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Saudi Arabia in Transition:

Opportunities for Italian-Saudi Cooperation

in the Age of Renewable Energy

Gen. Carlo Magrassi

Supervisor

Prof. Alessandro Lanza

Co-supervisor

Veronica Travisani

Student ID 641762

Candidate

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List of Abbreviations

ARAMCO	Arabian American Oil Company
Bbl	Barrel of Crude Oil
Bcm	Billion Cubic Metres
BICS	Brazil, India, China and South Africa
CCE	Circular Carbon Economy
CCUS	Carbon Capture, Utilization, and Storage
CSP	Concentrated Solar Power
EEAS	European External Action Service
EUC	End-User Certificate
FDI	Foreign Direct Investment
GCC	Gulf Cooperation Council
GCCIA	Gulf Cooperation Council Interconnection Authority
GHG	Greenhouse Gases
GW	Gigawatts
IEF	International Energy Forum
IMELS	Italian Ministry for the Environment, Land and Sea
IPCC	Intergovernmental Panel on Climate Change
IPO	Initial Public Offering
JAP	Joint Action Program
KACARE	King Abdullah City for Atomic and Renewable Energy
KACST	King Abdulaziz City for Science and Technology
KAFD	King Abdullah Financial District
KSA	Kingdom of Saudi Arabia

KWh	Kilowatt-Hours
MAECI	Italian Ministry of Foreign Affairs and Cooperation
MbS	Muhammad Bin Salman
MENA	Middle East and North Africa
MEWA	Ministry of Environment, Water and Agriculture
MGI	Middle East Green Initiative
MISA	Ministry of Investment of Saudi Arabia
MMb/d	Million Barrels per Day
MOCCAE	Ministry of Climate Change and Environment
MOE	Ministry of Energy
MoU	Memorandum of Understanding
m/s	Meters per Second
MtCO2	Million Tonnes of Carbon Dioxide
MW	Megawatts
NCP	National Centre for Privatization
NDC	National Determined Contribution
NIDLP	National Industrial Development and Logistics Program
NREP	National Renewable Energy Program
NTP	National Transformation Program
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of Arab Petroleum Exporting Countries
PIF	Public Investment Fund
PV	Photovoltaic
RE	Renewable Energy
REPDO	Renewable Energy Project Development Office

RES	Renewable Energy Sources
RST	Rentier State Theory
SABIC	Saudi Arabian Basic Industries Corporation
SGI	Saudi Green Initiative
SMEs	Small and Medium-sized Enterprises
SOCAL	Standard Oil of California
SOEs	State-Owned Enterprises
SWF	Sovereign Wealth Fund
TFEU	Treaty on the Functioning of the European Union
TW	Terawatts
UAE	United Arab Emirates
VRPs	Vision Realization Programs

Introduction

This thesis explores potential opportunities for economic cooperation between Italy and the Kingdom of Saudi Arabia (KSA) within the broad context of energy transition and aims to offer useful guidance for Italian actors operating in the field of energy and renewable energy (RE) in understanding the peculiarities of the Saudi market. Therefore, the ultimate answer this research will attempt to answer is how Italy and Saudi Arabia can improve bilateral dialogue and cooperation in the context of the energy transition.

The reason for this question is that the evolving landscape of energy for oil-producing countries in the wake of the energy transition is creating new challenges but also new opportunities. Indeed, the broader adoption of renewable energy sources (RES) in traditional oil-exporting countries is reshaping bilateral relations with oil-importer countries, giving a chance to rethink cooperation channels and create different bonds of positive interdependence with historical commercial partners like Italy, whose biggest trading partner in the Gulf and the second on the broader region is precisely the Kingdom. While recognizing structural limits in the current Italian-Saudi cooperation patterns in the energy field, this research adopts a constructive and positive attitude regarding possibilities to strengthen bilateral dialogue and partnerships. Ultimately, this research aims at demonstrating that mutual profits stemming from the energy transition can overcome existing limits and might actually be an instrument to overcome historical contrasts that have hindered inter-regional dialogue.

With this goal, the research will first present an in-depth analysis of the Saudi social and macro-economic context, with the intent to provide the basis for an informed evaluation of potential partnerships with the Kingdom. More specifically, the first chapter will focus on the energy sector's role in the economic development of the KSA, highlighting the implications of the use of oil revenues for the peculiar social contract of the country. In doing so, the research will build on the well-established academic literature of Rentier State Theory (RST) and Dutch disease, interpreting it in light of the evolving Saudi economic and energy landscape to provide exhaustive preliminary knowledge of the specific political and economic environment of the Kingdom. This will offer a comprehensive picture of the Saudi socio-political system and economic development, highlighting the peculiarities and challenges that Saudi Arabia faces with regard to the energy transition and climate change counter-action. This research-based premise will also be necessary to identify specific areas for boosting economic partnerships and potential constraints.

The second chapter will focus specifically on RES penetration in the KSA, considering both the legislative and regulatory framework for diversifying the country's energy mix and analyzing the level of deployment of different energy sources in the Kingdom. While providing a complete overview of the Saudi energy landscape, this section will also highlight existing limits and constraints in Saudi Arabia's energy transition plans and economic diversification attempts. Building on this account, the last section of the chapter will consider potential opportunities for Italian actors in the Saudi evolving energy sector, considering Italy's expertise in energy and RE as well as the Kingdom's needs and priorities.

Finally, the last chapter of the thesis will analyze potential areas of improvement in bilateral dialogue between Italy and Saudi Arabia. Drawing on the literature review and qualitative analysis conducted in the first two chapters, this section will suggest policy actions that both Italy and the KSA could take in order to enhance mutual dialogue and cooperation in the energy field. More specifically, the chapter will first consider country-specific recommendations for Italy, moving then to policy recommendations addressing Saudi Arabia, and concluding with an analysis of potential improvements in EU-GCC inter-regional dialogue. While some of the recommendations provided will be country-focused, this does not invalidate their relevance for bilateral cooperation. Indeed, elements such as regime stability, strategic export policy, and bureaucratic well-functioning are essential for establishing meaningful long-term partnerships in the energy field.

As for the methodology of the research, literature review and data collection -necessary to draw the framework of analysis and provide an up-to-date picture of Italy-Saudi Arabia bilateral cooperation- has been accompanied by a qualitative research approach in the form of interviews conducted by the author with professionals of the energy industry, business consultants, academic experts, and representatives of Italian and Saudi institutions, for a total of eleven interviews. The content of these conversations has been essential not only to enrich the theoretical framework of the research, by providing practical insights into a continuously developing field such as the Saudi energy and RE sector, but also to draft the policy recommendations provided in the third chapter and ultimately to draw the conclusions of the research. For what concerns specifically the interviews modality, a specific set of open-ended questions has been provided to each participant, focusing on different topics depending on the sector of reference (i.e., academic research, consultancy, institutions, and energy industry). Each interview has been conducted and transcribed by the author. When editing or translation was needed for clarity reasons, this has been signaled at the end of the interview transcript.

Similarly, when interviews have been conducted under confidentiality agreement, personal information and identifiers have been removed, and that has been signaled at the end of the interview transcript.

Chapter I - The Energy Transition as a Strategic Dilemma: Understanding the Link Between Energy, Economic Development, and Political Stability in the Kingdom of Saudi Arabia

This chapter provides an up-to-date overview of the Saudi socio-political and economic landscape, highlighting the main challenges that the energy transition poses to the KSA. To this end, the chapter will first present Saudi Arabia's geopolitical standing, focusing on how oil resources shaped the KSA's role in the international chessboard. Considering the Italian-Saudi bilateral framework of this research, a specific paragraph will be dedicated to analyzing bilateral relations between Italy and Saudi Arabia.

The second section of the chapter will focus on Saudi Arabia, discussing the notion of *rentier state* applied to the Saudi context. The research will first provide an overview of the original RST and then focus on more recent revisionisms of the same notion. This passage will be crucial to understand the relevance of the energy sector for the Saudi economy and political equilibria and to fully grasp the potential implications of the energy transition for the future stability of the Saudi regime.

Finally, the last section will specifically consider the role of the energy sector in the KSA, highlighting current trends of development for the sector's relevance in the context of the energy transition. Starting from a brief historical overview of the development of the oil industry in Saudi Arabia and analyzing data on the economic contribution of the energy sector to the Saudi public finances, the discourse will first focus on the economic impact of oil price volatility on the financial stability of the country and then will examine conflicting challenges posed by climate change in the KSA. The main objective of this section will be to emphasize the crucial and yet controversial role that the energy sector played in the country's economic development, in the past as in the present, and access future perspectives in light of the upcoming energy transition beyond fossil fuels.

1.1 Saudi Arabia in the international chessboard: how oil power shaped Saudi Arabia's geopolitical standing

Oil reserves impacted the KSA not only at the domestic level, underpinning the country's economic and institutional development, but they also determined the Kingdom's

salient position in the international scenario. Indeed, Saudi Arabia's strategic geographic location and vast oil reserves made it a crucial partner in the Cold War context of the mid-twentieth century for the economic growth of Western countries, and most notably of the United States. Arguably, Saudi Arabia's geopolitical power derives precisely from its immense oil reserves and, even more, from its demonstrated capacity to provide a source of stable and secure furniture of energy that has sustained Western powers' economic development for long[1].

Indeed, owning the second-largest crude oil reserves and production capacity globally[2], Saudi Arabia is critical to the world's energy needs. Even though the Kingdom's role in the global oil market has sometimes been controversial[3], its overall reliability as a global oil supplier made it an important player for global economic growth. That is also because Saudi Arabia has almost invariably acted as the global swing oil producer[4], ensuring moderate prices[5]. The Kingdom successfully took advantage of this position and used it as an instrument of state power to play a critical role in keeping the oil market balanced. This has allowed the KSA to gain an influential position in the international geopolitical system by strengthening its balance of power and relationship with the United States and Western countries[6].

Notably, the XXI century marked a turning point in Saudi Arabia's foreign policy, not only because it saw the beginning of a gradual deterioration of US-Saudi bilateral relations, but

[1]Antonio Perra, *Kennedy and the Middle East: the Cold War, Israel and Saudi Arabia* (London: Bloomsbury Publishing, 2017), chap. 4, Perlego.

[2]In 2020, the KSA's oil reserves amounted to 40.9 billion metric tons, accounting for about one-fifth of the world's conventional oil sources. In the same year, Saudi Arabia's oil production amounted to some 11.04 million barrels per day. See "Oil production in Saudi Arabia 1998-2020," Statista, last modified August 26, 2021, https://www.statista.com/statistics/oil-production-in-saudi-arabia-in-barrels-per-day/; "Proved oil reserves in Saudi Arabia 1990-2020," Statista, last modified August 10, 2021, https://www.statista.com/statistics/oil-reserves-in-saudi-arabia-since-1990/.

[3]Historically, the most serious crisis was marked by the 1973-74 oil embargo, when Saudi Arabia and a coalition of Arab states cut oil sales to the United States and its Western allies for their support to Israel in the 1973 Arab-Israeli war.

[4]The KSA abandoned its swing producer role only in a few cases. For example, in 1985, when Saudi Arabia chose to protect its market share by increasing production and making competitors' high-cost oil production facilities less profitable, and in 2014, when the United States' supply resulting from high shale oil production added to a worldwide surplus and caused oil prices to drop by a third.

[5]Saudi Arabia has been traditionally defined as a swing oil producer according to three criteria: 1. it is a net oil exporter with enough daily production, spare capacity, and reserves to influence market prices by balancing supply and demand through increasing or decreasing output; 2. it can act authoritatively and quickly to increase or decrease oil output; 3. it has low production costs and sufficient financial reserves to withstand reduced cash flow when restricting or increasing oil supply. However, realism, liberalism, and other international relations theories interpret the KSA's role as a swing producer differently. For a complete review of these theories, see Andrei Belyi, "Energy security in international relations (IR) theories," (Cathedra on political issues of international energy, Higher School of Economics, 2007).

[6]Ammro Ragaban, "The Geopolitical Implications of Saudi Arabia's Role as a Swing Producer of Oil, the Threat of the Shale Oil Revolution to Saudi Stability, and the Middle East Balance of Power Post-U.S. Energy Independence," (Master diss., John Hopkins University, 2016), 17-21.

also because Riyadh began shifting from a moderate mediator to a more aggressive intervener. While this shift became evident only by the mid-2010s, following King Salman's enthronement, it was the result of a progressive transformation started with the Iraqi War and the deposition of Saddam Hussein, which undermined profoundly Saudis' assurance over the United States' regional hegemony and military protection against Iran. This initial detachment was further reinforced by increasingly diverging positions on democracy, the role of Iran, openness in the Middle East and North Africa (MENA) geopolitics, and the enhanced energy independence of the United States. Arguably, the shale revolution permanently impacted US-Saudi relations by providing the former with the opportunity to revise its traditional policy in the Gulf region and causing concern in Riyadh over the potential weakening of the US influence in the area. As the United States' political and military support became less reliable, Saudi Arabia's threat perception increased significantly. Consequently, the KSA attempted to strengthen its self-sufficiency by expanding its military spending and increasing its ties with Russia and China. Notably, while reviving political confrontation, this shift also encouraged Gulf investments in the African continent, thus increasing economic cooperation with European countries and Italy[7].

1.1.1 Focus on Italy-Saudi Arabia relations

Focusing on Italy-Saudi Arabia bilateral relations, the two countries have been cultivating economic, trade, and investments partnerships since the establishment of the modern KSA in 1932, when Italian diplomatic interests began to gravitate towards the Arabian Peninsula to create a military outpost on the Red Sea with a view to facilitating the extension of the Italian colonial empire. Despite Italy's struggle to develop an assertive foreign policy in the region independently from the framework of the US-Saudi relations due to its limited capacity as a mid-sized European power, the two countries managed to develop a relationship based on mutual needs and the competitive advantage Italy can offer to the Arab Gulf countries[8].

[7]Silvia Colombo, "Italy and Saudi Arabia Confronting the Challenges of the XXI Century," Istituto Affari Internazionali (IAI), 2013, 50; Anoushiravan Ehteshami, "Saudi Arabia as a Resurgent Regional Power," *The International Spectator* 53, no. 4 (2018), 75, DOI: 10.1080/03932729.2018.1507722; Sean Fole, "Kingdom of Saudi Arabia," in *Government and Politics of the Middle East and North Africa: Development, Democracy, and Dictatorship*, ed. Sean Yom (London: Routledge, 2020), chap. 15, Perlego; Mehran Kamrava, "The Arab Spring and the Saudi-Led Counterrevolution," *Orbis* 56, no. 1 (2012): 104; Azad Shirzad, "Saudi Arabia Looks East: Imperatives and Implications," *The International Spectator* 54, no. 3 (2019): 139-140, DOI: 10.1080/03932729.2019.1643550; Guido Steinberg, "Leading the Counter-Revolution: Saudi Arabia and the Arab Spring," *German Institute for International and Security Affairs* 7 (June 2014): 26.
[8]Colombo, "Italy and Saudi Arabia Confronting the Challenges of the XXI Century," 79, 127.

Indeed, traditionally Saudi Arabia has been primarily an economic and commercial partner for Italy. Remarkably, today the Kingdom is Italy's biggest trading partner in the Gulf and its second on the broader region, with imports to Italy from Saudi Arabia amounting to 3,803 billion euros in 2019 (Table1). Italy is also one of the top ten suppliers to the KSA, with exports reaching 3,276 billion euros in 2019, up by 6 percent compared to 2018 data. Looking at data for the first half of 2021, exports from Italy recorded a positive trend with a growth of more than 5 percent compared to the previous period, confirming the centrality of Saudi Arabia as a commercial partner in the MENA area (Table 2). Similarly, in the first nine months of 2021, imports from Saudi Arabia to Italy also grew by more than 57 percent due to the rise in oil price, far exceeding the 2020 figure (Table 1)[9].

Table 1: Saudi export towards Italy

	2018	2019	2020	JAN-OCT 2020	JAN-OCT 2021
Total (mln. EUR)	5,139.13	3,803.94	3,803.07	2,496.21	3,936.83
Variation (%)	+48.5	-26	-22.2		+57.7

Source: InfoMercatiEsteri. "Scheda paese: Arabia Saudita", 37. https://www.infomercatiesteri.it/.

Table 2: Italian export towards Saudi Arabia

	2018	2019	2020	JAN-OCT 2020	JAN-OCT 2021
Total (mln. EUR)	3,092.14	3,276.16	3,216.56	2,553.14	2,679.98
Variation (%)	-21.4	+6	-1.8		+5

Source: InfoMercatiEsteri, "Scheda paese: Arabia Saudita", 35, https://www.infomercatiesteri.it/.

As for the composition of imports from the Kingdom, the main assets are represented by fuels, which alone are worth 84 percent of total imports towards Italy, plastics (8 percent of the total), and chemicals (5 percent of the total). On the other hand, over half of the goods that Italy exports to Saudi Arabia are represented by four main items, namely machinery (36 percent

[9]Roberto Cantone, "Riad punta sul verde: occasione per le aziende italiane," interview by Angela Zoppo, *Milano Finanza*, December, 2021, https://www.milanofinanza.it/riad-punta-sul-verde-occasione-per-le-aziende-italiane; "Italian Foreign Minister, Saudi Arabia's Crown Prince Discuss Relations," Italian Trade Agency (ITA), last modified January 11, 2021, https://www.ice.it/; Maria Grazia Rutigliano, "Italia-Arabia Saudita: firmato un Memorandum d'Itesa," *Sicurezza Internazionale*, January 11, 2021, https://sicurezzainternazionale.luiss.it/italia-arabia-saudita-firmato-un-memorandum-dintesa/.

of overall Italian exports), machines, appliances, and electrical equipment (6.8 percent of total exports), furniture (6 percent), cast iron and steel (5.1 percent of total exports)[10].

Notably, in recent years relations between Italy and Saudi Arabia have expanded not only at the economic and commercial level but also in the fields of politics, culture, and security. This bond was formalized with the Memorandum of Understanding (MoU) signed in Al 'Ulā in January 2021 by the Italian Minister of Foreign Affairs Luigi Di Maio and his Saudi counterpart Minister Faisal bin Farhan Al Saud. The MoU provided a strategic framework to enhance political cooperation beyond economic and commercial relations, including stabilizing the main crisis theaters in the MENA region (from the Israeli-Palestinian conflict to Syria, Iraq, and Yemen) and promoting regional dialogue within the framework of the United Nations[11].

Despite some political discrepancies concerning the export of armaments to the Kingdom due to its role in the war in Yemen[12] and Rome's close diplomatic ties with Tehran, Italy and Saudi Arabia continue to cultivate their partnership in a number of strategic sectors. For example, the Italian company Leonardo S.p.A. operates in the country in the field of cyber defense and anti-drone systems, as well as in sectors with civil implications, such as cyber defense infrastructures in the city of Neom. Looking to the future, Saudi Arabia's Vision 2030 reform program, launched in 2016, offers enormous opportunities to strengthen further bilateral economic partnerships, especially in the infrastructure, energy, manufacturing, and logistics sectors. Indeed, in the wake of the infrastructural and urban investments in progress, it is possible to expect both an increase in the export items relating to machinery, building materials, marble, and ceramics, as well as higher participation of Italian architectural studies and

[10]Roberto Cantone, "Riad punta sul verde: occasione per le aziende italiane," interview by Angela Zoppo, *Milano Finanza*, December, 2021, https://www.milanofinanza.it/riad-punta-sul-verde-occasione-per-le-aziende-italiane; "Italian Foreign Minister, Saudi Arabia's Crown Prince Discuss Relations," Italian Trade Agency (ITA), last modified January 11, 2021, https://www.ice.it/; Maria Grazia Rutigliano, "Italia-Arabia Saudita: firmato un Memorandum d'Itesa," *Sicurezza Internazionale*, January 11, 2021, https://sicurezzainternazionale.luiss.it/italia-arabia-saudita-firmato-un-memorandum-dintesa/.

[11]"Scheda Paese: Arabia Saudita," InfoMercatiEsteri, Italian Embassy in Riyadh, last modified December 13, 2021, https://www.infomercatiesteri.it/; Author's interview with Dr. Mario Boffo, former Italian diplomate and ambassador in Yemen (2005-2009) and Saudi Arabia (2013-2016), December 7, 2021; Author's interview with Dr. Valerio Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh, December 22, 2021.

[12]Notably, on December 22, 2020, the Foreign Affairs Commission of the Italian Chamber of Deputies passed a resolution extending the halt to the sale of aircraft bombs and missiles to Saudi Arabia and the United Arab Emirates (UAE). On that occasion, the Italian Minister of Foreign Affairs revoked authorizations still in progress and provided the suspension of granting new licenses towards the KSA and the UAE. Specifically, the suspension concerned of one of the licenses for RWM Italia S.p.A. and other armament material for Eurofighter jets. Restrictions were then loosened in July 2021, with the revoke of the strengthened end-user certificate (EUC) clause necessary for exports to the UAE and Saudi Arabia. Nevertheless, weapons licenses revoked in January, including the sale of some 12,700 missiles, remained on hold.

construction companies in the tenders promoted by Vision 2030. Other sectors where Italy has a historical advantage in the Saudi market and with high potential are fashion, agri-food, furniture, and luxury design[13].

1.2 Saudi Arabia and the Rentier State Theory paradigm

To fully understand the intricate relationship between the Saudi energy sector and current and future trends of the country's economic, political, and social scenario, it is first essential to refer and briefly review the theoretical framework for studies of resource-dependent countries in the Persian Gulf, namely the RST.

The conceptual foundations of the RST were laid over in the late 1980s by Hazem Beblawi and Giacomo Luciani, with a particular focus on countries of the Gulf and Arabian Peninsula[14]. At the most general level, the notion of *rentier state* describes a situation where the state is the owner of the country's natural resources and plays a chief economic role by redistributing, directly or indirectly, the rent accrued from abroad through exports of those resources to a large part of the society to gain political support. For example, rather than taxing their citizens, rentier states may use oil export rents to fund generous social welfare budgets. Remarkably, according to the traditional RST academic literature, this would make untaxed citizens have fewer grounds to demand oversight of policy-making[15].

For what concerns specifically the Gulf Cooperation Council (GCC) countries[16] and the KSA, this redistributive mechanism occurs through the collection of vast oil revenues and the reallocation of the same to national citizens in the form of large public employment and cuts to subsidies, such as water, electricity, and gasoline. Traditionally, this system has allowed the

[13]Cantone, interview by Angela Zoppo; Author's Interview with Dr. Valerio Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh, December 22, 2021; "Italian Foreign Minister, Saudi Arabia's Crown Prince Discuss Relations," Italian Trade Agency (ITA), last modified January 11, 2021, https://www.ice.it/.

[14]Hazem Beblawi and Giacomo Luciani, *The Rentier State* (London: Croom Helm, 1987). Actually, the notion of *rentier state* was initially introduced by Hossein Mahdavy, but with a specific focus on the economic development dimension. See Hossein Mahdavy, "The Pattern and Problems of Economic Development in Rentier States: The Case of Iran," in *Studies in the Economic History of the Middle East: From the Rise of Islam to the Present Day*, ed. M. A. Cook (Oxford: Oxford University Press, 1970).

[15]Beblawi and Luciani, *The Rentier State,* 49-62; Giacomo Luciani, "Oil and Political Economy in the International Relations of the Middle East," in *International Relations of the Middle East,* ed. Louise Fawcett (Oxford: Oxford University Press, 2013), 103-26; Mahdavy, "The Patterns and Problems of Economic Development in Rentier States,", 428-67; Abdul M. Al Mashat, "Politics of Constructive Engagement: The Foreign Policy of the United Arab Emirates," in *The Foreign Policies of Arab States: The Challenge of Globalization*, ed.s Bahgat Korany and Ali E. Halil Dessouki (Cairo: The American University in Cairo Press, 2008), 461.

[16]The Gulf Cooperation Council (GCC) is a group of six oil-exporting countries – namely Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE – established in 1981 as a regional intergovernmental political and economic alliance.

Saudi ruling family to maintain substantial public expenditure programs without resorting to taxation while avoiding severe deficits in their balance of payment. The most important outcome of this social contract is that the government, being independent of domestic taxation, is financially self-sufficient and thus independent of society. In reason of this, the traditional RST affirms that in rentier governance state-society relations are inverted as the government's political legitimacy is based on its capacity to support the population through the distribution of the oil rent[17]. Indeed, rentier states like the oil-rich countries of the GCC and the KSA can be defined as distributive states, in the sense that the fundamental function of the government is to redistribute oil revenues, which ultimately is what gives the ruling political elite its power of patronage. It follows that, in such circumstances, any disruption in oil production, distribution, or consumption could be detrimental not only in economic terms but also for the very stability of the state[18].

1.2.1 Rentier features in the Saudi governance: an analysis of labor market distortions

The KSA has traditionally been referred to as a typical example of rentier state. Among the distinct qualities of rentier states, Saudi Arabia features an oil-based economic development, the absence of personal income or property tax, and the lack of political representation of national citizens, allegedly traded with a generous redistribution of oil rent[19]. Arguably, the primary way through which the Saudi government has redistributed revenues accrued from oil exploitation among its citizens has been public sector employment. Indeed, the size of the current public sector wage bill - around 46 percent of total expenditure in 2020 - is an evident rentier characteristic of the Saudi governance and shows how issues of bulging demography and unemployment have been typically addressed by local authorities. Actually, even in periods of lower oil prices, the Saudi government preferred to cut investment expenditure rather than government spending on public sector wages, which traditionally have been preserved. As proof of this, Saudi Arabia has kept its historically high wage bill consistent

[17]Al-Mashat, "Politics of Constructive Engagement," 461; Nazih N. Ayubi, *Over-stating the Arab State: Politics and Society in the Middle East* (London: I.B. Tauris Publishers, 1995), 224-25; Luciani, "Oil and Political Economy in the International Relations of the Middle East," 103-26.

[18]Luciani, "Oil and Political Economy in the International Relations of the Middle East," 103-26; Rodney Wilson, Abdullah Al-Salamah, Monica Malik, and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia,* New York: Routledge, 2004, 16.

[19]The only chief tax involving redistribution in the KSA is *Zakat*, an Islamic wealth tax levied at one-fortieth of the value of liquid wealth or two-and-a-half per cent per annum, the payment of which is regarded as one of the five pillars of Islam. The responsible for the collection of *Zakat* is the government.

even throughout the Covid-19 pandemic[20].

To fully understand the circumstances through which the Saudi labor market took shape, it is important to briefly address the demographic developments that paralleled the country's economic development. In particular, following a tremendous demographic boom and a significant decline in infant mortality rates in the 1990s, the number of Saudi nationals entering the labor market began increasing sharply. By the 2000s, the Saudis born during the 1970s oil boom years were seeking employment. Although the Saudi economy has been able to absorb this increase in labor demand to a considerable extent, the issue of youth unemployment has soon become particularly evident in the Kingdom compared to the three wealthiest GCC states, namely Qatar, the United Arab Emirates (UAE), and Kuwait. That is due to different elements: on the one hand, in the KSA 58 percent of the population is under the age of 30, of which a percentage as high as 29.6 percent is currently unemployed; on the other one, old mechanisms of public sector hiring, that traditionally have been adopted to address issues of unemployment, today are less viable due to shrinking government resources[21].

An excellent example of the limits of the Saudi labor market can be found precisely in the oil industry that, despite being the backbone of the Saudi economy, does not offer a consistent source of local employment due to its capital-intensive nature. For example, the state-owned oil giant Saudi Aramco has an excellent reputation in the Kingdom as an employer because, even though most of its staff were expatriates before nationalization, by the 1990s most of its employees were Saudi citizens. Nevertheless, in 2019 its total workforce amounted just to 79,000 people, accounting for less than one percent of the entire national workforce. Similarly, in 2020 the Saudi Arabian Basic Industries Corporation (SABIC) - the Kingdom's largest industrial company - only employed 32,000 workers. Today, little more than 100,000 Saudis are employed in the oil and gas industry, accounting for as little as 1.4 percent of the total national workforce. Moreover, the growth of jobs in the oil and gas sector is also low, implying that the industry will account for an increasing diminishing proportion of the total workforce over the longer term[22].

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[20]Luciani, *Resource Blessed: Diversification and the Gulf Development Model*, 48; Strategic Gears, *Saudi Arabia's Budget Report 2021* (Riyadh: Strategic Gears, 2021), 10, accessed August 18, 2021, https://strategicgears.com/index.php/providers/reports.

[21]Faris Al-Sulayman, "'Reform Dissonance' in the Modern Rentier State: How are Divergent Economic Agendas Affecting State-Business Relations in Saudi Arabia?," *British Journal of Middle Eastern Studies* 47, no. 1 (January 2020): 65-66, https://doi.org/10.1080/13530194.2020.171426065; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 99.

[22]Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 49, 53.

Interestingly enough, the largest sources of employment in the KSA are the construction, retail trade and finance, and real estate sectors. However, the majority of workers employed in these sectors are non-Saudi citizens. In particular, the housing and commercial projects require many unskilled and semi-skilled workers, most coming from the Indian subcontinent and paid relatively modest wages. Therefore, few Saudi nationals – even if unemployed – are interested in jobs in the construction industry. For what concerns retailing, although by law all establishments must be owned by Saudis, and even if the government has decreed that one-third of the workforce in retail establishments should be national, this is widely ignored[23].

This picture shows how employment issues of the local workforce remain problematic in the KSA. Indeed, despite the substantial growth in the Saudi population and labor force since the 1990s, trained local citizens are often unavailable for key jobs such as electricians, plumbers, or maintenance engineers, as the preference for white-collar jobs in the government sector remains high despite the reduced availability[24]. That can be troublesome in a context where state sector organizations already employ a high percentage of local citizens and - as budgetary considerations increasingly constrain government expenditure - prospects for public employment are limited. As a matter of fact, today, most of the recruitment of local nationals in the state administration simply replaces retiring employees[25].

1.2.2 Making the energy sector a platform for development: diversification efforts and limits of the energy labor market

The Saudi energy sector has soon adapted to ensure that it could act as a platform for development and private-sector growth capable of bringing added value to the country. As proof of this, diversification strategies involving the petrochemical industry in Saudi Arabia date back to the oil boom of the 1970s. It should be acknowledged, in fact, that the Saudi rulers' willingness to diversify the local economy was already present well ahead of the first oil boom; actually, it was a lack of capacity rather than a lack of desire that prevented non-oil industries from emerging in the country before the 1980s. Since the 1980s, the major industrial diversification in Saudi Arabia has been into petrochemicals, fertilizers, and energy-intensive industries such as iron and steel. As a result, the Kingdom has become one of the leading international producers of methanol, ethylene, styrene, vinyl chloride monomer, butane, caustic

[23]Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 101-2.
[24]*Idem*, 9-10.
[25]*Idem*, 102.

soda, sulfuric acid, and MTBE[26], being home to one of the most successful non-oil industries in the region, which is often referred to as a model case of economic diversification in the Gulf, that is SABIC[27].

Notably, when the stock market was established, SABIC became the largest quoted company in the entire MENA region, keeping this prime position until the partial privatization of the Saudi Telecommunications Company in December 2002[28]. To this day, SABIC is still the Kingdom's largest industrial company and accounts for almost one-tenth of Saudi exports, with production exceeding 35 million metric tons by the end of 2019, with sales revenue worth around seven billion dollars annually, and profits of almost one billion dollars. As it has been already mentioned, however, the contribution of this industry to local employment has been limited. Good evidence of this can be found in the fact that the cities of Jubail and Yanbu, where most of SABIC's industrial plants are located, have become enclave economies with limited links to the national economy and somewhat isolated from the country's chief urban centers[29].

Aside from the petrochemical sector, the Saudi authorities have adopted several statist policies tackling the private sector to increase the number of nationals working there, launching the Niṭāqāt and Ṭāqāt programs. The Niṭāqāt Program is a quota system introduced in 2011 to push private firms to increase the number of nationals they employ through an incentive and penalty system. On the other side, the Ṭāqāt Program was launched in 2015 in synergy with several government agencies, with the goal to facilitate the matching of jobseekers' skills with opportunities for firms looking to hire[30]. Within the range of labor nationalization policies, Saudi authorities have also broadened Saudization requirements on new sectors and introduced levies on foreign workers[31]. At the same time, the government has undertaken several initiatives to narrow the wage gap between local and foreign labor, for example, introducing foreign labor fees at a rate of 200 SAR per foreign employee per month. However, although employment costs for foreign labor have increased, wages for nationals remain unchanged. Indeed, the state's effort to reduce the private sector's reliance on cheaper foreign labor through fees and

[26]Methyl tert-butyl ether, the octane enhancer that replaces lead in petrol.
[27]Ali Al-Saffar, "Strategies: All the Gulf's Energy," *World Energy* 42 (April 2019): 21; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 53; Makio Yamada, "Can a Rentier State Evolve to a Production State? An 'Institutional Upgrading' Approach," *British Journal of Middle Eastern Studies* 47, no. 1 (January 2020): 27, https://doi.org/10.1080/13530194.2020.1714867.
[28]Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 53-55.
[29]*Idem*, 39.
[30]Al-Sulayman, "Reform Dissonance," 70.
[31]This resulted in a large exodus of migrant workers in the last two years, with around 1,800,000 foreigners who left the Saudi labor market between Q1 2017 and Q1 2019.

other means while maintaining most elements of public sector compensation unvaried is a symptom of the rigidity of the Saudi social contract. Moreover, it suggests that a direct attempt to curtail public sector wages to further narrow the gap with the private sector may not be a politically viable possibility[32].

1.2.3 A blessing or a curse? Reconsidering the suitability of the Rentier State Theory for the Kingdom of Saudi Arabia

Over the past decade, the prevailing RST orthodoxy started being revised, and a new academic literature of corrections to the original concept of *rentierism* has gradually emerged, providing a more positive account of the economic accomplishments and future development perspectives of the GCC states and even questioning whether the notion of rentier state is still applicable to Gulf countries[33].

Initial disaffection with the original RST resulted from observing the uneven impact of the alleged "resource curse" and "Dutch disease[34]". In particular, some academics started rejecting the deterministic view of *rentierism* and the oil curse, which linked rentier governance with a lack of economic diversification and, in the long run, with a distorted economic development[35]. In the case of Saudi Arabia, for example, although oil dependence has hindered the process of economic diversification and favored the development of asymmetric state-society relations, there is no doubt that without the exploitation of oil revenues the KSA would not have had the necessary financial resources to fund the basic infrastructures needed to establish a modern state. Ultimately, compared to other "resource-cursed" countries like Venezuela, Angola, or the Democratic Republic of Congo, oil seems to have been more a blessing than a curse for Saudi economic development[36].

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[32]Al-Sulayman, "Reform Dissonance," 72-73.

[33]Robert Springborg, "GCC Countries as 'Rentier States' Revisited," *Middle East Journal* 67, no. 2 (Spring 2013): 301; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 39.

[34]The term was coined in the 1970s to describe the effect of natural gas boom in the Netherlands on the local manufacturing sector, and started being used to highlight a causal relationship between the increase in the economic development of a specific sector (such as natural resources) and a decline in other sectors.

[35]Dutch disease is expected to be occur in countries that have either discovered vast reserves of natural resources or that have experienced a sudden spike in their most precious export commodity. According to the classical theory of Dutch disease, the inflow of foreign funds which result from the sudden discovery of a tradable natural resource, has a negative impact on a country's economy in the form of appreciation in real exchange rate, temporary increase in current income, and inefficient labor mobility. Ultimately, this could result in a decrease in competitiveness of other tradable sectors as the exports of natural resource would crowd-out other exports. Eventually, the spike in foreign exchange could leave the country economically uneven and structurally vulnerable, facing the threat of a de-industrialization process.

[36]Ishtiaq Ahmad Baiwa, Muhammad Ather Elahi, Waleed Rafi, and Farooq Ahmad Bajwa, "Oil Overdependence and Dutch Disease, KSA evidence," *Management Studies and Economic Systems* (MSES), no. 4 (Summer 2019): 214; Springborg, "GCC Countries as 'Rentier States' Revisited," 304; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 39.

In recent years, Giacomo Luciani himself has acknowledged the need to revise the original concept of rentier state in light of the changed circumstances of the GCC countries, recognizing the strong commitment of the Gulf ruling elites to the transformation of their economies. While Luciani observes that a significant share of the rent is still used to buy political consensus in the GCC countries, he also stresses that a considerable percentage has been invested in diversification, concluding that hydrocarbon resources have been a blessing rather than a curse for the GCC states, that indeed are progressively achieving their diversification goals[37].

In conclusion, it could be argued that despite showing the typical features of a rentier state -both in state-society relations and governance mechanisms- and even if suffering from significant labor market distortions resulted from the redistributive system established by the state, the KSA ranks among the rentier states that are striving to make the most of their current privileged financial stance to find innovative strategies to move towards a post-oil economy[38]. However, a different and probably more troubling question concerns whether the Saudi ruling elite is willing to move towards a post-rentier social order and to which extent the reforms announced with the development plan launched in 2016 with Vision 2030 will concern not only an innovative program of economic diversification and growth but also a rethink of state-society relations.

1.3 The energy sector in Saudi Arabia: from a source of growth to cause for concern

In the GCC countries and particularly in the KSA, hydrocarbons have ensured a long period of stability and economic development, representing the pillar of the regional economy. Starting from the 1970s, the exploitation of oil resources has made it possible for Saudi Arabia to experience tremendous evolutions, becoming a modern nation-state with increasing power and ambitions in the international arena in less than fifty years. However, what has historically represented the leading source of economic growth and political power for the Saudi ruling elite - namely its virtually unlimited access to oil and gas - today is threatened by several factors that

[37]Giacomo Luciani, *Resource Blessed: Diversification and the Gulf Development Model* (Berlin: Gerlach Press: 2013), 9, 27.

[38]Arguably, this was made possible in the first place by the long-standing US security umbrella, which guaranteed state stability in the Kingdom even in troubled periods while pushing the Saudi government into embracing the path of economic development.

may affect future hydrocarbons demand[39], including government policies, consumers' behavior, and advances in clean energy technology.

For example, coal is progressively being replaced by lower-emission natural gas in the power sector, while gas itself is beginning to compete with zero-carbon substitutes such as renewables. Likewise, in personal transportation markets, which constitute two-thirds of global demand for hydrocarbons, hybrid and electric vehicles increasingly represent an alternative for gasoline and diesel-fueled ones. Similarly, the rising efficiency of consuming technology provides services with reduced energy use. In addition, government policies such as carbon taxes, restrictions on single-use plastics, or multilateral initiatives like the 2015 Paris Agreement - that includes pledges from nearly all the world's governments to reduce greenhouse gas (GHG) emissions - will affect future fossil fuel demand too. Moreover, extreme weather events linked to the greenhouse effect are likely to result in increasing public pressure on governments to impose policy prescriptions, along with growing investors' pressure from multilateral institutions, shareholders, insurers, and lenders to reduce investments in carbon-intensive developments. Finally, the recent Coronavirus-induced economic downturn has once again unmasked the weaknesses linked to the financial reliance of oil-dependent countries like the KSA on oil revenues, raising concerns over the ability of the Saudi government to continue sustaining its traditionally generous welfare state and casting a shadow over the political stability of the Kingdom in the medium and long-term[40].

What should be stressed further is that in the KSA, the energy transition poses a true policy dilemma as it constitutes an existential challenge for the Kingdom, marking a pivotal moment in the country's history. Indeed, for the Gulf petrostates, climate change does not solely present the potential for physical harm in the form of rising temperatures – and thus potential uninhabitability of the country in the long run – but it also represents an existential political economy threat. The reason for this is that the transition from fossil fuels towards cleaner energy sources may undermine the economic rent that has traditionally financed the country's governance and that still underpins state-society relations in Saudi Arabia, ensuring state stability. At the same time, although a successful economic diversification strategy could

[39]The terms "hydrocarbons" and "fossil-fuel" are here used interchangeably based on the assumption that the decrease of all hydrocarbons demand will be an inevitable consequence of the adoption of climate chance mitigation strategies. Nevertheless, the author acknowledges that hydrocarbons are not solely used as fossil fuels and that they represent an important raw ingredient in many manufacturing processes that do not involve combustion or CO2 emission.

[40]Jim Krane, "Climate Action Versus Inaction: Balancing the Costs for Gulf Energy Exporters," *British Journal of Middle Eastern Studies* 47, no. 1 (January 2020): 121-123.

address both physical and financial risks, it would require structural changes in the rentier governance, hence jeopardizing the legitimacy of the Saudi regime, which is essentially based on a system with virtually no taxation and a generous rent redistribution among nationals[41]. On top of that, Saudi Arabia is among the most exposed countries to physical risks linked to a warming climate. Indeed, while all the GCC countries are doomed to face devastating adverse effects of climate change, the wealthiest monarchies of Kuwait, Qatar, and the UAE are better equipped from a financial standpoint to find adaptation measures than poorer rentiers states like Oman and Saudi Arabia[42]. In this respect, a 2018 study on the effects of climate change on countries' GDP[43] suggested that Saudi Arabia is among the countries expected to endure the most significant GDP losses due to the adverse effects of a warming climate. More specifically, considering a three degrees global warming[44], the Kingdom would be expected to lose 0.829 percent in GDP terms by 2037, 1.387 percentage points by 2047, 2.674 by 2067, and up to 7.304 in the long run[45]. In such circumstances, it appears clear how the future of the KSA is tightly bound to the fate of oil within the global energy transition scenario and why the current Saudi ruling family urgently needs to find new strategies to diversify the country's economy and rethink its social structure[46].

1.3.1 The development of the oil industry in Saudi Arabia

Energy is an essential input for all economies, but in GCC countries oil and gas revenues have set out the very structure of the state, representing the bulk of their GDP and export value. Notably, in 2020 62 percent of the KSA's revenues came from oil and gas[47]. That is because of the distinct role that oil revenues have played in the country's economic development. Arguably, establishing a modern state in Saudi Arabia was possible only thanks to the

[41]Aisha Al-Sarihi, "Prospects for Climate Change Integration into the GCC Economic Diversification Strategies," *LSE Middle East Centre Paper Series* 20 (February 2018): 6-7; Nicolò Sartori, "Transition: Rapid Change in the Energy Sector," *World Energy* 11, no. 42 (April 2019): 25; Krane, "Climate Action versus Inaction," 117-118.
[42]Krane, "Climate Action versus Inaction," 127-128.
[43]Tom Kompas, Van Ha Pham, and Tuong Nhu Che, "The Effects of Climate Change on GDP by Country and the Global Economic Gains from Complying with the Paris Climate Accord," *Earth's Future* 6, no. 8 (July 2018), 1163, https://doi.org/10.1029/2018EF000922.
[44]This data refers to the 'worst case' scenario adopted by the Intergovernmental Panel on Climate Change (IPCC), namely the Representative Concentration Pathway 8.5. This trajectory assumes that emissions will continue to expand at current rates with little advancement in technology or reduction in human population growth.
[45]Kompas, Pham, and Che, "The Effects of Climate Change on GDP by Country and the Global Economic Gains from Complying with the Paris Climate Accord," 1163.
[46]Sartori, "Transition: Rapid Change in the Energy Sector," 25; Krane, "Climate Action versus Inaction," 117-118.
[47]Euro-Gulf Information Centre (EGIC), "Country Profile: Kingdom of Saudi Arabia," 2020, https://www.egic.info/saudi-arabia.

exploitation of oil resources.

Oil reserves in the country were discovered soon after the foundation of the modern KSA in 1932 when, in 1938, the American company Standard Oil of California (SOCAL) found the then world's largest oilfield in Dammām, in the eastern province of the country. At that time, King Abdul Aziz had already agreed with SOCAL a sixty-year exclusive concession[48] and, by the time the well drilled in Dammān revealed the country's substantial oil reserves, SOCAL had brought Texaco as a partner with their merged operations becoming the Arabian American Oil Company (ARAMCO). Notably, this foreign corporate ownership structure made by SOCAL, Texaco, and since 1948 by Socony-Vacuum[49] remained in place until the October War of 1973. Although the Saudi authorities could not control the production level over this period, in the late 1940s they managed to secure a profit-sharing agreement with ARAMCO that entitled them to half of all revenues from oil sales[50]. Still, American oil companies preserved their ownership and management role on Saudi Arabia's oil resources until 1973, even after oil companies elsewhere ceded control to government-owned[51]. Possibly, these external developments further benefited the Saudi oil industry, pushing ARAMCO foreign shareholders to increase investments in the KSA to maintain their access to oil supplies and share of world oil production[52].

This situation suddenly changed after the outbreak of the Yom Kippur War in 1973. Indeed, following the oil embargo imposed in October 1973 by oil-producing Arab countries to the United States and other Western allies for their support of Israel in the 1973 Arab-Israeli war, Saudi Arabia could not tolerate it any longer to have its oil production controlled exclusively by American companies. Consequently, in 1974 negotiations started between the Saudi government and the American owners of ARAMCO. Initially, a sixty percent majority ownership stake of the Saudi state was agreed; however, soon after negotiations started over complete nationalization and eventually they were concluded in June 1977 with the establishment of Saudi Aramco. In this way, Saudi Aramco became a one hundred percent

[48]The agreement was signed on July 14, 1933.
[49]Today known as the Exxon Mobil Corporation.
[50]Valerie Marcel, *Oil Titans: National Oil Companies in the Middle East* (Washington, DC: Brookings Institution Press, 2006), 21; Rodney Wilson, Abdullah Al-Salamah, Monica Malik, and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia* (New York: Routledge, 2004), 40.
[51]For example in Iran, whose oil industry was nationalized as early as 1951 by the then prime minister Muhammad Mossadegh.
[52]Marcel, *Oil Titans: National Oil Companies in the Middle East*, 21; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 40-41.

government-owned company, with former American oil partners still providing some specialized management and technical services on a fee basis[53].

Since then, development possibilities have opened up in Saudi Arabia, mainly as a result of the 1973-74 and 1979 oil-price rises. Indeed, during the 1973 oil crisis, oil prices rose from 3 USD per barrel to nearly 12 USD, while following the second oil crisis of 1979 the crude oil price doubled up to 39.50 USD per barrel. In this period, the Saudi economy began to proliferate, with GDP increasing from approximately 15 billion USD in 1973 to more than 184 billion USD by 1981[54]. Ultimately, Saudi Arabia became the largest economy in the Arab world and the third-largest in the Middle East. Actually, there is little doubt the country would have experienced such an advancement without oil. Indeed, it should be reminded that until the mid-twentieth century the territories that today comprise Saudi Arabia were sparsely populated, with few coastal settlements and small trading towns in the interior and some agricultural settlements in the east and the mountainous region of Asir in the south-west. Although no accurate demographic data is available for that period, it is likely that, before the oil era, the entire population of the area counted less than one million people. By contrast, today Saudi Arabia is the second-most populous country of the Gulf region, being home to almost 35 million people and with a population growth rate still above the region's average.

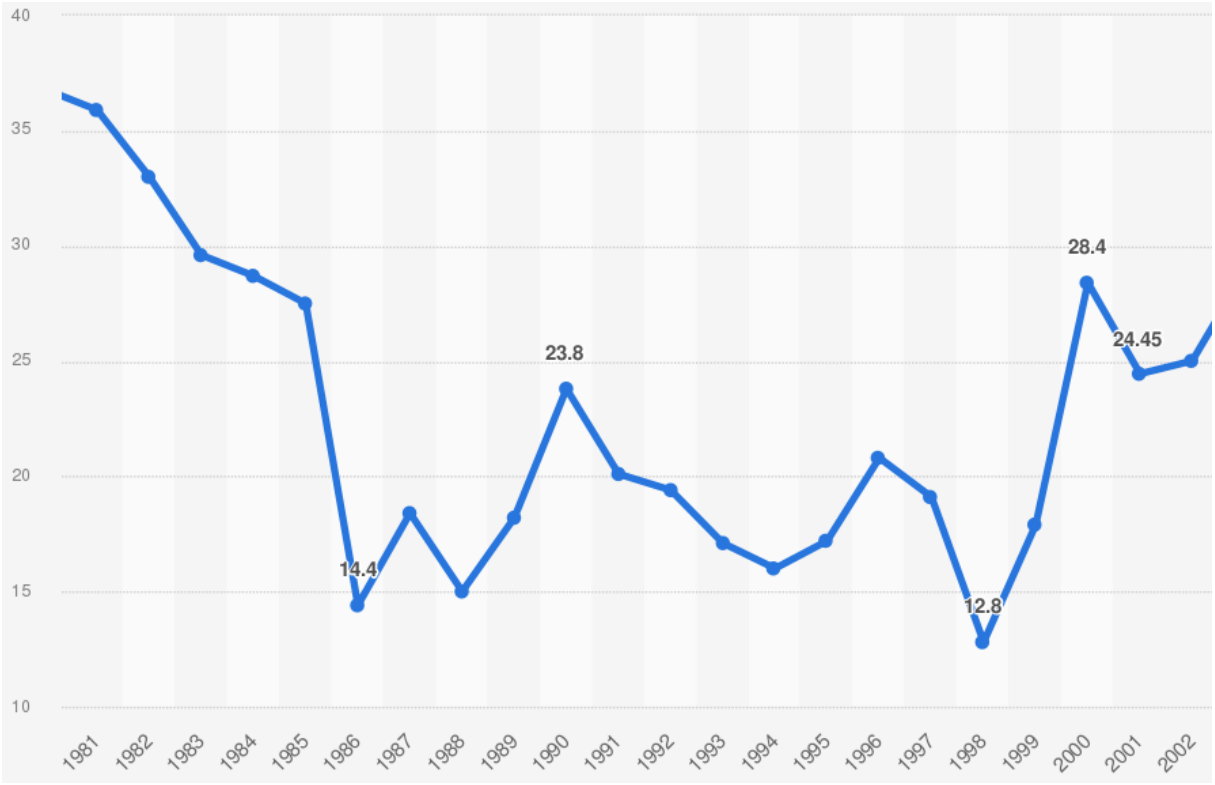
1.3.2 The price of oil: economic instability in an oil-driven economy

Even though the Saudi economy has proved highly resilient to oil market swings thanks to its consistent financial buffers, and although Saudi Arabia has always designed pricing policy within the Organization of the Petroleum Exporting Countries (OPEC) to preserve stability, ultimately oil prices are the outcome of supply-and-demand forces and, as such, they inevitably fluctuate[55]. Since the late 1980s and 1990s, the impact of oil price fluctuations on the Saudi government revenues and economy has been more evident than in the past. With continued lower oil prices, government reserves began draining and the state had to resort to the central bank's loans. To recall some of the most significant oil-price swings, between 1982-1985 oil prices fell to 12-20 USD per barrel range (Figure 1). After the Iraqi occupation of Kuwait, there was a brief rise, but then in 1998 oil-price slumped again due to the previous year's Asian financial crisis (Figure 1). Similarly, the 1990s economic boom in the United States and the

[53]Marcel, *Oil Titans: National Oil Companies in the Middle East*, 29-30; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 42.
[54]The World Bank, *Saudi Arabia Data,* (Washington, D.C.: The World Bank), https://data.worldbank.org/country/saudi-arabia.
[55]Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 45, 48.

progressive revival of the Asian economies made oil demand increase again; however, soon after the US economy experienced a downturn aggravated by the uncertainty brought about by the events of September 11, 2001 (Figure 1)[56].

Figure 1: Average annual Brent crude oil price, 1981-2002 (USD per barrel)



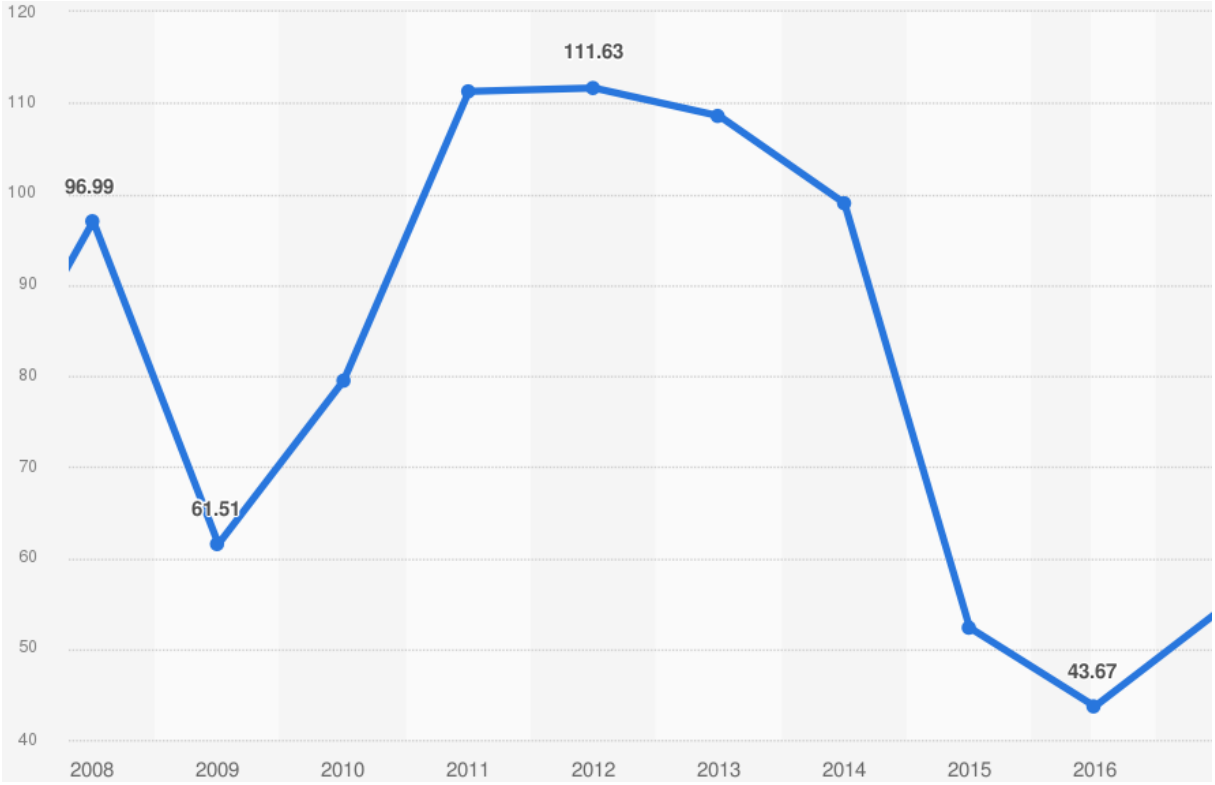
Source: Statista, "Average annual Brent crude oil price (USD per barrel)," https://www.statista.com/statistics/.

Later on, following the financial crisis of 2008-2009, oil price went down by 53.9 percent to 42.90 USD a barrel, compared to 93.12 USD in the pre-crisis period, resulting in a fiscal deficit of 3.1 percent of GDP and a 50 percent reduction in oil export receipts in Saudi Arabia, with a total 36 percent drop in government balances in 2009[57]. Shortly after, between 2015-2018 in the GCC countries average net incomes from oil and gas fell by 45 percent compared to their highs in 2010-2014 due to different supply factors, including booming US oil production, receding geopolitical concerns, and shifting OPEC policies. In three years, financial revenues from oil exports dropped by 400 billion USD in the GCC countries, while in 2016 the six GCC member states ran an aggregate deficit of around 12 percent (Figure 2).

[56]Saudi Arabian Monetary Agency, *Thirty Seventh Annual Report* (Riyadh: SAMA, 2001), 114, accessed August 18, 2021, https://www.sama.gov.sa/en-us/economicreports/pages/annualreport.aspx; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 48.
[57]International Monetary Fund, *Regional Economic Outlook: Middle East and Central Asia*, (Washington, D.C.: IMF, 2010), 56-64, accessed August 18, 2021, https://www.imf.org/en/publications/reo.

Notably, in Saudi Arabia the 2015 fiscal deficit would have led to the depletion of the Kingdom's assets within five years had it persisted[58].

Figure 2: Average Annual Brent Crude Oil Price, 2008-2016 (USD per barrel)



Source: Statista, "Average annual Brent crude oil price (USD per barrel)," https://www.statista.com/statistics/.

The latest example of the vulnerability of the Saudi oil-driven economy came as a result of the Covid-19 pandemic and its influence on the global energy market. In 2020, Saudi Aramco profits – which historically have been mostly immune to international pressures since its oil reserves are the cheapest and cleanest to extract at about 3 USD per barrel - nearly halved to 49 billion USD. Overall, the Covid-19 pandemic caused a fall in economic growth to minus 2.3 percent in 2020 as unemployment rose to 8.22 percent in the same year. Similarly, the budget deficit reached 298 billion SAR (76 billion USD) in 2020 and, at the moment of writing, is expected to amount to 141 billion SAR (36 billion USD) in 2021[59].

Certainly, the unstable oil price cycle of the past decades has exposed the structural economic weaknesses of countries for whom oil and gas revenues constitute the backbone of exports and fiscal profits like Saudi Arabia. As a result of this extended period of oil price slump

[58]Al-Sulayman, "Reform Dissonance," 65; Sartori, "Rapid Change in the Energy Sector," 25.
[59]Al-Sulayman, "Reform Dissonance," 65; Luca Franza, Margherita Bianchi, and Luca Bergamaschi. "Geopolitics and Italian Foreign Policy in the Age of Renewable Energy," 20, no. 13 (June 2020): 11.

in international markets, most oil-based economies in the Gulf region experienced fiscal tensions as oil revenues could no longer cover social expenses. That affected particularly the more populated states of Saudi Arabia and Oman, where social demands are more heavily felt. Indeed, the enduring uncertainty and volatility of oil markets have made it necessary for the Saudi ruling regime to embark on serious reform efforts to reduce their reliance on oil revenues and reform electricity, fuel, and water prices. As a result, the need to diversify the national oil-dependent economy has recently come to the fore of the country's public debate, stressing the urgency for Saudi policymakers to rethink the economic development model according to the changes required by the global energy transition. In addition to this, although Saudi Arabia has proven durable in the past, surviving extended downturns, the specter of persistently lower oil prices, exacerbated by the coronavirus-induced economic downturn, may present an unprecedented challenge. In fact, non-oil diversification, which is advocated as the chief remedy for political economies dependent on oil rents, may be insufficient to continue to fund the generous welfare outlays associated with rentier states[60].

1.3.3 Climate action in Saudi Arabia: a strategic dilemma

The KSA is one of the most hydrocarbon-rich countries globally, holding almost a fifth of the world's total proved oil reserves and accounting for over 12 percent of global oil production in 2020. Notwithstanding, the Kingdom has recently set ambitious targets for implementing and developing RE. The main drivers for this change are to stimulate economic development, free up hydrocarbon resources for local industrial use and export, diversify local energy sources and reduce GHG emissions. However, although the Saudi government loudly advertises its commitment to combat climate change, the underlying motivations for acting so are complex and concrete achievements have often been limited by contradictory goals[61]. Indeed, both action and inaction regarding climate change could have harmful consequences for the KSA. On the one hand, in the long run, the country needs to reduce fossil fuel combustion to curb the adverse effects of climate change and preserve the habitability of its national territory. In the short run, however, a solution that suppresses fossil fuel demand could demolish the country's oil-export-dominated economy and undermine the stability of the Saudi

[60]Al-Saffar, All the Gulf's Energy," 20; Al-Sulayman, "Reform Dissonance," 65; Krane, "Climate Action versus Inaction," 117; Eric Verdeil, "Smart City: Sustainable Urbanization?," *World Energy* 11, no. 42 (April 2019): 34; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia,* 48.

[61]Mahmoud Abdel-Baky and Mhairi Main Garcia, "Saudi Arabia," in *Practical Cross-Border Insights into Renewable Energy Law: Renewable Energy 2022,* ed. Mhairi Main Garcia Dentos & Co. (London: Global Legal Group, 2021), 93.

political system. These conflicting incentives mean that climate and energy policy-making in the Kingdom should be calibrated carefully, weighing the socio-economic costs of decarbonization against the costs of climate damage and ensuring an economically, socially, and environmentally secure and sustainable transition[62].

Therefore, climate action and the global decarbonization agenda represent a fundamental strategic dilemma for the KSA, which finds itself on the front lines of climate change-related adverse effects. Indeed, the Kingdom is among the countries most exposed to risks of rising temperatures. Continued increases in summer heat could threaten the livability of the Arabian Peninsula. For instance, record high temperatures of 53ºC were reached in the Eastern Province of the Kingdom in 2017, surpassing the previous record of 52ºC in Jeddah in 2015. Heat index temperatures, which include humidity effects, have ranged even higher. In addition to this, average warming is projected to increase more in the KSA than the global average. In a scenario where average temperatures rise by 3-4°C, three-quarters of the Kingdom will suffer from excessive aridity by the end of the century. In other words, inadequate climate action could subject the most populated areas of Saudi Arabia and the Gulf region to temperatures that are intolerable to humans within the current century. While Saudi Arabia is better placed than many other developing countries to fund adaptation measures, financial wealth may be insufficient to cope with intolerable temperatures fully[63].

At the same time, however, the Kingdom's economy and its patronage-driven political system might be seriously challenged by policies aimed at reducing global oil demand. As a matter of fact, despite potential physical risks related to a warming planet, climate change concerns have not been prominent in the Saudi public debate over the energy transition until recently, and local policymakers have long opposed international efforts to accelerate decarbonization. Notably, the Kingdom's confrontational stance was based on fears that the climate change mitigation policies could harm the Saudi economy more than climate change itself. More recently, however, the Saudi authorities have shifted their stance and begun supporting international initiatives against climate change[64], although not without

[62]Krane, "Climate Action versus Inaction," 118; Sartori, "Rapid Change in the Energy Sector," 27, 118; Yamada, and Hertog, "Revisiting Rentierism," 4.
[63]Jim Krane, "Energy Governance in Saudi Arabia: an Assessment of the Kingdom's Resources, Policies, and Climate Approach," *Rice University's Baker Institute for Public Policy* (January 2019): 21-22, https://www.bakerinstitute.org/research/energy-governance-saudi-arabia/.
[64]During 2016 COP22 in Marrakesh, the Saudi Minister of Energy Khalid al-Falih publicly affirmed that the KSA viewed the Paris Agreement as "balanced and fair" and in line with the Kingdom's climate and sustainable development goals, concluding that Saudi Arabia was determined to implement the agreement.

contradictions[65]. Officially, the Saudi leadership has accepted the necessity of reducing GHG emissions, although mainly through efforts that protect the interests of oil-exporting states and do not affect demand for fossil fuels[66]. Moreover, while progress has been made about Saudi Arabia's commitment to climate change goals, the typical element justifying political reforms in the Kingdom is still the necessity to prepare the local economy for a post-oil future. That is because a potential decline in national income has always been perceived as a more immediate problem for the country than risks related to rising temperatures. To say it in other words, the energy transition in Saudi Arabia emerged not as a response to the climate change threat but rather as a way to guarantee political stability and give a new direction for the national economy[67].

[65]Just three years ago, for example, the Saudi government aligned with US President Donald Trump and Russian President Vladimir Putin at COP24 in Poland to reject an IPCC report that called for a more incisive response to reduce GHG emissions. Similarly, Saudi negotiators were criticized during COP26 climate talks in Glasgow for blocking progress over the so-called "cover decision" and adaptation measures to prevent vulnerable countries from signing up any consistent agreement, pushing back on the inclusion of the 1.5 temperature goal and demanding weak baselines.
[66]Krane, "Energy Governance in Saudi Arabia," 24.
[67]Krane, "Climate Action versus Inaction," 119.

Chapter II - Saudi Arabia Towards the Green Transition: Balancing Risks and Opportunities

This chapter will present initiatives and policies adopted by the Saudi government since the 2015 leadership shift with regard to economic diversification and RE development targets. In doing so, the final goal will be twofold, namely 1. providing a comprehensive overview of the Saudi regulatory framework concerning the national economic diversification plans and transition away from fossil fuels, and 2. highlighting potential areas of cooperation with Italy within the broad context of the energy transition.

For this purpose, the first section of the chapter will be entirely dedicated to presenting the regulatory framework for Saudi Arabia's economic diversification and energy transition plans. The analysis will first focus on the Vision 2030 reform program, highlighting issues of relevance for the reform of the Saudi energy sector; then, the attention will move specifically to RE development targets and recent initiatives adopted by the Saudi government in the context of energy transition and climate change action.

The second section of the chapter will present a more precise panorama of RES penetration in the KSA, focusing on fields owning particular development potential (i.e., solar and wind power, and hydrogen) and considering areas of specific interest for Saudi Arabia (i.e., carbon capture, utilization and storage technologies, power distribution and grid, and water sustainability). While the subjects considered are not exhaustive and do not represent the entirety of Saudi Arabia's RE potential or priorities in sustainability matters, they will serve the scope of the research, that is identifying potential opportunities for cooperation with Italy.

Finally, the last section of the chapter will discuss how Italian expertise in the broad field of RE can match Saudi Arabia's needs. While the primary goal of the analysis is to identify potential opportunities for expanding cooperation activities and economic exchange in the energy and RE field, existing elements of constraint in current Saudi Arabia's renewables targets will be acknowledged.

2.1 The Saudi roadmap towards a post-oil economy: the Vision 2030 economic reform program

Traditionally, the Saudi authorities have identified economic diversification as the key solution to the strategic dilemmas posed by the country's oil-based development. Indeed, as it

has already been discussed, diversification was already a strategic priority of the Kingdom in the 1970s, as achieving this goal was perceived as essential for political and economic regional security. However, it was not until the launch of the Saudi Vision 2030 program that concrete plans began to be discussed[68].

Vision 2030 was launched in April 2016 by Crown Prince Muhammad bin Salman (MbS), targeting three main subjects -namely society, economy, and government efficiency- and providing an overarching framework for diversifying the Saudi economy away from oil within the next decade. As part of the Vision 2030 reform program, Saudi Arabia is looking to boost the private sector's role in the Kingdom's socio-economic development. To meet its privatization goals, in 2017 the Saudi government established the National Centre for Privatization (NCP), whose core competencies include advising various sectors on privatization, establishing regulations, and developing public information to promote privatization initiatives. The NCP was also charged with implementing the country's Privatization Program — adopted in 2018 — that aimed to boost the role of the private sector in the provision of services and availability of public assets. In September 2020, the Saudi government announced that the NCP would develop a privatization plan within a two-year timeframe and, to help with this process, in March 2021 it established a legal framework through the Private Sector Participation Law[69].

The KSA has identified several key sectors for privatization, including industry and mineral resources, environment, and energy. For instance, ongoing privatization projects in the energy sector feature several agreements with private enterprises, among which stand out the Sakaka solar photovoltaic (PV) plant[70], of which 70 percent is owned by the Saudi company ACWA Power, and the decision of the Saudi government in 2019 to sell ~2 percent of the state-owned oil company Saudi Aramco, opening up to the possibility to sell a further 1 percent stake of the company in the next two years[71].

Altogether, these initiatives aim to increase the private sector's contribution to the

[68]Al-Saffar, "Strategies: All the Gulf's Energy," 20; Al-Sulayman, "Reform Dissonance," 63, 68; Krane, "Climate Action versus Inaction," 130-31; Manal Shehabi, and Bassam Fattouh, "The Long Road Towards 'Better' Diversification," *World Energy* 42 (April 2019): 15.
[69]Al-Sulayman, "Reform Dissonance," 68; Sophie Smith, "Behind the Privatisation Drive in Saudi Arabia," The Euro-Gulf Information Centre, accessed August 11, 2021, https://www.egic.info/behind-privatisation-drive-saudi-arabia.
[70]The first utility scale renewable energy project planned under the Saudi National Renewable Energy Program (NREP).
[71]Al-Sulayman, "Reform Dissonance," 68; Smith, "Behind the Privatisation Drive in Saudi Arabia".

Kingdom's GDP from 40 percent to 65 percent[72], with the total value of investments from public-private partnerships expected to reach 62 billion SAR by 2025. Saudi Arabia is also seeking to stimulate its Public Investment Fund (PIF) -which since the introduction of Vision 2030 has tripled - with a further 200 percent growth over the next five years, reaching 10 trillion SAR (2.663 trillion USD) by 2030. Besides promoting growth and diversification of the national economy, increasing the role of the private sector is expected to bring new employment opportunities for Saudi citizens as new economic possibilities for entrepreneurs and businesses arise. Notably, to raise the weight of start-ups and small and medium-sized enterprises (SMEs), Riyadh has also activated credit lines and set up tax incentives for local entrepreneurs -also in partnership with foreign countries- aiming to invest in sectors with high added value and strengthen the national industrial base in this way[73].

At the same time, the Saudi government is experimenting with new forms of collaboration with the private sector in various fields (e.g., water management, health, transport, and logistics), planning to sell or manage in public-private partnerships multiple assets -including water desalination plants, hospitals, laboratories, and hotels- in 2022. The stock market is also experiencing a dynamic phase with an increasing number of initial public offerings (IPOs) on Tadawul, the Saudi stock exchange, which has reached 200 listed companies[74].

Overall, thanks to Vision 2030, the Saudi market is undergoing a rapid transformation and has the greatest growth potential in the Gulf area, also in light of its number of inhabitants and rate of population growth. Until 2030, the KSA will likely keep pace with the other major G20 economies and climb additional positions in international rankings[75]. Indeed, with the launch of Vision 2030 and the establishment of the Tayseer Committee, which identifies over 500 reforms targeting foreign direct investments (FDIs), Saudi Arabia has begun a reform process that, according to the World Bank's Doing Business report, made the country one of the top reformers in the world in 2020. As a matter of fact, following the launch of Vision 2030 in 2016, the Kingdom began a liberalization process in its investment sector, allowing one-hundred percent foreign ownership in new sectors such as retail, wholesale trade, education,

[72]Notably, the Saudi economy is progressively approaching the target of 65 percent of GDP, with the public and private shares equal to about 50 percent.
[73]Cantone, interview by Angela Zoppo; Smith, "Behind the Privatisation Drive in Saudi Arabia".
[74]Abdulrahman Alajlan, and Gavin Witcombe, "Saudi Arabia: New Privatisation Law," Global Compliance News, last modified July 11, 2021, https://www.globalcompliancenews.com/saudi-arabia-new-privatisation-law/; Cantone, interview by Angela Zoppo.
[75]Cantone, interview by Angela Zoppo.

health care, land transport, and others. Remarkably, today Saudi Arabia has virtually removed all sectors from the "negative list" of foreign ownership, which refers to those sectors where one-hundred percent foreign ownership is not allowed[76].

Finally, another promising measure that the Saudi government is about to launch to make the national business environment more attractive for international investors and specifically make it easier for companies to move and relocate their headquarters is the establishment of Special Economic Zones[77]. This initiative is part of the new National Investment Strategy announced in October 2021, which aims to boost FDI to more than 100 billion USD annually by 2030[78].

2.1.1 Structural limits to the implementation of the Vision 2030 plan: contrasting objectives and conflicting agendas

The major obstacle to a genuinely reformative impact of the economic reforms envisaged by the Vision 2030 plan in the KSA is the continuity in government's rentier policies due to the difficulties for the ruling elite in implementing reforms to sustain the economic growth in the long run while continuing to rely on a policy of rentier entitlements for maintaining social stability in the present. Indeed, while pursuing a neoliberal agenda through the Privatization Program, at the same time the Saudi government has continued to implement a statist agenda to face the strong demographic pressure on the labor market through labor nationalization policies, increasing scope and scale of state-owned enterprises (SOEs) and state-led initiatives, and raising public sector compensations and employment[79].

To describe the current situation in the KSA concerning diversification efforts of the national economy, some scholars referred to the concept of reform dissonance, describing a contradictory policy landscape caused by the lack of coordination between different governmental reform initiatives that have produced a confusing policy landscape for the

[76]Author's interview with Dr. Marco Binenti, Riyadh-based economist and co-founder of the Global Think Group, December 21, 2021.
[77]Meaning special zones placed under a legal framework based on Common Law.
[78]Author's interview with Dr. Marco Binenti, Riyadh-based economist and co-founder of the Global Think Group, December 21, 2021; Robert Mogielnicki, "Saudi Arabia's Ever More Ambitious Investment Strategy," The Arab Gulf States Institute in Washington (AGSIW), November 23, 2021, https://agsiw.org/saudi-arabias-ever-more-ambitious-investment-strategy/; Vivian Nerim, and Dana Khraiche, "Saudi Arabia to Create Special Economic Zones To Raise Investment," Bloomberg, last modified October 11, 2021, https://www.bloomberg.com/saudi-arabia-plans-to-create-special-economic-zones-to-raise-fdi.
[79]Some examples are the Saudi Arabian Military Industries Company, Dussur and TAQNIA, the Entertainment Investment Company, Noon.com, the Saudi Refinancing Company, the Saudi Recycling Company (SAMI), and the National energy-efficiency company Super ESCO (SIE).

country's private sector. Indeed, divergent economic agendas - namely a liberal strategy needed to tackle fiscal deficits and a statist agenda required to cope with the issue of youth unemployment - conflict with each other in three ways. The first way is through persisting public sector entitlements in the distributive state. Secondly, this contradiction is manifested through the mismatch between labor nationalization quotas without commensurate human capital development. Finally, a crowding-out effect created by SOEs and state control over the disbursement of oil revenues, that has encouraged a rentier mentality and crowded out many potential private-sector initiatives[80].

A prominent example of this conflict was the attempt made by the Saudi government in September 2016 to curtail some elements of public sector employment benefits in the midst of the low oil price environment, soon reversed in April 2017 following a substantial recovery in the oil price. Similarly, in January 2018, five days after increasing utility prices and the introduction of VAT, the Saudi authorities reintroduced a bonus equivalent to one month's salary to the annual compensation of most state employees and members of the armed services. A few months later, 20,000 jobs were added in the public sector. These government's moves revealed that, even in an era of deeply needed economic diversification and liberalization, the reflexive reaction of the state is to revert to entrenched modes of rentier governance[81].

Another issue in the current economic diversification attempts in Saudi Arabia, always related to the local workforce, concerns the ability of the Saudi government to enhance the local human capital. Indeed, persistent clientelist practices in the form of public employment of nationals continue to constrain a modern development of competitive human capital among the bulging Saudi youth. The main obstacle to this step is that institutional upgrading can only occur if both the state and citizens are willing to accept pain-sharing. However, this can happen only in a context where the patronage system that underlies state-citizens relations in the Kingdom has failed or when alternative gains are offered to citizens in place of conventional rent redistribution. Actually, neither of these conditions is currently present in Saudi Arabia that, by contrast, maintains a direct and extensive distributional regime[82].

All these elements together have produced a peculiar economic environment in the

[80]Al-Sulayman, "Reform Dissonance," 62, 65; Yamada, "Can a Rentier State Evolve to a Production State?," 24-27; Wilson, Al-Salamah, Malik and Ahmed Al-Rajhi, *Economic Development in Saudi Arabia*, 8.
[81]Al-Sulayman, "Reform Dissonance," 70-72; Makio Yamada, and Steffen Hertog, "Introduction: Revisiting Rentierism - With a Short Note by Giacomo Luciani," *British Journal of Middle Eastern Studies* 47, no. 1 (February 2020): 5, https://doi.org/10.1080/13530194.2020.1714267.
[82]Yamada, "Can a Rentier State Evolve to a Production State?," 24-27.

KSA, apparently liberal but in practice still patronage-based, that despite the relevant initiatives undertaken at the political level in recent times, preserves the fundamentals of the rentier state. Even though privatization initiatives foreseen by the Vision 2030 economic program show the willingness of the Saudi leadership to review the structural elements of their social contract, concerns remain about how and when this contract will be factually renegotiated. Some research even argues that, with Vision 2030, the Saudi ruling elite set a path of innovation without truly altering oil policy in the Kingdom. Indeed, the way towards privatization is far from being straightforward, as Saudi Arabia is still in the nascent stages of its privatization plans and has faced numerous obstacles and delays, not least due to the impact of the Covid-19 pandemic on the global economy[83].

Overall, the Privatization Program is moving slower than expected. This is due to multiple reasons. In the first place, there are political reasons; indeed, privatizing significant government assets is not easy because usually SOEs employ thousands of nationals who would not be competitive in the private sector and would have to be reallocated. Secondly, the Saudi private sector is still very fragile[84]. Arguably, this is not by accident but by design, as traditionally Gulf governments tried to keep the economic power concentrated at the central level through the control of oil and gas revenues, then redistributed through a political patronage system. This is why some research argues that Saudi Arabia could be there reluctant to adopt some of the measures required by the energy transition, as these reforms would imply that the political power could become less centralized and create sources of power in the society that would not be under the direct influence of the ruling political elite. This tension is evident, for example, in the way the KSA is fostering RE development, which happens to be in a highly centralized and top-down way. Indeed, when it comes to the energy sector, electricity, power generation and distribution are a complete monopoly of the Saudi Electricity Company. To some extent, this is something that is fundamentally at odds with the energy transition[85]. Nevertheless, it should be acknowledged that the Kingdom is working to change this model by privatizing some value chain elements, especially in the distribution part, with the ultimate intention to fully privatize many of the value chain elements[86].

[83]Al-Sulayman, "Reform Dissonance," 69; Brahim Maarad, "Personalities: The Who's Who of Energy," *World Energy* 42 (April 2019): 28–29; Smith, "Behind the Privatisation Drive in Saudi Arabia."
[84]Author's interview with Dr. Marco Binenti, Riyadh-based economist and co-founder of the Global Think Group, December 21, 2021.
[85]Author's Interview with a senior economist based in the Gulf, December 20, 2021.
[86]Author's interview with Dr. Marco Binenti, Riyadh-based economist and co-founder of the Global Think Group, December 21, 2021.

Finally, regarding structural limits in the Saudi FDIs regulatory environment, historically Saudi Arabia has had issues in the ease of doing business and in the diversification of attractive sectors for FDIs. This is due to the fact that the country's economy was highly dependent on oil and gas, and most of the other sectors were closed off to foreign investors, who could not own one hundred percent of their business for most sectors[87]. Another constrain preventing foreign investors from doing business in Saudi Arabia is the slowness of procedures and the level of bureaucracy in the Kingdom. Notably, this excessive bureaucracy is also the result of the labor market structure in this country, where nationals are mainly employed in the public sector and consequently there is a proliferation of public bodies and offices that answer the need to redistribute income among the population through the labor market. However, even though the legal framework is undoubtedly one of the main obstacles for foreign investors in the Kingdom, there is great awareness from the local leadership, and there have been some positive signals and announcements in this regard[88]. In addition, it should be noted that, apart from the Saudi context, FDIs have been declining globally in the last three years. Indeed, before Covid-19 -and even more during and after the pandemic- there has been a global trend towards onshoring investment rather than offshoring, as people preferred investing in their home countries. Certainly, this has not favored Saudi Arabia. Finally, it has to be considered that some of the targets that the Saudi government had set in the first place did not consider the volatility of the global markets. Nevertheless, structural reforms to make the country more competitive for foreign investments are taking place, although they will take time[89].

2.1.2 Targets and policies to make the green transition reality

Vision 2030 identifies RE as one of the pillars of economic diversification away from oil, emphasizing the industrial side of RES and looking to localize RE and industrial equipment sectors as well as a significant portion of the RE value chain to create new jobs for Saudi nationals. The initial driver behind the Saudi interest in RES was to preserve the capacity to export oil in the face of rising domestic consumption and enduring low oil prices. While the low oil price environment contributed to reinforcing the Saudi authorities' awareness of the urgency of economic diversification, the essence of the problem lies in the demographic time-bomb[90] that has increasingly put pressure on the government to develop new labor-intensive

[87]Author's interview with Dr. Marco Binenti, Riyadh-based economist and co-founder of the Global Think Group, December 21, 2021.
[88]See Chapter 1.2.1, 15-16.
[89]Author's interview with a Senior Advisor based in the Gulf, December 20, 2021.
[90]See Chapter 1.2.1, 15-16.

industries to create new job opportunities[91].

Among the programs designed to translate Vision 2030 into action[92], the National Renewable Energy Program (NREP) stands out for its relevance to the RE sector. The NREP is a strategic plan adopted under Vision 2030 and the King Salman Renewable Energy Initiative that aims to maximize the potential of RE in the Kingdom. The program, overseen by the Renewable Energy Project Development Office (REPDO)[93], sets out a road map to diversify national energy sources, stimulate economic development and provide sustainable financial stability to the country in the long term. So far, the Saudi NREP has set the most ambitious targets in the region[94].

Within the NREP and Vision 2030 framework, Saudi Arabia initially aimed to produce 50 percent of its energy from RES by 2030. The Saudi plan provided for a 40 percent improvement in the country's energy efficiency and an overall increase in the use of RES by 50 percent, reducing carbon dioxide emissions by 70 percent and with savings estimated at USD190 billion. Specifically, the KSA aims to develop 27.3GW of RE by 2024 (up from 9.5GW in 2019) and 58.7GW by 2030, divided into 40GW of solar PV, 16GW of wind, and 2.7GW of concentrated solar power (CSP). To reach these goals, the REPDO is looking to procure 30 percent of the 2030 target through competitive public tenders, while the remaining 70 percent should be developed through the PIF and its partner Softbank by direct negotiations[95].

Besides the NREP, among the larger economic reform package of Vision 2030, the Saudi government also introduced energy subsidy reforms in 2016 and increased fuel and electricity prices in 2018 in an attempt to limit internal consumption. As Table 3 shows, between 2015-2018 the crude oil power generation price went from 4.23 USD bbl to 5.87 USD bbl, with a 39 percent increase. Similarly, natural gas went from 0.75 USD mmbtu in 2015 to 1.25 USD in 2018, with an increase in price equivalent to 67 percent. Even more remarkable

[91]Yamada, "Vision 2030 and the Birth of Saudi Solar Energy," 2-3.
[92]The so-called Vision Realization Programs (VRPs).
[93]An entity within the Ministry of Energy.
[94]Abdel-Baky and Main Garcia, "Saudi Arabia," 92; We Supply Renewables, "The National Renewable Energy Program," accessed October 13, 2021, https://www.wesupplyrenewables.com.sa/; Al-Sulayman, "The Rise of Renewables in the Gulf States," 101; International Renewable Energy Agency (IRENA), "Renewable Energy Market Analysis: GCC 2019," IRENA: ABU Dhabi (January 2019): 13.
[95]Abdel-Baky and Main Garcia, "Saudi Arabia," 92; Al-Sulayman,"The Rise of Renewables in the Gulf States," 102; IRENA, "Renewable Energy Market Analysis," 13; Italian Trade Agency, "Emirati Arabi Uniti: guida al mercato. Opportunità e sfide per le imprese italiane in vista di Expo 2020," 39-40; We Supply Renewables, "The National Renewable Energy Program".

was the sharp increase in gasoline price, which went from 0.61 USD gallon to 2.09 USD, marking a 240 percent increase. Diesel also rose from 0.26 USD gallon to 0.44 USD, as well as electricity for residents, which increased 260 percent from 0.01 USD kWh to 0.05 USD. This initiative proved successful, as following the price increases of 2016 and 2018 Saudi oil demand flattened and even reversed in some areas, with the Kingdom undergoing a 1 percent decline in oil use in 2017[96].

Table 3: Increases in energy commodity and service prices in Saudi Arabia, 2015-2018

	2015	2016/2017	2018	% CHANGE (2015-2018)
Crude oil for power generation (USD/bbl)	$4.23	$5.87	$5.87	39%
Natural gas (USD/mmbtu)	$0.75	$1.25	$1.25	67%
Gasoline (USD/gallon)	$0.61	$0.92	$2.09	240%
Diesel (USD/gallon)	$0.26	$0.48	$0.48	88%
Electricity (USD/kWh)	$0.01	$0.01	$0.05	260%

Source: Krane, "Energy Governance in Saudi Arabia," 16, https://www.bakerinstitute.org/.

In addition to this, in March 2021 the KSA announced the launch of the Saudi Green Initiative (SGI), which scaled up the country's renewable power generation target to 50 percent by 2030. The SGI entails some ambitious actions to boost the Kingdom's climate change fight and environmental protection by unifying sustainability efforts working with entities and organizations across the country to amplify their climate actions and create opportunities for new initiatives. One of the main goals of the SGI is precisely to bridge the gap between public

[96]"G20 Scorecard of Fossil Fuel Funding: Saudi Arabia," International Institute for Sustainable Development, November 9, 2020, https://www.iisd.org/publications/g20-scorecard-saudi-arabia; Krane, "Energy Governance in Saudi Arabia," 16-17, 28.

and private sustainability efforts, identifying potential opportunities for cooperation. The SGI focuses on three overarching targets: reducing carbon emissions by more than 4 percent of global contributions, "greening" the country by rehabilitating 40 million hectares of land over the coming decades[97], and raising protected areas to more than 30 percent of the total land area. In tandem with the SGI, the KSA also announced the launch of the Middle East Green Initiative (MGI), which aims to amplify the SGI's efforts on an international scale in coordination with other GCC states, neighboring countries across the MENA region, and other international partner governments, with the ultimate goal to make the Kingdom a global leader in the green transition[98]. At the time of writing, the SGI and MGI initiatives have been presented during a three-day launch event between October 23-25, 2021 as a path for the Kingdom and the entire MENA region to achieve global decarbonization targets and confront climate change. Nevertheless, it still has to be seen how and whether these initiatives will concretely contribute to creating a framework for regional cooperation and to institutionalizing climate change mitigation initiatives at the national level in the KSA, or whether they will reveal just as an attempt of the Saudi leadership of greening its public credentials.

Notably, with the aim to promote the development of RE projects in Saudi Arabia, the NREP introduced numerous incentives to boost foreign private investments, including the possibility of 100 percent foreign direct ownership, up to 15-20 percent of the monthly salaries of Saudi employees paid by the Human Resources Development Fund, customs duties exemptions for the import of primary raw materials, manufacturing equipment, as well as refunds of raw material that is processed in the Kingdom and re-exported as more finished products, and land incentive, with subsidized leases for projects[99]. At the same time, however, some requirements that regulate foreign investments in RE projects in the Kingdom might negatively impact foreign participation. For example, foreign investors must obtain an investment license from the Ministry of Investment and a permit from the relevant authority depending on the activity. In addition to this, foreign corporate entities seeking to invest in Saudi Arabia need to have been in operation for at least one year in their country of origin, while foreign natural persons are required to have a Saudi Premium Residency Card. Another requirement that may negatively impact foreign investments in RE projects is the Saudi

[97]Notably, Saudi Arabia has already planted 10 million trees under the "Let's Make it Green" campaign and aims to reach the target of 10 billion trees in the upcoming decades.
[98]Organization of the Petroleum Exporting Countries, *World Oil Outlook 2021* (Vienna: OPEC Secretariat, 2021), 239; "The Saudi Green Initiative aims to improve the quality of life," Saudi Green Initiative, accessed October 23, 2021, https://www.saudigreeninitiative.org/.
[99]Seznec, and Mosis, *The Energy Transition in the Arab Gulf*, 6.

Nationalisation Scheme[100], which requires companies and enterprises operating in the Kingdom to employ a minimum number of Saudi nationals. In addition to this, publicly procured renewables projects typically include robust Saudisation requirements that might hinder foreign investors' participation[101]. Although the Saudi regulatory framework undoubtedly presents several criticisms[102], the exceptional amount of investments and extensive privatization plan launched by the Kingdom provides unique opportunities for Italian actors operating in the RE sector.

2.2 A changing energy outlook: renewable energy penetration in the Kingdom of Saudi Arabia

In recent years, interest in RES has increased throughout the GCC region and Saudi Arabia. Besides the UAE, where the market for RE is most mature, a large portion of the GCC region's demand for RES is expected to come precisely from the KSA, where a changing policy focus is assigning greater priority to RES, making Saudi Arabia an emergent regional leader of the energy transition. Indeed, in line with the development goals of the Vision 2030 plan and with the declaration on the environment adopted during its G20 Presidency in 2020[103], the Saudi government is committed to unlocking the RE sector and achieving environmental sustainability[104].

Several factors have contributed to this change, among which the growing competitiveness of RES' prices, the need to diversify the national energy mix in the light of fluctuating oil prices, young citizens' entry into the job market and, above all, the Kingdom's intention to preserve its capacity to export oil in light of rising domestic consumption[105]. Although the primary reasons for this shift towards RES are economical, there is also increasingly a realization that the credentials gained from pushing forward RE development can be helpful to project a modernized image of the Kingdom among the international

[100]The so-called *Niṭāqāt*. See Chapter 1.2.2, 19.
[101]Abdel-Baky and Main Garcia, "Saudi Arabia," 94-95.
[102]See Chapter 2.1.1, 34-37.
[103]Which resulted with the adoption of the Circular Carbon Economy (CCE) framework with its 4Rs (namely reduce, reuse, recycle and remove), based on an holistic approach towards more sustainable energy systems to address emissions while sustaining economic development.
[104]Abdel-Baky and Main Garcia, "Saudi Arabia," 97; IRENA, "Renewable Energy Market Analysis," 11, 15.
[105]In the KSA, in particular, due to extreme climatic conditions, per capita energy consumption is one of the highest in the world, and it is estimated that the production currently destined for the national market can only guarantee half of the demand forecast for 2030.

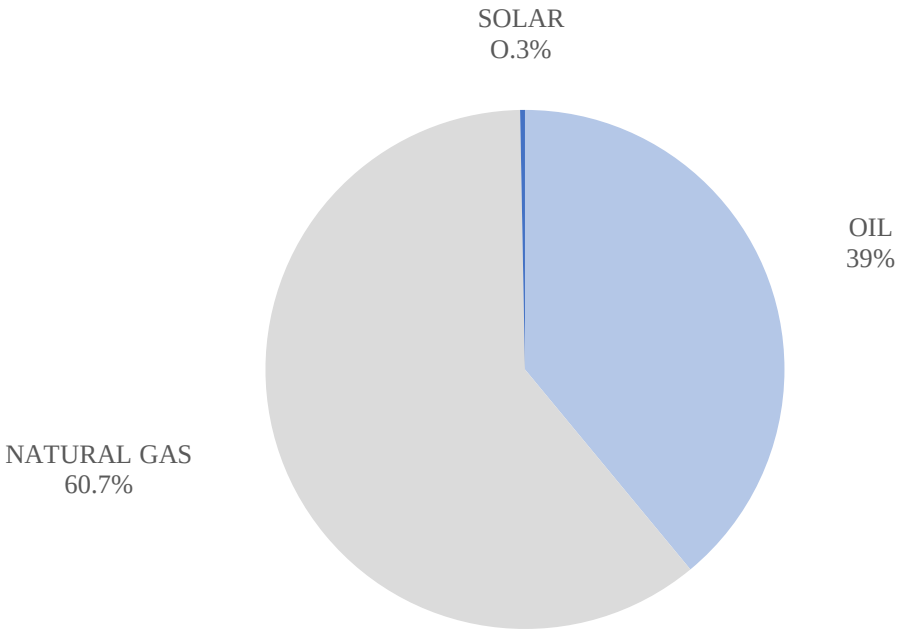
community[106].

Following the leadership shift in 2015, the KSA started implementing structural economic reforms to achieve its RES development plans. That has been possible also because important constituencies of the state now stand to benefit from the RE agenda, thus helping to shape and ensure the implementation of RES development plans. For example, at the moment the Saudi company ACWA Power is singularly well placed to take advantage of the opportunities presented by Saudi Arabia's energy transition and to use the expertise it is accumulating nationally to take advantage of opportunities at the world level[107]. Similarly, the PIF is also taking advantage of opportunities made available by the development of RE through its investments in ACWA Power -of which since 2018 the PIF has acquired a 25 percent share- and thanks to its partnership with SoftBank, which includes manufacturing and energy storage plans[108].

Zooming on the KSA's energy mix, the country is one of the largest oil and natural gas consumers for electricity generation, burning more crude oil for power generation than any other country in the world. In 2019, Saudi Arabia's direct oil use was 0.43 million barrels per day (MMb/d), while its natural gas consumption in 2018 was 112 billion cubic meters (bcm). In 2020, gas-based generation held a share of 60.7 percent, whereas oil-based generation held a share of 39 percent in the country's annual electricity generation (Figure 3). Despite its potential, in 2020 the share of RE in total electricity capacity represented as little as 0.3 percent, with total RE accounting to 413 megawatts (MW). Although this data was far from the planned capacity, it represented almost a three-fold increase from 2018, when total RE in the Kingdom accounted for just 142 MW[109].

[106]Faris Al-Sulayman, "The Rise of Renewables in the Gulf States: Is the 'Rentier Effect' Still Holding Back the Energy Transition?" in *Low Carbon Energy in the Middle East and North Africa*, ed. by Robin Mills and Li-Chen Sim (London: Palgrave Macmillan, 2021), 109-110, 115.
[107]Notably, ACWA Power has recently won large Indipendent Power Producer (IPP) tenders in Morocco and in the UAE for one of the largest CSP and PV plants respectively. Recently, it has also won Saudi Arabia's first large PV tender at Sakaka.
[108]Al-Sulayman, "The Rise of Renewables in Gulf States," 110.
[109]Krane, "Energy Governance in Saudi Arabia," 8.

Figure 3: Saudi Arabia's electric power generation by fuel, 2020.



Source: U.S. EIA, *Country Analysis Executive Summary: Saudi Arabia*, 9, https://www.eia.gov/.

Currently, RE sources make up less than 1 percent of the country's total energy generation capacity; however, the KSA aims to raise that percentage to 50 percent by 2030. Indeed, in recent years, significant advancements – such as well-designed auctions, favorable financing conditions, declining technology costs, and initiatives backed by the PIF – have successfully attracted developers for large-scale projects, bringing RES into the mainstream of the Saudi energy market[110]. That novelty came as the Saudi ruling family began seeking to diversify the national economy in the context of fast-growing domestic energy demand and safeguard hydrocarbon export revenues for the future[111]. Although a relatively recent entrant to the Saudi energy landscape, RE holds significant potential to cut fuel costs, reduce carbon emissions, conserve water and create new jobs for Saudi citizens. Therefore, looking forward, the KSA is set to see a meaningful acceleration in RES deployment, particularly in solar PV

[110]Large-scale solar PV projects in Saudi Arabia have featured record-low bids in 2018 (2.34 US cent bid by ACWA Power for the 300 MW Sakaka project), and costs of CSP projects are decreasing as well.
[111]According to IRENA's projections, achieving RE targets by 2030 could save up to 354 MMbbl equivalent in fossil fuel consumption in the power sector in the GCC, reduce emissions by 136 MtCO2, create more than 220,500 jobs, and reduce water withdrawal for power production and associated fuel extraction by 11.5 trillion liters. Notably, solar technologies alone could account for 89 percent of RE jobs in the region. Moreover, according to these forecasts, the KSA could account for about 40 percent of total GCC fuel savings.

generation and CSP[112], for which the country has considerable potential[113].

Table 4: Installed renewable energy capacity, 2014-2018

	2017/2018						2016	2015	2014
Country	PV	CSP	Wind	Biomass and waste	Total RE	Share of RE in total electricity capacity	Total RE	Total RE	Total RE
Bahrain	5	0	1	0	6	0.1%	6	6	6
Kuwait	19	50	10	0	79	0.4%	20	1	0
Oman	8	0	0	0	8	0.1%	2	2	1
Qatar	5	0	0	38	43	0.4%	43	42	42
Saudi Arabia	89	50	3	0	142	0.2%	74	74	24
UAE	487	100	1	1	589	2%	144	137	137
Total	613	200	14	39	867	0.6%	289	262	210

Source: IRENA, *Renewable Energy Market Analysis: GCC 2019*, 50, https://www.irena.org/.

2.2.1 Solar and wind power

Presently, solar PV and CSP provide 94 percent of installed capacity in the GCC region and almost 91 percent of the project pipeline. Most of the CSP capacity is currently located in the UAE, Kuwait, and the KSA. Plans for expanding wind power, particularly in Saudi Arabia and Oman, should raise wind capacity in the GCC over the coming decade. Renewable capacity build-out and research are also overwhelmingly concentrated in the KSA and the UAE, which hold together over 92 percent of the block's 2.82 GW of operational utility-scale solar and wind power generation, and which account for over 80 percent of the region's renewable generation capacity[114].

[112]Even though CSP is more efficient than PV in terms of energy storage and saving, to date it has not been significantly deployed in the solar industry due to a number of limits. In particular, the main disadvantages associated with CSP projects are 1. high costs of installing solar power infrastructure and thermal energy storage systems, without which a CSP system could only generate energy during the daytime, 2. substantial land requirements, due to the fact that -with the exception of CSP parabolic dish systems- CSP are only feasible at the utility scale, and 3. high environmental impact linked with the large amount of water for cooling that is necessary for CSP projects, which can be particularly problematic in arid environments such as Saudi Arabia.
[113]Abeer Al Ghamdi, *Saudi Arabia Energy Report* (Riyadh: KAPSARC, 2020), 10, 12; Al-Sulayman, "The Rise of Renewables in the Gulf States," 100; IRENA, "Renewable Energy Market Analysis," 11-12, 15-17.
[114]IRENA, "Renewable Energy Market Analysis," 15; Seznec, and Mosis, *The Energy Transition in the Arab Gulf*, 12.

The main types of RES that the KSA is currently seeking to deploy are solar energy (particularly solar PV, and to a less extent CSP), wind power, geothermal energy, waste-to-energy and, more recently, green hydrogen. To date, the emphasis has been on utility-scale projects using solar PV energy and onshore wind power, with limited activity in respect of solar rooftop projects. Overall, solar PV is emerging as the cheapest source of electricity generation for new RE projects in the country, beating natural gas, liquefied natural gas, oil, coal, and nuclear. Despite some significant issues related to high construction and installation costs and considerable land use, Gulf countries are also considering CSP a dispatchable alternative to natural gas, including for peak evening demand[115]. Moreover, as technological improvements, including higher turbine towers and longer blades, make wind farms economically viable even in regions with lower wind speeds[116], wind resources, both onshore and offshore, could complement the load profile of solar power in the KSA[117].

Remarkably, the level of solar irradiance and landmass availability has allowed Saudi Arabia to initiate some of the largest solar projects in the world, many of which have achieved record low purchase prices. The most recent example can be found in the Sudaīr region, where the record-low awarded tariff for solar power of 0.0104 USD kWh. The driver for these low tariffs has been the use of competitive auctions by state energy companies which, combined with resource potential, economies of scale, and access to low-cost financing and land, has created a competitive low tariff environment, granting a narrow profit margin and competitive rates of return, a combination that is not replicable in other regions[118].

Solar is arguably the most promising source of non-hydrocarbon energy in the KSA. As the Arabian Peninsula is one of the most sunshine-rich places globally, with exceptionally long (over 3,000 hours annually) sunlight hours, the Kingdom holds enormous and underutilized solar energy potential. Lying in the middle of the sunbelt, the country has among the highest

[115]Notably, ACWA Power used CSP technology as part of the fourth phase of the Mohammed bin Rashid Al-Maktoum Solar Park, the largest single-site solar park in the world with a total capacity of 950 MW, of which 700 MW coming from CSP. See Celine Malek, "Saudi Arabia shines a light on future of solar power," *Arab News*, last modified April 3, 2019, https://www.arabnews.com/; "A History of the Solar Park," Muhammed bi Rashid Al Maktoum Solar Park, accessed January 27, 2022, https://www.mbrsic.ae/mohammed-bin-rashid-al-maktoum-solar-park/.

[116]Abdel-Baky and Main Garcia, "Saudi Arabia," 92; IRENA, "Renewable Energy Market Analysis," 12.

[117]The 400 MW Dumat Al Jandal wind project in Saudi Arabia was awarded by a Masdar-led consortium based on the levelized energy cost of 2.13 USD cents/kWh – registering a new record-low price for a project of this type across Europe, the Middle East, and Africa. Remarkably, the wind farm - that is the largest wind farm in the Middle East region and the first in Saudi Arabia - started production in August 2021, is expected to generate enough electricity to power up to 70,000 Saudi households a year while offsetting 988,000t of carbon emissions a year.

[118]Seznec, and Mosis, *The Energy Transition in the Arab Gulf*, 11.

levels of practical PV power potential globally, with average solar radiation ranging from 4 to 7 kWh per square meter. As for wind power, average annual wind speeds vary between 6 and 8 m/s. Consistent wind speeds of 8 m/s or above have been documented in the northern and mountainous western regions. Therefore, Saudi Arabia has a high potential both for solar and wind power, ranking sixth for solar energy potential and thirteenth for wind potential worldwide. Solar and wind projects also benefit from state ownership of vast, empty, and treeless tracts of land and the ease of installing road access to these sites[119].

Concerning the future performance of solar and wind energy penetration scenarios in the KSA, perspectives for the market for distributed generation are likely to grow. Indeed, even though up to now, most RE projects in the country have been of utility-scale, mainly devised through central planning and implemented by independent power producers, decentralized generation of electricity is expected to play a growing role in the future. In fact, distributed generation is no longer suitable only for remote areas, but it may gain prominence in the on-grid environment as well, through self-generation by industries and commercial and residential buildings. With regard to this, it will be crucial to see whether the Saudi authority will implement reform of utility tariffs and incentive schemes for self-generators, together with long-term policies to liberalize regional electricity market structures[120].

2.2.2 Hydrogen

Another key sector in Saudi Arabia's energy transition path is hydrogen, whose production could allow the Kingdom not only to become less reliant on domestic oil by diversifying its export portfolio, but also to develop new industrial sectors and possibly to become a global hydrogen exporter. Indeed, by combining its hydrocarbon resources with carbon capture, utilization and storage (CCUS) technologies, the KSA could become a supplier of blue hydrogen (particularly in the form of blue ammonia) in the medium-term[121]; in the long term, solar and wind resources could make the country a global exporter of green hydrogen. As a matter of fact, Saudi Arabia already has the skills, infrastructure, and resources to produce blue and green hydrogen on a large scale. While an official hydrogen strategy for Saudi Arabia is still under development, the Kingdom is working to operationalize its first green hydrogen

[119]Abeer Al Ghamdi, "Saudi Arabia Energy Report," 13; Jean-François Seznec, and Samer Mosis, *The Energy Transition in the Arab Gulf: From Vision to Reality* (Washington: Atlantic Council, 2021), 5; Krane, "Energy Governance in Saudi Arabia," 7-8; Seznec, and Mosis, *The Energy Transition in the Arab Gulf*, 6; Yamada, ""Vision 2030 and the Birth of Saudi Solar Energy," 2.
[120]Abdel-Baky and Main Garcia, "Saudi Arabia," 97; IRENA, "Renewable Energy Market Analysis," 19.
[121]Remarkably, in September 2020 Saudi Aramco shipped 40 tons of blue ammonia to Japan for the first time.

plant in the futuristic city of Neom by 2025, with the goal to make 2.9 million tons of blue and green hydrogen per year by 2030 and 4 million tons by 2035. In addition to this, the country is working on its hydrogen capacity by developing hydrogen pipeline networks in the industrial districts of Jubail and Yanbu[122].

2.2.3 Carbon Capture, Utilization and Storage (CCUS)

In the first phase, the degree of success of Saudi Arabia's hydrogen plans will be closely linked to the country's achievements in its CCUS strategy, whose development will play a key role in decarbonizing the national oil and gas industry, and therefore will significantly affect the commercial viability of blue hydrogen production. While the role of CCUS as a climate mitigation technology remains controversial, particularly due to high costs and fears around the safety and permanence of storage, oil-producer countries like the KSA consider it a mean to play a more active role in climate change negotiations through utilizing their own expertise and geological resources and help these countries diversify into new sectors, which could ease the burden of the green transition. Indeed, CCUS could support current Saudi Arabia's industrialization strategy for energy-intensive industries without requiring a fundamental transformation of the existing energy system and increasing the competitiveness of a critical sector in a carbon-constrained world. Furthermore, it could be argued that global deployment of CCUS will be needed to achieve the goal of net-zero emissions given that oil and gas are projected to remain an essential part of the energy mix for the foreseeable future, and considering that the cost of a failure to mitigate climate change could be much higher[123].

While Saudi Arabia has been promoting CCUS for over a decade, this technology has gathered critical momentum only in the last couple of years, entering the strategic objectives of Saudi decision-makers and creating new opportunities for cooperation in this sector. In recent years, the Kingdom has been increasing its expertise in CCUS, aiming to continue using its carbon-based production while reducing the overall emissions profile. Indeed, technologies such as CCUS that store carbon in terrestrial sinks could be at the core of oil and gas exporting countries' low-emissions development strategies by allowing them to draw on their sources of competitive advantage (given their natural and technical resources) to mitigate the potential

[122]Bianco, "Power Play: Europe's Climate Diplomacy in the Gulf," 14; Cantone, "Riad punta sul verde: occasione per le aziende italiane," interview by Angela Zoppo; Jane Nakano, "Saudi Arabia's Hydrogen Industrial Strategy," *CSIS Commentary*, January 7, 2022, https://www.csis.org/analysis/saudi-arabias-hydrogen-industrial-strategy.
[123]Bassam Fattouh, Wolfgang Heidug, and Paul Zakkour, "Transitioning to net zero: CCUS and the role of oil- and gas-producing countries," *The Oxford Institute for Energy Studies: Energy Insight* 90 (June 2021): 2, 6, 15; Nakano, "Saudi Arabia's Hydrogen Industrial Strategy."

impacts associated with the energy transition by continuing to monetize their hydrocarbon reserves more sustainably while retaining the competitiveness of their energy-intensive industries in a net-zero emissions world. Hence, enabling CCUS as a key mitigation sector could establish a competitive advantage for oil and gas exporters like Saudi Arabia[124].

2.2.4 Power distribution and grid

The Saudi Arabian electricity generation, transmission, distribution, and smart-grid power sector is racing to keep up with the growing electricity demand. Intending to reduce oil consumption in power generation, the Kingdom is looking to upgrade its entire power generation, distribution, and transmission sector. Apart from increasing the national non-oil generation capacity, this includes updating the country's transmission and distribution infrastructure, implementing smart-grid technology, and promoting international grid connectivity. In addition to this, Saudi Arabia also plans to replace old substations, transformers, and other infrastructure to reduce energy wastage. Most of these improvements are expected to occur between 2020 and 2025, with operations continuing to 2030[125].

The KSA is facing an enormous task in expanding its power-generation capacity[126]. In order to achieve this, the government is looking to make a yearly investment of approximately 5 billion USD in generation and 4 billion USD in distribution. Considering that Saudi Arabia intends to privatize all electricity generation by 2025, opportunities for increased cooperation in this field should also be considered[127].

2.2.5 Water sustainability

Another critical field for Saudi Arabia in the broader context of sustainable development and climate change is related to water sustainability. Indeed, water scarcity is a crucial threat in the region, with four of the six GCC countries ranking among the top 10 most water-challenged countries on earth. Furthermore, with one of the fastest-growing populations globally, the GCC region's water demand is projected to increase fivefold by 2050. Hence, the problem of high water consumption, combined with the scarcity of available resources, is severe in the KSA. According to the International Monetary Fund, in Saudi Arabia twice the volume of water is

[124]Fattouh, Heidug, and Zakkour, "Transitioning to net zero: CCUS and the role of oil- and gas-producing countries," 1-2, 5, 15; Bianco, "Power Play: Europe's Climate Diplomacy in the Gulf," 14.
[125]International Trade Administration, "Saudi Arabia: Power," https://www.export.gov/.
[126]It is estimated that the Kingdom needs to increase power-generation capacity to 160GW in 2040.
[127]International Trade Administration, "Saudi Arabia: Power".

consumed compared to the international average, and if the consumption trend continues to grow at current rates, the country's aquifers could run out entirely in a few decades[128].

In order to meet the ever-growing domestic demand, the Saudi government has built and put into operation many desalination plants, which today guarantee about 50 percent of the drinking water used[129], and it is even considering plans for small reactors for desalination[130]. In recent years, the production capacity and the number of plants have progressively increased, but the demand - tripled between 2000 and 2010 - is still higher than production. The other water sources available in the KSA are surface water (which represents 10 percent of the total) and groundwater (about 40 percent) [131].

For some time now, the country has been looking to ensure a more efficient and sustainable management of water resources. Indeed, water is also one of the main areas of intervention identified by the Vision 2030 development strategy, which indicates - among the targets to be achieved – a 40 percent reduction in the cost of water desalination per m^2, an increase in desalination production capacity equal to 90,000 m^3/day, and 14,000 tons of CO2 emissions reduced thanks to water desalination projects using solar power. Currently, the government is planning massive investments in electricity generation projects, especially in the field of RE and the development of the water network, where the private sector is also being encouraged to participate through the contribution of capital, technology, and know-how[132].

2.3 What opportunities for Italian-Saudi bilateral relations? Identifying potential fields of cooperation in the context of energy transition

The potential to boost further economic and technological cooperation in the energy and RE field between Italy and Saudi Arabia is undoubtedly present, not least because for both countries developing RE can be a mean of generating competitiveness in their national

[128]Italian Trade Agency, "Emirati Arabi Uniti: guida al mercato. Opportunità e sfide per le imprese italiane in vista di Expo 2020," 103.
[129]The KSA is the largest producer of desalinated water in the world, counting 31 desalination plants in 17 locations, operated and managed by more than 10,000 employees.
[130]In 2010, King Abdullah City for Atomic and Renewable Energy (KACARE) was established to oversee the Saudi National Atomic Energy Project, consisting of four components, namely 1. the Nuclear Power Plant Project (NPP), 2. the preparatory phase of the NPP, 3. site characterization and infrastructure preparation, and 4. the National Centre of Radioactive Wate Management Facilities Development Program. Nevertheless, currently Saudi Arabia has no nuclear power plants. See "Our Projects," King Abdullah City for Atomic and Renewable, accessed January 27, 2022, https://www.energy.gov.sa/.
[131]Italian Trade Agency, "Emirati Arabi Uniti: guida al mercato. Opportunità e sfide per le imprese italiane in vista di Expo 2020," 103.
[132]Vision 2030, "Water Desalination Project Using Solar Power," accessed October 27, 2021, https://www.vision2030.gov.sa/.

economies. Individual competencies are also already there, with "Made in Italy" technologies being highly respected in the KSA and with the Kingdom offering promising opportunities for foreign companies[133].

Zooming in on Italy, the country enjoys a leadership position in the RE sector and remains one of the most important markets for RE globally[134]. According to a study published by the University of Oxford[135], thanks to the number of environmental patents filed, low CO2 emissions, and strict environmental policies, Italy ranks second at the world level in the Green Complexity Index[136] and first in terms of development potential. In addition to this, with 3 percent of world exports, the country is the sixth exporter of RE technologies globally. This data confirms that RE represents a strategic asset for the country's future, both in terms of growth and economic competitiveness[137]. Looking at the Italian expertise in the RE sector, Italy occupies a top position at the EU level in geothermal and hydropower. Moreover, the country has a solid revealed comparative advantage in hydroelectric technologies and is a net exporter of binary cycle geothermal turbines, being the world's second-largest producer of geothermal turbines and dry and flash steam. In addition to this, Italy ranks second in the EU for solar PV capacity and power production, as well as biogas production. The country also has an excellent resilience of the supply chain of the core components of renewables, enjoying a competitive position in several specific components, particularly in wind technologies such as wind turbine generating sets and gearboxes. Italian SMEs also show an extreme specialization in speed multipliers, of which Italy is the fourth exporting country globally. In addition to that, the country presents widespread, reliable, and highly digitalized electric grid. Notably, the country was a first mover in the rollout of smart meters, which confers to Italy a significant advantage, increasing reliability and security of supply[138].

Opportunities for Italian companies and investors in the Saudi market are encouraging. Indeed, there is already a robust presence of Italian firms and, within the framework of Vision

[133]Franza, Bianchi and Bergamaschi, "Geopolitics and Italian Foreign Policy in the Age of Renewable Energy," 37-39.
[134]Notably, in the period 2010-2019 Italy ranked seventh in the world for cumulative investments in renewable capacity, ahead of countries such as France, Brazil and Spain.
[135]Mealy, Penny, and Alexander Teytelboym. "Economic complexity and the green economy," *INET Oxford Research Policy* (April 2020), https://doi.org/10.1016/j.respol.2020.103948.
[136]The index measures the ability to export technologically advanced green products.
[137]Franza, Bianchi and Bergamaschi, "Geopolitics and Italian Foreign Policy in the Age of Renewable Energy," pp. 11-12.
[138]Intesa Sanpaolo, "Transizione energetica: la filiera delle tecnologie delle rinnovabili in Italia," last modified June 17, 2021, https://group.intesasanpaolo.com/.

2030, there is excellent potential to increase and strengthen commercial partnerships. While Italian manufacturing and infrastructure construction companies currently represent the most relevant Italian industrial presence in Saudi Arabia, Italian enterprises are well placed in the Saudi energy sector too. Notably, Saipem operates in the area of Dammām with 6000 employees and is one of the main contractors for extraction of Saudi Aramco, with which the company has a long-standing collaboration in the execution of a broad set of activities, from onshore and offshore engineering and construction to drilling activities, with onshore and offshore rigs[139]. In addition, Eni has also been present in Saudi Arabia since 1984, operating in the Refining & Marketing and Chemicals sector through the subsidiary Ecofuel, which manages the production and marketing of clean components for gasoline (in particular oxygenated) and methanol, and agreements with Saudi Aramco for oil supply[140]. Moreover, Eni's joint-venture with SABIC, of which the Italian company holds 10 percent, is also very important[141]. Notably, Snam is also entering the Saudi market in two strategic sectors, namely hydrogen[142] and the Saudi gas network, which the Kingdom is planning to develop in order to increase its total capacity. Entering the business of the Saudi gas network modernization could be a strategic move because, in the medium term, existing gas networks could be converted for the distribution of hydrogen[143].

Concerning specifically the renewable sector, there is high potential in the KSA for both solar and wind power, not least because the country aims to produce 50 percent of its energy needs from RES by 2030. As for the Italian presence in this sector, however, at the moment Enel, the Italian giant for renewables, has not considerably entered the Saudi market, and its industrial presence in the country is certainly not comparable to Saipem or Snam. Nevertheless, considering the consistent investments that the Saudi government is planning, it would be

[139]Saipem, "Dammam Yard, Kingdom of Saudi Arabia," accessed January 1, 2022, https://www.saipem.com/dammam-yard-kingdom-saudi-arabia.

[140]Eni, "Our work in Saudi Arabia," accessed January 1, 2022, https://www.eni.com/eni-worldwide/middle-east/saudi-arabia.html.

[141]Eni operates with SABIC in six ether plants, transforming gas into oxygenated products with high added-value. See author's interview with Dr. Marco Piredda, Head of International Affairs Analysis and Business Support at Eni's Public Affairs Department, Dr. Polina Averianova, Energy Analyst at the International Affairs Analysis and Business Support at Eni's Public Affairs Department, and Dr. Marco Innocenti Degli, Head of Public Affairs APAC & MENA at Eni S.p.A., January 5, 2021.

[142]On December 13, 2021 the joint venture between Thyssenkrupp and De Nora, participated by Snam, signed contract to install over 2 GW electrolysis plant for one of the largest green hydrogen production projects in the world in Neom.

[143]Author's interview with Dr. Valerio Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh, December 22, 2021.

desirable that Enel's operations increase in this market during the next decade[144].

Arguably, however, hydrogen is the most promising field of clean energy cooperation with Saudi Arabia. Indeed, Italy has also identified hydrogen as a critical element to its energy transitions, as it was presented by the Ministry of Economic Development ("*Ministero dello Sviluppo Economico*" or "MISE") in the "Guidelines for the National Hydrogen Strategy" published in November 2020[145]. Another reason why hydrogen could be a valid alternative from the point of view of oil-producing countries is that it has the potential to generate similar revenues to oil and create new jobs. Indeed, according to a report written in 2021 by the MENA Hydrogen Alliance[146], green hydrogen could create up to 1 million new jobs, directly and indirectly, in the GCC countries and generate up to 2 hundred billion in annual revenues by 2050. The potential for blue and green hydrogen in the GCC region is truly immense, also because it could be possible to repurpose the already existing infrastructures -such as gas and oil-producing companies' infrastructures- in a way that also traditional energy companies could be part of the energy transition, preserving jobs and generating revenues. Indeed, hydrogen could make it possible for oil and gas firms to stay relevant because the specifical of how many infrastructures can be reused is significant. For example, it is possible to reuse port facilities, LNG export and import terminals, gas pipelines, and even salt domes for storage[147]. At the same time, hydrogen could also represent a new opportunity for the Italian industrial fabric capable of generating a competitive supply chain. Indeed, without considering big players, about 120 companies in the hydrogen supply chain have been identified for a total turnover of 7 billion euros and over 19,000 employees in 2019[148].

Finally, with services becoming increasingly important as the share of RE in the energy mix rises, some of these services could be exported. Examples of new services with export potential include smart grids, closed-cycle eco-industrial parks, smart transport systems,

[144]Author's interview with Dr. Valerio Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh, December 22, 2021.
[145]Bianco, "Power play: Europe's climate diplomacy in the Gulf," 12; Ministero dello Sviluppo Economico (MISE), "Strategia Nazionale Idrogeno: Linee Guida Preliminari," last modified November 24, 2020, https://www.mise.gov.it/avviata-la-consultazione-pubblica-della-strategia-nazionale-sull-idrogeno.
[146]MENA Hydrogen Alliance, *The Potential For Green Hydrogen in the GCC Region*, Dii & Roland Berger, 2021, 23-25.
[147]Author's interview with Dr. Cinzia Bianco, Gulf Research Fellow at the European Council on Foreign Relations (ECFR), interview by author, December 7, 2021.
[148]Bianco, "Power Play: Europe's Climate Diplomacy in the Gulf," 14.

tracking systems for environmental standards along value chains, and energy management systems[149].

As for Italian companies operating within the energy sector, many of them are very strong in Saudi Arabia also in the export of machinery, such as pumps, drainage pumps, production lines, or packaging machines. Usually, these companies get in touch with Saudi companies thanks to intermediaries, and export in a traditional way, without necessarily opening a branch in the Kingdom. Concerning prospects for increasing machinery exports towards the KSA, the Emirati market provides a helpful example of how economic cooperation could be enhanced further in this area. Indeed, Italy provides the UAE with pumps for its desalinization plants, pressure reducers, and solar panel components[150]. In particular, Italy is showcasing renewable technology, specifically on the fronts of environmental and food sanitation, wastewater treatment, water treatment, dewatering equipment, and energy systems. Notably, Italy's participation at Expo 2020 Dubai and the WETEX conference[151] represent a valuable opportunity to step up Italy's participation not only in the country but in the entire Gulf region, creating new opportunities for partnerships with local companies[152].

[149]Bianco, "Power Play: Europe's Climate Diplomacy in the Gulf," 14.
[150]Notably, according to figures provided by the ITA in the first half of 2021 Italy increased its export of RE components to the UAE by 12 percent.
[151]Where fifty-five Italian companies are present, including SMEs and start-ups.
[152]Italian Trade Agency, "Emirati Arabi Uniti: guida al mercato. Opportunità e sfide per le imprese italiane in vista di Expo 2020," 103.

Chapter III - Study Results: How to Improve Italy-Saudi Arabia Cooperation in the Energy Field?

The framework of economic reforms envisaged by the Vision 2030 program and the formal commitment of Saudi Arabia to adhere to international climate targets provide an unprecedented and ideal context for improving bilateral relations between Italy and Saudi Arabia. In the energy field, the common goal of boosting the development of RE and reducing GHG emissions opens to new and unexploited opportunities for cooperation between the two countries, which already share a deep-rooted history of diplomatic and economic relations[153]. However, even though the current policy outlook suggests the magnitude of the potential stemming from this historical moment, a structured framework for improving bilateral cooperation in the field of energy and new energy technologies is not yet in place.

This chapter will consider three main directions -namely the Italian, the Saudi, and the EU-GCC interregional dimensions- through which Saudi Arabia and Italy could improve cooperation in the energy and RE sectors. Building on the literature-review-based analysis presented in the previous two chapters and drawing on the interviews conducted[154], this chapter will attempt to suggest policy initiatives that the two countries could take in the short and medium-term to advance bilateral relations in the energy field. To this end, the analysis will be divided into three sections, focusing on 1. specific policy recommendations addressing Italy (i.e., establishing a MoU with Saudi Arabia in the field of RE, and enhancing inter-ministerial dialogue for drafting a strategic export policy and supporting SMEs' internationalization), 2. country-specific recommendations directed to Saudi Arabia (i.e., resuming the GCC regional integration process to increase energy policy coordination, enhance government and financial transparency, and increase citizens' active participation), and 3. perspectives for fostering relations at the EU-GCC level (i.e., increasing knowledge-sharing, joint research and projects, and boosting inter-institutional cooperation at the EU-GCC level).

Although some policy recommendations are country-specific and entail unilateral initiatives that Italy or Saudi Arabia could take, this does not exclude the bilateral framework of the analysis. Indeed, all the considered elements represent issues the two countries need to reflect on if they want to foster bilateral dialogue in the energy sector. While the ultimate goal

[153]See Chapter 1.1.1, 12-14.
[154]See Appendix, 96-143.

of this chapter is to highlight possible areas of improvement in Italy-Saudi Arabia cooperation, the research will also take into account existing challenges and potential limits.

3.1 Italy country-specific recommendations

The first section of this chapter will focus on country-specific recommendations for Italy, highlighting three areas of potential improvement concerning the country's positioning in the Saudi market and, more broadly, its geopolitical stance in the GCC region. Specifically, the analysis will consider 1. perspectives for establishing a MoU with the KSA in the field of sustainable development and RE, 2. Italy's strategic view for the GCC area, and 3. possibilities for improving the Italian industrial presence in the Saudi energy sector.

3.1.1 Deepening bilateral cooperation with Saudi Arabia: establishing a Memorandum of Understanding in the field of sustainable development and renewable energy

Although opportunities for Italian companies in the Saudi energy sector are encouraging, to date a MoU between the Italian Ministry for Ecological Transition (MiTE) and the Saudi Ministry of Energy (MOE) is not yet in place. Notably, other European countries have already established such a framework of cooperation. For example, in March 2021 the German Minister of Economic Affairs Peter Altmaier and the Saudi Minister of Energy Abdulaziz bin Salman Al Saud signed a MoU establishing cooperation on the production, processing, use, and transport of green hydrogen between the two countries. This agreement provided for the establishment of a bilateral innovation fund to promote clean hydrogen, the use of German technologies and the participation of German companies in the implementation of clean hydrogen projects in the Kingdom and, ultimately, the import of clean hydrogen and its downstream products from the KSA to Germany[155]. Considering that contacts between Italian-Saudi energy ministries are already in place within the International Energy Forum (IEF)[156] framework, Italy could draw inspiration from the recent Germany-Saudi Arabia agreement and consider expanding its cooperation with the Kingdom in this sector. Notably, the participation in the next ministerial meeting that the IEF will hold the upcoming year could be the proper

[155]Bianco, "Power Play: Europe's Climate Diplomacy in the Gulf," 19; Claire Dietz-Polte, and Vivien Vacha, "Germany: The German National Hydrogen Strategy and international hydrogen partnerships," *Baker McKenzie*, last modified October 6, 2021, https://insightplus.bakermckenzie.com/germany-the-german-national-hydrogen-strategy-and-international-hydrogen-partnerships; "Minister Altmaier signs Memorandum of Understanding on German-Saudi hydrogen cooperation," Federal Ministry for Economic Affairs and Climate Action, last modified March 11, 2021, https://www.bmwi.de/altmaier-signs-memorandum-of-understanding-on-german-saudi-hydrogen-cooperation.html.

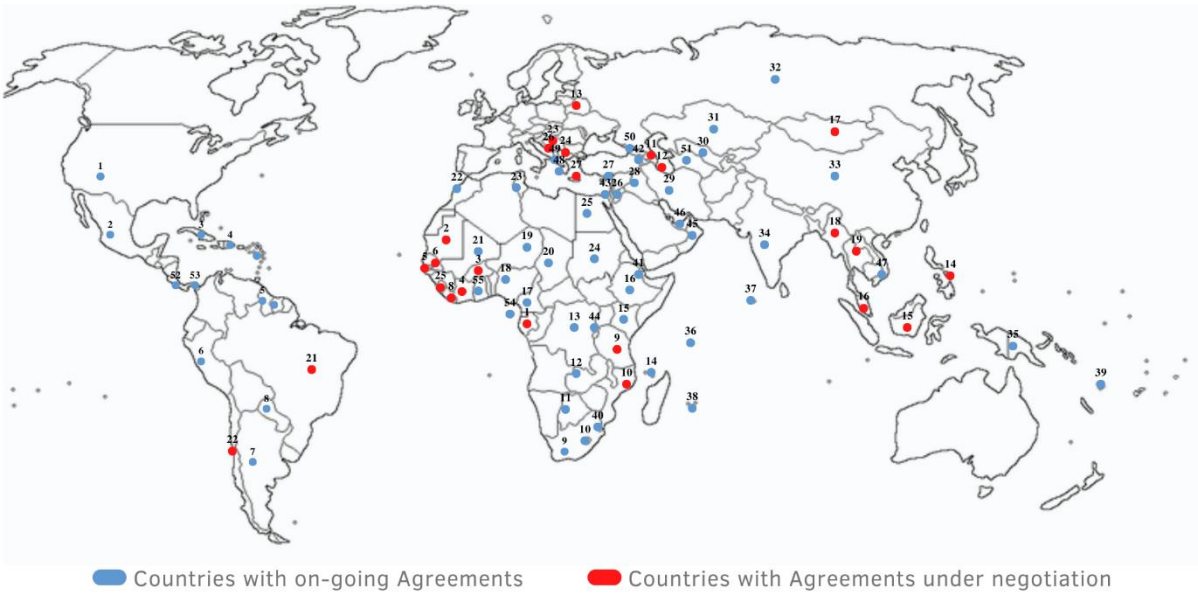
[156]The IEF -based in Riyadh- is the world's largest international organisation of energy ministers and its biennial Ministerial Meetings collect energy ministers from 71 countries, including Italy. See "Overview," International Energy Forum (IEF), accessed January 7, 2021, https://www.ief.org/overview.

occasion to build up deeper contacts with Saudi institutions, including the Saudi MOE, and potential economic partners already present in the country[157].

Notably, before the establishment of MiTE in 2021[158], the Italian Ministry for the Environment, Land and Sea (IMELS) had already established cooperation activities on environmental matters with 72 countries, for a total of 45 bilateral cooperation agreements signed, 31 agreements under negotiation, and a total of 170 projects launched (Figure 4). Remarkably, on September 24, 2018 IMELS signed a MoU with the Ministry of Climate Change and Environment (MOCCAE) of the UAE, establishing a path of cooperation to implement measures for mitigation and adaptation to climate change. Among the multiple fields of cooperation, the agreement identified the sharing of policies and tools to promote economic diversification and technological innovation, the identification of new opportunities in the area of RE, sustainable farming, fisheries, food processing, landscaping, biodiversity conservation, and tourism, the transfer of technologies and capacity building to promote the development of the private sector, and fostering technical cooperation and information exchange. This bilateral cooperation agreement also encouraged private-sector participation, capacity building, technology transfer, and exchange of experts and delegation visits between Italy and the UAE. The signature of the MoU was followed by the establishment of a joint working group composed of representatives from both IMELS and MOCCAE to provide general direction and advice on cooperation, approve work programs, supervise and support cooperation activities, and take necessary decisions[159].

[157]Author's interview with Dr. Valerio Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh, December 22, 2021.
[158]MiTE replaced the Italian Ministry for the Environment, Land and Sea (IMELS) in 2021, and it was also assigned competence in energy matters previously assigned to the Ministry of Economic Development.
[159]Ministero della Transizione Ecologica, *Memorandum of Understanding Between the Ministry for the Environment, Land and Sea of the Italian Republic and the Ministry of Climate Change and Environment of the United Arab Emirates*, last modified September 24, 2018, https://www.mite.gov.it/pagina/emirati-arabi.

Figure 4: MiTE bilateral agreements (geographic areas)



Source: "Accordi di collaborazione bilaterale," MiTE, https://www.mite.gov.it/.

MiTE could build on its experience with the UAE and establish a MoU with the Saudi Ministry of Environment, Water and Agriculture (MEWA) to develop cooperation programs and joint activities in the field of climate change mitigation initiatives and sustainable development. That could enhance bilateral dialogue and mutual understanding of respective needs and capabilities, creating new commercial opportunities for Italian companies in a vast field, ranging from water-management to agri-tech and RE.

3.1.2 Establishing an inter-ministerial platform for developing a strategic export policy

Like many European countries, traditionally Italian diplomacy in Saudi Arabia and the Gulf states has mainly been concerned with economic and commercial issues. However, as for bilateral cooperation in the energy and RE field, despite the export potential of Italy[160], Italian energy policy and vision are still very much confined to the EU level, being focused on national targets and lacking a plan outside its national borders to gain from a strategic point of view from the energy transition.

Today, the US progressive retreat as the regional security guarantor, the parallel advancement of new regional powers and global players in the area, and the rise of new economic opportunities linked to the energy transition require Italy to reflect on its strategic positioning in the Gulf. Indeed, boosting energy cooperation with the KSA could be for Italy not only a mean of economic growth but also an instrument to increase its influence within the

[160]See Chapter 2.3, 49-53.

EU in the framework of the decarbonization agenda and, consequently, it could serve as an internal legitimation and consensus-building tool as well. Indeed, by assuming a more prominent role in the international energy transition scenario by consolidating its partnership with valuable international actors, Italy could improve its negotiating position in Brussels. Ultimately, becoming a reliable geopolitical player in the sustainable development agenda could translate even into an effective regional policy for Italy, redefining the Euro-Mediterranean balance for its benefit[161].

With a view to strengthening economic and commercial relations with the KSA in promising and evolving sectors such as energy and RE, Italy could work on the recently signed MoU between the Italian and Saudi Ministries of Foreign Affairs[162] to combine the promotion of economic opportunities with a broader strategic approach to the Italian projection in the Gulf region, making the most of every viable channel of collaboration with the Kingdom[163]. More broadly, Italy should begin to recognize the strategic value and the potential external projection of its energy policy, considering the possibility for a new role of Italy in the upcoming energy international scenario dominated by RES. Concerning this point, it will be crucial for Italy to acknowledge the inter-ministerial nature that energy policy will acquire in the next future, and avoid relegating it to the responsibility of a single department, but coordinating its energy policy at the inter-ministerial, without leaving it detached from the country's commercial interests and strategic consideration in foreign policy. This could be possible through the establishment of an inter-ministerial board for drafting considerations on import/export of new energy technologies and services involving at least four vital ministries for the delineation of tailored regional strategies, such as MiTE, MISE, the Ministry of Foreign Affairs and International Cooperation (MAECI), and the Ministry of Defense. Sub-committees of work within these ministries could be identified to delineate inter-ministerial strategies, taking into account the multiple implications (political, security, economic, financial, industrial, and technological) of import/export in the energy field. Indeed, without a cross-government dialogue between different ministries, it is going to be increasingly difficult for Italy to find convergence and align diplomatic efforts across different areas of competence, which instead will become more and more important considering the cross-sectoral impact that the growing adoption of RES

[161]Lanza, Bianchi, and Bergamaschi, "Geopolitics and Italian Foreign Policy in the Age of Renewable Energy," 47; Marco Valigi, "La decarbonizzazione. Le dinamiche sistemiche, il ruolo dell'Europa e il posizionamento dell'Italia," in *Osservatorio di Politica internazionale: Sicurezza energetica*, no. 2 (Summer 2021): 9-10.
[162]See Chapter 1.1.1, 12-13.
[163]Author's interview with Dr. Mario Boffo, former Italian diplomate and ambassador in Yemen (2005-2009) and Saudi Arabia (2013-2016), December 7, 2021.

will pose[164]. Stronger coordination is needed to better assess risks and opportunities linked with the energy transition and design a more strategic and proactive energy foreign policy in line with climate change goals[165].

3.1.3 Establishing an inter-ministerial coordination room for SMEs internationalization initiatives

While Italy can boast big players in the traditional and RE field, most of its industrial texture is made of SMEs operating at the national and European level, which are unlikely to enter more distant and not so easily accessible markets such as Saudi Arabia. Indeed, what broadly emerged during the confrontation with industrial and institutional representatives[166], is that the majority of Italian SMEs operating in the energy sector do not have an international projection in their activities which, by contrast, are fundamentally confined to the national and European borders, both in terms of internationalization potential and cooperation and partnership activities. This is due to several factors. On the one hand, while Italian SMEs do not lack the necessary expertise, there is no structured vision for bringing together those capacities at the central level. Secondly, there are limits linked to intrinsic characteristics of SMEs' way of doing business. Notably, one of the main elements of constraint which emerged during interviews with sector associations is related to low levels of digitalization[167] and limited capacities to communicate with international markets[168].

Increasing sector associations' resources and instruments for internationalization initiatives and training programs could be a useful strategy to help Italian companies to close the current digitalization gap and support them in reaching new foreign markets, taking advantage of the position and expertise of umbrella associations as privileged interlocutors with the SMEs. At the same time, while confrontation with sector associations should not be

[164]For a complete overview of renewable energy-related security challenges see Maria G. Burns, *Managing Energy Security: An All Hazards Approach to Critical Infrastructure* (New York: Routledge, 2019), chap. 3, Perlego.
[165]Lanza, Bianchi, and Bergamaschi, "Geopolitics and Italian Foreign Policy in the Age of Renewable Energy," 48.
[166]Author's interview with Dr. Mario Boffo, former Italian diplomate and ambassador in Yemen (2005-2009) and Saudi Arabia (2013-2016), December 7, 2021; Author's interview with Dr. Valerio Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh, December 22, 2021; Author's interview with Dr. Veronica Pitea, President of ACEPER (Association of Consumers and Producers of Renewable Energy), November 17, 2021; Author's interview with Interview with Dr. Walter Righini, President of FIPER (Federation of Energy Producers from Renewable Energy Sources), December 1, 2021.
[167]Remarkably, Dr. Veronica Pitea noted that less than 20 percent of the over 6,000 companies associated in ACEPER currently figure in online platforms.
[168]Author's interview with Dr. Angelo Artale, General Director of FINCO (Italian Federation of Industries for Construction and maintenance), November 23, 2021; Author's interview with Dr. Veronica Pitea, President of ACEPER (Association of Consumers and Producers of Renewable Energy), November 17, 2021.

underestimated -as they could collect and speak for common issues and needs that would be impossible to manage at the central level- it would be useful to enhance inter-ministerial dialogue (especially between the MiTE, MISE, and MAECI) and establish a specific coordination room for drafting tailored strategies and initiatives for SMEs operating in the energy sector to better reach foreign markets, bringing together the in-depth knowledge of distant markets with that of the Italian industrial sector.

Overall, the reasons why it would be interesting for Italy to include further SMEs operating in the energy sector -which, as a matter of fact, make up one of the many supply chains on which the Italian economy is based- in the global value chain are manifold. First of all, this would not only help these companies to expand from an economic point of view, but it could also help accelerate the energy transition at the national level through a positive exchange in technologies and best practices with foreign operators. At the same time, the increased presence of Italian companies in strategic sectors like energy could also serve as a soft power instrument in foreign policy, reinforcing the image of Italy as a credible actor with respect to new global challenges like the energy transition.

To do this, however, the creation of a functioning supply chain capable of bringing together different SMEs working in various sectors of the energy industry will be necessary. With respect to this, Enel has already set the path, being helped in its economic expansion by many Italian SMEs, particularly to produce new power plants or build machinery. Supported in the early stages by Enel, many of these companies were then able to make their way in the sector and win the trust of other large energy companies as well. Some of them have also opened offices and factories directly abroad to reduce management costs. Overall, Italian SMEs in the energy sector have already made themselves appreciated all over the world -from Zambia to Brazil, passing through Panama and South Africa- and demonstrated that they could successfully conquer new markets[169].

3.2 Saudi Arabia country-specific recommendations

The second section of this chapter will focus on country-specific recommendations for Saudi Arabia, considering three areas of potential improvement concerning the country's regulatory framework and business environment and, more broadly, initiatives that the Kingdom could take at the national and GCC level to defuse potential disruptive outcomes

[169]"Enel launches Program for innovative and sustainable Supplier Development," *Enel*, last modified July 16, 2020, https://www.enel.com/enel-launches-program-for-innovative-and-sustainable-supplier-development.

linked to the energy transition. More specifically, the section will be divided into three sub-paragraphs analyzing 1. initiatives for improving the Kingdom's financial transparency and business environment, 2. Saudi Arabia's role in the GCC integration process and its links with the successful outcome of the energy transition, and finally 3. perspectives over the sustainability of the Saudi social contract in the next future.

3.2.1 The Saudi regulatory environment: revising the legal framework while improving transparency

Enduring issues in the level of financial transparency in Saudi Arabia are hindering foreign investments. Indeed, while the Kingdom's direction is one of continuous growth, with an uninterrupted proliferation of new projects, there is difficulty in tracking the progress. As an indication of this, besides the government's public statements, it is almost impossible to access concrete progress on giga projects such as the futuristic city of Neom, which have been a relevant part of the Kingdom's plans to attract FDIs[170].

In addition to this, the opaque nature of inter-institutional relationships and the hierarchies between Saudi governmental entities negatively affect the way policies are formed and, most importantly, the efficiency of their implementation. A concrete example of the detrimental effect of this inter-institutional competition is the Small Scale Solar PV Systems Regulations: presented in 2017 as a regulatory framework for businesses and individual energy users willing to install solar PV on their properties, the regulation was set to go into effect in July 2018, but the program has still not got off the ground[171]. Arguably, the biggest obstacle facing RES in the KSA is precisely the ability of the government to regulate the local market and, more specifically, the contrast between this regulatory vacuum and the need for clarity of SMEs and larger entities looking to enter the independent power producer space. A large part of this can be attributed to the fact that, in Saudi Arabia, numerous ministries and organizations hold overlapping or even competing mandates, which detracts from implementing critical policies due to confusion over which government entity has the authority to lead the energy transition[172].

Arguably, the fact that the Kingdom seems to lack consistent centralized planning and

[170]Author's interview with a Senior Advisor based in the Gulf, December 20, 2021.
[171]Al-Sulayman, "The Rise of Renewables in the Gulf States," 109.
[172]Faris Al Sulayman. "The Obstacles Facing Renewables in the Gulf." *Gulf Affairs*, no. 11 (Summer 2016): 10-11; Seznec, and Mosis, *The Energy Transition in the Arab Gulf*, 6, 15.

the number of institutions involved in energy policy-making is indicative of this[173]. Moreover, outside the Saudi MOE's REPDO, no centralized body is responsible for coordinating Riyadh's shift to RES. In fact, even though other institutions are involved in building renewable capacity, they are moving forward independently. Recent changes in the role of KACARE provided a concrete example of this issue. The institution was first established in 2010 as the focal point for renewable and atomic energy deployment in Saudi Arabia, announcing ambitious plans to deploy 41 GW of solar and 16 GW of wind power before 2030. However, confronted by stiff competition from other state institutions and charged with an unclear mandate, the focus of KACARE gradually turned to research and training. Once the new leadership assumed power in 2015, KACARE fell out of favor and was sidelined in its role[174].

Despite recent initiatives and announcements, Saudi Arabia seems to be "trapped" in an economic structure and regulatory incentives that send very confusing signals to the market. Indeed, while ambitious RE projects are gathering unprecedented attention, at the same time Vision 2030 provides for an increase in the local content of the oil and gas sector from 40 to 75 percent. While this is comprehensible with a view of keeping stable oil prices and adapting to the global energy needs[175], it will be crucial that Saudi Arabia sticks to its RE targets, demonstrating its commitment to a proper long-term transition if it wants to be considered accountable as a reliable energy player and commercial partner in the post-oil world[176]. While the implementation of RE targets will be essential to reinforce the Kingdom's credibility in international markets, continuing on a path of reform of the current legal landscape for FDI and privatization will be crucial to attracting foreign investors further. At the same time, given the high degree of involvement of government entities in the energy transition, it will be essential for Saudi Arabia to enhance the level of governance transparency.

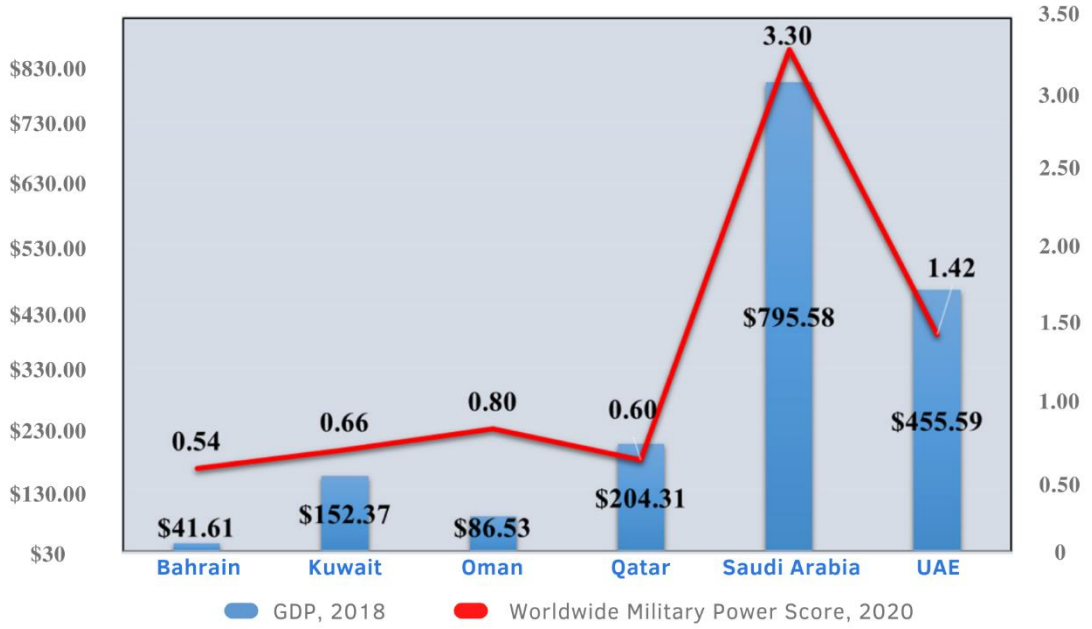
3.2.2 Resuming the GCC regional integration process

Notably, GCC states have set up almost all their joint ventures with international

[173]Namely, the Ministry of Energy (MOE), the Electricity Cogeneration and Regulation Authority (ECRA), KACARE, King Abdulaziz City for Science and Technology (KACST), the Public Investment Fund (PIF), the Saudi Energy Efficiency Center (SEEC), the National Energy Services Company (Tarshid), Saudi Aramco, and the Saudi Electricity Company (SEC) with its subsidiary National Grid.
[174]Al-Sulayman, "The Rise of Renewables in the Gulf States," 97, 108.
[175]Author's interview with Dr. Luciano Jannelli, Chief Economic Advisor at the Ministry of Investment of Saudi Arabia (MISA), January 3, 2021.
[176]Author's interview with Dr. Marco Piredda, Head of International Affairs Analysis and Business Support at Eni's Public Affairs Department, Dr. Polina Averianova, Energy Analyst at the International Affairs Analysis and Business Support at Eni's Public Affairs Department, and Dr. Marco Innocenti Degli, Head of Public Affairs APAC & MENA at Eni S.p.A., January 5, 2021.

companies and currently have established nearly no joint ventures between them. That is linked to GCC governments' perception of energy as deeply related to their national sovereignty and security. Therefore, these countries have always been reluctant to establish strong forms of cooperation in this field, particularly due to a perceived lack of respect for the sovereignty of smaller countries by stronger actors such as the KSA. This pattern also repeats today within the context of the energy transition. Indeed, while GCC states would definitely benefit from cooperating more at the regional level[177], to date they have established only very superficial relationships beyond the OPEC umbrella because of the dominant destructive approach that still characterizes intra-regional dialogue. As a matter of fact, the GCC as an institution has always been characterized by a complete imbalance, determined by Saudi Arabia being much more powerful -politically, military, demographically, and economically- than other countries of the area (Figure 5). This undermined the regional integration process by preventing the establishment of a balance of power among the six GCC states and will continue to make the GCC governments operate significantly below their potential for the foreseeable future. Ultimately, it would be recommendable that Saudi Arabia would establish fairer relationships with other GCC states, rethinking its regional foreign policy in a way to create more reciprocal trust and respect for national sovereignty[178].

Figure 5: The GDP and military strength in the GCC states



Source: Tok, "The Gulf Cooperation Council states," 56, https://doi.org/10.1111/dome.12226.

[177]For example, considering that they share the same climate and have similar resources, they could establish joint research centers in the field of solar energy.
[178]Author's interview with a senior economist based in the Gulf, December 20, 2021.

3.2.3 Escaping the 'rentier trap': looking for a post-oil social-contract

A sensitive question concerning the future stability of the Saudi regime is whether local authorities will manage to diversify the national economy successfully without political liberalization. Indeed, this element is particularly relevant also from the point of view of potential commercial partners like Italy because it is strictly linked with the future regime stability of the Kingdom and, therefore, with the possibility to establish long-lasting and stable economic ties in the area. It could be argued that, to date, only the UAE managed to do something similar by creating a possibly unique model that allowed it to maintain its social contract unvaried. However, it has to be noted that the UAE enjoys a particular socio-economic context, where national citizens make up about 10 percent of the total population, while the remaining 90 percent is made up of migrant workers who either live in such miserable conditions not to be able to claim political liberties or who are rich enough to enjoy high living-standards and give up on political concessions. Although things could change in the future, to date it would be difficult, not to say impossible, for other GCC countries to replicate this model. Actually, as things currently stand, it would be fairly daring to draw a comparison with Saudi Arabia, whose demographic and labor market context is radically different from the Emirati one[179].

Nevertheless, precisely in consideration of the Kingdom's more consistent and bulging native population, whether and how Saudi authorities will consider engaging more with nationals on political issues and how they will deal with the necessary revision of the current social contract will be crucial. Indeed, currently Saudi Arabia -like other Gulf states- is trying to preserve its social contract by diversifying its economy in the attempt to maintain enough revenues sources and not giving substantial political concessions. However, it is possible that as soon as this reforming process might imply consistent political concessions, there could be a strong pushback coming from local authorities. Indeed, while many aspects of the traditional social contract could become unsustainable in the near future, keeping the status of the praetorian guards unchanged will still be sustainable for the next twenty or thirty years. Arguably, as long as there will be enough revenues to pay for the praetorian guards, and considering that military intervention in the Gulf is unlikely, there will not be any fundamental threat to the essential stability of the Saudi regime[180].

[179]Interview with Dr. Luciano Jannelli, Chief Economic Advisor at the Ministry of Investment of Saudi Arabia (MISA), January 3, 2021; Author's interview with a senior economist based in the Gulf, December 20, 2021.
[180]Author's interview with a senior economist based in the Gulf, December 20, 2021.

Even so, considering those structural fragilities linked to the Saudi regime's stability and sustainability of the local social contract in the medium-long term, the Kingdom should find new ways of engaging the local youth without undermining its political legitimacy. While the UAE managed to do so by diversifying its economy due to a peculiar demographic context, Saudi Arabia needs to recognize that, sooner or later, what has traditionally sustained its State-society pact will fall short. Therefore, framing new ways for increasing Saudi nationals' active participation in the process of policy-making, even without thinking about direct forms of involvement like in the democratic model, will be essential to ensure long-term regime stability. Arguably, climate change and sustainable development offer an interesting opportunity to open up the dialogue with the younger generation of Saudis, either because it is not a political, religious, or cultural sensitive topic in a traditional way, and also because it could create a new sense of participation and sharing of the public wealth that is not solely based on the actual sharing of economic revenues.

Remarkably, youth empowerment is an important voice of Vision 2030, and many government entities in Saudi Arabia have already launched initiatives that aim to empower and increase the social participation of young Saudis[181]. Two ways the Kingdom could reinforce this effort could be to establish a specific Ministry for the Youth[182] or set up a dedicated entity within its Ministry of Human Resources and Social Development to create platforms of active exchange and confrontation between the youth and local authorities, including university partnerships, start-up funding projects, and annual forum of discussions.

3.3 EU-GCC level policy recommendations

The last section of this chapter will consider perspectives for improving inter-regional dialogue at the EU-GCC level. While this is not the main focus of the research, considering that both Italy and Saudi Arabia are part of regional organizations[183], the following analysis will evaluate to which extent the EU-GCC level dialogue will accompany and hopefully favor bilateral relations between GCC and European actors and, consequently, between Saudi Arabia and Italy. In doing so, the research will focus on initiatives undergoing at the GCC-EU level in

[181]"Youth Empowerment," Saudi National Portal for Government Services – GOV.SA, accessed January 8, 2022, https://www.my.gov.sa/youth.
[182]Similar to the UAE's Federal Youth Authority, which was established as part of the Ministry of Culture and Youth in 2016. See "FYA Strategy," Federal Youth Authority, accessed January 8, 2022, https://youth.gov.ae/fya-strategy.
[183]And particularly in light of the fact that, as for other EU member states, Italy's energy policy is framed at the EU level.

the field of RE and sustainable development, trying to understand whether this level of cooperation can be more functional than the bilateral level and how it can be strengthened.

3.3.1 Strengthening the inter-institutional level dialogue: limits and perspectives for improving EU-GCC cooperation

Arguably, the GCC region is not on the EU priority list, particularly concerning RE and energy transition matters. Indeed, European actors have been interested much more in North Africa and Southern Mediterranean countries, both due to deeper relations already in place because of their geographical proximity and for strategic interests in supporting economic development in those countries to cut back some of the migration pressure towards the EU. Nevertheless, European actors are becoming increasingly aware of the GCC region's potential in the energy transition, as these countries already have better energy infrastructures and liquidity to invest in RE projects[184].

As a matter of fact, RE has already been part of the conversation between the EU and the GCC for the past decade. Indeed, the Joint Action Program (JAP) for the Implementation of the "EU-GCC Cooperation Agreement of 1988" -that was agreed in 2010 and validated in 2013- already dedicated extensive attention to the topics of RE, climate, and environment. Particularly relevant were domains number four, five, and six, which respectively addressed energy, nuclear safety, electricity and water security, transports, and environment and climate change[185]. Even though the JAP and the initiatives that came after it[186] have provided several platforms for technical discussions and cooperation, technology exchange, know-how, and policy dialogue in climate and energy subjects between the EU and the GCC, it is essential to dig deeper into this activity. Besides the inter-institutional discussion, the EU is currently fostering cooperation with GCC actors by concluding Cooperation Arrangements with

[184]Author's interview with Dr. Cinzia Bianco, Gulf Research Fellow at the European Council on Foreign Relations (ECFR), December 7, 2021.

[185]Abdulaziz Al-Shalabi, Nicolas Cottret, and Emanuela Menichetti, "EU-GCC Cooperation on Energy," *Sharaka Technical Report*, no. 3 (June 2013): 7, https://www.iai.it/files/Sharaka_RP_03.pdf; "Joint Action Programme for Implementation of the EU-GCC Cooperation Agreement 1988," European External Action Service, accessed January 5, 2022, https://eeas.europa.eu/archives/delegations/gulf_countries/documents/eu_gulf_countries/eu_gcc_joint_action_programme_en.pdf.

[186]The JAP was accompanied by two other projects, namely INCONET-GCC (2010-2012) and INCONET-GCC2 (2014-2017), which supported inter-regional dialogue and scientific research on innovation in areas including climate change. Moreover, in 2010 the EU-GCC Clean Energy Network was established in Abu Dhabi, with the goal to expand research efforts in the field of clean energy, CCUS, energy efficiency, connectivity, and technology cooperation. More recently, the Saudi G20 Presidency in 2020 marked another relevant moment for inter-regional relations, providing many opportunities for the EU, via the European Commission, to engage with the GCC -and specifically with Saudi Arabia- on these issues.

individual GCC countries. For example, the High Representative of the Union for Foreign Affairs and Security Policy Joseph Borrell and the Saudi Minister for Foreign Affairs Faisal bin Farhan Al-Saud signed a Cooperation Arrangement in October 2021, establishing a platform for regular consultations between the European External Action Service (EEAS) and the Saudi Minister of Foreign Affairs on issues of mutual interest, including climate change[187].

Notably, concerning potentialities in terms of inter-regional cooperation, the EU and the GCC states could be able to trade energy once the necessary infrastructures are in place. Indeed, due to their geographical location GCC states use electricity the most during summer when European countries use it the least. Thus, when grids will be connected with cables having sufficient capacity, there will be an excellent opportunity for inter-regional energy trade. The fact that the two blocks could buy energy from each other during their peak demand -instead of relying only on their local capacity- would make it possible for a region to install a lower capacity[188]. Actually, EU-GCC cooperation in the electricity field is already quite advanced thanks to regular exchanges and meetings at the technical level organized by producers, system operators, distributors, and relative associations. However, while European countries are embedded in an increasingly integrated electricity system, regional integration in the GCC is a more recent initiative (Figure 6)[189]. Nevertheless, as both the EU and the Gulf countries are seeking to expand the reach of their electricity systems beyond their borders, in the long run the realization of a regional power grid in the GCC could open concrete perspectives for the establishment of a broader electricity market, in particular with a view of interconnecting the GCC region's RE potential with the EU's targets for decarbonization. Currently, however, the main areas for potential inter-regional cooperation in the electricity field are limited to the realm of knowledge transfer[190].

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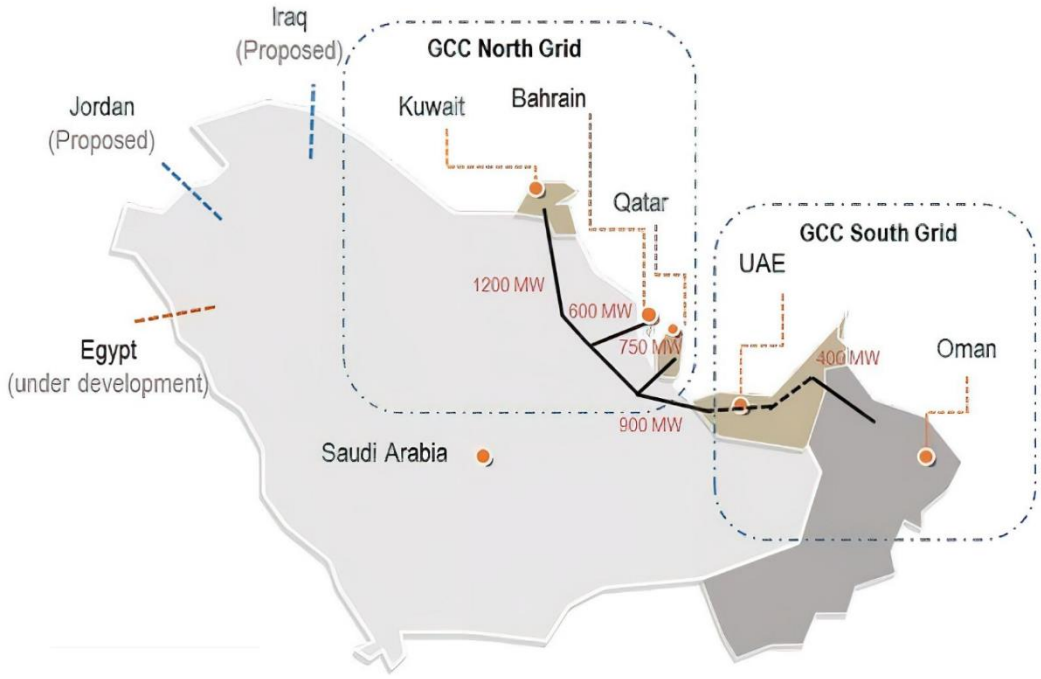
[187]Author's interview with Dr. Cinzia Bianco, Gulf Research Fellow at the European Council on Foreign Relations (ECFR), December 7, 2021; "Saudi Arabia: Remarks by High Representative/Vice-President Joseph Borrell at the press conference with Minister of Foreign Affairs Faisal bin Farhan Al-Saud" EEAS, last modified October 3, 2021, https://eeas.europa.eu/saudi-arabia-remarks-high-representativevice-president-josep-borrell-press-conference_en.

[188]Author's interview with a senior economist based in the Gulf, December 20, 2021.

[189]Even though it has been strengthened since the establishment of the Gulf Cooperation Council Interconnection Authority (GCCIA), a joint stock company subscribed by the six GCC states in 2001. For more information see "Projects," Gulf Cooperation Council Interconnection Authority (GCCIA), accessed January 17, 2021, https://www.gccia.com.sa/introduction/.

[190]Al-Shalabi, Cottret, and Menichetti, "EU-GCC Cooperation on Energy," 21-22; "Electricity Interconnections and Market Integration," EU-GCC Clean Energy Technology Network, accessed January 17, 2022, https://www.eugcc-cleanergy.net/wg4; Karoline Steinbacher et al., "Cross-border cooperation for interconnections and electricity trade: Experiences and outlook from the European Union and the GCC," *Navigant Consulting* (September 2019): 3, 42, https://guidehouse.com/epstudyinterconnectionsandgovernance.pdf.

Figure 6: GCC interconnections and line capacities



Source: Hasan, "Is the Time Ripe for Private Investment in Interconnections in the MENA Region?", *KAPSARC,* 5, https://test.kapsarc.org/research/publications/.

Besides electricity, another element that determines opportunities for energy cooperation and trade between the two blocks is related to the GCC states RE potential, particularly for solar and wind energy, both due to their strategic geographic location and because of their low population density and land availability. By contrast, European countries have a high population density and do not have much room for solar panels and wind farms. Therefore, judging on purely economic grounds, there are conditions for the EU and GCC states to trade energy[191].

For what concerns specifically technology transfer and knowledge sharing, there is incredible potential for EU-GCC joint initiatives. Indeed, RE technologies require tailoring to work efficiently in the GCC climate, as solar energy technology developed in Europe is not highly efficient in the Gulf because of dust, high levels of heat, and humidity. Thus, it would be essential for Saudi engineers to collaborate with European ones to tailor such technologies according to regional needs. At the same time, there are some areas where Gulf states could potentially lead innovation. For example, Saudi Arabia is making significant advances with hydrogen technology, desalination technologies, and cooling systems. If the Kingdom

[191]Author's interview with a senior economist based in the Gulf, December 20, 2021.

continues to make the right investments, it could become an exporter of this knowledge to the EU[192].

On the other hand, some considerations are needed concerning the willingness to improve inter-regional cooperation. Indeed, the EU is a vast economy and, as such, its need to engage economically with third countries is less significant than the GCC states, which have smaller economies, concentrated in specific sectors, and minimal domestic manufacturing capacity. In addition to this, external trade as a percentage of GDP is much smaller for the EU than for GCC countries. Besides this asymmetry in the economic imperative to establish links, historically, the EU has tied its economic goals with political objectives, such as the respect of human rights and environmental protection. As a matter of fact, human rights records in Gulf states have been consistently concerning; as for the environment, the GCC countries are among the highest per capita energy consumers and carbon producers in the world and, apart from changes in recent years, traditionally they have not been interested in pursuing environmental-climate goals of the EU. Clearly, the GCC governments would like to engage with the EU on purely economic grounds, separating economic and political dossiers[193].

Although political relations between Gulf monarchies and the EU have been fragmented over the years, mainly due to sharp differences over regional policy issues such as the war in Yemen and GCC countries' dire human rights records, cooperation on the energy transition could reverse this trend[194]. Moreover, by playing a more assertive role in the global energy transition, the EU could strengthen inter-regional relations with the GCC while reaching a double goal. On the one hand, in fact, the EU could take advantage of the opportunities offered by the new green enthusiasm of GCC states to transform its relations with these countries, going from being a secondary player in the region to a primary one by facilitating economic diversification in the area and becoming a strategic partner in the green transition. That would enable the EU to strengthen its influence in the region and partially offset Gulf countries' growing dependence on China. At the same time, acquiring a leading role in the decarbonization process would significantly benefit the EU on the domestic front as well. Indeed, not only it would provide a set of values to which anchor or through which re-establish the European identity, but -especially if Brussels should gain some form of primacy over the United States

[192]*Idem.*
[193]Abdulkader Binsal, "UAE capable of exporting renewable hydrogen to Europe in future: EU Energy commissioner," *Emirates News Agency (WAM)*, December 5, 2021, https://www.wam.ae/; Author's interview with a Gulf-based senior economist, December 20, 2021.
[194]Bianco, "Power play: Europe's climate diplomacy in the Gulf," 12.

and China in the global climate action agenda- it would also reinforce the leadership of the Commission, thus facilitating the relaunch of the integration process in the EU[195].

3.3.2 Reframing inter-regional dialogue in the energy sector

To expect that oil and gas exporters like Saudi Arabia will keep their resources underground or fully diversify away from the oil and gas sector -which constitute the core competitive advantage of their economy- is not only unrealistic but also sub-optimal, as these countries would limit their scope for risk reduction and adaptation strategies in the face of a potentially disruptive shock[196]. This is particularly relevant considering Saudi Arabia's historical role as a global provider of stability in oil and gas prices[197]. Arguably, it is both in the interest of the international community and of the energy transition that Saudi Arabia continues to adapt its capacity in line with global needs. This point is significant because the energy transition will make energy prices more volatile, not less[198]. Moreover, policies focused only on restricting the supply of hydrocarbons could disincentivize oil and gas exporters from playing a more constructive role in climate change negotiations and reduce their incentive to be part of the solution to climate change, especially in the absence of a global framework that channels funds to help these countries adapt to the disruptions of the energy transition. Notably, many oil and gas exporters recognize the climate change threat and are adopting a fundamentally different approach from the past, showing a willingness to employ technical and financial resources to fight climate change[199]. Therefore, a softer approach in the inter-institutional dialogue with GCC countries is needed if there is a willingness to strengthen cooperation in the energy field.

Concerning the future modalities of inter-regional cooperation, while European countries could be more successful in establishing new paths for collaboration in the energy sector by working at the bilateral level in the short run[200], it would be better to insist on the EU-

[195]Bianco, "Power play: Europe's climate diplomacy in the Gulf," 11; Marco Valigi, "La decarbonizzazione. Le dinamiche sistemiche, il ruolo dell'Europa e il posizionamento dell'Italia," in *Osservatorio di Politica internazionale: Sicurezza energetica*, no. 2 (Summer 2021): 9.
[196]Bassam Fattouh, Wolfgang Heidug, and Paul Zakkour; "Transitioning to net zero: CCUS and the role of oil- and gas-producing countries," *The Oxford Institute For Energy Studies: Energy Insight* 90 (June 2021): 10.
[197]See Chapter 1.1, 10-11.
[198]Author's interview with Dr. Luciano Jannelli, Chief Economic Advisor at the Ministry of Investment of Saudi Arabia (MISA), January 3, 2021.
[199]Bassam Fattouh, Wolfgang Heidug, and Paul Zakkour; "Transitioning to net zero: CCUS and the role of oil- and gas-producing countries," *The Oxford Institute For Energy Studies: Energy Insight* 90 (June 2021): 10.
[200]Not least because the GCC as an institution has been weakening in recent years, among other things, following the crisis with Qatar in 2017. Moreover, there is a clear national interest by individual EU Member States in the GCC, where many European firms have commercial interests in the energy field. See author's interview with Dr. Cinzia Bianco, Gulf Research Fellow at the European Council on Foreign Relations (ECFR), December 7, 2021.

GCC cooperation level in the long run. The first reason for this is that the GCC as an institution must function correctly for the region to be stable. If the EU would take a strong position on this by negotiating only at the inter-institutional level, that could empower the GCC as an institution, which historically has been a goal of the EU. However, even though it would be arguably in the interest of everyone if the dialogue were strengthened more at the inter-regional level, probably the EU will continue to strengthen relations with the GCC states at the bilateral level in the short run. Despite some signs of improvement, in fact, there is still no concerted EU policy in the Gulf. Indeed, Member States frame relations with Gulf countries based on their national and business interests, hence undercutting the EU's ability to act as a unified actor[201].

Notably, this incapacity to reconcile various viewpoints of Member States with the EU's long-term energy agenda is not exclusive to EU-GCC relations, but it characterizes to a great extent the EU external energy policy in its entirety. For example, agreements and partnerships of the EU and its Member States with Brazil, India, China, and South Africa (BICS) in the energy sector run on parallel tracks, sometimes rivaling each other. As in the Gulf, the BICS engage with the EU and its Member States simultaneously, and the value-added of cooperating with the EU's supranational institutions is unclear[202]. Even though to date the external dimension of the EU's energy policy remains incomplete[203], in the past decade the Commission has been gaining progressive control over the Member States' external energy policy. Specifically, Decision 2017/684 equipped the Commission with significant powers over the drafting phase of bilateral agreements between the Member States and third countries, shifting the governance authority to the supranational level[204]. In addition to this, the EU regulatory framework already provides European institutions with the instruments to oversee and influence Member States' energy policy to comply with the EU's regulatory framework[205].

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[201]Author's interview with Dr. Cinzia Bianco, Gulf Research Fellow at the European Council on Foreign Relations (ECFR), December 7, 2021; Author's interview with a senior economist based in the Gulf, December 20, 2021.
[202]Michèle Knodt, and Franziska Müller, "Communication in EU External Policy: Lessons from the Bilateral Energy Dialogues with Brazil, India, China and South Africa," *ENTER Policy Brief*, no.1 (October 2019): 1, https://foreignpolicynewrealities.eu/enter-policy-brief-1-october-2019/.
[203]Indeed, Member States have retained core competences in external energy policy since the beginning of European integration, and the Lisbon Treaty assigns key elements of external energy policy under the national authority.
[204]Thaler, Philipp, and Vija Pakalkaite, "Governance through Real-Time Compliance: The Supranationalisation of European External Energy Policy," *Journal of European Public Policy* 28, no. 2 (January 2020), 209-210, 212, https://doi.org/10.1080/13501763.2020.1712462.
[205]Specifically, articles 216-218 of the Treaty on the Functioning of the European Union (TFEU) enable the EU to develop an external energy policy by influencing the framing process, the interpretation, and the revision of procedures. Specifically, article 216 of the TFEU sets out that the Union has the competence to conclude an agreement where 1. the Treaties provide so (explicit competence), 2. the conclusion of an agreement is necessary

Future developments in the EU external energy policy integration will be crucial in determining the extent of positive outcomes possibly deriving from the energy transition in the GCC, as well as in other regions. Indeed, there are already several examples of how a common approach at the EU level towards external energy strategy can also benefit the interests of singular Member States[206]. As for potential benefits for Saudi Arabia and Italy deriving from strengthening inter-regional dialogue at the EU-GCC level, on the Saudi side this could be a strategic choice as it could further legitimize and endorse the country's commitment to RE targets and serve as an element showing up the genuine willingness of the Kingdom to reform itself, both at the internal and external level. On the other hand, considering Italy's limited influence on the international energy markets, the first step towards a more substantial role could be precisely strengthening the intermediate dimension, meaning the European one.

to achieve one of the objectives expressed in the Treaties, 3. the conclusion of an agreement is provided for in a binding act, or 4. the conclusion of an agreement is likely to affect common rules or alter their scope.

[206]For example, the intervention of the European Commission in the draft agreement between the Polish gas supplier PGNiG and Russia's Gazprom on transit and extension of gas supplies through the Yamal-Europe transmission pipeline in 2010, and the Commission's support to Lithuania in negotiations with Gazprom and E.ON in the same year. See Philipp Thaler, and Vija Pakalkaite, "Governance through Real-Time Compliance: The Supranationalisation of European External Energy Policy," *Journal of European Public Policy* 28, no. 2 (January 2020), 218-223, https://doi.org/10.1080/13501763.2020.1712462.

Conclusions

Arguably, the energy transition has put the KSA in front of one of the hardest challenges in its modern history. Indeed, today Saudi Arabia has to rethink the basis of its governance model and social contract, which have been traditionally sustained by mechanisms of rentier governance based on the exploitation and redistribution of oil revenues. Placed in a precarious geopolitical scenario and faced with new regional actors and competitors, the country is called to transform the fundamental directives of its economy in the upcoming decade. This transformation, however, will not only come with economic consequences, but it could also impact the State-society relations underlying the legitimacy of the Saudi ruling elite, thus marking a historical moment with disruptive potential for the KSA. Despite this, climate change and the energy transition also offer the Kingdom the chance to build a new economic model and finally diversify its national economy.

Within this context of economic and energy diversification, Saudi Arabia and Italy have the opportunity to establish new patterns of cooperation. Indeed, while traditionally diplomatic relations between these countries have been hindered by different regional alliances and diverging positions on issues such as human rights respect and environmental protection, the energy transition could prove to be a binding force, giving the chance to relaunch bilateral dialogue on new grounds based on mutual benefits. The recent commitment of the Kingdom to global environmental goals could work in favor of Italy-Saudi Arabia bilateral and EU-GCC inter-regional dialogue if the Saudi government turns out to be serious in reaching the stated objectives. More broadly, the EU could find in the Gulf states new partners to advance its climate agenda and establish positive relations of interdependence in the context of RE technologies development and the emerging hydrogen market. That is particularly relevant considering that the EU sees significant potential in hydrogen and that its hydrogen policy has a clear external dimension. Therefore, international cooperation will be a big part of European actors' future energy policy; that being so, Italy should begin to reach out and discuss issues with potential partners like Saudi Arabia.

While it has been stated that reservations about whether the KSA will continue with business as usual or will radically change its approach towards environmental questions are motivated, it has also been observed that this question is pointless to a certain extent. Indeed, it could be argued that it does not make sense to put under question Riyadh's true motivations behind its recent climate change pledge; by contrast, it would be more reasonable for Italy and

other European actors to consider how this formal shift could provide opportunities for new positive partnerships with the Kingdom. Ultimately, however, how and whether the Saudi government will manage to ensure a secure economic, social, and political transition remains to be seen; indeed, the successful outcome of this process will depend on several factors, including the capacity of the Saudi authorities to find a valid alternative to the current rentier model of governance without undermining its political legitimacy and unity.

Considering the findings of this research, it has been demonstrated that Italy and Saudi Arabia can benefit from deepening bilateral partnerships in several fields (i.e., solar and wind power, blue and green hydrogen, CCUS technologies, power grid and distribution, gas, and water management systems). However, it has also been noted that a number of structural elements still hamper the establishment of more solid relations, among which historical tensions surrounding regional alliances and human rights respect. Secondly, thanks to the confrontation with sector associations and business consultants, it has been observed that Italian companies face structural challenges when trying to enter the Saudi market. Indeed, despite recent initiatives to deregulate the national FDI and regulatory framework for privatization, the Kingdom is still perceived as a relatively closed market, especially if compared to the neighboring UAE. In addition to this, structural limits linked to the lack of a strategic vision for Saudi Arabia, and more broadly for the GCC region, and even more the absence of an external projection of Italy's energy policy, have prevented the creation of a strategic framework of cooperation in the field of RE between the two countries.

At the same time, it has been underlined how difficulties in assessing concrete progress on Saudi Arabia's RE targets due to a lack of accessible data signals a problem of transparency on the Saudi side, which contrasts with the government's stated plans and public announcements. While as a general premise of the entire Vision 2030 it is possible to highlight a gap between targets announced by the Saudi authorities and their state of realization, this does not change the fact that opportunities in the Kingdom are concrete and investments mobilized by the Saudi government are consistent. Moreover, it has been underlined how thanks to its vast land availability and geographic positioning, Saudi Arabia owns consistent RE energy potential, particularly for solar and wind power. Furthermore, it has been observed that the Kingdom's vast hydrocarbon resources, existing industrial capacity, and business expertise make it a potential global supplier of hydrogen, particularly to those energy import-dependent economies that are beginning to explore hydrogen imports such as European countries. Indeed, in terms of EU-GCC energy trade, blue and green hydrogen arguably represent the most promising sector

of development in inter-regional and bilateral cooperation initiatives. With this regard, it has been argued that Italy and Saudi Arabia already have the instruments and institutional relations to establish a MoU for boosting bilateral cooperation initiatives in the field of RE or, more specifically, in the sector of hydrogen development.

Concerning announcements and reforms launched by the KSA, it is possible to give an overall upbeat assessment of the government's awareness of the steps forward to be taken, despite the slow pace of advancement in the privatization of the energy sector and deployment of RES. Indeed, even though sometimes measures and instruments adopted so far have been not very successful, an important reforming process has begun since the launch of Vision 2030 and, despite some delays, it is going forward. Although the energy transition will undoubtedly take longer than what publicly advertised programs state, a positive direction has been marked; concerning this, it is possible to give a positive evaluation of the Saudi business environment and prospects for foreign investors in the field of energy and new energy technologies.

On the other hand, concerning political liberalization and regime sustainability, it has been noted that Saudi Arabia could face a significant challenge in attempting to find a new solid basis for its social contract different from oil revenues. While the answer to this issue goes beyond the scope of this research, it should be acknowledged that issues of state stability are of concern for potential partners as well, not least because of possible spillover effects in the broader region. Regarding this subject, it has been suggested that the energy transition could prove to be a successful opportunity for the Kingdom to include more Saudi citizens in the policy-making process, finding new ways of enhancing youth's participation while not undermining the government's legitimacy.

On the Italian side, this research showed that Italy needs to investigate further the interrelation between the energy transition and its strategic interests. To date, in fact, Italy does not seem to have framed a strategy beyond its national borders for its decarbonization agenda. While this is comprehensible given Italy's middle posture in the international scenario and its primarily European projection in terms of energy policy and economic interests, it has been noted how the increasing deployment of RES could change existing commercial and diplomatic partnerships with actors like Saudi Arabia. More specifically, Italy seems to lack a national strategic vision with regard to the KSA and generally the GCC countries. Although this is understandable due to Italy's geographical proximity with other promising areas for the development of RES as North Africa and Eastern Europe, this does not impair the fact that the

GCC countries, and particularly Saudi Arabia, offer the opportunity to get things done earlier and to enter a market with enormous possibilities of growth for Italian companies. As for bilateral cooperation in the energy and RE field, despite the export potential of Italy, Italian energy policy and vision are still very much confined to the European space, being very much focused on national targets and lacking a vision outside the national borders to gain from a strategic point of view from the energy transition.

At the same time, it has been argued that it would be interesting to better understand structural limits and potentialities in the Saudi market for Italian SMEs operating in the field of RE. This could be done through a mass survey including SMEs operating in this sector and evaluating results together with sector associations. Indeed, it would be useful to evaluate possibilities for this part of the Italian industry to actively participate in the energy transition not only at the national level but also abroad. This consideration arises from the fact that the KSA is willing to open also to unconventional modalities of dialogue and cooperation with a view of boosting its private sector and the participation of SMEs in the market. In light of the Italian peculiar industrial composition, cooperation opportunities in this field in terms of best-practice sharing or 'twinning' between Italian-Saudi SMEs helped by an institutional framework of dialogue could open up new opportunities for both sides: for Italian SMEs in terms of reaching new markets, for Saudis in terms of R&D, know-how, and innovation.

On the Saudi side, further research is needed into the national regulatory and bureaucratic regime to identify the exact processes and procedures holding back greater progress in terms of deregulation and transparency. Internal studies should be conducted into the government sector to identify precise mechanisms and institutions to be addressed to make inter-ministerial collaboration more effective and accountable in the field of the energy transition and RES development projects and regulation.

As for EU-GCC inter-regional dialogue, this research argues that conversation over environmental issues and energy transition should be reframed if inter-regional cooperation has to be boosted. Indeed, what has been historically perceived as an obstructionist attitude of the KSA in international climate negotiations is derived from a fact situation, meaning the structural role of hydrocarbon resources in the economic and political stability of the country. In light of this, to expect oil and gas exporters like Saudi Arabia to keep their resources underground or fully diversify away from the oil and gas sector is not only unrealistic but it is also sub-optimal. This is particularly relevant considering Saudi Arabia's role as a global provider of stability in

oil and gas prices, being the only oil-producing country that can increase and reduce capacity. Thus, it is arguably both in the world's interest and of the energy transition that Saudi Arabia continues to adapt its capacity in line with global needs.

Considering that oil and gas will remain part of the energy mix in many countries for the foreseeable future, in addition to diversification a complementary transition strategy for oil and gas exporters would be to increase the resilience and the competitiveness of their oil and gas sector. That can take different forms, the most obvious of which is integrating renewables -such as solar, wind, and green hydrogen- with existing hydrocarbon infrastructures to reduce oil and gas production emissions. Similarly, it has been seen that technologies such as CCUS could also be essential for oil and gas exporting countries' development strategies, allowing them to draw on their sources of competitive advantage and mitigate the potential disruptive economic impact of the energy transition. Indeed, from the point of view of oil-producing countries, CCUS could enable these states to continue monetizing their hydrocarbon reserves more sustainably and retain the competitiveness of their energy-intensive industries also in a net-zero emissions world. At the same time, however, it has been observed how the outlook for the future deployment of this technology is still very uncertain.

As for the limits of this thesis, while the research saw potential also for Italian SMEs to be part of the global RE value chain, the interviews conducted with representatives of Italian companies operating in the RE field pointed out criticalities in the access of SMEs to foreign energy markets. However, going beyond the methodology and the scope of this analysis, the study could not provide a quantitative assessment of opportunities for Italian companies in the Saudi energy market. Further research on commercial opportunities for SMEs in the Kingdom's energy sector should be integrated with an in-depth quantitative analysis on the RE supply chain in Italy and mechanisms of internationalization to highlight and analyze criticalities. Similarly, many business aspects with potential for improvement in Italian-Saudi commercial relations have not been addressed in this thesis due to limits in the qualitative approach and the scope of the research. As for opportunities for commercial partnerships, further investigation should be conducted and integrated with quantitative analysis and scenarios.

At the same time, future research investigating Italian-Saudi relations potential should expand the research also to non-economic sectors. Apart from the economic level, in fact, it is also necessary to reflect on the social and cultural effects of Vision 2030 and how these changes can affect the Italian-Saudi bilateral dialogue, both positively and negatively. Further research

is needed on this front to better understand underlying cultural differences in the way of doing business and in the broader governance framework that might hinder bilateral dialogue and foster cooperation more effectively and successfully on both sides. While this was not the main scope of the research, hopefully, the analysis provided a first framework upon which a more in-depth cultural comparative analysis can be built in light of the social and economic Saudi framework.

Hopefully, the present study contributed to providing a comprehensive assessment of multiple the economic, social, and political challenges that Saudi Arabia faces with reference to the energy transition, providing an original point of view on potential cooperation opportunities with a country that, despite being historically linked to Italy, remains an unconventional option in comparison to other regional markets. Despite limits in Italian-Saudi bilateral cooperation, the final assessment of this research wants to be positive by recognizing that concrete opportunities have the potential to surpass existing criticalities significantly. Thanks to the integration of a number of interviews conducted with different actors of the Italian and Saudi energy sector and institutions, this research provided an insightful, original, and up-to-date overview of the current state of Italian-Saudi relations, giving an assessment of existing limits as well as potentialities for improving them. Hopefully, this thesis can serve as a point of departure for identifying and formulating targeted RES diplomacy initiatives between Italy and Saudi Arabia.

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Appendix: Interviews

This appendix presents interviews conducted by the author between November 2021 and January 2022 with researchers, consultants, and professionals of the energy sector, as well as Italian and Saudi institutional representatives. Overall, a total of eleven interviews has been collected. Each interview has been tailored according to the interviewee's specialization and work field, aiming to deepen the research framework with first-hand data and original insights.

Broadly, interviews could be divided into four main groups, namely:

- Academic interviews, conducted with Dr. Cinzia Bianco, Gulf Research Fellow at the European Council on Foreign Relations (ECFR), and a senior economist based in the Gulf (anonym interview);
- Institutional interviews, conducted with Dr. Mario Boffo, former Italian diplomate and Ambassador in Yemen and Saudi Arabia, and Dr. Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh.
- Economic-focused interviews, conducted with a Senior Advisor based in the Gulf, Dr. Jannelli, Chief Economic Advisor at the Ministry of Investment of Saudi Arabia (MISA), and Dr. Binenti, Riyadh-based economist and co-founder of the Global Think Group;
- Energy industry interviews, conducted with Dr. Marco Piredda, Head of International Affairs Analysis and Business Support at Eni's Public Affairs Department, Dr. Polina Averianova, Energy Analyst at the International Affairs Analysis and Business Support at Eni's Public Affairs Department, Dr. Marco Innocenti Degli, Head of Public Affairs APAC & MENA at Eni, Dr. Angelo Artale, General Director of the FINCO Federation, Dr. Veronica Pitea, President of the sector association ACEPER, and Dr. Walter Righini, President of the sector association FIPER.

To facilitate the reading, each interview is preceded by a short introduction presenting the main topics discussed in the form of bullet points. In general terms, the group of academic interviews discusses issues in EU-GCC inter-regional relations, investigating limits and opportunities for improving cooperation in the energy sector and highlighting recent initiatives undertaken in this direction. While doing so, these interviews also offer original insights into the Saudi system, presenting interesting perspectives on the implications of the energy transition for regime stability. On the other hand, the set of institutional interviews focuses on Italy-Saudi Arabia bilateral relations, analyzing the Italian industrial presence in the Kingdom and considering the potential for improving partnerships in the energy sector. The following three interviews focus on the FDI regulatory framework and business environment in Saudi Arabia, presenting recent reforms adopted by the KSA and discussing remaining criticalities that might prevent foreign companies from investing in the Kingdom. Finally, interviews conducted with industrial actors and associations operating in the energy sector explore both constraints and opportunities for expansion in Saudi Arabia in light of existing cooperation patterns.

Interview with Dr. Cinzia Bianco, Gulf Research Fellow at the European Council on Foreign Relations (ECFR), December 7, 2021.

Main topics:

- EU-GCC inter-regional relations: initiatives and channels of dialogue;
- Fields for deepening cooperation in the energy sector (in particular, hydrogen);
- Political willingness to strengthen inter-regional ties: historical limiting factors and new opportunities stemming from the energy transition.

Historically, non-economic factors (such as human rights and environmental protection) have been a double-edged sword in inter-regional relations between the EU and the GCC, often hindering integration efforts between the two blocks. How can the recent GCC states' commitment to the global climate agenda reshape economic relations between the two blocks (both in terms of trade, technology transfer, and education initiatives) in the field of renewable energy?

Dr. Bianco: Renewable energy has been part of the conversation between European and Saudi interlocutors for a few years already. For example, the Joint Action Program (JAP) for the Implementation of the EU-GCC Cooperation Agreement of 1988 dedicated extensive attention to renewable energy, climate, and environment. However, the fact that this subject has been part of the conversation [for quite a long time] does not mean it was easy. Still, that document (i.e., the JAP) already tackled from a technical point of view a lot of the necessary conversations to implement more environmental-friendly policies. The JAP -that was agreed in 2010 and validated in 2013- had different domains, but particularly relevant was domain no. 4, which was related to energy, nuclear safety, electricity & water security, domain no. 5, which focused on transports, and domain no. 6, on environment and climate change. This document shows how already eleven years ago there was cooperation in fields such as waste recycling, water security, electricity, renewable energy, fossil fuels, carbon capture and storage, but also joint studies for collaboration in water management, desertification, and preservation of biodiversity. The JAP was a very comprehensive document that presented all of the elements that we can find today in the EU's policy debate at the level of the Green Deal. It is important to dig deeper into this document […], which was quite an early activity in the cooperation over energy transition and climate change.

The JAP was followed by two other projects, namely the INCONET-GCC and the INCONET-GCC2, which covered respectively the period 2010-2012 and 2014-2017. These projects specifically supported inter-regional dialogue and scientific research on innovation in areas including climate change. At the same time, in 2010 the EU-GCC Clean Energy Network was established in Abu Dhabi, with the goal to expand research efforts in the field of clean energy, carbon capture and storage, energy efficiency, connectivity, and technology cooperation.

Another relevant moment for inter-regional relations was the Saudi G20 Presidency in 2020, which provided much space for the EU, via the European Commission, to engage specifically with Saudi Arabia on these issues. Many initiatives were also launched through the International Renewable Energy Agency (IRENA) and the framework of the Strategic Partnership for the Implementation of the Paris Agreement (SPIPA), thanks to which specific workshops on climate and energy diversification were held with Saudi Arabia.

Another crucial element to keep in mind when speaking about climate change in the Gulf is that […] the process of going beyond fossil fuels has profound economic and political implications for Saudi Arabia and the other Gulf countries. Climate change and the energy transition are a matter of economic and political stability for Saudi Arabia. That is the reason why the KSA and countries in the Gulf perceive climate policies as threatening to their stability, and they have adopted for a long time an apparent obstructionist attitude […] in international negotiations, such as the Kyoto Protocol, the Paris Agreement, and all the COP events, including the last one in Glasgow. The concern of these countries is that climate protection initiatives could translate into an all-out attack against the fossil fuel industry and that international pressure to move beyond fossil fuels could happen too quickly without thinking about potential implications for economic and political stability in oil-producing countries. Hence, there is a tension that was already evident 10-11 years ago and even longer, between the attempt of international players such as the EU to push the GCC countries to cooperate on climate and the willingness of these countries to do so, and, at the same time, the GCC states' concerns of implications for that. […] Nevertheless, the JAP and all of the initiatives that came after it provide a number of platforms for technical discussions and cooperation, technology exchange, know-how, and even policy dialogue, and that place topics like climate and energy as subjects that have a concrete potential for the EU-GCC relations.

For the GCC states, boosting the development and the deployment of renewables is a way of answering multiple priorities, such as protecting the environment, promoting innovation, and decreasing unemployment among nationals. How can European actors help tackle some of these security and economic challenges facing the GCC region?

Dr. Bianco: From the point of view of oil-producing countries, what we are talking about when discussing energy transition away from fossil fuels is the risk of losing revenues and jobs. Therefore, the best way […] the EU can tackle those concerns is by presenting credible climate-friendly alternatives to oil and fossil fuels that can generate similar revenues and create new jobs. The ideal way is to remain in the frame of energy and move towards renewable energy; this is why I am focusing mainly on green hydrogen in my research. According to a report written in 2021 by the MENA Hydrogen Alliance, green hydrogen could create up to one million new jobs, directly and indirectly, in the GCC countries and generate up to two hundred billion in annual revenues by 2050. The potential is immense, not least because it is possible to use the sum of the same infrastructures already employed in some energy

industries, such as gas infrastructures and some oil-producing companies' infrastructures, and repurpose them for green hydrogen in a way that also traditional energy companies can remain relevant and be part of the transition, preserving jobs and generating revenues. Another estimation by Bloomberg New Energy Finance states that the international hydrogen market could be worth up to eleven trillion USD in the next thirty years. The potential is enormous, and this is why hydrogen could also be presented as a valid alternative for GCC states. Indeed, hydrogen could make it possible for traditional oil and gas firms to remain relevant because the specifical of how many infrastructures can be reused is quite significant. Indeed, it is possible to reuse port facilities, LNG export and import terminals, gas pipelines, and even salt domes for storage.

You stressed that there is significant potential for EU-GCC cooperation stemming from the energy transition. Is there acknowledgment at the EU level about this potential, or is the GCC region simply not on the top priority list of the EU?

Dr. Bianco: The answer is mixed. On the one hand, the GCC region is not on the priority list of the EU. Specifically, concerning renewables and energy transition, initially the EU was looking much more at North Africa and the Southern Mediterranean countries. There are multiple reasons for that: first of all, the EU has deeper relations with these countries; secondly, these countries are geographically closer to Europe; and thirdly, the EU has a strategic interest in supporting economic development in those states, according to the idea that regional economic development would cut back some of the migration pressure towards the Union. Nevertheless, the EU is increasingly aware that the potential to get things done quickly is much higher in the GCC states because they already have better energy infrastructures and more liquidity, and the energy transition will require many investments. Thus, the conversation over the GCC is shifting.

Traditionally, economic cooperation between European actors and GCC countries has developed more at the bilateral level than multilateral. Is this situation evolving? Is there currently room or willingness to improve economic relations between the two blocks after the negative conclusion of the Free Trade Agreement in 2008?

Dr. Bianco: When the EU and the GCC started negotiations over a Free Trade Agreement (FTA) there was mutual interest in signing it. Today, a series of strategic interests on both sides to sign a FTA is no longer in place. Indeed, European firms already export enough to the GCC, while the GCC countries export almost nothing towards the EU, and particularly nothing beyond products associated with the fossil fuel industry. Consequently, it would make no sense from a political standpoint if the EU would sign a FTA with countries that only export energy products, which are highly polluting. The 2008 FTA is famous because it is a massive failure story in the history of inter-regional EU-GCC relations, but it is not that relevant from a policy perspective and especially from an energy perspective.

What is more relevant today are the Cooperation Arrangements, which are policy deals signed between the EU and individual GCC countries. I believe the way forward [will be marked by] bilateral cooperation between individual European and GCC countries and, at the same time, cooperation between the EU and singular GCC states. These two levels of cooperation will continue to coexist, especially in the energy field, where many European firms are involved in energy and renewable energy projects in the GCC. Indeed, individual European countries have a clear national interest, and there is no way to walk back from that. For example, France and the UAE are very active in the front of renewable energy and particularly nuclear energy for the production of green hydrogen. Overall, a lot is going on bilaterally, and this is very much related to commercial interests by specific firms; this will remain, but it will be accompanied by an EU-level approach with individual GCC countries. Moreover, it makes much more sense for the EU itself to deal with individual Gulf countries, considering that the GCC as an institution has been weakening […].

This interview has been edited for length and clarity.

Interview with a Senior Economist based in the Gulf, December 20, 2021.

Main topics:

- EU-GCC inter-regional relations: initiatives and channels of dialogue;
- GCC integration process: perspectives for a common energy policy;
- Implications of the energy transition on the GCC countries' regime stability.

Historically, non-economic factors (such as human rights and environmental protection) have been a double-edged sword in EU-GCC inter-regional relations, often hindering integration efforts between the two blocks. How can the recent GCC states' commitment to the global climate agenda help improve inter-regional relations in the field of renewable energy (either in terms of trade, technology transfer, or education initiatives)?

Interviewee: First of all, the EU and the GCC states should be able to trade energy once the necessary infrastructures are in place. Indeed, due to their geographical location, the GCC states use electricity the most during summer when European countries use it the least. Thus, when grids are connected with cables having sufficient capacity, there will be an excellent opportunity for energy trade. The fact that the two blocks could buy energy from each other during their peak demand -instead of relying only on their local capacity- will make it possible for a region to install a lower capacity. A second element that might determine opportunities for energy trade between the two blocks is related to the fact that GCC states, including Saudi Arabia, have a low population density and much space. This is particularly useful for solar technologies and, to some extent, wind technologies. By contrast, European countries […] have a higher population density and do not have much space for solar panels. Therefore, judging on purely economic grounds, there are conditions for the EU and the GCC states to trade energy.

Regarding technology transfer and knowledge sharing, the EU and the GCC could cooperate in this field as well. Indeed, renewable energy technologies require tailoring to work efficiently in the GCC climate. Solar energy technology developed in Germany, for example, is not highly efficient in the Gulf because of dust, high levels of heat, and humidity. […] Thus, it would make sense for Saudi, Emirati or Kuwaiti engineers to collaborate with European ones to tailor such technologies according to regional needs. At the same time, there are some areas where Gulf states could potentially lead innovation. For example, Saudi Arabia is making significant advances with hydrogen technology, desalination technologies, and cooling systems. If the Gulf countries make the right investments, they could export this knowledge to the EU.

As for the willingness to improve inter-regional cooperation, some considerations are needed. First of all, the EU is a vast economy and, as such, its need to engage economically with the rest of the world is less significant than the GCC states, which have smaller economies, concentrated in specific sectors, and minimal domestic manufacturing capacity. In addition to this, external trade as a percentage of GDP is much smaller for the EU than for the GCC. Besides this asymmetry in the economic imperative to

establish links, historically the EU has tied its economic objectives with political and environmental goals. Despite changes in recent years, this is a potential barrier in inter-regional relations. Indeed, human rights in countries like Saudi Arabia are not at the level the EU would typically engage with; as for the environment, the GCC countries are among the highest per capita energy consumers and carbon producers at the world level, […] and traditionally they have not been interested in pursuing environmental-climate goals of the EU. The GCC governments would like to engage with the EU on purely economic grounds, accessing the European knowledge, R&D, and markets to increase their exports and economic diversification, […] separating economic and political dossiers.

All things considered, I would say that willingness [to cooperate] is significantly higher from the GCC side than from the EU. However, the recent GCC governments' commitment to global environmental goals could work in favor if they turn out to be serious. In fact, given the US and China fluctuating commitment towards the global climate agenda, the EU could look for new partners to advance its climate objectives. Therefore, there are some potential positive changes on this front, even though it is too early to judge. In the end, what will be decisive will be the GCC states actual implementation of what they have promised.

Economic cooperation between European actors and GCC countries has traditionally developed more at the bilateral level than multilateral. Is this a winning strategy for fostering inter-regional dialogue?
Interviewee: The EU could be more successful by working at the bilateral level in the short run. However, it would be better to insist that things happen at the GCC level for several reasons in the long run. The first reason is that the GCC as an institution must function correctly for the region to be stable. If the EU would take a strong position on this by negotiating only with the GCC, that could empower the GCC as an institution, which historically has been a goal of the EU. […] However, probably the EU will continue to strengthen relations with the GCC states bilaterally in the short run, since European actors continue to undercut the EU action by working at the bilateral level to pursue their own economic objectives, which puts pressure on the EU to conclude itself bilateral deals not to get too much marginalized. Nevertheless, it would be in the interest of everybody if the dialogue were strengthened more at the inter-regional level.

For the GCC states, boosting the development of renewable energy answers multiple priorities, such as protecting the environment, fostering innovation, and decreasing unemployment. However, despite initiatives undertaken at the national level, climate policy integration among the six GCC countries is still limited. How does this element affect regional efforts towards the energy transition?
Interviewee: First of all, it is necessary to refocus the level of priority that the GCC governments face in relation to the energy transition. First and foremost, the priority of the GCC states is regime stability. Even though unemployment and falling oil prices are considered major threats, the countries' power structure and political dynamics -resulting from an oil-based economic development- are way more

determining. For example, generally the private sector is very fragile and lacks innovation in Gulf countries. This is not by accident but by design: Gulf governments want economic power to be concentrated in their hands through oil and gas revenues, which are then redistributed through a political patronage system. This is why there is a reluctance to adopt some of the measures required by the energy transition, as these reforms would imply that the political power becomes less centralized and could create sources of power in the society that would not be under the direct influence of the ruling political elite. Clearly, the GCC governments understand that some changes will be necessary in the near future; however, we should not underestimate the reluctance to let go of any economic power being in their hands. This is evident, for example, in the way Saudi Arabia is fostering renewable energy, which happens to be in a highly centralized and top-down way. To a great extent, this is something that is fundamentally at odds with the energy transition.

As for regional cooperation, notably GCC states have established nearly no joint ventures between one another, and almost all the joint ventures that Saudi Arabia, Oman, the UAE, and Qatar have set up are with international companies. This is linked to the fact that GCC governments perceive energy as deeply related to their national independence and security, and they have always been reluctant […] to cooperate in this field because traditionally bigger countries have not respected the sovereignty of smaller countries. This is something we also see today with renewable energy. Indeed, GCC states could establish joint research centers in the field of solar energy, considering they have the same climate and similar pooling resources (especially countries like Bahrain and Oman). Definitely, they would benefit more from cooperating at the regional level rather than solving these problems alone. Nevertheless, to date the GCC governments have established only very superficial relationships beyond the OPEC umbrella because of the dominant destructive notion of international relations [which still dominates intra-regional dialogue].

Could economic competition between Saudi Arabia and the United Arab Emirates, and eventually economic development and diversification of other GCC states, create more balanced intra-regional relations?

Interviewee: There is a fundamental difference between the EU and the GCC. When the EU was conceived, the balance of power […] prevented any country from dominating the others. By contrast, the GCC has always been characterized by a complete imbalance, that is Saudi Arabia being much bigger than other countries of the region. In the beginning, Gulf states were united in a sort of 'defensive block' because of the Iraq-Iran war. However, once that threat subsided, Saudi Arabia began […] expecting that other GCC countries did what it told them to do. This is the fundamental problem of the GCC [integration process]: there is no balance of power. For the foreseeable future, this will stop the GCC governments from realizing their goals unless the Saudi foreign policy has an 'epiphany' and [the Kingdom] understands it would be in everyone's interest to operate in a block where there is reciprocal trust and respect for national sovereignty.

As for economic competition with UAE, as long as it is constructive, it is generally favorable […] because it raises the bar for everyone. Indeed, apart from some retrograde policies -such as Saudi Arabia's ultimatum to international companies to move their regional headquarters to Riyadh or lose out on government contracts- the enhanced economic environment in Saudi Arabia is boosting reforms in other Gulf countries as well. However, economic competition is not enough to counterbalance the military and political imbalance [in the GCC]. It would only work, for example, if Kuwait, the UAE, Qatar, and Oman would create one block to counter-balance Saudi Arabia, but this is not likely to happen for the foreseeable future. Instead, probably economic competition will generally benefit the GCC states' economic environment, but the GCC will continue to operate significantly below its potential because of deficiencies in the political philosophies of its member states.

Do you believe that the GCC states, and particularly Saudi Arabia, have already found a substitute for oil revenues to sustain their social contract?

Interviewee: First of all, it should be reminded that, without foreign interference, there has never been a successful revolution unless the armed forces sided with the rebels. That was the case in Egypt in 2011, when the army sided with the rebels against Mubarak, in Syria in 2011, where there was a split in the military, in Tunisia, where the army clearly sided with the rebels. This is simple power politics: who has the weapons holds power. This applies to Gulf countries as well, where armies are not effective by design due to the monarchies' fear of a military coup, especially since the pan-Arab movement spread from Egypt to Syria and North Africa in the 1950s and 1960s. […] This is why, for example, Saudi Arabia struggles to protect its borders with Yemen. In the GCC countries, armed forces are not national armies, but above all they are praetorian guards, meaning that they are the personal defenders of the King or the head of state. While many aspects of the traditional social contract will become unsustainable in the near future, keeping the status of the praetorian guards unchanged will still be possible for the next twenty or thirty years. […] As long as there will be enough revenues to pay for the praetorian guards, there is no way that the military will ever side with the rebels, and therefore there will not be any fundamental threat to the basic stability of the regime. Moreover, whereas in the past the US adopted an interventionist stance in Iraq, Afghanistan, and Libya, it is clear that today nor the US, China, or the EU are interested in interfering military in the Gulf.

This does not mean that the GCC governments will not face political turbulence and turmoil domestically. However, if the energy transition does not succeed, as oil prices fall and oil revenues decrease, it is likely that these countries will slowly become more repressive. Currently, the GCC states are trying to preserve their social contract by staying rich and diversifying their economies, but without granting any political concession. However, as soon as this process implies political benefits, there could be a strong pushback.

[An important question concerning the future of the GCC is whether] it will be possible to diversify the economy successfully without political liberalization. Ten years ago, I would have said it is possible to have economic success only to a certain degree, but not at the level necessary to maintain GCC living standards, especially in countries like the UAE or Qatar. However, the UAE managed to do something very Machiavellian, exploiting the political decay in Western democracies. […] Indeed, the political dysfunction of Western democracies has become so evident -even more following the Covid-19 pandemic- that people living in Western countries are willing to move to the UAE […] where -even though there is not a democracy- they can enjoy high living standards, well-functioning infrastructures, etc. […]. The UAE managed to create a possibly unique model that may allow maintaining its social contract. However, it has to be noted that the UAE enjoys a particular socio-economic context, where national citizens are just 10 percent of the total population and can be co-opted through the praetorian system, while the remaining 90 percent of the population is made up of migrant workers who are either too poor to even care about political liberties or rich enough to enjoy their lives and give up on political concessions. Although things could change in the future, to date it could be difficult, not to say impossible, for other GCC countries to replicate this model.

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Interview with Dr. Mario Boffo, former Italian diplomat and Ambassador in Yemen (2005-2009) and Saudi Arabia (2013-2016), December 7, 2021.

Main topics:

- Italy-Saudi Arabia Memorandum of Understanding (2021);
- Italy's industrial presence in the Kingdom;
- Perspectives for improving Italy-Saudi Arabia bilateral dialogue in the energy sector.

Following the regime change in January 2015 and the progressive takeover of power by Crown Prince Muhammad bin Salman, the Kingdom of Saudi Arabia has formally launched important initiatives to modernize the country from an economic and political point of view. Do you believe that the reforms envisaged by the Vision 2030 program will impact the Saudi government model?

Dr. Boffo: The objectives of the Vision 2030 plan are fundamentally economic, although with some social implications. Among the main goals, there are overcoming the country's dependence on oil, establishing a more structured economic diversification program, and modernizing the society by opening up to activities that have been prohibited until recently (such as foreign tourism, entertainment, the possibility for women to drive, cinemas, music concerts, etc.). However, I do not believe that a change in the model of government is within the scope of the Vision 2030 plan. Indeed, although recent openings have been very welcomed by the people, especially by the youth, serving as a source of political consensus, they do not modify the fundamentally authoritarian structure of the Kingdom. For example, they do not recognize political dissent or religious pluralism, and women are still subject to the juridical minority (i.e., male guardianship system) based on Sharia law despite being officially allowed to drive. Whether or not Vision 2030 will serve the affirmation of fundamental rights in the long run, including the right to dissent, remains to be seen. Under current circumstances, however, with Mohammed bin Salman now in office as Crown Prince and soon as King, I doubt this will happen.

During the Saudi Green Initiative launch, Saudi Arabia announced its willingness to achieve a zero-emissions target by 2060. This goal, paralleled by a very ambitious economic diversification plan, opens up numerous opportunities for foreign investors. How does Italy fit into this panorama? Based on your experience, in which industries is our country better placed to succeed in Saudi Arabia?

Dr. Boffo: The development of green energy is one of the pillars of the Vision 2030 plan to replace oil for internal use and save it as much as possible for export. This strategic objective fits the broader global goal of reducing fossil fuels and represents a significant opportunity for foreign investors. However, currently infrastructure construction companies probably represent the most important Italian industrial presence in Saudi Arabia.

Despite its historical and consolidated presence within the country, if compared to other European actors, such as Germany or France, Italy seems to struggle to establish itself as a prominent partner

for Saudi Arabia in strategic sectors such as defense or energy. According to your experience, what factors determine this inability?

Dr. Boffo: Italy would benefit from a more incisive and pervasive presence at various levels in Saudi Arabia. In the effort of doing this, during his mission to Saudi Arabia in January 2021, Foreign Minister Luigi Di Maio met with Crown Prince Mohammed bin Salman and Foreign Minister Faisal bin Farhan Al Saud. At the center of the talks, there was the Italian G20 Presidency, the fight against Covid-19, and the strengthening of economic and commercial relations between Italy and Saudi Arabia. At the end of the meeting with his Saudi counterpart, the two ministers signed a Memorandum of Understanding (MoU) to launch a bilateral strategic dialogue between Italy and Saudi Arabia. This MoU should be acted on by Italy dynamically and systemically, combining the promotion of economic opportunities with the Italian strategic projection in the Gulf region and making the most of every viable channel of collaboration with Saudi Arabia, also at the international level. In this way, there would also be more room for expansion for the Italian energy sector; on the other hand, a broader strategic approach, rather than strictly commercial, is essential for the defense sector.

In the light of your experience as Italian Ambassador to Saudi Arabia, which initiatives should be undertaken at the bilateral level to improve Italian-Saudi economic cooperation in the energy sector?

Dr. Boffo: Italy can offer significant expertise to the Kingdom in the field of renewable energy: Enel, Eni (for the green component), Terna for power grids, but also small and medium-sized component industries provided that bigger contractors coordinate them well. I am sure that the Kingdom would gladly welcome Italian proposals for collaboration, as long as they are reliable, concrete, and based on continuity.

This interview has been translated and edited for length and clarity.

Interview with Dr. Valerio Cendali Pignatelli, First Secretary for Economic and Commercial Affairs at the Italian Embassy in Riyadh, December 22, 2021.

Main topics:

- Italy-Saudi Arabia Memorandum of Understanding (2021);
- Italy's industrial presence in the Kingdom;
- Perspectives for improving Italy-Saudi Arabia bilateral dialogue in the energy sector.

In January 2021, Minister Luigi Di Maio and the Saudi Minister of Foreign Affairs Faisal bin Farhan Al Saud signed a Memorandum of Understanding to strengthen bilateral dialogue and foster economic and commercial relations between Italy and Saudi Arabia. What are the main channels of collaboration identified at the commercial level?

Dr. Cendali Pignatelli: The MoU signed in Al Ula by Minister Di Maio and his Saudi counterpart provides a strategic framework to enhance political cooperation beyond economic and trade relations. This includes cooperating on the main crisis hotspots in the MENA region and confronting in the United Nations' context for the resolution of these crises. Clearly, strategic dialogue at the political level also opens the door for strengthening economic and commercial cooperation, which is crucial in the case of Italian-Saudi bilateral relations. Indeed, Saudi Arabia is primarily a commercial partner for Italy, which has a historical political partnership with Iran. Notably, the Iranian Minister of Foreign Affairs visits Rome every four months, with a recurrence that is not comparable to that of the Saudi Foreign Minister.

Opportunities in the Saudi market are encouraging. Indeed, there is already a robust presence of Italian companies and, within the framework of Vision 2030, there is excellent potential to increase and strengthen this partnership. However, to date a specific MoU between the Italian Ministry of Ecological Transition and the Saudi Ministry of Energy in the energy sector is not in place, although other European actors such as Germany have already established something similar. Nevertheless, contacts are well established, and they are favored by the fact that Saudi Arabia hosts the International Energy Forum (IEF) in Riyadh, an international body that aims to promote dialogue between energy producers and consumers. Regarding this, for example, the IEF will hold a ministerial meeting next year, which could be an opportunity for Minister Cingolani to come to Saudi Arabia and get in contact with a series of institutions, including the Saudi Ministry of Energy and economic partners present in the country.

Italian manufacturing and infrastructure construction companies currently represent the most relevant Italian industrial presence in Saudi Arabia. What are the perspectives for Italy's industrial expansion in the field of energy and renewable energy in Saudi Arabia? How can SMEs participate in the clean technology value chain?

Dr. Cendali Pignatelli: Beyond institutional relations, Italian companies are well present in the energy sector as well. [...] For example, Saipem has a robust presence in the country, where it operates in the area of Dammam with six thousand employees and is one of the main contractors of Saudi Aramco for

extraction. In addition, agreements between Saudi Aramco and Eni are also in place for oil supply. Snam is also entering the Saudi market in two strategic sectors, namely hydrogen -through the joint venture between Thyssenkrupp and its subsidiary De Nora, thanks to which Snam has been awarded the supply of electrolysis plants for a total of 2 GW for one of the largest green hydrogen production projects in the world in the city of Neom- and the Saudi gas network, which Saudi Arabia is trying to develop to exploit better its vast resources. Although negotiations are still ongoing, Snam is in an advanced negotiation phase, and there have already been public statements. Entering the business of the Saudi gas network modernization could be a very strategic move because in the medium term the existing gas networks (in Europe, as well as in the Middle East) could be converted for the distribution of hydrogen.

As for the renewable sector, the country holds high potential for both solar and wind power [...]. Indeed, Saudi Arabia aims to realize 50 percent of its energy needs from renewable sources by 2030, mainly through solar and wind technologies. Concerning this sector, at the moment Enel's presence in Saudi Arabia is not comparable to Saipem or Snam; however, considering that investments in this field are consistent and that the resources put in place for renewables are significant, it is likely that during the next decade Enel will appear on the Saudi market. To date, however, Enel […] operates mainly in Europe, North and South America. Generally speaking, the tools to access opportunities stemming from the Saudi energy sector are direct calls from the Saudi Ministry of Energy or the Private Investment Fund (PIF), which mainly operates with direct negotiations through ACWA Power, the Saudi champion for renewables.

[Looking at the Italian industrial presence in Saudi Arabia on the whole,] the infrastructure sector is the primary area of economic and trade relations. This sector will be crucial also in the coming years because tremendous investments are being made under the Vision 2030 plan. Concerning this, among the Vision 2030 VRPs, the Real Estate Program should gaze maximum attention as, given the high population growth rate in Saudi Arabia, an extensive real estate investment program has been launched. As a general premise of the entire Vision 2030 program, it is necessary to highlight a gap between announcements and state of realization. For example, in the Neom site little has been realized to date […]. Even though this is valid as a general criterion, this does not change the fact that opportunities in Saudi Arabia are real because there are substantial financial resources to mobilize. That is to say that, despite the huge gap between announcements and implementation, eventually Neom will be done. Probably, it will not be completed by 2030, but by 2035-2040 the city could be ready, and this would not be a small achievement. Similarly, although the goal of producing 50 percent of its energy capacity from renewables will not be reached by 2030, Saudi Arabia could concretely achieve this by 2040 [...]. Expectations that Saudi Arabia will eventually achieve its goals can be drawn by the fact that Riyadh has already managed to conclude many of the projects launched at the beginning of 2010. For example, the Kingdom has almost completed its new financial district in Riyadh, and its metro will be ready at the end of 2022 with a network of six metro lines and 85 stations.

As for Italian SMEs operating in the energy sector, many of them are destined for the European market. However, medium-sized Italian companies are very strong in Saudi Arabia in the export of machinery, such as pumps, drainage pumps, production lines, or packaging machines. That is typical equipment of Italian companies located in the center-northeast of Italy. Usually, these companies get in touch with Saudi companies thanks to intermediaries, and export in a traditional way, without necessarily opening a branch in Saudi Arabia. Other sectors where Italian SMEs operate are furniture and agri-food. However, a certain 'size' is needed as far as the construction, infrastructure, and energy sectors are concerned.

Following the Italian stop to arms sales to Saudi Arabia and the UAE in January 2021[207], there has been a political confrontation at the national level about Italy lacking a strategic view in its export policy. Among other proposals, it has been suggested to establish an inter-ministerial board to coordinate choices in export policy, with particular attention to industries of strategic nature like defense. Do you believe this proposal could also apply to energy and energy technology export?

Dr. Cendali Pignatelli: Technically, the Italian Ministry of Foreign Affairs suspended with Saudi Arabia one of the licenses for RWM Italia S.p.A. and other armament material for Eurofighter jets. Italy, however, continues to cooperate with Saudi Arabia in the defense sector. For example, Leonardo S.p.A. is present in the country in strategic sectors such as cyber defense and anti-drone systems, which are very important for Saudi Arabia, which is vulnerable to drone and missile launches from its borders with Yemen. [...] Leonardo S.p.A. is also present in sectors with civil implications, such as cyber defense infrastructures in the city of Neom. The defense sector is vast, and Italy continues to cultivate its partnership with the Kingdom in this field, especially considering that now Saudi Arabia is trying to get out of the war in Yemen, declaring its willingness to sign a ceasefire agreement.

Concerning the potential creation of an inter-ministerial board, in 2019 the Minister of Foreign Affairs Di Maio promoted a reform that assigned to the Ministry of Foreign Affairs competencies in the field of export policy that previously were in the hands of the Ministry of Economic Development, including authorization permits and aspects of the Chemical Biological Radiological Nuclear (CBRN) sector. […] Actually, it would make sense to cultivate a strategic export control policy; however, export control refers to all those materials that, directly or indirectly, can have an aggressive purpose and does not include the energy sector.

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[207]The suspension concerned one of the licenses for RWM Italia S.p.A. and other armament material for Eurofighter jets. Restrictions were then loosened in July 2021, with the revoke of the strengthened end-user certificate (EUC) clause necessary for exports to the UAE and the KSA. Nevertheless, weapons licenses revoked in January, including the sale of some 12,700 missiles, remained on hold. See Chapter 1.1.1, p. 14.

Interview with a Senior Advisor based in the Gulf, December 20, 2021.

Main topics:

- Limits in the FDI regulatory framework in Saudi Arabia;
- Initiatives to improve the Saudi business environment;
- Saudi Arabia's progress on giga-projects and financial transparency.

Despite plans of boosting annual FDI to nearly 19 billion USD by 2020, FDI remains short of target in Saudi Arabia (last year it was 5.5 billion USD). Nevertheless, the Kingdom has raised the stakes again, and it plans to reach 100 billion USD in annual FDI by 2030. Is this goal realistic? Are there structural limits in the current investment regime in the KSA?

Interviewee: It is impossible to give a straightforward answer to this question, precisely due to problems of fact-finding and the lack of access to reliable information that would allow a credible assessment. Based on publicly available information, I believe that the annual target of 100 billion USD in FDI is a political target, even though the local leadership has invested a lot in the objective of attracting foreign investments (for example, through the creation of the Ministry of Investment). Indeed, on the one hand, the Saudi authorities are undoubtedly willing to address those structural limitations you mentioned and overcome them. On the other hand, however, as far as the feasibility of their goals is concerned, this target signals more a political will [rather than a realist objective].

Structural limits in the Saudi regulatory environment are mainly linked to the legal framework and, more broadly, to the business environment. However, there have been some positive signs of awareness from the Saudi authorities of the need to revise the legal framework, also in terms of secularization. What is difficult to evaluate is to what extent these announcements will develop into concrete projects. The limits of the Saudi legal framework and business environment can also be sensed in the increasing competition between the Kingdom and the UAE. Indeed, the Emirati business environment is much more friendly for [foreign] investors, as reforms have been adopted way back. To some extent, by announcing that it will revise the legal framework in a secular direction, Saudi Arabia is trying to emulate the Emirati model. Another relevant element that, on the one hand, indicates the structural limits of the Saudi business environment and, on the other one, the willingness to revise them, is that the KSA is moving towards the creation of Free Zones, meaning special zones placed under a legal framework based on Common Law.

Another limit to FDI in Saudi Arabia is the slowness of procedures and the level of bureaucracy that all operators doing business in the Kingdom complain about. This is also the result of the Saudi labor market structure, where nationals are mainly employed in the public sector and there is a proliferation of public bodies and offices that answer the need to redistribute income among nationals through the labor market.

On February 15th, the Saudi Minister of Finance issued an ultimatum according to which foreign firms must set up their regional headquarters in the country by the end of 2023 or risk losing out on government contracts. Is this initiative a successful way to incentivize international investments?

Interviewee: As for the initiative's effectiveness, this measure has already produced some positive effects, as several companies have expressed their willingness to open their headquarters in Riyadh. However, the attractiveness of a country is built on various elements and not on impositions. From this point of view, Saudi Arabia has sent a distorted signal to the international community. Certainly, as a first result, this measure will translate in the opening of new headquarters of large and important companies in Riyadh. However, this is definitely not an orthodox instrument of attracting FDI, and probably the international investment community will evaluate it as such.

In addition to this, this decision should be read in terms of regional competition. Indeed, the UAE is a successful example of what it means to move an international community. Apart from the business environment, in fact, it is necessary to consider all that expatriates need to live, meaning infrastructures, education, lifestyle, etc. However, Saudi Arabia is also making great efforts in this direction.

Overall, I would give an upbeat assessment of the Saudi executive's awareness of the steps forward to be taken, even though so far the measures and the instruments adopted have been somewhat unorthodox and perhaps not very successful. Even though it will take a long time, a reform process has begun and is going forward, and concerning this it is possible to give a positive evaluation.

Giga projects such as the futuristic city of Neom have been a relevant part of the Kingdom's plans to attract FDI. However, concrete progress on these projects is difficult to access. Does this signal a problem of financial transparency in the Kingdom?

Interviewee: There is a real difficulty in tracking the progress of these projects. Actually, the Kingdom's direction is one of continuous growth. For example, within the framework of the Neom project, the Kingdom has recently announced a new industrial city called Oxagon to transform the local port into a trade and manufacturing hub. There is a continuous proliferation of projects, but it is not easy to access the state of advancement. […] This has to do with a series of structural limits already mentioned and with the fact that the country has still a long road to take to go in the right direction, but also with the attempt of the political leadership to convey in a very emphatic way a message of change with respect to its internal constituency. As a matter of fact, these projects serve a double need, playing a role both at the domestic and external level.

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Interview with Dr. Luciano Jannelli, Chief Economic Advisor at the Ministry of Investment of Saudi Arabia (MISA), January 3, 2021.

Main topics:

- MISA's role in the Saudi energy transition;
- Saudi Arabia's progress in energy diversification targets;
- Reforms to enhance the Saudi investments environment.

How is MISA involved in the Saudi Government's objective to create a more balanced energy portfolio within the framework of the Vision 2030 targets? How can MISA promote diversification of the economy away from the oil sector?

Dr. Jannelli: The role of MISA is to promote investments in the Kingdom, without distinguishing between foreign and domestic investments. Having said so, obviously MISA wants to play a key role in attracting foreign investments, and particularly foreign direct investments (FDIs), which are a key component of sustainable growth and, as such, one of the main pillars of the country's Vision 2030 program.

As for MISA's involvement in creating a more balanced energy portfolio within the framework of Vision 2030, it is important to stress that MISA is not directly working at a target of diversification, as its primary role is to promote and attract domestic and foreign investments, which have a positive and sustainable economic impact, independently of the sector to which they belong.

MISA does so by operating in two ways.

Firstly, it has a general regulatory/policy-setting function. In other words, MISA promotes and creates a general Saudi investment regulatory framework (such as investment laws) that gives investors certainties wherever they invest in the country and in whatever sector they invest in. Within this mandate of policymaker, MISA also endeavors to reduce unnecessary administrative burdens on the investors and to help investors as much as possible. To that purpose, MISA also acts as a "one-stop-shop", acting as a facilitator for investors in reaching out to various authorities depending on which sector they want to invest in. As such, the Ministry hosts at its Head Office representatives of other governmental entities, responsible for regulating specific economic activities, and plays a coordinating role to reduce the time for registering investments.

Secondly, the Ministry not only sets out the overall regulatory frameworks and helps out wherever administrative hurdles have to be overcome, but it also attracts and facilitates specific investments with the support of internal specialists across the different sectors of economic activity, such as tourism and entertainment […], but also mining and materials […], and education. MISA facilitates investment projects that can be fully or partly owned by foreign entities. MISA promotes investments in a sector-agnostic way and has no targets to promote investments away from the energy sector. Having said so, given the Ministry's mandate to promote long-term sustainable investments, it is only natural that over

time the Ministry will oversee investments that are increasingly more in low-carbon sectors, such as also renewable energy, alongside investments in the traditional energy sector. This will naturally follow from our mandate to promote investments that sustainably add value to the economy and create jobs for young Saudis.

As a Ministry, MISA wants to promote sustainable investments over the longer term and is working on defining criteria for sustainable investments also looking at what other countries are doing. As mentioned, by defining policies that determine whether an investment is sustainable or not according to specific criteria -whether labeled as ESG[208] or Sustainable Finance or otherwise-, the Ministry has already started pushing in a direction that is characterized by more renewable energy, more energy efficiency and ultimately increasing abatement of CO2 emissions. Within its mandate of policy setting, MISA is looking thoroughly at this. A lot of work still needs to be done in this regard and I would like to stress that the European Union -which has one of the most advanced jurisdictions globally in this matter- is still struggling in defining a taxonomy for sustainable investments (as is the case of other advanced jurisdictions which – globally – can be counted on two hands[209]).

[To sum up], the Kingdom -like all other countries- is still in the defining process of the taxonomy and regulation of sustainable investing, and it recognizes that it has -like all other countries- a very steep learning curve ahead. However, we are working hard on this […] by setting the proper policies that, over time, will diversify [the country's economy] away from the oil sector.

The KSA has committed itself to ambitious renewable energy development goals; however, the country continues investing in fossil fuels and plans to raise its daily crude-production capacity to 13 million barrels by 2027. While this is understandable with a view of maintaining stable oil and gas prices, it has also been argued that renewable energy is not at the center of the Kingdom's investment objectives. How is the MISA balancing investments between fossil-fuel industries and renewable energy technologies?

Dr. Jannelli: First, we need to consider two basic facts: 1) today, the Saudi economy is not yet sufficiently diversified, and 2) the world needs oil. These are factual situations, which we need to take into account. Then, when we talk about investment objectives, there is a recognition in the Kingdom that the country could have a significant comparative advantage in renewable energy sources, such as solar and wind, which are very stable in Saudi Arabia. Because of that, the Kingdom also has an advantage in developing green hydrogen. Indeed, green hydrogen needs wind and solar energy, while blue hydrogen needs methane gas, and Saudi Arabia has both in stable quantities. This is very important because, even though hydrogen is not as efficient as electricity by definition (even though electricity strictly speaking is not an energy source) […], hydrogen is essential to decarbonize specific sectors,

[208]Stands for "Environmental, Social, and Governance" criteria.
[209]UK, Switzerland, Japan, Singapore, Hong Kong, New Zealand and Brazil.

such as steel, cement, and the production of fertilizers. Moreover, considering that the country is rich in minerals and metals, Saudi Arabia is well-positioned not only to decarbonize the above-mentioned hard-to-abate sectors, but it also has the raw materials (mainly metals) required in the space of electrification of mobility.

Notably, however, a global issue is that currently ninety-five percent of hydrogen production is grey hydrogen, which is produced through a highly polluting process. Thus, there is still so much to do in technological progress. Saudi Arabia is therefore working with major global energy and utility companies to develop those technologies. In addition to this, the Kingdom is cooperating with global financial institutions to define the taxonomy of sustainable finance. In this process, MISA work is setting the groundwork to make the transition.

Going back to the issue of the traditional oil sector, there are two reasons why – specifically from a sustainability point of view – Saudi Arabia will need to continue to invest in this sector. First, significant capital will be needed to invest in solar, wind, and new hydrogen technologies. Thus, it is necessary to utilize resources from already profitable activities. It is as simple as that: it is impossible to do this without money. Second, there is the issue of maintaining stable oil and gas prices. Indeed, Saudi Arabia has an exceptional track record in stabilizing global oil prices, as it is the only oil-producing country that can both increase and reduce capacity, and therefore it has a role as a global provider of stability. Thus, it is not in the world's interest, nor of the energy transition, if Saudi Arabia does not increase its capacity in line with global needs. This point is particularly relevant because the energy transition is going to make energy prices more volatile, not less […], which is a typical phenomenon when one transits from one energy source (and thus technology) to another energy source (and thus technology). […] Hence, we need to accept that the transition takes time, that it will require an enhanced and not a reduced role of market stabilization by Saudi Arabia, and that the Kingdom needs capital revenues to make this transition.

In recent years, the KSA has launched an extensive program of modernization in its commercial legal landscape (e.g., the Commercial Pledge Law in 2018, the Competition Law in 2019, and the ratification of the UN Convention on International Settlement Agreement Resulting from Mediation in 2020). To what extent have these reforms managed to open up Saudi Arabia to foreign investors, and why is the country still lagging behind the neighboring UAE? What are further steps necessary for Saudi Arabia to enhance its investment environment?

Dr. Jannelli: I do not agree with your assertion that -today- Saudi Arabia is lagging behind the UAE when it comes to attracting foreign investments and promoting to that purpose the proper framework.

It is not easy to find much information concerning recent (2020 and 2021) FDI flows towards Saudi Arabia and the UAE. For Saudi Arabia, which is a G20 country, OECD data are available until the second quarter of 2021 and are very encouraging. On the other hand, up-to-date data for the UAE are

not available. As for what concerns reforms you have cited, many of them are laws introduced in 2018, 2019, or 2020 that need time to exercise their influence, even more considering the Covid-19 pandemic. Thus, the short answer to your question is that we do not have enough data yet, and it is too early to make this judgment.

Concerning further steps necessary for Saudi Arabia to enhance its investments environment, I believe these are the steps in the right direction. We will continue perfecting them to create the best possible institutional regulatory framework and build trust. This process takes time and it works in the manner of a snowball effect: initially, results might be minimal, but they will exponentially grow over time. Also, this is a continuously ongoing process. No country can rest in this regard: as the global environment continues to change, all countries need to continue changing their regulatory framework.

This interview has been edited for length and clarity.

Interview with Dr. Marco Binenti, Riyadh-based Economist and Co-Founder of the Global Think Group, December 21, 2021.

Main topics:

- Saudi Arabia's FDIs regulatory framework;
- Saudi Arabia's Privatization Program (focus on the energy sector);
- Reforms to enhance the Saudi investments environment.

In recent years, the KSA has launched an extensive program of modernization in the commercial legal landscape (e.g., the Commercial Pledge Law in 2018, the Competition Law in 2019, and the ratification of the UN Convention on International Settlement Agreement Resulting from Mediation in 2020). To what extent have these reforms succeeded in opening up Saudi Arabia to foreign investors, and why is the country still lagging behind the neighboring UAE on this front?

Dr. Binenti: Historically, Saudi Arabia has had structural issues in the ease of doing business and in diversifying attractive sectors for FDI. In particular, the country's economy was highly dependent on oil and gas, and most of the other sectors were closed off to foreign investors, who could not own one-hundred percent of their business. However, in 2016 Saudi Arabia began a liberalization process in its investment sector, allowing one-hundred percent foreign ownership in new sectors such as retail, wholesale trade, education, health care, land transport, and others. Today, the Kingdom has virtually removed all sectors from the so-called 'negative list' of foreign ownership, which refers to those sectors where one-hundred percent foreign ownership is not allowed. In the UAE, this happened much earlier, thanks to the establishment of the Free Zones. Similarly, economic diversification into retail, tourism and entertainment occurred much earlier in the UAE.

With the launch of Vision 2030 and the establishment of the Tayseer Committee, which identified over five hundred reforms specifically targeting FDIs, Saudi Arabia has begun a reform process that contributed to making the country one of the top reformers in the world in 2020 according to the World Bank's Doing Business report. However, while the liberalization of the Saudi stock exchange (Tadawul) managed to draw foreign investors' capital inflows, resulting in an immediate increase in foreign participation and ownership in the Saudi stock exchange, FDI is a long-term trend.

Besides the Saudi context, it is worth noting that FDI has been declining globally in the last three years. Even before the Covid-19 pandemic hit the global economy -and even more during the pandemic- people have been investing more in their home countries. This global trend towards onshoring investment has certainly not favored Saudi Arabia. Finally, it has to be considered that some of the targets that the Saudi government had set in the first place did not consider the volatility of the global markets. Nevertheless, structural reforms to make the country more competitive for foreign investments are taking place, although they will take time.

[Concerning the Saudi ultimatum to international companies to set up their regional headquarters in Riyadh,] it is undoubtedly a strong competitive move. However, Saudi Arabia has been maybe too accommodating to foreign investors for a long time, as most of the companies headquartered in Dubai have been doing eighty percent of their business in Saudi Arabia, then repatriating invoices and generating revenue in the UAE, without any added value for the Saudi economy. Therefore, although this move could be defined as unorthodox, it makes sense to some extent. […] Another relevant measure that local authorities are about to launch is the establishment of special economic zones, which will make the Saudi environment more attractive. This initiative is part of the National Investment Strategy that was announced a few weeks ago and will be launched in the coming months. It will make it much easier for companies to move and relocate their headquarters, particularly concerning Saudization requirements, which have been an issue for many companies.

Despite the privatization program launched by the Kingdom, initiatives in the energy sector are still confined to a great extent to governmental initiatives. Do you believe that this is related to an initial phase of the diversification efforts launched by Saudi Arabia, or will the Saudi government keep the monopoly over this sector?

Dr. Binenti: The privatization program is moving slower than expected because privatizing big government assets is not easy, as these companies employ thousands of nationals who are not competitive in the private sector and would have to be laid out. Thus, there are political reasons why the privatization program is moving slowly. Then, when it comes to the energy sector, electricity, power generation and distribution are a complete monopoly of the Saudi Electricity Company. Saudi Arabia has been working to change this model and create regional clusters by prioritizing some value chain elements, especially in the distribution part, but keeping the independent buyer. This process takes time, but the intention is to privatize many value chain elements fully. For what concerns new sectors, and specifically renewables, the government's strategy is to kickstart sectors that would otherwise be too risky for the local private sector through the PIF.

The private sector in Saudi Arabia is fragile. Indeed, traditionally the local private sector has been composed of Saudi families owning trading companies that did not produce much and usually made margins on the import-export of goods and were not willing to take risks investing in new sectors. […] Notably, a significant exception to this is ACWA Power, which has been a success story with investments in renewable energy projects outside Saudi Arabia, especially in Morocco and other countries in the MENA region. To make the company the 'Aramco' of the renewable energy sector and boost investments, the PIF is now taking a twenty-five percent share in ACWA Power. On paper, the PIF's strategy is to make companies grow to list them on the stock exchange. Even though it is too early to evaluate how successful this strategy will be, it has been announced that the Saudi Telecom Company, owned by the PIF, will be listed on the secondary market.

At the same time, however, there are some valid critiques that the PIF is crowding out private sector participation. Indeed, in some cases the PIF is expanding too much. This is also linked to the PIF's mandate and ambitious goals, which create pressure to get in everything they can to reach the targets. At the same time, the Saudi private sector is still fragile, and the economy is very much dependent on the government, which is something that cannot change overnight. [….] In fact, international investors are reassured when there is government participation, and most foreign investors are attracted precisely by government spending, being reassured, for example, by the fact that the Crown Prince chairs the PIF. Of course, there are some segments where it would be better not to have the PIF competition; however, it varies on a case-by-case basis. By contrast, one main point that many foreign investors make is that they do not feel like intellectual property is protected enough in Saudi Arabia.

Among the Global Think Group's clients, there are some of the government entities involved in the implementation of the Vision 2030 strategic objectives, such as the Public Investment Fund, the Ministry of Investment, Invest Saudi, the Economic Cities and Special Zones Authority, and KAPSARC. Which projects are currently gazing the Saudi authorities' maximum attention?

Dr. Binenti: Since the launch of Vision 2030, all the giga-projects such as Neom, Qiddiya, Amaala, the Red Sea Project, King Salman Energy Park (SPARK) have been considered a top priority. The entire ecosystem is looking at supporting these projects and finding international partners for their development. While attracting international investors, Saudi Arabia is […] looking for high local content rates in any foreign investment project. With this goal, less than two years ago the Kingdom has launched a new Government Tenders and Procurement Law (GTPL) establishing a new authority called Local Content Authority that changed the methodology according to which local content requirements are calculated in government projects. That includes the use of local raw materials -when available- and local human capital, with all the projects being evaluated according to their score in local content.

Overall, Vision 2030 is a pretty clear blueprint, […] as it maps out clearly what areas the government is trying to develop, making evident for investors which areas to prioritize. For example, entertainment, tourism, culture, and renewables are all sectors the Saudi government is currently focusing on. Opportunities are massive and the difference in how the country looks today compared to just five years ago is incredible. Today, it is possible to open anything in entertainment, culture, and any business will be successful just because of the market demand and because there is barely any competition. At the same time, there are challenges regarding Saudization and local content because there are not enough skilled workers and resources to deliver the sheer amount of projects they have planned. Thus, it is likely that Saudi Arabia will experience a new inflow of qualified foreign labor, which is something that has stopped for a few years.

This interview has been edited for length and clarity.

Interview with Dr. Marco Piredda, Head of International Affairs Analysis and Business Support at Eni's Public Affairs Department; Dr. Polina Averianova, Energy Analyst at the International Affairs Analysis and Business Support at Eni's Public Affairs Department; and Dr. Marco Innocenti Degli, Head of Public Affairs APAC & MENA at Eni, January 5, 2021.

Main topics:

- Eni's industrial presence in Saudi Arabia;
- Eni's strategic partnerships in the Kingdom (i.e., SABIC);
- Differences between Eni's industrial presence in the UAE and in the KSA.

Despite Saudi Arabia's recent commitment to a zero-net target by 2060, the Oil & Gas sector will be essential to drive the country towards a more diversified economy and will continue to be an integral part of Saudi economic development in the coming decades. Within this context, which technologies is Eni favoring in Saudi Arabia to produce cleaner fossil fuels and lower greenhouse gas emissions?

Dr. Piredda: First of all, [it has to be noted that] Saudi Arabia is not a country where Eni has significant operating activities. In particular, Eni has commercial partnerships […] in the petrochemical sector. However, the country is dominated by the national oil companies (NOC) giants, meaning state-owned actors that only recently began opening up to transparency and international confrontation, especially with the launch of the first listing for a minority stake of Saudi Aramco. Despite this, Saudi Arabia is still not easily accessible for international companies, except for service providers or technical partners. Considering that Eni is an integrated company, it favors all-round relations where it is possible to enter the governance of a project, access production and profits, and not just technological contribution, services, engineering, or design, which is something that other international and Italian companies - first of all Saipem - have always done in Saudi Arabia.

Looking ahead, the scope of interaction [in Saudi Arabia] can be extended, especially if the country intends to undertake a real qualitative leap in terms of reducing its carbon footprint […]. Actually, there have been plans for quite some time [to do this]; however, right now it is not easy for anyone to accelerate on these objectives. Moreover, in the specific case of Saudi Arabia, we are not speaking about front-runners of low-carbon innovation -both at the governmental and at the corporate level- for several reasons linked to the objective difficulty of moving industrial, technological, and financial capacity from conventional [sectors] to another, for the global price context, etc.

Nevertheless, there are some interesting signs. The first is the reduction of the carbon impact of methane, which occurs through various components. In the case of Saudi Arabia, the first step could be reducing emissions in production, both of oil and methane. Concerning gas, Saudi Arabia largely reuses it [...] to increase its oil production. This equilibrium could change. Another element of potential improvement that is equally of interest to Saudi Arabia concerns flaring. Indeed, Eni is most involved in reducing methane fugitives and methane's impact on the production, transport, and consumption chain. Notably,

if Saudi Arabia truly intends to move part of its production and consumption mix towards gas to favor greater oil production in the short-medium term, this will also entail a technological and process effort to use this gas in a less impactful way. Eni certainly has relevant experience in this [field], and it also has recently launched solutions that are not only technological but also contractual, financial, and standard. Indeed, the issue of methane emissions is accompanied by the need to be able to certify them, to be able to demonstrate them and to be able to verify them.

The second noteworthy element, which is close to the already existing areas of collaboration [with Saudi Arabia], is the petrochemical sector. In fact, Eni is also a protagonist in chemistry's energy and ecological transition, with green chemistry and chemistry from waste. Arguably, there will be a convergence of interests on this point, and certainly [there is] interest on the Saudi side to transform a piece of its petrochemical sector, making it increasingly sustainable. Talking about global giants [...], even transforming just a part of the Saudi petrochemical plants would be a huge success in terms of energy transformation, reduced environmental impact, and value of the partnership.

Dr. Averianova: In Saudi Arabia, diversification is more complementary and integrated than a substitute for the core business of the country, particularly Saudi Aramco. That is to say that the Oil & Gas sector and its expansion remain a priority for the country. [...] Similarly, the increase in gas production for domestic use to release [more significant quantities of] oil for export is another critical target for the Kingdom. This will require investments and increased technological efforts to leverage unconventional resources; beyond investments, this will also depend on the country's budget and require great effort in infrastructure, market, and above all water availability. All these core business activities will be accompanied by low-carbon technologies and solutions that are capital-intensive and require technological innovation. Particularly, I am referring to CCUS technologies and, above all, to the production of blue hydrogen, which will be the most significant effort for the country.

Another element to consider is that Saudi Aramco has been the first to declare the net-zero goal for 2050, while the Saudi government followed with a declaration only in October 2021 before COP26, with a net-zero target by 2060. In fact, Saudi Aramco claims to be a low-carbon-emissions and low-cost operator as a global producer. This is the result of recently adopted corporate decisions, such as the divestment in the mid-stream and investments in SABIC, which is a high-performing international company. Hence, Saudi Aramco uses a set of administrative levers to achieve its objectives, leaving to the government further decisions to lead the country towards the net-zero goal by 2060.

Concerning Eni's activities in Saudi Arabia, the joint-venture with SABIC, of which Eni holds ten percent, is very important. Eni operates with SABIC in six ether plants and transforms the gas into oxygenated products that are high added-value products and one of the gasoline components for improving performance. On a broad level, through its activity Eni satisfies three percent of the demand

for these products through the production in joint-venture with SABIC and other important productions from the plants in Venezuela and Ravenna in Italy.

In February 2019, Eni strengthened its presence in Saudi Arabia by signing an agreement with SABIC to develop the Short Contact Time - Catalytic Partial Oxidation (SCT-CPO) technology for synthesis gas production. What results have been achieved so far? What are the perspectives for new strategic partnerships with SABIC and other government entities?

Dr. Averianova: Regarding the agreement with SABIC in 2019, it is necessary to stress that SABIC and Saudi Aramco are very interested in growing technological innovation. Saudi actors are strongly inclined to enrich their know-how and are always interested in concluding partnerships with cutting-edge international companies to increase their R&D. Since Eni had already a commercial joint venture, SABIC proposed to seek innovative technological solutions for the production of synthesis gas starting from natural gas. […] Eni's R&D and SABIC worked together to seek innovative solutions in this area. However, the performance was not encouraging enough to incentivize further joint studies and construction of the demonstration plants. Consequently, at the end of 2020, SABIC withdrew from this area of cooperation, while Eni went ahead with the construction of a demonstration plant in Taranto to evaluate the results of these studies and whether to proceed with industrial plants.

Nevertheless, the joint-venture production of oxygenates with SABIC is performing very well and is undoubtedly continuing in the future. Unfortunately, this experience in the field of R&D ended, but it was focused on a particular technology for a specific product, which in any case can be achieved through existing, mature, and commercial technologies. [...] In the future, Eni will undoubtedly consider other areas of expansion in the cooperation with SABIC on the circular economy, green, petrochemicals, and biofuels. Eni leaves all doors open for these areas of collaboration.

Dr. Piredda: In Saudi Arabia and throughout the Middle East, the issue of natural resources and the intersection of natural resources and energy is an elective area of development for Eni. This comprehends the entire supply chain, including waste, water treatment, saving water use -both in production and civil processes-, in which Eni has considerable experience that it has already begun to export, particularly the reuse and reclamation of water.

Dr. Innocenti Degli: For the more traditional sector of the Oil&Gas business, it is important to remember that since a couple of years (since the beginning of the pandemic and the collapse of the oil price), Eni has adopted a new strategy that provides for a progressive refocusing on businesses linked to the energy transition and a progressive disengagement from traditional fields. In this sense, all upstream activities and new exploration and production initiatives have become more selective. Before entering a country and opening new collaborations, Eni is now much more careful than in the past in assessing the degree of opportunity, interest, and timing of potential developments. That is also because the resources dedicated to these activities are gradually decreasing, as over time most of the investments

will be refocused on other businesses. Therefore, the upstream activity is always looking for new opportunities but with a more selective approach.

As for renewables, it is helpful to remember that a couple of months ago the new Eni company (Plenitude) was launched, which will take care of renewables and the entire gas and electricity retail business and will be listed on the stock exchange this year. Concerning this company, which will incorporate the vast majority of renewable activities, the current focus is to link electricity production from renewable sources to markets where Eni also has a retail business, that is, where the company has end customers. Similarly to upstream, Eni is always looking for opportunities for renewables -and [in the case of Saudi Arabia] we are indeed speaking about a country with very high potential- but at the moment the focus is linked to contexts and markets where the production of energy from renewable sources also has a final outlet. By contrast, Eni does not currently produce renewables in Saudi Arabia, nor does it have end customers or intends to enter the final market.

Eni's presence in the United Arab Emirates is more transversal than in the Saudi territory, ranging from the Exploration & Production area in refining and chemistry to the Ruwais and Ghasha projects, up to the partnership with ADNOC and the recent Memorandum of Understanding with Mubadala Petroleum. Where does this difference come from?

Dr. Piredda: The Saudi system is essentially still closed, although it is a relatively successful system as it has managed to keep itself among the highest-profile international companies, especially on the front of innovation and technological collaboration. Of course, this [was possible] primarily thanks to the massive availability of financial resources derived from the successful and well-managed production of Oil&Gas.

As for prospects [in the country], the question is whether this closed model can perpetuate and survive in the transition, which in any case will not be very fast and will take decades. Indeed, new energy systems could produce such stresses not to guarantee this profit position for the Saudi system in the future. Nevertheless, at present, it has to be recognized that the [Saudi system based on a] combination of minimal competition -not to say the absence- and a management system based on the control of state-owned companies, combined with a remarkable ability to acquire information, technological skills, know-how, and highly specialized personnel, has worked well.

Ultimately, however, non-Saudi subjects can participate only where the door is opened and limited to the territory that they are allowed to enter. In addition, the attractiveness of [new] partnerships will depend not only on environmental compatibility but, more broadly, also on the SDGs, and therefore social sustainability, openness, transparency, etc. All these elements will increasingly be a challenge for Saudi Arabia. The arduous experience of listing a small part of the Saudi Aramco property has demonstrated that entering the global system [...] requires a great deal of change and compliance with the rules. We may be assisting the beginning of a change [...], but without an opening, Saudi Arabia

could not be able to maintain the position of economic pre-eminence it had in the past 70-50 years since the nationalization of the [energy] sector.

Dr. Innocenti Degli: It is necessary to consider a couple of elements to explain how Eni entered the Emirati market and the reasons that led the company to invest in such an important partnership. [First of all,] the choice to bet on the UAE does not in any way preclude other countries in the area, including Saudi Arabia […]. The agreements that Eni signed with Emirati companies from 2018 onwards are linked to two macro-dynamics. On the one hand, Eni had an interest in entering and further consolidating its position in the Middle East, an area where Eni has a relatively minor presence compared to other regions such as Africa or the Mediterranean, and a region considered more stable than many others and with interesting Oil&Gas resources from a commercial point of view. On the other hand, the Emirates were interested in having Eni, a leading company in the field of exploration and production of resources. Indeed, it is worth mentioning that this partnership was born after discovering Zohr in Egypt and the discoveries in Mozambique. [Moreover,] Eni is a company that is often invited to enter new countries precisely because of its capabilities in exploration and management of the development of production fields. Furthermore, through the Mubadala fund, the Emirates have also entered into Zohr, investing in the agreements signed from 2018 onwards. Therefore, there are also purely technical, market and commercial reasons that led Eni to strengthen its relations with the Emirates.

In the case of the UAE, the partnership has also extended to the mid-down-stream level because, in addition to collaborations in the upstream area, Eni also has an important joint venture that concerns the Abu Dhabi refinery of ADNOC and the commercialization and trading of the productions of that refinery.

Dr. Averianova: As Dr. Innocenti Degli said, Saudi Arabia has a closed system, while the Emirates have historically had greater openness and participation with the international private sector, especially in the conventional upstream theme. Furthermore, in view of the renewal of expiring contracts - strongly unbalanced by the Anglo-American presence - Abu Dhabi wanted to diversify its strategic partnerships. With the successes demonstrated by Eni in its performance, the company was undoubtedly one of the most attractive operators to diversify its partnerships.

Beyond the entry in Abu Dhabi, it is relevant to point out how innovative and front-runner Eni has been in entering the other Emirates that -despite being less wealthy than Saudi Arabia- were much in need of increasing and implementing their energy potential. Particularly in Ras al-Khaima and Sharja, Eni has made significant discoveries for these smaller Emirates, heavily dependent on the main Emirate [Abu Dhabi]. […] Therefore, ENI's presence in the Emirates is much broader and more innovative.

This interview has been translated and edited for length and clarity.

Interview with Dr. Angelo Artale, General Director of FINCO (Italian Federation of Industries for Construction and maintenance), November 23, 2021.

Main topics:

- Projects supporting Italian SMEs presence in foreign markets (i.e., Caseitaly);
- Umbrella associations' role in internationalization projects;
- Italian SMEs export potential.

The Caseitaly project was born to help the SMEs associated with FINCO to overcome their structural difficulties in intercepting the potential of international markets. How does the Caseitaly format help to fill this gap?

Dr. Artale: Within the construction market, the representatives of four Italian product sectors within the trade associations ACMI, ANFIT, ASSITES, and PILE joined the Caseitaly project to increase their share of international presence. The sectors of interest of these associations include: industrial and residential technical closures; windows and doors; curtains, solar screens and blackout systems; civil and industrial sheet metal works, and metal roofing.

The primary limit facing companies represented by these associations is that, even though foreign operators look for Made in Italy productions for their quality, design, and safety, small and medium businesses are not always able to promote themselves effectively and intercept such opportunities. Caseitaly was born to effectively promote these companies, their values, products, and services.

Caseitaly is not just the sum of the associations and companies that participate in this project, but it represents the best of the Italian production by communicating its values and records tangibly. Caseitaly serves as an internationalization tool for hundreds of companies that, thanks to this project, can sustain themselves and grow by increasing their export share, today on average below 10 percent.

What is the role of FINCO in the Caseitaly project and how do you evaluate the results concluded up to that date?

Dr. Artale: Among the roles […] of the Federation, there is increasing the presence of its members abroad. Increasing internationalization would allow these industrial realities not only to continue to be competitive in the national market that, as the Covid-19 pandemic has demonstrated, can go through tough times, but it would also make it possible for companies to grow and support employment in our country. We can no longer afford to collect weakly the potential of international markets that require the specifics of our productions but fail to come into contact with them systematically and effectively.

To date, the Caseitaly project concerns Italian companies operating in the building envelope sector. Do you think this format could be successfully extended to other industrial sectors within FINCO's competence, including productions related to the energy sector?

Dr. Artale: Overall, FINCO brings together a total of 65 associations, 34,500 companies, and 370,000 employees, for a total of 47 billion EUR of turnover. Together, these associations represent a large part

of the world of building materials, plant engineering, and specialized products and systems for construction and maintenance. Among the fields in which our partners operate, there is also renewable energy, particularly biomass, geothermal energy, and hydroelectricity.

It is important to stress that the contribution of Italian SMEs to Italian export is exceptional, especially when compared to other European countries. Germany, for example, achieves better results only in the group of companies with more than 250 employees. For what concerns our job, the group of companies with a number of employees between 9 and 249 is the one that characterizes almost all the companies belonging to the federated associations of FINCO.

Notably, increasing the export of these quality products by twenty percent could have tremendous positive effects on the balance of our country, not only from an economic point of view but above all in terms of employment and promotion of the Italian model.

Regarding the recent participation of FINCO at The Big 5 Dubai fair, what do you think is the surplus-value of the "Made in Italy" production that has taken hold in the UAE market?

Dr. Artale: Certainly, the quality of our productions and the ability to provide tailored and customized solutions. This applies to the UAE market but more generally to all the markets of interest of our federated associations. […] In terms of foreign markets, FINCO considers the MENA region to be significant and particularly, among others, the UAE and Morocco. Within this framework, FINCO carries on the Caseitaly project in the building envelope sector with the support of ICE and will repeat the project in Morocco with "Espace.Caseitaly.MA", a permanent showcase for the promotion of the technical components of the envelope and training. At the same time, FINCO also places relevance in the recovery of traditional European markets, including the Russian one.

At the domestic level, the closeness of the associative world to companies has proved to be a vehicle for success when speaking about internationalization initiatives. We believe the action of the associative subjects to stimulate the internationalization of SMEs should be enhanced by recognizing a certain level of autonomy in the organization of missions and initiatives abroad and by agreeing on the items of expenditure in concert with the Italian Trade Agency (ITA). Another crucial step would be that the signatory Control Room Confederations and Federations would be recognized a two-year period non-repayable fixed contribution for 2022/2023 […] to set up a permanent internationalization desk to support the federated associations and the respective companies, including Made in Italy products belonging to sectors that are not already well-known by foreign markets.

This interview has been translated and edited for length and clarity.

Interview with Dr. Veronica Pitea, President of ACEPER (Association of Consumers and Producers of Renewable Energy), November 17, 2021.

Main topics:

- ACEPER's represented companies' expertise;
- Limits and potentialities for improving Italian SMEs' internationalization;
- Role of international discussion tables (i.e., World Business Angels Investment Forum).

What are the main sectors of expertise of the companies that ACEPER represents?

Dr. Pitea: ACEPER associated companies are SMEs and large enterprises that provide excellent goods and services under the category of Renewable Energy Producers.

Among our associates, for example, there is Walter Tosto S.p.A., a recognized worldwide leading manufacturer of top quality high-pressure equipment and vessels company that produces state-of-the-art and long-lasting items for the process industry, in particular chemical, petrochemicals, Oil & Gas and energy, such as heavy wall hydrocracking reactors, hydrotreating reactors, HP separators, HP heat exchangers (breech-lock), large columns & heavy drums, tubular reactors (EO reactors, methanol reactors), polymerization reactors, Claus reactors, CTL/GTL Fischer Tropsch reactors, oxychlorination reactors, EB/SM styrene reactors, ammonia converters, coke drums, waste heat boilers and condensers for refineries, fertilizer plants, chemical and petrochemical plants, nuclear and power plants.

[…] I have mentioned only a few names, but out of more than six thousand companies, I could continue to tell you of the excellence present on the Italian territory in the most varied sectors.

How does ACEPER support the internationalization of its associated companies?

Dr. Pitea: In the first place, ACEPER was born as a trade association that aims to help renewable energy producers correctly manage their production plants. However, following the Covid-19 pandemic, together with our associates, we understood that the market is changing and that the companies we represent need to be accompanied on a path that can lead them towards a digital future. The first thing we aim to do is transform companies at the level of tools and knowledge. Indeed, Istat data on the online presence of our companies are discouraging, to say the least, with percentages on the use of online tools and platforms below twenty percent. To tackle this problem, ACEPER has signed agreements with important national digital training partners that will accompany our associates on their "network journey" and beyond, providing multilingual assistance, creating websites with visibility in shop windows outside the national borders, and creating connections with foreign dealers and distributors. Overall, thanks to the PNRR and the support of the Ministry of Economic Development (MiSE), with whom we have opened bilateral communication channels, we aim to bring the products of our associates to seventy percent of new exports at least.

You have been recently appointed as Italian representative at the World Business Angels Investment Forum. What do you think can be the value of this international discussion table for Italian SMEs operating in the renewable energy sector? What are the priorities on which the dialogue should focus to increase economic cooperation in the industry and facilitate access to finance?

Dr. Pitea: My appointment is very recent, and we are still trying to understand what sectors might be interesting and how and when these two realities can find synergies. Undoubtedly, the confrontation with more than eighty thousand entrepreneurs and over twenty ministries and countries will allow us to quickly identify the foreign market's needs. I hope this experience will help our companies to have a clearer view of the demands of markets beyond the national borders!

This interview has been translated and edited for length and clarity.

Interview with Dr. Walter Righini, President of FIPER (Federation of Energy Producers from Renewable Energy Sources), December 1, 2021.

Main topics:

- Italian bioenergy sector: trends and recent initiatives;
- European Commission package Fit for 55: impact on the bioenergy sector.
- Development of energy communities projects in Italy.

During the "Key Energy" fair that took place in Rimini in October 2021, FIPER together with Elettricità Futura, AIEL, ANPED, Assitol, Assoebios, Assograssi, CIB, Confagricoltura, the production district "La Nuova Energia", EBS, and ITABIA have jointly signed the Italian Bioenergy Manifesto. What are the main proposals to boost the development of the bioenergy sector at a national level?

Dr. Righini: This is the first time that all the sector associations have signed a joint manifesto on bioenergy as a sign of the urgency and importance of a supply chain that impacts the development of rural and mountain areas. From this point of view, adjusting the Integrated National Plan for Energy and Climate (PNIEC) to the targets of the European Green Deal by strengthening the role of biomass is a top priority [for Italy]. Indeed, the Italian PNIEC assigns a marginal role to biomass, well below its potential and what has been outlined by the other EU Member States. At the national level, it is necessary to rethink the contribution that this energy source can give to the decarbonization of the thermal, electricity, and transport sectors, considering the environmental, economic, and energy benefits it can create on the territory. At the same time, it is necessary to keep the already installed energy park in operation, preserving and increasing its value.

For what concerns specifically the Italian mountain areas -particularly the municipalities in climate zone F that have not been methanised yet- the signatory associations have proposed to boost the establishment and development of district heating networks fueled by local virgin woody biomass rather than encouraging methanisation. This should be done under a clear and forward-looking regulatory framework that creates the conditions for investments and supports technological innovation.

FIPER's activity is strongly linked to the Italian territory, but at the same time it also participates in the EU level dialogue, being part of the board of Bioenergy Europe[210] and the European Biogas Association (EBA)[211]. In light of your activity within these international organizations, how do you

[210]Bioenergy Europe is a non-profit international organization based in Brussels that brings together 41 associations and 122 companies, as well as academia and research institutes from across Europe, with the goal to develop a sustainable bioenergy market and ensure that bioenergy contributes to the goal of a carbon neutral Europe. For more information visit https://bioenergyeurope.org/about-us.

[211]The European Biogas Association (EBA) is a Brussels-based non-profit organisation aiming to promote the deployment of sustainable biogas production and use in Europe. EBA's membership comprises national biogas associations, institutes and companies from over 20 European countries, covering the majority of producers, companies, consultants and researchers in the field of biogas within Europe. For more information visit https://www.europeanbiogas.eu/.

evaluate the European Commission's package "Fit for 55" for bioenergy development?

Dr. Righini: Starting from the indications of the Commission document, which defines the European economic scenario until 2030, a significant increase in bioenergy emerges clearly, with a doubling of the installed power planned by 2050. The European energy transition provides for an increase in the biomass demand, both for productive uses, energy, and transports, preserving the soil's "carbon sink" function and protecting biodiversity.

It should also be noted that in the RED 3 Directive, the Commission provides for a revision of the definition of efficient district heating, requiring the exclusive use of renewable sources (currently a system that uses at least fifty percent of RES is defined as "efficient"). Considering the current distribution of renewables in district heating, the revision proposed by the Commission will recognize an even more central role in the use of woody biomass. At the same time, however, the proposal to apply more stringent biomass sustainability criteria on small plants (from 20 MW to 5 MW) is risky. Concerning this, Bioenergy Europe presented an "interlocutory" amendment to reduce the power to 10 MW.

In addition to this, the inclusion of activities related to Land Use, Land-Use Change and Forestry (LULUCF) (e.g., sustainable forest management, reforestation, etc.) in the assessment of the reduction of greenhouse gas emissions, has been defined as a priority to meet the zero-emission goal. However, this will require medium and long-term planning skills and close coordination of forestry policies between the Member States. To promote the growth of natural carbon absorption sources, the new LULUCF Regulation has also increased the 2030 target on net absorptions in the sector (310 million tons against 225 set by the Climate Law). Moreover, for the first time, a zero net emissions target has been introduced for the Agriculture, Forestry and other land use (AFOLU) sector by 2035. National targets have also been updated: for Italy, it is 36 Mt CO2eq, among the highest in the EU after Sweden, Spain, and Poland. In the biogas sector, the objective is to convert existing plants into biomethane and promote greater use of by-products in energy production.

By contrast, it is unintelligible -not to say dangerous- for the sector the proposal of the DG Energy to introduce a new definition of "Renewable Source" defined as "zero air pollution renewable energy" within the Communication Climate, Energy and Environment State Aid Guideline. According to this new definition, only renewable sources with zero emissions into the air can benefit from support and incentives from the Member States. The intervention by national governments for the repeal of the proposal is fundamental. FIPER is working with the Ministry of Ecological Transition to take an active role in this regard.

In April 2019, FIPER participated in the discussions for the launch of the first energy community pilot project in Italy in the municipality of Tirano. At what point is the project? What is an energy

community, and what advantages could it have in energy management, distribution, and consumption?

Dr. Righini: Ricerca sul Sistema Energetico (RSE) selected REC Tirano among the pilot projects with ACSM Primiero and Cooperativa Prato allo Stelvio, associated with FIPER, to analyze the possible evolution of one hundred percent renewable municipalities in the renewable energy community. So far, the RSE has analyzed the current energy flows with the simulation of advanced integrated energy management models. However, the current legislative framework relating to the implementation of energy communities only contemplates the production and consumption of renewable electricity from PV (up to 200 kW for each plant, raised to 1 MW starting from the implementation of RED 2), not taking into account the renewable thermal energy already available in the area. Another limit related to the current legislation concerns the impossibility of existing plants to join the energy community, if not by contributing thirty percent of energy production.

More generally, the utility of renewable energy communities can be summarized in the following points:

- Direct involvement of citizens in the production and consumption of energy at a decentralized level, starting from the sources already present in the area;
- Affordable energy supply and reduction of energy poverty;
- Greater efficiency in energy distribution and use in every sector;
- Implementation of a direct and socially circumscribed governance model.

Looking to the future, what are the prospects for diversifying services and products to consolidate existing biogas and biomass capacity (for example, what role for biomethane and green hydrogen)?

Dr. Righini: Biogas is an agricultural activity functional to increase the competitiveness of companies and reduce the environmental impact of livestock activities and the production of electricity. Therefore, it is a priority to define an agricultural system approach that aims to consolidate the existing anaerobic digestion activity by diversifying the services/products it can provide in energy and environmental terms. In particular, FIPER proposes to:

- Allow the production of electricity and biomethane at a variable rate with reference to the specific characteristics of the company;
- Use biomethane for different transport and uses while maintaining the concept of an enlarged network;
- [Guarantee] a flexible service to guarantee the stability of the electrical system (programmability) and the possibility of producing green hydrogen.

It should also be noted that there is no reference within the PNRR about the consolidation of the existing electricity capacity and the new generation from biogas. A total conversion of the current stock into biomethane producers is not feasible, considering the plants' logistic location, often distant from the gas network. The future of existing biogas plants cannot ignore the evolution of the agricultural sector

towards more sustainable and low-environmental impact production models. Considering that the Po Valley employs approximately 360,000 tons of synthetic nitrogen every year, correct management of organic nutrients (e.g., digestate) deriving from the plants would drastically reduce these quantities. This is relevant considering that the “Farm to Fork” communication recognizes the fundamental role of this technology in terms of environmental impact on agricultural activity.

In addition, the agricultural sector can play a leading role in producing green hydrogen by upgrading existing agricultural biogas plants. FIPER proposes to include this measure within the PNRR and evaluate, in addition to electrolysis, the process of “steam methane reforming - SMR” of the methane contained in the biogas for hydrogen production. It should be noted that 1 MW of biogas supplies a quantity of hydrogen capable of supplying eight buses with an autonomy of 400 km and a hydrogen consumption of 9 kg/100 km.

This interview has been translated and edited for length and clarity.

Summary

This thesis explores potential opportunities for economic cooperation between Italy and the Kingdom of Saudi Arabia (KSA) within the broad context of the energy transition, aiming to offer useful guidance for Italian actors operating in the field of energy and renewable energy (RE) to understand better the peculiarities and the opportunities offered by the Saudi market. Ultimately, this study will attempt to answer how Italy and Saudi Arabia can improve bilateral dialogue and cooperation in the energy transition context and, more specifically, in the field of RE.

The reason why this research question can be relevant is that the evolving landscape of energy in traditional oil-producing countries like the KSA is creating new challenges but also new opportunities. Specifically, the broader adoption of renewable energy sources (RES) in oil-exporting countries is reshaping relations with oil-importer states, giving a chance to rethink cooperation channels and create different bonds of positive interdependence with historical commercial partners like Italy, whose biggest trading partner in the Gulf and the second in the broader region is precisely the KSA. Notably, the Vision 2030 reforming program and the formal pledge of Saudi Arabia to adhere to a net-zero target by 2060 provide an unprecedented and ideal context for improving bilateral relations between Italy and the Kingdom. In the energy field, the common goal of boosting the development of RE and reducing greenhouse gases (GHGs) emissions opens to new and unexploited opportunities for cooperation between the two countries, which already share a deep-rooted history of diplomatic and economic relations (see Table 1 and 2).

Table 1: Saudi export towards Italy

	2018	2019	2020	JAN-OCT 2020	JAN-OCT 2021
Total (mln. EUR)	5,139.13	3,803.94	3,803.07	2,496.21	3,936.83
Variation (%)	+48.5	-26	-22.2		+57.7

Source: InfoMercatiEsteri. "Scheda paese: Arabia Saudita", 37. https://www.infomercatiesteri.it/.

Table 2: Italian export towards Saudi Arabia

	2018	2019	2020	JAN-OCT 2020	JAN-OCT 2021
Total (mln. EUR)	3,092.14	3,276.16	3,216.56	2,553.14	2,679.98
Variation (%)	-21.4	+6	-1.8		+5

Source: InfoMercatiEsteri, "Scheda paese: Arabia Saudita", 35, https://www.infomercatiesteri.it/.

As for the methodology of the research, literature review and data collection -necessary to draw the framework of analysis and provide an up-to-date picture of Italy-Saudi Arabia bilateral cooperation- has been accompanied by a qualitative research approach in the form of interviews conducted by the author with professionals of the energy industry, business consultants, academic experts, and representatives of Italian and Saudi institutions, for a total of eleven interviews. The sum of these conversations has been essential not only to enrich the theoretical framework of the research by providing abreast and practical insights on a continuously developing field such as the Saudi energy and RE sector, but they have been vital also to draft policy recommendations provided in the third chapter and ultimately to draw the conclusions of the research. For what concerns specifically the interviews modality, a tailored set of open-ended questions has been provided to each participant, focusing on different topics depending on the sector of reference (i.e., academic research, consultancy, institutions, or energy industry). Each interview has been conducted and transcripted by the author. When editing or translation was needed, this has been signaled at the end of the interview. Similarly, when interviews have been conducted under confidentiality agreement, personal information and identifiers have been removed, and that has been signaled.

To frame the context of Saudi Arabia-Italy bilateral relations and to better understand areas of potential cooperation in the energy field, the first chapter of this thesis presents an up-to-date overview of the Saudi socio-political and economic landscape, highlighting the main challenges that the energy transition poses to the Kingdom. To this end, the first section analyses Saudi Arabia's geopolitical standing in the international scenario, stressing how oil resources shaped the Kingdom's role, and then dedicating a specific paragraph to the analysis of bilateral relations between Italy and Saudi Arabia.

The second section of the chapter provides an in-depth analysis of the Saudi social and macro-economic context, with the goal to highlight the role of the energy sector in the

Kingdom's economic and political development. In doing so, the research builds on the well-established academic literature of Rentier State Theory (RST) and Dutch disease, reviewing it according to the current Saudi landscape. By pointing out the existing links between Saudi Arabia's oil-based development, labor market distortions, and regime stability matters, this passage is crucial to understand the relevance of the energy sector for the Saudi economy and political equilibria and to fully grasp the potential implications of the energy transition for the future of the Saudi regime.

Finally, the last section of the first chapter analyzes specifically the Saudi energy sector, considering its historical development and highlighting current trends. Starting from a brief historical overview of the development of the oil industry in Saudi Arabia and analyzing data on the economic contribution of the energy sector to the Saudi public finances, the discourse first focuses on the economic impact of oil price volatility on the financial stability of the country and then it examines conflicting challenges posed by climate change in the KSA. The main objective of this section is to emphasize the crucial and yet controversial role that the energy sector played in the country's economic development, in the past as in the present, and access future perspectives in light of the upcoming energy transition beyond fossil fuels. The ultimate purpose of this chapter is to provide the basis for an informed evaluation of potential partnerships in the field of energy and RE with the Kingdom.

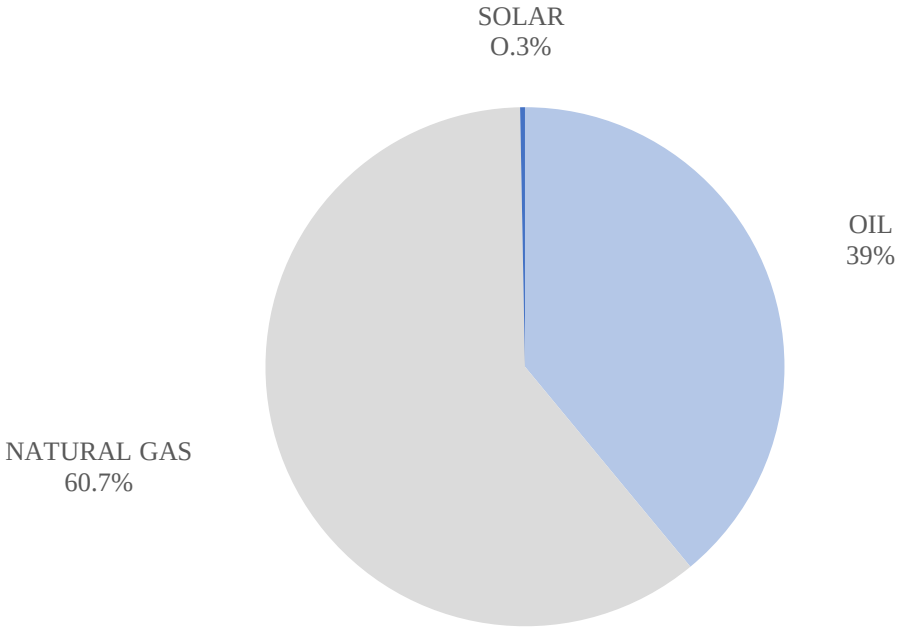
The second chapter of the thesis presents the legislative and regulatory framework for diversifying the Kingdom's energy mix and analyzes the level of RES penetration in Saudi Arabia. To this end, the chapter first presents initiatives and policies adopted by the Saudi government since the launch of the Vision 2030 reforming program in 2016 with regard to economic diversification and RE development targets. While the primary goal of the analysis is to provide a complete overview of the Saudi energy landscape, this section also highlights existing limits in Saudi Arabia's energy transition plans and economic diversification attempts. In particular, building on the literature review conducted in the first chapter on mechanisms of rentier governance applied to the Saudi context, issues related to the Kingdom's national Privatization Program and Foreign Direct Investment (FDI) regulatory framework are pointed out.

Then, the attention moves specifically to RE development targets and recent initiatives adopted by the Saudi government in the context of energy transition and climate change action, such as the Saudi Green Initiative and the Middle East Green Initiative. This section of the chapter presents a more precise panorama of RES penetration in the KSA, focusing on fields

owning particular development potential (i.e. solar and wind power, and hydrogen), but also considering areas of specific interest for Saudi Arabia's mitigation and adaptation strategies (i.e. carbon capture, utilization and storage technologies, modernization of the national power distribution and grid, and water sustainability).

Zooming on the KSA's energy mix, it is worth noting that the country is one of the largest oil and natural gas consumers for electricity generation globally. In 2020, Saudi Arabia's gas-based generation held a share of 60.7 percent, whereas oil-based generation held a share of 39 percent in the annual electricity generation. RE represented as little as 0.3 percent despite the enormous potential, with total RE accounting for 413 MW (Figure 1).

Figure 1: Saudi Arabia's electric power generation by fuel, 2020.



Source: U.S. EIA, *Country Analysis Executive Summary: Saudi Arabia*, 9, https://www.eia.gov/.

Although RE sources make up less than 1 percent of the country's total energy generation capacity, in recent years, significant advancements – such as well-designed auctions, favorable financing conditions, declining technology costs, and initiatives backed by the PIF – have successfully attracted developers for large-scale projects, bringing RES into the mainstream of the Saudi energy market (Table 3), with large-scale solar PV projects in Saudi Arabia featuring record-low bids in 2018 (2.34 US cent bid by ACWA Power for the 300 MW Sakaka project), and costs of CSP projects are decreasing as well.

Table 3: Installed renewable energy capacity, 2014-2018

	2017/2018						2016	2015	2014
Country	PV	CSP	Wind	Biomass and waste	Total RE	Share of RE in total electricity capacity	Total RE	Total RE	Total RE
Bahrain	5	0	1	0	6	0.1%	6	6	6
Kuwait	19	50	10	0	79	0.4%	20	1	0
Oman	8	0	0	0	8	0.1%	2	2	1
Qatar	5	0	0	38	43	0.4%	43	42	42
Saudi Arabia	89	50	3	0	142	0.2%	74	74	24
UAE	487	100	1	1	589	2%	144	137	137
Total	613	200	14	39	867	0.6%	289	262	210

Source: IRENA, *Renewable Energy Market Analysis: GCC 2019*, 50, https://www.irena.org/.

Although a relatively recent entrant to the Saudi energy landscape, RE holds significant potential to cut fuel costs, reduce carbon emissions, conserve water and create new jobs. According to IRENA's projections, achieving RE targets by 2030 could save up to 354 MMbbl in fossil fuel consumption in the power sector in the GCC, reduce emissions by 136 MtCO2, create more than 220,500 jobs, and reduce water withdrawal for power production and associated fuel extraction by 11.5 trillion liters. Notably, solar technologies alone could account for 89 percent of RE jobs in the region. Moreover, according to these forecasts, the KSA could account for about 40 percent of total GCC fuel savings.

Finally, the last section of the chapter considers potential opportunities for Italian industrial actors in the Saudi evolving energy sector, discussing how Italian expertise in the energy and RE field can match the Kingdom's needs and priorities. Ultimately, this second chapter has a twofold objective, namely 1. providing a comprehensive overview of the Saudi regulatory framework concerning its national economic diversification plans and transition away from fossil fuels, and 2. highlighting potential areas of cooperation with Italy within the broad context of the energy transition.

The third and last chapter of the thesis considers potential areas of improvement in bilateral dialogue between Italy and Saudi Arabia. Drawing on the literature review and qualitative analysis conducted in the first two chapters, this section suggests policy initiatives

that Italy and Saudi Arabia could take in the short-medium term to advance mutual dialogue and cooperation in the energy field. More specifically, the analysis takes into account three main directions -namely the Italian, the Saudi, and the EU-GCC inter-regional dimensions- through which the KSA and Italy could improve cooperation in the energy and RE field. Therefore, the analysis will be divided into three sections, focusing precisely on 1. specific policy recommendations addressing Italy, 2. country-specific recommendations for Saudi Arabia, and 3. perspectives for fostering relations at the EU-GCC level.

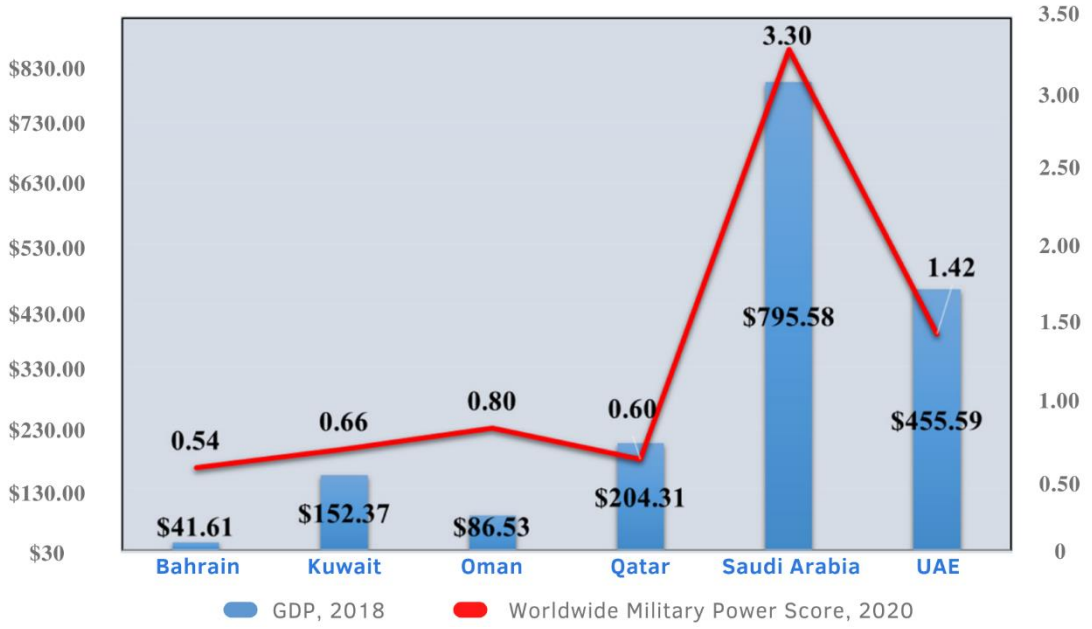
The first section of the chapter focuses on country-specific recommendations for Italy, highlighting three areas of potential improvement concerning the country's geopolitical positioning and industrial presence in Saudi Arabia. Specifically, the analysis considers 1. perspectives for establishing a Memorandum of Understanding (MoU) with the KSA in the field of sustainable development and RE, 2. Italy's need to draft a strategic view for Saudi Arabia and the GCC region through the enhancement of inter-ministerial dialogue for its export policy, and 3. possibilities for improving the Italian industrial presence in the Saudi energy sector, including small and medium enterprises (SMEs) operating in the field of RE, by establishing an inter-ministerial board of coordination for internationalization initiatives.

The second section of the chapter moves to country-specific recommendations for Saudi Arabia, identifying three areas of potential improvement concerning the country's regulatory framework and business environment and, more broadly, initiatives that the Kingdom could take at the national and regional level to defuse potential disruptive effects linked with the energy transition. More precisely, the second section will be divided into three sub-paragraphs analyzing 1. initiatives for improving the Kingdom's financial transparency and business environment, 2. Saudi Arabia's role in the GCC integration process with reference to regional climate change fight initiatives, and 3. perspectives over the sustainability of the Saudi social contract in the next future.

Notably, GCC states have been traditionally reluctant to establish strong forms of cooperation in the energy field, as these countries have historically perceived energy as deeply related to their national sovereignty and security. This pattern also repeats today within the context of the energy transition. Indeed, while GCC states would benefit from cooperating more at the regional level, they have established only very superficial relationships to date. As a matter of fact, the GCC as an institution has always been characterized by a complete imbalance, determined by Saudi Arabia being much more powerful -politically, military, demographically, and economically- than other countries of the area (Figure 2). This

undermined the regional integration process by preventing the establishment of a balance of power among the six GCC states and will continue to make the GCC governments operate significantly below their potential for the foreseeable future. Ultimately, it would be recommendable that Saudi Arabia would establish fairer relationships with other GCC states, rethinking its regional foreign policy in a way to create more reciprocal trust and respect for national sovereignty.

Figure 2: The GDP and military strength in the GCC states



Source: Tok, "The Gulf Cooperation Council states," 56, https://doi.org/10.1111/dome.12226.

Finally, the last section of the chapter considers perspectives for improving inter-regional dialogue at the EU-GCC level. While this is not the main focus of the research, considering that both Italy and the KSA are part of regional organizations it is relevant to provide an evaluation of how the EU-GCC level dialogue can accompany and hopefully favor bilateral relations between GCC countries and European actors and, consequently, between Saudi Arabia and Italy. In doing so, the research focuses on initiatives undergoing at the GCC-EU level in the field of RE and sustainable development, trying to understand whether this level of cooperation can be more functional than the bilateral level and how it can be strengthened.

Although the third chapter mainly provides country-specific policy recommendations, this does not exclude the original framework of the analysis that primarily focuses on the bilateral Italian-Saudi dimension. Indeed, all the considered elements represent issues the two countries need to reflect on if they want to foster bilateral dialogue in the energy field. While

the ultimate goal of this chapter is to highlight possible areas of improvement in Italy-Saudi Arabia cooperation, the research also offers an overview of existing challenges and potential limits.

Ultimately, this thesis argues that Italy and Saudi Arabia can benefit from deepening bilateral partnerships in several fields (i.e., solar and wind power, blue and green hydrogen, CCUS technologies, power grid and distribution, gas, and water management systems). In terms of EU-GCC energy trade, arguably blue and green hydrogen represents the most promising sector of development for inter-regional and bilateral cooperation initiatives, as the Kingdom's vast hydrocarbon resources, existing industrial capacity, and business expertise make it a potential global supplier. With this regard, Italy and Saudi Arabia already have the necessary instruments and institutional relations to establish a MoU for boosting bilateral cooperation initiatives in the field of RE or, more specifically, in the sector of hydrogen production.

Ultimately, this thesis argues that Italy and Saudi Arabia can benefit from deepening bilateral partnerships in several fields (i.e., solar and wind power, blue and green hydrogen, CCUS technologies, power grid and distribution, gas, and water management systems). In terms of EU-GCC energy trade, arguably blue and green hydrogen represents the most promising sector of development for inter-regional and bilateral cooperation initiatives, as the Kingdom's vast hydrocarbon resources, existing industrial capacity, and business expertise make it a potential global supplier. With this regard, Italy and Saudi Arabia already have the necessary instruments and institutional relations to establish a MoU for boosting bilateral cooperation initiatives in the field of RE or, more specifically, in the sector of hydrogen production.

However, even though the current policy outlook suggests the magnitude of the potential for improving bilateral dialogue stemming from this historical moment, a structured framework for enhancing cooperation initiatives in the field of energy and new energy technologies is not yet in place. Indeed, a number of structural elements still hamper the establishment of more solid relations. On the Italian side, the confrontation with sector associations and business consultants has underlined how Italian companies face structural challenges when trying to enter the Saudi market. Furthermore, structural limits linked to Italy's lack of a strategic vision for Saudi Arabia and the absence of an external projection of the country's energy transition objectives have prevented the creation of a strategic framework of cooperation in the field of RE between the two countries. In addition to this, the research suggests it would be interesting for Italy to evaluate possibilities for SMEs operating in the energy and RE sector to participate more actively in the energy transition, both nationally and abroad. This consideration stems

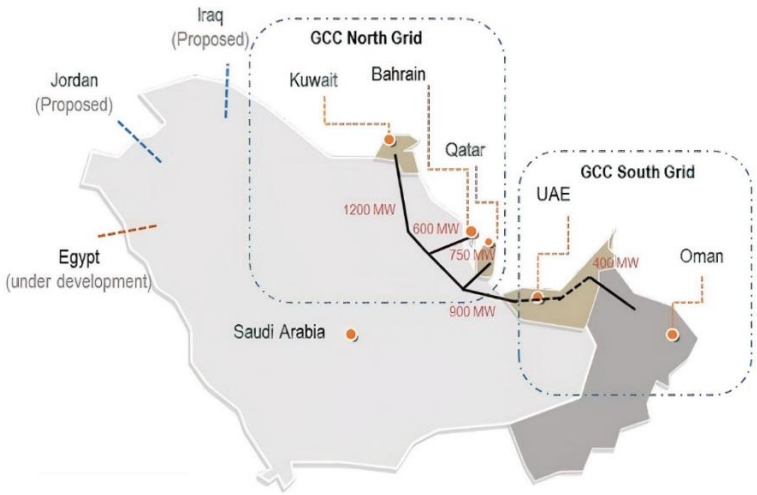
from the fact that the KSA is willing to open unconventional modalities of dialogue and cooperation to boost its private sector and the participation of SMEs in the market. In light of the Italian peculiar industrial composition, cooperation opportunities in this field in terms of best-practice sharing or 'twinning' between Italian-Saudi SMEs helped by an institutional framework of dialogue could open up new opportunities for both: for Italian SMEs in terms of reaching new markets, for Saudis in terms of R&D, know-how, and innovation.

On the Saudi side, despite recent initiatives to liberalize the national FDI and privatization regulatory framework, the Kingdom is still perceived as a relatively closed market, especially if compared to the neighboring United Arab Emirates. Moreover, the research highlights how difficulties in assessing concrete progress on Saudi Arabia's RE targets due to a lack of accessible data signals a problem of transparency on the Saudi side, which contrasts with the government's stated plans and public announcements. Nevertheless, despite the slow pace of advancement in the privatization of the energy sector and deployments of RES and limits in the availability of accessible and transparent data over accomplishments, this research gives an overall upbeat assessment of the KSA'a awareness of the steps forward to be taken with regard to the national regulatory environment. Indeed, Vision 2030 has launched a comprehensive and considerable reforming process in the Kingdom and, despite some delays, it is going forward. Notably, according to the World Bank's Doing Business report, Saudi Arabia was one of the top reformers in the world in 2020.

Finally, concerning potentialities in terms of inter-regional cooperation, the EU and the GCC states could trade energy once the necessary infrastructures are in place as, due to their geographical location, GCC states use electricity the most during summer when European countries use it the least. Actually, EU-GCC cooperation in the electricity field is already quite advanced thanks to regular exchanges and meetings at the technical level organized by producers, system operators, distributors, and relative associations. However, while European countries are embedded in an increasingly integrated electricity system, regional integration in the GCC is a more recent initiative (Figure 3). Nevertheless, as both the EU and the Gulf countries are seeking to expand the reach of their electricity systems beyond their borders, in the long run the realization of a regional power grid in the GCC could open concrete perspectives for the establishment of a broader electricity market, in particular with a view of

interconnecting the GCC region's RE potential with the EU's targets for decarbonization.

Figure 3: GCC interconnections and line capacities



Source: Hasan, "Is the Time Ripe for Private Investment in Interconnections in the MENA Region?", *KAPSARC*, 5, https://test.kapsarc.org/research/publications/.

Secondly, the research observes that, while in the short-term it could be easier for the EU to interact with individual GCC states, in the long-term the Union should evaluate to establish a more structured framework of cooperation at the institutional level with the GCC. Even though this might seem inconvenient on the European side, this could ultimately help reinforce a regional pattern of collaboration in the GCC area, and arguably this could benefit not only the region but also EU political and commercial interests. The research also argues that conversation over environmental issues and energy transition should be reframed if inter-regional cooperation has to be boosted. Indeed, what has been historically perceived as an obstructionist attitude of the KSA in international climate negotiations is derived from a fact situation, meaning the structural role of hydrocarbon resources in the economic and political stability of the country. In light of this, to expect oil and gas exporters like Saudi Arabia to keep their resources underground or fully diversify away from the oil and gas sector is not only unrealistic but it is also sub-optimal.

As for the limits of this thesis, while the research saw potential also for Italian SMEs to be part of the global RE value chain, the interviews conducted with representatives of Italian companies operating in the RE field pointed out criticalities in the access of SMEs to foreign energy markets. However, due to limits in the methodology and the scope of the research, this study does not provide a quantitative assessment of opportunities for Italian companies in the Saudi energy market. Further research on commercial opportunities for SMEs in the Kingdom's energy sector should be integrated with quantitative analysis and risk scenarios.

At the same time, future research investigating Italian-Saudi relations potential should expand the research also to non-economic sectors. Indeed, besides commercial considerations, it would also be interesting to reflect on the social and cultural effects of Vision 2030 and how these changes could affect the Italian-Saudi bilateral dialogue. Further research is needed on this front also to understand better underlying cultural differences in the way of doing business and in the broader governance framework that might hinder bilateral dialogue and thus foster cooperation more effectively. While this was not the main scope of the research, hopefully, this analysis provided a first framework upon which a more in-depth cultural comparative analysis can be built in light of the social and economic Saudi framework.

Overall, the present study provides a comprehensive assessment of multiple economic, social, and political challenges that Saudi Arabia faces with reference to the energy transition, presenting an original point of view on potential cooperation opportunities with a country that, despite being historically linked to Italy, remains an unconventional option in comparison to other regional markets. While this study acknowledges structural limits in the potential improvement of current Italian-Saudi cooperation patterns in the energy field, it adopts a constructive and positive attitude regarding possibilities to strengthen bilateral dialogue and partnerships. Ultimately, this research aims at demonstrating that mutual profits stemming from the energy transition scenario can overcome existing and historical limits and might actually be an instrument to overcome contrasts that have traditionally hindered inter-regional dialogue. Thanks to the integration of interviews conducted with different actors of the Italian and Saudi energy sector, this research provides an insightful and up-to-date overview of the current state of Italian-Saudi relations, assessing existing limits and highlighting possible initiatives for improving them. Hopefully, this thesis can serve as a point of departure for identifying and formulating targeted RES diplomacy initiatives between Italy and Saudi Arabia.