

13. Saudi Arabia: Oil as a Burden in the Struggle for Energy Diversification



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Historically, Saudi Arabia's economic progress has relied heavily on high oil revenues. In times of low oil prices, its rentier state system suffers from decreased revenues, which are needed to sustain a generous welfare state and highly subsidised energy services for its growing population. To tackle this problem, the new Saudi leadership is now seeking energy diversification by investing in renewables and nuclear energy. However, it remains to be seen whether this reform agenda will be implemented, as traditional structural, political and societal obstacles remain. While Saudi Arabia has previously boycotted international climate agreements, it now supports the Paris Agreement.

Energy and economic transformations: In the clutches of oil

Saudi Arabia's energy mix is overwhelmingly dominated by its oil resources. With 16 percent of the world's proven oil reserves, the Kingdom is the world's largest energy exporter, valued at USD 285 billion in 2014 (OPEC, 2015). Oil production has increased from 6.4 million barrels per day (m b/d) to 10.2 m b/d between 1990 and 2016. Oil revenues still account for 90 percent of government fiscal revenues and around 85 percent of export revenues, while the oil sector comprises more than 40 percent of total GDP (SAMA, 2015). Oil revenues enabled the country's transformation from a tribal structure to a modern nation state and form the basis of the royal family's (the Al Saud) political legitimacy by financing a state-centred economic system. It provides free education, health care and job opportunities to the Saudi population, and has established an oil income-based system of subsidies for gas, water and electricity (al-Rasheed, 2002). Thus, Saudi Arabia can be characterised as the rentier state *par excellence* (Beblawi, 1987), in which the population is not allowed to participate in political affairs through elections, etc. and must

demonstrate full loyalty and obedience towards the rulers in return for tax-free cradle-to-grave welfare distribution ("no representation without taxation") (Herb, 2005).

However, this system is on the brink of collapse today: It is estimated that Saudi Arabia's oil reserves will be depleted by 2030.² By providing generous benefits to almost all Saudis in the past, the state has created an entitlement mentality among its national population. Familiar with the Kingdom's long-standing social welfare system, the majority of the Saudi workforce continues to rely on the state as its caretaker and provider of energy and jobs, which are characterised by high salaries and short working hours. This so-called *mudir* (meaning boss or director in Arabic) mentality is one factor in the Saudi economy's inefficiency (Champion, 1999). In addition, the state bureaucracy is characterised by bloated patronage networks (Hertog, 2010). Furthermore, the population is growing by 2.2 percent per annum. By 2050, the present population of thirty million will have doubled. More than half of the population is younger than 25. The growing young Saudi workforce can no longer be absorbed within the public

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² Interviews in Riyadh and Jeddah in December 2014.

sector, and the state cannot provide unlimited social services to its population in the future. The private sector is still not attractive for Saudi job seekers, and is mostly dominated by foreign workers: 90 percent of the private workforce are non-Saudi nationals (Sons, 2014). As a result, Saudi youth unemployment (15–24 years) increased to 41 percent in 2013, and youth labour participation of Saudi nationals was just 14 percent in 2014 (McKinsey Global Institute, 2015).

Due to high population growth and high energy subsidies, both aggregate and per capita energy consumption have increased tremendously in recent decades. Per capita energy consumption is presently the highest globally and three times the global average. Since 2000, energy consumption has more than doubled, while electricity consumption has grown at an annual rate of 6–8 percent (Akhonbay, 2012). Almost one quarter of total oil production is consumed domestically, which is almost double the consumption in 2000 (Lahn & Stevens, 2011). In 2012, approximately 40 percent of energy was consumed by the transport sector (Akhonbay, 2012). In addition, almost all Saudi gas production is consumed by the domestic market (US Energy Information Administration, 2014). As part of the welfare system, the state has offered its population highly subsidised energy in the form of low petrol and gas prices in recent decades. Subsidies amounted to 9 percent of GDP both for the oil products (around USD 46 billion) and for the electricity sector (almost USD 15 billion) (Nacht & Aoun, 2015).

In the absence of reforms, continued population growth will lead to further increases in domestic energy consumption and rising expenditures to sustain the existing subsidy regime. At the same time, increasing domestic energy demand reduces the country's export capacities of oil and gas, thus further exacerbating the state's fiscal situation. It is predicted that Saudi Arabia may become a net energy importer in 2030 unless it initiates significant changes to present energy consumption patterns (Taher & al-Najjar, 2014). Since 2014, the low international oil price has further damaged the Saudi fiscal situation and is affecting the domestic socioeconomic situation. The International Monetary Fund (IMF) has projected continued fiscal deficits for the foreseeable future, amounting to 15 percent in 2015, which is expected to increase to 17.8 percent of GDP in 2016

(Jadwa, 2016). Consequently, Saudi Arabia's budget swung from a surplus of 6.5 percent of GDP in 2013 to a deficit of 2.3 percent in 2014 as proceeds from oil exports dropped (SAMA, 2015). Foreign exchange assets and saving dropped from USD 746 billion to USD 669 billion between mid-2014 and mid-2015 (Barakat, 2016).

Impulses and reform initiatives: Will the “Vision 2030” work?

Due to domestic socioeconomic obstacles based on high energy consumption and rising population in times of low oil prices, Saudi Arabia's leadership is aware of the dire need to diversify the Saudi energy mix. In this regard, ambitious reforms in the energy sector are planned. The diversification of the energy mix away from its current oil dependence is the main objective of the latest reform agenda, called “Vision 2030”, which was announced in spring 2016 by the King's son, Deputy Crown Prince Muhammad bin Salman. As head of the newly established Council for Economy and Developmental Affairs, he is in charge of the reform agenda (Kéchichian, 2015). Muhammad bin Salman stated that Saudi Arabia plans to overcome its oil dependency “within 20 years” (Almashabi et al., 2016). Thus, USD 133 billion is required for energy infrastructure by 2023 in order to increase electricity production from 58 GW in 2013 to 120 GW in 2032 (Reuters, 2016). In addition, the following reforms are planned or under implementation:

Cut in subsidies

The Saudi Government decided at the beginning of 2016 to cut energy subsidies for the first time in modern Saudi history. Thus, the average crude oil price for domestic consumption has risen per barrel (Jadwa, 2016) and gasoline prices have been increased by 50–67 percent (Watts, 2016). It is estimated that the recent price reforms will enable the government to increase its domestic oil revenues by an additional USD 18 billion per year for the period (2016–2035) (Jadwa, 2016). However, subsidies have become integral parts of the welfare system, and it remains to be seen whether wide parts of the population will accept the negative impacts of these reductions in subsidies. In order to avoid such frustration and disillusionment, Muhammad bin Salman mentioned that subsidies should be cut for the wealthy

elites: “(...) We do not deserve subsidies (...). The people who deserve and need subsidies are those who are on average incomes and less” (Al-Arabiya, 2016).

Privatisation of Saudi Aramco

A 5 percent initial public offering of the national oil company Saudi Aramco is planned. This privatisation should generate new assets of around USD 250 billion, but it seems likely that only non-sensitive sectors of the business, such as non-oil production, will be included in the initial public offering. Nonetheless, this would open Saudi Aramco to public discussion, force it to provide more information about ongoing and planned strategies and projects and thus demonstrate greater transparency towards its investors and shareholders. This could have fundamental consequences for the Saudi energy system as a whole and could offer new opportunities for supporting alternative energy.

Personnel changes in energy administration

In May 2016, the long-serving oil minister Ali al-Naimi (in post since 1995) was replaced by Saudi Aramco CEO Khalid al-Falih, who is in charge of the newly created Ministry of Energy, Industry and Natural Resources. It remains to be seen whether the establishment of such a ministry will exert strong influence on the political system. However, it is apparent that the administration under King Salman seeks to create synergies between different parts of the decision-making process. This was also demonstrated by the merging of several economic committees into the Council for Economy and Developmental Affairs. This further serves to consolidate power within positions and institutions that are controlled either directly by King Salman and Crown Prince Muhammad (such as Muhammad bin Salman as head of the Council for Economy and Developmental Affairs) or by loyal technocrats (such as Khalid al-Falih).

Expansion of renewable energy

The expansion of renewable energy is also an important pillar of the new “Vision 2030” (Saudi Gazette, 2016): The potential for utilising renewables such as solar and wind in the Kingdom is tremendously high, with three hundred sun days per year, and long

coastal and remote desert areas (King Abdulaziz Center for Atomic and Renewable Energy, 2010). Solar radiation potential is approximately fifty thousand GW per annum. Wind energy potential is also promising, with average wind speeds of 8–12 m/s (Rehman et al., 2012). The strategy document estimates investment of USD 109 billion in the renewable energy sector. The details of the investment strategy have not yet been fixed, but most of the projects should be implemented by public investors such as state agencies. It is planned to increase the share of renewable energy to 50 percent of installed capacities, which it is estimated would create one hundred and thirty-seven thousand new jobs by 2030. Vision 2030 mentions the installation of 9.6 GW of wind and solar energy (Saudi Gazette, 2016). In addition, it is planned to use renewables to run oil-intensive technologies such as water desalination.

However, these plans are nothing new: In 2010, the Saudi Government established the King Abdullah City for Atomic and Renewable Energy (KA-CARE) to increase new renewable and nuclear energy capacities, and the King Abdullah Petroleum Studies and Research Center (KAPSARC), which officially serves as an independent research centre for energy and environmental studies. However, the KA-CARE mission to install 54 GW of renewable energy by 2032 was postponed to 2040, approved projects have not been realised, and bid periods have passed without final decisions being made (Reuters, 2015). Furthermore, Saudi Aramco, the largest energy company in the world, and other players such as the Saudi Electricity Company (SEC) have also sought more control of the renewable energy sector.

This involvement has resulted in opaque hierarchies and delayed decision-making processes. It remains to be seen whether the establishment of the new Ministry of Energy, Industry and Natural Resources will solve these inter-institutional struggles. Lack of expertise in renewable energy technologies, and the mentality by which energy consumers rely on subsidised fossil resources rather than on unsubsidised alternative energy additionally limit the future prospects of renewable energy in the Kingdom. This is also due to the fact that there are no support mechanisms, such as feed-in tariffs, to stimulate investment. Political support remains limited due to the overwhelming dominance of the oil lobby; and adminis-

trative capacities and necessary engineering and managerial skills remain inadequate. Due to these barriers, solar and wind energy still account for less than one percent of the total energy mix.

Installing nuclear power

Nuclear energy also plays a significant role in the process of diversifying the Saudi energy mix. It is planned to expand nuclear energy capacity by building 16 nuclear plants by 2040 with a total power capacity of 17 GW. Nuclear energy is considered more prestigious than renewables, and Saudi nuclear power is perceived as counterbalancing Iranian nuclear ambitions (interviews in Riyadh, December 2014).

Strengthening energy efficiency

In recent years, Saudi Arabia has also intensified policy measures to foster energy efficiency in the construction, transportation and industrial sectors. In this regard, the National Energy Efficiency Programme (NEEP) and the Saudi Energy Efficiency Centre (SEEC) were founded in 2008 and 2010, respectively. The National Energy Efficiency Programme was initiated in cooperation with the UN Development Programme (UNDP) in order to enhance energy-efficient solutions and support research and development conducted by the King Abdulaziz City for Science and Technology (KACST). The programme is funded by USD 35.5 million provided by the Saudi Government. Key fields of activities are housing and buildings, consumer appliances, heavy industry, water and transport. It is planned to develop regulations, such as the Energy Conservation Law, and a national database on energy supply and demand; to implement capacity-building measures such as training courses for future experts in energy efficiency; and to start nationwide public awareness campaigns on energy consumption behaviour. Since the National Energy Efficiency Programme's launch in 2008, more than three hundred applicants have attended courses and workshops, a project management office was established and the energy efficiency standard for air-conditioners has been updated. On this basis, in 2014, the government banned air-conditioners that did not comply with the new specifications. Furthermore, energy efficiency labels for washing machines, refrigerators and freezers were implemented in 2015

(UNDP, 2011). The young Saudi population in particular has increased its awareness and sensitivity regarding energy efficiency. Therefore, future political initiatives might achieve better results than in the past. To date, energy efficiency has mostly been discussed within academic circles, and the trickle-down effect to broader spheres of society remained minimal. However, previously implemented regulations and the adoption of Vision 2030 are likely to improve awareness in the foreseeable future.

International energy policy: weakening global energy competitors and showing leadership and responsibility

Saudi Arabia plays a very important role as a global energy producer, and has maintained its position as the most influential member state of the Organization of the Petroleum Exporting Countries (OPEC) (Fattouh & Sen, 2015). This is evident during the period of low oil prices since 2014: While other OPEC members such as Venezuela, Nigeria and Iran sought to cut oil production in order to increase international prices, Saudi Arabia vetoed this decision for more than a year. Thus, daily crude oil production was maintained at a high level of approximately 10.2 m b/d in January 2016. Although shrinking oil revenues present the Saudi Government with formidable domestic challenges, Saudi Arabia nevertheless aimed to weaken its rivals on the global energy market – the United States, Iran and Russia – by driving down energy prices in order to maintain its market share (Sons, forthcoming). In this regard, the Saudi decision was driven by the calculation that the Kingdom was better able to withstand low oil prices than its rivals, due to its substantial foreign exchanges (Gause, 2015). However, this policy may change: For the first time since the significant drop in oil prices, Saudi Arabia agreed to cut oil production in September 2016 (Blas & Smith, 2016). Thus, OPEC's total daily oil production will be reduced from 33.23 m b/d to 32.5–33.0 m b/d. Saudi Arabia alone cut its production by four hundred thousand barrels/day at the end of 2016 (Said, 2016).

Furthermore, Saudi Arabia has worked on improving its international image as a responsible and reliable partner in multilateral climate policy initiatives. Therefore, the Saudi Government has extended its activities within the UNFCCC. Nevertheless, its

position on climate change is a double-edged sword: Due to its oil production, the Kingdom is a large contributor to CO₂ emissions through air conditioning, the use of cars with high fuel consumption and energy-intensive industries such as oil production. On the other hand, its arid and dry climate, air pollution and scarce water resources make Saudi Arabia highly vulnerable to the adverse effects of global warming and environmental pollution. By the year 2100, average temperature during the summer months is expected to rise to 60–70°C (Pal & Eltahir, 2016) from 45 C today. This may further increase energy consumption for air conditioning. In the past, Saudi Arabia boycotted international climate agreements and questioned the scientific evidence on the impacts of climate change (Windecker & Pfülb, 2016). However, the Saudi Government now shows greater political will to address climate challenges and seeks to present itself as a trustworthy partner in global climate and environment initiatives (Al-Naimi, 2012). Thus, in December 2015, the Kingdom submitted its first Intended Nationally Determined Contribution (INDC) to the UNFCCC at the COP21 climate conference in Paris, thereby contributing to the international community's climate protection strategy (UNFCCC, 2015). Saudi Arabia's leadership wants to implement its INDC between 2021 and 2030 in the following sectors: energy efficiency, renewable energies, carbon capture and utilisation/storage, utilisation of gas, and methane recovery and flare minimisation. However, no concrete details have yet been announced.

Lessons learned for the G20 process

At present, Saudi Arabia shows that even important oil exporters have begun to show greater political will to reshape their energy policies in order to promote domestic energy diversification and independence from fossil resources. In this regard, Saudi Arabia has also modified its stance towards international

climate initiatives such as the UNFCCC. This may mean a significant step towards greater environmental responsibility, thereby offering new windows of opportunity for international cooperation. However, this strategic turn is also due to the socioeconomic challenges that the Kingdom faces: The low oil price has begun to impose severe pressure on the Saudi national budget. Declining oil incomes reduce the financial capacity to sustain the traditional rentier state. Thus, the Saudi leadership plans to implement fully-fledged energy reforms in order to reduce the state's oil dependency. However, it remains to be seen whether the ambitious reform agenda can be realised in the long run, as similar plans in the past have achieved only minimal outcomes. Although the new leadership is fully aware of the dire need to diversify the energy sector, other factors will also influence the future success of such reforms: Firstly, the government has to balance the socioeconomic consequences of cutting subsidies for Saudi nationals, in order to avoid social frustration and to change attitudes to sustainable energy consumption. Secondly, it remains to be seen whether King Salman and Deputy Crown Prince Muhammad have the will to persevere with these painful reforms, given the prevailing *mudir* mentality the strength of the oil lobby. Thirdly, most of the Saudi population perceive their own security as the biggest priority, and political reforms have lost relevance since the destabilising effects of the “Arab Spring” on the region since 2011. In this regard, most young Saudi nationals welcome Vision 2030 (Thompson, 2016). The trust of their people thus buys the royal leaders time to implement energy reforms and opens a window of opportunity to change not only the country's energy infrastructure but also the traditional social contract between the ruled and the rulers in general (Sons, forthcoming). Therefore, low global oil prices also offer an opportunity for the Kingdom to completely reshape its oil-dependent energy policy in favour of climate protection, renewable energy and energy efficiency.

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