

11 Energy consumption and transition dynamics to a sustainable future under a rentier economy

The case of the GCC states

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Introduction and outlook of GCC states

In this chapter, the political system and prevalent rentier economy of the Gulf Cooperation Council (GCC) states will be analyzed in order to assess those states' transition to a sustainable energy future. There are two important pillars, namely demand and supply, for a sustainable energy transition to take place in the GCC. First, cheap utility prices (water, oil, and electricity) have been a part of "rentier agreement" between the ruler and the citizens. This has partially led to excessive demand and waste of energy in those states. We analyze recent trends of change in utility prices and dynamics of energy consumption in these states. Second, sustainable energy transition needs the introduction of sustainable energy production forms. This will require a change in decade-old energy infrastructure of the GCC states which could be very challenging due to idiosyncratic economic, industrial, and political structures of these states.

The chapter follows with the prevailing political and economic system of the GCC states. Energy consumption dynamics and recent change in utility prices are analyzed in the second section. Development of sustainable energy forms in the GCC is discussed in the third section, which is followed by a conclusion.

Political system

Six Arab countries located in the Arabian Peninsula by the Persian Gulf are Bahrain, Kuwait, Oman, Saudi Arabia, Qatar and UAE together constitute the GCC (Hvidt 2011). The political systems of these six countries are monarchies, with Kuwait, Qatar, and UAE ruled by emirs; Oman ruled by a sultan; and Bahrain and Saudi Arabia ruled by kings. The Democracy Index is published by the Economist Intelligence Unit (EIU); the score of 1 is for absolute authority and the score of 10 is for the maximum democracy. The 2012 report classifies all GCC states as countries with absolute political systems (Table 11.1) based on the democracy scores of GCC.

Table 11.1 GCC Democracy Index

<i>Country/Year</i>	<i>2012</i>
Bahrain	2.53
Kuwait	3.78
Oman	3.26
Qatar	3.18
Saudi Arabia	1.71
UAE	2.58
Norway (Highest)	9.93
North Korea (Lowest)	1.08

Most national councils of GCC states have limited rights and executive power. While the national councils of Kuwait and Bahrain have more executive and legislative power, appointments of critical ministries and approval of large projects are directly managed by the rulers or the committees appointed directly by the rulers (Kaya and Tsai 2016; Hanieh 2015).

Rentier agreement

GCC states are classified as rentier states in which revenue from selling of hydrocarbon reserves plays a vital role in those societies (Ross 2001). The governments of GCC distribute accrued wealth to their people through subsidies, free education and health schemes and high-paying public jobs in exchange for the political rights known as “rentier social contract” or “rentier agreement” or “ruling agreement” (Herb 2005). Additionally, there is little or no tax in the GCC states since the state doesn’t need taxation due to revenue from hydrocarbons (Herb 2005).

Productive and commodity circuits in the economic structure of GCC states

Productive circuit

As indicated earlier, GCC states sit on top of significant hydrocarbon reserves while possessing little agricultural land and other mineral resources (Rogner 1997). Due to easily accessible and cheaper-to-produce oil reservoirs of the GCC region compared to deep-offshore, shale, or tar sands oils, money generated from exporting hydrocarbon products constitute a significant revenue for the GCC governments (Fasano-Filho and Wang 2002). All the upstream exploration, drilling, transportation, and production rights of hydrocarbon resources are under the control of the government in all of the GCC states (Kaya and Tsai 2016).

It is, hence, not surprising that revenues from selling hydrocarbon constitute a significant part of government revenue, country exports, and the overall economy in the GCC states, as shown in Table 11.2 (Hvidt 2013).

Table 11.2 Percentages of hydrocarbon revenue in export, state budget and GPD in 2011

<i>Country</i>	<i>% of export earnings</i>	<i>% of state budget</i>	<i>% of GDP</i>
Bahrain	69	86	24
Kuwait	90	93	45
Oman	65	77	41
Qatar	91	80	46
Saudi Arabia	85	85	50
UAE	69	77	32

In the 1980s, GCC states started initiatives to diversify their hydrocarbon business by investing into downstream operations in oil and gas industries through, for example, building state-of-the-art petrochemical complexes. Saudi Basic Industries Corporation (SABIC), a subsidiary of Aramco as the national oil company of Saudi Arabia, is one of the leading petrochemical companies in the world (Hertog 2010). Similar to SABIC, other GCC states have established successful petrochemical companies which delivered good profits thanks to strict and autonomous management (granted by the ruler) and the advantage of cheap oil and gas as raw material for production. Following the successful diversification into downstream hydrocarbon industries, the Gulf states gradually expanded their business into capital intensive and high energy-intensive manufacturing such as aluminium and steel production. “Coke and refined petroleum products”, “Chemical products”, “Non-metallic mineral products”, “Manufacture of basic metals” are categorized as high energy-intensive manufacturing sectors. Further investment and creation of state-owned enterprises (SOEs) are directed towards natural monopoly areas such as airlines and telecommunication industries where the Gulf states captured significant returns for their investments (Hertog 2010). To conclude, GCC states have either nationalized or developed monopoly entities to engage almost all of the productive industries, first starting with hydrocarbon industries. This strategy was critical in empowering the state to supply its citizens with various economic privileges as a part of the rentier agreement. This economic circle, which is entirely under state control, is named as “productive circuit” (Hanieh 2015).

Commodity circuit

There is no significant manufacturing of capital goods used for production (i.e. machinery and heavy equipment) in the GCC states. This has resulted in the imports of necessary capital goods from advanced economies. Rapidly improving economic conditions of GCC citizens and expatriate workers has also created huge demand for basic consumer goods such as food products, automobiles, home appliances, and apparels (Hanieh 2015). Due to lack of industrial base, most of the consumer goods are imported as well. The state has given exclusive licenses to the family businesses established by the locals to perform importing of some capital

goods and most of the consumer goods as part of the rentier agreement. The Dubai ruler has granted “exclusive import licenses and business contracts” to the famous merchant families in Dubai such as Al Ghurairs, Al Futtaims and Al Rostamanis (Krane 2009: 70). Large family conglomerates in the GCC countries are a common feature and mostly operate in “commodity circuit” (Hanieh 2015, Chapter 3). Regular citizens are also awarded with economic privilege through sponsorship systems (known as “kafala” in Arabic) which require foreign entities to have a local partner with a majority stake of ownership in a business (Fargues 2011).

Energy consumption dynamics in the GCC states

Energy consumption per capita in the GCC states

GCC states have very high energy consumption figures (per capita) compared to the other Arab nations, wealth nations, and the world average in general. Figure 11.1 highlights the stark difference of the GCC countries compared to the rest of the world based on World Bank Database.

High energy use in the GCC states can be attributed to many different factors. Generous utility subsidies under rentier agreement may be one of the most important reasons for excessive use of electricity, oil, and gas in the GCC states (Mezher et al. 2014). Diversification into high energy-intensive industries such as steel and aluminium manufacturing under “productive circuit” strategy may contribute excessive energy use in the GCC states as described above. The region’s very hot climate, desalination due to lack of potable water, low level of development in public transportation and high GDP per capital levels are partly the reason for excessive energy use in the GCC states. In fact GCC states have very energy dense economies compared to the world average or OECD average (comprised of 34

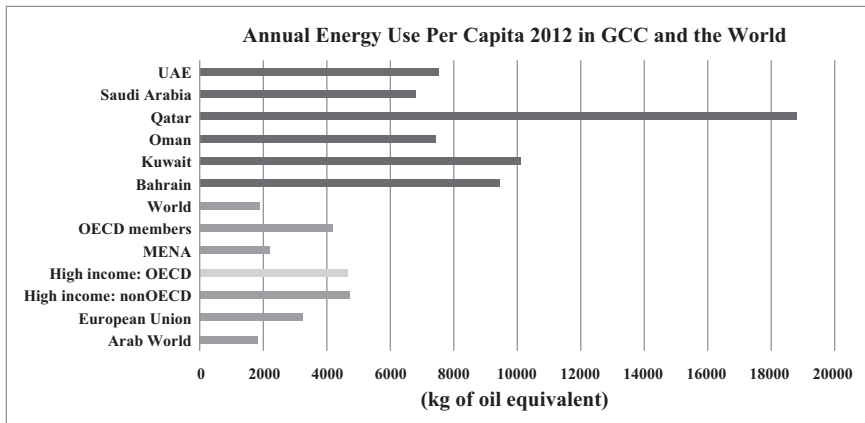


Figure 11.1 Annual energy use per capita in GCC states and selected regions and income groups

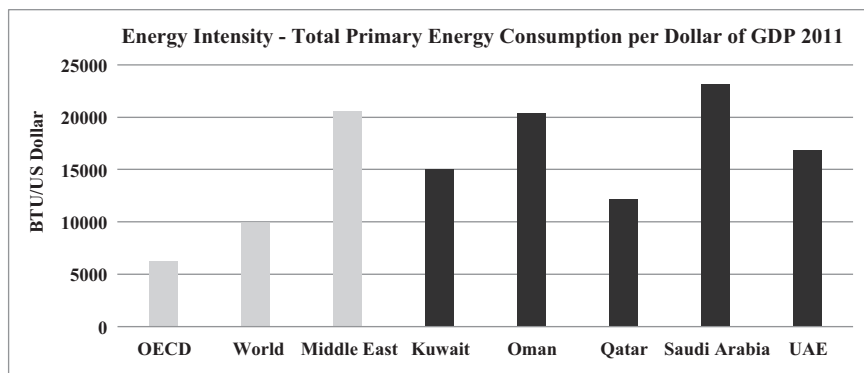


Figure 11.2 Total primary energy consumption per dollar of GDP created in the GCC

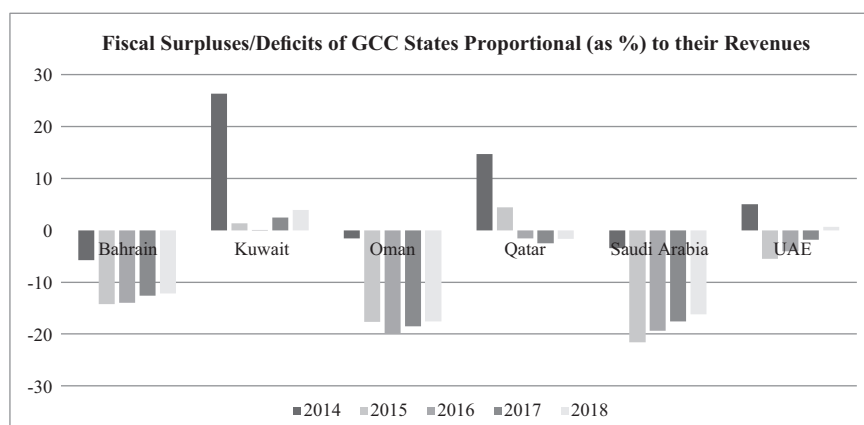


Figure 11.3 Fiscal surpluses/deficits of GCC states proportional to their revenues from year 2014 to 2018

countries having high GDP per capita income), as depicted in Figure 11.2 (AFEX 2015).

Nevertheless, there are some changes in the GCC states regarding generous subsidies and excessive use of energy and water subsequently. The recent collapse in oil prices have caused the most GCC states to run significant budget deficits and this is expected to be the case for the coming years, as shown in Figure 11.3, which is based on the IMF database.

With the exception of Kuwait, all the GCC states are expected to run significant budget deficits under low oil prices. Bahrain, Oman, and Saudi Arabia are suffering most due to their relatively bigger populations compared to oil revenues (Kaya and Tsai 2016).

In order to respond to the budget deficit, the GCC states decreased energy subsidies which appeared in the form of cheap electricity, water, and gasoline prices. GCC states have reduced the misalignment between the pump prices for gasoline and the international benchmark oil prices. Figure 11.4 shows prices increase for the gasoline in comparison with the subsidized rates in the GCC states.

Some GCC states (UAE, Saudi Arabia, and Qatar) have increased the electricity tariffs charged to the residential and commercial entities while other GCC states are planning to increase (Boersma and Griffiths 2016). Nevertheless current electricity tariffs are still far below than those of European Union (EU)

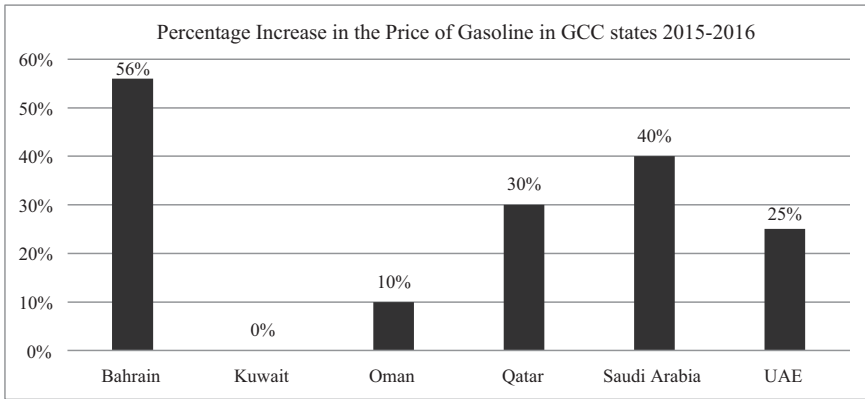


Figure 11.4 Percentage increase in the price of gasoline compared to its previous price either in year 2015 or 2016

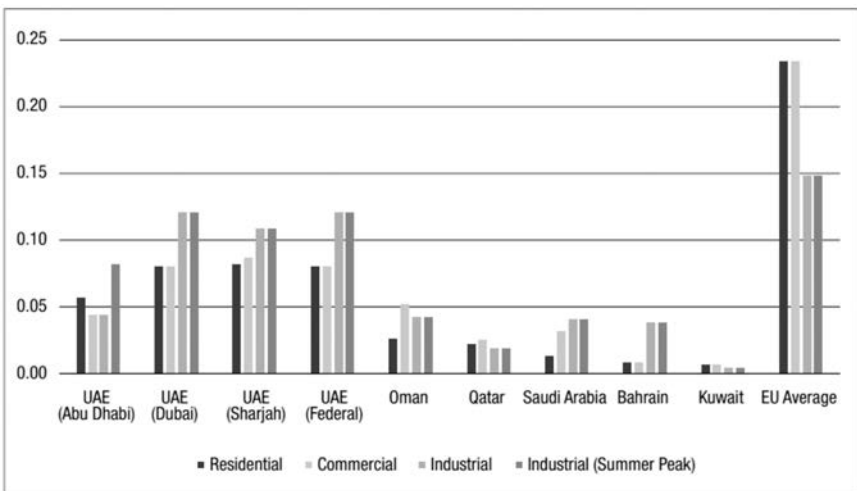


Figure 11.5 Electricity tariffs in the GCC states and the EU average

countries, to which GCC states have similar GDP per capita on average, as shown in Figure 11.5.

Future of energy consumption dynamics in the GCC states

Cheap utility prices due to the rentier economic system, industrialization in energy-intensive production sectors, and the region's hot climate are the primary factors behind the high energy use in the GCC states compared to the Middle East Region, OECD countries, or the world average (Figure 11.1). The recent collapse in oil prices has caused the GCC states to take some austerity measures which have caused spikes in gasoline prices, electricity, and water tariffs. However, further increase in utility and gasoline prices in line with the value of energy in international markets may be tricky, especially in relatively less wealthy GCC states (Bahrain, Oman). It has been stated by Gengler and Lambert (2016):

Most in the region remain broadly opposed in principle to the notion of benefit retrenchment, whatever the economic or environmental imperative. Many ordinary citizens perceive that they are being asked to make financial sacrifices disproportionate to their level of wealth compared to societal elites, and this in order to solve a problem derived from policies and decisions most played no significant role in shaping. In Qatar, for instance, a nationally representative survey conducted in September 2015 found strong resistance to the idea of Qataris paying for part or all of their electricity and water usage, even when the policy is explicitly framed against the backdrop of environmental and economic challenges.

Overall energy price in the GCC states is still much lower comparatively and recent increases may not change the energy consumption fundamentals of the region. Expected increase in population and economic activity along with low levels of energy efficiency are likely to dominate the energy consumption trends in the GCC, where there was a continuous upward trend since 2000.

More importantly, CO₂ emissions of GCC states will increase along with their energy consumption unless a significant change in energy production dynamics occurs. While, for example, a complete removal of water and electricity subsidy in Abu Dhabi is expected to reduce 7.2% of carbon emissions in the Emirate (Wang et al. 2016), investments in clean, efficient and renewable energy technologies (CERET) have been quite low until recently (Reiche 2010). The Gulf countries used to actively oppose any international binding agreement on reduction of carbon emissions (Jamil et al. 2016). Lately, there is a growing interest in the region for utilization of renewable energies in electricity production (Jamil et al. 2016). In the next section, the possibility of deploying CERET in the GCC states will be discussed regarding the rentier economic structure.

Development of CERET for a sustainable energy transition in the GCC

The entry barriers for CERET towards sustainable energy transition in the GCC

Deployments of renewable/clean energies along with energy-efficient technologies are important for the GCC states to curb their carbon emissions and will allow them to export more hydrocarbons with less domestic fossil-fuel consumption. These changes are likely to introduce new business opportunities, market structures, and industrial development which may challenge the status quo of productive and commodity circuits in the rentier states of GCC. Due to the rentier nature of the socio-political system, it is reasonable for GCC states to introduce market entry barriers for CERET (Kaya and Tsai 2016). We will first discuss theories for why there could be entry barriers for the new technologies in the GCC states before analyzing development dynamics of CERET in the GCC states.

There are various theories on the rationality of the introduction of entry barriers (Djankov 2009). “The helping hand” model postulates that governments regulate the entry conditions to prevent market failures (Djankov et al. 2002). A government may introduce entry barriers to block the entry of low-quality products or prevent the occurrence of undesirable externalities. This policy helps the incumbent firms strengthen their position vis-à-vis the new technology developer. “The capture theory” asserts that incumbent firms in an industry or sector tend to support regulations that block the entry of new firms or technologies to the market (Djankov 2009). As incumbent firms or economically strong power blocks tend to control the political power, they can effectively promote regulations that introduce entry barriers (Acemoglu 2008). Meanwhile, the “Tollbooth Theory” explains why there are more entry barriers in less democratic countries compared to the democratic countries (Djankov 2009). This theory claims that regulations and entry barriers are set in place by politicians and bureaucrats to extract money (bribe, rent) from the firms. Different than “the capture theory”, which emphasizes the incumbent firms as the beneficiary of energy barrier, “the Tollbooth Theory” suggests that it is the politicians and bureaucrats who benefit from the introduction of entry barriers.

The Heritage Foundation’s 2014 “Economic Freedom (EF)” report published data regarding business freedom in each country (Hall et al. 2014). Each index is scaled from 0 to 100 where 0 represents minimum level of freedom to do business and 100 represents maximum freedom to do business. From the 2014 EF report, “Business Freedom”, “Trade Freedom”, and “Investment Freedom” are chosen and their averages (labelled as “Average EF”) to assess entry barrier levels in the GCC states. For the year 2014, the GCC states had similar (Kuwait, Qatar, Saudi Arabia, and UAE) or better (Bahrain and Oman) performance in those indexes compared to the world average. Figure 11.6 shows the level of business freedom in the GCC states in 2014.

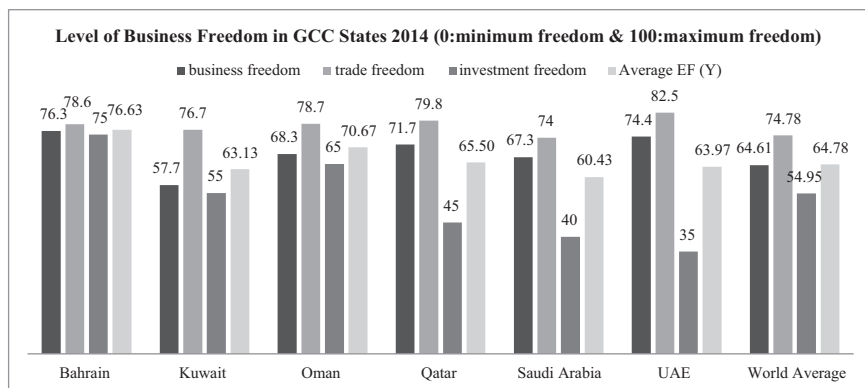


Figure 11.6 Level of business freedom in the GCC states 2014

While the GCC states generally have good performance regarding the “Trade Freedom” index, they have very low-level performance in “Business Freedom” and “Investment Freedom”. This result is not very unlikely since we explained before that the “productive circuit” and “commodity circuit” areas are highly protected in the GCC by the state and the citizens respectively. This is a direct result of “rentier agreement” prevailing in the GCC states’ economic and political structure, where critical business and investment opportunities are reserved either for the state or for the elites.

Panel data regression analysis for entry barriers in the GCC states

A panel data regression analysis is conducted to analyze the determinants of entry barriers in the GCC states. We use the EF index as a proxy to measure the level of entry barriers in those countries. The EF report provides performance for the GCC states from 2000 to 2014, which allows us to conduct a panel data regression analysis by using the index of entry barrier levels as the dependent (affected) variable. For the factors affecting the level of entry barriers, we use the Democracy Index (score) provided in Table 11.1, similar to previous studies (Djankov et al. 2002). Since a rentier state’s fortunes are tightly linked to the price of its rent, oil price fluctuations may play a role in the level of entry barriers the GCC states. Finally, GDP per capita is added as a third factor to estimate the effect of economic prosperity on entry barriers in the GCC states.

Table 11.3 shows regression results. It is found that that the level of democracy has no statistical significant effect on the level of business freedom (or entry barriers) in the GCC states for the selected period for the pooled regression. However, oil price has a significant and negative effect on the level of entry barriers. A 1 dollar increase in oil prices results in 0.08 points increase in level of business

Table 11.3 Entry barriers in the GCC states, panel data analysis

Panel data regression of entry barriers in the GCC states

<i>Dependent variable:</i>	<i>Regressors</i>					
	<i>Democracy score (EIU)</i>		<i>Oil price (Brent US\$/barrel)</i>		<i>GDP/capita (in 1000 USD)</i>	
	<i>Random effects model</i>	<i>Fixed effect</i>	<i>Random effects model</i>	<i>Fixed effect</i>	<i>Random effects model</i>	<i>Fixed effect</i>
General business freedom	1.55 (1.08)	–	0.08*** (–0.02)	0.045* (–0.03)	–0.1** (0.04)	0 –

Notes

General business freedom is the average of “business freedom”, “trade freedom” and “investment freedom” indexes.

Oil price is for the Brent International Petrol and measured as US\$ per barrel. The source of the data is cia.gov.

GPD per capita is measured in current US\$ for each country. The source of data is databank.worldbank.org/data.

Standard errors are provided in the brackets.

“*”: $p < 0.05$; “**”: $p < 0.01$; “***”: $p < 0.001$. (Level of significances for the regressors)

freedom. This result may indicate that GCC states are pursuing more market friendly economic policies and put less restriction when the oil revenues are high. Interestingly, higher GDP per capita results in more entry barriers in the GCC states, which may indicate that when GDP per capita is high, the state may feel less pressure to introduce market reforms to attract private investment or push for economic diversification. However, the effect of GDP per capita on entry barriers disappears in the fixed effect model.

A negative relationship between economic growth and high entry barriers has been proposed and analytically shown recently (Aghion et al. 2007). Autocratic governments tend to erect more entry barriers for the high value-added (advanced, closer to the technological front) sectors of the economy rather than the sectors with low value added (Aghion et al. 2007). While democratic countries have lower entry barriers for the advanced sectors, autocratic regimes have higher entry barriers for those sectors. For that reason, democratic regimes have generally more dynamic and competitive advanced sectors compared to the autocratic regimes which may contribute positively to the overall economy. In the European Union, renewable energy sectors had a productivity level similar to the manufacturing industry average, which usually comprises advanced manufacturing.

CERET are high value-added businesses and could face potential entry barriers in the GCC states. This could prevent creation of competitive industries and markets related to CER technologies in the GCC states. In fact investment into CERET is low compared to the world in the GCC states with the exception

of a few initiatives with data taken from Eurostat and the study by Ragwitz et al. (2009).

The state itself may try to capitalize on high value-added CERET by localizing the manufacturing and utilizing for electricity and water production. This strategy could result in extension of the “productive circuit” similar to the previous extensions into petrochemicals and basic metal businesses. In fact, the Emirate of Abu Dhabi has taken separate but important initiatives towards localizing the manufacture and deployment of CERET while remaining GCC states are still in planning stages (Jamil et al. 2016). The success and continuation of these initiatives are yet to be seen. Different than petrochemical and basic metal industries, the GCC states don’t have any comparative advantage in high value-added and competitive sectors of CERET. Manufacturing high value-added CERET by state can be costly and result in failure as opposed to the previous initiatives (petrochemical and basic metals) in the GCC states. By importing know-how of international companies and aggressively supporting Research and Development (R&D) efforts of local companies, the Norwegian government could be a very good example for the GCC states (Cherif and Hasanov 2014). Instead of being the main agent in manufacturing and production, Cherif and Hasanov (2014) suggests that GCC states can “*act as a venture capitalist and foster public-private collaboration to design and implement strategies that go beyond the comparative advantage sectors and target high value-added sectors with large potential spillovers and productivity gains.*” For example, Dubai’s successful biddings to subcontract its solar energy power plant could be role model for the region to deploy and utilize CERET for electricity or water production (Sgouridis et al. 2016).

Conclusion

The rentier agreement prevailing in the GCC states has taken a hit by the recent collapse in the oil prices. To decrease the budget deficit due to very low oil prices, the GCC governments have phased out some subsidies for utilities and gasoline. Nevertheless, current price levels for utilities and gasoline are still below the world average in all the GCC states to varying degrees. In the UAE, for example, the price of gasoline is no longer subsidized but is still low compared to EU countries because there are no added taxes. Very low electricity and water rates, and cheap gasoline prices incentivized overconsumption and waste in those countries such that they are among the highest per-capita energy consumers in addition to high level of carbon emissions. Significant reduction in energy consumption per capita in the GCC states seems unlikely even after removal of the subsidies due to high GDP per capita, the region’s hot climate, low efficiency in energy consumption, and the presence of energy-intensive industries (productive circuit). Instead, growing population and economies will increase overall energy consumption in those states along with carbon emissions unless energy production and conservation dynamics change. Rentier economic systems in the GCC states where the political rights are traded off with economic privileges can play a decisive role in whether these countries transition to a more sustainable energy consumption and production

dynamics by utilizing CERET instead of fossil fuels. Development and deployment of CERET may require a competitive and dynamic economic system as well as low entry barriers for newcomers. Despite having good performance for a free trade index, GCC states have high entry barriers for the business and investment opportunities compared to the world average. A regression analysis shows that entry barriers in the GCC states increase when rent revenues (oil price) decrease, and GDP per capita is high while there is no effect of democracy level. Implicit entry barriers and lack of comparative advantage may slow down CERET industries' development in the GCC states. However, sharp decreases in the cost of CERET may incentivize the Gulf States to deploy these technologies instead of fossil fuels, which can be exported.

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