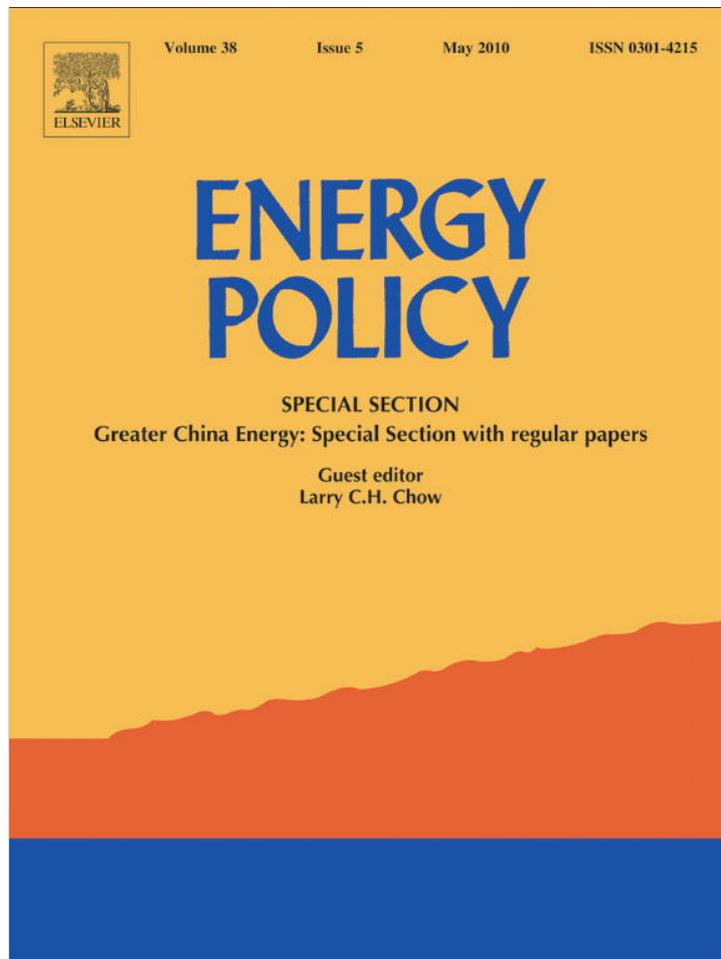


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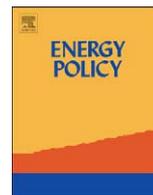


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Energy Policies of Gulf Cooperation Council (GCC) countries—possibilities and limitations of ecological modernization in rentier states

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ABSTRACT

Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates are major oil and natural gas producing countries that make up the Gulf Cooperation Council. The six GCC countries fall in the top 25 countries of carbon dioxide emissions per capita and are perceived as the main actors blocking international climate change negotiations. The aim of this article is to discuss from a policy perspective the capacities of the GCC states to switch toward an ecological modernization of their energy sectors. At the beginning of the paper, I analyze the benefits of transforming oil wealth into funding for renewable energy and energy efficiency. After this, I discuss obstacles to such a transformation process based on the rentier states theory. Finally, I investigate governance of the GCC on all levels (international, regional, and local). The article shows that the GCC countries have recently adopted a more pro-active approach toward ecological modernization. This reorientation has not yet resulted in the development of consistent strategies and policies, however. The concluding assumption based on the concept of policy transfer is that pioneering projects such as Masdar City and innovative regulation like the green building code in Dubai will spread within the GCC.

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1. Introduction

Discussing the climate change policy of the Gulf Cooperation Council (GCC), a trade bloc comprised of the 6 Arab states of the Persian Gulf (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates) created in 1981, would seem to be a paradox: GCC member states are major oil and natural gas producing countries. They hold approximately 40% of the world's proven oil and 23.6% of the world's proven gas reserves (BP, 2008: 213). Furthermore, the general perception of the world is that GCC is one of the main actors impeding international climate change negotiations. Per capita, they are also one of the top contributors to pollution in the world.

The Climate Change Performance Index 2009 (CCPI) by Germanwatch evaluates and compares the climate protection performances of the 57 countries responsible for more than 90% of global energy-related CO₂ emissions. In the 2009 CCPI the Kingdom of Saudi Arabia (KSA) ranked last on the list. "Some countries, such as, e.g. Sweden, Germany, and the United Kingdom, are showing successful approaches, for example in raising the share of renewable energies in their country. The emission trends in Canada, Australia, China, and Saudi Arabia are especially

worrisome," sums up the CCPI 2009 (Germanwatch, 2008: 10). Due to their relatively small populations – 26 out of 39 million people in the GCC are living in the KSA – the other GCC countries are not evaluated by the Germanwatch ranking. But on a global scale all GCC countries fall in the top 25 countries of carbon dioxide emissions per capita, with UAE and Kuwait leading, according to the United Nations Statistic Division (United Nations Statistic Division, 2007), as well as the Climate Analysis Indicators Tool (CAIT), an information and analysis tool on global climate change developed by the World Resources Institute (World Resources Institute, 2009).

Just 0.6% of the global population is living in the GCC, but the region is contributing 2.4% of the global greenhouse gas emissions (Raouf, 2008: 3). "CO₂ emissions per capita, energy intensities and CO₂ emissions per GDP in the GCC countries are higher than the average of 25-EU and the average of the OECD countries. Considering all the above, it is clear the energy efficiency could be improved in the region" (Doukas et al., 2006: 755).

Despite all the evidence of the GCC countries' contribution to global warming, I analyze in this paper to what extent ecological modernization is possible in the GCC countries.

2. Theory and methodology

In this article I analyze the possibilities and limits of ecological modernization in the GCC states. The term ecological

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modernization is defined as the wide spectrum of possible environmental improvements in a state. The concept of ecological modernization was developed by Martin Jänicke in the early 1980s to describe the common field of ecology and economy. A policy for ecological modernization is defined as the sum of government actions aimed to stimulate environmental innovations and their diffusion (Jänicke, 2000).

The article focuses on one key pillar of ecological change: the energy sector. Energy demands and the impacts of global warming are increasing in the Gulf Cooperation Council countries at a rate higher than the global average. This article will not further analyze how the GCC is contributing to climate change; it will instead focus on the capacities of the six countries that make up the GCC to switch toward ecological modernization in the energy sector from a policy perspective.

At the beginning of this article, I argue that the GCC countries would significantly benefit from ecological change in the energy sector. Ecological modernization in the energy sector is defined as the promotion of energy efficiency and renewable energies. Thereafter, the following research question is analyzed: What are the political obstacles to ecological modernization in the GCC? This section mainly refers to the *rentier state theory*. The Gulf Cooperation Council countries are dictatorial monarchies. According to the rentier state theory, Arab monarchies survive by exploiting the 'rent' revenues from the oil industry. These revenues allow a regime to provide its subjects with substantial material benefits without the need for heavy taxation and democratic representation. In other words: "No representation without taxation" (Brooker, 2008: 138).

The third part of the article analyzes *governance* in the GCC countries. Peters (2008: 60) defines governance as "establishing the goals for society, finding the means to reach those goals, and then learning from the successes or failures of their decisions." Governance refers to activities at different levels (national, regional, global) involving regulation and control. According to Sørensen (2008: 611) "there appears to be a general trend away from national government within a defined territory toward multi-level governance in several interlocked arenas overlapping each other." This article evaluates all levels of governance and seeks to answer the following questions: What is the role of the GCC on an international level in the negotiations on the United Nations Framework Convention on Climate Change (UNFSS)? What is the role of the GCC on a regional level? Are there any strategies or policies for renewable energies and energy efficiency within the GCC countries on a domestic level?

Based on the concept of *policy transfer*, it is assumed in the conclusion that pioneering projects and innovative regulations in individual countries will spread within the GCC.

One difficulty in studying the GCC is the lack of reliable domestic data. Only a few sources such as the 2009 report of the Arab Forum for Environment and Development (AFED, 2009) are available from within the Arab world. In 2009, AFED conducted a survey covering 19 Arab countries in order to collect the public attitudes toward climate change issues (see Section 4). According to AFED "virtually no work is being carried out to make the Arab countries prepared for climate change challenges. Specifically, no concerted data gathering and research efforts could be traced regarding the impacts of climate change on health, infrastructure, biodiversity, tourism, water, and food production. (...) Government policies that promote low-carbon and efficient goods and services, and endorse sustainable management of natural resources and coastal protection, are overdue (2009: xx)."

Therefore, most data cited in this article are not from the region but from international sources such as BP (2008), Economist Intelligence Unit (2008), Freedom House (2008),

Germanwatch (2008), GTZ (2008), UNFCCC, (2009), World Resources Institute (2009), and WWF (2008).

Most political science discussion on GCC climate protection policies has a background in international relations and focuses on the role of the Gulf Cooperation Council countries in the climate change regime (see for example Depledge, 2008). Only a few studies (such as Raouf, 2008) have been conducted about what happens within the GCC countries and the interactions among them. The new contributions of this article are the inclusion of analysis at all political levels as well as the comparative perspective.

3. Benefit of climate protection policies for GCC countries

A switch toward more efficient use of fossil fuels and an increased share of renewable energies would have several benefits for the GCC countries: if the domestic use of fossil fuels were reduced, more oil and natural gas could be exported. Norway is an example of an oil and natural gas exporting country that has benefited for decades from the fact that almost 100% of its domestic electricity production is coming from renewables (Reiche, 2008). This is mainly due to hydropower—a resource that is hardly available in the GCC. However, due to the favorable geographical conditions for other renewable energy options, the Norwegian success story could be transferred in only a few decades to the GCC. Whereas Saudi Arabia and the UAE have limited potential for wind electricity generation (2.5–4.5 m/s), Bahrain, Kuwait, Oman, and Qatar have at least moderate opportunities (5–7 m/s) (Patlitzianas et al., 2006: 3722). Solar energy, on the other hand, is the most promising renewable energy source. The conditions for solar energy potential in the GCC are among the most favorable in the world: the GCC countries are in a rainless region extending from North Africa to Central Asia which has 80% clear skies throughout the year. Saudi Arabia, for example, is irradiated by at least 2200 kWh thermal kilowatt hours per square meter (Alawaji, 2001: 15). Currently, there are even discussions to produce large amounts of solar electricity in the Middle East and North Africa and export portions of it to Europe. A group of companies has founded the so-called "DESERTEC Industrial Initiative" to lobby for this idea (Vallentin/Viebahn, 2009).

Aside from the financial benefit of reducing highly subsidized domestic consumption and increasing export capacities, the GCC countries would gain another important benefit from such an ecological transformation process: they would prepare themselves for the post-oil age. Their energy infrastructure would be ready for an era when domestic oil and natural gas are no longer available. As discussed below, some of the GCC countries are already, or will be in the near future, confronted with the finiteness of fossil fuels. Even for those GCC countries such as Qatar that still have plenty of reserves it makes sense to begin to make changes; costly adjustments could be avoided in the future if an incremental transformation process were initiated now, rather than radical change later.

Another reason for the GCC countries to reduce their fossil fuel consumption is the effects climate change already has and will have on them. GCC falls in the "high category" for vulnerability to the effects of climate change. According to Janardhan (2007: 4), there are two major and immediate consequences of climate change, population growth, rapid urbanization, and wasteful consumption for GCC countries: first, rising sea levels will severely affect coastlines and marine life and could impact desalination plants that are the source of water for the region. Additionally, rising temperatures will mean increasing water demand. With falling freshwater levels and increasing salinity in

seawater (which affects the efficiency of desalination plants), water scarcity is a fearsome prospect. Desalination plants are not only costly in terms of construction and maintenance; they are also costly in terms of the large amounts of fuel they use and their harmful implications on the environment. Using renewable energies such as solar or wind energy to power desalination plants could be a viable answer to the environmental and oil-related challenges faced by desalination (Tzen/Morris, 2003).

Finally, more sustainable policies would also give the GCC countries a better reputation in the international policy arena. Current reports on environmental policy in the GCC are very critical and have given the GCC the image of being the worst environmental polluters worldwide. According to the much quoted World Wildlife Fund “Living planet report 2008” (WWF, 2008), the UAE possesses the highest Ecological Footprint¹ in the world (out of the 150 countries included in the study), only to be followed by Kuwait at number 3, Oman at 25, and Saudi Arabia at 60 (WWF, 2008: 14).

In addition to the above-mentioned reasons for domestic initiatives, the GCC countries might also benefit in the future from helping their less wealthy neighbor states to step up climate protection policies. In Egypt, for example, a possible increase in the average temperature by three to four degrees would raise the sea level by about 1 m, creating up to six million migrants from the densely populated Nile delta region. Such a development could threaten the Gulf region with a massive influx of migrants attempting to reach the oil states (Kumetat, 2009).

4. Structural restrictions for climate protection policies in the GCC

The Arab Forum for Environment and Development (AFED, 2009) conducted a survey in 2009 covering 19 Arab countries in order to collect public attitudes toward climate change issues. The AFED survey shows that 98% of those questioned believed that the climate is changing and 89% believed that the change is human-induced. Fifty-one percent of respondents wanted governments to better address the question, and 94% believed that their country would benefit from participating in the global action to deal with climate change. More importantly, 93% pledged to personally participate and take action to reduce their contribution to the problem. The main mechanism preferred for reducing waste was through reducing the use of energy.

When it came to perceptions of government, less than 35% of people believed that their governments are doing enough concerning climate change, with greater disgruntlement in the Levant than in the Gulf. “The respondents to the AFED survey revealed a clear desire for their governments to participate and cooperate proactively in order to reach a solution to the problem of climate change; the Arab public seems ready to accept and be part of concrete national and regional action to deal with climate change” (AFED, 2009: 3).

¹ “The Ecological Footprint measures human demand on the biosphere in terms of the area of biologically productive land and sea required to provide the resources we use and to absorb our waste. In 2005 the global Ecological Footprint was 17.5 billion global hectares (gha), or 2.7 gha per person (a global hectare is a hectare with world-average ability to produce resources and absorb wastes). On the supply side, the total productive area, or biocapacity, was 13.6 billion gha, or 2.1 gha per person. A counter footprint is the sum of all the cropland, grazing land, forest and fishing grounds required to produce the food, fiber and timber it consumes, to absorb the wastes emitted when it uses energy, and to provide space for its infrastructure. Since people consume resources and ecological services from all over the world, their footprint sums up these areas, regardless of where they are located on the planet” (WWF, 2008: 14).

In Western-style liberal democracies, climate change mitigation policies are often advocated bottom-up by an active civil society and an informed public and are turned into policy by voter-maximizing politicians (Spiess, 2008). But such a society with active NGOs, such as Greenpeace, developed and independent political parties (such as environmental parties in Western Europe), and free press, which puts critical issues such as environmental pollution on the political agenda, is hardly present in the GCC countries. According to the Economist Intelligence Unit’s Democracy Index 2008, “there has been a very weak response in the Middle East to pressures for democratization (Economist Intelligence Unit, 2008: 2). From the analyzed 167 countries no GCC country is in the top 100 most democratic states: Saudi Arabia is number 161, the United Arab Emirates 147, Qatar 144, Oman 140, Bahrain 130, and Kuwait 129. Freedom House’s survey of political and economic freedom rates Bahrain, Oman, Qatar, Saudi Arabia, and the United Arab Emirates as “not free” and Kuwait “partly free” (Freedom House, 2008). Kuwait is described as generally respecting academic freedom and having “a tradition of allowing relatively open and free private discussion” although restricted to traditional all-male settings. The foundation and work of NGOs are also restricted (Freedom House, 2008).

In addition to the lack of a civil society, the policy of minimal taxation is another structural obstacle of climate protection policies in the GCC. One key pillar of climate protection policies is the internalization of external costs. Northern European countries such as Germany, for example, which is one of the few countries that is fulfilling its obligations from the Kyoto protocol, introduced an ecological tax reform in 1999 that increased the taxes on electricity and fuels in five yearly steps until 2003. The revenue was used to lower employee retirement contributions. The intended (and to a certain extent achieved) effects of this reform were a reduction of greenhouse gas emissions and a stimulation of the job market (Bach, 2009, Reiche/Krebs, 2000, Schlegelmilch, 1999).

The feed-in tariff system in Spain, Denmark, and Germany, which serves as the main instrument for the promotion of renewable energies in the electricity market, is financed by a fee on every citizen’s electricity bill. By early 2009, this support scheme was copied by 45 countries and 18 states/provinces/territories around the world (REN 21, 2009: 18).

Such redistributive schemes like ecological tax reform and feed-in tariffs are very unlikely in the GCC countries. GCC countries are “rentier states.” This term describes a distributive societal contract on which the government’s legitimacy depends. Very cheap and subsidized energy is an integral part of the wealth transfer to the domestic population from oil and natural gas generated revenues. The states provide free medical care, education, low-income housing, and high-paying public service jobs in exchange for the population’s compliance to the rule of the royal family. The GCC regimes think they have no responsibility for responding to any of the population’s pressure because the population pays (almost) nothing to the government (Beblawi, 1987). Based on 2007 figures, Saif (2009: 6) argues that in the GCC “domestic taxes constitute a minimal source of government revenue and spending. On average, domestic taxes amounted to less than 5% of the GDP, thus constituting a very low share of the government’s revenue. (...) This means that GCC countries rely on rent made from the export of oil in order to generate revenue for financing public spending.”

According to the GTZ, in 4 GCC member states retail prices of gasoline are below the price for crude oil on the world market. Only in the United Arab Emirates and in Oman are the retail prices for gasoline above the price for crude oil on the world market but

Table 1
Super gasoline and diesel retail prices in the GCC states as of mid-November 2008 (in US Cents/liter) (GTZ, 2008).

	Super gasoline	Diesel	Above/below world market price
Bahrain	21	13	below
Kuwait	24	20	below
Oman	31	38	above
Qatar	22	n/a	below
Saudi Arabia	16	9	below
UAE	45	62	above

below the price level of the United States of America² (see Table 1).

Higher taxes such as on super gasoline and diesel would cancel the societal contract and force the governments to increase their interactions with their populations. Yates argues, “by liberating itself from the necessity of tax collection, the rentier state unwittingly diminishes its own administrative capacity” (Yates, 1996). Other political scientists argue along the same lines. For example Hertog (2006) argues: “[Rentier] states are distributive, not extractive, which means that they lack the administrative machinery to regulate markets, as regulation requires information, and in many cases, fiscal instruments.” Abdelkarim (1999: 56) argues: “The absence of direct taxes, while freeing the government from any need to share power [...] reduces the redistributive power of fiscal policy (...). Without taxation-induced political bargaining, rentier states are supposed to be generally autonomous from societal demands, free to pursue policies as they please, drawing on external resources the use of which they are not held accountable for”.

A side-effect of the policy of minimal taxation is that the GCC countries are becoming more and more attractive to international energy-intensive industries: “Low energy prices in the Gulf, coupled with relatively cheap foreign labor, made the cost advantage of operating in GCC countries very compelling. It is very likely that we will be observing the opening of new plants in the aluminum, petrochemicals, and steel industries in the GCC countries” (Saif, 2009: 13). With energy-intensive industries the policy of minimal taxation has created an economically vulnerable sector for policy instruments such as carbon taxes. If such innovations were implemented, GCC regimes would suffer high political costs. The energy-intensive industries would fear for their competitive advantage and act as a powerful lobby group against any policies making their business less competitive. It might be necessary to exempt this sector if first steps in the direction of an internalization of external costs are taken. Germany, for example, has exempted its energy-intensive industry from the German ecological tax reform. This tax applies mainly to private households and those industries that have a relatively low share of energy costs (Bach, 2009).

The GCC countries need such differentiated policy innovations to stop the trend of growing energy demand. The primary energy consumption increased in the Middle East from 2000–2007 by 43% (BP, 2008). Since 1980, the average electricity consumption growth rate in the UAE has been 10%, in comparison to the world average of 3%. The UAE as well as the other GCC countries have always reacted to growth in electricity consumption by adding new generation capacity. Whereas many industrialized countries such as Japan – which is the most energy efficient economy in the world due to innovative policy instruments such as the top runner approach – are concentrating on demand-side policies to reduce the rate of electricity consumption, “lack of energy conservation

efforts in the GCC seems to be the result of the perception that in those countries with abundant oil resources there is no need for such efforts since energy can be obtained at relatively low costs” (Al-Irani, 2006: 2350).

If fossil resources were not or were to a lesser extent available and the revenues from them were decreasing, GCC governments might fall under more pressure to tax their population. This would also be a window of opportunity for ecological change, such as the introduction of carbon taxes, which could contribute to stabilize the budget as well as protecting the climate. Therefore, it is pertinent to ask the questions: How recent is the development of government revenues from fossil fuels within the GCC countries? Is the pressure increasing to end the policy of minimal taxation? How long will oil and natural gas be available in the GCC?

The recent oil boom from 2002 to mid-2008 generated a large volume of revenues within the GCC. The economies of the 6 countries are increasingly dependent on oil: The share of oil in the GCC economy increased from 30.8% of GDP in 2002 to 40% in 2006. Oil revenues constituted 77.4% of total government revenue in 2002 and 86% in 2006 (Saif, 2009: 3). However, differentiations among the GCC countries are necessary to get the whole picture of the six states: according to the recent BP Statistical Review of World Energy (BP, 2008) the length of time remaining oil reserves would last if production were to continue at the rate of the year 2007 varies greatly among the different GCC countries. According to BP, Oman could produce oil for another 21.3 years, Qatar for 62.8 years, Saudi Arabia for 69.5 years, the United Arab Emirates for 91.9 years, and Kuwait for more than 100 years (data for Bahrain is not given by BP).

According to Saif, Bahrain and Oman find it increasingly difficult to sustain past levels of public spending. The oil sectors of both countries had negative growth rates from 2003 to 2007. They are suffering from a rapid decline in oil reserves as well as a small production capacity (Saif, 2009: 5). Despite its huge oil production and its possession of the world's largest reserves, Saudi Arabia faces a different structural problem related to stagnant oil-production-per-citizen rates exacerbated by a rapidly increasing population. Per capita incomes decreased by more than half between 1980 (\$16.650) and 2000 (\$7.239) and current levels of welfare redistribution are unsustainable in the longer-term (Dresch, 2005: 16, Kumetat, 2009). Whereas countries such as Qatar have an unemployment rate of less than 3%, the unemployment rates in Bahrain, Oman, and Saudi Arabia exceed 15% (Bahrain Tribune, 2007).

In many statistics data are given for the whole UAE and not for the individual emirates. This disguises the fact that according to the constitution of the United Arab Emirates, full legal control over oil and natural gas reserves is with the local governments without any possibilities for intervention by the federal government. This is one of the main explanations for the wealth of Abu Dhabi: in all the other emirates hardly any fossil resources are available. Ninety-five percent of the fossil fuel reserves in the UAE are inside the emirate of Abu Dhabi. This means that the mentioned oil-producing lifespan of 91.9 years for the UAE is mainly relevant to Abu Dhabi. Dubai's fossil fuels will not be available for much longer in the future as its oil is estimated to dry up in about 10 years and its natural gas in about 20 years. Whereas around 70% of Abu Dhabi's current government revenue comes from oil and natural gas, it is already less than 5% in Dubai.

In Qatar, the oil revenue is also decreasing and the proven oil reserves are lower than in the UAE, KSA, and Kuwait (see above). But this is more than compensated for by the country's large natural gas reserves: Qatar holds the highest natural gas reserves among the GCC members and possesses the third largest proven supply of natural gas in the world. Its technological advance-

² Retail price of gasoline in the United States in mid-November 2008: 56 US Cents/Liter (GTZ, 2008: 4).

ments, especially in liquefied natural gas (LNG), make it the largest exporter of natural gas (Dargin 2007).

To sum up, in spite of the large oil and natural gas reserves in the GCC and the recent trend of increasing revenues from these sources, not all 6 member states profit from these developments. Six out of 7 emirates in the UAE, Oman, Bahrain, and partly Saudi Arabia do not benefit as much from oil and natural gas revenues as most of them did before, nor as their GCC neighbors Qatar, Kuwait, and the Emirate of Abu Dhabi still do. This might change their minimal taxation policy and could be a window of opportunity for higher energy prices and other energy efficiency measures.

5. Governance of the GCC countries

In the previous section I discussed the structural restrictions for ecological modernization in the GCC. I also addressed the possible advantages of an ecological transformation process of the GCC energy systems toward a more efficient use of fossil fuels and renewable energies. In this section I analyze governance of the GCC countries on all levels. The question is whether these policies are influenced primarily by the above-analyzed obstacles, or in part by the possible advantages. I will begin my analysis of the GCC policies with a discussion of their role on the international level before I address the regional and national levels as well as bilateral programs.

6. GCC on an international level

All the GCC countries ratified the United Nations Framework Convention on Climate Change (UNFCCC) between 1994 and 1996. Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates ratified the Kyoto Protocol in 2005, Bahrain 1 year later in 2006 (UNFCCC, 2009). According to the study “Measuring countries’ cooperation within the international climate change regime” by Baettig et al. (2008) which is based on six different indicators,³ the UAE fares best in cooperation with the agreements and Kuwait the least. In particular the emissions indicator shows a difference between the countries: the UAE score substantially higher than the other GCC countries and Kuwait scores the lowest of the 6 countries.

The GCC countries are Non-Annex I parties, which means that they do not have any obligations of greenhouse gas emission reductions. Nevertheless, GCC countries have been a powerful force in blocking the climate negotiations, which are based on unanimous consensus. A single member state can derail, weaken, or delay the decision-making process. Saudi Arabia plays a key role dominating the regional debate: with its well-funded delegations the KSA strongly influences country groups such as the GCC, the League of Arab States, the Organization of Arab Petroleum Exporting Countries (OAPEC), the Organization of Petroleum Exporting Countries (OPEC), and the G-77. Within

climate negotiations, the GCC is considered “well disciplined with a policy united behind Saudi statements” (Depledge, 2008). The OAPEC position is completely in line with the Saudi position and adopted in full by the League of Arab States. The position is that “any requirements that encourage switching to a low-carbon economy are likely to reduce demand for oil worldwide, unfavorably affecting OAPEC economies.” Anticipating these adverse effects, OAPEC countries have advocated since the drafting of the Kyoto protocol that oil-producing countries receive compensation for losses to the oil trade sustained because of climate change (Hmaidan, 2009). Friedman (2009) quotes a Saudi delegate concerning this position: “It’s a matter of survival for us. We are among the most vulnerable countries, economically.”

Although Saudi Arabia, GCC, OAPEC, and OPEC have not backed down from their main demands since the Bali Conference in 2007, they have adopted a more cooperative approach, modifying and scaling back some – but by no means all – of their demands. Demands for compensation have been somewhat reduced and superseded by requests for “technical assistance with economic diversification, and help with financial risk management in order to achieve economic ‘resilience’” (Depledge, 2008: 16). Economic diversification is important for OPEC and especially GCC countries, and some see climate change negotiations – and the technical assistance that could come with it – as an opportunity (Desai, 2004).

In June 2009 a decision was made which might contribute to a more pro-active role of at least one of the GCC countries in the climate negotiations; the 114 member states of the International Renewable Energy Agency (IRENA) decided that Abu Dhabi would host the headquarters of IRENA. IRENA would be located in the planned carbon-neutral town Masdar City (see below) and would be the first global agency based in the Middle East. Abu Dhabi convinced a majority of the international community to vote for the Emirate by promising that the office space for IRENA will be free of charge and that USD 135 million will be donated to help the agency in its incubation period until 2015. Additionally, an annual sum of USD 50 million from the Abu Dhabi Fund for Development has been allocated to support IRENA-endorsed projects in developing nations over 7 years “to move the world to a renewable future” (The National, 2009b: 3).

The UAE newspaper *The National* commented that the decision to host IRENA in Abu Dhabi would have the effect of “boosting the country in its aim of being recognized as a progressive state that is tied into the international community and planning for its post-oil future. (...) IRENA representatives (...) could be expected to keep a watchful eye on the progress of the developments around them” (The National, 2009b: 3). As different standpoints from this part of the world emerge, Saudi Arabia might lose its role of being the voice of the GCC on a global level. The German newspaper *Süddeutsche Zeitung* comments that the UAE would lose its credibility if they joined the forces impeding the climate negotiations (2009: 4).

Another reason for a more differentiated approach by the GCC countries might be the fact that as Non-Annex I parties they are potential locations for clean development projects. Credits earned with projects in the field of renewable energies and energy efficiency could be sold to industrialized countries (Annex I parties). GCC countries would benefit from such projects financially, technologically, and ecologically. However, the political will for the implementation of CDM projects has been very weak in the past. Only Qatar has a registered CDM project since 2009. The Al-Shaheen oil field gas recovery and utilization project is a CDM project by the government of Qatar. It will remove 1,457,811 tons of CO₂ per year from the Al-Shaheen oil field, and ship the gas to the Mesaiseed gas-processing plant. There the gas will be utilized for export and local consumption and to produce

³ The indicators measure in order: UNFCCC—the speed with which the agreement was ratified; Kyoto—the speed with which the Kyoto protocol was ratified; Report—submission of National Communications report within the deadline in the UNFCCC; Finance—regularity of contributions paid to UNFCCC according to the agreement; Emissions—estimates level and trend of GDP-dependent CO₂ emissions per capita in comparison to the environmental Kuznets curve based on data of 13 EU countries; Cooperation—weighs the other five indicators. The results for the cooperation of the GCC countries are Bahrain (1.79), Kuwait (1.47), Oman (2.38), Qatar (1.73), Saudi Arabia (2.42), UAE (2.79). For the sake of comparison the article notes that big players of the climate negotiations are ranked in the following order: United States of America (2.5), Australia (2.5), Russia (3.5), Canada (3.5), Brazil (3.5), China (3.8), India (3.8), South Africa (4.1), Poland (4.2), France (4.2), Hungary (4.3), Germany (4.4), and United Kingdom (4.4).

electricity. To put the scale of the project in perspective, the largest CDM projects deal with CO₂ emissions in the range of 40 million tons (UNFCCC, 2009b). This project is the only CDM project in the GCC countries. But awareness is increasing, and Doha Bank is planning to launch the Persian Gulf's first carbon credits exchange in 2009 to tap an emerging market for emissions trading (Raouf, 2008: 7).

7. GCC on a regional level

Aside from their increasing cooperation on an international level, changes on a regional level have also been taking place within the GCC. Created in 1981, the GCC aims at enhancing the "coordination, cooperation and integration between [the member states] in all fields." The GCC Supreme Council highlights the importance of "joint environmental action for converging policies, unifying environmental laws and legislation, enhancing national and regional capacities, training of labor force, raising environmental awareness among citizens and conservation of natural resources" (The Cooperation Council for the Arab States of the Gulf, 2009). There are administrative structures in the GCC responsible for climate change issues, and certain actions promoting work on climate change issues have already taken place. Under the secretariat general of the GCC, which is responsible for preparing studies related to cooperation, coordination, and integrated plans and programs for joint work, there are five assistant secretaries general; one of them is for Human and Environment Affairs.

The Assistant Secretary General of Human and Environment Affairs is responsible for a wide range of issues, one of which is environmental cooperation. The Environmental Coordination Unit created in 1985 is responsible for six major areas of environmental concern: laws and policies, disaster control, environmental awareness, cooperation with the organizations and economic groupings, multilateral environmental agreements, and the granting of the GCC award for best environmental work. The Environmental Coordination Unit is responsible for ensuring that environmental concerns are represented in all GCC planning and decisions. It should be noted, however, that while its mandate has a large scope, it is responsible only for "coordination," which implies that the real decision-making is left up to the national-level actors. Thus, the Unit supports the individual GCC countries in implementing their environmental policies (GCC, 2009).

In the past, measures taken by the GCC Council were limited to introducing mild guidelines targeted at promoting environmental awareness and education. For example, "Environment Week" is held in the GCC states every February, granting awards such as the "GCC Award for the Best Environmental Work." The inclusion of environmental concepts in the education curricula and the production of 30 television episodes about various environmental topics pertaining to the GCC states are some other actions taken by the Council to increase awareness about climate change issues (GCC, 2009).

At the GCC meeting in Muscat in April 2009, one of the main discussions revolved around the possibility of implementing a green tax that would be based upon the systems currently in use in Europe (Vaidya, 2009). Although these plans are still in the preliminary stage, it is interesting to see that the GCC is starting to take into consideration instruments that would have much higher political costs than its previous policies.

Among the newer and more prominent developments is the GCC common power grid. The project is the responsibility of the GCC Interconnection Authority (GCCIA) and is set for completion in 2012. The 7 billion dollar grid is expected to cut the need for new electricity generation by 5000 Megawatts (Khaleej Times,

2009). GCC member states also participate in other regional institutions such as the Council of Arab Ministers Responsible for the Environment (CAMRE), the Joint Committee on Environment and Development in the Arab Region (JCEDAR), and the Center of Environment and Development for Arab Region and Europe (CEDARE). To end this section, it is important to highlight another breakthrough as far as multilateral initiatives are concerned. During the OPEC Ministers' meeting in 2007, member countries announced the establishment of a USD 750 million fund for Climate Change. Saudi Arabia paid USD 300 million for the fund while Kuwait, Qatar, and the United Arab Emirates each pledged USD 150 million. In a statement, OPEC said it would "stress the importance of cleaner and more efficient petroleum technologies for the protection of the local, regional, and global environment, and the importance of expediting the development of technologies that address climate change, such as carbon capture and storage" (Wardam, 2008).

8. Bilateral programs

There are also some bilateral programs between GCC member states and industrialized countries. Saudi Arabia is the most experienced among GCC member states in joint cooperation with developed countries. One of the first and most important bilateral programs on climate protection issues in the region was SOLERAS (Solar Energy Research American Saudi). SOLERAS was an endeavor to which the US Department of Energy and the Saudi Arab National Center for Science and Technology (SANCST) had each committed USD 50 million and for which the Solar Energy Research Institute (SERI) in Golden, Colorado, was responsible. SOLERAS addressed solar energy in relation to technological and economic issues. One of several projects being carried out under SOLERAS supplied two traditional Saudi Arabian villages, not connected to the central electric grid, with solar energy. These first solar villages of al-Jubaila and al-'Uyaina, which were realized in the early 1980s, were an innovation for the region. Saudi Arabia was the first country in the GCC as well as in the entire Middle East to research how to make villages independent from the central system of power generation. SOLERAS was established in 1975 and concluded in 1997 (Dargin, 2009: 20).

9. GCC on national level

On a national level, all GCC member states have created administrative capacities dealing with climate change issues: the Public Commission for the Protection of Marine Resources, Environment and Wildlife in Bahrain, the Environment Public Authority in Kuwait, the Ministry of Environment and Climate Change in Oman, the Supreme Council for the Environment and Natural Reserves in Qatar, the Presidency of Meteorology and Environment (PME) in Saudi Arabia, and the Federal Environment Agency as well as the Ministry of Environment and Water Resources in the United Arab Emirates (Raouf, 2008: 9). These institutions, however, often have weak capacities and low influence in domestic policy processes.

As summarized in Table 2, no GCC country has a consistent policy framework for renewable energies and energy efficiency. No GCC member state has support schemes such as feed-in tariffs or cap-and-trade systems in place. Instead of such policies there is a strong dynamic on an individual project level. There are some remarkable projects going on in the GCC countries that are also recognized in other parts of the world. The most well known project among these is the construction of Masdar City. Masdar City is the name of a carbon-neutral, zero-waste city being built in

Table 2
Driving forces for climate protection policies in the Gulf Cooperation Council (GCC) countries.

Country	Ratification of the Kyoto protocol	Administrative capacities dealing with climate change issues	Government targets	Implemented Policies	Large scale pioneer projects for renewable energies	Registered CDM projects	Political freedom for environmental NGOs	Vulnerability to climate change	Availability of oil (proven reserves according to BP if production continues at the rate of the year 2007)	Solar energy potential	Potential for wind electricity generation
Bahrain	In 2006	Public Commission for the Protection of Marine Resources, Environment and Wildlife	No	No	Bahrain World Trade Center	No	Not allowed	High	< 20 years	Very good opportunities	Moderate opportunities
Kuwait	In 2005	Environment Public Authority	No	No	No	No	Allowed, but restricted	High	> 100 years	Very good opportunities	Moderate opportunities
Oman	In 2005	Ministry of Environment and Climate Change	No	No	No	No	Not allowed	High	21.3 years	Very good opportunities	Moderate opportunities
Qatar	In 2005	Supreme Council for the Environment and Natural Reserves	No	No	Energy City	Al-Shaheen Oil Field Gas Recovery and Utilization Project	Not allowed	High	62.8 years	Very good opportunities	Moderate opportunities
Saudi Arabia	In 2005	Presidency of Meteorology and Environment	No	No	Solar villages; Sustainable campus KAUST	No	Not allowed	High	69.5 years	Very good opportunities	Limited potential
UAE	In 2005	Ministry of Environment and Water Resources	No	No	No	No	Not allowed	High	91.9 years	Very good opportunities	Limited potential
Dubai		Dubai Electricity and Water Authority	No	Green building code	No	No	Not allowed	High	< 10 years	Very good opportunities	Limited potential
Abu Dhabi		Environment Agency	7% reduction in CO ₂ emissions by 2020; 7% of renewables in Abu Dhabi's power generation capacity in 2020	No	Masdar City	No	Not allowed	High	95% of UAE reserves	Very good opportunities	Limited potential

Abu Dhabi. The construction started in 2006 and the completion of Masdar City is scheduled for 2016. The objective of the city is to become home to a population of 90,000 made up of 40,000 residents and 50,000 daily commuters. The city hopes to attract more than 1500 companies in the field of sustainable energy technologies to have offices and research centers within its city walls. By fall of 2009 the first students will start to study at the Masdar Institute of Science and Technology. The institution's curriculum includes courses in the areas of information technology, water and environment, engineering systems and management, materials science and engineering, mechanical engineering as well as its research activities (Reiche, 2010). Masdar City will also host the secretary of the International Renewable Energy Agency (IRENA) (see above).

In Qatar, currently an "Energy City" is being built. Energy City will invite multinational natural gas and oil companies to set up headquarters there. Its objectives are to become the "next major energy hub" and a center for "regional operations and global hydrocarbon development" (Energy City, 2009). This on the one hand is a contrary concept to Masdar City, but on the other hand there is a similarity: both projects aim for "creating a sustainable blueprint for future development" (Energy City, 2009). The buildings of Energy City will incorporate the latest green technology, solar energy will be used in some parts of the city and "intelligent solutions designed to promote energy efficiency, improve air and water quality and reduce waste stream" will be implemented (Energy City, 2009). The project developer sees Energy City as a unique new project that will bring together traditional oil magnates in a green environment showcasing to the world that traditional energy sources and green technology can coexist (Energy City, 2009).

In the financial district of Manama in Bahrain, wind turbines have been installed on the Bahrain World Trade Center (BWTC). Two sail-shaped towers were constructed to capitalize on the potential of the wind turbines by funneling and accelerating breezes from the Persian Gulf (Sawin, 2007). When fully operational, the three 29 m turbine blades can provide 11–15% of the power for the two towers (Renewable Energy World, 2008).

In Saudi Arabia, the King Abdullah University of Science and Technology (KAUST) is building a sustainable campus. KAUST has announced several green technological innovations. Two iconic solar towers on the campus will create a passive pressure difference, using the sun and prevailing winds from the northwest and microclimate winds blowing in from the Red Sea to facilitate a continuous breeze along the shaded courtyards. The monumental roof for the KAUST campus has been designed to incorporate massive solar thermal arrays to provide domestic hot water to all campus buildings, and solar photovoltaic (PV) arrays to generate and distribute power to campus buildings based upon demand. The two rooftop solar plants on the North and South Laboratory buildings will occupy nearly 12,000 m², have a maximum output of 1 MW each, and produce up to 3300 MWh of clean energy annually. This output will save nearly 1700 tons of annual carbon emissions and equals carbon offsets for 7.3 million miles of air travel (KAUST, 2009).

The carbon-neutral Masdar City, the integration of renewable energies and energy efficiency (and other environmental concepts) into Energy City, Bahrain World Trade Center, and King Abdullah University of Science and Technology are currently the most spectacular, but not the only, sustainability projects going on in the GCC. From a policy perspective, the decisive questions are (a) whether there will be a diffusion of these pioneering projects among the GCC countries and (b) whether these initiatives will be the starting point for a development toward a more consistent legal framework for climate protection.

10. Conclusion

The GCC countries have recently adopted a more pro-active approach to addressing environmental issues on all levels: international, regional, and national. This reorientation has not yet resulted in the development of consistent strategies and policies on ecological modernization. However, some projects such as Masdar City may serve as the foundation for an extension of activities in the field of renewable energies and energy efficiency and finally lead to legislation as well as medium- and long-term targets. In the GCC region, so far only Abu Dhabi is following a strategic approach. The emirate made a pledge to reduce CO₂ emissions by 7% by 2020. They also announced for the first time a domestic renewable energy goal: the objective is to reach a share of at least 7% of renewables in Abu Dhabi's power generation capacity in 2020. The commitment came on the eve of the World Future Energy Summit in Abu Dhabi in January 2009 (The National, 2009a).

The green building code in Dubai that came into effect in January 2009 may be the first step in the direction of developing consistent policies in the emirate. The code is based on the US Green Building Council's (US GBC) Leadership in Energy and Environmental Design (LEED) rating system, with modifications made to account for the local environmental conditions (UAE interact, 2008).

Based on the concept of policy transfer, the concluding assumption is that pioneering projects such as Masdar City and innovative policies like the green building code in Dubai will spread within the GCC. Geographical proximity is seen as a key factor for regional diffusion. The more proximal the state the higher the probability of adoption; the probability of a state to adopt a policy is positively related to the number of bordering states that have already adopted that policy (Mintrom, 1997). Proximate states tend to have similar economic aspects and common social problems that lead to similar policy action effects (Mooney and Lee, 1995). Moreover, several scholars have argued that neighboring states do not only learn from each other but they also compete with each other. States tend to "emulate policies to achieve an economic advantage over other states or avoid being disadvantaged" (Berry and Berry 2007 p. 225).

It remains to be seen what kind of policies for the promotion of renewable energies and energy efficiency will be implemented in the GCC countries. Due to the existing societal contract, redistributive policies such as higher taxes on energy consumption are less likely due to the high political cost associated with those policies. Under the current rentier state regime, energy-intensive industries and the population living in the GCC enjoy such benefits as obtaining energy at low costs, paying low or even no taxes, and receiving public services such as medical care for free. The GCC governments fear that if they introduced regulatory policies such as trade tariffs and individual taxation their authoritarian power could face public scrutiny: with a heavier tax burden, populations might crusade for more political representation. Therefore, it is most likely that GCC countries will avoid structural changes and that, instead, top-down initiatives with comparatively low political costs such as the green building code in Dubai (or maybe in the future standards for the fuel consumption of new cars) will dominate the energy policy agenda.

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