

09

Study
17.06.2020

The Looming Climate Peril

Sustainable Strategies
and Environmental
Activism in the Middle
East and North Africa

Tobias Zumbrägel

Contents

Introduction. Contextualizing the Research on Sustainability in the MENA Region ———	04
Approaching Sustainability as a 'Fuzzy' Concept —	07
'Godzilla' at the Doorsteps. Climate Change Meets Unsustainability and Public Contestation in the MENA Region —	10
Playing the Green Card. Empirical Snapshots across the Regions ———	15
Revisiting the Sustainability Trend in the Region —————	24
Future Outlook —————	28
Literature —————	30

Acronyms

IDPs	Internally displaced people
IRENA	International Renewable Energy Agency
GGIF for Africa	Green Growth Infrastructure Facility for Africa
GHG	Greenhouse gas emissions
GO-NGO	Governmental-organized NGO
K.A.CARE	King Abdullah City for Atomic and Renewable Energy
KAPSARC	King Abdullah Petroleum Studies and Research Center
KAUST	King Abdullah University of Science and Technology
KEPS	Kuwait Environment Protection Society
LAS	League of Arab States
MDGs	Millennium Development Goals
MENA	Middle East and North Africa
NDC	Nationally determined contribution
NGGP	National Green Growth Plan
NGO	Non-governmental organization
RES	Renewable energy source
SD	Sustainable Development
SDGs	Sustainable Development Goals
UAE	United Arab Emirates
UN	United Nations
VAT	Value-added tax
WEN	Water-energy nexus

The Middle East and North Africa (MENA) encounters a climatic upheaval that adds another upcoming challenge to the already tormented region. Whereas many scholarly works discuss the opportunities and chances of a much-needed sustainable transition, this Study takes the viewpoint of a 'political ecology' to highlight the social and political implications of such a transformation across the broader MENA region. It shows that policy-makers consider environmental sustainability of low or medium-range importance, whereas its importance for and within these societies is steadily increasing. It argues that political decision-makers across the MENA tend to implement sustainable strategies based on autocratic logic and path dependency. Yet, managing the waves of social protest and anger over political corruption and mismanagement that merge with environmental concerns will become the ultimate litmus test for future regime stability.

Introduction. Contextualizing the Research on Sustainability in the MENA Region

Whether Kuwait suffers from the highest temperature ever recorded or neighboring Iraq from barely known large-scale snowfall; whether there are flash floods on the Arabian Peninsula, droughts in the Fertile Crescent or toxic air in Iranian cities: The Middle East and North Africa (MENA)¹ provides a whole package of evidence about anthropogenic influences on the climate and the natural environment. For a long time, only a handful of climatologists drew attention to this issue. Observers of the region had been mainly occupied with other topics rather than dealing with sustainability as a matter of urgency: Other themes of 'Middle Eastern exceptionalism', such as armed conflicts, authoritarian state structures, foreign policy and political economy, prevailed (Bellin 2004; see also: Owen 2004; Halliday 2007; Gerner 2008). It is only since the 2000s that this part of the world receives greater scholarly attention in the fields of environmental protection and sustainable development. The following text intends to give a comprehensive literature overview of the most important research avenues on sustainability in this region. Whilst providing literature information for further reading, it also helps to delineate this Study's focal point to other existing literature threads.

¹ MENA includes Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, and Yemen.

So far, the majority of environment-related topics in the MENA region deals with varying security aspects. This is mainly explained by the fragile political environment and high environmental vulnerability of the region. Early and comprehensive investigations have been conducted on behalf of supra-national bodies such as the United Nations or the World Bank Group (Dasgupta et al. 2007; Gelil 2009; Trondalen 2009; Croitoru & Sarraf 2010; Verner 2012). Meanwhile, scholarship increasingly engaged with topics such as environmental deconstruction and climate threats in all their facets, including the short and long-term effects of desertification, sea level rise, waste management, depletion of biodiversity and pollution (Tolba 2009; Sowers et al. 2011; Al-Mebayedh 2013). Especially water scarcity, including the physical inexistence or insufficiency as well as socioeconomic/political mismanagement of water availability, received much attention (see especially the chapter on the *Mashreq* countries and further: Michel & Pandya 2009; Alterman and Dziuban 2010; Rached & Brooks 2010; Malka 2018). Studies dealing with water scarcity and desertification have frequently related these topics to questions of violence and regional conflict in weak or failing states, by pinpointing the role of decreasing access to water and fertile land (Kramer, et al. 2011; Juan 2015; Ward 2015; Pal & Eltahir 2016; Lackner 2019). The research avenue on the correlation of environmental deconstruction and conflict has been fueled in the aftermath of the upheavals of 2010 and 2011 that swept across the region. For instance, there is an ongoing debate whether droughts have played an important role in steering the Syrian civil war (Werrel & Femia 2013; Voski 2016; differently: Daoudy 2020). However, as Eckart Woertz rightly points out: "It is intuitively appealing, but can be misleading, as it tends to neglect the socio-political origins of such conflicts" (Woertz 2014: 491).

This rather (neo) Malthusian-oriented perspective of climate wars has also been accompanied by a more optimistic-inspired outlook of liberal development. Such a neoclassical growth framework accentuates modernization, knowledge, innovation and technology for progress (Verhoeven 2018). Along these lines, various scholars, varying in their approaches of economic, technocratic or institutional perspective (ibid.), propose climate-resilience strategies and recommendations of how to overcome this high degree of vulnerability. This line of research mainly provides practical advice on alternative energy in order to solve oil dependency, limiting the waste of energy and lowering the high amounts of greenhouse gas (GHG) emissions (Bahgat 2013; El-Katiri & Fattouh 2014; Dees & Auktor 2019; Arouri et al. 2012; al-Mulali 2011). Within the literature on energy security and efficiency, studies about the *Maghreb* (Brand & Zingerle 2010; Arce et al. 2012; Komendantova et al. 2014; Saouli & Madani 2019) and, even more, the Arab Gulf countries dominate the field (al-Naser & al-Naser 2011; Bhutto et al. 2014; Patlitzianas & Flamos 2016; Mondal et al. 2016; Griffiths & Orkoubi 2019). This strong focus on energy diversification

(Luciani et al. 2012) and decarbonization (Al-Saleh et al. 2012) of the hydrocarbon-rich countries towards a post-oil era (Sultan et al. 2011) is, however, to the detriment of studies on research of environmental sustainability in the region (some exceptions: Raouf 2008; Kumetat 2012; Al-Maamary et al. 2017). Recent scholarship now focuses on a clearer differentiation between climate and energy policies (Griffiths & Orkoubi 2019). For instance, some studies have concentrated on climate-oriented policies and provide further recommendations, such as fostering green economy growth, good governance structures, and urban greening, as well as implementing a stronger institutional setting and introducing regulations such as fiscal incentives of feed-in-tariffs or carbon taxes (Reiche 2010; Raouf & Luomi 2016; Krupa & Poudineh 2017). Other studies highlight the potential of sustainable development by pointing to aspects of green growth such as sustainable tourism and climate jobs (for instance: Hilmi et al. 2015; Lindisfarne & Neale 2019). Further research also includes technology transfer/diffusion (al-Roubaie & al-Zayer 2006; Pfeiffer & Mulder 2013; Atalay et al. 2016) and regional/international cooperation initiatives (Mason & Mor 2009; Petersen-Perlman et al. 2017; Mittal 2019; al-Sarihi & Luomi 2019; al-Zubari 2019).

In contrast to both the (neo)Malthusian and neoclassical growth literature, a social science perspective is only slowly evolving. In fact, there is a surprising lack of environmental topics in political science. According to Jessica Green and Thomas Hale: "As a field, we have 'punched well below our weight'" (Green and Hale 2017: 473). This is particularly true for the MENA region, where political topics on the environment have been largely absent. Lately, Harry Verhoeven has delineated different schools of thought within the discipline of environmentalism and research in the MENA in his volume *Environmental Politics in the Middle East* (2018). His call for a "political ecology" that disregards a "neat analytical separation between the environment and human conceptualizations of it" (Verhoeven 2018: 15) can be considered a substantial contribution to sustainability research in the MENA region. For Verhoeven, environmental issues must be studied in the scope of "wider societal dialectics and broader questions about authority, ideology, identity, legitimacy, and power that form the core of the social sciences" (ibid: 2). This Study intends to add to this research avenue by combining issues of sustainability with political core concepts such as power, authority and legitimacy. It aims to achieve several goals: (a) to provide a comprehensive overview of existing research and avenues of thought; (b) to supply a cross-sectoral analysis across the MENA region, rather than in-depth single case studies; (c) to uncover broader implications and dialectic relationships between sustainability and political power constellations, following Verhoeven's analytical approach of 'political ecology'; and (d) to sketch out some potential future developments and dynamics over the coming years.

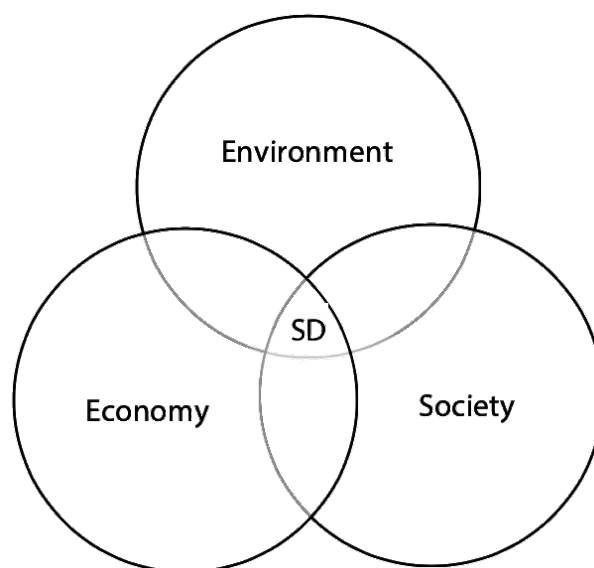
The Study proceeds as follows: First, the term ‘sustainability’ and its various pitfalls are discussed in theoretical terms. The subsequent chapter focuses on the emergence and revitalization of sustainability in the region. The hype around sustainability (*al-istidāma*) is a rather recent phenomenon in the MENA region, as seen in recent major events such as the announcement of the Emirate’s Masdar Initiative of 2006 – gradually turning into a “green ghost city” (Pouran & Hakimian 2019: 8) – and the hosting of climate conferences by Qatar (2012) and Morocco (2016). This second chapter focuses on three specific motives why regimes have initiated a stronger sustainability-related output: imminent environmental vulnerability, a sustainability paradox, and growing environmental activism. In so doing, it connects the theoretical outline of the first chapter with the empirical investigation of the second. Three following sub-chapters (each dealing with a specific MENA sub-region) highlight specific environmental challenges and the accompanied policy setting and making. A focus here is how individuals or protagonist groups hijack and instrumentalize the sustainability agenda for other political means, even while facing growing environment-related deconstruction and social contestation. Following this empirical analysis, the next chapter focuses on uncovering the various facets of environmental policy making, involved actors and underlying political motives. The last chapter highlights some developments worth watching. Here, the role of increasing environmental mobilization is a possible prime challenge for regime stability.

Approaching Sustainability as a ‘Fuzzy’ Concept

Before elaborating the recent trends in the MENA region, it is paramount to get a clear idea about the highly contested concept of sustainability, to counteract the ‘fuzzy’ that currently prevails in the study of environmental politics. Reflections on the interconnectedness between humankind and the environment has deep historical roots that can at least be traced back to Greece philosophers like Aristotle, Plato and Hippocrates and up to the so-called ‘Storm and Stress’ period and early Romanticism. It was not until the 1960s that ‘green thought’ and a political understanding of anthropogenic global warming as a cross-sectoral issue attracted growing academic and public interest (Aden 2012: 14–22; Bulkeley 2015; Scoones 2016). This development of an ‘eco-era’ (Radkau 2011) coincided with several incidents that helped to entrench and institutionalize green political thought. From the 1960s onwards, several industrial countries, above all the USA and Japan, experienced massive public scandals due to ecological degradation and human-made pollution as a result of rapid industrialization. Specific

events, such as the oil crisis of 1973, exacerbated the situation and demonstrated the vulnerability of global dependence on finite resources controlled by nation states with unpredictable decision-makers. Consequently, a rethinking of sustainable resource management began. The anti-nuclear movement, particularly in Germany and France, also contributed to a critical rethinking of unmanageable environmental pollution. Perhaps most surprisingly, the first pictures of our planet taken from outer space in 1968 fostered a common perception about the fragility of the planetary eco-system.

All these different events and developments gave rise to a deeper *recognition of the need* to balance industrialization and modernization and its severe human-made effects on the natural system. Concretely, the first global environmental conference in Stockholm in 1972, which created the United Nations Conference on the Human Environment (UNCHE), marked a turning point. The publication of several reports, including the Meadows Report to the Club of Rome entitled *The Limits to Growth* (1972); *The Ecologist's Blueprint for Survival* (1972); and the *Brundtland Report to the United Nations* (1987) framed the scholarly and public debate. The Brundtland Report introduced and coined the concept of 'sustainable development' (SD). Its core definition of "meeting the needs of the present generation without compromising the needs of future generations" has been built upon by the United Nations (cited in: Todaro & Smith 2012: 467; further: Richer 2014). Drawing on their classic approach of systemic balance, the UN states that sustainable development is achieved when different features of a system remain in equilibrium. This approach is often explained by three sub-attributes, namely economic sustainability, environmental sustainability, and social sustainability.



*Pillars of SD in equilibrium
(see also: Beutel 2012)*

The components in each individual pillar may vary across different regions and areas. For the Arab world, the UN identifies aspects of addressing poverty and exclusion, promoting youth development and employment for the economic pillar; and the provision of basic services and the promotion and ensuring of gender equality for the social dimension. Managing natural resources in a sustainable manner and ensuring water and food security are some aspects that are dedicated to the pillar of environmental sustainability (Luomi 2018: 2).

While this three-pillar approach is widely reiterated in public and scholarly literature, there is disaccord concerning the relative weight of the individual pillars (Luomi 2012a). For instance, a prevailing opinion claims that economic development, technology and innovation can help to achieve the goal of sustainability through more efficiency. Advocates claim that this can help to avoid overexploitation of the natural capital (Beutel 2012). Other accounts highlight the value of nature at the center of their perspective, claiming that not only efficiency but also sufficiency (i.e. a radical change of behavior and lifestyle) is necessary to become more sustainable. The accentuation on any one of the pillars of SD results in an overall weak SD, in contrast to a strong SD that “sets the three pillars in a concentric hierarchy where environmental sustainability forms the basis of all other forms of sustainability” (Luomi 2012a: 5; further: Wurster 2014; Scoones 2016). Rephrased, only a strong SD values further aspects like the natural, social and human capital.

Still the Best We Have?!

It is this confusion over degreeism and substitutability that make SD a contested and ‘fuzzy’ concept (see further: Goodland 1995; Luomi 2012a; Scoones 2016). Additionally, the approach suffers from “definitional sloppiness” and “conceptual stretching” (Sartori 1991: 249): Different terms, such as ‘ecological sustainability’ (Wurster 2014), ‘natural sustainability’ (Luomi 2012a) or ‘environmental sustainability’ (Goodland 1995), are used interchangeably. This terminological inaccuracy is further complicated by concepts such as green economy (Raouf & Luomi 2016) and ecological modernization (Reiche 2010), which assume a notion of weak SD by placing greater focus on the economic pillar, at the (alleged) expense of social and environmental dimensions.

Despite these pitfalls, sustainable development remains the dominant approach within the international community. In September 2015, all UN member states adapted unanimously the *2030 Agenda for Sustainable Development* as the guiding roadmap to ensure sustainable development

transition over the following 15 years (UN 2015). With its 17 goals² and 169 targets, the so-called Sustainable Development Goals (SDGs) are far more comprehensive than the Millennium Development Goals (MDGs) of 2000, which were often criticized of oversimplifying complex issues, “reproduc(ing) a donor-receiver dynamic between high-income and low-income countries and omitt(ing) the environment sustainability dimension” (Nicolai 2020: 38; further: Scoones 2016). While the SDGs take a holistic approach of balancing all three pillars of SD, they put emphasis on environmental sustainability (e.g. goals 6-7 and 11-15) as the prime mover that supports human life in the long term. As other UN proposals and charters, it stresses the responsibility of national governments to enact measures, which, however, remain voluntary in order to not infringe on state sovereignty. In the words of Ian Scoones: “Behind this seeming consensus lies much disagreement as to what the goals and agreements mean, who should benefit, and where responsibilities lie” (Scoones 2016: 294).

‘Godzilla’ at the Doorsteps. Climate Change Meets Unsustainability and Public Contestation in the MENA Region

The MENA comprise a wide region with many diverse countries, ranging from the Islamic Republic of Iran in the east to the so-called linchpin monarchy³ of Morocco in the west, and the failing republics of Syria from the north and Yemen in the south. These countries share similar historical and cultural roots but differ greatly per political, social, economic and ideational factors. Geographically and climatologically, the region can also be divided into three broader sub-regions: the Arabian Peninsula (*Khaleej al-Arabi*): Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates (UAE) and Yemen; the Fertile Crescent (*Mashreq*): Egypt, Iraq, Jordan, Lebanon, Israel/Palestine

2 The 17 Sustainable Development Goals are: (1) No Poverty, (2) Zero Hunger, (3) Good Health and Well-being, (4) Quality Education, (5) Gender Equality, (6) Clean Water and Sanitation, (7) Affordable and Clean Energy, (8) Decent Work and Economic Growth, (9) Industry, Innovation, and Infrastructure, (10) Reducing Inequality, (11) Sustainable Cities and Communities, (12) Responsible Consumption and Production, (13) Climate Action, (14) Life Below Water, (15) Life On Land, (16) Peace, Justice, and Strong Institutions, (17) Partnerships for the Goals.

3 The linchpin monarchies of Morocco and Jordan contrast the dynastic monarchies of the Arabian Peninsula insofar as the royals only engage in the political institution of the monarchy and not in the broader public sector or state bureaucracy; see: Lucas 2004.

and Syria; and North Africa (*Maghreb*): Algeria, Libya, Morocco and Tunisia.⁴ All these regions share the same arid and semi-arid climate and are some of the world's most critical areas as regards fresh and renewable water resources and its management. Moreover, to a greater or lesser degree, all MENA countries face a sustainability impasse caused by numerous factors: rapid demographic growth, urbanization, migration, unsustainable consumption patterns, widescale pollution and inefficient use of environmental capital. These structural constraints come under further stress from outside, such as growing demands to decarbonize and occasional environmental hazards. Above all, global warming, seen as the fictional Japanese character of 'Godzilla' as 'the king of the monsters', not only exposes long-term public mismanagement but also aggregates all existing problems and shortcomings.

Facing Environmental Vulnerability

The short- and long-term effects of climate change pose perhaps the most pressing threat to a region highly dependent on its natural capital and geography (Verhoeven 2018). As a region that largely lacks green spaces and aquifers, water reserves like the Nile, the Jordan-Yarmouk basin or the Tigris–Euphrates river system are of utmost importance. Yet, all these natural water aquifers suffer from ongoing depletion and degradation. Increasing temperatures create more droughts, destroy agriculture land and lead to a loss of biodiversity. Urbanization, soil erosion and salinization further deconstruct soil fertility and put even more stress on fossil aquifers. Maritime trade ways, such as the Strait of Hormuz, the Bab al-Mandab Strait and the Suez Canal, are vital for the region's economic prosperity, as well as home to many (partially endangered) species. Yet, these trade routes become more polluted through oil transportation, saltwater discharge from desalination plants and outflow of untreated wastewater (for instance: Abumoghli & Broughton 2019). Moreover, sea level rise threatens densely populated coastal areas, especially on the Arabian Peninsula.

Public health also is a serious issue, as a consequence of climate change and ecological deterioration. Bad air quality and soil degradation are increasingly linked to growing numbers of cancer, osteoporosis, tuberculosis and many respiratory diseases. Moreover, frequently occurring extreme weather events, such as dust storms and flash floods, kill dozens of people. This short summary underlines the high degree of environmental vulnerability of the broader MENA region, but not all countries face the same risks: According to Hilmi and

⁴ Such a differentiation of the MENA region into sub-systems was made for reasons of simplicity and is of course very idealistic. Unfortunately, this reduction of complexity is made at the expense of Iran, which cannot be associated with one of these sub-regions, and is thus treated only cursorily in this Study.

colleagues, over 81 per cent of the environmental disasters between 1980 and 2010 happened in just five of the MENA countries: Algeria, Egypt, Iran, Morocco and Yemen (Hilmi et al. 2019: 33).

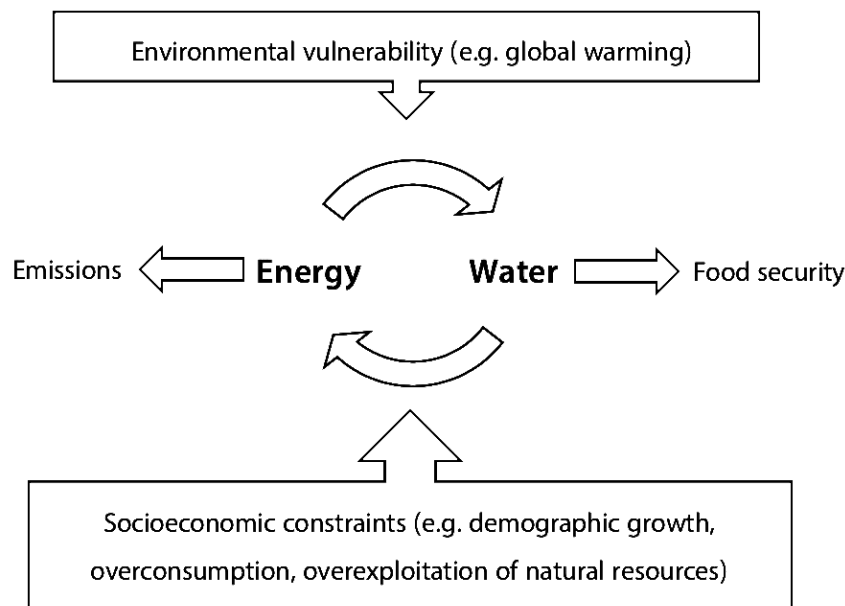
Overcoming the Sustainability Paradox

The sustainability impasse is as much environmental as it is political and socioeconomic. Fossil fuels have long been the key driver of development in the region (Woertz 2014). This single sector focus impaired the development of a manufacturing industry, an example of the so-called 'Dutch disease'. Further constraints and distortions such as 'institutional stasis', emergence of oligopolies, dependence on foreign labour and state capitalism with a bloated public sector accompanied the hydrocarbon model of 'rentierism'⁵ in the MENA region (Kamrava 2018: 7; among many others, also: Gray 2018; Schaar 2019). The uneven distribution of natural resources also created dependencies among exporters and importers, dependencies that have often been politically weaponized (see further: Zumbrägel 2020). More importantly, it reinforced authoritarian practices by reordering civil-state relations. In other words, state revenues from selling natural resources allowed the prevention of taxation and, simultaneously, a full-fledged provision of welfare gifts and free, or at least highly subsidized, public utilities like water, electricity and fuel. In exchange, ruling elites expect political compliance and acquiescence from their citizens (Woertz 2014). Despite leading to aggravated corruption, unproductive rent-seeking behavior and social problems, this 'ruling bargain' also fosters unrestrained consumer habits, inefficient management of natural resources and environmental damage. In other words, while it is difficult to describe the region as traditionally characterized by rentier and semi-rentier economies,⁶ some patterns of a 'rentier mentality' still exist and exacerbate the 'natural unsustainability' (Luomi 2012b). In hydrocarbon-exporting countries (i.e. rentier states), as well as states that depend on them (semi-rentier states), the high dependence on carbon resources and their allocation capacity created lavish and wasteful lifestyles and facilitated widespread overconsumption. This is particularly true for the fossil-wealthy Gulf monarchies, which have "the most wasteful energy policies in the world, the highest energy consumption per capita, the highest energy subsidies and the lowest level of renewable energy use" (Schaar 2019: 10).

⁵ Generally, one can define a rentier state as a state in which more than 40 per cent of the GDP is covered by external rents and which is rather based on the exploitation of resources than on aiming at an increase of production; see: Beblawi and Luciani 1987.

⁶ According to Matthew Gray, traditional rentier states have by now entered a stage of 'late rentierism' that is characterized by an economic liberalization, an active foreign policy, as well as more attempts at economic diversification and entrepreneurial thinking; see: Gray 2018.

However, the 'business as usual' model based on the abundance of fossil fuels has lately come under enormous pressure. This not only relates to the oil crisis of 2014 (and again in spring 2020), when prices crashed to less than a half within six months, but also the growing pressure towards a global low-carbon development (Krane 2019). In addition, many MENA countries, including the Gulf states that are known as global powerhouses, experience periods of energy shortages in the summers due to global warming. This already fragile situation is further exacerbated by heavy consumption patterns and skyrocketing demand of energy caused by massive population growth. One can also speak of a sustainability paradox: On the one hand, policy-makers need to adjust to new realities and transform their previous hydrocarbon model; that is, making it sustainable. On the other hand, leaders remain highly dependent on the abundance of fossil fuels to secure their grip on power (ibid; Zumbärgel 2020).



*The water-energy nexus as vicious cycle
(author's compilation)*

The so-called water-energy nexus (WEN) demonstrates that this also applies beyond the energy sector to other sensitive fields, such as water and food security. Water, to a large degree, is used for agricultural irrigation; whereas energy is needed for pumping, wastewater treatment, the operation and maintenance of water-supply facilities and, above all, the process of desalination. The energy sector, in turn, depends on water for the extraction and refinement of hydrocarbon resources, the cooling of power plants, and the operation of hydroelectric power plants. Countries that suffer from a dry and arid climate with little groundwater reserves but have high financial capacities

(particularly the Arab Gulf monarchies) rely on the costly and highly energy-intensive processes of desalination (Lange 2019). Electricity production, in turn, is almost completely based on hydrocarbons like oil and gas. At some sites, especially when gas cannot meet the periodical surge in demand, crude and raw oil is simply burned, creating vast amounts of GHG and ocean acidification (Hilmi et al. 2019: 39). This again puts further stress on food security as the pollution leads to a loss of maritime biodiversity and decrease of fish stocks. External pressures, such as global warming warnings and global demands to limit emissions as committed to via international accords like the Paris Agreement and the SDGs, aggravate the unsustainable situation and limit the leadership's maneuvering ability (e.g. in providing low-cost public utilities). In short, the WEN depicts a vicious circle of needs and threats (for instance: Lahn & Stevens 2011). The mutual dependence on water, energy and food security, as illustrated above, also helps to underscore the complexity that calls for holistic frameworks rather than single-issue focus.

Growing Environmental Activism

Even as governments across the MENA region encounter many challenges to secure water, energy and food security, there is a noticeable increase in public contestation over environmental issues. A combination of revolutionary fervor and anger about public mismanagement and corruption from a younger, frustrated generation seems to fuel environmental activism. Recent examples include the protest in Istanbul in 2013, against an urban development plan in the capital's Taksim Gezi Park, that swept to several other Turkish towns; as well as waves of social protest across Lebanon, Iraq and Iran in 2019. While the mass protests across the region mainly called to end practices of corruption and nepotism, they also criticized the fiscal policy and the accompanied unsustainable economic model of the ruling elite.

It is worth noting that environmental activism in the region is not a completely new phenomenon. Kuwait is a vivid example and interesting case, where "a group of dedicated citizens" created the Kuwait Environment Protection Society (KEPS) in 1972 – the same time as stronger environmental awareness was taking root in industrialized Western countries (al-Sultan & al-Bakri 1989: 63; also: Shuaib 1988). Environmental concerns further surged in the public sphere shortly after the Gulf War 1990/91 due to the burning of oil wells (Warner 1991), but later lost momentum. In Egypt, local civil actors created the Egyptian Environmental Affairs Agency in 1982. Ultimately, both initiatives in Kuwait and Egypt (as well as many other environmental grassroots movements) were co-opted by the state and gradually turned into government-organized NGOs (GO-NGOs), resembling a common authoritarian instrument to

deal with societal activism (Albrecht & Schlumberger 2004: 383). In Iran, several grassroots environmental organizations emerged over the last decades and played a significant role in raising awareness about environmental degradation and pollution in the country. Yet, in late 2017 and early 2018, security forces restrained their work and detained a couple of environmental activists (Tabatabai 2020). Perceiving social activism as a threat to the leadership and applying harsh repressive means against civil society actors is, thus, another common instrument from the 'autocratic toolbox'.

More recently, however, there is a resurgence of environmental mobilization across the MENA, fueled by a global desire to prioritize the protection of the environment and the ability of transnational exchange and learning via new communication technologies (Sowers 2018: 34). Such environmental mobilization can vary dramatically: ranging from informally and locally organized groups; to a highly institutionalized process of forming environmental non-governmental organisations (NGOs); to widespread popular resistance campaigns (ibid: 37). Authoritarian state leaders thus feel challenged by a new dimension of social contestation unrelated to traditional threats to 'high politics', but rather composed of 'soft' issues.

It is in light of this "confluence of crises" (Schaar 2019), regarding the interconnected issues of facing environmental vulnerability, overcoming a sustainability paradox and delivering state responses to growing environmental-oriented societal mobilization, that policy-makers across the region have put sustainability on the political agenda. The following sections provide some empirical snapshots on sustainable policy-making in three MENA sub-regions: the Arabian Peninsula, the Fertile Crescent and North Africa.

Playing the Green Card. Empirical Snapshots across the Regions

Arabian Peninsula: Greening the Black Gold?

The Arabian Peninsula has long been labeled by the outside world as a "haven of ecocide" (Luomi 2012b: 45) and "worst environmental polluters worldwide" (Reiche 2010: 8). This perception still prevails and refers mostly to the abundance of 'dirty' natural resources. These resources, in combination with the 'hydrocarbon lock-in' of the above-mentioned rentier mentality, has resulted in the highest degree of ecological deficit and ecological overshoot worldwide (measured as the ecological footprint per capita). When the Gulf monarchies

started a process of state branding from 2000 onwards (famously known as the 'Dubai Model') (Hvidt 2009), it exposed them as places of environmentally unsustainable practices. Artificial islands destroying coastal areas, extensive urban gardening in arid climate, the construction of ski halls, outdoor air-conditioning systems and chilled swimming pools are only a few examples of this non-sustainable and reckless modernization course. Yet, over more than a decade, an increasing 'green noise' can be heard, starting with the creation of the first zero-waste and zero-emission city (Masdar) in Abu Dhabi, UAE in 2006. This was followed by other cutting-edge initiatives in sustainability, such as Qatar's promise to carry out a carbon-neutral World cup in 2022; and, more recently, Saudi Arabia's announcement of its futuristic megacity NEOM as the world's largest city to be entirely powered by renewable energy. While equalizing these developments with a 'green revolution' (Quaile 2013) is certainly an overestimation, the sustainable performance of the hydrocarbon-wealthy Gulf monarchies exceeds a mere greenwash (Zumbrägel 2020). A closer look, however, reveals that the rationale and focus is mostly on achieving energy sustainability, alongside the perception of sustainability as a tool of economic diversification and a "new business megatrend" (Kumar & Christodoulopoulou 2014: 8). All these aspects help to pursue a 'green legitimization' that fosters stability and regime resilience in the region (Zumbrägel 2017).

It is the growing energy (and water) demand that especially threatens the fundamental basis of the Gulf regimes' allocative power, through international oil and gas rents, as the backbone of their legitimacy (ibid; Atalay 2018). There is rising speculation that most of the states (except Qatar, with abundant natural gas) will become energy importers within the next decades if their domestic energy consumption is not balanced (Krane 2019). At the same time, the oil-rich Arab Gulf monarchies have not yet recovered from the rapid fall of the oil price between 2014 and 2017, and face further severe fiscal constraints in the current oil price plunge caused by the global COVID-19 pandemic. Furthermore, in a well-connected, increasingly environmentally aware global population, the high ecological footprint of the Gulf monarchies has come under critical scrutiny. In other words, the long-term debate about peak oil has been replaced by discussions on peak oil *demand*.

It is, however, not only the growing energy demand, reputational and financial loss, and the pressure of decarbonizing that mobilizes these regimes. The attacks of 2019 on the oil facilities in Abqaiq and Khurais in the Eastern Saudi province, as on oil tankers in the Streets of Hormuz, acted as a game changer, disclosing another facet of insecurity (Crystal 2018). The Saudi government in particular, despite having one of the largest military budgets on earth, realized its fragile security framework and infrastructure. This is even more surprising when remembering that one of the two targeted oil facilities (i.e.

Abqaiq) had already sustained an attempted al-Qaeda attack in 2006 (Crystal 2018). Similar to 2006, the latest attack again revealed the kingdom's energy vulnerability due to the "centrality of hydrocarbons" (ibid: 76). The demolition of the two plants in Abqaiq and Khurais immediately affected the supply of almost half of the kingdom's oil output. Following the logic of rentierism, one can assume an immanent fear among key elites that the attack, and the resultant supply bottleneck and loss of revenues, would have severe economic and even political repercussions. While the kingdom was able to restore its oil capacity swiftly, efforts towards a more decentralized and non-carbon energy infrastructure increased significantly in the aftermath.

In light of these unresolved questions of how to reduce the dependence on oil and secure energy and water supply without sacrificing their power and welfare, the Arab Gulf states have set up several initiatives and spend enormous financial sums on research and development. At least three different strategies can be identified: a) simply increasing the energy supply through 'cleaner' conventional energy sources like natural gas; b) diversifying the energy portfolio through renewable and nuclear energy; and c) enhancing energy efficiency through energy-saving measures and regulations like cutting subsidies (Krane 2019; Zumbärgel 2020).

In many cases, state leaders initiated high-profile sustainability projects to underline this new focus (Rizzo 2017). Various examples of such "output-legitimacy" (Atalay 2018: 45–47) or "performance legitimation" (Zumbärgel 2019: 65) include the creation of sustainable hubs: namely, Masdar City in Abu Dhabi; King Abdullah University of Science and Technology (KAUST); King Abdullah Petroleum Studies and Research Center (KAPSARC); King Abdullah City for Atomic and Renewable Energy (K.A.CARE); the planned NEOM City in Saudi Arabia; as well as green urban projects like Lusail City, Barwa City and Msheireb Downtown in Qatar. Additional promotion of large-scale, alternative energy projects are the Mohammed bin Rashid Al Maktoum Solar Park in Dubai, Kuwait's Shagaya Renewable Energy Park or Saudi Arabia's planned, but now abandoned \$200 billion solar project with the Japanese company SoftBank. There are also large-scale and costly decarbonization projects, such as the al-Zour refinery in Kuwait, and Qatar's al-Shaheen Oilfield Gas Recovery and Jetty Boil-off Gas Recovery projects (Zumbärgel 2019). In Qatar, sustainable transformation also goes along with putting a green label on huge infrastructure projects related to the hosting of the FIFA World Cup in 2022 and include the building of carbon-neutral stadia and public transport systems (ibid.). These mushrooming projects have several benefits, including fostering global visibility, boosting foreign investments, and diverting attention from other deficiencies (e.g. human-rights violations against guest workers). They also underline leadership qualities and means of personal legitimation, as well

as create a perception of cutting-edge and “hyper-developmental” innovation (cited in: Nicolai 2020: 37). Moreover, in many cases, small segments of the economic and political elite gain from these green megaproject and pledge loyalty to the state leaders. Further mechanisms of co-optation that boost cliental networks have been accomplished by the creation of political institutions, such as several new Ministries of Environment across the region (Zumbrägel 2017, 2019; for an overview, see: Bertocchi & Spagat 2001).

While Kuwait, Saudi Arabia, Qatar and the UAE explicitly point to environmental sustainability as a leading principle in their national visions, measures for ecological preservation barely receive the same attention as the pursuit of energy sustainability and resilience. Rather, sustainability has been instrumentalized for reasons of personal legitimation. To this end, royals in Saudi Arabia, Oman and the UAE took a vanguard role in wildlife preservation programs that protect endangered species like the Arabian (white) oryx (Sowers 2018). Internationally, the Gulf monarchies also tend to improve their image through stronger environmental diplomacy. Examples include Qatar’s hosting of the climate summit in 2012, the UAE’s hosting of international organizations like the International Renewable Energy Agency (IRENA), and Saudi Arabia’s gradual abandonment of its longstanding role as denier of global warming (al-Saidi et al. 2019; further: Depledge 2008). Smaller countries with an assertive foreign policy, such as Qatar and the UAE, are also using environmental diplomacy to escape the Saudi sphere of influence and showcase themselves as environmentally responsible countries (al-Saidi et al. 2019). Against this backdrop, one can conclude that the environmental enthusiasm of the hydrocarbon-rich Arab Gulf monarchies appears mostly cosmetic. The exception is the UAE, whose first president, Zayed bin Sultan Al Nahyan, was known for his passion of environmental protection while “ironically” also building up an “oil-exporting legitimacy” similar to the other Gulf leaders (Davidson 2009: 2, further: 137–38). With regard to the above conceptualized approach of SD, one can also speak of a weak SD with a clear bias towards the economic dimension that is dominated by an oil path dependency. In other words, the hydrocarbon-wealthy Arab Gulf monarchies are far from abandoning the still lucrative oil and gas business and risking their long-term anchor of stability. Instead, they green their black gold.

In resource-poor and least developed Yemen, the situation is tremendously different. Climatic stress and environmental degradation considerably impact the country’s agriculture and rural life, causing food insecurity and extreme water scarcity. Indeed, Yemen, “one of the oldest water management civilizations in the world” (Ward 2015: xxi), faces severe problems in water supply. According to Helen Lackner: “Water is the fundamental constraint to Yemen’s future” (Lackner 2019: 110) and has been the subject of many rural conflicts

in the past, and certainly will be in future. The combination of an ongoing civil war, a humanitarian catastrophe, and high vulnerability to the long- and short-term effects of climate change act as immense obstacles for Yemen's sustainable development, and perhaps even for its future reconciliation process. Yemen's environmental challenges resemble issues that are familiar to other sub-regions in the MENA, such as demographic growth, groundwater depletion, market-led agricultural development, inefficient use of natural capital and pollution.

Fertile Crescent: Troubled Waters

In the Fertile Crescent or *Mashreq*, an area that encompasses Lebanon, Israel/Palestine, Syria, Jordan, Iraq and Egypt, water scarcity poses a substantial risk and may even become a question of fate for the countries' long-term existence. For some time, the comparatively small Jordan-Yarmuk river basin has been subject to cross-border conflict and even military confrontation. Several sources agree that struggle over water management over the River Jordan has been a driving force behind the 1967 Arab-Israeli war (for an overview see: Selby 2005: 328). Other past examples over water resources can also be found to the east, such as the access to the Shatt al-Arab river in the Tigris-Euphrates delta being a principal cause for the first Gulf war between Iran and Iraq, which lasted for eight years (Qader 2017: 8). More recently, the conflicts in Syria and Iraq have shown how water can be weaponized as a political tool (von Lossow 2016). While the water-war thesis is not shared by all, no one doubts the geopolitical importance of water as a significant steering element in either cooperation and even peacebuilding, or in conflict (for an overview, see: Petersen-Perlman et al. 2017). All agree that the importance of water will increase in the future for multiple reasons, including, at minimum, a fourfold challenge: (1) climate change and increasing droughts demanding more agricultural irrigation, (2) which cause growing depletion of groundwater reserves that again are further limited by (3) pollution through increasing industrialization and urbanization, and (4) hydrological modifications that threaten local waterpower. To give only one example, there are predictions that the Tigris and Euphrates may desiccate by 2040 (Abumoghli & Broughton 2019: 14). While initiatives of monitoring, information exchange or joint management are largely missing in the riparian states (Al-Zubair 2019),⁷ principal issues of water quantity and water share are disrupted by national policy decisions of single states, such as the threat Syria and Iraq face through Turkey's building

⁷ In fact, manifold agreements and protocols have been drafted between Turkey, Syria and Iraq since 1920, but these have never been implemented or even ratified; see: Schaar 2019.

of many hydroelectric dams on the upper sides of the Euphrates and Tigris (as an overview: Kramer et al. 2011). This limiting of available water for drinking and irrigation has only added fuel to protests starting in 2013, over water and energy services in southern Iraq (Schaar 2019).

The *Mashreq* countries are not only exposed to water scarcity, but face several other environmental issues that come with widespread public mismanagement. Above all is the air pollution and garbage problem, which was on full display during the Lebanon waste crisis in 2015, when the country's main sanitary landfill site was closed due to overcapacity (Abumoghli & Broughton 2019). The resultant grassroots mobilization campaign #YouStink (تعلط_مكتحير) was also a reflection of widespread public service mismanagement, social exclusion and corruption in Lebanon. Protestors claimed that the private waste disposal company, which has close links to the then-Hariri administration, had not only been incapable of service provision, but had also fueled the country's sectarian divisions (for instance: Sowers 2018: 46).

Noteworthy are also respiratory health problems and diseases, such as lung cancer and asthma, that are linked to air pollution and dust storms. This is especially true in war-torn states like Syria and Iraq, where burning sulphur or oil wells, as well as contamination of the ecological environment through hazardous chemical residues from explosives, impact air quality. Additionally, the large numbers of internally displaced people (IDPs) across the Levant exacerbate an already tense situation. This relates to informal settlements with poor living conditions and growing rivalry over already limited natural resources in countries such as Lebanon and Jordan, as well as to a future scenario where IDPs return home to find others have gained control of land and water in their absence. The struggle for land and natural resources can reignite conflicts and hinder long-term efforts on reconstruction and reconciliation (Schaar 2019: 14).

It is striking that the projected and implemented environmental policy decisions of most of the countries mentioned above are the weakest in the MENA region. While no sufficient data on Palestine is available (Emirates Diplomatic Academy 2019), Iraq and Syria score very poorly in all categories of the SDGs. Even more concerning, Syria provides a vivid example of how environmental sustainability can be politicized, and weaponized. In 2016, the al-Assad regime, never a proponent of environmental management, started to blame the US-led forces and terrorist groups for the disastrous environmental degradation in the country (Nicolai 2020: 40). Lebanon undertook measures to address issues of pollution, deforestation and ensure water and energy security in collaboration with the UN, but the output largely failed to meet expectations, leading to new political crises and a resurgence of conflict in 2019. In

contrast, Jordan, which placed attention to environmental issues on the political agenda comparatively early by initiating a national climate change policy in 2013, is the only country in the region that has successfully achieved two SDGs (i.e. Climate Action, and Life on Land) (Emirates Diplomatic Academy 2019). In 2017, Jordan instigated a National Green Growth Plan (NGGP) in close relation to the SDGs. The League of Arab States (LAS) has declared the NGGP a model for the region.

Egypt, in turn, which interconnects the MENA sub-regions of the *Mashreq* and the *Maghreb*, faces challenges similar to other countries discussed above. Egypt is almost completely dependent on the Nile from which it receives more than 90 percent of its water; thus, Egyptian policy-makers, as well as their counterparts in Sudan, view the planning and construction of large-scale hydroelectric dams in upstream countries (e.g. Burundi, Tanzania and Uganda, Rwanda and Ethiopia) as a matter of national security. Syria and Iraq have comparable concerns with the Tigris–Euphrates river system. Egypt’s water threat, however, is partially also self-inflicted by growing pollution and sparse regulations on wastewater. Long-term effects of climate change, particularly sea level rise, also pose a major future risk: A rise of one meter can destroy large parts of the Nile Delta region and displace around six million people (Sever et al. 2019: 202). In combination with a demographic explosion – Egypt has recently hit the mark of 100 million inhabitants – the government faces problems in delivering key services such as water, energy and security. It appears that the Egyptian government is gradually realizing that this is a critical juncture. As an initial attempt to save water, the regime proposed draconic regulations on agricultural irrigation in the Nile Delta, which led to large-scale protests in the rural areas in spring 2018 (Schaar 2019). Egypt’s fear and resultant swift silencing of any form of opposition activism demonstrates how environmental activism is constrained by authoritarian state structures and behavior like repression, counter-discourses and co-optation. The al-Sisi government systematically counters public campaigns that criticize water pollution, destroyed farmland for urbanization and the regime’s management of the natural resources. As well, environmental stakeholders and NGOs are often co-opted by state authorities, leaving little space for interest articulation and aggregation (Sowers 2013, 2018).

North Africa: The Greenest Bang for the Buck (?)

Already a first glance at quantitative data reveals that the North Africa region can be seen as a frontrunner in sustainability and could provide an environmental blueprint for the other MENA states. Because the countries of the region

experience increasingly limited rainfall, hot temperatures during the summer-time, and large-scale pollution, the *Maghreb* states (except for crisis-riddled Libya) have started to enact gradual environmental policies. More concretely, Morocco, Algeria and Tunisia are on the MENA region's top five list of achieving the SDG goals (Emirates Diplomatic Academy 2019). This is especially interesting in the case of the rentier state Algeria, which almost completely relies on hydrocarbon revenues. It was large budgetary constraints during the latest drop of oil prices that triggered an Algerian reorientation, with international assistance. Despite the exploration of ecologically risky techniques of hydrocarbon extraction (e.g. fracking), Algeria also began to diversify its energy portfolio by implementing renewable energy sources (RES), particularly solar energy followed by wind, geothermal and less potential biomass. Starting in 2014, their previous focus on hydropower was gradually phased out in order to secure their water supply (Saouli & Madani 2019: 175).

Even more prominently, Tunisia and Morocco stand out as model examples of sustainable transformation on a regional and even global scale, with ambitious visions and concrete targets that many other MENA states lack (Schaar 2019). It is often argued that both countries have enacted a wide spectrum of environmental activities and have explicitly enshrined environmental principles, such as the right to water, in their constitutions (Morocco 2011 and Tunisia 2014).⁸ Especially as regards Morocco, experts point to the implementation of regulative means such as the suspension of the usage of plastic bags (*Zéro Mika*), fostering educational environmental awareness in both public and religious fields, and establishing the world's largest solar park and the largest wind farm on the African continent (Nicolai 2020).

It can be assumed that civil society in both countries had a considerable impact in shaping this transformation. As elsewhere in the recent decade, North African countries have seen protests emerge over environmental problems that adversely affect the living conditions and income opportunities, particularly of young people, a significant part of the population. Between 2010 and 2017, several forms of social mobilization could be identified in Morocco (9) and Tunisia (8) that were mainly against water mismanagement and pollution from the extraction of minerals and fossil fuels (Houdret et al. 2018). Particularly in Tunisia, several environmental networks emerged during the transition period of 2011 to 2014. The time between the fall of President Ben Ali and the second parliamentary elections restructured state-society relationships, and enabled the politicization of environmental problems and issues. It can be assumed that the promotion of an environmental agenda in 2011 was used

⁸ Already in 2010, the Moroccan parliament ratified the National Charter for the Environment and Sustainable Development.

“as a tool of resistance against the political system” by some oppositional forces (Loschi 2019: 99) and, ultimately, sparked a broader public environmental awareness.

The ability to create new channels of environmental activism is related to a comparatively long-standing tradition of civil activism, as in Lebanon and to a lesser degree in Kuwait, but also that inherent autocratic modes of limited access to information and creating counter-narratives are less dominant in both states (for instance: Sowers 2018; Loschi 2019). However, while social protest has certainly driven the environmental agenda to a large part, one should not forget that in the Maghreb, as elsewhere in the MENA region, environmental policy remains state-led, highly centralized and top-down, and that there are strategic political motives behind the recent promotion of the new policy field of environmental sustainability. For example, Morocco has managed to gain a reputation as a green champion by a recently enacted hyperactive environmental diplomacy. This includes being the first Arab country to voluntarily submit nationally determined contributions (NDCs) to the UN immediately after the Paris Agreement in 2015; the hosting of the climate summit in 2016; and the adoption of several other national initiatives including the National Strategy for Sustainable Development, the Green Investment Plan and the Green Morocco Plan (Nicolai 2020). Despite these green achievements, one can also assume an underlying political strategy behind Morocco’s self-proclaimed role as regional champion of the environment: Several green projects like *Zéro Mika*, Morocco’s green mosques, a better public transport in major cities and the introduction of Africa’s first city bikes for hire were publicly showcased and fostered a positive perception and image about the kingdom.⁹

Morocco is thus a good example for the elaboration of ulterior motives of a country’s climate strategy. At least two aspects are prevalent. First, as Qatar had already managed to do with the hosting of the climate conference in 2012, four years later Morocco used the climate summit as an opportunity to consolidate its image as an international sustainability forerunner. This form of state branding is closely accompanied by the leadership’s attempt to create personal legitimation and to co-opt loyal elites. Mohammed VI used the climate summit to present himself as a great visionary of environmental protection. Already during the preparation phase of the climate summit, he took charge by commissioning the task force and appointing loyal associates, such as his foreign minister, Salaheddine Mezouar, to leading positions (Reifeld 2016). In 2016, the same year the COP22 took place, he also inaugurated the highly remunerated environmental prize that bears his name (*Prix Mohammed VI pour le climat et*

⁹ Unpublished manuscript by Katharina Nicolai.

l'environnement).¹⁰ Related to this is the second aspect of Morocco's intention of gaining a leadership role in the Africa, as environmental sustainability is perceived as offering a suitable framework for this objective. Hence, Mohammed VI framed the hosting of the climate conference as a "COP of the African continent" while staying in Dakar (Mohammed VI 2016). Furthermore, plans of exporting Morocco's national energy strategy (*Plan Maroc Vert*) in 2009 were promoted under the label of 'Triple A' (Adaptation of African Agriculture) during the COP22. As well, the idea of Green Growth Infrastructure Facility for Africa (GGIF for Africa) was promoted to attract foreign capital and facilitate sustainable projects across Africa, all under the guidance of Morocco. Parallel to the conference, Mohammad VI organized an African summit to discuss mechanisms and processes of sustainable development on the continent. Immediately after the conference, Mohammad VI continued his Africa tour and fostered cooperative attempts with other African leaders under the scope of the Triple A and GGIF for Africa. Those examples underscore how Morocco has taken over the role of major advocate for African interests, and how environmental diplomacy, especially under the narrative of fighting for climate justice, serves as a soft policy tool for promoting regional aspirations.¹¹

Revisiting the Sustainability Trend in the Region

This Study does not aim to provide a comprehensive overlook about the status of environmental sustainability. Rather, it presents a cross section of environmental politics in the MENA region. It is hoped that the vast amount of literature reviewed in the Study will encourage further reading and spark new research questions and avenues. This Study does not discuss opportunities and challenges of a sustainable development in the MENA region as others have done, but taking the perspective of a 'political ecology' (Verhoeven 2018), puts recent developments in a broader political scope. Several findings have emerged from this overview.

First, sustainability has only recently become a major trend across the MENA region; but the progress, scope, priorities and approaches differ greatly between single countries and between regions. Given the fuzzy understanding about SD in general and the SDGs in particular, many nation states advocate their own perspective that best serves their national interests. National

¹⁰ Already in 2001, the king established the Mohammed VI Foundation for the Protection of the Environment.

¹¹ Unpublished manuscript, Katharina Nicolai.

motives vary, including the enhancing of regime popularity inside and abroad, boosting investment and business opportunities, greenwashing for international reputation, or pursuing a national security roadmap. Such priorities highlight minimal inherent interest towards an authentic pledge to promoting sustainability based on ecological concerns. Strikingly, states with the most capacity, such as the Arab Gulf states, have had a rather modest performance in implementing the SDGs. These states are eager to announce ambitious goals, but frequently fall short of their self-declared targets and commitments (al-Saidi et al. 2019). With the exception of the UAE, the region's poster child with its long-term and inherent environmental vision (Davidson 2009: 137–38), the oil-rich Gulf monarchies rank middle-average in the SDGs performance, on a similar level with the *Mashreq* states, Lebanon, Egypt and even war-torn Syria. Within the countries of the Fertile Crescent, Jordan positively stands out. Morocco and Tunisia take the regional leadership role in the *Maghreb* region, although one has to acknowledge that there are significant geographical differences within countries, and not all citizens benefit from the sustainable policy-making in a same matter. It also needs to be seen whether initiated processes and measures actually produce results. In fact, the transformation of both countries currently appears relatively modest when considering the further indicators of environmental health and ecosystem preservation.¹² The least developed MENA countries, such as Yemen (but also Sudan, Somalia, Comoros, Mauretania and Djibouti in a broader understanding of the region), represent the other side of the spectrum, where attaining sustainability has a very low priority. Although these countries have the lowest share on global emissions, they are the ones most vulnerable to the adverse effects of climate change (for instance: Hilmi et al. 2019: 33).

Second, the rise of sustainability as a needed commitment was mainly generated by a stronger awareness of growing threats, foremost linked to the water-energy nexus, which also put stress on the provision of food security. External developments, such as global oil price volatility and the increasing pressure to decarbonize by the international climate regime and non-binding declarations like the Paris Agreement and the SDGs, can be seen as another trigger for the sustainability transformation. Although external circumstances present cross-cutting and transboundary issues, it is interesting to note that there is very little cooperation among Arab states (al-Sarihi & Luomi 2019). Jointly announced initiatives did not materialize, and state leaders frequently only paid lip service to proposals of common action. Instead, sustainable policy-making remains on a national level, where a notion of a weak SD, which favors economic sustainability over environmental or social improvements,

¹² Ibid.

prevails. Various cases throughout the MENA region highlight that energy sustainability and resilience are at the core of any country's future development. Sustainability is also perceived as an expanding industry with the potential to create jobs, diversify the economy and attract foreign investments. In reality, however, one has to admit that output of most SD projects, such as the installed RES capacity, is still very low.

Third, sound environmental policies are hampered by institutional weakness and missing, or unenforced, legal frameworks. Even more problematic, sustainable policy-making remains state-led, top down and highly hierarchic "with little participation from local authorities" (Abumoghli & Broughton 2019: 25). Core elements of environmental governance, such as information, accountability and transparency play no dominant role. A lack of environmental awareness is endemic in the broader public, which also constitutes a great obstacle for a profound transformation because resource scarcity awareness is almost non-existent. Yet, key decision-makers across the region remain invested in steering political support and fostering political legitimacy internally and externally. Many policy-makers thus focus on the supply side rather than controlling the demand for resources, because the latter would more easily lead to social frictions. In this vein, several states strive for energy diversification by implementing non-hydrocarbon energy sources, including nuclear energy. In contrast, reduction of subsidies for electricity, water and fuel is implemented much more cautiously. This is especially true for the Arab Gulf states, which have more financial capacities to balance measures of fiscal austerity (Krane 2019). Yet, some of the wealthy oil-exporting countries face severe financial constraints as never before. Still recovering from the drop in oil prices from 2014 and 2017, the current twin crisis of the corona virus and a fresh oil price collapse adversely affect their fiscal capability to cover governmental expenditures. Saudi Arabia has lately made the unprecedented move to raise its value-added tax (VAT) from 5 to 15 per cent from July 2020 onwards. Additionally, in many states of the region, there is very little regulative responsibility. Where environmental legislation does exist, it is minimally enforced or applied. State leaders shy away from command and control measures, as they can have an inherent delegitimizing effect and an accompanying loss of support.

Fourth, and related to the above: One can notice that sustainable policy-making is not only based on a weak understanding of SD, but clearly serves ulterior motives of political power games. Externally, several MENA countries instrumentalize environmental politics as a soft policy tool for achieving ulterior political goals, such as gaining political influence, exploring new business opportunities or distracting from other internal failures. Examples include Morocco's pivot to Africa; Saudi Arabia's hedging towards China and

Russia; Syria's blame game concerning foreign intervention forces; as well as the UAE's and Qatar's branding techniques. Another political sustainability strategy relates to the creation of various 'networks of privileges' (Heydemann 2006) from which incumbents benefit. This practice of co-optation has many facets, but two forms appear prevalent: On the one hand, it includes formal aspects by putting loyal elites in political positions, even sometimes in newly created institutions or governmental bodies like Ministries of Environment. On the other hand, it comprises rather informal techniques of clientelism, where certain companies in the hands of oligarchic business families obtain contracts to build, construct or operate large-scale sustainable infrastructure projects (i.e. monopoly concessions). In brief, sustainability is *en vogue* and offers windows of opportunity for authoritarian stability. These include modes of legitimation and co-optation, seen as autocratic pillars of regime resilience (Gerschewski 2013; see also: Albrecht & Schlumberger 2004).

Fifth: Simultaneously, state leaders not only make use of the field of sustainability to foster their popularity inside and outside and boost elite cohesion, but also tend to reduce oppositional activism when necessary. In other words, in addition to legitimation and co-optation, repression serves as another important trajectory to understand the dynamics of a sustainability transformation (Gerschewski 2013). Leaders are now experiencing new forms of social contestation over the provision of utility services and the protection of the public good that is environment. Such is underlined by recent waves of social protest including Turkey in 2013, Lebanon in 2015, Morocco in 2016/2017, the Gaza Strip in 2017 as well as in Lebanon, Iraq and Iran throughout 2019 (the latter also having, to a greater or lesser extent, an environmental dimension). Moreover, the growing state-society frictions across the MENA region reveal that the water-energy-food nexus is a major pressure factor; and the adequate and sustainable management of the nexus reflects upon fundamental aspects of state legitimacy. Yet, for the majority of citizens and political decision-makers, concerns over environmental degradation are not as important as the provision of these public goods and utility services. This is well highlighted by the low level of general environmental awareness in the MENA region. Having said that, cases of public outcry over environmental degradation, bad crisis management of natural disasters and pollution incidents are increasing, although gradually and marginally. A vivid example includes the protests in Istanbul's Taksim Gezi Park over clearing the park complex, which were a catalyst for nationwide protests against political mismanagement. Other examples of growing environmental awareness include the flash floods in Jeddah in 2009, and several oil spills in Kuwait's southern Ra's al-Zour area in late summer 2017. Both events sparked outrage on social media platforms.

Future Outlook

The earth is heating up. The MENA region is projected to be tremendously affected by climate change. While the Gulf region already regularly reaches temperatures over 50 degrees Celsius, future projections are to over 60 degrees in the course of this century. Additionally, just as elsewhere in the world, MENA will experience more extreme weather and environmental disasters; particularly, an increase number of flash floods, which are already the greatest threat to the region today (Hilmi et al. 2019: 33). Thus, the traditional concentration on a weak SD will not bring a fundamental change. Policy-makers need to address the issue holistically, also taking into account socioeconomic issues, short- and long-term effects of climate change that demand more environmental governance, as well as adaptation and mitigation measures. In other words, the provision of services such as electricity and water and the guarantee of clean air and fertile land cannot be treated as two separate issues. However, it is expected that state leaders will continue to perceive sustainability largely from an economic perspective, and to prioritize development, growth and stability, often at the expense of ecological preservation. It is apparent that key decision makers advocate sustainable development based on an autocratic logic. If state leaders continue to follow this economic and political (i.e. authoritarian) path dependence, they may be confronted with another challenge that might become the ultimate litmus test for future regime stability: bottom-up mobilization.

Already, empirical evidence points to the development of bottom-up environmental mobilization that challenges the inherent autocratic modes of governance. Given the growing importance of environmental issues all around the globe, particularly promoted through the youth campaign 'Fridays For Future', it may be expected that environmental activism will continue and even increase in the MENA region. The last decade already gave a hint of this development: Environmental concerns may not have been "at the forefront of grievances" or the principal cause for the Arab uprisings, but they did relate to them and constituted a contributing factor (Malka 2018: 1). As outlined above, Tunisia is a striking example that the waves of protest in 2011 were partially accompanied by an environmental agenda. The factor of migration, caused by an extreme drought, can also be seen as a contributory factor to the events that resulted in the Syrian uprisings. More research is still needed to make a clear assessment and causal argument. However, since then several waves of protest, as mentioned above, have highlighted that environmental concerns have become an increasingly visible component of social protest; and its continued growth, in both frequency and scope, can be expected. The few countries of the region that have a comparatively vibrant civil society and allow channels of political

participation (e.g. Lebanon, Jordan, Morocco, Tunisia and Kuwait) are far better prepared than countries that shy away from such inclusion, and mantle themselves in traditional modes of closed authoritarianism (e.g. Saudi Arabia, Iran, Egypt, Bahrain, the UAE). Countries suffering from armed conflicts and endemic poverty (e.g. Yemen, Libya, Syria and Iraq) will backslide even further. The lack of sustainable policies in these countries may also hinder any form of long-term progress in reconstruction and reconciliation.

However, the multiple challenges to a sustainable transformation in the MENA region may also offer windows of opportunity. As a cross-cutting issue, the climate change as 'Godzilla' can also help to overcome regional obstacles of conflict, competition, and grievances between different political leaderships. Cooperation via transfer of knowledge and technology are needed, more than ever, to combat the challenges of global warming, one of the greatest threats of this century. Yet, as this Study and various scholars (e.g. al-Sarihi & Luomi 2019) pinpoint, there is currently very little exchange at the highest circles of decision-making. Hence, there is a need and opportunity to foster trans-boundary channels of communication and establish collaboration efforts beneath the top leadership level, among various stakeholders across different fields, sectors and locations. Enhancing these partnerships will constitute an important steering element for a holistic sustainable transformation of the highly vulnerable and fragile MENA region.

Literature

- Abumoghli, Iyad; Broughton, Matthew (2019): 'Environmental outlook for the West Asia Region', in: H. Pouran and H. Hakimian (eds.): *Environmental Challenges in the MENA Region. The Long Road from Conflict to Cooperation*, London, pp. 10–30.
- Aden, Hartmut (2012): *Umweltpolitik*. Wiesbaden.
- Akhonbay, Hisham M. (ed.) (2019): *The Economics of Renewable Energy in the Gulf*, London, New York.
- Albrecht, Holger; Schlumberger, Oliver (2004): "'Waiting for Godot": Regime change without democratization in the Middle East', in: *International Political Science Review* 25/4, pp. 371–92.
- Alterman, Jon B.; Dziuban, Michael (2010): *Clear Gold. Water as a Strategic Resource in the Middle East*, Center for Strategic & International Studies (CSIS). Available at https://csis-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/101213_Alterman_ClearGold_web.pdf (11.03.2020).
- Arce, Rafael de; Mahía, Ramón; Medina, Eva; Escribano, Gonzalo (2012): 'A simulation of the economic impact of renewable energy development in Morocco', in: *Energy Policy* 46, pp. 335–45.
- Arouri, Mohamed El Hedi; Ben Youssef, Adel; M'henni, Hatem; Rault, Christophe (2012): 'Energy consumption, economic growth and CO2 emissions in Middle East and North African countries', in: *Energy Policy* 45, pp. 342–49.
- Atalay, Yasemin (2018): 'Understanding input and output legitimacy of environmental policymaking in the Gulf Cooperation Council States', in: *Environment Policy & Governance* 28/1, pp. 39–50.
- Atalay, Yasemin; Biermann, Frank; Kalfagianni, Agni (2016): 'Adoption of renewable energy technologies in oil-rich countries. Explaining policy variation in the Gulf Cooperation Council States', in: *Renewable Energy* 85, pp. 206–14.
- Bahgat, Gawdat (2013): *Alternative Energy in the Middle East*, Basingstoke, Hampshire.
- Beblawi, Hazem; Luciani, Giacomo (1987): *The Rentier State*. London.
- Bellin, Eva (2004): 'The robustness of authoritarianism in the Middle East: Exceptionalism in comparative perspective', in: *Comparative Politics* 36/2, pp. 139–57.
- Bertocchi, Graziella; Spagat, Michael (2001): 'The politics of co-optation', in: *Journal of Comparative Economics* 29/4, pp. 591–607.
- Beutel, Jörg (2012): 'Conceptual problems of measuring economic diversification, as applied to the GCC economies', in: G. Luciani, S. Hertog, E. Woertz and R. Youngs (eds.): *Resources Blessed. Diversification and the Gulf Development Model*, Berlin, pp. 29–70.

- Bhutto, Abdul Waheed; Bazmi, Aqeel Ahmed; Zahedi, Gholamreza; Klemeš, Jiří Jaromír (2014): 'A review of progress in renewable energy implementation in the Gulf Cooperation Council countries', in: *Journal of Cleaner Production* 71, pp. 168–80.
- Brand, Bernhard; Zingerle, Jonas (2010): *The Renewable Energy Targets of the Maghreb Countries: Impact on Electricity Supply and Conventional Power Markets*, EWI Working Paper 10/02. Available at <https://www.ewi.uni-koeln.de/cms/wp-content/uploads/2015/12/EWI-WP-10-02-Renewable-Energy-Maghreb.pdf> (18.03.2020).
- Bulkeley, Harriet (2015): *Accomplishing Climate Governance*, Cambridge.
- Croitoru, Lelia; Sarraf, Maria (eds.) (2010): *The Cost of Environmental Degradation. Case Studies from the Middle East and North Africa*, World Bank. Available at <http://documents.worldbank.org/curated/en/896881468278941796/The-cost-of-environmental-degradation-case-studies-from-the-Middle-East-and-North-Africa> (19.03.2020).
- Crystal, Jill (2018): 'The securitization of oil and its ramifications in the Gulf Cooperation Council states', in: H. Verhoeven (ed.): *Environmental Politics in the Middle East*, Oxford, pp. 75–98.
- Daoudy, Marwa (2020): *The Origins of the Syrian Conflict. Climate Change and Human Security*, Cambridge.
- Dasgupta, Susmita; Laplante, Benoit; Meisner, Craig; Wheeler, David; Yan, Jianping (2007): *The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis*, World Bank. Available at <http://documents.worldbank.org/curated/en/156401468136816684/The-impact-of-sea-level-rise-on-developing-countries-a-comparative-analysis> (18.03.2020).
- Davidson, Christopher (2009): *Abu Dhabi. Oil and Beyond*, Oxford.
- Dees, Philipp; Auktor, Georgeta Vidican (2019): 'Renewable deployment in the MENA region. Growth effects and explaining factors', in: H. Pouran and H. Hakimian (eds.): *Environmental Challenges in the MENA Region. The Long Road from Conflict to Cooperation*, London, pp. 148–68.
- Depledge, Joanna (2008): 'Striving for no. Saudi Arabia in the climate change regime', in: *Global Environmental Politics* 8/4, pp. 9–35.
- El-Katiri, Laura; Fattouh, Bassam (2014): *A Roadmap for Renewable Energy in the Middle East and North Africa*, The Oxford Institute for Energy Studies. Available at <https://www.oxfordenergy.org/publications/a-roadmap-for-renewable-energy-in-the-middle-east-and-north-africa/?v=3a52f3c22ed6> (18.03.2020).
- Emirates Diplomatic Academy (2019): *SDG Index and Dashboard Report 2019. Arab Region*, SDG Centre of Excellence for the Arab Region (SDGCAR); Sustainable

- Development Solutions Network (SDSN). Available at <https://sdgindex.org/reports/2019-arab-region-sdg-index-and-dashboards-report/> (18.03.2020).
- Gelil, Ibrahim A. (2009): *Arab Climate Resilience Initiative Climate Change: Economic Challenges and Opportunities in the Arab Regions*, United Nations Development Programme. Available at https://www.climamed.eu/wp-content/uploads/files/Arab-Climate-Resilience-Initiative_UNDP.pdf (18.03.2020).
- Gerner, Deborah J.; Schwedler Jillian (ed.) (2008): *Understanding the Contemporary Middle East*, London.
- Gerschewski, Johannes (2013): 'The three pillars of stability. Legitimation, repression, and co-optation in autocratic regimes', in: *Democratization* 20/1, pp. 13–38.
- Goodland, Robert (1995): 'The concept of environmental sustainability', in: *Annual Review of Ecological System* 26, pp. 1–24.
- Gray, Matthew (2018): 'Rentierism's siblings. On the linkages between rents, neopatrimonialism, and entrepreneurial state capitalism in the Persian Gulf monarchies', in: *Journal of Arabian Studies* 8, pp. 29–45.
- Green, Jessica; Hale, Thomas (2017): 'Reversing the marginalization of global environmental politics in international relations: An opportunity for the discipline', in: *PS: Political Science & Politics* 50:02, pp. 473–9.
- Griffiths, Steve; Orkoubi, Daniah (2019): 'Energy and climate policies to stimulate renewables deployment in GCC countries', in: H. Akhonbay (ed.): *The Economics of Renewable Energy in the Gulf*. London, New York, pp. 139–66.
- Halliday, Fred (ed.) (2007): *The Middle East in International Relations. Power, Politics and Ideology*, Cambridge.
- Heydemann, Steven (2006): *Networks of Privilege in the Middle East. The Politics of Economic Reform Revisited*, New York.
- Hilmi, Nathalie; Safa, Alain; Planca-Bielsa, Victor; Cinar, Mine (2019): 'Environmental Risks and Ocean Acidification in the MENA Region', in: H. Pouran and H. Hakimian (eds.): *Environmental Challenges in the MENA Region. The Long Road from Conflict to Cooperation*, London, pp. 31–48.
- Hilmi, Nathalie; Safa, Alain; Teisserence, Brice; Peridy, Nicolas (2015): 'Sustainable tourism in some MENA countries', in: *Topics in Middle Eastern and African Economies* 17/1, pp. 92–112.
- Houdret, Annabelle; Pasqua, Irene; Meknassi, Saâd Fillali (2018): *Access to Environmental Information: A Driver of Accountable Governance in Morocco and Tunisia?*, German Development Institute Brief. Available at <https://www.diegdi.de/briefing-paper/article/access-to-environmental-information-a-driver-of-accountable-governance-in-morocco-and-tunisia/> (18.03.2020).

- Hvidt, Martin (2009): 'The Dubai model. An outline of key development-process elements in Dubai', in: *Middle East Studies* 41/03, pp. 397–418.
- Juan, Alexander de (2015): 'Long-term environmental change and geographical patterns of violence in Darfur, 2003–2005', in: *Political Geography* 45, pp. 22–33.
- Kamrava, Mehran (2018): 'Oil and institutional stasis in the Persian Gulf', in: *Journal of Arabian Studies* 8, pp. 1–12.
- Komendantova, Nadejda; Pfenninger, Stefan; Patt, Anthony (2014): 'Governance barriers to renewable energy in North Africa', in: *The International Spectator* 49/2, pp. 50–65.
- Kramer, Annika; Kibaroglu, Aysegul; Scheumann, Waltina (2011): *Turkey's Water Policy. National Frameworks and International Cooperation*, Berlin, Heidelberg.
- Krane, Jim (2019): *Energy Kingdoms. Oil and Political Survival in the Persian Gulf*, New York.
- Krupa, Joel; Poudineh, Rahmatallah (2017): *Financing Renewable Electricity in the Resource-Rich Countries of the Middle East and North Africa*, Oxford Institute for Energy Studies. Available at <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/02/Financing-renewable-electricity-in-the-resource-rich-countries-of-the-Middle-East-and-North-Africa-A-review-EL-22.pdf> (18.03.2020).
- Kumar, V.; Christodouloupoulou, Angeliki (2014): 'Sustainability and branding: An integrated perspective', in: *Industrial Marketing Management* 43/1, pp. 6–15.
- Kumetat, Dennis (2012): 'Climate change on the Arabian Peninsula. Regional security, sustainability strategies, and research needs', in: J. Scheffran, M. Brzoska, H. Brauch, P. Link and J. Schilling (eds.): *Climate Change, Human Security and Violent Conflict. Challenges for Societal Stability*, Heidelberg, pp. 373–86.
- Lackner, Helen (2019): 'Extreme environmental challenges in the context of lasting political crisis. The case of Yemen', in: H. Pouran and H. Hakimian (eds.): *Environmental Challenges in the MENA Region. The Long Road from Conflict to Cooperation*, London, pp. 108–26.
- Lahn, Glada; Stevens, Paul (2011): *Burning Oil to Keep Cool The Hidden Energy Crisis in Saudi Arabia*, Chatham House. Available at https://www.chathamhouse.org/sites/default/files/public/Research/Energy%2C%20Environment%20and%20Development/1211pr_lahn_stevens.pdf (18.03.2020).
- Lange, Manfred A. (2019): 'Impacts of climate change on the Eastern Mediterranean and the Middle East and North Africa region and the water-energy nexus', in: *Atmosphere* 10/8, pp. 1–22.
- Lindisfarne, Nancy; Neale, Jonathan (2019): 'Oil, heat and climate jobs in the MENA region', in: H. Pouran and H. Hakimian (eds.): *Environmental Chal-*

- lenges in the MENA Region. *The Long Road from Conflict to Cooperation*, London, pp. 72–94.
- Loschi, Chiara (2019): 'Local mobilisations and the formation of environmental networks in a democratizing Tunisia', in: *Social Movement Studies* 18/1, pp. 93–112.
- von Lossow, Tobias (2016): 'The rebirth of water as a weapon: IS in Syria and Iraq', in: *The International Spectator* 51/3, pp. 82–99.
- Lucas, Russel E. (2004): 'Monarchical authoritarianism. Survival and political liberalization in a Middle Eastern regime type', in: *Journal of Middle East Studies* 36/1, pp. 103–19.
- Luciani, Giacomo; Hertog, Steffen; Woertz, Eckart; Youngs, Richard (eds.) (2012): *Resources Blessed. Diversification and the Gulf Development Model*, Berlin.
- Luomi, Mari (2018): *Implementing the Sustainable Development Goals – Early Experiences in the Arab Region*, EDA Insight. Available at: https://eda.ac.ae/docs/default-source/Publications/eda_insight_arab_sdg_governance_en.pdf?sfvrsn=0 (18.03.2020).
- Luomi, Mari (2012a): *Qatar's Natural Sustainability: Plans, Perceptions, and Pitfalls*, Center for International and Regional Studies (CRIS). Available at <https://repository.library.georgetown.edu/bitstream/handle/10822/558216/CIRSOccasionalPaper11MariLuomi2012.pdf?sequence=5&isAllowed=y> (18.03.2020)
- Luomi, Mari (2012b): *The Gulf Monarchies and Climate Change. Abu Dhabi and Qatar in an Era of Natural Unsustainability*, London.
- al-Maamary, Hilal M.S.; Kazem, Hussein A.; Chaichan, Miqdam T. (2017): 'Climate change. The game changer in the Gulf Cooperation Council region', in: *Renewable and Sustainable Energy Reviews* 76, pp. 555–76.
- Malka, Haim (2018): *Water Pressure: Water, Protest, and State Legitimacy in the Maghreb*, CSIS Analysis Paper. Available at <https://www.csis.org/analysis/water-pressure-water-protest-and-state-legitimacy-maghreb-0> (18.03.2020).
- Mason, Michael; Mor, Amit (eds.) (2009): *Renewable Energy in the Middle East. Enhancing Security through Regional Cooperation*, Berlin.
- al-Mebayedh, Hamad (2013): 'Climate changes and its effects on the Arab area', in: *APCBEE Procedia* 5, pp. 1–5.
- Michel, David; Pandya, Amit (eds.) (2009): *Troubled Waters. Climate Change, Hydropolitics, and Transboundary Resources*, Henry L. Stimson Center. Available at https://www.stimson.org/wp-content/files/file-attachments/Troubled_Waters-Chapter_6_Michel_1.pdf (18.03.2020).
- Mittal, Deepti Mahajan (2019): *Advancing the Sustainable Energy Agenda. Governance and Cooperation in the Arab Region*, EDA Insight. Available at <https://>

- eda.ac.ae/docs/default-source/Publications/eda-insight_gear-iv_sustainable-energy_en_final.pdf?sfvrsn=2 (18.03.2020).
- Mohammed VI (11.06.2016): 'SM le Roi prononce à Dakar un discours à l'occasion du 41eme anniversaire de la Marche Verte', in: *Map News*.
- Mondal, Md. Alam Hossain; Hawila, Diala; Kennedy, Scott; Mezher, Toufic (2016): 'The GCC countries RE-readiness. Strengths and gaps for development of renewable energy technologies', in: *Renewable and Sustainable Energy Reviews* 54, pp. 1114–28.
- al-Mulali, Usama (2011): 'Oil consumption, CO2 emission and economic growth in MENA countries', in: *Energy* 36/10, pp. 6165–71.
- al-Naser, Waheeb E.; al-Naser, Naser W. (2011): 'The status of renewable energy in the GCC countries', in: *Renewable and Sustainable Energy Reviews* 15/6, pp. 3074–98.
- Nicolai, Katharina (2020): 'Sustainable development and environmental policy in the Middle East and North Africa', in: *Orient* 61/1, pp. 36–44.
- Owen, Roger (2004): *State, Power and Politics in the Making of the Modern Middle East*, London.
- Pal, Jeremy S.; Eltahir, Elfatih A. B. (2016): 'Future temperature in Southwest Asia projected to exceed a threshold for human adaptability', in: *Nature Climate Change* 6/2, pp. 197–200.
- Patlitzianas, Konstantinos D.; Flamos, Alexandros (2016): 'Driving forces for renewable development in GCC countries', in: *Energy Sources, Part B: Economics, Planning, and Policy* 11/3, pp. 244–50.
- Petersen-Perlman, Jacob D.; Veilleux, Jennifer C.; Wolf, Aaron T. (2017): 'International water conflict and cooperation: challenges and opportunities', in: *Water International* 42/2, pp. 105–20.
- Pfeiffer, Birte; Mulder, Peter (2013): 'Explaining the diffusion of renewable energy technology in developing countries', in: *Energy Economics* 40, pp. 285–96.
- Pouran, Hamid; Hakimian, Hassan (2019): 'Introduction', in: H. Pouran and H. Hakimian (eds.): *Environmental Challenges in the MENA Region. The Long Road from Conflict to Cooperation*, London, pp. 1–9.
- Qader, Mohammed (2017): 'Brief view on the water-energy nexus in the Near and Middle East', in: *Orient* 58 (1), pp. 7–10.
- Quaile, Irene (21.03.2013): 'Green energy revolution in the Gulf?', in: *Deutsche Welle*.
- Rached, Eglal; Brooks, David B. (2010): 'Water governance in the Middle East and North Africa: An unfinished agenda', in: *International Journal of Water Resources Development* 26/2, pp. 141–55.

- Radkau, Joachim (2011): *Die Ära der Ökologie*, München.
- Raouf, Mohamed A. (2008): *Climate Change Threats, Opportunities, and the GCC Countries*, Middle East Institute. Available at <https://www.mei.edu/publications/climate-change-threats-opportunities-and-gcc-countries> (18.03.2020).
- Raouf, Mohamed A.; Luomi, Mari (eds.) (2016): *The Green Economy in the Gulf*, Abingdon, New York.
- Reiche, Danyel (2010): 'Energy policies of Gulf Cooperation Council (GCC) countries. Possibilities and limitations of ecological modernization in rentier states', in: *Energy Policy* 38/5, pp. 2395–403.
- Reifeld, Helmut (2016): *COP 22: Marokko ist schon angekommen*, Konrad-Adenauer-Stiftung e.V. Available at https://www.kas.de/documents/252038/253252/7_dokument_dok_pdf_44219_1.pdf/f1578692-fcd9-cb75-cada-1cf525df62a3?version=1.0&t=1539651226011 (18.03.2020).
- Richer, Renee A. (2014): 'Sustainable development in Qatar. Challenges and opportunities', in: *QScience Connect* 1, pp. 2–14.
- Rizzo, Agatino (2017): 'Sustainable urban development and green megaprojects in the Arab states of the Gulf region. Limitations, covert aims, and unintended outcomes in Doha, Qatar', in: *International Planning Studies* 22/2, pp. 85–98.
- al-Roubaie, Amer; al-Zayer, Jamal (2006): 'Sustaining development in the GCC countries. The impact of technology transfer', in: *World Review of Entrepreneurship, Management and Sustainable Development* 3/2, pp. 175–88.
- Saab, Najib W. (2017): *Arab Public Opinion and the Environment AFED 2017 Survey in 22 Countries*, Arab Forum for Environment and Development (AFED). Available at https://www.greengrowthknowledge.org/sites/default/files/downloads/resource/2017%20Report%20of%20the%20Arab%20Forum%20for%20Environment%20and%20Development_Arab%20Environment%20in%2010%20Years.pdf (18.03.2020).
- Saab, Najib W. (2009): 'Arab public opinion and climate change', in: *Arab Environment. Climate Change: Impact of Climate Change on Arab Countries*, Arab Forum for Environment and Development (AFED), pp. 1–12. Available at <http://www.afedonline.org/afedreport09/Full%20English%20Report.pdf> (18.03.2020).
- al-Saidi, Mohammad; Zaidan, Esmat; Hammad, Suzanne (2019): 'Participation modes and diplomacy of Gulf Cooperation Council (GCC) countries towards the global sustainability agenda', in: *Development in Practice* 29/5, pp. 545–58.
- al-Saleh, Yasser M.; Vidican, Georgeta; Natarajan, L.; Theeyattuparampil, Vijo V. (2012): 'Carbon capture, utilisation and storage scenarios for the Gulf Cooperation Council region. A Delphi-based foresight study', in: *Futures* 44/1, pp. 105–15.

- Saouli, Safia; Madani, Kaveh (2019): 'Renewable energy potential in Algeria. Opportunities and setbacks', in: H. Pouran and H. Hakimian (eds.): *Environmental Challenges in the MENA Region. The Long Road from Conflict to Cooperation*, London, pp. 169–83.
- al-Sarihi, Aisha; Luomi, Mari (2019): *Climate Change Governance and Cooperation in the Arab Region*, EDA Insight. Available at https://www.eda.ac.ae/docs/default-source/Publications/eda-insight_gear-i_climate-change_en_web-v2.pdf?sfvrsn=8 (18.03.2020).
- Schaar, Johan (2019): *A Confluence of Crises. On Water, Climate and Security in the Middle East and North Africa*, Stockholm International Peace Research Institute. Available at <https://www.sipri.org/publications/2019/sipri-insights-peace-and-security/confluence-crises-water-climate-and-security-middle-east-and-north-africa> (18.03.2020).
- Scoones, Ian (2016): 'The politics of sustainability and development', in: *Annual Review of Environmental Resources* 41/1, pp. 293–319.
- Selby, Jan (2005): 'The geopolitics of water in the Middle East. Fantasies and realities', in: *Third World Quarterly* 26/2, pp. 329–49.
- Sever, S. D.; Tok, M. Evren; D'Alessandro, Christina (2019): 'Global environmental governance and the GCC. Setting the agenda for climate change and energy security', in: L. Pal, M. Tok (eds.): *Global Governance and Muslim Organizations*, Basel, pp. 197–228.
- Shuaib, Hamid A. (1988): 'Oil, development, and the environment in Kuwait', in: *Environment* 30/6, pp. 19–44.
- Sowers, J. (2018): 'Environmental activism in the Middle East and North Africa', in: H. Verhoeven (ed.): *Environmental Politics in the Middle East*. Oxford, pp. 27–52.
- Sowers, Jeannie (2013): *Environmental Politics in Egypt. Activists, Experts, and the State*, London.
- Sowers, Jeannie; Vengosh, Avner; Weinthal, Erika (2011): 'Climate change, water resources, and the politics of adaptation in the Middle East and North Africa', in: *Climatic Change* 104/3-4, pp. 599–627.
- Sultan, Nabil A.; Weir, David; Karake-Shalboub, Zeinab (2011): *The New Post-Oil Arab Gulf. Managing People and Wealth*, London.
- Al-Sultan, Yusuf Y.; Al-Bakri, Dhia (1989): 'The development and experience of Kuwait in environment protection and environmental impact assessment', in: *Impact Assessment* 7/4, pp. 57–68.
- Tabatabai, Adnan (2020): *Irans Zivilgesellschaft. Sozialies Engagement und politischer Aktivismus in einem autoritären Staat*, Bundeszentrale für politische Bildung. Available at <https://www.bpb.de/apuz/309952/soziales-engagement-und-politischer-aktivismus> (12.06.2020).

- Todaro, Michael P.; Smith, Stephen C. (2012): *Economic Development*, Boston.
- Tolba, Mostafa Kamal (ed.) (2009): *Arab Environment. Climate Change: Impact of Climate Change on Arab Countries*, Arab Forum for Environment and Development. Available at https://www.preventionweb.net/files/12741_FullEnglishReport1.pdf (18.03.2020).
- Trondalen, Jon Martin (2009): *Climate Changes, Water Security and Possible Remedies for the Middle East*, The United Nations World Water Assessment Programme. Available at <https://unesdoc.unesco.org/ark:/48223/pf0000181886> (18.03.2020).
- United Nations (2015): *Transforming Our World. The 2030 Agenda for Sustainable Development (A/RES/70/1)*. Available at https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (03.03.2020).
- Verhoeven, Harry (2018): 'Introduction. The Middle East in global environmental politics', in: H. Verhoeven (ed.): *Environmental Politics in the Middle East*, Oxford, pp. 1–26.
- Verner, Dorte (2012): *Adaptation to a Changing Climate in the Arab Countries. A Case for Adaptation Governance and Leadership in Building Climate Resilience*, World Bank Report. Available at <http://documents.worldbank.org/curated/en/740351468299700935/Adaptation-to-a-changing-climate-in-the-Arab-countries-a-case-for-adaptation-governance-and-leadership-in-building-climate-resilience> (18.03.2020).
- Voski, Anaïs (2016): 'The role of climate change in armed conflicts across the developing world and in the ongoing Syrian war', in: *Carleton Review of International Affairs (CRIA)* 3, pp. 120–41.
- Ward, Christopher J. (2015): *The Water Crisis in Yemen. Managing Extreme Water Scarcity in the Middle East*, London.
- Warner, Frederick (1991): 'The environmental consequences of the Gulf War', in: *Environment* 33/5, pp. 6–26.
- Werrel, Caitlin E.; Femia, Francesco (2013): *The Arab Spring and Climate Change*, Center for American Progress. Available at <https://www.americanprogress.org/issues/security/reports/2013/02/28/54579/the-arab-spring-and-climate-change/> (18.03.2020).
- Woertz, Eckart (2014): 'Environment, food security and conflict narratives in the Middle East', in: *Global Environment* 7, pp. 490–516.
- Wurster, Stefan (2014): 'Comparing ecological sustainability in autocracies and democracies', in: A. Croissant, S. Kailitz, P. Köllner and S. Wurster (eds.): *Comparing Autocracies in the Early Twenty-First Century*, London, pp. 141–158.

- al-Zubari, Waleed (2019): *Regional Water Governance and Cooperation in the Arab Region*, EDA Insight. Available at https://eda.ac.ae/docs/default-source/Publications/eda-insight_gear-iii_water_en.pdf?sfvrsn=2 (18.03.2020).
- Zumbrägel, Tobias (2020): 'Beyond greenwashing. Sustaining power through sustainability in the Arab Gulf monarchies', in: *Orient* 61/1, pp. 28–35.
- Zumbrägel, Tobias (2020): 'Kingdom of gravity. Autocratic promotion and diffusion in Saudi Arabia', in: T. Demmelhuber and M. Kneuer (eds.): *Authoritarian Gravity Centers. A Cross-Regional Study of Authoritarian Promotion and Diffusion*, London, pp. 55–88.
- Zumbrägel, Tobias (2019): 'Being green or being seen green? Strategies of eco regime resilience in Qatar', in: H. Pouran and H. Hakimian (eds.): *Environmental Challenges in the MENA Region. The Long Road from Conflict to Cooperation*, London, pp. 49–71.
- Zumbrägel, Tobias (2017): 'The quest for green legitimation: Reconsidering the 'environmental enthusiasm' of the Arab Gulf monarchies', in: *Orient* 58/1, pp. 54–59.

About the Author

Tobias Zumbärgel is researcher at CARPO and a PhD candidate at the Chair of Middle East Politics and Society at the Friedrich-Alexander-University of Erlangen-Nuernberg (FAU). Previously, he studied history, political science and Middle East studies in Cologne and Tuebingen, Germany and Cairo, Egypt. In 2015 he received a Bucerius Pre-Doctoral Grant by the ZEIT Foundation, and between 2015 and 2018 he was a research associate in the project 'Authoritarian Gravity Centers', funded by the German Research Foundation (DFG). During this time, he conducted extensive field research in Saudi Arabia, Qatar, Bahrain and Kuwait. He also teaches at the Interdisciplinary Centre of Digital Humanities and Social Science (IZ Digital) at the FAU. Contact: zumbraegel@carpo-bonn.org.

About CARPO

CARPO was founded in 2014 by Germany-based academics trained in the fields of Near and Middle Eastern Studies, Political Science and Social Anthropology. Its work is situated at the nexus of research, consultancy and exchange with a focus on implementing projects in close cooperation and partnership with stakeholders in the Orient. The researchers in CARPO's network believe that a prosperous and peaceful future for the region can best be achieved through inclusive policymaking and economic investment that engages the creative and resourceful potential of all relevant actors. Therefore, CARPO opens enduring channels for interactive knowledge transfer between academics, citizens, entrepreneurs, and policy-makers and supports research relevant for the region and beyond.

Website: carpo-bonn.org Facebook/Twitter: @CARPObonn

About the Series

The CARPO Sustainability Series aims to contribute to the slowly growing but still quite marginal research on sustainability in the Middle East and North Africa. As this region's high vulnerability to the severe effects of climate change and global warming represents one of the greatest challenges of this century, it is imperative to tackle this field from a holistic perspective. Sustainability comprises aspects of social (e.g. justice, equality, participation, state-society relations), environmental (e.g. clean energy, pollution, waste, recycling, biodiversity) and economic sustainability (e.g. business engagement, training, education, diversification). Cross-cutting issues are highly diverse and interconnect a vast array of disciplines such as anthropology, politics, economics, sociology, environmental studies or history. Accordingly, this series will publish analyses in the form of CARPO Briefs, Reports or Studies by academics and practitioners from various fields to provide multidisciplinary analysis on key themes of sustainability.

© 2020, CARPO – Center for Applied Research in Partnership with the Orient e.V.
All rights reserved.

ISSN 2367-4539

CARPO – Center for Applied Research in Partnership with the Orient
Kaiser-Friedrich-Str. 13
53113 Bonn
Email: info@carpo-bonn.org
www.carpo-bonn.org

