The Hague Centre for Strategic Studies

TIME TO WAKE UP

The Geopolitics of EU 2030 Climate and Energy Policies

The Hague Centre for Strategic Studies

RESOURCES

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THE GEOPOLITICS OF EU 2030 CLIMATE AND ENERGY POLICIES

The Hague Centre for Strategic Studies (HCSS)

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Cover image A field of solar panels at the King Abdulaziz city of Sciences and Technology, Al-Oyeynah Research Station. Saudi Arabia, the world's top oil exporter, is working to overcome challenges to harnessing its other main resource: sunshine. Saudi Arabia wants to generate much more solar power as it lacks coal or enough natural gas output to meet rapidly rising power demand.

Harrison Davis, 'The 17 Countries Sitting On The Most Valuable Energy Reserves', *Businessinsider.com*, 14 February 2014, http://www.businessinsider.com.au/countries-with-most-energy-reserves-2014-2#4-saudi-arabia-15.

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'Until now, geopolitical and strategic considerations have played a minor role in the energy policy of the European Union. However, the crisis in Ukraine has revealed that reducing the Union's vulnerability in this area deserves highest priority. [...] The need to diversify our energy portfolio in terms of energy sources and suppliers is clearer now than ever before. [...] European countries are able to produce more renewable energy. This requires significant investments, but also provides for numerous economic opportunities and benefits the climate.'

Frans Timmermans, Dutch Minister of Foreign Affairs,
September 2014 in de H.J. Schoo Lecture

'Geopolitieke en strategische overwegingen hebben tot nu toe een ondergeschikte rol gespeeld in het energiebeleid van de Europese Unie. De crisis in Oekraïne heeft echter laten zien dat vermindering van de kwetsbaarheid van de Unie de hoogste prioriteit verdient.[...] De noodzaak voor meer diversiteit in onze energiebronnen en energie-aanbieders is duidelijker dan ooit. [...] Europese landen kunnen meer hernieuwbare energie produceren. Dat vergt forse investeringen maar biedt ook tal van nieuwe economische mogelijkheden en is goed voor het klimaat.'

Frans Timmermans, Minister van Buitenlandse Zaken,
September 2014 in de H.J. Schoo Lezing

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

In October 2014, European leaders of state will reach a decision about the EU climate and energy policy (CEP) framework for 2030. The proposed framework by the European Commission sets out to increase the share of renewable energy to at least 27% by 2030, in addition to reducing greenhouse gas (GHG) emissions by 40%, increasing energy efficiency by 30%, and implementing a series of other measures aimed at promoting competitive, secure, and sustainable energy use. The Commission's proposal has been denounced for not being sufficiently ambitious. Critics find fault with both the level of these targets –'too low'– and their proposed status – non-binding. They argue that the Commission should aim for a sustainable transition at a faster pace with a longer time horizon: they call for a more ambitious increase in the share of renewable energy to between 80% and 90% by 2050. They deem this to be necessary to achieve the target of reducing GHG emissions to 80-95% below 1990 levels by 2050, a target that was adopted in 2009 by the European council and reiterated in the EU Energy Roadmap 2050.

Whichever target will be set, one thing is clear: the level of ambition of the CEP framework will have profound effects on international peace and security. But puzzlingly, the geopolitical consequences of a continuing European reliance on fossil fuels ('business as usual') versus a gradual European transition towards renewable energy are entirely lost in public and policy discourses. Given the stakes, policy makers deciding on Europe's energy future should take these consequences into account.

There is a broad international consensus that the large scale use of fossil fuels is one of the key causes of climate change. The immediate manifestations of climate change are well rehearsed in both the scientific and the popular literature. In recent years, world leaders have also increasingly come to recognize the serious security implications of higher temperatures, extended periods of droughts, rising sea levels,

increased variation in weather patterns, and a drastic increase in the number of weather related natural disasters. These security implications include social and political instability and conflict caused by resources scarcity, changes in agricultural productivity and migration flows as well as humanitarian catastrophes. The impact of climate change will be felt both in the developed and the developing world, but the populations of fragile states are at particular risk.

Dealing with the effects of climate change is therefore commonly singled out as one of the key priorities of a long term security agenda. Continuing with business as usual is therefore no option. The link with CEP is clear: reducing and preventing these security challenges require ambitious CEP targets.

In addition to these climate induced security effects, continuing business as usual also fuels various other security challenges. The ample availability of oil and gas resources in places such as the Middle East, West & East Africa, and Central Asia are important drivers of interstate and intrastate conflict. Such conflicts are likely to emerge or to continue in the proverbial arc of instability which runs from Algiers to Ashgabat to Astana and from Brazzaville to Basra to Baku. The arc is home to plenty of 'rentier states' which are cursed rather than blessed by their rich resources reserves. The outbreak of political and societal violence in these societies has significant spill over effects to Europe which are presently already topping the security agendas of European leaders of state.

Given the vital importance of energy to modern economies, it is near impossible for states to overcome the logic of the security dilemma in interstate energy relations.

Carrying on with business as usual will therefore also mean it is likely that the long history of foreign intervention in oil producing states to secure national energy supplies is set to continue in the future.

The EU's dependence on a restricted number of fossil fuel suppliers poses a real risk to energy supply security. It also significantly constraints the EU's political room for maneuver in the international political and diplomatic arena, as was painstakingly illustrated by the EU's initial difficulties in formulating a joint response against Russian interference in Ukraine.

In sum, the effects of climate change, as well as the dependence on fossil fuel resource supply, provide both a geopolitical and sustainability rationale for the EU to act as a responsible global security stakeholder, and set ambitious climate and energy targets for the CEP 2030 framework.

A European transition to 80% (or even higher) renewable energy will have major ramifications for international energy trade relations and international peace and security. Whereas in the long run (20-30+ years), the impact of a global transition is likely to be positive, in the medium term (10+ years) the prospected insecurity effects should not be underestimated.

In the long run, assuming that a European renewable energy transition will find a global following, a global transition towards renewable energy resources can help alter the playing field for states without any fossil fuel resources. Not only do renewable energy resources provide states with possibilities to rely less on single sources of energy input, but decreased competition over non-renewable energy resources will likely reduce the probability of energy driven conflicts between states. Foreign military interventions will no longer be considered necessary in the interest of securing the national energy supply of great powers. As a result, accessing fossil fuel resources will no longer drive the Great Games of the future.

In the long term, instability in energy hot-spots around the world may also become less prevalent because decreased demand for fossil fuel resources will negatively affect both the willingness and the ability of non-state actors to use violence to control these resources. Lower energy rents will erode the power base of autocratic and often corrupt regimes, possibly paving the way towards more sustainable and possibly more democratic forms of governance.

Moreover, the security effects of climate change will be, if only, partially prevented and mitigated by a global transition to renewable energies.

However, the road towards such a world is likely to be bumpy. Although there is a clear security rationale for a transition towards renewable energy, its security implications are mixed in the medium run, especially if global demand for fossil fuel does not decline.

In the medium run, a transition to renewable energy is likely to heighten instability in rentier states. If European fossil fuel demand is not substituted by demand from

emerging economies, then the reduced oil and gas rents will undermine the ability of (often non-democratic) regimes to fund the social contract that binds fragile societies and states together. When the power base of these regimes crumbles, the likelihood of social and political unrest goes up, putting the existing power equilibrium at risk. The outcomes of social and political transformation processes can eventually yield substantial benefits to the societies of rentier states, but during the process itself there is considerable risk of societal violence.

The European sustainable energy transition will be complicated by economic conditions and developments in the global energy market. As a result of the North American shale gas revolution, coal has become a more attractive energy resource in Europe. The shale gas revolution also triggered interest from other states to pursue this as an alternative source of cheap energy. Moreover, global conventional fossil fuel reserves are far from exhausted. This means that continued reliance on these non-renewable energy resources is not to be ruled out in the short to medium term. As long as renewable energy remains comparatively more expensive, the economic incentives to transition to more sustainable forms of energy will be low. Needless to say that the effects of European transition on climate change and the resulting security challenges are also dependent on the climate and energy policies of other states in the world.

Overall, the combination of these different challenges requires an active role of the EU in bringing about the transition to a sustainable energy future. But understanding the worldwide security effects of energy and climate policies is crucial as well, in order to make an informed decision on the CEP framework for 2030. When and where needed, CEP should be complemented with appropriate security policies to address the instability that may arise in the medium term.

1 INTRODUCTION

1 INTRODUCTION

In October 2014, European policy makers will reach a decision on the EU's energy future. In January of this year, the European Commission put forward a proposal for the EU policy framework on climate and energy 2030 (EU CEP 2030), which sets targets for the reduction of greenhouse gas (GHG) emissions, the share of renewable energies in the overall European energy portfolio, and energy efficiency.[1] While the EU is progressing towards its climate and energy targets for 2020, a new framework agreement for the period up to 2030 is needed to stay on track with its long-term objective of reducing GHG emission to below 80-95% of 1990 levels by 2050. A new agreement will help create certainty for investors, and is also deemed necessary to coordinate the EU's position during the upcoming 21st United Nations Climate Change Conference, which will be held in Paris at the end of 2015.

The upcoming EU CEP 2030 policy framework for climate and energy is about more than the impact of energy use on the environment. The EU's climate and energy policies (CEP) have important implications for international peace and security. These implications are largely – and puzzlingly – absent in public and policy discourses surrounding the EU CEP 2030. This Issue Brief lists and analyzes the security implications associated with the EU CEP 2030.

1.1 The Geopolitical Perspective: What is at Stake?

No matter what the outcome of negotiations in Brussels will be, the EU CEP 2030 will have major geopolitical implications and consequences for peace and security in Europe and the rest of the world. First and foremost, it will shape the extent to which climate change related security challenges will come about in 21st century. Climate change heightens the risk of internal social and political instability and conflict, especially in volatile regions and in areas that are most vulnerable to the effects of climate change. Moreover, the humanitarian losses and economic costs of climate change related disasters are already enormous and they are projected to continue to grow.

Second, the EU 2030 policy framework has the potential to either perpetuate or transform the structural interdependencies encapsulated in the energy trade relations of the fossil fuel economy. Continued dependence on fossil fuels harnesses several risks for the EU, ranging from price volatility, supply risks associated with dependence on imports from politically unstable regions, gradual depletion of easily recoverable and economically viable resources, and global competition over available supplies. At the same time, a transition towards more renewable energy sets in motion certain dynamics that will both positively and negatively affect the stability of the international system.

BACKGROUND INFORMATION

The Commission's Proposal

In its 2030 policy framework on climate and energy, the European Commission proposes to increase the share of renewable energy to at least 27% by 2030, in addition to reducing greenhouse gas emissions by 40%, increasing energy efficiency by 30%, and other measures aimed at promoting competitive, secure, and sustainable energy.[2] The Commission's proposal has been widely criticized. On the one hand, large European utilities companies, firms in the coal, oil and gas industries, and also some EU Member States are concerned about falling revenues or initial investment costs and are opposing the higher targets for renewable energy that the Commission is proposing. On the other hand, the European parliament, research institutes, and civil society organizations are criticizing the Commission's proposal for not being ambitious enough.

Non-Binding Targets

The European Parliament regretted the 'short-sighted and unambitious' nature of the Commission's proposal with respect to a lack of national targets for renewables and relevant new actions to incentivize energy efficiency. In the Commission's proposal, the target for renewable energy represents a rise of just 7% compared to the 2020 target share of 20%. Moreover, as this is an overall EU target and does not provide binding targets at the national level after 2020, there is uncertainty over the enforcement of this target should states' contributions fall short. The Parliament instead called for three binding targets for 2030: at least 30% of total final energy consumption from renewable energy sources, at least 40% reduction in greenhouse gas emissions, and 40% increase in energy efficiency. It has encouraged EU Member States to play a more ambitious role in

influencing and promoting sustainable energy policies.[3] Organizations such as the Fraunhofer Institute for Systems and Innovation Research, and the Coalition for Energy Savings side with the Parliament. They argue for binding targets and a higher level of ambition for energy savings combined with increasing the share of renewables.

Inconsistency with global warming target

The Commission's proposal also appears at odds with the EU's commitment to limiting global temperature rise to 2°C. The EU adopted this objective in 1996 and has since repeated this commitment time and time again.[4] In part due to the EU´s efforts, the target was internationally agreed upon during the COP15 in Copenhagen. It informs many of the EU's long-term energy ambitions laid out in EU policy documents. For example, to prevent global warming, the European Commission's Energy Roadmap 2050 sets out to achieve a 80-95% reduction in greenhouse gas emissions compared to the 1990 levels by 2050, and to increase the share of renewable energy to at least 55% in 2050 for all decarbonization scenarios.[5] The Energy [R]evolution scenario, jointly commissioned by Greenpeace International, the European Renewable Energy Council and the Global Wind Energy Council, aims to calculate the pathway to limit the global warming to 2°C by phasing out fossil fuels and cutting CO2 emissions while ensuring energy security.[6] It sets the share of renewables in primary energy consumption on a global level at 41% by 2030 and 82% by 2050 (85% for European states that are member of the Organisation for Economic Co-Operation and Development (OECD).[7] The target for 27% renewable energy 2030 that has been put forward by the Commission is thus far below the target deemed necessary by these parties for limiting climate change, and makes meeting the targets of reducing GHG emissions by 89-95% by 2050 less probable.

Although the security stakes are sizeable, the public debate in Europe about the transition towards renewable energy revolves principally around environmental and climate arguments. The geopolitics of the transition remain largely underexposed despite their unquestionable relevance. Geopolitics is here defined as the influence of geography on international peace and security issues and international relations. Geography influences among other things a country's endowment with geological resources, such as oil, gas, and minerals, and renewable energy resources, such as solar and wind power. A state's geographical location also influences its trade relations with other states and the extent to which it is exposed to security challenges resulting from instability or conflict in its vicinity.

This HCSS Issue Brief considers the geopolitical dimension of Europe's renewable energy transition. It first discusses the security implications of continuing with business as usual in which fossil fuel will remain the dominant energy form in the future. In so doing, it assesses the security implications of climate change, examines the dynamics of the fossil fuel based economy and identifies their implications for international and national security. It then analyses how these security dynamics will be affected should the EU make the transition to 80% renewable energy by 2050.

RELEVANCE FOR DUTCH POLICYMAKERS

In 2013, over forty Dutch stakeholders, including the Dutch government, employers, trade unions, financial institutions, and civil society organizations committed to the Energy Agreement for Sustainable Growth. The Agreement sets out an ambitious national plan for more sustainable energy supply and demand. The agreement includes the objective of increasing the share of renewable energy to 16 % of the national energy mix by 2023 and to achieve a fully sustainable energy supply by 2050.[8]

In October 2014, Dutch policy makers will have to take a decision on the EU's energy future. To make an informed decision on the EU 2030 CEP for climate and energy, Dutch policy makers should understand the geopolitical aspects associated with CEP. Dutch climate and energy policies can only hope to have a global impact if it is pursued in sync with the European Union.

1.2 Scope and Structure

Out of the plethora of available energy sources (e.g. oil, natural gas, coal, nuclear, hydropower, photovoltaic, tidal, biofuels and so on), oil and natural gas traditionally stand out when it comes to the potential for geopolitical tension that is associated with their acquisition. Moreover, it are primarily the revenues generated through the sale of oil and gas resources that stand to be affected in case the EU transitions to a fuel economy which generates 80% of its energy through renewable sources. It is for this reason that a large part of the analysis in this Issue Brief focuses on the geopolitical impact that a European energy transition has on oil and gas exporting countries, their intra-state stability, and the international security ramifications that this may hold.

This Issue Brief is structured in the following way. Following the Executive Summary and the Introduction (chapter 1), comes chapter 2 which discusses the security implications of climate change. Chapter 3 and 4 analyze security dynamics of the fossil fuel based economy. Chapter 5 and 6 evaluate potential implications of an EU renewable energy transition for international and national stability. Chapter 7 concludes.

2 SECURITY IMPLICATIONS OF CLIMATE CHANGE

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CEP will influence to which extent the EU will face geopolitical challenges related to climate change in 21st century. World leaders increasingly acknowledge the security implications of climate change as an urgent priority.[9] The 2008 Climate Change and International Security report, jointly prepared by the High Representative for the Common Foreign and Security Policy (CFSP) and the European Commission (EC), already called attention towards the humanitarian, political and security risks of climate change, including resource conflicts, territory loss and border disputes, risks to coastal cities and infrastructures, environmentally induced migration, increased fragility and radicalization of weak states, tensions over energy supply and pressurized international governance.[10] The security implications of climate change are already manifest in the present and are expected to exacerbate if mankind continues to rely on fossil fuels for its energy needs.

2.1 The Causal Logic

Climate change encompasses more than global warming *per se*. It is an umbrella term that covers perspicuous changes in the global climate which include higher temperatures, extended periods of droughts, increased variation in weather patterns, and a drastic increase in weather related natural disasters. Climate change is best understood as a 'threat multiplier': it causes environmental degradation which then interacts both with other risk drivers and sources of vulnerability to produce instability.[11] Two fundamental trajectories can be identified for depicting the causal chain between climate change, environmental degradation and instability: resource scarcity disasters and environmental migration (see Figure 1).[12] Environmental degradation in the form of punctuated natural hazards, such as floodings and tornados, moreover, produces staggering and increasing humanitarian and economic losses worldwide.

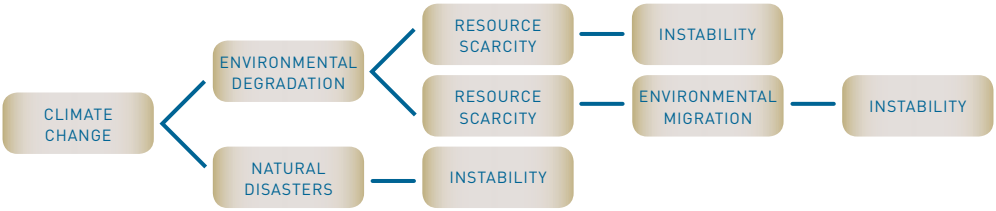


FIGURE 1 CAUSAL CHAIN FROM CLIMATE CHANGE TO INSTABILITY

Environmental degradation, resultant of climate change, causes scarcity of essential resources such as food, water, and arable land. This decrease in quality and quantity of renewable resources coupled with population growth creates unequal resource access, which then leads to increased risk of conflict. According to the United Nations Environment Programme (UNEP), the ongoing conflict in Darfur, Sudan, also referred to as the first 'climate war', has strong links with environmental degradation and desertification. A 16 to 30% drop in annual rainfall, a 70% fall in the yield of the local staple crop, sorghum and about 100 kilometers encroachment of the Sahara desert into Northern Sudan over the past forty years, were identified as the three main factors leading to war.[13] Darfur is not a standalone incident but illustrates a general relationship between climate change and instability.

The alternate path leading from environmental degradation and resource scarcity is a huge exodus of population from the affected area. This kind of 'environmental migration' may burden the economy and resource base of the receiving country and cause competition between immigrants and the native population. Attempts to secure increasingly scarce resources can become violent. Also, if immigrants are of a different ethnicity than the native population, they can upset ethnic balances and through fears of domination, separatism or unification threaten stability in the receiving country, especially in states with a precedent of ethnic conflict. In case of Darfur (2003), for example, millions of refugees fled to neighboring Chad, contributing to the mounting tensions in a country already destabilized by civil war.[14]

2.2 Environmental Degradation and Natural Disasters

Climate change induced environmental degradation both has direct physical and indirect socio-economic effects. The most obvious physical effects include higher average surface and ocean temperatures, increased variability in rainfall and temperature, rising sea levels, increased frequency and intensity of floods, droughts,

hurricanes and tornadoes, and extended arrays and seasons for mosquitoes and other tropical disease carriers.[15] The twentieth century was the warmest period in at least the last 1300 years, with global surface temperatures rising by over 0.7°C and a record of the warmest decade between January 2000 and December 2009.[16] Meanwhile, the world experienced a concomitant increase in the number of extreme weather events resulting in enormous humanitarian and economic losses (see figures 2 and 3). The number of natural disasters related to extreme weather conditions increased from between 200 and 250 in the period 1987-97 to about double that number in the first seven years of the twenty-first century.[17] The World Meteorological Organization outlines that, from 1970 to 2012, 8835 weather-, climate-, and water-related disasters were reported globally, causing the loss of 1.94 million lives and economic damages of US$ 2.4 trillion.[18] The World Bank accounts that, during the 1980-2012 period, estimated losses due to weather-related or hydro-meteorological disasters accounted for US$2.6 trillion and 1.4 million lives.[19] One recent expert estimate assesses the costs to be even higher for lesser developed societies: 'Since 1980, weather catastrophes have caused almost 1,200,000 fatalities and led to direct damages amounting to US$610 billion in low and lower middle income states.'[20]

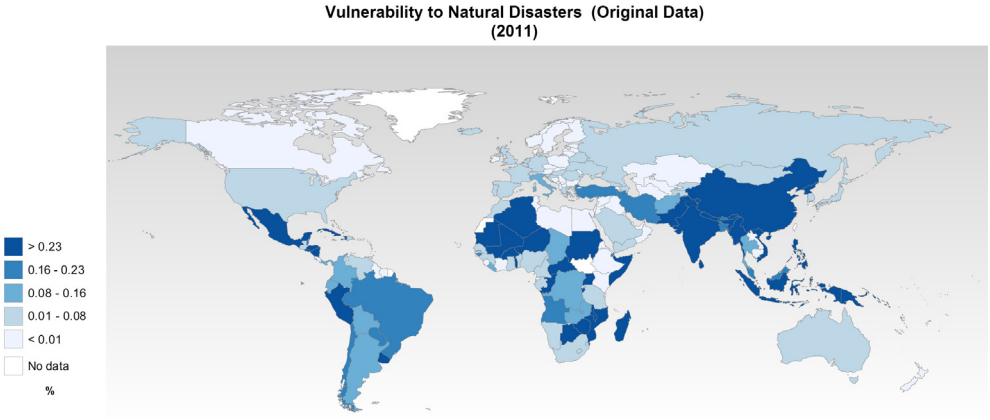


FIGURE 2 PERCENTAGE OF POPULATION AFFECTED BY NATURAL DISASTER, 2009-2013[21]

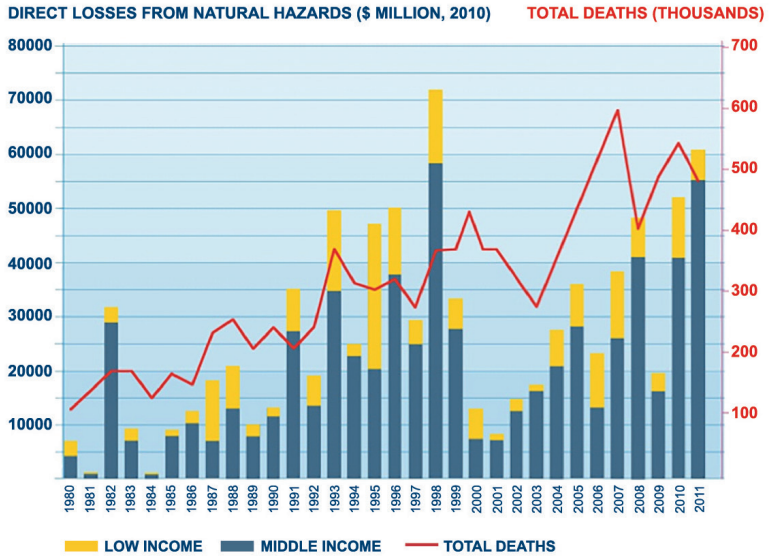


FIGURE 3 DIRECT ECONOMIC LOSSES AND FATALITIES IN LOW AND MIDDLE INCOME COUNTRIES ($ MILLION, 2010)[22]

Should climate change continue unabated, projections are that the losses due to natural disasters are set to increase even further. Although these changes are predicted to occur gradually, an 'irreversible state of decline' of the West Antarctic Ice Sheet melting at a rate faster than previously estimated can singlehandedly raise global sea levels by 1.2 meters, with catastrophic effects. [23] By the end of the 21st century, the number of people exposed annually to a 20th century 100-year flood is projected to be three times greater for very high GHG-emissions than for very low GHG-emissions. Physical effects are not constrained to one particular country but will be felt across the globe:

> '250 million people face the pressures of sea-level rise; 30 million people are affected by more extreme weather, especially flooding; 25 million people are affected by permafrost thawing; and 5 million people are pressured by desertification.'[24]

Particular hotspots at risk over the next 20-30 years make for a very long list and include the Amazon basin, Central America, U.S. Southwest, most of the African continent, the Arabian Peninsula, Afghanistan, central China, Mongolia, Indonesia and eastern Australia.[25] Especially in Asia, small islands would suffer from coastal

elevations from 0 to10m, causing coastal flooding and forcing their populations to migrate.[26] Hazard hotspots – floods, cyclones and droughts – are predicted to cause humanitarian crisis in the Andes, the landlocked states of sub-Saharan Africa as well as southern Mozambique and Namibia, Yemen, Afghanistan, Pakistan, Mongolia, and Myanmar.[27]

Physical effects of climate change ultimately have an impact on the socio-economic well being of the population. Environmental deterioration makes local populations more vulnerable to health hazards such as diarrhea illnesses, meningitis, malaria and other vector borne diseases. Current patterns of carbon-intensive energy use coupled with climate change is estimated to cause 6 million deaths per year by 2030, close to 700,000 of which can be attributed to climate change.[28] The economic loss resultant of climate change is most glaringly observed through the loss of labor productivity. The effects of climate change are estimated to be most brutal in case of the least developed countries, with average GDP losses of 8% in 2030.[29] Figure 4 shows the climate change induced comparative losses of agricultural productivity as a share of GDP across the world. In the Netherlands, climate change induced flooding could potentially have large damaging effects on the western part of the Netherlands, possibly up to tens of billions of euros.[30]

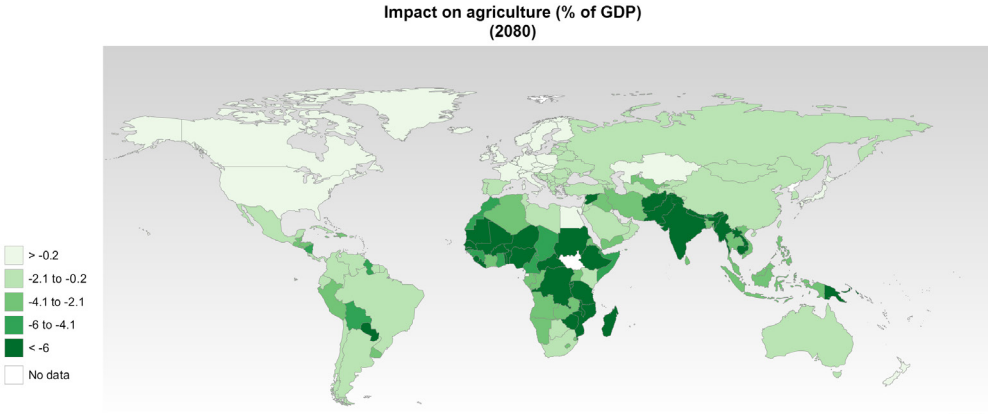


FIGURE 4 VULNERABILITY TO LOSS OF AGRICULTURAL PRODUCTIVITY (% OF GDP), 2080 ESTIMATION[31]

2.3 Resource Scarcity and Environmental Migration

The availability of resources is already under pressure from the growing population growth, emerging middle classes, imperfect market conditions, and violent conflict. Climate change can exacerbate the scarcity of resources, such as water, food, and land.[32]

- **Water:** According to the latest IPCC assessment, each degree of warming is projected to decrease renewable water resources by at least 20% for an additional 7% of the global population. Climate change is projected to reduce renewable surface water and groundwater resources significantly in most dry subtropical regions. The frequency of meteorological droughts (less rainfall) and agricultural droughts (less soil moisture) in currently dry regions is likely to increase by the end of this century.[33]

- **Food:** Climate change can potentially affect all aspects of food security - food access, utilization, and price stability. The IPCC estimates the negative impacts on average yields to become likely from the 2030s with median yield impacts of 0 to -2% per decade projected for the rest of the century. With crop demand projected to increase by about 14% per decade until 2050, changes in temperature and precipitation, without considering effects of CO2 will raise global food prices anywhere between 3-84% by 2050.[34]

- **Land:** Climate change is the underlying cause of land degradation, which directly affects over 250 million people and about 33% of the global land surface. Soil degradation has reduced yields on approximately 16& of the agricultural land, especially cropland in Africa, Central America, and pastures in Africa and resulted in an estimated annual income loss of approximately US$ 42 billion globally. [35]

Competition over resources can result in violent intrastate and interstate conflict. For example, water conflicts are ongoing in many parts of the world, including the Tigris-Euphrates conflict between Turkey, Syria and Iraq, and the conflict over the river Jordan between Israel, Lebanon, Jordan and the State of Palestine. Coupled with other drivers of vulnerability, water conflicts can easily escalate and distort fragile domestic dynamics. Land degradation has a cyclic effect with food and water security and is viewed as a significant 'conflict multiplier', especially in arid and semi-arid regions of the Middle-East, Asia, and Africa. In Kenya, for example, over 83% of total land is affected by desertification. This has contributed to the ongoing conflict between various pastoralist tribes since 1991.[36] The heightened violence that killed more than a

thousand people and left over six hundred thousand homeless during the controversial Kenyan presidential elections in 2007-08, had its roots in the decade long disputes over land distribution, dwindling agricultural yield and unfulfilled demand for water and food.[37]

Environmental degradation and resource scarcity can push people to leave their homes and to seek a better livelihood elsewhere. Sudan provides a case in point. The country is currently home to over five million internally displaced persons (IDPs) and international refugees living in rural camps, informal settlements, and urban slums. Environmental migration is most frequently intrastate or intraregional, but increasingly over longer distances and towards far away areas, including Europe.

2.4 Conclusion

The relationship between climate change and exorbitant rise in CO_2 emissions due to wide scale use of fossil fuels is no longer disputed. Climate change is a threat multiplier which drives environmental degradation. This in turn causes resource scarcity. The resulting hardship triggers social and political intrastate conflict especially in fragile and critically vulnerable states. It can lead to migration flows that can destabilize both states and entire regions.[38] Last but certainly not least, the humanitarian and economic costs of natural disasters are staggering. Even if the economic damage and environmental migration towards Europe remain relatively moderate compared to developing countries in the global South, in a globalized world, many of the climate change induced security risks have direct impact on the EU even if they happen miles away. Projections of the security implications of a fossil fueled future look bleak and provide substance to a security rationale of a European shift towards renewable energy.

3 INTERNATIONAL FOSSIL FUEL RELATIONS: CAUSE OF CONFLICT RATHER THAN SOURCE OF STABILITY

3 INTERNATIONAL FOSSIL FUEL RELATIONS: CAUSE OF CONFLICT RATHER THAN SOURCE OF STABILITY

It is almost part of conventional wisdom that economic interdependence has a positive impact on the stability of the international system. Globalization and the resultant economic interdependence facilitate international cooperation rather than conflict. In his classic 'Towards Perpetual Peace', the 18th century philosopher Kant wrote that nations would avert violence and war because of their mutual self-interest in economic prosperity: 'For the *spirit of commerce* sooner or later takes hold of every people, and it cannot exist side by side with war.'[39] Building on the Kantian democratic peace thesis, it is argued that markets create an alternative to competition by means of force, and that 'capitalism encourages co-operation among states by creating conditions that make war unappealing or unnecessary.'[40]

Yet, there is ample empirical evidence that, contrary to this belief, energy dependencies contribute to interstate conflict and regional instability. Differences in natural resource endowments produce a non-level playing field and result in structural inequalities between states. As a result, states without fossil fuel reserves are prepared to go a long way to secure energy supplies for their national economies. Testament to this is the long history of foreign meddling in Middle Eastern oil producing countries by both the United Kingdom, Russia, and the United States. But energy resources can also be the source of conflicts between neighbors, witness conflicts in South Sudan or in Biafra (Nigeria) in the past.

The critical importance of energy to the functioning of economies and societies provides energy suppliers with significant coercive power. Given the essentially non-negotiable nature of satisfying domestic energy demand, it is more likely that increasing uncertainty about such supplies can trigger vehement responses, up to and including the use of armed force. Future projections foresee greater energy demands from emerging economies which already at present are feeding the fragmentation of the global energy market. This makes it likely that the logic of the security dilemma

holds greater sway over the strategic behavior of states that seek to safeguard their supply of energy. The incipient standoff in the South China Sea is often billed as a contemporary case in point.[41]

This third section first assesses the factors driving structural inequalities in the fossil fuel based economy and projected trends for energy demands, and then analyses the security implications that derive from these structural inequalities.

3.1 Factors that Shape Structural Inequalities in Access

Today, the world economy is still running largely on fossil fuels. In spite of decades of talk about strategic shifts towards using renewables, fossil fuels continue to make up for over 80% of the global energy mix.[42] Unlike most renewable energy resources, fossil fuels have fixed geographical locations, thus creating inevitable inequalities in terms of access to such resources and being among the key drivers of geopolitics.

Figure 5 shows that the majority of the proven oil reserves from conventional sources is located in the Middle East and Latin America, with Venezuela, Saudi Arabia, Iran, Iraq, and UAE holding almost 75% of proven global reserves.

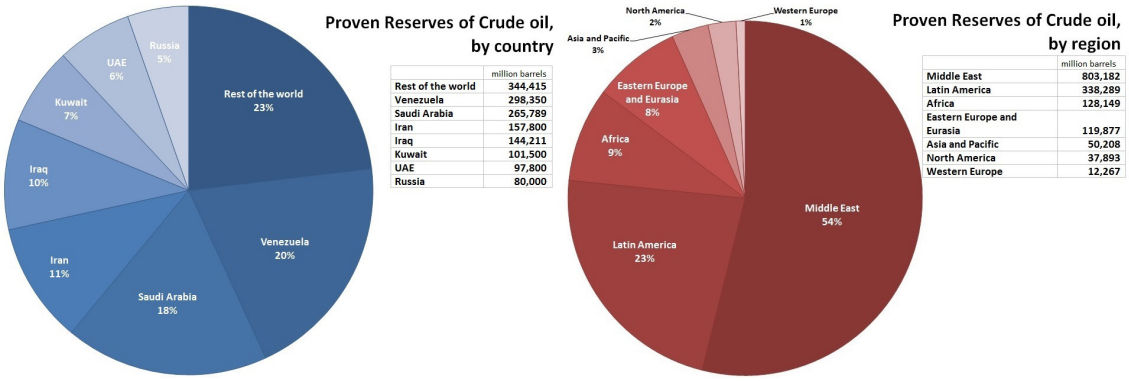
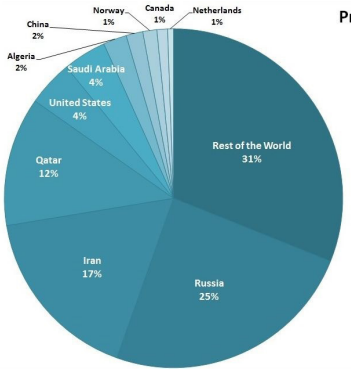


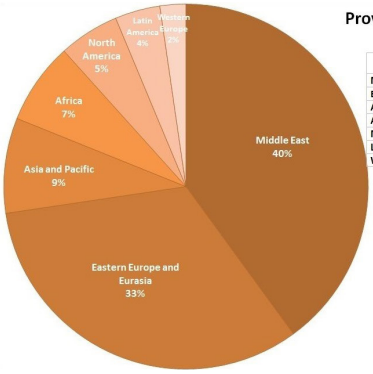
FIGURE 5 DISTRIBUTION OF OIL RESERVES PER COUNTRY AND PER REGION (YEAR 2013) [43]

Figure 6 shows that Russia, Iran, and Qatar alone have more than 50% of proven global natural gas reserves, while North America, Latin America and Western Europe together have less than 15%. These figures do not include oil and gas from unconventional sources. However, unconventional hydrocarbon resources are also geographically concentrated. A country like Canada has low conventional oil reserves but is a key player in the oil market due to its large oil sands.



Proven natural gas reserves, by country

	Billion Standard Cubic Metres
Rest of the World	62,256
Russia	48,810
Iran	34,020
Qatar	24,681
United States	8,735
Saudi Arabia	8,317
Algeria	4,504
China	3,200
Norway	2,687
Canada	2,022
Netherlands	1,131



Proven natural gas reserves, by region

	Billion Standard Cubic Metres
Middle East	80,065
Eastern Europe and Eurasia	65,505
Asia and Pacific	16,902
Africa	14,498
North America	10,757
Latin America	8,032
Western Europe	4,604

FIGURE 6 DISTRIBUTION OF GAS RESERVES PER COUNTRY AND PER REGION (YEAR: 2013)[44]

However, geography is not the only factor that causes structural inequalities to persist. For the geographical constraints have also helped to shape economic relations, in particular between the big oil producers and consumers, creating effective oligopolies. The involvement of Western countries as well as Russia in the Middle East since the beginning of the 20th century and the relations they forged with local regimes are well known. Also, large private oil companies (most from the West) have sought to monopolize energy markets for decades, and to create dependency of local regimes on Western know-how.

It is important to stress that there are two starkly competing views on the perpetuation of these structural inequalities, and the occurrence of resource scarcity. On the one hand, there are those who adhere to the view that the earth cannot for long continue to support current and forecasted levels of demand for oil, natural gas and other finite resources. The 'peak oil' debate is one that follows this logic. On the other hand, there are those who claim that aided by market incentives, appropriate public policies, and new technology, society can amply provide for its needs for the indefinite future.[45]

The validity of the first paradigm which sees resources representing a 'fixed stock' irrespective of technological, environmental, economic and policy developments, is being challenged by a series of developments. First, the melting of the polar ice caps, in conjunction with the development of new drilling technologies, make that oil and gas resources that were previously out of reach, are now becoming accessible. Second, the arrival of unconventional forms of energy such as shale gas and shale oil are a direct result of the persistent high prices for imported conventional oil and natural gas supplies in the 2000s, which in turn spurred a search for alternatives.

The long term success of a drive for developing renewable energy as such does not only hinge on their climatological and environmental benefits. It is important that renewable sources of energy are also able to compete economically with other forms of energy in the long term.

3.2 Recent Trends in Energy Demand and their Impact on Security

Various factors impact the quest for securing energy resources worldwide. One is of course demography. The race for resources in Asia has to a large extent been triggered by population growth combined with economic development in China and India. But demographic developments elsewhere should not be overlooked: strong population growth in Africa will mean that people there will want to consolidate their own emergent energy resources (e.g., from offshore oil fields in the Gulf of Guinea and Angola), while making a stronger demand to attract energy from outside the region. Equally important – especially for Europe – is that slowly declining populations in Europe and Russia also change the dynamics there. Finally, demand is subject to economic growth figures, and this applies worldwide. For instance, over the course of the past decade, demand for energy in Europe stagnated. Demographic trends, economic crisis, and the ongoing political reordering of the world punctuated by a number of major international conflicts since the 1990s have all contributed to increased turbulence on global energy markets. This fundamental uncertainty has prompted countries to retrench and search for ways to put their energy supplies on a more secure footing.

In supplier countries, this has led to a surge in nationalist and protectionist approaches, known under the rubric of 'resource nationalism.' In essence, this means that countries with large resources seek to 1) exploit anxiety among large consumer countries to extract higher prices for their commodities and 2) benefit from protectionist policies because it pushes up global prices for fossil fuels.[46] These policies can include imposing access restrictions, increased taxation, trade barriers, and export quotas.

Meanwhile, these protectionist pressures are also contributing to further fragmentation of the international system. Partly, such fragmentation is driven by the emergence of rapidly growing economies in Africa, Asia, and Latin America. Indeed, according to projections from the International Energy Agency (IEA), the share of non-OECD countries in global energy demand is set to grow to around 60% in 2020 and around 66% in 2035.[47]

In the energy sphere, fragmentation results in new producers coming online as they seek to seize a share of expanding energy markets. Secondly, it has led to a reshuffling amongst the players with influence. Whereas formerly it was OPEC and the Seven Sisters, today we witness the rise of state capitalism and a return of National Oil Companies (NOC).[48] Indeed, big NOCs now make up six of the ten largest oil producers in the world, while Western oil majors such as Shell, BP, Statoil, Exxon Mobil and others are pushed towards investing in costly deep-water oilfields in unforgiving areas of the world.[49] Thirdly, global organizations are losing clout. The International Energy Agency (IEA), for example, has not yet admitted China and India as members, while those countries account for a great and growing share of global primary energy demand.

The consequences for global security of these developments are serious, and make it look doubtful that the Kantian logic can prevail in interstate energy relations if present trends persist. First of all, there is a self-reinforcing mechanism at play whereby conflicts are being stoked by disputes over energy, and these disputes in turn help to spike up energy prices, putting a further premium on securing supplies. Secondly, the present turmoil is further reinforced by the fact that the price of fossil fuels is less determined by absolute worldwide stocks, but by the level of access to these stocks, and the chances that supply lines can and will be disrupted.

3.3 Energy Dependence, the Security Dilemma and Coercive Power

Structural inequality and continuing uncertainty about the growth prospects of the world economy make that the problem of energy dependence in fossil fuel based economy will persist for the foreseeable future and that this dependence will also be a root cause for potential conflict (see table 1).

First of all, supplier countries in Africa, the Middle East and Asia will remain strategic lynchpins for consumer countries — not just in the West, but increasingly also in Asia and Africa, if not in Latin America. With the Arab spring having descended in many countries into war-torn quagmires, the temptation or need for consumer countries to intervene will remain or even increase in the years to come, if only because the risk that more oil fields will fall into the hands of hostile groups becomes ever greater. And if it is not direct control over oil fields that is at stake, then it is access to such fields that can be at issue. The problem with piracy in the past decade in the Arabian Sea is a case in point, but so is the maritime build up taking place in the Indian Ocean, and the strategic maneuvering of South East Asian nations in the South and East China Sea.[50]

Secondly, the need to secure resources or access to them in the future could precipitate conflicts in areas where exploration and exploitation are yet to take place. The best examples in this regard are Arctic Region and (again) the South China Sea. But there are also other examples where quarrels over maritime delimitations can adversely affect security conditions, an example being a long-running dispute between Israel and Lebanon over a nearby oil field in the Mediterranean.

Thirdly, the increased value of energy and dependence thereon can also be used as a coercive instrument by producer countries as Russia did throughout the aughts in its relations with Ukraine. This only hit the European home recently when the EU experienced great difficulties formulating a unified response to the crisis in the Crimea and the Russian support for separatist groups in Eastern Ukraine. The tragic crash of MH17 only helped to underscore the European quandary, as well as the need to rethink EU security interests and the role that energy security plays in this respect. Disparate dependencies of individual EU member states on Russian gas and oil long obstructed a unified diplomatic response.[51] But high oil prices can of course also be used to buy influence, whether among neighbors or in a region as a whole. Good examples in this vein are Venezuela in Latin America and Qatar in the Middle East. Depending on the nature of relations between such supplier states and the interests that consumer states have in a given region, using energy as a stick can stir serious unrest, and possibly lead to armed conflict. The table below summarizes these dynamics:

TABLE 1 SECURITY DYNAMICS OF THE FOSSIL FUEL BASED ECONOMY

CHALLENGE	SECURITY IMPLICATIONS	EXAMPLES	SHORT TO MEDIUM-TERM IMPACT	LONG-TERM IMPACT
Structural inequalities in fossil fuel resource endowments	Foreign interventions to control resources and secure supply of energy	Middle-East, Africa (in the future)	In ME: Continued military involvement of Western consumer states. In Africa: greater involvement of China and India	Global conflict over resources whereby ME, Africa, and other producers become part of global Great Game of resources
Competition over developing and accessing new resources	Conflicting territorial claims, persisting low-level conflict, brinksmanship	South China Sea, Arctic Sea	Standoffs, threats to or temporary denial of access to waterways	Full-blown regional conflict, with likelihood of Great Powers being drawn in
Energy as a coercive instrument	Vulnerability to coercion because of limited maneuvering space in international arena	Russia	Sudden flare-ups of regional tension, could erupt into regional conflict	Sudden flare-ups of regional tension, could erupt into regional conflict

3.4 Conclusion

For various reasons, the liberal logic that argues that interdependence helps to create a basis for geopolitical stability does not mesh with the logic that undergirds energy dependencies. Structural inequalities have been such that the need to secure energy supplies has continued to bring instability and, at times, drive armed conflict. Based on current trends, energy dependencies between states are likely to endure for the foreseeable future. The projected growth paths of rapidly developing economies and the additional pressure this will put on global demand is only introducing a greater sense of uncertainty into global energy markets. What is more, the increasing uncertainty has led countries to retrench and resort to 'resource nationalism', leading to fragmentation of the energy markets. The combination of these trends will further precipitate the logic of the security dilemma in the calculus of states in their relations vis-à-vis other states. Consumer states will continue to strive and secure energy supplies, while producer states will continue to be able to use their fossil fuel reserves as a stick (or a carrot) depending on their national needs and circumstances. Dependencies in this system increase rather than decrease the odds of interstate conflict.

4 DOMESTIC INSTABILITIES: RESOURCE CURSES AND RENTIER STATES

4 DOMESTIC INSTABILITIES: RESOURCE CURSES AND RENTIER STATES

The global fossil fuel economy is linked to intra-state conflict in a number of ways. States well endowed with natural resources such as oil and gas, but which have been unable to channel this wealth to improve societal levels of economic and social development are sometimes said to be 'cursed' by their own resources. The resource curse refers to the paradox that countries and regions with an abundance of natural resources tend to have less economic growth and worse development outcomes than countries with fewer natural resources. A substantial fraction of these states are so-called 'rentier states' which possess various intrinsic vulnerabilities that have been linked to the risk of violent conflict.

The term rentier state refers to states which derive all or a substantial portion of their national revenues from the rent of indigenous resources to external clients. These states tend to be vulnerable because of a negative relationship between resource dependence and government corruption.[52] Oil's high value and ease of transport makes it a particularly attractive 'prize' for a ruling power which renders oil-rich economies particularly susceptible to power struggles and factionalism.[53] Moreover, high levels of dependency on oil and gas exports render an economy prone to volatility in the oil markets. Negative price shocks inevitably produce economic downturns in a rentier state, leaving it at greater risk of intrastate conflict as dissent rises and opportunity costs of rebellion fall.[54]

This chapter describes the relationship between natural resource dependencies and intra-state conflict dynamics in the fossil fuel based economy and identifies particularly vulnerable states.

4.1 Natural Resource Dependency and Intra-State Conflict Dynamics

Being well endowed with resources can be both a curse and a blessing. Countries well-endowed with natural resources do not automatically become rentier states.

Norway for example, is, despite its exorbitant oil wealth, able to avoid such a fate because first, its institutions create incentives for people to save, invest and innovate, and second, because it invests its oil revenues in a sovereign wealth fund estimated to be worth around US$ 800 billion.[55] However, in many countries cautious spending of natural resources wealth is wholly absent. Moreover, their public institutions in effect only cement the power of small minorities that benefit from the exploitation and export of natural resources.[56] Rentier states are associated with a 'lack of transparency, lack of separation of powers within the government, a conspicuous lack of equitable distribution of wealth and power [and] high levels of state debt.'[57]

Rentier states rely on their resources rents both to coerce and to appease their populations. Large expenditures on state security forces enable them to suppress social-political movements that threaten their hold on power.[58] At the same time, they also channel significant resource earnings back into society as part of a 'social contract' between the government and society at large. Disbursements typically subsidize public services, which include health care and education, as well as food and fuel. Most Gulf monarchies, for example, increased social spending in response to the Arab Spring of 2011 to avoid political turmoil.[59] Although these 'handouts' can nip the potential for popular protest in the bud, food and fuel subsidies in particular act as a heavy strain on the fiscal budget.[60]

What's more, in order to perpetuate this system, resource windfalls are often used to build a bloated and inefficient public sector, while states pursue policies that inhibit productive growth in the private sector. Generally speaking, high resources rents and ineffective government go hand in hand. Figure 7 graphically illustrates the combination of the two: states in darker shades of blue combine ineffective government with a high percentage of fuel exports as a share of the national GDP. [61] States that score particularly poor on these variables are Colombia, Ecuador, Nigeria, Algeria, Egypt, Yemen, Oman, Saudi Arabia, Russia, and Kazakhstan (see Figure 7).

Furthermore, ineffective governance is not the only problem rentier states often suffer from. States richly endowed with natural resources are statistically more vulnerable to experience civil conflict.[62] Notable examples over the past two decades include Angola, Colombia, The Democratic Republic of Congo, Iraq, Nigeria, Sudan, and Venezuela.[63] Depending on how natural resources are distributed over a country's territory, different types of conflict can emerge.

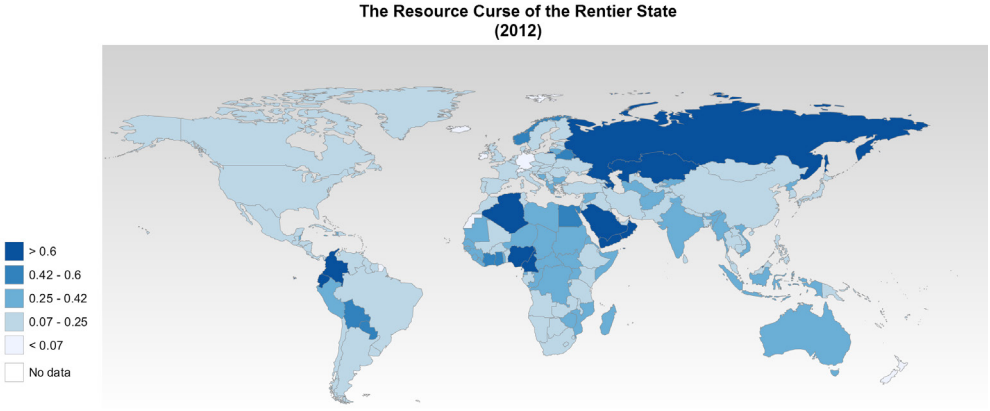


FIGURE 7 FUEL EXPORTS AS A % OF MERCHANDISE EXPORTS AND GOVERNMENT EFFECTIVENESS

The geographic concentration of resources is more likely to give birth to intra state conflict as opposed to when resources are distributed evenly across the country. The reason is that small patches of land are easier to control for a single (armed) group. Depending on the location of the resources, different conflict dynamics are likely to come into play. If the resources are located in the proximity of the capital, it creates incentives to control the state which is likely to produce coup d'états. Conversely, if the resources are far from the capital, it is more likely to breed secession movements.[64]

Governments resorting to 'handouts' to quell popular dissent operate on a slippery slope. There have been numerous examples in the past of countries which were forced to slash fuel subsidies, owing to either the collapse of the price of oil, gas, or other natural resources; the loss of natural resources due to secession movements; or a general worsening of the trade balance. The result is often predictable: public unrest and violence following a sharp decline in the purchasing power of the average citizen. Indonesia, Sudan, Nigeria and Egypt are precedents, which Indonesia's case eventually led to the ousting of President Suharto in 1998.[65]

Taken together, the irresponsible spending of natural resource wealth, the temptation for individuals and groups to control the riches associated with natural resources, and lavish public spending to quell the potential for civil unrest act as precursors for domestic instability.

Table 2 summarizes these factors.

TABLE 2 SECURITY DYNAMICS OF A RENTIER STATE ECONOMY

RISK FACTOR	SECURITY IMPLICATIONS	EXAMPLES
Irresponsible spending of resource windfall profits	Persistent underdevelopment of rentier states	North Africa, Middle East, Caspian Sea region, Russia, West Africa
Attractiveness to establish access to and permanent control over natural resources	Fuels conflicts in the form of coup d'états or secession movements	West Africa, Sub-Sahara Africa, Latin America, Middle East
Lavish financial handouts to general population	Drains state budget and holds state hostage to hold on to status quo, for risk of popular unrest	North Africa, Middle East, Russia, Caspian Sea region

The regimes of rentier states thus walk a fine line and their continuous balancing act renders them inherently unstable and vulnerable in the long run to changes in energy markets. Current trends and developments in the global energy market – including unconventional energy and the shale gas revolution – may not bode well in this regard: decreasing energy prices pose significant risks to the stability of rentier states. [66]

4.2 Unconventional Energy and the Shale Gas Revolution

The growth in domestic natural gas production in the US, led by the increased development of shale resources and a process known as hydraulic fracturing, or 'fracking' for short, has fundamentally altered the US energy landscape. Simultaneously, the same extraction technology is spurring the production of unconventional oil resources (shale oil and tight oil) and has set the US on course to become the world's premier oil producer by the mid 2020s.

As global demand for natural gas is projected to increase, shale gas can change the mix between natural gas and other fuels. In the short term this is already taking place in North America, but in the medium (2020 till 2030) to long term (2030 and later), this will have global effects. A shift in the global energy mix, in so far that it displaces oil and puts oil prices under pressure. Unsurprisingly, this carries risks for countries with high oil rents as a share of their GDP.

States with hybrid regimes, or anocracies, are particularly vulnerable to such shifts. Anocracies are defined as regimes which are characterized by an often incoherent combination of democratic, as well as autocratic characteristics: parliamentary elections exist, yet not for the president; free press exists, yet there is no independent judiciary, etc. Examples include Algeria, Russia, Egypt, Iran, Iraq, and Yemen. In the

past fifty years, anocracies were five times more likely to experience some form of intrastate conflict than autocracies and ten times more likely than democracies.[67]

The HCSS study *The Geopolitics of Shale Gas* found that anocracies that suffer from high levels of youth unemployment *and* possess limited financial reserves are most at risk to the changes brought about by unconventional energy such as shale gas. States that score particularly poor on these parameters include Algeria, Iran, Iraq, Yemen and Russia. These nations are at greater risk of internal unrest if oil prices were to decline due to shifts in the energy mix. What's more, the global drive towards greater sustainability and energy efficiency will in the long term also exert pressure on oil prices. Possibly even greater than is felt by unconventionals. Faced with expanding populations and an explosive domestic energy demand, countries in the Middle East and North Africa are likely to see oil export earnings come under significant pressure.

4.3 Conclusion

Access *to* and control *over* fossil fuel resources in fragile states is not a source of stability but rather the opposite. Overreliance on resources rents derived from fossil fuel renders rentier states intrinsically vulnerable. These states are prone to instability due to a lack of inclusive institutions, high levels of corruption, ineffective governance, societal dissatisfaction and the presence of incentives for factions to either try and capture state control or carve out resources rich parts of the territory. Changes in the global energy system, for example the introduction of unconventional sources of energy leading to shifts in demand and supply and substitution between primary fuels, presents a real problem to the ruling regimes of rentier states as it undermines their ability to coerce and appease both their power base and the broader population at large. The transition to renewable is likely – at least in the medium term – to unleash similar effects. These effects as well as others will be analyzed in greater detail in the next two chapters.

5 THE IMPACT OF THE RENEWABLE ENERGY TRANSITION ON INTERNATIONAL STABILITY

5 THE IMPACT OF THE RENEWABLE ENERGY TRANSITION ON INTERNATIONAL STABILITY

The global fossil fuel based economy is characterized by different security dynamics that are not conducive to international peace and security. Interstate energy dependencies are more often a cause for conflict than a source of stability. A European transition to a 80% (or more) share of renewable energy will undoubtedly affect these security dynamics. Such dynamics are complex and interact with many other different factors. But taking them one by one and assessing these dynamics in a world within which such a transition has taken place, will shed some light on both positive and negative security externalities the transition may have. A European transition towards renewable energy will make Europe less dependent on energy suppliers in unstable environments and less vulnerable to coercion. But it is only a global transition towards renewable energy resources which will drastically alter the security dynamics. A global transition can help level the playing field while decreased competition over non-renewable energy resources will lower the probability of energy driven conflicts.

5.1 Impact of the Transition on Structural Inequalities in Access

The fundamental differences between fossil fuels and renewables are their geographic availability and their quantitative availability.

Fossil fuels have the drawback of being geographically fixed. This causes two problems: it creates inequalities between countries and it raises the specter of conflict should existing or prospective resources straddle multiple jurisdictions. Renewable energies suffer to a much smaller extent from these drawbacks. In principle, they can be harvested just about everywhere on earth (and perhaps even in space some day), and therefore are not subject to issues of exclusivity or regarding physical access. The Global Atlas for Renewable Energy (see Figure 8) of the International Renewable Energy Agency (IRENA) shows that at least some forms of renewable energy are available in most places.

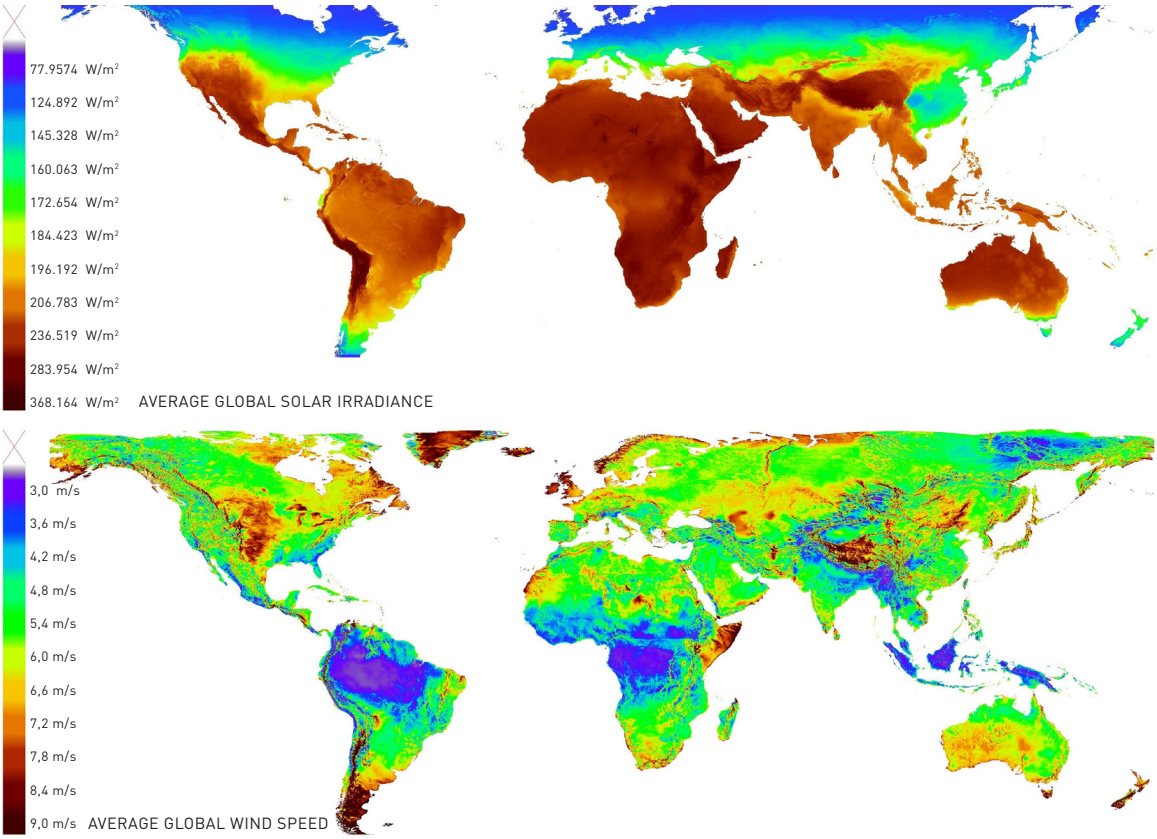


FIGURE 8 GLOBAL DISTRIBUTION OF SOLAR AND WIND SPEED[68]

This map also shows that not every region can benefit equally from available renewable energy resources, much also depending on local weather conditions. And depending on how energy is harvested, this could create new inequalities. First of all, countries that have more space available and sunshine hours per year than others have a comparative advantage over countries that also rely on sunshine but do not enjoy equally advantageous conditions. The same could be argued for wind, and in particular for hydropower. Of course, it can be argued that if a disadvantaged country can manage to be self-sufficient, the issue of comparative advantage becomes moot. However, countries that do enjoy preferential circumstances can also produce renewable energy in a cheaper fashion. And given that costs are still a major factor when it comes to renewable energy, this could make an important difference. But if these differences could help to perpetuate certain inequalities, they can also be an

opportunity for cooperation. A good example is the Desertec project, in which solar panels located in the deserts of Morocco, Algeria, Tunisia, and elsewhere generate energy that is subsequently exported to Europe and beyond. [69] The key point here is that renewable resources cannot be monopolized and, due to their very nature, are less likely to lead to foreign interventions to secure their supply and more likely to foster international cooperation. The Energy Roadmap 2050 recognizes the need to expand links between the EU and Northern African countries with a view to best harness the solar energy potential of the Sahara.[70]

A second major advantage of renewables is that they are available in infinite quantity. This takes away all uncertainty about the future – a key precondition for potential conflict. What is more, it also eliminates (some exceptions are e.g. generating hydro-electricity through water dams) the issue of jurisdictional conflicts in terms of prospecting in new locations.

At the same time, some renewable resources fluctuate in their availability, making investments in grid flexibility and energy storage necessary to secure a reliable energy supply. This is the case for wind, solar, wave, and tidal energy.[71] Taking this into account, countries blessed with the natural conditions to exploit these renewable resources for large scale energy generation need to have considerable energy storage capabilities in place to avoid seasonal energy shocks. For instance, countries in South-East Asia and Central America have a high potential for energy generation during the monsoon season when the winds are strong and there is a lot of rainfall, while during the dry season the productive capacity of wind turbines and hydro plants decreases substantially. In the EU, investments in building large and flexible international electricity grids are a real barrier to the increase of the share of renewables in the EU energy mix. Joint investments in developing grid flexibility and storage capacity offer opportunities for cooperation between EU Member States and other countries.

ENERGY EFFICIENCY

Another key development that could have similar security effects as increasing the share of renewables in the EU's energy mix is the quest for energy efficiency. Increased energy efficiency is often seen as the twin pillar, with renewables, of a sustainable energy policy. The long-term net impact of energy efficiency remains to be seen however. On the one hand, a drop in demand for energy as a result of efficiency leads to – ceteris paribus – a reduction for which there is no substitution in terms of total energy use. On the other hand, energy efficiency is also subject

to rebound effects, which mean that efficiency gains are being offset by greater consumption of energy, and could lead to a net rise of energy use. As opposed to a switch towards renewables, the key advantage of seeking energy efficiency is that it can be pursued autonomously, i.e. such gains do not depend on third parties. But because of the different indirect effects of energy efficiency policies, its short-term nor long-term impact on energy use can be easily forecasted. Therewith, its impact on geopolitics and Europe's security environment remains uncertain.

5.2 Impact of the Transition on Medium- and Long-Term Trends and Risks

If the EU manages to achieve an 80% target for renewable energy by 2050, the security implications of such a transition both at the regional and at the global level can be profound, and in fact change global power dynamics as a whole. The dynamics that ensue from such a transition can, however, be unpredictable while both medium and long-term consequences can put a different gloss on the outcome of seeking an 80% target by 2050.

A shift towards an 80% share of renewables can have a critical impact on the distribution of political power across the world, but first and foremost it will affect the strategic outlook of the EU itself. This is because, in effect, a major consumer of fossil fuels will largely exit the world market. Even taking into account economic and demographic growth outside Europe, total demand for fossil fuels will decrease, resulting in lower prices. A greater supply of fossil fuels relative to demand will likely have important effects on security risks at different levels.

The medium-term effects of such a transition will be different from its long-term effects. In the long run, it will be less likely that countries quarrel over acquiring new resources or accessing existing fossil fuel resources. What is more, the importance of the structural inequalities in the political and economic arenas will be less important, as a result of which the prospect for cooperation on a level playing field (i.e. the benefits of interdependence) will increase. More in general, the ability of producer countries to use energy supplies as a stick or carrot will somewhat diminish. For the EU specifically, its dependency on Russia will decrease drastically which will give it greater leeway in dealing with Russia's interference in Central and Eastern European countries.

For the medium term, some caveats need to be added, since dynamics triggered by a transition towards renewable energies can lead to different outcomes than the projected ones. If a conscious policy would be put in place to pursue a renewable energy strategy, this will incur a serious investment from which the benefits may only accrue in decades to come. At the same time, assuming that overall prices for fossil fuels will fall, European states will have to forgo economically advantageous low prices for fuel that they can use immediately. A further complicating factor is the lack of a properly functioning carbon pricing system. The EU acknowledges that more coherence and stability is needed between EU and national policies for the carbon price signal to function properly.[72] Hence, a multi-decade policy aiming at radically reforming the energy mix in the direction of renewables takes not only patience and perseverance, but also the financial means to accomplish it and the temptation not to succumb to a logic akin to that of the 'stag hunt'.[73]

In the long term, and with the necessary investments, many of these dilemmas may be more easily overcome as renewable energy becomes cheaper. However, a practical problem remains that, even if Europe were to make a radical shift towards renewables, it will still remain dependent on importing some fossil fuels, and also will need increased imports of minerals for the production and maintenance of solar panels, wind turbines and other renewable energy generators. Some of this material needs to come from China. At present, the EU imports close to 90% of the minerals used for the production of high-tech products from China.[74] One consequence of a greater dependence on renewables can of course be that the demand for minerals needed to operate such technology increases, thus increasing their prices and creating further dependencies. The EU has little domestic production capacity for minerals that are necessary for the production of wind turbines, solar panels, and other equipment to generate energy from renewable sources. Currently, the EU imports close to 90% of the minerals used for the production of high-tech products from China.[75] If the EU were to reduce its import dependence for these raw materials, it would have to set up domestic supply chains, but the import premium together with high labor costs in the EU make the production of equipment within the EU rather expensive. Hence, reliance on renewables may create new coercive tools – such as mineral export embargos - to be used against the EU; but this time by China, not Russia.

5.3 Security Implications of the Renewable Energy Transition

One estimate has it that if the EU makes sufficient investments in energy infrastructure, introduces regional power systems, unifies the intra-bloc energy market and produces electricity using the most suitable renewable technologies in each

member state, it would allow the EU to become completely energy independent by 2050.[76] If Europe would reach this goal, or get close to it, this will have huge security implications for the continent: there will be no need to intervene militarily abroad to secure energy interests; no need to join in the race for new resources; and the EU will be freed from the ability of third countries to use energy supplies as a tool for coercion (see Table 3).

TABLE 3 IMPACT OF THE ENERGY TRANSITION ON SECURITY DYNAMICS IN THE INTERNATIONAL SYSTEM.

DRIVERS	SECURITY IMPLICATIONS	EXAMPLES	SHORT TO MEDIUM-TERM IMPACT	LONG-TERM IMPACT
Structural inequalities reduced by EU renewables policy	More fossil fuels resources available for rest of the world	More fuels to burgeoning economies in Asia and Africa	EU: gradually less need to be involved in intl disputes, but tensions at intl level over energy could still increase	Positive impact on overall energy-related conflict worldwide if rest of world also makes transition to renewable energy
Developing and accessing new resources	Less pressure on the need to secure new resources whether offshore or on land b/c of EU renewables policy	Fewer tensions around South China Sea, Arctic Sea	Tensions concerning access to new resources could increase if demand goes up	Tensions could decrease if supply outstrips demand
Energy as a coercive instrument	Energy will be less useful as stick or carrot	Russia, Gulf States, Venezuela	No price decreases expected now, energy as coercive element remains useful	Should prices decrease, energy less useful to coerce other countries

But even complete self-sufficiency may not absolve the EU from defending its interests abroad. In other words, if securing energy resources in other parts of the world was a reason for getting involved in conflicts in, say, the Middle East, a move towards self-sufficiency could bring its own problems. First, should the EU be the only continent to achieve the 80% target and other parts of the world continue to struggle to secure sufficient fossil fuel resources for themselves, this means that conflict and the potential for such elsewhere will also continue. The consequences of such conflicts will remain largely similar to what we witness today: that is, dealing with migrant and refugee flows, needing to secure supply routes for other commodities being shipped to Europe and having to deal with excesses of jihadism, if such would persist and/or proliferate. In the end, all of these have, or will have, an effect on Europe's security. Another issue is that countries such as Russia, China and others will seek other means to influence the EU if energy is taken out of the equation for instance through the use of minerals.

Despite these caveats, the consequences for Europe's security will still be sizeable. Energy dependence has been a millstone constraining a country's freedom to act in international relations. Any attempt at lessening this dependence is therefore worthwhile to pursue, and could constitute a massive game changer, not just for Europe, but for the world as a whole. A European renewable energy transition, if it were pursued in earnest, could certainly stimulate other countries to pursue similar policies. Reduced prices for renewable energy technology as a result of developments in Europe could help spur such a push on the part of other countries. If indeed, Europe would be leading the way in pursuing progressive environmentally-friendly energy policy, then the benefits will not only be in the environmental realm, but in the security realm as well.

5.4 Conclusion

A shift towards achieving an 80% target for renewable energies is prompted by two key objectives: one, to help slow down climate change and to reduce its effects and two, to become less dependent for energy supplies on countries outside the EU. On both counts, the consequences could be profound. In the security realm in specific, it is all but certain that the pressures on Europe either to act, or to be acted upon, will be significant.

In case of a global transition, the likelihood of energy driven interstate conflicts will go down. Regardless of whether a European reneweable transition is followed by a global transition, it will certainly make the EU less vulnerable to direct coercion by energy supplier states. Therefore, the odds are solid that a successful renewables strategy will indeed help to improve Europe's security environment and decrease the need for EU member states to intervene militarily abroad.

6 THE IMPACT OF THE EUROPEAN RENEWABLE ENERGY TRANSITION ON DOMESTIC STABILITY

6 THE IMPACT OF THE EUROPEAN RENEWABLE ENERGY TRANSITION ON DOMESTIC STABILITY

Chapter 5 discussed how rentier states – states that rely mainly on the export of natural resources for their national budgets – suffer from a number of intrinsic vulnerabilities.

These vulnerabilities render rentier states vulnerable to internal conflict in the form of coup d'états or secession movements. The common practice of rentier states to dampen popular dissent by lavishly subsidizing basic goods and services, including food and fuel, not only levies a hefty burden on the state budget, it also means that abolishing this practice is a recipe for civil unrest.

Changes in the global energy system that trigger long-term substitution effects between primary fuels, such as those unleashed by the introduction of shale gas in the US, run the risk of destabilizing this precious social contract in rentier states. More importantly in the context of energy transition is that policies aimed at improving energy efficiency in fact may lead to greater shifts in global energy markets than those caused by the introduction of unconventional fuels.[77] Greater energy efficiency brings about an absolute reduction in energy demand, leading (ceteris paribus) to a lower market equilibrium for oil and gas prices. This in turn erodes the export earnings of rentier states, putting pressure on their ability to subsidize basic goods and services, thus raising the risk of domestic instability.[78]

The extent to which a rentier state is vulnerable to the effects of an energy transition in Europe depends on a range of different factors. For example, countries with a high share of oil and gas rents in their GDP and state budget are more exposed to price fluctuations than countries where these shares are low. Also, countries that export the majority share of their oil and gas to the EU run a greater risk of being adversely affected in case energy transition fosters a reduction in demand in Europe. Regime type is another important factor in determining the risk of instability, whereby anocratic

regimes run a far greater risk of experiencing civil unrest than do democratic or autocratic governments. Finally, it also matters whether a country can easily switch between customers and reroute oil and gas exports to states outside of the European Union in case demand in Europe were to drop; oil barrels and liquefied natural gas (LNG) are more easily transported elsewhere than pipeline gas.

Beyond the characteristics of individual rentier states, other factors such as time play a role, as well as the extent to which other countries worldwide equally embark on an ambitious energy transition away from fossil fuels. For this reason, the following analysis consists of three distinct sections, each departing from the premise that Europe embarks on an energy transition towards 80% renewable energy. Section 6.1 analyzes the degree of vulnerability of several hydrocarbon exporting states around Europe to such a transition. Section 6.2 turns to the dynamics of intra-state stability in rentier states in the short tomedium term (5-15 years from now). Finally, section 6.3 assesses the long-term implications (20-30 years from now) of such an energy transition in Europe.

6.1 Which States are Most Vulnerable to a European Renewable Energy Transition?

For its energy, the EU is largely dependent on external suppliers. Currently, the Union imports 53% of its total energy needs from abroad. Import dependency is most acute for crude oil (almost 90%) and natural gas (66%).[79] Countries of particular importance for the EU's supply of fossil fuels are Russia, Algeria, Egypt, Qatar, Saudi Arabia, Kazakhstan, and Libya (see Table 4).

TABLE 4 KEY FOSSIL FUEL SUPPLIERS OF THE EUROPEAN UNION

VARIABLE	OIL RENTS AS % OF GDP (2012)[80]	GAS RENTS AS A % OF GDP (2012)[81]	OIL/GAS RENTS AS % OF STATE BUDGET[82]	EU SHARE OF OIL EXPORTS[83]	EU SHARE OF GAS EXPORTS[84]	REGIME TYPE[85]
Russia	13,9%	2.3%	52% (2012)	79% (2012)	81% (2012)	Anocracy
Algeria	17,1%	5,9%	60% (2013)	72% (2013)	90% (2013)	Anocracy
Egypt	8,0%	3,2%	N/A	56% (2013)	7% (2013)	Anocracy
Qatar	12,1%	12,5%	60% (2012)	N/A	30% (2012)	Autocracy
Saudi Arabia	45,8%	2,4%	90%[86] (2012)	15% (2012)	No exports	Autocracy
Kazakhstan	24,9%	2,2%	N/A	56% (2012)	Net importer	Autocracy
Libya	52,3%	2,1%	96% (2012)	71% (2012)	100% (2012)	Anocracy

Based on the data presented in Table 4, the following conclusions are warranted with respect to the relative vulnerability of each country.

Most exposed to the effects of a European energy transition are Russia and Algeria in light of the high share of their oil and gas exports destined for Europe, and the high share of oil and gas rents in their state budgets. The risk of instability in the case of reduced export earnings is amplified by the anocratic regime type in all three countries.[87] Although Egypt and Libya share similar characteristics with the above mentioned states, it should be stressed that the hydrocarbon sector in both nations is already experiencing difficulties following the unrest that started with the Arab uprisings of 2011. Libya, for example, has not exported LNG since early 2011, when the LNG plant was damaged during the civil war and oil production plummeted. Natural gas exports bounced back in 2012, but the only gas currently being shipped to Europe is via Libya's Greenstream pipeline to Italy. In the case of Egypt, oil transit through the Suez Canal was not so much affected by the civil unrest. Gas exports however grinded to a halt and turned Egypt into a net importer of natural gas for the first time. LNG exports have since started to grow gradually, but the sector suffers from high domestic consumption and underinvestment.[88] That said, an energy transition in Europe will further compound the stress that both nations are already experiencing if the transition results in lower prices for oil and gas. In particular, the lavish fuel subsidies in both countries will come under pressure.[89]

Moreover, countries such as Algeria, Russia, and Libya have a harder time switching between alternative clients as their gas primarily uses pipeline infrastructure which flows towards Europe. Although Russia signed a deal with China in May 2014 which would bring Russian gas to the Chinese market, the first deliveries are not expected before 2018. Moreover, at 38 billion cubic meters (bcm) it pales in comparison to the 161,5bcm that Russia annually exports to Europe.[90]

Less exposed is Kazakhstan given its growing trade with China. Recently, the Kazakh government opened a pipeline from Kazakhstan to China, thus giving the former Soviet State an alternative export route.[91] That said, the majority of Kazakh oil exports are still destined for Europe, leaving its export earnings vulnerable to a drop in demand from the EU although not to the same extent as for Russia, Algeria and Libya.[92]

Least exposed are Qatar and Saudi Arabia in light of the lower share of hydrocarbon exports from these countries that are destined for Europe. Although Qatar still exports almost a third of its gas supplies to Europe, it should be borne in mind that these are

LNG supplies. Should demand in Europe falter, such supplies can more easily be rerouted to the Asian market.

Finally, compared to the other countries in Table 4, it should be stressed that comparatively stable autocratic regime types rule Qatar, Saudi Arabia, and Kazakhstan. Also, these countries are home to significant sovereign wealth funds, which in the event of an oil price shock are capable of mitigating the effects on the state budget – at least in the short to medium term.[93]

6.2 The Short-to-Medium Term Implications of a European Renewable Energy Transition

If Europe decides to drastically green its energy mix and complete an energy transition towards 80% renewable energy, the effects on rentier states in the EU neighborhood will play out differently over time. In the short to medium term (5-15 years) the demand for fossil fuels coming from Europe will experience a sharp decline.

However, many non-OECD countries have a growing appetite for energy, chiefly fossil fuels, as a result of economic development, growing middle classes, and population growth (See Figure 9).

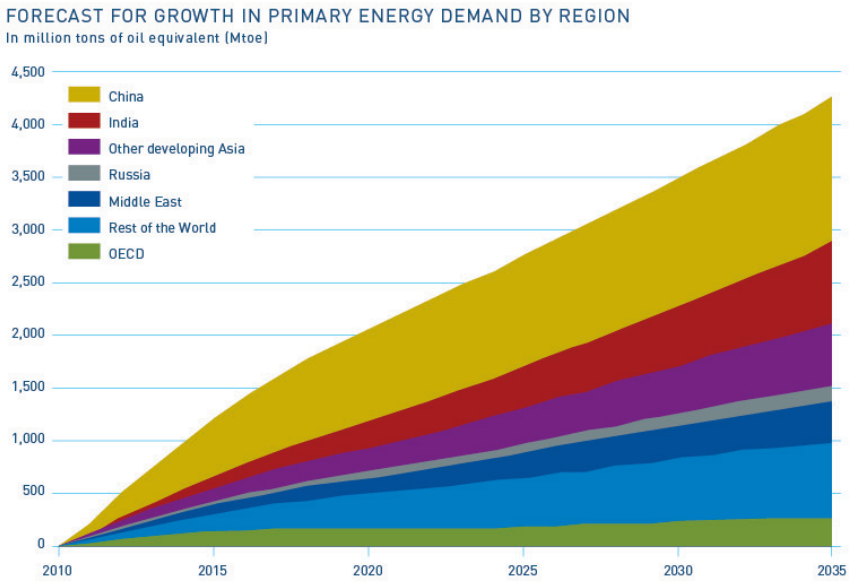


FIGURE 9 INTERNATIONAL ENERGY AGENCY (IEA) FORECAST FOR GROWTH IN PRIMARY ENERGY DEMAND BY REGION IN MILLION TONS OF OIL EQUIVALENT (MTOE)[94]

Much of the growth in primary energy demand will be coming from China and India, with growth particularly stark in the short to medium term. This potentially provides hydrocarbon exporting countries in the EU neighborhood with a chance of switching between clients.

Russia and Algeria hardest hit

Countries such as Russia and Algeria will not be among the frontrunners in terms of servicing the Asian markets. The limited ability for both countries to switch to alternative export routes, particularly for natural gas, will strain their fiscal budgets. Their oil exports are more nimble and better suited for being redirected to other markets, particularly the growth markets in Asia. The higher relative value of oil exports compared to natural gas exports means that both nations can compensate a drop in gas exports to an extent. That said in 2013 Algeria only exported 10% of its oil to Asia and Oceania and should thus step up its efforts to diversify. Russia by comparison exported only 12% of its oil to Asia in 2012.[95] Moreover, the high share of hydrocarbon revenues in both countries' budgets means however that in the medium term both Russia and Algeria would also have to seriously ramp up their investments in LNG capacity in order to tap into the growth markets in Asia and avoid being badly affected by the drop in natural gas exports to Europe.

Russia is currently investing in LNG, but it will take many years before these projects come online and there are doubts concerning the profitability. Moreover, the more LNG capacity comes online, the more choice Asian consumers will have, thus dampening the price.[96] Given the current state of the Russian economy and the high risk of it sliding into a recession following the sanctions imposed by the US and the EU, a drop in demand for Russian oil and gas exports in Europe would have detrimental consequences in terms of social unrest, possibly prompting regime change.[97]

The share of Algerian natural gas exports go to Europe that goes via pipeline (70,5% in 2012) far outweighs the share of LNG exports. However, Algeria is investing in additional LNG capacity. The recently completed LNG train at Arzew, with a planned capacity of 0.6 billion cubic feet (Bcf) per day increases the country's LNG export capacity by 36%.[98] This additional capacity could offset some of the damage incurred by a drop in European demand, but it is not enough to significantly offset the balance between pipeline and LNG exports. This leaves Algeria badly exposed to a drop in its export earnings. Moreover, with a fiscal break-even oil price of US $ 113,3 in 2014[99], Algeria is already punching above its weight and risks greater budgetary pressure, should the price of oil drop further as a result of a lower demand coming from Europe.

The risk of having to slash fuel subsidies, triggering social discontent, is therefore high.

A similar fate awaits Libya, which with the bulk of its oil exports (71%) going to Europe via pipeline, will also significantly feel a drop in European demand. Moreover, currently all Libyan gas exports are destined for the European Union, meaning its ability to switch to alternative markets in Asia is limited. In 2012 Libya exported only 12% of its crude oil to China and 7% to other markets in Asia and Oceania.[100] With the Libyan government subsidizing 75% of an individual's fuel cost, and faced with tremendous post-war reconstruction efforts, Libya can ill afford the impact of a European energy transition.[101]

Egypt exported 44% of its crude oil to destinations outside of the EU. The bulk of which was destined for China (13%) and India (28%). China in particular is increasing its presence in the Egyptian market, as evidenced by the purchase of a 33% share in the Egyptian oil operations of the US owned Apache Corporation. The deal is part of a series of overseas purchases by Chinese oil companies to secure access to fossil fuel supplies.[102] This leaves Egypt with some leeway in channeling some of its oil exports to the Asian market and less exposed to a reduced demand in Europe in the short-to-medium term. That said, the bulk of Egyptian supplies are still destined for Europe and although the country is less exposed than Algeria and Russia, it is still likely to witness a decline in export earnings.

Countries such as Qatar and Saudi Arabia are much less likely to see popular unrest as a result of dwindling government revenue, subsidy cuts, and a resultant worsening of purchasing power among the population. The majority of Qatari and Saudi exports are already destined for markets outside the EU (chiefly Asia). As Chinese and Indian demand is set to increase, both countries will be eager to scoop up the share let behind by Europe.[103]

Kazakhstan will similarly try to ramp up its exports to China and other non-EU markets. The prospects for increased trade with the Chinese look promising in light of the construction of the Kazakhstan-China oil pipeline. However, a lower demand in Europe may see Kazakhstan forced to sell a growing share of its oil supplies to Russia; the latter of which who will then undoubtedly use its renewed bargaining power vis-à-vis its former republic to its advantage. That said, the stability of the Kazakh regime compared to those in Libya and Egypt means that Kazakhstan is likely to fare better through the immediate effects of a European energy transition.

6.3 The Long Term Implications of a Renewable Energy Transition

The previous section highlighted the ability of several countries to make use of the surge in primary energy demand coming from non-OECD countries to offset a reduced European demand for fossil fuels, should Europe significantly 'green' its energy mix. In the long-term (20-30+ years from now) the ability for Qatar, Saudi Arabia, Kazakhstan and others to do so in varying degrees is likely to be significantly constrained due to the energy policies in both OECD and non-OECD countries.

These policies point towards a long-term global increase in energy efficiency and renewable energy technologies. This development will seriously affect the revenues of hydrocarbon exporters and carries security consequences.

Non-OECD turning the tables

Within OECD countries, improving energy efficiency and installing renewable energy generation capacity is already a cornerstone of the policy toolkit to enhance energy security and to reduce harmful impacts on the environment. For example, the Obama administration has recently announced an action plan consisting of several energy measures to reduce carbon pollution and address climate change.[104]

Increasingly, emerging economies are catching on. For example, China's climate change-related goals for 2020 include targets to reduce CO_2 per unit of GDP by 40-45% relative to 2005, and to increase the ratio of non-fossil energy to the consumption of primary energy to 15%. The Chinese government also aims to establish a national CO_2 emission trading system during its Thirteenth Five-Year Plan, which covers the period 2016-2020. China also has set targets for a more sustainable transport sector. For example, a five-year Clean Air Action Plan states that out of every 600,000 new vehicles allowed into Beijing between 2013 and 2017, 170,000 should be battery powered, plug-in hybrid or fuel cell driven.[105]

India was ranked the third most attractive place for renewable energy investment worldwide in KMPG's annual renewable energy country attractiveness index.[106] Phase two of India's ambitious National Solar Mission[107] attracted bids totaling 2,710 Megawatt (MW), almost triple the 750MW on offer. The success of this initiative will likely boost support for government plans to launch a similar program for Wind; the National Wind Energy Mission. This second initiative, announced in January 2014, will target 100 Gigawatt (GW) of wind power by 2022, a third of India's estimated wind energy potential.[108]

In Brazil, the ten-year plan for energy expansion through 2020 aims for renewables, primarily hydropower, bioenergy and onshore wind, to significantly increase, with the goal to generate nearly 70% of the energy from renewable energy sources by the year 2020, up from 55% in 2013.[109]

The impact of these policies becomes clear when looking at the bigger picture. Whereas the renewable power generating capacity in Europe and the US has been slowing down or been volatile in recent years, emerging markets more than compensated.[110] Led by China, India and Brazil, non-OECD countries now dominate global renewable power generation, at around 54% of the total in 2013, up from 52% in 2012. By 2018, this share will rise to 58% according to the IEA.[111] By 2025, the largest proportion of renewable energy generation would come from China (26%), followed by OECD Europe (17,3%), the US (11%), Brazil (6,3%) and India (6,1%).[112]

In sum, primary energy demand in non-OECD countries is growing fast. In the short-term, the bulk of this demand will be met by fossil fuels. Policies on renewable energy, fuel standards, and energy efficiency will need time to bear fruit. Nonetheless, they will contribute to a slowdown in the projected demand or oil in the medium-to long term.[113] This has several security implications.

Security Implications of the Renewable Energy Transition

The scenario that in the long run, the EU and other OECD-countries as well as non-OECD countries adopt renewable energy on a large scale is bad news for rentier states dependent on the export of hydrocarbon fuels. Whereas in the short-term countries such as Russia, Algeria, and Libya already face major difficulties, wealthy autocratic nations such as Qatar and Saudi Arabia also won't be able to escape the effects in the long-term either.

A scenario in which both Europe and non-OECD countries have adopted renewable energy on a large scale, the international oil price will almost certainly drop below the fiscal break-even point of most hydrocarbon exporters in the EU neighborhood. Although a drop in the price of oil will also mean that subsidies can be lowered as a result, the resultant severe reduction in export earnings and GDP more than offsets this positive stimulus. The result of this development is a severe erosion of the power base of hydrocarbon based regimes in the EU neighborhood, with a heightened risk of social unrest and instability.

Table 5 provides an overview of these effects.

TABLE 5 IMPACT OF THE ENERGY TRANSITION ON SECURITY DYNAMICS IN RENTIER STATES

DRIVER	EFFECT	EXAMPLES	SHORT TO MEDIUM-TERM IMPACT	LONG-TERM IMPACT
Lower demand for fossil fuels in Europe	Loss of export revenue for hydrocarbon producer countries that export to Europe	Russia, Algeria and Libya lose a significant share of their export revenues	Erosion of government rule in Algeria, Libya, Russia. Risk of social unrest. Other exporters can mitigate the effects by rerouting exports to emerging economies	Erosion of government rule in countries such as Qatar, Saudi Arabia if emerging economies adopt similar energy transition and global demand for fossil fuels drops
Lower attractiveness to establish access to and permanent control over oil and gas resources	Reduced possibilities for governments to concentrate on wealth accumulation from oil and gas. Decreased incentives for energy driven conflicts, coup d'états or secession movements	Fewer long term tensions in West Africa, Sub-Sahara Africa, Latin America, and the Middle East	Could in short term lead to social unrest as tacit dissatisfaction with the ruling regime rises to the surface, possibly toppling autocratic governments	Opportunity cost for overthrowing the government to gain control over the country's 'prize' is raised. Could open door towards greater democratization
Downward pressure on oil price	Fuel subsidies become untenable. Slashing subsidies out of austerity raises risk of popular unrest	Worsening of purchasing power of the population in North Africa, Middle East, Russia, Caspian Sea Region, West Africa, Sub-Sahara Africa	Street protests over erosion of living standards, possibly toppling autocratic governments	Impetus for alternative models of governance in rentier states as attractiveness to establish access to and permanent control over natural resources is lowered. Incentive to diversify the economy and develop the non-hydrocarbon sector

However, the pathway to a renewable energy transition on a global scale is not only a story of painful adjustment and social unrest. If extractive rentier regimes in countries highly dependent on fossil fuel exports are toppled, it could pave the way towards more inclusive forms of government, provided there is enough 'critical mass' among the general population. This could open the door towards greater democratization in rentier states. In this sense renewable energy can act as a beacon of opportunity for impoverished nations whose economies thrive on a single commodity and who are ruled by secretive, non-accountable, extractive regimes.

6.4 Conclusion

A European renewable energy transition will in the short to medium term affect the stability of rentier states in the European neighborhood. Some of these states will be able to switch their exports to emerging economies, other states, however, will not be able to do so. In the long term, in case the European transition is followed by other global players, it can open up the door to reforms and provide impetus to a process of democratization in these rentier states.

7 CONCLUSIONS

7 CONCLUSIONS

Fossil fuels continue to be critical to the functioning of our global economy; their strategic importance makes states willing to fight over access and exploitation, sometimes even literally. Fossil fuels are also used as an important coercive bargaining instrument in contemporary international relations. Moreover, the large scale use of fossil fuels is a significant contributing factor to climate change. Climate change is already producing serious security challenges worldwide, and is projected to increasingly do so in the future. It is fair to say that the dynamics of the fossil fuel economy thus contribute to competition and conflict rather than cooperation and peace.

In the run up to the decision about the EU CEP 2030 next month, criticism has been raised that the EU CEP 2030 is falling short in ambition. Some call for a radical departure from the past urging the European Commission to set a target of 80% renewable as share of the total energy mix by 2050. What is clear is that the level of ambition of the EU CEP 2030 will not only have significant effects on the future direction of climate change, but also have important geopolitical consequences.

The renewable energy transition carries a near utopian promise, namely the promise of being able to escape at partially from the security dynamics inherent in the fossil fuel-based economy. The notion of substituting fossil fuels for sources of energy that are distributed more evenly, are not geographically fixed, and can less easily be monopolized is thus something worthwhile pursuing, for a plethora of reasons.

First and foremost, climate change affects world supplies of food, water and energy. Drought, floods, food, water and energy shortages all have the potential to create instability or even conflict. What is more, changing climate patterns also trigger migration flows, putting pressure on countries and regions alike, and resulting to further security risks. Hence, dealing with climate change head on has a clear long term security rationale.

Second, in our current fossil fuel-driven economies, there is a perpetual tension between supply and demand, or producer and consumer countries. What is more, based on current trends, the balance between supply and demand will become even more skewed as new economies are emerging, populations increase and 'old' economies are growing once more. These trends have given rise to a rebalancing of power towards producer countries, which are trying to reap ever greater rewards from their prized possessions by protecting their economies, extracting higher prices, and thus contributing to fragmentation of world markets. This, in combination with increasing uncertainty about future oil and gas fields and the ability to bring these online exacerbate three security risks: one, conflict over existing resources (Libya, Iraq, Central African Republic, South Sudan), two, conflict over potential new resources (South China Sea, Arctic Sea, Sakhalin) and three, conflict as a result of energy being used as a stick or a carrot (Russia/Ukraine, Venezuela).

Third, at the domestic level, current dynamics of the fossil fueled world economy are having various adverse effects. First, states that rely to a great extent on income from energy exports are likely to be rentier states with anocratic or autocratic regimes (examples being Russia, Saudi-Arabia, Iran, Libya), which lag in terms of socio-economic development and show little inclination towards democratization. These countries will remain unstable, or prove to be so in the long run, producing security risks that could erupt quite suddenly (witness the sudden outbreak of the Arab Spring). The other side of the coin is that high prices for fossil fuel puts added pressure on those countries that depend on energy imports and need to subsidize these. This creates potential for social unrest or even civil conflict in the short or medium term, and possibly drive outside states to intervene.

To what extent can a move by the EU towards an 80% (or more) renewable energy consumption target stem such security risks? It seems here that a distinction needs to be made between the medium term (10+ years) and the long term (20-30+ years) and between a European transition and a global transition. The latter is only expected in the long term. Although in the long term, the security effects of both a European and a global transition is likely to be positive, in the medium term the prospected security effects are mixed.

In the long term, it appears very likely that an effective exit of the EU from world energy markets would help to bring prices down and therefore, make oil and gas a less coveted prize thus decreasing the chances of conflict over such resources. Hence, the need for EU states to intervene militarily to secure energy resources,

either on its own behalf or on behalf of a larger coalition, will become smaller. In addition, the need for EU states to get involved in exploiting new resources will greatly diminish. Moreover, the EU would no longer be vulnerable to coercion on the part of energy suppliers, giving the EU and its members more leeway its dealings with other states.

A global energy transition could potentially mirror such effects on the global level: it can reduce the security dilemma in interstate energy relations and lower incentives for interstate conflict over access to and control over resources. Great power politics will likely continue to exist but fossil fuel resources will no longer drive the Great Games of the future. It will alter the playing field for states without any fossil fuel resources. Stability in energy producing regions will be increased if non-state actors no longer benefit from using violence to control fossil fuel resources. Also in the long run, lower energy rents will undermine autocratic and often corrupt regimes, which can eventually lead to more sustainable and possibly more democratic forms of governance. And last, but certainly not least, a global renewable energy transition will help in putting a halt to climate change induced security effects.

However, the road towards a world fueled by renewable energy is likely to be a rocky one. In the medium term, the global security dynamics of the fossil fuel based economies will not drastically alter if the EU's transition towards 80% or more renewable energy is not matched by similar targets of other large energy consuming countries. Although other important players – including at the US and China – are investing in renewable energies, conventional and unconventional fuels (including shale) are likely to continue to make up a substantial share of their energy mixes in the medium term. What is more, such a transition is likely to contribute to instability in rentier states especially in the European immediate neighborhood. The reduced oil and gas rents will detract from the ability of rentier regimes to carry on funding the social contract that keeps them in power. The outcomes of political transformation processes can yield substantial benefits to the societies, but the processes themselves often feature significant amounts of societal violence.

These various challenges require the EU to pro-actively engage not only in attempting to bring about the transition to a sustainable energy future but also in dealing with its potential security effects. Understanding the global security implications of energy and climate policies is a crucial first step in making an informed decision on the CEP framework for 2030.

NOTES

NOTES

1 The IPCC defines renewable energy is 'any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate that equals or exceeds its rate of use,' occurring in the natural environment and includes: solar energy, hydropower, wind, tide and waves and ocean thermal energy, as well as renewable fuels such as biomass. Technical Support Unit Working Group III, *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change*, 2012, 958, http://srren.ipcc-wg3.de/report/IPCC_SRREN_Full_Report.pdf.

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