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CHAPTER 9

The Geo-Ecological Risks of Oil Investments by China and the Global South: The Right to Development Revisited

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1 Introduction

Developing countries have long argued that they have a right to development (see Section 2.2). They claim the right to use fossil fuels and to invest in oil and gas exploration, production, and dissemination technologies to protect energy and resource security. As a result, the emerging economy of China has promoted the development of an oil and gas industry that operates at a geo-economic and geopolitical level (Amineh and Guang (eds.) 2014; see 3). It is a relative newcomer to the oil exploration and export business compared to OPEC (Organization of the Petroleum Exporting Countries) countries that have been investing in oil for decades (see 4). Increasingly, least developed countries (LDC) such as Uganda and Tanzania—as well as those that have recently graduated to middle-income country status (MDC) such as Ghana and Kenya—are also beginning to explore options for developing their newly found oil resources (see 5). Chinese, MDC, and LDC interests are driven primarily by the prospect of improving their energy security and increasing their economic prosperity as OPEC countries have done in the past.

However, these Southern oil investors are relying on an expectation that fossil fuels will not be phased out in response to the evolving global agreements to address the problem of climate change. They also expect that the demand for fossil fuels will continue to grow, the price of oil will rise, somehow their economy will not suffer from the impacts of climate change, and their right to development will not be challenged. Investors have failed to consider the unpredictable nature of the global negotiations on climate change

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and the uncertainties surrounding future oil extraction controls. For example, Mo (2014) argues that China's oil companies face four risks—geopolitical risks, resource nationalism, business competitiveness, and human resources development—but ignores the geo-ecological impacts of climate change. Although there has been significant research on designing greenhouse gas mitigation measures and other approaches to controlling fossil fuel demand at the global level, there has been relatively little scholarship on understanding the supply-side implications of fossil fuel reductions, particularly in terms of global equity, geopolitics, and geo-ecological risks.

Against this backdrop, this paper asks: What are the geo-ecological risks for developing countries of investments in the oil and gas sector? In order to answer this question, we combine the understanding of climate change and its implications for phasing out fossil fuels, the debate around the right to development and its implications for who should phase out fossil fuels first, and the issue of stranded assets—or the long-term costs of phasing out fossil fuel in our theoretical framework (see 2). We then try to understand the different types of risks in the Global South, which consists of about 150 countries in different stages of development. We draw on examples from three categories of Southern countries: newcomer oil investor countries such as the emerging economy of China, that also invest in oil resources elsewhere, historical oil investors, such as middle income countries like Nigeria and other OPEC members, and prospective oil investors such as Kenya, that has only just graduated from a least developed country (LDC) status to the status of a lower-middle income developing economy. Although there is no discussion about which of these countries would have a 'greater' or 'lesser' right to development—and whether it is countries or collectivities or individuals who have a right to development—the policy practice is to accept that LDCs should be assisted in achieving economic progress. Figure 9.1 illustrates the per capita income of these three case study countries and compares it against data from the US, UK, and the Netherlands in the global North over the period 1990–2025. As can be seen, the right to development in relation to climate change corresponds to the period during which the climate change negotiations have taken place, when the per capita incomes of China, Nigeria, and Kenya were significantly lower than that of the developed countries.

Our evaluation is based on a literature review of the need to phase out fossil fuels, the right to development, and theories on stranded resources and stranded assets as applied to the case studies on China, Nigeria, and Kenya. The Chinese case study draws on secondary data collection from the on-going research work by the research team under the Dutch Royal Academy of Sciences

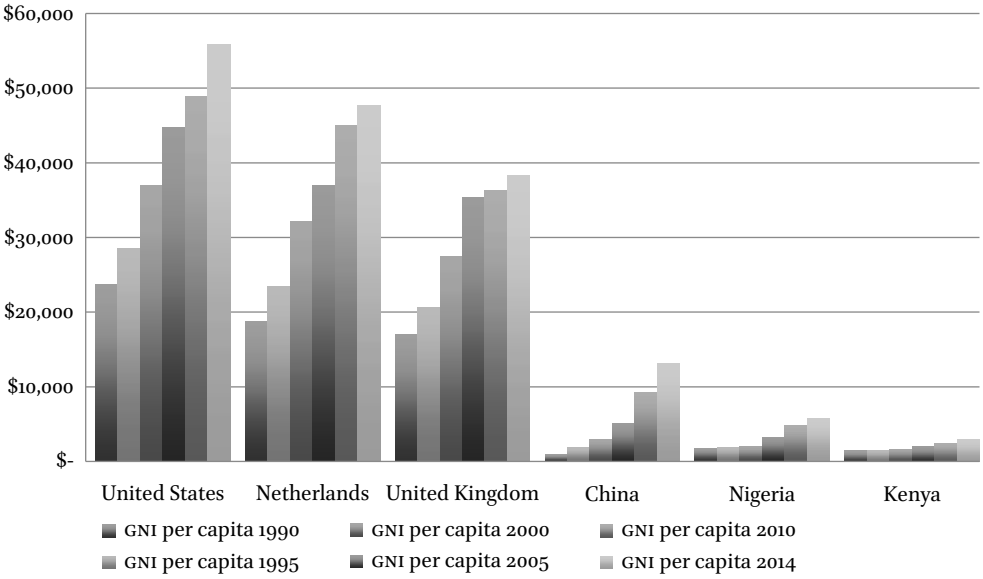

FIGURE 9.1 *The evolving GNI per capita (USD$).*
SOURCE: GENERATED FROM THE WORLD BANK DATABASE

(KNAW) funded network project of the Joint EPA-IIAS-IWAAS-CASS Research Program examining the Geopolitics of Transnationalization of Chinese National Oil Companies in different countries world-wide (see Amineh and Guang 2014). The Nigerian case study was conducted during a nine-week period of fieldwork in 2015, with a geographical focus on the Niger Delta where oil extraction takes place. In total, 58 semi-structured interviews were conducted with experts at the global (12), national (26), and local level (20), subdivided into government officials (4), civil society actors (24), industry (6), and academics (24). Additional interviews were conducted with 17 members from four different local communities experiencing the impact of oil operations in the Niger Delta on a daily basis. The Kenya case study was conducted in 2014 and focused on recent oil discoveries in the South Lokichar Basin in the northwestern Turkana county. A total of 34 semi-structured interviews were carried out with experts from global (8), regional (East African) (2), national (20), county (2), and local levels (2). These experts can be subdivided into civil society actors (14), academic actors (8), government, governmental agency or inter-governmental organization actors (10), and private sector actors (2). A further 65 local community members in Lokichar were

interviewed. Experts were selected using 'purposive sampling' by identifying interviewees following the topic of interest and the snowball method (Bryman 2012).

The nature of the analysis in the three case studies is different because the circumstances are different, even though they all focus on oil and gas investments. Each case study brings forth different dimensions of geo-ecological risks. Since energy security, the right to development, and climate change are closely related issues, we argue that current understandings of geopolitical risks should not be limited just to place- and space-based political risks, but should also include evaluations of ecological and economic risks in relation to rights (see 6). While much of the existing research focuses on an international relations and a political economic examination of how national oil companies improve energy security and address resource scarcity, this paper goes beyond to examine the subsequent geo-ecological risks in the context of the Paris Agreement under the United Nations Framework Convention on Climate Change (2015) and the United Nations General Assembly's adoption of the Sustainable Development Goals in 2015. Such risks only not apply to latecomers to development that are obliged to take new knowledge into account, but can also point to opportunities for avoiding the previous mistakes of others.

We have two caveats to make here. Firstly, this paper emphasizes risks and not facts. In other words, it looks at different literatures, contextual situations, and perceptions to identify possible risks for investing countries. Secondly, it was not possible to look only at states as oil and gas extraction is generally undertaken by companies. The nature of the companies in all three case studies is different, the venue in which they work is different, and their logic and structure is different. This is taken into account in the analysis, but the paper focuses on the risks to states and not on the risks to companies.

2 Three Theoretical Storylines: Phasing Out Oil, the Right to (Sustainable) Development, and Stranded Resources

2.1 *Introduction*

This section first discusses the current science on the need to phase out fossil fuels such as oil and gas (see Section 2.2). We then discuss who needs to phase out fossil fuels first under the right to (sustainable) development (see Section 2.3), and the potential costs of prematurely phasing out fossil fuel investments by exploring the concepts of stranded resources and stranded assets (see Section 2.4). Hence, this section frames the key issues involved in addressing the research question.

2.2 *The Need to Phase Out Fossil Fuels*

Current assessments of global fossil fuel reserves show that approximately one-third of oil reserves, half of gas reserves, and over 80 percent of current coal reserves must remain unexploited to limit the increase of global mean temperatures to within 2°C above pre-industrial levels (Carbon Tracker 2013: 9; IPCC 2014). Geographically, the remaining oil and gas reserves are largely concentrated in the Middle East, post-Soviet states, and Africa, while coal reserves are largely located in the United States, India, and China (McGlade and Ekins 2015).

The long-term 2°C stabilization objective was adopted by all parties to the United Nations Framework Convention on Climate Change (UNFCCC) at the Conference of the Parties (COP) in Copenhagen (COP-15) and Cancun (COP-16). This target has subsequently been modified to a 1.5–2°C objective in the Paris Agreement (2015), a legally binding agreement. With 75 countries having ratified the Paris Agreement, it entered into force on 4 November 2016. The long-term objective are legally binding, and all ratifying countries—including the US, European Union, Brazil, China, and India—are obliged to work toward it. Nigeria and Kenya have signed the agreement but have yet to ratify it. Parties are obliged to come up with short-term targets (i.e., Nationally Determined Contributions) and to ratchet these up regularly. However, as the short-term targets are included in Annexes, the degree to which they are legally binding is disputed (Gupta 2016), although there is no dispute about the long-term objective. Hence, the issue is not *whether* the global community will phase out these resources but *when* and *who* has to phase out first and who later.

2.3 *The Right to Development, Sustainable Development, and Climate Change*

In relation to the *who* question, all parties to the Paris Agreement are expected to phase out fossil fuel usage, but the Climate Change Convention of 1992 had stated that this should occur in stages, with already industrialized countries leading the way. This argument was a recognition of the developing countries' *right to development*, which they had been arguing for since gaining independence in the post-World War II period as they felt that industrialized countries were hampering their growth prospects. For example, countries of the global South argued that trade measures espoused by the Bretton Woods system were used as a disguised restriction on domestic economic growth. This led to the negotiations on the New International Economic Order (NIEO) (Schrijver 1995) and later the Right to Development (Kirchmeier 2006). After decades of negotiations, this right was recognized in 1986, but there is continued discussion about whether it is applied to individuals and collectivities only or also to states (UNGA 1986).

The right to development raises a particularly problematic question when applied to climate change: does the right to development—that includes "the exercise of their inalienable right to full sovereignty over all their natural wealth and resources"—imply the right to emit GHGs (Baer et al., 2008; Gupta and Van Asselt, 2007; Gupta 2014a)? This is contested as "the presumed right to emit" is clearly something different from the right to vote, the right to receive an education, or the right to enjoy basic civil liberties (UNDP, 2007: 50). At the same time, the reality is that current forms of economic and industrial development are necessarily accompanied by GHG emissions when they rely on fossil fuels.

Given the close coupling between economic growth and GHG emissions, the problem of climate change was seen in the early 1990s as yet another problem that would affect the global South's right to grow. The UNFCCC in 1992 implicitly recognized the significance of the right to development in its preamble (UNFCCC, 1992: Preamble Paragraphs 3 and 23, and Article 4(5)) and promoted the idea that developed countries should reduce their emissions with respect to 1990 levels to make space for the legitimate growth interests of the South. However, the legally binding portion of the text instead spoke of the *right to sustainable development* (UNFCCC 1992: Article 3).

Twenty-five years later, although the EU has reduced its emissions significantly with respect to 1990 levels, the US and Canada have had no legally binding quantitative target for between 1990 and 2020, while Russia, Japan, and New Zealand (in addition to the US and Canada) have no targets planned for between 2012 and 2020. This means that if the Paris Agreement's long-term objective is to be met, there is less 'space' for the global South to grow using fossil fuels. At the same time, the growth prospects of some Southern countries are increasingly being seen as the reason the above-listed recalcitrant industrialized countries refuse to take far-reaching action. In this case, it is unclear who is the free rider in international climate change negotiations—is it the US because it has not committed to national legally binding emission reduction targets since 1992, or is it China that is trying to catch-up? Furthermore, instead of phasing out fossil fuel facilities, many industrialized countries and their multinationals are actively searching for new sources of oil and gas, such as the US with its recent investments in fracking and Canada with its investments in oil sands. It appears that all countries want to further develop fossil fuel supplies as they see their development prospects directly linked to a cheap energy supply.

However, the Intergovernmental Panel on Climate Change (IPCC) clearly warns of the impending risks of climate change and signals the need for significant reductions in emissions (IPCC 2014). While there are some recalcitrant

industrialized countries, the EU has clearly committed to reducing its own emissions by 20 percent in 2020 and by 40 percent in 2030, and calls on all "developed countries as a group to reduce emissions by 80–95 percent by 2050 compared to 1990" (EU 2015). The signs are that countries like the EU member states, US, China, and India that have now ratified the Paris Agreement, and civil society are all effectively promoting a global phase-out of oil, gas, and other fossil fuels. This inevitably raises the risk of stranded resources and stranded assets.

2.4 *Stranded Resources and Stranded Assets*

A stranded resource is a resource that cannot be used because it is economically expensive to extract (Roberts 2006; Khalilpour and Karimi 2011) or lacks commercial viability (Attanasi and Freeman 2013). The extraction of stranded resources, such as fossil fuels or trees from forests, is limited by national or international regulations in order to combat their impacts on climate change and biodiversity. Conversely, a stranded asset is an asset that cannot be used. To do so first requires a contract or infrastructure in place to convert a resource into a marketable product (Crew and Kleindorfer 1999) that suddenly becomes obsolete because of market forces or changes in regulation, leading to economic losses (Generation Foundation 2013; Crew and Kleindorfer 1999). A stranded asset implies significantly more losses because infrastructures enabling the extraction, production, distribution, and consumption of natural resources must be prematurely written off or be rendered a liability (Robins 2014; Ansar et al. 2013; Caldecott and McDaniels 2014; Generation Foundation 2013). Historically, many regulated industries—such as public utilities (Roper et al. 2006) and the nuclear sector (Briddell 1996; Stern 2010)—have produced stranded assets when the technologies they use are no longer permitted.

Phasing-out a stranded asset is more expensive than phasing-out a stranded resource, so countries that argue in favor of the right to development must also realize that stranded assets can imply significant expenses in the long term. Since fossil fuels must be phased out to combat climate change, the question is whether countries should invest in assets with a lifetime of 80 years, that can then become stranded a few decades down the line because of future regulations?

There are three types of risks associated with this decision. The first is when the state invests and is left with stranded assets. The second is when the domestic private sector invests and sues the state for changing the rules. For example, private nuclear power companies in Germany are suing the state because of a decision made in 2011 to close down all nuclear power plants in the country in response to the Fukushima disaster in Japan (Bernasconi-Osterwalder

and Hoffmann 2012). While in theory the domestic private sector might have less power to sue the state in a developing country context—given that these companies often work in collaboration with the foreign private sector—there is a clear risk. In this context, the third risk is when the foreign private sector invests in the energy sector and is then protected from state policy by international investment laws and rules, which can lead to either policy freezing or to large sums of compensation paid to the investing company (Tienhaara 2010). For example, the Swedish energy company, Vattenfall, filed a claim against Germany at the World Bank's International Centre for Settlement of Investment Disputes (ICSID) claiming compensation (possibly over 700 million euro) for stranded assets attributed to the forced closure of its nuclear plants (Bernasconi-Osterwalder and Hoffmann 2012; see Table 9.2).

2.5 *Implications for the Geo-Ecological Risks of Oil*

This section concludes first that the global community has agreed on a legally binding 1.5–2°C long term objective, implying that fossil fuels and fossil fuel technologies are destined to become obsolete within this century (cf. Princen et al. (eds.) 2015).

Secondly, the question of who needs to phase out fossil fuels can be addressed in relation to the right to development, which suggests that industrialized countries (and their multinationals such as Shell and Tullow Oil) should make space for the legitimate development aspirations of the South, while also allowing developing countries (and, by extension, their multinationals) a delayed responsibility for phasing out fossil fuels. However, given the urgency of addressing climate change, there might be a limit to how long Southern countries can argue in favor of a delayed responsibility without running major climate impacts. Notable ecological risks include the degree to which water resources will affect the prospects for development in developing countries (Pahl-Wostl et al. (eds.) 2016). This is why the Climate Treaty (UNFCCC 1992) originally recognized the *Right to Sustainable Development*.

Thirdly, investors in new oil and gas infrastructure risk long-term lock-in and being left with stranded assets, whereas upgrading and capital improvement costs associated with older fossil fuel infrastructure depreciate over time regardless. In this case, industrialized countries are better positioned than the global South for phasing out fossil fuels, though developing countries also face opportunity costs associated with leaving fossil fuels unexploited. Crucially, however, fossil fuels are unequally distributed across space and the process of stranding creates unequal burdens on economic development between the global North and South. For example, in order to maintain global temperature

increases to within 2°C, the Middle East would have to abstain from extracting 40 percent of its oil reserves while China, India, and the oil-producing countries in Africa would have to forgo between 66 and 85 percent of their reserves (Jakob and Hilaire 2015). The lost revenue from stranding fossil fuel resources—that correspond to keeping a total of approximately 11,000 gigatons of carbon emissions underground (Jakob and Hilaire 2015)—will likely amount to more than USD 27 trillion (Carbon Tracker 2013). At the same time, the impacts of climate change are also calculated to be in the trillions of dollars.

These three implications for geo-ecological risk suggest that the right to development must be accompanied by: (a) an implementation process that actually improves development opportunities for countries and helps them avoid inappropriate investments that lead to lock-in or stranded assets; (b) a requirement to meet the energy security needs of people in the country; and (c) a mechanism to ensure countries' potential for development and ability to adapt despite the impacts of climate change. Under these conditions, the right to sustainable development as framed by the Climate Convention is possibly more appropriate.

3 Newcomers to Development: The Emerging Economy of China

3.1 *Introduction*

We now turn to assess oil politics in China, an emerging economy. China is a newcomer to 'development'. In the 1990s, China's income was relatively low, but in 2014, the country's population grew to more than 1.3 billion and its gross national income (GNI) was nearly USD 18 trillion. Despite the fact that China has high emissions today, the cumulative share of China over the period 1850–2002 has only been about 7.6 percent compared to 29.3 percent of the US. Although recent emissions are higher, any equitable sharing of emission responsibilities reduces the need for China to do as much as the US (Opschoor 2009; Baer et al. 2008; Dellink et al. 2009). While China should change its trajectory of emissions growth and achieve peak emissions soon, the US should have peaked a long time ago according to the leadership paradigm. Although China and other developing countries can legitimately require industrialized country polluters to take action first, the question is whether this is in fact a risky standpoint given current geo-ecological politics, the behavior of the US, and the growing risk of climate change. The following sections first discuss China's climate change policy (see 3.2) and its foreign policy and investments in oil (see 3.3) before drawing some conclusions.

3.2 *China's Climate Change Policy*

China's climate change policy over the last 25 years can be summed up as: (a) calling on industrialized countries to reduce their GHG emissions; (b) actively asserting its right to (sustainable) development; (c) reminding industrialized countries that policy change in developing countries is dependent on international technological and financial assistance under Article 4.7 of the Climate Convention; and (d) developing implicit policies domestically until 2001 and explicitly in the Tenth and subsequent Five Year Plans that take climate change into account by encouraging the adoption of measures with co-benefits, such as encouraging energy conservation and efficiency (Stensdal 2012:6; Lewis 2007; Richerzhagen and Scholz 2008; Gupta and Yip 2014). This policy has taken place against the background of the recent transition of China from a centrally planned economy to a socialist market economy.

In the last two decades, China has adopted a series of laws, plans, and policies on electricity, energy, the circular economy, and the environment. China's energy policy is governed by the State Economic and Trade Commission, while oil policies are executed by different state enterprises such as the China National Petroleum Corporation (CNPC), the China National Offshore Oil Corporation (CNOOC), and the China Petroleum and Chemical Corporation (Sinopec). China appears to have a two-pronged strategy—it not only invests in fossil fuels at home and abroad, it also heavily invests in renewable energy, thereby reducing the percentage of fossil fuels in its domestic energy mix (Jiang 2010). In 2016, China both signed and ratified the Paris Agreement and committed to a global 1.5–2°C goal. China's Intended Nationally Determined Contributions (INDC) to climate change commits the country to reducing its GHG emissions per unit of GDP by 60–65 percent in 2030 compared to 2005 levels (Government of China 2015). Toward this end, China is not only investing in a change in the supply but also in the demand side of energy by promoting 'low-carbon lives' and 'low-carbon days' (Gupta 2014).

3.3 *China's International Oil Companies Abroad*

As part of its overall energy and geopolitical strategies, China—through the CNPC—first began importing oil from Peru in 1973. Throughout the 1990s, China imported oil more aggressively as China's oil companies became increasingly global. Since 2010, the production and consumption levels of Chinese oil companies have exceeded those of all other producing regions individually (De Graaf 2014). This growth occurred in four stages: (a) the stage of importation (1970–1993); (b) the stage of hesitant foreign investment by Chinese national oil companies (NOCs) during which these companies often were welcomed (1993–2001); (c) the stage of WTO membership and an increased reliance on oil

imports and the need for oil security in a more pronounced strategy to encourage foreign investment in oil in the Tenth Five Year Plan (2001–2009). This was a complex period as host countries extract only as much oil and gas as they need for their economic goals. Therefore as oil prices rise, oil-rich countries were willing to level off extraction, a move that pushed Chinese companies to invest in industrialized countries; and finally, (d) the stage of leadership in global oil production, consumption, and refinement (2009 onward). Given this trajectory, we argue that with continued transnational oil extractive behaviors, China could be left with a fifth phase of falling oil prices, phase-out of oil demands, and stranded assets.

Because of its limited domestic sources, China has invested heavily in oil exploration abroad. China is now the world's second largest oil consumer and the largest oil importer. The bulk of Chinese oil investments in Iran and Iraq are service contracts that are profitable financially when the politics permit, but do not ensure China's energy security as these contracts do not permit oil exports to China (Dong 2014). China is also in the process of investing in the Saudi oil- and gasfields (Mo 2014), as well as having invested in Ghana since 2010 with a view on oil importation. However recent research shows that Chinese oil companies in Ghana often act independently of Chinese state interests and do not address the policy needs of Ghana. As Hardus (2014) notes, this "contradicts 'China threat' theories that portray China's activities abroad as part of a highly coordinated strategy to take control of global oil resources" (Hardus 2014: 608). Finally, China's investments in Sudan pursue joint ventures that have led to both profits and social investments in the country. These activities pose both local political risks—exemplified when Sudan bifurcated in 2012—as well as global political risks (Mo 2014).

China is also increasingly investing in Latin America, although its role there remains marginal. Besides investments in Peru, Venezuela, Ecuador, and Colombia, Sinopec is investing in Brazil and CNOOC in Argentina. Much of this oil does not reach China but is sold to the US (Hoogenboom 2014). Investments in Latin America run contextual risks because of social protests and political instability (Hongbo 2014; Hoogenboom 2014).

Lastly, China is not only investing in Southern countries but also in industrialized countries of the North—it is buying oil investments in UK, Japan, Canada, and investing in Russia and Kazakhstan (Cutler 2014). Although China is investing abroad, its international oil assets are ranked 98th out of the top 100 list of oil multinationals (Mo 2014).

From these global trends, we can see that Chinese oil companies seek to: (a) ensure the security of access to oil and gas resources that the country lacks (Holslag 2006; Moyo 2012); (b) provide such resources to other developing

country purchasers (McNally 2012) such as its risk service contracts signed in Iran and Iraq; (c) increase access to oil *and* improve their economic profits; (d) enhance profits only (cf. Dong 2014); and/or (e) improve access to technologies (Cutler 2014). As the example from Ghana illustrates, Chinese state-owned companies are to some extent controlled by the state while also gradually becoming autonomous of the state.

In light of these trends, the practice of oil extraction by Chinese multinationals has some curious characteristics. First, these companies tend to concentrate their activities in fragile states and have a higher tolerance for investing in situations of high political risk. This might be attributed to state subsidy and state policy (Dong 2014), but is also because as a newcomer with little prior experience, it is unable to enter more stable political contexts (Mo 2014). Secondly, many of the actual contracts do not permit oil exports to China, but imply only service delivery within the host country (Dong 2014). China's contracts with Iraq are buy-back contracts, while Iran maintains control of its resources as Chinese companies encounter different exploratory risks and extraction costs. From the moment of production, the Iranian government takes over but provides Chinese companies with minor compensation. In this case, Chinese companies are neither in charge nor shareholders in these companies—they make commercial gains but cannot export back to China. Thirdly, some contracts actually lead to selling the oil to third-party countries (including to industrialized nations), and do not really serve the energy security needs of China (Hoogenboom 2014). Fourthly, as De Graaf (2014) argues, many Chinese state companies do not necessarily compete with domestic and other oil companies as they often collaborate with or have investments in many of them.

3.4 *Implications for Geo-Ecological Risks*

In relation to the key theoretical storylines, we can argue that firstly, China's gross high emission level has put it in the limelight. The need for China to phase out fossil fuels is urgent because of its huge impact on global emissions levels. Secondly, clearly China has a right to sustainable development and energy security and therefore its oil companies have a right to exploit fossil fuel resources for profit. However, while the profits from these revenues appear to be channelling back to China for short-term development purposes, much of these investments are not actually contributing to China's energy security needs. Furthermore, exposure to the impacts of climate change might adversely affect China's long-term development prospects. Thirdly, new fossil fuel purchases and investments in other countries could actually lead to stranded assets either at home or in the host country and a reduction in

long-term returns on investment. These are some of the possible risks China faces.

4 Newcomers to Development: OPEC and Nigeria

4.1 *Introduction*

Alongside the emerging economies like China, the global South encompasses the oil-rich countries that have been exporting oil as a member of OPEC. OPEC, founded in 1960, aims "to coordinate and unify petroleum policies of its member countries and ensure stabilization of oil markets to secure an efficient, economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital for those investing in the petroleum industry" (Statute OPEC 2012, Article 2). OPEC currently has twelve member countries, Nigeria, that joined in 1971, among them. Today some OPEC members like Kuwait, Qatar, and the United Arab Emirates have incomes comparable to those of industrialized countries, that was not the case in the 1990s. According to estimates, more than 80 percent of the world's proven oil reserves are located in OPEC member countries, with the bulk of OPEC oil reserves in the Middle East, accounting for 66 percent of the OPEC total.[2] The economies of OPEC countries depend to a large extent on oil revenues, with oil accounting for 30 to 60 percent of GDP.

OPEC's role in the global climate negotiations has been controversial. Despite being among the richest of the developing countries, its members have long argued for compensation from industrialized nations if they are to phase out their oil production facilities under Articles 4.8 and 4.9 of the Climate Convention (Barnett and Dessai 2002; Gupta 2014). They have consistently opposed the adoption of emissions targets by industrialized countries, fearing that this will affect their oil income. At the same time, since industrialized countries have found alternative sources of oil and gas, their dependence on the Middle East has substantially decreased. Oil prices—that were expected to go up as a result of the rising demand in the emerging economies—are now at an all-time low as the market is saturated. Therefore questions still remain about whether OPEC will use its oil revenues to diversify its economies (Barnett 2008). This section focuses on Nigeria, an OPEC country with middle-income developing country status, first discussing its climate policy and then the situation with regard to oil investments in Nigeria.

2 Source: http://www.opec.org/opec_web/en/data_graphs/330.htm.

4.2 *Nigeria's Climate Change Policy*

Nigeria contributes minimally to GHG emissions, which in 2000 amounted to about 330,946 gigatons (FGN 2010). On a per capita basis, the country's emissions in 2011 were 0.5 metric tons (WB data, 2011), compared to 10.1 metric tons per capita in the Netherlands, 17 metric tons per capita in the United States, 6.7 metric tons per capita in China, and 1.7 metric tons per capita in India. Like other developing countries, Nigeria is highly susceptible to climate variability and change, and is already experiencing impacts such as desertification in the north and increased flooding in the Niger Delta, of which large parts are below sea level. Climate change is projected to result in a loss in GDP of between 6 percent and 30 percent by 2050 (FGN 2010). In response, the national policy on climate change focuses on building institutional capacity, promoting an enabling environment for climate change policy, participating in global initiatives, investing in climate change science and technology, promoting research and development, increasing public awareness, and mobilizing communities for climate change adaptation measures (FGN 2012).

In the run-up to the Paris Conference of the Parties (2015), the Nigerian government's Intended Nationally Determined Contributions (INDC) aimed at peaking national carbon emissions by 2030, reducing overall carbon intensity by 50 percent compared to 2005 levels, realizing 30 percent energy efficiency, and eliminating gas flaring and the capture of gas nationwide (Uwaegbulam 2015). Nigeria has yet to ratify the Paris Agreement.

4.3 *Nigeria and Oil*

The country discovered oil in commercial quantities in 1956, and has been an oil-producing nation since 1958, joining OPEC in 1971 (EIA 2015b). As of January 2015, Nigeria has an estimated 37 billion barrels of proven crude oil reserves, the second-largest amount in Africa after Libya. Nigeria also has an estimated 180 trillion cubic feet of proven natural gas reserves (as of 2015), making it the largest natural gas reserve holder in Africa and the ninth largest in the world. Unlike most OPEC member countries, the oil industry accounts for only 14 percent of Nigeria's GDP, but it constitutes 95 percent of export revenues and 75 percent of government revenues from taxes on and royalties paid by oil companies (EIA 2015b). However, because of low oil prices, Nigeria's fiscal buffers—in the form of savings in the Excess Crude Account and Sovereign Wealth Fund generated when oil revenues exceed budgeted revenues—declined from USD 11 billion at the end of 2012 to USD 3 billion at end of 2013 (IMF 2014).

Nigeria is strongly associated with the '*resource curse*' theory that posits that countries with large natural resource reserves grow more slowly than

resource-poor countries (Sachs and Warner 2001). One explanation is that natural resources crowd out other export-led activities that are drivers of growth, such as trading and manufacturing activities. Other drivers of growth that might be negatively impacted (such as by neglect) include education, entrepreneurial activity, or innovation (Sachs and Warner 2001). A second explanation is that natural resource rents are easily appropriated, which leads to government rent-seeking, corrupt behavior, a failure to focus on pro-growth policies, uneven wealth distribution, and the creation of 'predator states' (Auty 2000). The high levels of oil revenues also means governments do not need to levy high taxes, reducing the demand for government accountability (Corrigan 2014).

In Nigeria, within a decade of the inception of the oil industry, the previously dominant agricultural sector was nearly wiped out as the country's economy became solely dependent on oil (Nwajiaku-Dahou 2012). The contribution of oil revenue to total government revenue rose from 26.3 percent in 1970 to 82.1 percent in 1974 (Frynas 2001), and it has been sustaining government revenues since then. While receiving substantial oil rents in lieu of revenues from non-oil sources, the government (including political leaders and statutory agencies) has become corrupt, leading to poor governance, lack of accountability, and political conflict (Ite 2007). There are accounts of large sums of money being transferred abroad (Nwajiaku-Dahou 2012):

> [T]he former head of the Economic and Financial Crimes Commission (EFCC), Nuhu Ribadu, once likened oil theft—and the Nigerian state as a whole—to 'organised crime'. He claims that in 2003, 70 percent of the country's oil wealth was stolen or wasted, this apparently went down to 40 percent by 2005 (with reference to Watts 2007: 641).

Under the government of former President Goodluck Jonathan, some have noted that USD 20 billion of oil revenues have disappeared, with some remarking that, "poor institutional quality is the real legacy of oil in Nigeria" (Sala-i-Martin and Subramanian 2003:15). Even though large amounts of oil revenues are benefiting ethnic majorities that live in non-oil producing parts of the country, much remains in the hands of corrupt elites in the Niger Delta and contribute to the continued uneven development of the region (Obi 2010). International oil companies in particular are implicit in corruption (Nwajiaku-Dahou 2012).[3] According to the Society of Petroleum Engineers (SPE), Nigeria loses an estimated USD 9.1 billion per year to oil thieves, while pipeline

3 Kuijten, T. 2015, Interview 11, 14, 17, 21, 35 & 37.

vandalism and oil theft have led to a decline in oil production from 2.45 million barrels per day to 2.05 million barrels per day between 2010 and 2014.

Nigeria fails to benefit from its resources because of a lack of refining capacity. Nigeria currently imports refined products that are in turn heavily subsidized by the government and account for 30 percent of the total expenditure. Many argue that these subsidies fail to benefit the poorest in society (SDN 2015). Nigeria has high levels of poverty (around 35 percent) and high unemployment rates (24 percent) (WB 2013), with the Niger Delta being one of the most impoverished regions (Austine, Sunday & Raymond 2014; Obi 2010). Nigeria's Gini coefficient was 48.8 in 2013 (WB 2013) and its score on the Human Development Index is 0.504 (UNDP 2014a).

Muhammadu Buhari, president since May 2015, is intent on eradicating corruption, particularly in the oil and gas sectors (APC 2013, Section 2). Section 12 of the ruling party's manifesto concerns the oil industry, according to which the All Progressive Congress (APC) will "make the industry and Nigeria one of the world's cutting edge centers for clean oil and gas technologies" and develop the industry's capacity to provide more jobs, put an end to gas flaring, and promote optimal domestic gas utilization (APC 2013). The APC also intends to pass the *Petroleum Industry Bill* as soon as possible. This supports these goals and reasserts the government's bargaining power in the oil and gas sector. The Nigerian National Petroleum Corporation (NNPC) has already announced the need to renegotiate contracts with international oil companies to improve government revenues.

Practically, however, Nigeria faces continued dependence on oil revenues and this results in the lack of domestic energy security, the inability to effectively reutilize oil revenues to pursue a low carbon future, and the inability to address impacts from projected climate change. Interviewees argue that the political rhetoric over the last 30 years has been about diversifying the economy, but this goal has not been implemented.[4] Another respondent argued, "if the country would no longer engage in oil trade, the country would grind to a halt"[5] or "it would lead to civil war".[6] An energy transition would require support from the global community in the form of technology and knowledge transfer;[7] however, such support is unlikely. Nigeria needs to see to its own needs first and it should not be sacrificing its fate to a global problem it did not

4 Kuijten, T. 2015. Interview 13.

5 Kuijten, T. 2015. Interview 39.

6 Kuijten, T. 2015. Interview 45, 57.

7 Kuijten, T. 2015. Interview 23, 27, 39.

cause,[8] and other developing countries should do the same[9] as climate responsibility primarily lies with the large emitters of the US, Canada, and China.[10]

Most respondents did not perceive the risk of stranded assets as a serious threat for Nigeria.[11] The government expects that the demand for oil will remain for at least the next 30 years and that it has an established position in the global market (EIA 2015b). Even though it has lost the US market, it still sells to the EU and India (EIA 2015b). Should Nigeria at some point be faced with a global phase-out of the oil industry before its reserves run out, one respondent argues that Nigeria's strategy would be to increase the pace of extraction and use rather than to sell its oil infrastructure.[12]

Shell (Nigeria) is the IOC with the largest footprint in the country. SPDC (Shell Petroleum Development Company), a full subsidiary of Shell Nigeria, is the operator of a Joint Venture Agreement involving the Nigerian National Petroleum Corporation (NNPC), that holds 55 percent. Shell holds a further 30 percent, while Total and Agip hold minority shares of 10 percent and 5 percent respectively.[13]

Shell notes a commitment to addressing climate change (Shell 2014). Since 2009, Shell has invested around USD 1 billion in researching and developing new low carbon technologies, that include carbon capture and storage technologies, improving energy efficiency, and turning gas into a more efficient and clean fuel source (Shell 2014b; Shell 2014a). Shell advocates for a global price on carbon (BG Group plc et al. 2015), that is driven by profit and shareholder interests (Shell 2014a).[14] Shell recently announced a reorganization to cut costs and refrained from any more investment in a Canadian tar sand project (Shell Canada 2015), that is no longer viable because of the continuous low oil price (EIA 2015a). While Shell is well aware of the climate change problem, it thinks its investments in carbon capture and storage (CCS) and its response to the market price of oil is the way in which it can contribute.[15] The company rejects the stranded resources argument,[16] and notes that, as world population grows,

8 Kuijten, T. 2015. Interview 21.
9 Kuijten, T. 2015. Interview 9, 17, 19, 21, 28, 35 & 36.
10 Kuijten, T. 2015. Interview 17, 19, 21, 28, 35, 36.
11 Kuijten, T. 2015. Interview 19, 30, 32, 39, 42, 43, 45 & 58.
12 Kuijten, T. 2015. Interview 55.
13 Source: http://www.shell.com.ng/aboutshell/our-business/bus-nigeria/e-and-p/spdc.html.
14 Kuijten, T. 2015. Interview 7, 8, 10, 13, 15, 16, 21, 26, 30 & 48.
15 Kuijten, T. 2015. Interview 29.
16 Kuijten, T. 2015. Interview 29.

energy demand for development also grows (Van Beurden 2014). Nigeria's own population is expected to surpass that of the US and EU within a few decades.

Shell's position in Nigeria is highly contested as its environmental standards often do not meet international standards (UNEP 2011). For example, environmental degradation attributed to oil spills has led to the destruction of local livelihoods and general underdevelopment in the Niger Delta region. Communities have responded with protests and, in areas like Ogoniland, have resorted to communal violence to expel Shell (Obi 2010; Shell Nigeria 2015b; cf. Adunbi 2016). Although the security situation has generally improved, the sabotaging of pipelines continues. The National Oil Spill Detection and Response Agency (NOSDRA) reported more than 900 sabotage incidents last year along the 12,700 km pipelines belonging to local and international companies. Between 2007 and 2014, the NOSDRA recorded another 1,307 incidents of vandalism (SDN 2015). Respondents from communities dispute this number, arguing that oil spills are often incorrectly ascribed to sabotage instead of technical failure.[17]

Conflicts between Shell and local communities arise from the lack of job opportunities, lack of commitment by Shell employees to community development projects, failure to take community needs into account, and failure to provide for alternative sources of livelihoods after environmental impacts.[18] Shell notes that, "one of the most important ways in which we provide support is by producing energy that also allows economic development." However most of Nigeria's oil and gas is exported and, therefore, the lack of access to energy for the population at large remains a major barrier to Nigeria's economic development (Ibitoye and Adenikinju 2007; FGN 2012; FGN 2011).

Shell Nigeria contends that its main responsibility is paying tax and royalties to Nigeria. The company raises the question of whether domestic oil companies might take domestic interests to heart, more so than international ones. Nigeria is an interesting test case as the SPDC has been divesting onshore since 2010, selling off several oil-mining licenses allegedly because of a reorientation of strategy and the government encouraging growth of Nigerian companies in the upstream oil and gas sector. By the end of 2014, close to one-third of Nigeria's crude oil reserves were in the hands of indigenous independent companies.[19] Recently conducted preliminary research on the performance of domestic oil companies (SDN 2015) indicates that the pipeline security for domestic operations is better, but this might be simply because local communities know that

17 Kuijten T. 2015. Interview 15, 26, 27, 34, 35, 36, 3, 39, 45, 47, 57 & 63.

18 Kuijten, T. 2015. Interview 15, 19, 26, 27, 32, 34, 35, 37, 38 & 39.

19 Kuijten, T. 2015. Interview 20.

sabotaging will yield more disappointing results as domestic companies have smaller budgets (SDN 2015). The same research finds that domestic companies tend to have a greater understanding of the Niger Delta communities and a more proactive approach to engagement (SDN 2015).

These divestment trends are welcomed by the Department of Petroleum Resources—the regulatory arm of the Nigerian Ministry of Petroleum Resources—as a positive development for local capacity building,[20] but others express serious concerns. For example, some suggest that this is only a matter of 'fronting' as international companies remain in charge in an attempt to continue to operate out of sight from public scrutiny.[21] Some argue that international companies evade liability for unresolved environmental pollution, leaving it to domestic companies that do not have the financial resources to deal with such legacy issues.[22] Finally, others note that domestic companies do not have the expertise comparable to international companies, so they are likely to be operating according to less stringent standards. At the same time, however, domestic companies are more likely to be able to operate below the radar, out of sight of the global community,[23] unlike Shell that is affected by international exposure, exemplified by recent court cases in the UK (settled) and in The Hague (appeal on-going) about the liability of Shell in terms of damages caused by oil spills from its operations (Shell Nigeria 2013; 2015a).

4.4 *Implications for Geo-Ecological Risks*

In relation to our three theoretical storylines (see 2), we conclude firstly that Nigeria and other OPEC countries have long been under pressure from the international community to take action to reduce emissions. While these countries have asked for compensation for phasing out oil since 1992 under the Climate Convention, this has not been honored. Secondly, while Nigeria could claim that under its right to development it can continue to use this oil, empirical evidence shows that, while oil extraction has indeed contributed to its national income, it has not led to balanced patterns of development across the different sectors of the country and has made Nigeria an export economy as opposed to having met domestic energy security needs. Oil politics has not created the jobs expected, has exacerbated local conflict, and has worsened local pollution. This reduces the legitimacy of its right to development argument, especially as the resources have not improved Nigeria's broad adaptive

20 Kuijten, T. 2015. Interview 20.

21 Kuijten, T. 2015. Interview 22, 57.

22 Kuijten, T. 2015. Interview 9.

23 Kuijten, T. 2015. Interview 22.

capacity to address the severe potential climate change impacts on its rapidly growing population. Thirdly, however, Nigeria's aging oil infrastructure implies lower financial risks from stranded assets in the future.

5 Perspectives from Prospective Oil Producers: Kenya and Tullow Oil

5.1 *Introduction*

Apart from the emerging economies and OPEC countries, there are about 40 least developed countries (LDCs) and another 80 developing countries. The UN General Assembly established the LDCs group in 1971 to target previously neglected and poor countries, and was expected to make special efforts to engage them in international cooperation and development assistance. Most LDCs have high poverty rates and, as a result, are very vulnerable to the impacts of climate change. Since the 1990s, per capita and total GHG emissions in LDCs have been very low (although growing).

Some LDCs have recently discovered oil and gas resources and see them as a way to facilitate rapid economic development. For example, East Africa recently emerged as a surprising newcomer to the global oil and gas market, with oil discoveries in Kenya and Uganda and gas discoveries in Mozambique and Tanzania (KPMG 2014). While Mozambique, Uganda, and Tanzania fall into the low-income economy category (and have a LDC status), Kenya has recently transitioned to a lower middle-income status (as of 1 July 2015—World Bank 2013; 2015a; 2015b). The following section focuses on Kenya's climate-change policy followed by a discussion of its oil politics.

5.2 *Kenya's Climate-Change Policy*

Kenya's responsibility for causing climate change is negligible, representing approximately only 0.1 percent of the total global emissions.[24] Kenya's total GHG emissions—including land use change and forestry—are about 69.60 metric tons, while per capita emissions are estimated at 1.27 metric tons in 2012 (World Resource Institute 2015; European Commission 2015).[25] Despite Kenya's rising macroeconomic status (Odhiambo 2015), 43.37 percent of the population lives below the poverty line (below USD 1.25 per day) (UNDP 2014b).

24 Bos, K. 2014. Interview 3, 10, 11, 18, 23 & 29.

25 Data of the Kenyan government estimates Kenya's total GHG-emissions in 2010 at 73 MtCO2eq, from which about 75 percent come from land use (change), forestry, and agriculture (GOK 2015).

Even though Kenya's Human Development Index is estimated at 0.535 (UNDP 2014b), the country experiences high-income inequality—the Gini coefficient is estimated at 47.68 (UNDP 2014b)—and it faces persistent food insecurity (IFAD 2015; World Bank 2015c). Kenya is also extremely vulnerable to climate change (especially droughts and floods) and has low adaptive capacity (Government of Kenya (GOK) 2007, 2008). Kenya's economy is highly dependent on climate sensitive sectors such as tourism, livestock, forestry, and fisheries, meaning climate change can significantly alter economic development trajectories (GOK 2007, 2008). East Africa in general experiences a number of climate vulnerability 'hotspots', including arid and semi-arid rangelands and the Indian Ocean coastline (Thornton et al. 2009).

Kenya's Intended Nationally Determined Contribution (INDC) states that, "Kenya believes that the key factors in determining the fairness of a contribution [to globally reducing GHG-emissions] should include historical responsibility and respective capability to address climate change" (GOK 2015). The INDC also states that, "Kenya is determined to continue playing a leadership role in addressing climate change by communicating a fair and ambitious contribution" (GOK 2015), pledging to abate its GHG emissions by 30 percent by 2030. Nevertheless, implementation depends on international capital, technology, and capacity support, as over USD 40 billion is needed to realize its mitigation and adaptation contribution (GOK 2015). Kenya's mitigation efforts are currently underdeveloped because of a lack of prioritization,[26] deficient market incentives and funding,[27] and a lack of affordable technology.[28]

To achieve the objectives set forth in *Vision 2030*, Kenya will adopt a 'low carbon climate resilient development pathway' as envisaged in the *National Climate Change Action Plan* (NCCAP, GOK 2013) and the *National Climate Change Response Strategy* (NCCRS, GOK 2010a; GOK 2015). However, interviewees note that there is little to no connection between this low carbon vision and the current oil developments in the country.[29] Interviewees see the low carbon development path as an unrealistic perspective because fossil fuels will not be phased out soon and other issues relating to poverty, health, and education are often prioritized over climate change.[30]

Currently, Kenya's electricity generation is already one of the most sustainable in the world. Renewable energy accounts for some 80 percent, mostly

26 Bos, K. 2014. Interview 10 & 17.

27 Bos, K. 2014. Interview 17.

28 Bos, K. 2014. Interview 10.

29 Bos, K. 2014. Interview 16, 26 & 28.

30 Bos, K. 2014. Interview 3, 10, 18 & 29.

from hydroelectric sources that are susceptible to hydrological and climate variability and change (Kiplagat et al. 2011; GOK 2014). The country's renewable energy potential in solar, wind, and geothermal remains largely underdeveloped to the victim of inadequate domestic expertise and lack of investment funding (Awuor and Ouya 2014; GOK 2014; Kimuyu et al. 2012; Kollikho and Rivard 2013).[31] Therefore this sector requires support from the international community.[32]

5.3 *Kenya and Oil*

In 2012, Kenya became a prospective oil-producing country with the discovery of significant oil reserves around the South Lokichar Basin in the northwest of the country (KPMG 2014; EIA 2015c). Tullow Oil has led exploration in the area and estimates that production could increase to over 1 billion barrels of oil per year (Tullow Oil 2014a). As of 2015, oil production has yet to commence, but the government is already working on a renewed framework to govern the sector.

Oil discovery is celebrated in Kenya as a potential driver of prosperity,[33] as a 'resource for development,' injecting capital[34] as well as catalyzing industrial[35] and infrastructural development (Patey 2014).[36] New sources of fuel will also supply energy, spur rural electrification,[37] empower marginalized communities in the Turkana region,[38] provide employment,[39] and create trade and commercial opportunities.[40] New sources of wealth will enhance Kenya's energy independence and security, helping to reduce imports from the Middle East (Kiplagat et al. 2011).[41] It will also drive the goals set out in *Vision 2030* to transform Kenya into a newly industrializing middle-income country with a high quality life for all its citizens (GOK 2007).[42]

The issue of stranded resources and assets is not perceived as a real risk to Kenya's oil resources (cf. Nigeria). Stakeholders argue that Kenya should be

31 Bos, K. 2014. Interview 8 & 10.
32 Bos, K. 2014. Interview 8, 9 & 10.
33 Bos, K. 2014. Interview 7, 8, 13, 14 & 15.
34 Bos, K. 2014. Interview 13, 19 & 22.
35 Bos, K. 2014. Interview 14.
36 Bos, K. 2014. Interview 7, 17 & 34.
37 Bos, K. 2014. Interview 9, 14, 34.
38 Bos, K. 2014. Interview 17, 30 & 34.
39 Bos, K. 2014. Interview 17, 30 & 32.
40 Bos, K. 2014. Interview 17.
41 Bos, K. 2014. Interview 3.
42 Bos, K. 2014. Interview 14 & 7.

entitled to use its domestic resources as it needs to develop.[43] However, the exercise of its right to development also depends upon the global community in allowing Kenya and other developing countries to develop.[44] Kenyan interviewees have little trust in industrialized countries, a state deeply embedded in the Kenyan psyche and emerges from a long history of colonization, past aid structures, and contemporary market regulations.[45] Kenyans argue that the big emitters and producers must bear responsibility and make space for Kenya to develop and use its domestic fossil fuel resources.[46] Kenyan interviewees also pointed out that the majority of companies engaged in exploration activities in Kenya are from the industrialized countries.[47]

Whether prospective oil resources will catalyze equitable and sustainable development in Kenya remains questionable. Key challenges include achieving accountability;[48] the persistence of a lack of transparency, particularly in terms of contract transparency, revenue transparency, and the traceability of revenues (KCSPOG 2014);[49] the ineffective and currently low levels of public consultation and civil society participation, required by the Constitution (GOK 2010b);[50] a lack of adequate information-sharing with the public;[51] uncertain benefit sharing arrangements;[52] a lack of a clear revenue management vision (KCSPOG 2014);[53] and the low capacity of the National Environment Management Authority (NEMA) to safeguard the environment.[54] In particular, since the production-sharing contract between the government and companies, including Tullow, are confidential, this could pave the way for "lucrative legal benefits for firms" (KCSPOG 2014: 32).[55] There are also worries that Kenya could face a resource curse under which the petroleum industry might capture the economy, partly because of a recent drop in the tourist, horticulture, coffee, and tea sectors (KCSPOG 2014). Finally, since corruption prevails in other

43 Bos, K. 2014. Interview 9, 13, 18, 19, 25, 26, 29 & 33.
44 Bos, K. 2014. Interview 7 & 15.
45 Bos, K. 2014. Interview 11 & 15.
46 Bos, K. 2014. Interview 3.
47 Bos, K. 2014. Interview 12.
48 Bos, K. 2014. Interview 29.
49 Bos, K. 2014. Interview 20, 28, 29, 33 & 34.
50 Bos, K. 2014. Interview 24 & 28.
51 Bos, K. 2014. Interview 24, 27 & 28.
52 Bos, K. 2014. Interview 22, 16 & 20.
53 Bos, K. 2014. Interview 19, 21, 22, 26 & 28.
54 Bos, K. 2014. Interview 26, 27, 28 & 31.
55 Bos, K. 2014. Interview 27, 33 & 34.

sectors (KCSPOG 2014),[56] such behaviors could spill over into the oil sector[57] across the national and county levels (KCSPOG 2014).[58]

Much like the case in Nigeria, another important challenge for Kenya is the risk of oil-related conflict as the reserves are located in the already insecure, climate-vulnerable, and underdeveloped semi-arid Turkana region, dominated by rival pastoralist tribes with recurring instances of cattle-raiding[59] and local community tensions.[60] These conflicts escalated violently beginning in November 2013,[61] threatening the traditional lands and livelihoods of the Turkanas, who received limited compensation and lack a specified framework for local participation (KCSPOG 2014).

Tullow Oil, a UK-based company, is leading exploration activities in the South Lokichar Basin (Tullow Oil 2014a). The company "acknowledges the climate change science that demonstrates global warming is occurring' and future restrictions on GHG emissions" (Tullow Oil 2014c: 44–45), and recognizes its own role in contributing to global warming and foresees increasing future control over GHG emissions (Tullow Oil 2014c). As a result, the company is currently working on a strategy to reduce its own GHG emissions and acknowledges the risks of stranded resources (Tullow Oil 2014c). However, it argues that there will be a "continuing role for the conventional oil and gas industry for decades to come. Even if governments around the world take decisive action now, it would take years of investment to replace the installed base of assets consuming fossil fuel, at a time when energy demand is forecast to continue to grow significantly" (Tullow Oil 2014c).

The oil exploration market in Kenya is dominated by multinational oil companies such as Total, BG Group, Africa Oil Corporation, and the Anadarko Petroleum Corporation. The National Oil Corporation (NOC) is currently the only domestic company engaged in exploration (KCSPOG 2014), but it remains unclear how the operations and investments of the NOC are and will be financed from oil revenues. Kenyans worry that they might lose oil revenues since many IOCs active in Kenya use tax havens (Quinn and Ball 2013), such as in the case of Tullow's subsidiaries that are registered in the Netherlands (KCSPOG 2014). Kenya's Civil Society Platform on Oil and Gas fears that, "export under-invoicing will likely feature in the oil industry" and that NOCs might not

56 Bos, K. 2014. Interview 12, 13, 14, 17, 22, 28 & 29.

57 Bos, K. 2014. Interview 13.

58 Bos, K. 2014. Interview 13 & 26.

59 Bos, K. 2014. Interview 18, 32 & 34.

60 Bos, K. 2014. Interview 16, 29, 31, 32, 33 & 34.

61 Bos, K. 2014. Interview 16, 29, 31, 32 & 33.

work in the country's best interest as they operate in secrecy, out of the public eye and away from parliamentary controls, while working with corrupt governments (KCSOG 2014: 27–28).

5.4 *Implications for Geo-Ecological Risks*

In relation to three theoretical storylines (see 2), our first conclusion is that as Kenya's emissions are very low, the relative urgency for Kenya to phase out is probably low. This could be used as justification to argue that Kenya's right to development implies that it can and should become an oil producer. However, lessons from the Nigerian case suggest that the discovery of oil might not lead to the expected tax and other revenues, development benefits might not be evenly distributed spatially, and Kenya might end up using this oil for export and not prioritize domestic needs. Moreover, clearly Kenya is very vulnerable to climate change impacts. Thirdly, unlike Nigeria's aging oil infrastructure, Kenya's prospective investments will probably lead to more expensive stranded assets, especially if an entire oil-dependent infrastructure is created domestically.

6 Analysis: The Geo-Ecological Risks of Oil Transnationalism and Extraction for the Global South

There are no clear answers to the dilemmas countries face that arise from climate change and energy politics (Sovacool et al. 2016). However, there are clear risks for developing countries. Throughout this chapter we have argued that—under the Right to Development—industrialized countries must phase out fossil fuels, while the global South might continue to develop using fossil fuel resources. However, the global South's right to development is restricted since usage of fossil fuels must eventually be completely eliminated under the Paris Agreement (2015). Furthermore, this right to development is only valid if oil revenues are made available to governments to diversify and develop national economies on the basis of renewable energy. The example of Nigeria highlights how oil revenues have led to both the resource curse and exclusive dependence on oil and gas revenues, and this has contributed to reducing overall development prospects and promoting corruption. This undermines Nigeria's right to development argument. The example of Kenya shows that, despite the presence of international oil companies in spurring development, the actual financial benefits to local companies and communities could be negligible (and hampered even more by secretive contracts). A summary comparison of oil investments of China, Kenya, and Nigeria is found in Table 9.1.

TABLE 9.1 *Comparing national oil investments and their right to sustainable development*

	China	Nigeria	Kenya
Conributes to Development	Possibly	Partially in terms of income only, but leads to corruption and the 'resource curse'	Partially in terms of income only, but may lead to the 'resource curse'
Contributes to Energy Security	Possibly, although importation is often not allowed	Almost never as oil is mostly exported	Almost never as oil could be mostly exported
Contributes to Reducing Climate Change Vulnerability	Increases climate vulnerability		

A critical examination of the case studies shows that the right to development can only be justified if ecological and social impacts are also taken into account, and that the process is in line with more recent calls for the *Right to Sustainable Development*. This effectively limits investments in new oil and gas infrastructures across the board. As a result, as Chinese or other Southern oil companies continue to invest in transnational oil resources, these interventions become more difficult to justify according to either the right to development or sustainable development lenses. Finally, developing countries should be subjected to differential treatment since they are highly diverse in terms of both income and per capita emissions. Here one could argue that the right of Kenya is greater than that of Nigeria or China, but such a perspective is time-sensitive given the urgent need for action on climate change.

Bringing the diverse lessons from the different contexts and the disparate literatures together, we argue that, if a country in the global South elects to develop its fossil fuel resources into fossil fuel assets, it will encounter five broad categories of risks, with ecological risks reshaping the risks across all the other categories. Firstly, *ecological risks* include the direct impacts of climate change on these countries, including sea-level rise, change in rainfall patterns, melting glaciers, and rise in temperatures; impacts on local air and water pollution from extraction activities as experienced in Nigeria (this is less so in China as its extraction takes place abroad); and indirect ecological damage to the economy

that prejudices the availability of ecosystem services. Ecological risks also include the risks associated with the global community's imminent decision to translate the Paris Agreement (2015) into a phase-out of oil and gas resources, thereby incentivizing a complete structural transformation of national economies. Clearly, there is no guarantee that all the steps will be taken to make this happen in practice by countries but, given the amount of global attention paid to climate change over the last 25 years and the increasing number of extreme weather events with disastrous impacts on countries, this a strong likelihood.

Secondly, *social risks* include the impacts of climate change on public health, high in the countries where the oil extraction actually takes place; loss of employment opportunities for those trained for this sector and those whose jobs rely on fossil fuels, such as taxi-drivers; and political resistance leading to social unrest and the risk of sabotage.

Thirdly, *economic risks* include losses incurred by the state as a result of social impacts (such as health costs, loss of jobs, social unrest, and security costs); ecological impacts (such as climate impacts, cleaning up local water, and air pollution, and the costs of phase-out); institutional and legal impacts (such as costs of litigation and compensation associated with phasing-out oil and gas extraction or if countries have to compensate international companies for phasing-out fossil fuels); loss of resources to the state, loss of economic growth opportunities as production and consumption systems are locked into fossil fuel use; loss of shareholder value and investment opportunities, often sources of profit for pension funds and bank investment products; and the costs of not receiving assistance for adaptation or instead having to pay compensation for possible adaptation costs of others. Another economic risk is when oil companies buy existing oil companies or assets, they might be left liable for the costs associated with remediating past pollution caused by the purchased oil company.

Fourthly, *institutional and legal risks* include litigation and the need to compensate local companies when the state decides to phase-out; either policy freezing or international litigation and the need to compensate international companies for closing down their companies under bilateral investment treaties; or the hypothetical need to compensate other countries for the impacts caused by continued pollution.

Finally, *political risks* include the dangers of investing in unstable economies; the risk of nationalization or other forms of commercial interference; the risk of countries breaking up, as in the case of Chinese investments in Sudan; the risk of international sanctions actually preventing investment in the oil sector and suspension of existing contracts as in the case of Chinese investments in Iraq; and the risk of war leading to loss of resources when investing in geo-politically sensitive countries. A summary of the five categories of geo-ecological risks is found in Table 9.2. We have evaluated these risks qualitatively

based on the case studies, but we see these risks as hypotheses for further testing in these different countries.

TABLE 9.2 *Risks faced by the global south in oil investments*

Type	Risk	China/EE	Nigeria/ OPEC	Kenya/ MDC
Ecological Risks	Risks of climate change impacts	Moderate to high	High	High
	Pollution impacts on local ecosystems	Moderate	High	High
	Loss of ecosystem services	Moderate	High	High
	Risk of phase-out policy	High	High	High
Social Risks	Human health risks	Moderate	High	High
	Livelihood and employment risks	High	High	High
	Civil violence risks	High	High	High
Economic Risks	Loss of state financial resources	High	High	High
	Loss of employment opportunities	High	High	High
	Risk of lock-in	High	High	High
	Loss of shareholder value	High	High	High
	Risk of not receiving aid for adaptation	High	High	Low
	Indirect social, ecological, and institutional costs	Moderate	High	High
Institutional/ Legal Risks	Risks of litigation and compensation to local companies closed down	Low	Low	Low
	Policy freezing and international litigation and compensation to international companies	Low	Moderate	Moderate
	Risk of eventually having to compensate other countries for continued pollution	Moderate	Low	Low

Type	Risk	China/EE	Nigeria/ OPEC	Kenya/ MDC
Political Risks	Risks of nationalization of companies in other countries	Moderate	Low	Low
	Risks of war/civil conflict	Low	High	High
	Risks to sovereignty	Low	Moderate	Moderate
	International sanctions and other geopolitical risks	Moderate (for MNCs operating abroad)	Moderate	Low

In principle, the argument that the global South's cumulative per capita income and per capita emissions of GHGs are so low that it can continue to emit only holds as long as the global community—as a collective—can still emit GHGs. But, given that the global community has committed to stay within the 1.5–2oC target, the window for the South to claim its right to emissions is closing. This is in the interest not only of the global community, but also of developing countries that are especially vulnerable to climate impacts. Since China has ratified the Paris Agreement, it is legally bound by the Agreement. Although Kenya and Nigeria have not yet ratified the Agreement, they have adopted Intended Nationally Determined Contributions (INDC) and have also morally committed themselves to a fossil-fuel free future. However, for the sake of argument, let us assume that they stay outside the Paris Agreement, it is possible that these countries will be subject to future sanctions. Unlike the short-term nature of political trade-offs, the risks of stranded assets attributed to proactive climate change action are likely to be definitive and long-term.

Under these circumstances, China and its multinationals must reconsider whether it should support the purchase of fossil fuel investments in other countries for economic—as opposed to energy security—reasons. By buying up fossil fuel extraction facilities and resources that are considered risky investments in the North, China could end up with assets that might soon become stranded. Although this is a speculative argument, one can imagine that, if industrialized countries were suddenly to announce a phase-out of oil and gas, the value of all assets would decrease drastically. It is more likely that European and North American oil companies will sell their assets before such an announcement.

One illustrative example is the case of the chlorofluorocarbons (CFC). The Vienna Convention for the Protection of the Ozone Layer (1985) did not directly advocate the phase-out of CFCs. Instead, companies from industrialized countries sold their units to the global South. Subsequently, the Montreal Protocol on Ozone Depleting Substances (1989) completely phased out CFC production in the North and gave the South a grace period, but ultimately the South also had to phase-out production.

The situation will be different for OPEC countries. OPEC countries are simply using their existing oil fields (though in Nigeria the off-shore deep-water Bonga project continues to be expanded), thus they already face the problem of stranded assets. Every year that they can still extract implies an additional year of income. However, OPEC countries have failed to diversify their economies over the last 25 years despite their high oil revenues, and are unlikely to recoup resources as assistance for adaptation.

The scenarios will be different again for newcomers to oil resources, including Kenya, Uganda, and Ghana. Whereas in theory they might wish to exploit these resources, their use is time-limited. Consequently, these countries are not only exposed to the problem of stranded assets in the form of fossil fuel extraction and distribution networks, but also in terms of the infrastructure and technologies that use oil and gas *and* the legal risks associated with compensating local and foreign companies that invest in or use their oilfields. Finally, besides risks to countries, stranded assets also result in the loss of revenue if policy leads to closure of plants or non-implementation of contracts. This could subsequently lead to employee dissatisfaction; possible liability suits and the need to pay compensation to those who might suffer the impacts of climate change; and a fall in share prices leading to a collapse of the company.

While some argue that large western multinationals behave as if there is no end to oil in sight, there are in fact two possible scenarios: they might be doing this because of the inherent inertia within an oil company discouraging it to continue to take on new investments and its conviction that it is too big to fail, but this could pose a very big risk. Moreover, it might also be making only symbolic investments in new oil while secretly divesting its other holdings in order to recoup any resources that it can.

7 Conclusions: The Right to Development Revisited

This chapter has assessed whether investing in fossil fuels at home or abroad actually improves the energy, resource, and developmental security of developing countries. We find that, with the entry into force of the Paris Agreement and the adoption of the Sustainable Development Goals, the geo-ecological

risks associated with such investments could outweigh their actual gains. Countries and companies often offer counter-arguments saying that they do not see the end of the fossil fuel era approaching, and hence the above geo-ecological risks are purely speculative. However, we argue that the global oil markets are in crisis—prices have already fallen—so industrialized countries will want to sell their fossil fuel assets prior to phase-out mandates in order to extract some remaining sale value. Of course, there will be fluctuations in this sector, but there can be little doubt that fossil fuels are destined to become obsolete within this century, indeed earlier rather than later if climate change is to be limited to nominally safe levels.

Global campaigns for divestment have noted that more than 500 organizations with collective assets of more than USD 3.4 trillion have committed to partial to full divestment. This divestment trend is clear across Europe and North America. For example, the Rockefeller Foundation in the US is divesting from oil,[62] 19 cities in France have agreed to divest, and the Bank of England is also seriously considering divesting. Russia is planning to partly privatize its state oil companies in order to share the risks of oil income, while even Shell is planning to sell off USD 30 billion in assets.[63] In the global South, Saudi Arabia is planning to sell its oil resources to prepare for a non-fossil fuel world.[64] These examples increasingly show that fossil fuel and technologies dependent on it will soon become obsolete.

The opportunity costs and risks associated with leaving fossil fuels underground create three distinct challenges to global equity. These challenges have a significant influence on not just domestic fossil fuel policies in the global South, but also these countries' engagement with other fossil-fuel-producing countries and oil-extraction companies across the world. Firstly, unexploited fossil fuel resources are unequally distributed across space, so there must be globally accountable mechanisms to determine how lost revenues from stranding fossil fuels can be equitably shared across countries. Secondly, the needs and capabilities associated with extracting the remaining fossil fuels allowable under a 1.5–2oC scenario are also unequally distributed. Thirdly, to the extent that countries and companies invest in extractive infrastructure and technology to access these fossil fuels, they will run the risk of encountering stranded assets when the global community eventually decides to phase out these

62 Source: http://www.theguardian.com/environment/2014/sep/22/rockefeller-heirs-divest-fossil-fuels-climate-change.

63 Source: http://www.telegraph.co.uk/business/2016/03/11/shell-appoints-lazard-to-advise-30bn-asset-sale/.

64 Source: http://www.theguardian.com/business/2016/apr/01/saudi-arabia-plans-to-sell-state-oil-assets-to-create-2tn-wealth-fund.

resources. These three related inequities can be exacerbated by economic and geopolitical interests (Wolf and Tessman 2012) and create emerging paradoxes for global climate governance.

The case studies of China, Nigeria, and Kenya, and the subsequent synthetic assessment of geo-ecological risks associated with stranded fossil fuel assets all point to a need for a global approach to monitoring transnational transfers of wealth and technology between countries that are permitted to extract fossil fuels, countries that are stranding resources and foregoing revenue, and countries that continue to require fossil fuel imports to support development (Van de Graaf and Verbruggen 2015). This global mechanism should be designed to account for not only specific place- and space-based political risks, but should also include evaluations of ecological and economic risks. Furthermore, there is a need for a clearer delineation of fossil fuel extraction responsibilities (i.e., between developed countries, Southern countries, Western oil companies, and Southern oil companies) that take historical arguments of the right to (sustainable) development into account. The concomitant operational challenge is to design a global climate governance arrangement that compensates losers, is perceived as equitable by all parties, and can impose strict limits on the use of fossil fuels in the long term (Jakob and Hilaire 2015).

Having said this, no country will be the first to agree to phase out oil and gas and then try to sell its fossil fuel assets. A country will first try to get rid of its assets at the highest possible price and then move toward phase-out. Understanding this logic is critical for developing countries. The question to China is: Under what circumstance should it enter into fossil fuel markets? How should China minimize the risks associated with stranded assets? Likewise, the message to Kenya is: What are the different approaches to minimizing economic and ecological risks of stranded assets by abstaining from investing in fossil fuels while simultaneously promoting renewable energy? Finally, the message to the OPEC countries is: Diversify!