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Resources and international climate change policy gridlock

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Few other policy zones are as complex as the issue of climate change. If the more pessimistic projections of climate change doom are correct, then the failure to address the issue is likely to be catastrophic and irreversible. The Inter-governmental Panel on Climate Change has predicted the potential extinction of many species and that the existence of small-island and other vulnerable countries will be threatened if business-as-usual greenhouse gas emissions continue. Climate change is a transboundary problem and requires unprecedented levels of cooperation between states and serious and sustained responses from major emitters. However, the growing demand and consumption of natural resources for continued energy security and cornucopian economic growth have undermined the outcomes of international climate change negotiations. It is argued here that there is a strong connection between the major emitters' positions at United Nations' climate talks, their possessions, dependence and consumption of natural resources, and the continued undermining of international climate change policy for unsustainable growth. This paper assesses the resource politics of the US, China, India, Canada, Russia, and Saudi Arabia and their positions at climate talks to show the link between lack of climate change policy progress and the positions of these main players.

Keywords: resources; climate change policy; United States; China; India; Canada; Russia; Saudi Arabia

1. Introduction

The greatest failure of international climate change negotiations has been the lack of any binding targets for greenhouse gas (GHG) emissions reductions from the major emitters. The nonparticipation of the United States (US) and exclusion of major emerging economies, including China and India, has rendered the impacts of the Kyoto Protocol inconsequential. The pledges for reducing GHGs made in Copenhagen 2009 fell far short of maintaining the temperature below 2°C, a level deemed necessary to avoid potential climate catastrophes (IEA 2010b). The Kyoto Protocol's extension for a second commitment period at the Doha climate conference 2012 included only 15% of total global GHG emissions, well below what is required to limit temperature increases below 2°C relative to the pre-industrial age.

The Organization for Economic Cooperation and Development (OECD) environmental outlook reported that global GHG emissions have continued to rise, reaching an all-time high of 30.6 gigatonnes in 2010 despite the recent economic crisis (OECD 2012) By 2011, GHG emissions had further increased by 3% (Oliver et al. 2012) and in 2012, global GHG emissions hit another new record of 35.6 billion tonnes, a 2.6% increase from 2011 and 58% above 1990 levels (Kinver 2012). Further delay in abating GHG emissions and alleviating environmental pressures will impose significant costs, undermine growth and development, and run the risk of irreversible and potentially catastrophic changes in the future (IPCC 2007; Morales 2012; World Bank 2012).

The main culprit in regard to global climate change is carbon dioxide (CO_2), with its emissions rapidly increasing since the start of industrialization (NEAA 2012). The global CO_2 level has reached 400 per parts million (ppm) from the pre-industrial level of 275 ppm, adding to further increases in global temperature (NOAA 2013). Although there are still some uncertainties about the impacts and consequences of climate change, scientists have refined their understanding and now project that global warming of more than 2°C could be potentially dangerous (IPCC 2007; Hansen et al. 2008). The European Council (2005) adopted a 2°C temperature threshold as a target to limit anthropogenic warming, but recent research and analysis from a number of think tanks, including the National Aeronautics and Space Administration (NASA), suggest that humanity must aim for even lower levels of global temperature (Hansen et al. 2008). The governments of the world also agreed to limit global temperatures below 2°C by ratifying the United Nations Convention on Climate Change (UNFCCC) and adopting subsequent negotiating documents, although they are far from both imposing these ambitious pledges and achieving their goals. Recent research suggested that the window of limiting global temperature below 2°C is closing (IEA 2011, 2013) as emissions of GHGs have continued to rise.

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Climate change, being a transboundary problem, requires unprecedented levels of cooperation between states and, more importantly, serious and sustained responses from the major emitters (Pandey 2012). It is a complex challenge involving a wide range of issues such as the international system (state-centric framework); characteristic problems of climate change (scientific uncertainty/complexity, unequal adjustment costs, differing environmental values, and unknown time for impacts, which are not readily perceptible at present); the role of media (balanced but biased reporting giving greater prominence to a few skeptics in terms of climate science reporting); and procedural problems (large number of parties, a politically difficult problem to address, and lowest common denominator outcomes) of international climate change negotiations (Keohane & Victor 2010; Downie 2011; Victor 2011; Pandey 2012; Tubi et al. 2012). Dolsak (2001) argues that there are multiple factors such as "strong disagreement among scientists on the causes and severity of global climate change," the nature of the problem that "must be addressed at the global level," and that the "countries need to accept the limitations on their sovereignty" that stymie the making of climate change policy.

The International Energy Agency (IEA 2011) reports more than 80% of global total energy is still derived from fossil fuels. Renewables may have potential but they remain on the periphery in comparison with fossil fuel usage. To date, there are no reliable substitutes for fossil fuels and continued global economic growth based on fossil fuels undermines the expectations and outcomes of international climate change negotiations and policy to address climate change. Depledge and Yamin (2009, p. 451) have argued that "In any case, small emitters are not the countries that are currently slowing down the negotiations," but the major emitters. The national interests of the major emitters, deriving from either their resource abundance/dependence or resource consumption, posit significant obstacles to developing the required climate change policies.

Countries cooperate and adopt new institutions that restrain their behavior only if the net benefits of adoption – the differences between benefits and costs – are positive (Dolsak 2001). Victor (2001) has reasoned that few countries will do much to control emissions unless they are sure that their competitors will bear similar costs. Economic interests of governments are connected with modern energy services, which are crucial to a country's economic development and human well-being (IEA 2011). The growing energy demands for continued national economic growth require seamless exploitation of natural resources for the production and consumption of commodities. There is, then, we hypothesize, a strong connection between the major emitters' positions at climate talks, their possessions, their dependence on and consumption of natural resources, and the consequent undermining of international climate change policy. However, despite its promise and potential to affect climate change negotiations, few empirical studies have established the efficacy of a connection between resources and climate policy gridlock. This research aims to bridge this gap of scholarship between resource politics and countries' positions at climate negotiations.

In the sections below, this paper briefly examines the resource politics of fossil fuel possessions, dependence, and consumption in the US, China, India, Canada, Russia, and Saudi Arabia and assesses their respective positions on climate policy at international climate change negotiations, followed by a conclusion.

2. Method and resource overview

The countries selected for this study possess or/and export or/and consume the largest amounts of fossil fuels and they are the major global GHG emitters, which makes them dominant stakeholders in international climate talks. Although the European Union (EU) is one of the major emitters, this study does not include the EU as it "is widely acknowledged as the most energetic player in climate negotiations, where it has usually played a progressive role, despite serious setbacks in developing its own internal strategy" (Aarts & Janssen 2003). The quantitative data are derived and/or reproduced from the IEA, Energy Information Administration (EIA), Energy Delta Institute (EDI), and Statistical Review of World Energy (SRWG). The data present the selected countries' proven reserves, production, and levels of energy consumption. There are some inconsistencies in terms of the availability of the annual data in the context of total energy consumption by source. The US data cover the period 2002 to 2012, China's covers 1996 to 2009, and India's covers 2008 to 2011; Canada's cover 2006 to 2011, whereas Russia and Saudi Arabia's data cover 2009 and 2010. However, this limitation does not affect the study and its core argument of the resource politics involved in climate change policy making, because they provide the broad picture and further data in words and numbers from the IEA, EIA, and EDI compensate the gap. In terms of proven natural resources reserves and the world's primary energy consumers and emitters, the data are exactly of the same year. A robust means of data interpretation and analysis are observed for the discussion and conclusion of this study.

Figure 1 shows that the selected countries hold the world's largest proven natural resources while Figure 2 demonstrates that these countries have been the world's top energy consumers. Based on data from Figures 1 and 2, this study testifies the hypothesis generated above, with other relevant data presented for each of these countries.

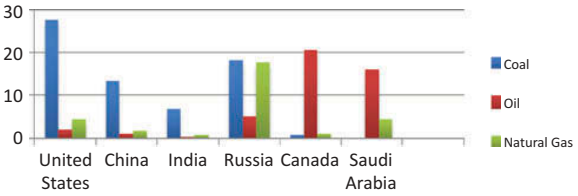

Figure 1. Proven natural resources reserves in 2012.

Note: Numbers 0 to 30 refer to percentages of total proven global reserves.
Source: © BP: Statistical Review of World Energy 2013 – Main Indicators. Reproduced by permission of Webassure.

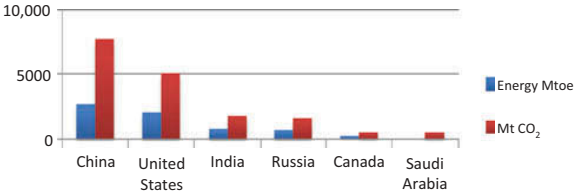

Figure 2. World's top energy consumers and CO_2 emitters in 2012.

Note: China ranks 1, the US 2, India 3, and Russia 4 by both energy and emissions measures. Canada ranks 9 by energy and 10 by CO_2 emissions whereas Saudi Arabia ranks 9 by CO_2 emissions.
Source: © Enerdata: Global Energy Statistical Year Book 2013 – Year Book. Reproduced by permission of Antonio Dellapelle.

2.1. *The US*

The US is the leading producer and consumer of world energy (EIA 1999, 2011). Figure 2 shows that the US was the second largest energy consumer in terms of total energy use in 2012, while Figure 1 shows that it possesses the largest amount of proven coal reserves in the world. It ranks seventh in per capita energy consumption after Canada and a number of other small countries. The commodities that have been produced elsewhere but consumed in the US have significantly reduced its energy consumption rate, leaving China as the foremost. The major energy sources in the US are oil, natural gas, and coal, and major consumers are residential and commercial buildings, industry, transportation, and electric power generators (EIA 2012a). Figure 3 illustrates US primary energy usage by source showing that in 2012, 36% came from oil, 26% from natural gas, 20% from coal, 9% from renewables, and 8% from nuclear power. The data show that fossil fuels have been the primary source of energy in the US for a considerable period of time. Nearly 82% of total energy consumed in 2012 was derived from fossil fuels compared with just 9% of renewables.

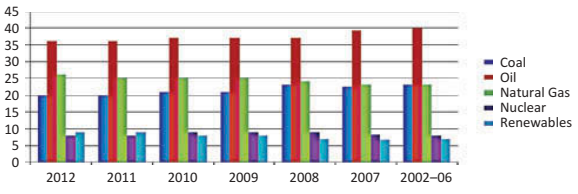

Figure 3. Total energy consumption in the US by source.

Note: Numbers 0 to 45 refer to percentage.
Source: US Energy Information Administration, International Statistics.

Energy consumption patterns in the US have changed throughout its history. Until the mid-to-late 1800s, the main energy source was wood; in the industrial age it shifted to water power and then coal became the dominant source of energy. In the middle of the twentieth century, nuclear power was added to the energy mix. However, fossil fuels – coal, natural gas, and oil – have become the dominant (average 87%) energy mix in recent decades. Together, these three fossil fuels have dominated the US energy mix for the last 100 years. The largest source of GHG emissions from human activities in the US is from burning fossil fuels for electricity, heat, and transportation (EIA 2013a). Research and development is driving the development of carbon capture and storage and second-generation biofuels. The IEA (IEA 2007) noted there was no federal government policy in place to establish a target for absolute reduction of CO_2 emissions. The resulting uncertainty risks are holding back investment in new technologies and may delay projects that are urgently required (IEA 2007). The EIA (EIA 2013a) reported that recent increases in the domestic production of petroleum liquids and natural gas had prompted a shift between the use of fossil fuels (largely from coal-fired to natural gas-fired power generation), but the predominance of these three energy sources is likely to continue into the future. Thus, fossil fuels have been the backbone of the US economy and lifestyle and its laggard position in international climate change negotiations, and thus account for its failure to provide leadership.

2.2. *China*

China, with the largest population in the world, has had a rapidly growing economy. Its average growth rate from 2000 to 2011 was 10%, but this declined to 7.8% for 2012. In achieving this rate of growth China has become the second largest importer and consumer of oil (EIA 2012c); China's oil consumption accounted for half the world's oil consumption in 2011. Figure 1 demonstrates that China is the largest emitter of CO_2, while Figure 2 illustrates that China is one of the largest possessors of coal. Figure 4 shows that coal is the largest source (70%) of total energy consumption in China, with oil comprising 19%. Although China has been making efforts to diversify its energy sources, hydroelectricity contributes just 6%, natural gas 4%, nuclear energy 1%, and renewables 0.3% of the total energy mix. Although natural gas usage is increasing in China, coal has been the backbone

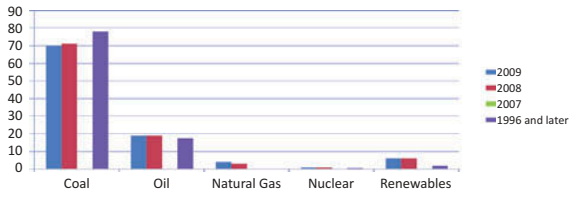

Figure 4. Total energy consumption in China, by source.

Note: Numbers 0 to 90 refer to percentage.
Source: US Energy Information Administration, International Statistics.

of the Chinese economy. The Chinese government's twelfth Five Year Plan has set a target to raise renewable energy consumption to 11.4 % of its total energy mix by 2015. However, its energy policies are dominated by the country's growing demand for more energy and reliance on imported oil, natural gas, and home-mined coal.

According to EIA (EIA 2012c), China held an estimated 128 billion tons of recoverable coal reserves in 2011, the third largest in the world behind the US and Russia, and equivalent to about 13% of the world's total coal reserves. Coal production rose by 9% from 3.5 billion tons in 2010 to over 3.8 in 2011, making China the largest coal producer in the world. There are 27 provinces in China that produce coal, with Shanxi and Inner Mongolia containing most of its easily accessible coal. China's overseas investment in oil production grew significantly as Chinese oil companies such as CNPC, Sinopec, CNOOC, and NOCs have expanded their overseas investment profile (EIA 2012c). It has finalized oil-for-loan deals with Russia, Kazakhstan, Venezuela, Brazil, Ecuador, Bolivia, Angola, and Ghana, and gas-for-loan agreements with Turkmenistan and Venezuela. The environmental impacts of the Chinese economy have global repercussions. Given its free ride in the Kyoto Protocol as a developing country and its continued insistence on free riding based on common but differentiated responsibilities (CBDR), historic responsibilities, and its national interest in protecting sovereignty, China is not showing leadership on the issue of international climate change.

2.3. *India*

India was the fourth largest energy consumer in the world after the US, China, and Russia in 2011, but as shown in Figure 2, it was third in 2012. Figure 1 demonstrates that India is also one of the largest sources of proven coal reserves. Its domestic production has stagnated in recent years, and Indian national oil companies increasingly purchase investment stakes in overseas oil fields (EIA 2013b). The country depends heavily on imported crude oil, mostly from the Middle East. Natural gas serves as a substitute for coal for electricity generation in India. The country began importing liquefied natural gas from Qatar in 2004 and increasingly relies on imports to meet domestic natural gas needs.

Indian primary energy consumption more than doubled between 1990 and 2011. According to the IEA (IEA 2012), India's per capita energy consumption remains lower than that of developed countries. The EIA (EIA 2013b) suggests that the Indian government may not be able to deliver secure supplies to meet demand because of fuel subsidies, increasing import dependency, and inconsistent energy sector reform. Some parts of the energy sector, such as coal production, remain relatively closed to private and foreign investment (EIA 2013b). Figure 5 shows that India's largest source of energy is coal – 41% in 2011 – whereas it was at 52% in 2010; and oil's share of the total energy mix was 23% in 2011 but it was at 30% in 2010. Natural gas, solid biomass, and waste comprise 31%, and nuclear and renewables contribute around 5%. This figure also shows that there has been no significant change in energy consumption in India by type. An IEA report in 2012 estimated that approximately 25% of the population still lacks basic access to electricity, while areas with an electricity supply suffer from rolling blackouts. The government is seeking to balance the need for electricity with environmental concerns but it does not want to compromise its economic growth. As India does not intend to distract its ongoing business-as-usual economic development, its position on international climate change negotiations is against cutting drastic emissions by major emitters from the developing world, but for reduction by the developed world.

2.4. *Canada*

Canada is one of the five largest energy producers in the world, and Figure 1 shows that it is one of the largest sources of oil globally. It has long been the principal source of US energy imports. Canada's tar sands and oil sands, known as unconventional deposits, are a significant contributor to growth of global liquid fuel supplies and comprise the vast majority of the country's proven oil

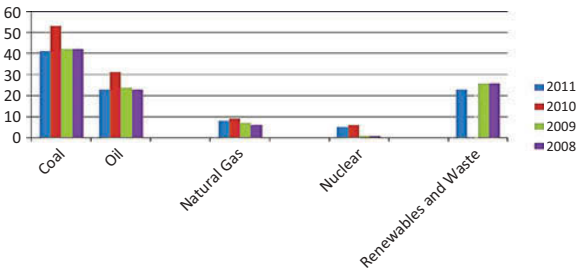

Figure 5. Total energy consumption in India, by source.

Note: Numbers 0 to 60 refer to percentage.
Source: US Energy Information Administration, International Statistics.

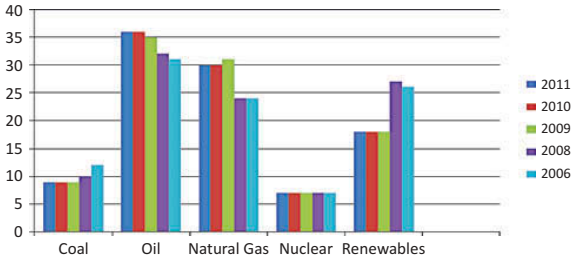

Figure 6. Total energy consumption in Canada, by source.

Note: Numbers 0 to 40 refer to percentage.
Source: US Energy Information Administration, International Statistics and Energy Delta Institute, the Netherlands.

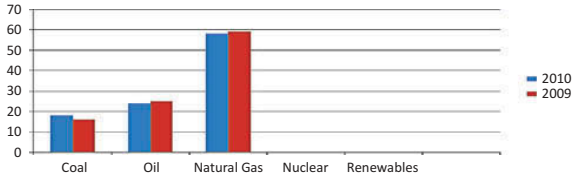

Figure 7. Total energy consumption in Russia, by source.

Note: Numbers 0 to 70 refer to percentage.
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reserves, which rank third globally (EIA 2012b). Canada is the world's third largest producer of dry natural gas and the source of most US natural gas imports (IEA 2010b), although most of its domestic power needs are met by hydroelectricity. Figure 6 illustrates that Canada's energy mix is comprised of oil at 36%, natural gas at 30%, and coal at 9%. Nuclear energy contributes 7% and renewables, including hydro-power, 18% of the total energy consumed in Canada. Figure 2 illustrates that Canada is the ninth largest energy consumer and tenth largest CO_2 emitter globally. Canada appears "greener" than other countries included in this study, but a different picture emerges when we look at its energy exports.

Canada is a net oil-exporting country and is the only IEA member country with a growing indigenous oil production; energy consumption in Canada is driven by sustained economic and population growth. Canada is an energy-intensive economy as a primary producer and exporter of vast quantities of primary and secondary energy. Conventional (crude oil, natural gas liquids, and condensate liquids) oil reserves in Canada are estimated at some 5.4 billion barrels, and the proven recoverable unconventional oil reserves from oil sands are estimated at 170.4 billion barrels (IEA 2010b). After declining from peak levels reached in the first half of the last decade, natural gas production increased in 2011 with the EIA (EIA 2012b) estimating that Canada produced 6.7 trillion cubic feet (tcf) of it in 2010 (18 billion cubic feet (bcf) per day), of which 5.9 tcf was marketed (5.4 tcf of which was dry natural gas), 730 bcf was reinjected, and 55 bcf was vented or flared. Canada has high stakes in the consumption and export of fossil fuel energy and it is noteworthy that it has not provided any leadership in international climate change negotiations. Withdrawal from the Kyoto Protocol is one of the testimonies of this trend.

2.5. *Russia*

Russia possesses "the world's largest natural gas reserves, the second largest coal reserves, and the ninth largest crude oil reserves" (EIA 2012d). It was the world's second largest producer of oil and natural gas in 2011. Figure 2 shows that Russia is the fourth largest energy consumer and CO_2 emitter in the world. According to Figure 1 and the EIA (EIA 2012d), Russia's proven oil reserves were 60 billion barrels as of January 2012 and it holds the world's largest natural gas reserves, with 1680 tcf, which account for about a quarter of total global proven reserves. Figure 7 shows that the primary source of Russian energy is natural gas which contributes 58% of the total energy mix, with oil contributing 24% and coal 18%. No contribution is recorded from renewables.

Although the energy intensity of Russian gross domestic product (GDP) has improved in recent years, energy use is still highly inefficient (EIA 2011). Russia's economic growth is directly associated with energy exports, given its high oil and gas production and the elevated prices for those commodities. Increasing global energy demands and the Russian energy policy choices affect not only the prospects of Russian economic development but also have major implications for global energy security and environmental sustainability. As one of the world's largest producers of fossil fuels, Russia is expected to play an important role in international climate change negotiations but, to date, its role in mitigating GHGs has been negative (see IISD 2013a).

2.6. *Saudi Arabia*

Saudi Arabia had the world's second largest proven conventional oil reserves in 2012 (EDI Date unknown; Figure 1) and production capacity in excess of 10 million barrels per day. It is the leading player in the Organization of Petroleum Exporting Countries (OPEC) and remains the only producer to hold significant "swing" (price, demand, and supply manipulation) capacity (IEA Date unknown). It has almost one-fifth of the world's proven oil reserves. It is the largest exporter of total petroleum liquids globally, and maintains the world's largest oil production (EDI Date unknown). According to EIA (EIA 2013b), Saudi Arabia has the world's fifth largest natural gas reserves, but natural gas production remains limited although it had proven

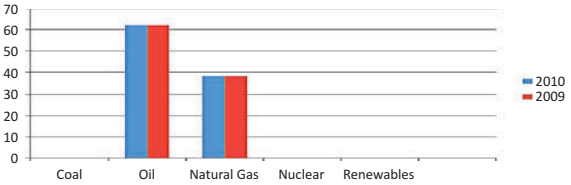

Figure 8. Total energy consumption in Saudi Arabia, by Source.

Notes: Numbers 0 to 70 refer to percentage.
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natural gas reserves of 288 trillion cubic feet at the end of 2012; 49% of Saudi Arabia's power generation depends on natural gas and the remaining portion comes from oil. According to OPEC's *Annual Statistic Bulletin* (2012), the Saudi economy depends heavily on petroleum revenues. Petroleum exports accounted for around 75% of government earnings and almost 90% of total Saudi's income from exports (EDI Date unknown). Figure 2 shows that Saudi Arabia ranks ninth globally according to CO_2 emissions, and Figure 8 illustrates that oil and natural gas are the primary sources of energy in that country.

The EIA (2013d) reports that Saudi Arabia exported an estimated 7.5 million barrels per day of crude oil in 2012. East Asia received an estimated 54% of Saudi Arabia's crude oil exports, as well as the majority of its refined petroleum product and natural gas liquids exports. It exported an average of 1.4 million barrels per day of total petroleum liquids to the US in the first 10 months of 2012 (up from 1.2 million barrels per day for calendar year 2011), accounting for 16% of total US crude oil imports. Other major importers in 2012 included Japan (1.1 million barrels per day), China (1.1 million barrels per day), South Korea (0.8 million barrels per day), and India (0.7 million barrels per day). Because export of fossil fuels is the primary source of its revenue, Saudi Arabia's role in international climate change negotiations has not supported the development of effective measures to address climate change (Aarts & Janssen 2003).

3. Discussion

Various commentators (Keohane & Victor 2010; Downie 2011; Victor 2011; Pandey 2012; Tubi et al. 2012) have argued that there is a wide range of issues that affect the positions of states in international climate change negotiations; this wide range of issues has been well documented above. The possession, import, export, production, and consumption of energy-related natural resources are significant in regard to energy security, economic growth, and environmental sustainability. The economic costs differ among countries due to differences in energy resources consumption, production, export, and import, which create political difficulties for major producers, consumers, and emitters in enacting climate-friendly policies. Dolsak (2001, p. 418) argues: "Countries relying predominantly on coal for meeting their energy demand may not be willing to adopt any action because coal combustion, in comparison with other fuels, emits more carbon per unit of energy. Major oil-producing countries also may not support mitigation efforts because this policy may reduce their revenues." Sprinz and Vaahtoranta (1994) argue that international environmental protection is favored by countries that suffer environmental degradation due to the economic activities mostly carried outside their territory. Small-island states and low-energy-dependent countries are more active in making strong climate change policies to arrest climate change, although they lack the resources and ability to mitigate GHGs because their emissions are insignificant (Betzold 2010). Observation of EU member states may explain this better, in that countries independent of fossil fuels are likely to pursue low-carbon economy by producing renewable energy. For example, Denmark, and Belgium are working toward more stringent climate change policies whereas Poland is at the bottom of the climate change performance index results prepared by Germanwatch, a not for profit organization (see Axelrod et al. 2011; Germanwatch 2013).

The US, China, India, Russia, Canada, and Saudi Arabia are the leading producers and consumers of world energy (IEA 2013; EDI Date unknown), and the adoption of any stringent climate policies is likely to compromise the significant growth in fossil fuel production. The US relies heavily on oil and gas in its economy and many US companies are hesitant to move away from fossil fuel use to renewables. Instead, the US fossil fuel industries and many Republicans lobby against climate change and highlight climate skepticism (Cohen & Miller 2012).The Clinton administration signed the Kyoto Protocol but the Senate did not ratify it. In 1997 the US Senate made it clear it was not looking for change. President Bush followed the direction of the Senate and announced that his government would not ratify the Kyoto Protocol. The Republicans have remained reluctant to introduce any significant regulations that could limit the use of fossil fuels. US negotiators, including President Barack Obama, have declined to take any binding quantified targets in the absence of the same limitations on developing countries. Obama failed to set a cap on US GHG emissions amid widespread opposition from fossil fuel industries (Chipma & Morales 2011).The greatest weakness of the Kyoto Protocol is that its GHG emissions targets include less than a third of global emissions as a result of nonparticipation by the US for its interest in fossil fuel-based economy and exclusion of large developing countries such as China and India (Bodansky 2009).

China ratified the Kyoto Protocol because it did not have to commit to any binding targets. Since 2006 China's

fossil fuels emissions have been larger than those from the US (NEAA Date unknown). With its population at more than 1 billion and many of them very poor, China's enormous economic growth will require more actions in arresting climate change. Although China is working towards renewable energy, it has consistently refused to accept any international climate agreement that limits its goal of economic development. Instead, China has argued that it should be allowed not to reduce its emissions based on the UNFCCC's principle of CBDR and historical responsibilities. Its strong objections to monitoring, reporting, and verification (MRV) and binding targets made the Copenhagen Accord a fragile agreement. As Pears (2010, p. 3) noted: "China played a very tough game, including insulting the U.S. President and other heads of state by sending their vice-foreign minister to the final negotiations with heads of state instead of their premier." Despite the Chinese government's goals of reducing energy use and CO_2 emissions in the twelfth five-year plan released in 2010 and its commitment in Cancun 2010, it upholds the principle of CBDR and leadership role of the developed countries (Hung & Tsai 2012). Although attention to climate change has recently increased among the Chinese leadership, it has not surpassed fossil fuel-based economic development as a policy priority (Lewis & Gallagher 2011).

India, like China, has been following the path of continued economic growth on fossil fuel-based energy structure. India had no binding targets from the Kyoto Protocol. With a population of 1.2 billion and many still living below the poverty line, it is important that India takes its population out of poverty, but it is also very important that development should not be at the expense of the environment. Although India has high and increasing levels of GHG emissions and it is both a victim of climate change and a major polluter, it has not provided any leadership in the climate change negotiations and has been reluctant to accept legally binding targets, arguing that economic development is its national priority. Jai Ram Ramesh, India's former Environment and Forests Minister, stated: "To say that climate change is the defining issue, no, there are bread-and-butter environmental issues" (Kissel 2010). India's central position in the international climate negotiations have always based on the principle of CBDR, which continues to insist that developed countries should act first and strongly to fix climate change (Senguputa 2012), and in this has been opposed by the US, Canada, Russia, and Australia (Pears 2010). China and India are pushing industrialized countries to take strong binding targets, arguing that climate agreement must recognize historical responsibility in consideration that any legally binding targets would not compromise their primarily fossil fuel-based economy (Chipma & Morales 2011).

Canada, one of the largest energy producers and suppliers in the world, has a high rate of energy consumption, much of which is exported. Although Canada ratified the Kyoto Protocol in 2002, the Canadian Conservative Prime Minister, Stephen Harper, has long opposed the Protocol and refused to implement it since he took office in 2006 by emphasizing the government's interest "in the sand-and the oil sands" (*Toronto Star* 13 December 2008). Canada formally withdrew from the Kyoto Protocol in 2011. Canada's Environment Minister, Peter Kent, defended the decision to withdrawal, arguing it would save the country US$14 billion in emissions trading permits and it would have had to buy such permits for not achieving its Kyoto targets. He said: "To meet the targets under Kyoto for 2012 would be the equivalent of either removing every car, truck, ATV, tractor, ambulance, police car and vehicle of every kind from Canadian roads or closing down the entire farming and agriculture sector and cutting heat to every home, office, hospital, factory and building in Canada" (*The Guardian* 2011). The Canadian government has consistently invested in expanding fossil fuel production to continue its economic growth, resulting in the protest in writing by 12 prominent Canadian scientists claiming that "building pipelines and developing fossil fuel production delays the transition to an economy that relies less on oil and gas" (Paris 2013).

Russia received unprecedented power after the US exit from the Kyoto Protocol in 2001. It took eight years of consultation time to ratify the Kyoto Protocol, not for environmental reasons but to win the support it needed for its membership of the World Trade Organization and for the economic advantage it would derive from Joint Implementation (JI) projects (Afionis & Chatzopoulos 2010). Although Russia ratified the Protocol, its position for post-Kyoto climate agreement has always been negative as its economic growth is mainly based on exporting fossil fuel energy. Afionis and Chatzopoulos (2010, p. 59) noted that: "Several analysts have concluded that economic growth and emissions are two sides of the same coin, as the current level of inefficiency in Russia could impede economic growth." It has refused to commit to the second round of Kyoto commitments or to any binding targets. As the fourth largest emitter of GHG emissions and one of the largest shareholders of known natural resources globally: "The Russian position has been conditioned by the limited public salience of climate change domestically and the government's primary concern with economic growth" by expanding its fossil fuel dependent economy (Andonova & Alexieva 2012, p. 615).

More than 90% of Saudi Arabia's economy depends on oil revenues, which contrasts with reducing GHGs by moving away from its conventional fossil fuel economy to renewables. It has a deep-rooted concern that if climate policies worked well, the primary source of its export-

driven fossil fuel-based economy would crumble (Mirchi et al. 2012). Aarts and Janssen (2003) note that oil is still king but that scientific and industrial developments are in the midst of transformation, and the major dilemma for Middle Eastern countries, including Saudi Arabia, is the future role of their primary source of income. As the lead nation of OPEC, Saudi Arabia has tried to block climate talks. In the lead-up to Copenhagen 2009, the lead negotiator for Saudi Arabia, Mohammad Al-Sabban, told the BBC that governments would not agree to a new treaty until the science was settled (Rigg 2012). The subsequent lack of agreement had absolutely nothing to do with the science, but Al-Sabban "himself has played no small part in obstructing the negotiations over the years, resorting to procedural delays when all else failed" (Rigg 2012). From 2010, the Saudi Arabian delegation to international climate talks has advocated that there be financial compensation for any loss it incurs if and when production declines after a new climate change agreement is reached (Vidal 2010). "The oil-producing giant has long played what many environmental groups call an obstructionist role in climate change negotiations. Saudis fear that reducing emissions will reduce oil exports and destroy their economy" (Siegel 2009). Indeed, "While climate change mitigation policies such as carbon tax and/or pricing, and R&D investment in renewable energy development can increase the long-term energy security for oil-importing countries, these policies can dramatically reduce the demand for fossil fuels which will reduce the vital revenues for oil-exporting countries" (Mirchi et al. 2012, p. 2646).

Together, the US, Canada, China, India, Russia, and Saudi Arabia account for between 60 and 70% of the world's total potential fossil fuel production and consumption (RFF 2003). Canada's departure from the Kyoto Protocol was related to fossil-fueled economic issues and linked with this country's tar sands (Lewis et al. 2012). Saudi Arabia has always stood against any legally binding agreement that would prevent it from exploiting its oil wells, which have long been the most important source of its national income (Siegel 2009; IMF 2012). The US, Russia, and China are the leading producers and consumers of world energy (EIA 1999, 2011; IEA 2011). India and China rely on coal as their primary source of commercial energy (IEA 2011; EIA 2013c). These countries saw that there was a trade-off between possession and consumption of fossil fuel reserves and economic development, between economic development and standards of living as society benefits, and between fossil fuel-dependent economic development and environmental degradation and sustainability (Dolsak 2001; Aarts & Janssen 2003). These countries have focused more on the first two trade-offs to escalate economic growth and upgrade the standards of living, articulating little attention to environmental degradation and climate change.

The ongoing debate on climate change negotiations through the establishment of the UNFCCC in 1992 to COP-18 to Bonn 2013 reveals that these countries have not taken international climate change negotiations seriously. India has made it clear that all negotiations need to keep the principles of the UNFCCC intact. At Doha, the Indian lead negotiator Mira Maharishi reinforced the message that "Equity is the gateway to ambition" (*Adopt Negotiator Project* 8 December 2012). China's climate envoy, Xie Zhenhua, said: "Climate change is due to unrestricted emissions by developed countries in their process of industrialization. Developing countries are the victims of climate change" (Hickman 2012). He further noted: "If we want to devise a long-term goal on emissions reduction by 2015, it is inevitable that we will have to find a way to allocate emissions. But these allocations must be equitable. It's very important therefore to talk about equity." This is the minimum prerequisite for developing countries, including China and India, for climate change negotiation, but the emerging reality is different. Although the concerns of addressing poverty are paramount, China and India have been major emitters and the ranks of their middle-class populations are swelling.

At Bonn 2013, India and China underscored that progress on a 2015 agreement would necessitate an increase in Annex I ambition and should be based on CBDR (IISD 2013b). In contrast, Todd Stern, Obama's special climate envoy said: "I will block this. I will shut this down" on the issue of the compensation mechanism (Harrabin 2012). At Bonn 2013, the US noted that it was important to address "mitigation through nationally determined contributions with rules that provide for transparent MRV but are flexible enough to be applicable to all," and suggested that there should be "further work on, among other things, rules that can be applicable to all and evolve with experiences gained" (IISD 2013b, p. 1) with Canada; and Russia and others declared they would not take quantified targets unless major emitters from developing countries were bound by quantified emissions targets. At the Warsaw Climate Conference 2013, a new lobby group was formed to stalemate the negotiations that included oil-rich countries such as Saudi Arabia and fossil fuel-dependent ones such as China and India (Harvey 2013).

4. Conclusions

Addressing global climate change challenge is complex. Scholars have postulated several reasons for the failure to address climate change. One of the most frustrating obstacles in climate negotiations is the national interests of the participating states and major emitters. The major emitters, which are the primary stakeholders of the climate talks, rely heavily on

fossil fuels – imports, exports, production, and consumption – for their seamless economic growth (IEA 2010b, 2012). Renewables contribute very little to the continuation of their national interests, so any effective climate change agreement means a reduction in emissions and a downsizing of the economic growth. This is the last thing on their priority list until reliable substitutes are readily available. Accordingly, this study argues that there is a strong connection between the major emitters' laggard positions in the United Nations' climate talks, their ownership and consumption of natural resources, and the continuous undermining of international climate change policy.

The reliance of the countries studied here on fossil fuels energy either as a producer, consumer, importer, or exporter, and their respective stance in climate negotiations, make it clear that there are no reliable alternative sources of energy to meet current demand. Resource-rich countries that depend on export revenue do not want innovative technologies that diminish their income, and resource-dependent countries do not have enough technological know-how to make the giant step in innovation that might make them independent of fossil fuels. Technological innovations could be the key to pulling these latter countries out of the fossil-fueled economy, but how this could be achieved is a question for future research that is beyond the scope of this paper; assessment is required of how well these countries are working together to advance technological developments to meet the challenge. Political leadership through the UNFCCC is perennially failing, so the hope is that leadership in the development and sharing of innovative carbon neutral technology will happen. The extent to which the world can progress toward the free flow of technologies from North to South, and South to South, is far from clear but such progress is essential. As things stand, there is limited potential for climate change agreements to be successful.

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