

The Elimination of Global Fossil fuel Subsidies and Public Choice Theory: Serving the Public Welfare through Private Interests

Jordan R. Israel – November 22, 2010 – International Environmental Law

I. Introduction

The international community can no longer ignore the distortive effects of fossil fuel energy subsidies, the market barriers to renewable energy technology created by the subsidies, and the dangerous habits encouraged by their existence. In the efforts to stem further climate change effects, phase-out and eventual elimination are crucial. Additionally, these efforts may have implications for the security of individual nations, as much of the world's oil supply comes from turbulent Persian Gulf states. This paper seeks to demonstrate the necessity of fossil fuel subsidy phase-out and eventual elimination; particularly, as it applies to the push toward replacing conventional power generation with renewable sources. Further, the staying power and rigidity of these subsidies is often explained through public choice theory. Using the tenets that support this theory, this examination will discuss some ways that the view of legislation, or international law-making, as a good flowing to the most politically cohesive and powerful groups can be surmounted, or even utilized.

This analysis will examine previous efforts and current international initiatives to evaluate the impacts of these harmful subsidies and how they may be removed. Also, the subsidies and some purported justifications for them will be explained, as well as the associated economic, environmental, and social effects. Additionally, this discussion will describe public choice theory and its application to the subsidy dilemma. Further, the recommendations of governmental and non-governmental entities to implement the phase-out initiative will be reviewed briefly. The analysis will evaluate some of these suggestions through a synopsis of

past attempts in Iran and Indonesia to curtail the overabundance of national subsidization. Finally, this examination will turn to possible avenues of international action and how the public choice theory dynamic can be utilized within each.

II. Fossil fuel Subsidies: A Framework for the Issue

The Group of 20 (G-20) nations convened in Toronto on June 26-27, 2010.¹ With the group's overarching objective of identifying key issues in the global economy, the topic of fossil fuel energy subsidies occupied a primary role in these most recent discussions. Prior to the Toronto summit, the group of nations gathered in Pittsburgh. It was there, that the group committed to "phase-out over the medium term inefficient fossil fuel subsidies," and requested an analysis of the scope of these subsidies.² This resulted in a joint report undertaken by the International Energy Agency, the Organization of the Petroleum Exporting Countries, the Organization for Economic Cooperation and Development, and the World Bank.³ Chief among their findings, these entities reported that fossil fuel consumption subsidies amounted to \$557 billion dollars in 2008.⁴ This was an increase from \$342 billion in 2007, and was 75% more than previously thought.⁵ Further, the analysis highlights that a price signal from the gradual elimination of these subsidies "would provide an incentive to use energy more efficiently, and trigger switching from fossil fuels to other fuels that emit less GHGs."⁶

¹ United Nations Environment Program, <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=628&ArticleID=6624&l=en> (last visited November 22, 2010).

² Chair of the G20, *Progress Report on the Economic and Financial Actions of the London, Washington, and Pittsburgh G20 Summits Prepared by Korea* at 17, (July 20, 2010), available at [http://www.g20.org/Documents 2010 /07/July_2010_G20_Progress_Grid.pdf](http://www.g20.org/Documents%2010%2007/July_2010_G20_Progress_Grid.pdf).

³ *Id.* at 18.

⁴ Office of the Chief Economist, International Energy Agency, *Energy Subsidies: Getting the Prices Right*, (June 7, 2010), available at http://www.iea.org/files/energy_subsidies.pdf.

⁵ Syed Rashid Husain, *Energy Subsidies Issue is Heating Up*, ARABNEWS.COM, July 4, 2010, <http://arabnews.com/economy/article78006.ece>.

⁶ Office of the Chief Economist, *supra* note 4.

The G-20 goals were in line with suggestions the United Nations Environment Programme (UNEP) had offered previously. In UNEP's estimation, fossil fuel subsidies act as a hurdle to sustainable development. International attention is "indispensable" in reducing "those subsidies that enhance fossil fuel use and thus act as a barrier to effective methods of combating climate change and achieving more sustainable development paths." In sum, phasing these subsidies out with a goal of elimination will force prices to reflect the true costs of fossil fuel production and consumption, which will discourage overconsumption and will allow cleaner sources of energy to compete with conventional fossil fuel power generation.⁷

This raises a question: If these subsidies are so inherently negative, how and why have they continued to persist? It is necessary to step back and examine subsidies broadly to better understand their particular application at present. The Organization for Economic Cooperation and Development (OECD) defines a subsidy as "any measure that keeps prices for consumers below market levels, or for producers above market levels or that reduces costs for consumers and producers."⁸ UNEP has identified some common practices employed by individual nations, and politicians within them, used to justify energy subsidies. For instance, social considerations underlie some energy subsidies. The rationale is that a society in its entirety benefits when all within it have access to energy. Thus, subsidies are often used as the means to this socially desirable end.⁹ Additionally, as UNEP realizes, few methods of energy production "have reached maturity without substantial public-sector investment."¹⁰ But in the case of fossil fuel based energy, this method has so predominated the energy field that subsidies used to eliminate

⁷ U.N. Env't Programme [UNEP], Div. of Technology, Indus. and Econ., *Reforming Energy Subsidies: Opportunities to Contribute to the Climate Change Agenda*, at 3, (2008) available at http://www.unep.org/pdf/pressreleases/reforming_energy_subsidies.pdf.

⁸ *Id.* at 11.

⁹ *Id.* at 22.

¹⁰ *Id.* at 23.

market barriers are no longer justifiable. Further grounds for subsidizing energy include: protection of domestic industry against international competition, spurring regional and/or rural development “in the interests of national and social cohesion,” reducing the need for imports, and raising national living standards.¹¹

These aims sound inspired and well-meaning, but in practical effect, the subsidies are largely ineffective in meeting the stated goal, and have unintended negative economic, social, and environmental effects. First, and most obviously, lowering end-use prices reduces incentives to conserve, leading to higher energy use. Also, a reduction in price that decreases the amount received by those producing energy undermines the return on investment. This in turn decreases the ability to invest in new technology and increases the reliance on out-dated, often more heavily polluting methods. However, direct subsidies to producers stimulate similarly negative behaviors. These subsidies tend to cushion the producers from market pressures, leading to a decreased incentive to minimize costs, which inevitably means less efficient operation and less investment in technology. Other negative impacts include the burdensome nature of subsidies on already strained government budgets, a need for imports due to increased energy use, and smuggling to nations with higher energy prices. Perhaps most importantly, these measures undermine other technologies that may prove more economically and environmentally beneficial.¹²

It is important to note that recent international discussions are not the first efforts to address fossil fuel energy subsidies. The General Agreement on Tariffs and Trade (GATT) Ministerial Conference took place in 1982. Discussion of energy subsidies arose due to the tendency of a dual pricing effect: lower prices to domestic industries than to the world market as

¹¹ *Id.*

¹² *Id.* at 15-16.

a whole.¹³ During the World Trade Organization (WTO) Uruguay Round (1986-1994), the United States and European Communities expressed concern over energy-exporting countries' restrictions on exports. Additionally, Australia led efforts to remove coal subsidies. While subsidies issues were on the multilateral trading system radar at this stage, it was a lower priority than the liberalization of agricultural subsidies. Further, major energy exporting nations were not part of the WTO.¹⁴ European nations and the United States have once again raised these concerns in the most recent Doha Development Round negotiations.¹⁵ The United Nations has long recognized the pitfalls of these subsidies as well. During the World Summit on Sustainable Development in 2002, energy subsidy reform was highlighted as a pressing issue.¹⁶ The underlining point of illuminating past attempts to address fossil fuel subsidy distortion and the persistence of these concerns to the present, is, in the words of one commentator, that there have been opportunities and efforts to address the problem, "but these efforts have not been backed by sufficient political capital or follow up."¹⁷

III. Public Choice Theory

The endurance of fossil fuel subsidies is often explained using public choice theory. There are two strands of this theory: one that treats the production of laws as a market process with legislation as the good, and one that views the law as the product of an individual firm. As it pertains to fossil fuel subsidies in this paper, the focus will lie upon laws as a market process. In its most condensed form, public choice theory would hold that energy subsidies have persisted

¹³ KERRY LANG, ET AL., INT'L INST. FOR SUSTAINABLE DEV., INCREASING THE MOMENTUM OF FOSSIL FUEL SUBSIDY REFORM: A ROADMAP FOR INTERNATIONAL COOPERATION 7 (2010), [HTTP://WWW.IISD.ORG/PDF/2010/INCREASING_MOMENTUM.PDF](http://www.iisd.org/pdf/2010/increasing_momentum.pdf).

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ U.N. Env't Programme [UNEP], Div. of Technology, Indus., and Econ., *Energy Subsidies: Lessons Learned in Assessing Their Impact and Designing Policy Reforms*, 4, UNEP/ETB/2003/1 (2003).

¹⁷ *Id.* at 8.

because of the commonality of interest among the relative few who receive energy subsidies. As they are few in number and united in general purpose, problems of collective action do not arise. On the opposite side of the issue, the relative impact on each member of society is so small as to barely be noticeable. The costs of organization, in terms of time and resources, far outweigh the actual return to the individual. Thus, there is little incentive to oppose. In sum, “as a result of general public inertia, then, the subsidy-seekers can maintain the subsidy indefinitely, to the disadvantage of society as a whole.”¹⁸

In the public choice model of legislation, interest groups will survive and prosper if the interests of each individual member are advanced by more than the costs of membership in the interest group.¹⁹ Such interests are advanced through favorable legislation, and under this theory, legislation is a good that flows to the interest group which will “derive the greatest value from it, regardless of overall social welfare.”²⁰ UNEP has identified this phenomenon as “political mobilization bias.” In essence, subsidy beneficiaries will have an interest in defending the subsidy, so long as the gain from it exceeds their share of the economic or environmental cost.²¹ Legislators examine the balance of political support among competing factions. If the resulting gain in political support from a given legislative action outweighs the losses from a rival group, then the action is desirable. In following, compromise may appear to be in the public interest, but is merely the most efficient means of maximizing political support. Thus, legislation is crafted to alienate as few groups as possible, while serving the most beneficial

¹⁸ DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 136 (FOUNDATION PRESS ED., 2007) (1998).

¹⁹ Jonathan R. Macey, *Public Choice: The Theory of the Firm and the Theory of Market Exchange*, 74 CORNELL L. REV. 43, 45 (1988).

²⁰ *Id.*

²¹ UNEP, *supra* note 7 at 152.

entities.²² Given the broad picture described above, certain groups and issues are more likely to spur legislative action. Successful groups tend to be small. This helps to overcome free-rider effects and concentrates the benefits of securing favorable legislation, which in turn creates increased incentive to seek the legislation.²³ It is not difficult to understand why garnering political support is easier for “the clear interests of a small, homogeneous group[s] than for the comparatively vague public interest.”²⁴ The political landscape under the public choice theory is one of interest groups and politicians bargaining “in a Coasean world;” meaning that “the only factor that will vary outcomes across ideological systems is the level of transaction costs faced by the parties.”²⁵

Although this perspective on the creation of laws takes a fairly cynical approach to governments and human nature, it does seem particularly applicable to the present state of fossil fuel subsidies on the international stage. Despite the voices speaking out against their harmful and distortive effects, they continue to expand. If the international community desires a workable solution, elements of public choice theory must be recognized and properly addressed. As this paper will discuss later, public choice theory may provide insights into how the international community can utilize interest groups to successfully implement a policy of fossil fuel phase-out and eventual elimination.

IV. The Phase-Out: Suggestions for Practical Effect

It is important to note that this push for subsidy phase-out focuses upon fossil fuel subsidies. There are an increasing number of desirable clean-energy subsidies, which stand to benefit from fossil fuel subsidy reform. The guiding principle is that subsidies should be

²² Macey, *supra* note 19 at 152.

²³ *Id.* at 48.

²⁴ UNEP, *supra* note 16 at 152.

²⁵ *Id.* at 49.

removed when the overall net effect is positive. It is determining the nature of the net effect that presents difficulty.²⁶ UNEP has described elements of a desirable subsidy. Subsidies should be well-targeted, meaning they flow only to those who are meant to receive them; efficient, meaning they do not undermine incentives to operate or consume efficiently; soundly-based on thorough cost-benefit analysis; practical from the standpoint of affordability; transparent, in terms of readily available information on money expended and to whom; and finally, limited in time, so as to prevent consumers and producers from becoming overly dependent.²⁷

Various international governmental and non-governmental entities have offered solutions for the reform of this highly contentious and potentially volatile arena. While the suggestions are very broad, there is general agreement on these approaches. The primary recommendation in structuring a reform measure is to do so in a gradual, programmatic fashion.²⁸ The wholesale elimination of energy subsidies is entirely impractical. The dramatic effect this would have on prices would lead to civil unrest and entire segments of national populations being unable to afford energy. Such unrest is evident in the case of Iran and Indonesia, as will be discussed later in this analysis. Also, the ability of poor and rural segments to purchase energy is a dominant concern in enacting subsidy reform, especially where the subsidies are touted for the purpose of facilitating the purchase among these sectors. Where impacts are expected to a country's poor and/or rural population, the introduction of compensating measures supporting real income is suggested. The success of this depends to a great extent upon the efficacy of the nation's already existing welfare system.²⁹ Further, UNEP emphasizes the need for clear communication of the benefits stemming from relinquishing dependency on fossil fuel subsidies, and encourages

²⁶ UNEP, *supra* note 7 at 24.

²⁷ *Id.* at 24-25.

²⁸ *Id.* at 27.

²⁹ UNEP, *supra* note 16 at 153.

politicians to involve energy industry stakeholders in order to counteract some of the inertia expected from subsidy reform.³⁰ Finally, these measures are to be promoted within a greater scheme of economic and social reform. Countries are encouraged to strive for a system that emphasizes the market over public measures, encourages investment, enacts a rational system of energy taxation, and addresses social issues through education and health reform rather than by subsidization.³¹

International efforts are sometimes criticized for their inadequacy. As the above guidelines demonstrate, the ideas are so broad as to have no real practical effect, and are mere theoretical suggestions without the corresponding political will. Leaders may make a commitment to convene for a meeting, but the goals discussed often do not descend from the realm of lofty aspirations into actual national practices. The same may not be said for many independent non-governmental organizations that make it their purpose to proffer advice for solving complex international matters. The International Institute for Sustainable Development (IISD), for instance, has put forth some solutions that are worthy of further examination.

At present, the G-20 nations are operationalizing, or at least paying lip service to, plans to implement subsidy phase-out on a nation-by-nation level. The present goal is to continue and increase independent research and analysis. In the next year, the IISD plan requires a strengthening of political leadership and bringing greater coordination to this research and analysis. Over the next one to three years, the goal is to include additional countries in the endeavor, to coordinate secretariat functions, and to build up a negotiating mandate. Eventually,

³⁰ *Id.* at 153-154.

³¹ UNEP, *supra* note 7 at 28-29.

this will all lead to a negotiated agreement on fossil fuel subsidy reform, with a dedicated secretariat in an existing or new organization, and ultimately, a clear mandate.³²

The structure of change is a contentious and hard-fought debate. The IISD identifies two potential international organizations as those best suited for guiding fossil fuel subsidy reform: the United Nations Framework Convention on Climate Change (UNFCCC) and the World Trade Organization (WTO).³³ Subsidy reform is mentioned in the text of the UNFCCC's Kyoto Protocol, providing *lex specialis*, although concerted efforts in this direction have yet to be made. Further, the WTO has established subsidy disciplines through its Agreement on Subsidies and Countervailing Measures.³⁴ These suggestions will be discussed more at length later in this analysis.

V. Prior Attempts to Reform

Recent history has provided examples of attempts to relinquish dependence on energy subsidies at the national level. Iran is an example of poorly conceived government intervention. Although it is a world leader in crude oil production, gasoline is heavily subsidized. These measures have reduced the profitability of industry in Iran, which has impacted the growth of GDP and the country's standard of living.³⁵ In a 2003 UNEP report, Iran was discredited with using energy inefficiently, maintaining subsidies that were a major burden on public finance, and facilitating continued poor performance in the energy sector.³⁶ With some intent to improve its energy infrastructure and undo these negative side effects of subsidization, the Iranian government launched a drastic plan to ration gasoline and raise prices of gasoline purchased

³² IISD, *supra* note 13 at 3.

³³ *Id.* at 1.

³⁴ *Id.*

³⁵ Iran in Facts and Figures, BBC News, March 10, 2008, http://news.bbc.co.uk/2/hi/middle_east/7279003.stm.

³⁶ UNEP, *supra* note 16 at 13.

above the rationed level. With UNEP's suggestion to gradually and programmatically eliminate wasteful subsidies in mind, looking back on Iran's 2007 fuel rationing fully demonstrates the danger of a rapid transition.

Iran's president, Mahmoud Ahmadinejad, was elected on a platform of bringing income from the nation's oil to each household.³⁷ In 2007, Iran imported 40% of its gasoline to make up for the shortcomings of an outdated refining industry, despite being the world's fifth largest oil exporter.³⁸ Unsurprisingly, investors were deterred from involvement with the industry. The Iranian government was purchasing gasoline for in excess of \$2.00 per gallon, and selling it to its citizens for \$.34 per gallon.³⁹ Rejecting a decision of its parliament to simply increase the cost, Ahmadinejad opted for a plan to both raise costs and ration the amount available for each privately owned vehicle. The price was raised \$.25 per gallon and citizens were allotted 26 gallons per month. Iranian officials expected a savings of \$100 billion in the next decade.⁴⁰

The public outcry over this policy was a perfect example of poorly developed subsidy reform. Rioting was the initial response, with reports of citizens attacking gas stations.⁴¹ The response was so widespread that armed guards were positioned at fueling stations.⁴² Also, fuel was reportedly sold on the black market due to rationing.⁴³ Fuel smuggling facilitated the existing trade in guns and drugs.⁴⁴ Rationing was seen as another level of bureaucracy in a

³⁷ Nazila Fathi, *Unrest Grows Amidst Gas Rationing In Iran*, NYTIMES.COM, Jan. 29, 2007, http://www.nytimes.com/2007/06/29/world/middleeast/29iran.html?_r=1.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ Mike Shuster, *Iran Adjusts to Gas Rations; Will Economy Survive?*, NPR.ORG, July 19, 2007, <http://www.npr.org/templates/story/story.php?storyId=12103643>.

⁴¹ NYTIMES.com, *supra* note 37.

⁴² NPR.ORG, *supra* note 40.

⁴³ NYTIMES.COM, *supra* note 37.

⁴⁴ NPR.ORG, *supra* note 40.

government already tainted with corruption.⁴⁵ Despite this, three weeks after rations were in place, traffic was cut dramatically and the air was noticeably clearer, as the government claimed they had saved millions of dollars.⁴⁶

The citizens of Iran agreed that something needed to be done about their energy subsidies. But the route chosen by the nation made life difficult for ordinary Iranians.⁴⁷ Iran continues to enact reform to its energy policy with questionable intentions and questionable results. With a continued determination to cut energy subsidies, some critics believe Ahmadinejad will create a slush fund, which will be used as a political tool to appease voters and political allies.⁴⁸ Ahmadinejad believes the subsidies disproportionately benefit the wealthy and with this basis, advocates monthly cash disbursements to the population's lower-income sectors to maintain and bolster their standard of living, as subsidy reform pushes prices upward. However, a lack of government transparency as to how the funds will be used leads many to fear rising inflation will accompany the government's efforts.⁴⁹

The example of Iran confirms that social considerations often underlie ultimately harmful subsidies. Here, the government believed keeping gasoline far below fair market prices would afford everyone access to energy, which would raise national living standards. Regardless of the intention, the subsidization had precisely the effects anticipated by UNEP. The low end prices led to increased consumption and a national mindset that their vast oil resources made cheap

⁴⁵ Steve Zind, *Iranians Upset About Gas Rationing*, NPR.ORG, July 13, 2007, <http://www.npr.org/templates/story/story.php?storyId=11945351&ps=rs>.

⁴⁶ NPR.ORG, *supra* note 40.

⁴⁷ NPR.ORG, *supra* note 45.

⁴⁸ Roshanak Taghavi, *Why Iran's Ahmadinejad is Pushing to Cut Popular Government Subsidies*, CSMONITOR.COM, Apr. 30, 2010, <http://www.csmonitor.com/World/Middle-East/2010/0430/Why-Iran-s-Ahmadinejad-is-pushing-to-cut-popular-government-subsidies>.

⁴⁹ *Id.*

gasoline a basic, fundamental right.⁵⁰ Further, the fuel refining industry was forced to rely on outdated technology, keeping gas prices low created an immense burden on government budgets, Iran was forced to import fuel, and technology was undermined. As mentioned, Iran did not gradually and programmatically reduce subsidies. This dramatic departure from the energy status quo created social and economic instability. The Iranian government did introduce compensating measures for the poor, but the lack of governmental transparency created economic uncertainty and the risk of inflation. Further, these changes were discussed in context of a greater scheme of economic and social reforms, including cutting subsidies in other areas. However, the question remains as to whether Ahmadinejad's purpose was actually to create meaningful reform, or whether it was to soften the blow of impending international sanctions for its nuclear program. Additionally, this case study shows that subsidy reform may operate more beneficially when it assumes that current rates of consumption will continue in the short-term.

Indonesia is another example of a subsidy reform policy resulting in national upheaval. This country employed a mix of consumer subsidies, resulting in under-pricing, and producer subsidies garnered from tax revenues. As in Iran, these subsidies were introduced on a platform of bolstering standards of living, especially for the nation's poorest.⁵¹ Essentially, Indonesia was embroiled in the Asian financial crisis of the late 1990s. On October 31, 2007, the Indonesian government submitted a Letter of Intent to the International Monetary Fund (IMF), outlining economic measures they would undertake to overcome their financial difficulties, were they able to obtain IMF credit.⁵² In turn, the IMF authorized \$7.3 billion to support the Indonesian economic adjustment program. By January of 1998, the rupiah had depreciated rapidly and IMF

⁵⁰ NYTIMES.COM, *supra* note 37.

⁵¹ Anabelle Mourougane, *Phasing Out Energy Subsidies in Indonesia*, 12 (Org. of Econ. Cooperation & Dev., Working Paper No. 808, (2010).

⁵² Milena Makich-Macias, *The Effect of the International Monetary Fund Bailout on Emerging Growth Countries*, 26 BROOK. J. INT'L L. 1755, 1771 (2001).

negotiators went to Indonesia to discuss the acceleration of reforms, including drastic cuts to subsidies.⁵³ Indonesian President Suharto increased the price for gasoline and kerosene under pressure from the IMF, and on May 15, 1998, students took to the streets to protest the high energy prices. These events culminated in Indonesian troops killing six university students at a peaceful protest.⁵⁴ President Suharto canceled the decrees that led to the riots. This rapid energy policy transition is credited with the ouster of the Suharto regime.⁵⁵

Indonesia is evidence that “political stability and reform momentum go hand in hand.”⁵⁶ Another objective of the IMF was the elimination of “sweetheart” business arrangements that “distorted Indonesia’s real economy.”⁵⁷ The role of bribery in Indonesia has been described as “institutionalized.”⁵⁸ This lack of transparency, like in Iran, contributed to the uncertainty of the economic climate in the wake of drastic subsidy reform measures. Parsing apart these examples will aid international efforts in avoiding the pitfalls of fossil fuel subsidy reform that places too much emphasis on private self-interest maximization to the complete detriment of the public welfare.

VI. The World Trade Organization, The United Nations Framework Convention on Climate Change, and Other International Arenas for Reform

It is imperative that developed countries not only play a role in shaping an international solution to the phase-out and eventual elimination of energy subsidies, but that they fully implement and adhere it on a national scale. This is especially true for the United States, which has often been the international hold-out on agreements; most notably, the Kyoto Protocol.

⁵³ *Id.* at 1772.

⁵⁴ PBS.org, Frontline: Timeline of the Crash, <http://www.pbs.org/wgbh/pages/frontline/shows/crash/etc/cron.html>. (last visited November 22, 2010).

⁵⁵ Annabelle Mourougane, *supra* note 51 at 7.

⁵⁶ Milena Makich-Macias, *supra* note 52 at 1774.

⁵⁷ *Id.*

⁵⁸ Charles Darwent, *Sullied Hands and Sweetheart Deals: Corrupt Business Practices In Asia*, MARKET HORIZONS, Apr. 1996, available at http://findarticles.com/p/articles/mi_m4070/is_n112/ai_18412627/.

Seven out of ten of the largest industrial corporations in the United States are either oil or auto companies.⁵⁹ Further, the U.S. government provides annual subsidies to the oil industry, which reportedly amounted to \$15.6 billion provided to worldwide projects in 2007.⁶⁰ As for the cost of gasoline, it is taxed at about half the rate of other goods. This translates to roughly 3% versus 6%.⁶¹ An international agreement without developed countries like the U.S. and the corporations within, who are responsible for this global market failure, would be a mere ideal without any measurable result.

It may be said that multinational corporations treat the environment as both an infinite resource and an infinite sink. Multinational corporations and the rest of the global business world must begin to understand that there is not enough natural capital to sustain present international development trends, rendering two options available for their business longevity and the world's environmental longevity: either the global population is forced to accept a reduction in material standards of living, or the global economy moves towards increased material and energy efficiency.⁶² The eventual elimination of global fossil fuel energy subsidies may be the most important step on the path to this undeniably necessary efficiency. Ignoring the social, environmental, and economic effects of perverse subsidies results in an unsustainable system of free trade.⁶³ With this in mind, the appropriate avenue to address a global system in need of internalizing these externalities may be the WTO.

⁵⁹ Donald O. Mayer, *Corporate Governance in the Cause of Peace: An Environmental Perspective*, 25 VAND. J. TRANSNAT'L L. 585, 610 (2002).

⁶⁰ The Institute for Southern Studies, <http://www.southernstudies.org/2010/05/oil-industry-subsidies-a-gusher-of-another-kind.html> (last visited November 22, 2010).

⁶¹ Mayer, *supra* note 59 at 606.

⁶² *Id.* at 617.

⁶³ *Id.* at 652.

It is helpful to classify the need for subsidy reform into major categories: energy security purposes, climate concerns, improvement of a nation's finances, and competitiveness of energy-related goods and services. The need for energy security appeals to a broad base and is not riddled by the divisions that exist in regard to climate science. Energy security may be defined as when a nation "can reliably, economically, environmentally, and safely deliver energy in quantities sufficient to support growing economy and defense needs."⁶⁴ Despite a history of non-involvement in energy trade issues, the WTO holds great promise as a forum for an international solution to fossil fuel subsidies. This is predominantly due to the fact that the WTO framework already has reporting and surveillance mechanisms under the Agreement on Subsidies and Countervailing Measures. Additionally, WTO law is enforced through its Dispute Settlement Body.⁶⁵

The Agreement on Subsidies and Countervailing Measures, or SCM Agreement, disciplines the use of subsidies, and regulates what a country may do to counter the effect of a given subsidy.⁶⁶ The United States and Europe have pushed to extend these disciplines to dual pricing schemes.⁶⁷ Dual pricing, briefly mentioned earlier, is exemplified when a resource rich country keeps the resource price substantially lower within their own country, than in the world market, through high export tariffs or other export controls.⁶⁸ Both the U.S. and the European Communities discussed inclusion of this practice within the ambit of "prohibited" subsidies during the Uruguay Round of negotiations. These suggestions proved to be controversial and a

⁶⁴ Wen-Chen Shih, *Energy Security, GATT/WTO, and Regional Agreements*, 49 NAT. RESOURCES J. 433, 435 (2009).

⁶⁵ IISD, *supra* note 13 at 8.

⁶⁶ WTO: Subsidies and Countervailing Measures, http://www.wto.org/english/tratop_e/scm_e/scm_e.htm (last visited Nov. 22, 2010).

⁶⁷ IISD, *supra* note 13 at 11.

⁶⁸ Wen-Chen Shih, *supra* note 64 at 441.

consensus was not reached.⁶⁹ However, the IISD has vouched for the viability of this route, as it offers “a legal framework that could, to some extent, address fossil fuel subsidies without major structural changes.”⁷⁰

There are legal requirements for bringing fossil fuel subsidies under the umbrella of the SCM Agreement. First, fossil fuels must be deemed “specific.” There are three specificity requirements under Article 2.1 of the agreement. A subsidy is specific when it is explicitly limited to certain enterprises, a subsidy with the required specificity cannot subject subsidy seekers to “objective criteria or conditions” that provide automatic eligibility when adhered to and which are spelled out in official form, and the third prong allows for consideration of “other factors.”⁷¹ As such, problems would arise with any alleged specificity of fossil fuel subsidies directed towards consumers. Here, the IISD suggests that they meet the specificity requirements where they lower the price of feedstock for certain energy-intensive industries. This could be, for instance, by providing cheap natural gas to a petrochemical industry.⁷²

Another hurdle for inclusion under the SCM Agreement is proving they cause one of three types of adverse trade effects.⁷³ These prohibitions on the effect of subsidies are listed in Article 5 of the SCM. Subsidies should not cause harm by injury to domestic industry, by serious prejudice in the subsidizing member or in a third country, or by impairment of benefits “whereby improved market access, due to reduced tariffs, is undercut by a subsidy.”⁷⁴ These adverse trade effects are particularly relevant in terms of the impact of fossil fuel subsidies on the

⁶⁹ IISD, *supra* note 13 at 11.

⁷⁰ *Id.* at 12.

⁷¹ Agreement Establishing the World Trade Organization, *Subsidies and Countervailing Measures (SCM)*, Article 2.1(a)-(c). *available at* http://www.wto.org/english/docs_e/legal_e/legal_e.htm#subsidies.

⁷² IISD, *supra* note 13 at 12.

⁷³ *Id.*

⁷⁴ SCM art. 5.

global renewable energy industry. Hence, the WTO's relevance for addressing concerns for competitiveness of energy related goods and services, as well as energy security.

The WTO could bring the level of collaboration and oversight needed for meaningful fossil fuel subsidy reform. But it will not be a panacea. While shaping trade in a way so as to eliminate future harmful subsidies is part of the answer, it is only a partial answer in terms of climate change. Concerns for fossil fuel subsidies as they relate to climate concerns are more appropriate for the United Nations Framework Convention on Climate Change (UNFCCC), and an agreement here “must then send the WTO an appropriate signal on how its rules may best be put to the service of sustainable development.”⁷⁵ In fact, a UNFCCC agreement is seen as a catalyst for action in the WTO.⁷⁶

The United Nations Framework Convention on Climate Change (UNFCCC) establishes a framework for international governments to work in a cooperative fashion in order to address the threat posed by climate change.⁷⁷ This is helpful in our discussion as it provides *lex specialis* in terms of efforts to mitigate climate change. While it is doubtful that changes could be made to treaties, so as to provide “an institutional home” for fossil fuel subsidy reform, there are other avenues worthy of examination in this context.⁷⁸ The potential for positive impacts to global greenhouse gas emissions conjoined with the decreased use of fossil fuels that would be expected from subsidy reform cannot be dismissed.

The reform of distorting subsidies is explicitly mentioned within the text of the UNFCCC's Kyoto Protocol. However, by and large, the legal framework allows for individual

⁷⁵ Achim Steiner, *Focusing on the Good or Bad: What can International Environmental Law Do to Accelerate the Transition Towards a Green Economy?*, 25 AM U. INT'L L. REV 843, 864 (2010).

⁷⁶ IISD, *supra* note 13 at 8.

⁷⁷ Unfccc.int, The United Nations Framework Convention on Climate Change, http://unfccc.int/essential_background/convention/items/2627.php (last visited Nov. 20, 2010).

⁷⁸ IISD, *supra* note 13 at 33.

nation parties to determine their own course of mitigation. Article 2.1(a) of the Kyoto Protocol requires Annex I countries, which are developed nations, to implement policies and measures to meet emissions targets that are in accordance with national circumstances.⁷⁹ This Article includes a list of possible actions to be taken by the parties. Included within it is the “progressive reduction or phasing out of market imperfections.”⁸⁰ Further, Article 3.14 urges the signatories to implement the measures listed in Article 2.1 so as to “minimize adverse social, environmental and economic impacts on developing country Parties,” and states that the Conference of the Parties at its first session shall “consider what actions are necessary to minimize the adverse effects of climate change.”⁸¹ In essence, countries are urged to prioritize these methods. Thus far, subsidy reform has not been discussed in any detailed negotiations.⁸² The IISD suggests a Declaration, Resolution, or Recommendation addressing fossil fuels as a suitable decision type in lieu of amending the Protocol.⁸³ Further, they note that as energy policy has been zealously guarded as a matter of national sovereignty, any attempt to put forth fossil fuel subsidy reform to the UNFCCC would arouse considerable suspicion.⁸⁴

The prong of the fossil fuel subsidy reform debate relating to its impact on an individual nation’s finances would not be best-served by the WTO or the UNFCCC. The Office of Economic Cooperation and Development (OECD) may play a role in this element of the reform. The OECD seeks to support sustainable economic growth, maintain financial stability, assist other countries’ economic development, and contribute to growth in world trade. In order to work towards these aims, the organization “provides a setting where governments compare

⁷⁹ Kyoto Protocol to the United Nations Framework Convention on Climate Change, UN Doc FCCC/CP/1997/7/Add.1 (Dec. 10, 1997) 37 I.L.M. 22 (1998).

⁸⁰ *Id.* at art. 2.1(v).

⁸¹ *Id.* at art. 3.14.

⁸² IISD, *supra* note 13 at 35.

⁸³ *Id.*

⁸⁴ *Id.* at 39.

policy experiences, seek answers to common problems, identify good practice and coordinate domestic and international policies.”⁸⁵ An international effort to compare best practices and share information is undoubtedly needed. Further, there are a number of international organizations able to contribute to the discussion of how fossil fuel subsidy phase-out will impact individual nation states. UNEP provides an assessment of the world’s environmental and social conditions through its Global Environmental Outlook, the U.N. Development Program regularly publishes reports on human development and poverty, and the World Bank publishes the World Development Report annually, which focuses upon worldwide economic and social development.⁸⁶ Additionally, there are other intergovernmental organizations, international financial institutions, and non-governmental organizations with an energy focus or experience with energy-related issues whose attention and analysis would prove valuable. These organizations include the International Energy Agency, the Organization for Petroleum-Exporting Countries, the World Bank, and the International Monetary Fund.⁸⁷ It is clear that awareness, information, and education are needed to impress upon the international community the importance of this reform. The success of the endeavor will depend greatly upon how this information is gathered and disseminated.

VII. Public Choice Revisited

Referring back to the discussion on public choice theory in terms of energy subsidies, it has been postulated that the general public who bears the cost of the subsidy sees the costs of information gathering as far more burdensome than the benefits of eliminating the subsidy. The

⁸⁵ OECD.org, About OECD, http://www.oecd.org/pages/0,3417,en_36734052_36734103_1_1_1_1_1,00.html (last visited November 20, 2010).

⁸⁶ John C. Dernbach, *Sustainable Versus Unsustainable Propositions*, 53 CASE W. RES. L. REV. 449, 451 (2002).

⁸⁷ IISD, *supra* note 13 at 47-48.

value of international efforts, in at least one respect, is to lessen or nearly diminish the transaction costs of information gathering at a national and individual level. On an international scale, in accordance with the theory, governments will try to maximize the welfare of their nation “or a subpopulation of their citizens (elites, government supporters), and ignore the welfare of noncitizens.”⁸⁸ Within these powerful subpopulations are entities that are at once citizens of individual nation states and that also transcend national boundaries. Thus, in the information gathering stage, it is not only important to supply information for a general public, but also to take into account the effect on multinational corporations. In doing so, it may be advantageous to include them in the information gathering and reporting process.

In determining how to utilize a public choice theory analysis in shaping an international solution, two methods may prove beneficial: either minimize the transaction costs of the public bearing the seemingly small cost of the subsidy while quantifying the associated externalities, or alter the transaction costs associated with subsidy-seekers. A combination of both would prove most beneficial. As has already been discussed, the ideal objective is action by the WTO to establish enforceable measures on the harmful and distortive effects of fossil fuel subsidies. In order to do so, it appears that action by the UNFCCC is needed to spur the WTO into action. Prior to this, a period of concentrated information gathering, awareness, and education must take place and must resonate with the general public. At present, conventional fossil fuel based power is cheaper than less polluting forms of energy. In addition to subsidies actually making prices lower than they would be in an undistorted market, there has vastly been a failure to quantify the associated externalities of this environmentally harmful means of energy. For instance, electricity generation is associated with externalities through the construction of equipment, its use, and its disposal. Fossil fuel burning power plants have the highest known

⁸⁸ Eric A. Posner, *International Law: A Welfarist Approach*, 73 U. CHI. L. REV. 487, 499 (2006).

quantified externalities. Some statistics show oil as having an external cost per kilowatt hour of 2.5 to 6.7 cents, with coal showing an additional external cost of 2.5 to 2.8 cents per kilowatt hour. Compare this to an additional 0 to 0.4 cents of solar and 0 to 0.1 cents of wind.⁸⁹ With much of the hesitancy to shift to cleaner fuel technologies based on concerns of rising prices, the true social costs of these methods of fuel and power need to account for environmental externalities and public subsidies.⁹⁰ With international efforts to inform and educate, the eventual goal is for the relative cost of subsidies upon the individual to no longer appear so infinitesimal as to prevent opposition.

Under a public choice model of environmental regulation, a given regulation may be disguised as a high-minded attempt to augment the public welfare, when in reality “regulation is acquired by the industry and is designed and operated for its benefit.”⁹¹ Thus, a regulation will be most effective where it harnesses both typical rent-seeking special interest groups and the environmentalists who seek improvements for the public good.⁹² Nowhere was this dynamic more prevalent than in the lead up to the Kyoto Treaty where the environmentalists provided the “cover story on which media attention is focused,” while “companies, industries and countries work quietly in the background to gain benefits.”⁹³

As the fervor surrounding Kyoto intensified and the push to regulate greenhouse gas emissions garnered increased attention, countries and industries worked to secure advantages in the face of shifting priorities. Not surprisingly, the Kyoto Treaty was supported by those who

⁸⁹ Edan Rotenberg, *Energy Efficiency in Regulated and Deregulated Markets*, 24 UCLA J. Envtl. L. & Pol’y 259, 275-276 (2006).

⁹⁰ *Id.* at 279

⁹¹ Bruce Yandle & Stuart Buck, *Bootleggers, Baptists, and The Global Warming Battle*, 26 Harv. Envtl. L. Rev. 177, 186 (2002).

⁹² *Id.* at 188.

⁹³ *Id.* at 190.

offered products that competed with coal and oil.⁹⁴ Bruce Yandle illuminates a few examples of multinational corporations in this context that are worthy of greater examination: Exxon Mobil, Shell Oil, British Petroleum, and Enron. In a 2002 address, Eileen Claussen of the Pew Center allowed some praise for Exxon Mobil for running ads touting their efforts to “get a handle on its emissions.”⁹⁵ However, these efforts did not arise out of a sense of civic duty. In 1998, ExxonMobil signed an agreement with General Motors to conduct collaborative research on advanced fuel options in vehicles.⁹⁶ Almost simultaneously, the company launched an op-ed campaign urging government funding for fuel cell research.⁹⁷ The Kyoto Treaty atmosphere also spurred the creation of the Global Climate Coalition (GCC), which purported to serve as “the industry voice on climate change.”⁹⁸ But in 1998, Shell Oil left the GCC and formed the world’s largest solar-panel plant under Shell Renewables, and formed Shell Hydrogen to enter the fuel cell market.⁹⁹ Another global oil giant, British Petroleum, left the association of electric utility, coal, oil, auto, and petrochemical companies opposed to the Kyoto Treaty.¹⁰⁰ One reason for this defection was the company’s intent to focus on a plan to increase solar sales to \$1 billion over the next decade.¹⁰¹ In a final example, natural gas company Enron formed Enron Renewable Energy Corporation and its chairman, Kenneth Lay, expressed disappointment at the Bush

⁹⁴ *Id.* at 211.

⁹⁵ PewClimate.Org, *Climate Change – The Next 50 Years One Decade At a Time*, <http://www.pewclimate.org/press-center/speeches/climate-change-next-50-years-one-decade-time> (last visited November 22, 2010).

⁹⁶ General Motors, http://prod.gm.gmgssm.com/vehicles/innovation/fuel-cells/fc_milestones.jsp (last visited November 21, 2010).

⁹⁷ Bruce Yandle & Stuart Buck, *supra* note 91 at 209.

⁹⁸ Global Climate Coalition, <http://web.archive.org/web/20060127223742/http://www.globalclimate.org/> (last visited November 21, 2010).

⁹⁹ Bruce Yandle & Stuart Buck, *supra* note 91 at 214.

¹⁰⁰ Cnn.com, *Texaco Quits Global Warming Group*, Mar. 1, 2007, <http://edition.cnn.com/2000/NATURE/03/01/tex.climate/>.

¹⁰¹ Bruce Yandle & Stuart Buck, *supra* note 91 at 214.

Administration's decision on the Kyoto Treaty.¹⁰² These actions may be described most accurately by a quote attributed to American Electric Power's senior vice president: "Once you realize that you can't kill this thing, then it's incumbent upon you to try to be a player in the process of shaping policies."¹⁰³

These examples illuminate something very useful for a discussion of international efforts to phase-out fossil fuel subsidies. While a concerted international effort to achieve positive results through reform will meet opposition, if the effort is consistent and has broad-support so as to give the impression that some change is inevitable, those affected may abandon outright opposition in order to play a role in implementation. Even though this role is more self-serving than altruistic, it may still be considered progress. Another point made clear in this discussion of the Kyoto Protocol with particular application to fossil fuel subsidy reform is that multinational corporations see renewable energy as a viable alternative to conventional forms of energy, with long-term profit potential. Fossil fuel subsidies create a barrier to renewable energy technologies attempting to enter the energy market in many countries. It follows that their gradual elimination allows for the gradual implementation of clean energy technology.

As mentioned, viewing international action in this arena within a public choice theory framework demonstrates the need for decreasing the transaction costs of the public paying the subsidy price, and altering the typical rent-seeking dynamic of the subsidy-seekers. It would be overly optimistic to believe that international action can change the intrinsic desire of countries and corporations to self-promote. The best course of action is to allow for, and expect rent-seeking behavior in implementation of a given policy goal, while making the policy goal concentrated and narrow enough to ensure that self-serving efforts to shape the rules still work

¹⁰² *Id.* at 217.

¹⁰³ *Id.* at 215.

towards a desired result. Renewable energy technology will play a crucial role in doing so. The International Renewable Energy Agency (IRENA) formed in 2009 may prove extraordinarily helpful to this cause, especially in the information, awareness, and education phase. IRENA seeks to facilitate access to technical and economic data. Additionally, the organization's mission statement includes an objective to share best practices regarding "policy frameworks, capacity-building projects, available finance mechanisms and renewable energy related energy efficiency measures."¹⁰⁴ A successful shift away from fossil fuel based power that has been so ingrained through government subsidies requires that these objectives are met.

Global environmental efforts are rife with issues inherent in public goods problems. Even those countries who do not contribute, will reap the benefits. This provides the individual incentive to limit one's own contribution, while attempting to maximize the contribution of others.¹⁰⁵ This is helpful in examining action from the UNFCCC, which may be necessary to spur action in the WTO. Looking back at Kyoto, a significant portion of the world was exempted; most noticeably, the rapidly growing economies of China and India. Further the UNFCCC's Kyoto Protocol lacks a significant ratifying party in the United States. In the debate over who would lead the charge toward curbing greenhouse gas emissions, the U.S. "required developing nations, China and India in particular, to reduce emissions in step with developed countries." China was averse to any binding commitments.¹⁰⁶ European Union countries have also expressed expectations that the Chinese, as a developing country with significant emissions, "will assume quantifiable and firm commitments" to reduce emissions.¹⁰⁷

¹⁰⁴ IRENA.org, Our Mission, <http://www.irena.org/ourMission/index.aspx?mnu=mis> (last visited November 21, 2010).

¹⁰⁵ Bruce Yandle & Stuart Buck, *supra* note 91 at 185.

¹⁰⁶ Zhang Haibin, *How to Make Progress On Climate Issues*, NYTIMES.COM, Feb. 20, 2009, <http://roomfordebate.blogs.nytimes.com/2009/02/20/what-the-chinese-want-from-obama/>.

¹⁰⁷ Energy Bar Association, 30 ENERGY L.J. 563, 594-595 (2009).

The case of China provides an example of how dynamics of the public choice theory can be utilized within the UNFCCC. While China may not want onerous regulations on its developing economy, taking charge and exhibiting initiative in this forum may allow the nation to outwardly project a desire to reach a goal for the public welfare, while also achieving more self-serving outcomes. The U.N. Climate Change Conference of 2007 in Bali, Indonesia set up a roadmap for a new negotiation process.¹⁰⁸ The conference set up a mechanism called “nationally appropriate mitigation actions” (NAMAs), which were intended to bring greater international efforts through actions of developing countries “supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner.”¹⁰⁹ This was seen as a step toward hard commitments from developing country parties.¹¹⁰ Essentially, a developing country makes a mitigation commitment, with the understanding that they will receive “sufficient financial, technical, and capacity building support to do so.” Further the support cannot be in the form of a vague promise, but must be “measurable, reportable, and verifiable.”¹¹¹

U.S. hostility toward Chinese communism has thus far excluded China from official development aid, “which could significantly hasten climate-change-related projects.”¹¹² China has the opportunity to come forward with a NAMA and demonstrate its ability to subscribe to binding targets. Further, they have the opportunity through this mechanism to set the targets in

¹⁰⁸ Unfccc.int, The United Nations Climate Change Conference in Bali, http://unfccc.int/meetings/cop_13/items/4049.php (last visited Nov. 20, 2010).

¹⁰⁹ United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 15 December 2007*, FCCC/CP/2007/6/Add.1 (Mar. 14, 2008).

¹¹⁰ IISD, *supra* note 13 at 30.

¹¹¹ Kenji Wantanabe et al., *East Asia Clean Development Mechanism*, 20 Geo. Int’l Envtl. L. Rev. 645, 652 (2008).

¹¹² NYTimes.com, *supra* note 106.

line with their own national priorities. Outside the environmental context, China has sought to be recognized by the U.S. as a world power, and not merely a regional force. Acceptance of the responsibilities expected from current world leaders must occur previous to such recognition¹¹³ The current focus on fossil fuel energy subsidies in the G-20 nations and agreement that is in some way acceptable to both the United States and China could create the contingent of nations necessary to champion a Declaration, Recommendation or Resolution on the need for subsidy reform at the UNFCCC that will be necessary to precipitate the action of the WTO. This is one pertinent example of how international politics, viewed as an economic theory, consists of tradeoffs and compromises among competing interests, “rather than the solidaristic pursuit of an overarching common goal to the exclusion of opposing claims.”¹¹⁴ Private welfare maximization and public goals may both be served.

In the last round of WTO negotiations referred to as the Doha Development Agenda, matters in mutual support of trade and the environment were issued in a mandate for the first time.¹¹⁵ Paragraph 31 of the Doha Ministerial Declaration lists the “reduction or elimination of tariff and non-tariff barriers to environmental goods and services” as one element of the negotiation mandate. As mentioned, subsidies to fossil fuels often pose a market-entry barrier to renewable energy technologies. Given the WTOs existing framework for subsidies, a dispute resolution body, and means of enforcement, it is desirable that future trade negotiations address

¹¹³ Frank Ching, *China Wants Credit as ‘World Player’ from U.S.*, CHINAPOST.COM, Aug. 4, 2010, <http://www.chinapost.com.tw/commentary/the-china-post/frank-ching/2010/08/04/267248/p1/China-wants.htm>

¹¹⁴ Paul B. Stephan, III, *Barbarians Inside the Gate: Public Choice Theory and International Economic Law*, 10 AM. U. J. INT'L L. & POL'Y 745, 748 (1995).

¹¹⁵ IISD, *supra* note 13 at 15.

the distorting effects of fossil fuel subsidies. International trade accords will be perhaps most valuable in “promoting the right mix of energy sources and green technologies.”¹¹⁶

We have previously mentioned oil-importing countries’ attempts to discuss the dual-pricing effect of oil exporting country domestic subsidies. In context of the view that tradeoffs and compromises are needed on the international scale that will serve private interests and still in some way work toward state public welfare goals, Article XXVIII of the GATT 1947 provides a framework for negotiation. Here, the reduction and elimination of export tariffs can be negotiated with an understanding that the “negotiation needs to be based on reciprocity.”¹¹⁷ Resource-importing countries could come to the negotiating table with incentives for resource-exporting nations. One suggestion is an offer to reduce import tariffs on processed or manufacturing products.¹¹⁸

VIII. Conclusion

The phase-out and eventual elimination of fossil fuel subsidies will not be met without opposition. Difficult decisions must be made and deals must be struck. Concerns for the environment may in fact be the most pressing matter associated with this reform; however, it must not overshadow economic concerns. Moreover, allowing multinational corporations to participate in the information, education, and awareness phase of the reform, may create the necessary balance between private-interest maximization and the public welfare. Taking an internationally cooperative approach to the information and research needed to build towards binding reform measures will help to ensure a comprehensive method that takes into account all affected entities. The experience of Kyoto and the examples of individual nation’s attempts to reform should guide fossil fuel subsidy reform endeavors. Further, while the public choice

¹¹⁶ Paul B. Stephan, III, *supra* note 114 at 864.

¹¹⁷ When-Chen Shih, *supra* note 64 at 449.

¹¹⁸ *Id.* at 450.

theory is applicable at a global level, approaching reform internationally first, may trump some of the dynamics at a national level, which may be more pronounced; especially where there are elected representatives involved. International measures can set the agenda for national implementation. In sum, self-interested behavior is inevitable, but working to confine it in order to achieve public welfare aims is not altogether impossible.

