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# DEVELOPING AN INTERNATIONAL CARBON TAX REGIME

Steven Specht

## ABSTRACT

As atmospheric CO<sub>2</sub> remains in the range of 400 ppm, it is necessary to find new international coordination to deal with climate change. The best way forward is an international regime of harmonized domestic carbon taxes. By agreeing to a minimum amount of taxation on domestic, point-source producers, money can be set aside for adaptation costs and alternative means of energy production. Finally, such a plan will overcome the problem of non-participation of countries in agreements like the Kyoto Protocol. As this is a treaty dealing with economics and trade, countries can place taxes on imports of non-participatory countries under exceptions of GATT Article XX.

## 1. INTRODUCTION: IMPLICATIONS OF GLOBAL CLIMATE CHANGE

At the time of its creation, the Kyoto Protocol<sup>1</sup> was considered by many to be the strongest international agreement on the subject of climate change.<sup>2</sup> In 1997, 182 nations committed to minimizing greenhouse gases (GHGs) during the period of 2005-2008, with the goal of reducing GHGs to below 1990s levels.<sup>3</sup> Early critics of the Kyoto Protocol pointed out future flaws: simply put, the underlying approach was bound to fail because it was premised on setting national emissions targets rather than dealing with the actual problem of global warming caused by emissions.<sup>4</sup> Despite noble ambitions, emissions have grown significantly.<sup>5</sup> By most accounts the Kyoto Protocol has “unequivocally failed.”<sup>6</sup> The fault lies in several areas. First, it was a regime which created “common but differentiated responsibilities”<sup>7</sup> putting little to no responsibility on developing nations to consider emission reductions.<sup>8</sup> While some combination of domestic efforts and a global recession has created a decline in emissions in the developed world, unchecked growth of emissions in the developing world is beginning to overcome that of the developed world, calling into question the apparent malarkey on common but differentiated responsibilities. For example, while the United States (US) remains a much larger per capita producer of Carbon Dioxide (CO<sub>2</sub>) than other major world economies, China and India are both increasing their respective CO<sub>2</sub> output at a whopping seven percent annually, while the US is either steady or declining.<sup>9</sup> The per capita CO<sub>2</sub> output for both China and India is also rapidly increasing at similar rates (seven percent and six percent for China and India respectively).<sup>10</sup> Assuming steady population growth rates,<sup>11</sup> China and India will both surpass the US per capita production of CO<sub>2</sub> within two decades.<sup>12</sup> Second, in addition to lack of buy-in by major nations such as the US in the initial stages of the Kyoto Protocol, some nations have lost

faith. (Consider Canada which declared that the Protocol “does not represent a way forward,”<sup>13</sup> despite its own plummeting emissions, and Russia which has declined to take on additional obligations despite its own drops in emissions).<sup>14</sup> Finally, the Kyoto Protocol failed to deal with many emissions such as those of airlines and shipping companies.<sup>15</sup> Transport alone accounts for at least fourteen percent of global GHG emissions.<sup>16</sup>

This Article serves to show a way forward from a failed Kyoto Protocol to create an international taxation scheme that harmonizes taxes levied upon producers of CO<sub>2</sub> by their respective nation states.

While this Article acknowledges that global warming is part of a natural cycle, it is an undeniable fact that the total amount of atmospheric CO<sub>2</sub> is at all-time highs for recorded history.<sup>17</sup> A consideration of ice core samples from Antarctica gives revelation of GHGs going back some 800,000 years and reveals periods of global cooling when the parts per million (PPM) was as low as 175 and periods of global warming with nearly 300 ppm.<sup>18</sup> Since modern atmospheric measurements began in 1958, the number has steadily increased from 315 PPM to a close to 400 PPM.<sup>19</sup> Such a level is unprecedented, at least within the timeframe of human history going back at least 800 millennia.<sup>20</sup>

While there is no empirical evidence indicating what awaits us with such a high level of CO<sub>2</sub> in the atmosphere, the warmest weather in recorded history has already occurred in the last generation.<sup>21</sup> With CO<sub>2</sub> levels to exceeding 400 PPM, one should consider treading carefully in unfamiliar territory. Certainly as part of a natural cycle the planet may heal itself, but “if humanity wishes to preserve a planet similar to that on which civilization developed and to which life on earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO<sub>2</sub> will need to be reduced to at least 350 PPM”<sup>22</sup> lest we go to the “point of no return.”<sup>23</sup>

Though the ramifications of dealing with CO<sub>2</sub> are expensive and inconvenient, the costs, both monetary and sociological, are far greater in the near future than in the present. Simply put, “delaying action is a false economy.”<sup>24</sup> Cost of

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environmental degradation already has a negative effect on the economy; for example, economic losses due to environmental degradation and pollution cost roughly 10 percent of China's gross national income.<sup>25</sup>

It is with some irony that a need for international coordination on environmental issues comes as a necessary byproduct of international coordination in trade liberalization. The road to trade liberalization has been disrupted throughout modern history by war and regional animosity, in a continual push towards opening of borders and removing of protectionist policies.<sup>26</sup> In recent years the developed world is rallying around a second issue of GHGs.<sup>27</sup> Given the relationship to expanding global trade and increased greenhouse gases, one might argue that the latter is the logical outgrowth of the former; if not for the advancement of trade through economic coordination, greenhouse gases might largely be a moot point. If we chart global GDP growth alongside the growth of greenhouse gas productions, there would be a surprising similarity.<sup>28</sup> The question arises: can one harness the power of economic coordination and integration to effect processes necessary to diminish the production of GHGs while repairing current and future damage caused by climate change? When viewing the problems tackled by our predecessors, one can be optimistic.

Certainly global measures to reduce the depletion of the ozone layer caused by chlorofluorocarbons (CFCs) have been successful, but CFCs were only a small portion of the overall economy.<sup>29</sup> Dealing with GHGs would have an effect on nearly every aspect in the daily life of the average industrialized citizen.

Sometimes it is necessary to state the obvious: environmental degradation knows no political boundaries. Smog regularly drifts westward from China to choke neighboring countries of South Korea and Japan.<sup>30</sup> The same can be said for that of India's neighbor, Bangladesh.<sup>31</sup> Meanwhile, some 37,000 tons of plastic particles have accumulated in ocean eddies throughout the world.<sup>32</sup> Increasing desertification throughout the world has been a destabilizing effect on numerous countries with conflicts regularly spilling over borders to threaten the lives of the indigenous population as well as the resource chain for the developed world.<sup>33</sup> The world is awash with well-intended, but often futile, efforts to deal with environmental degradation (each year, more than 30 additional Multilateral Environmental Agreements are signed with the intent to solve global environmental problems).<sup>34</sup> Most are dominated by language of second and third generation rights, and one wonders if these merely amount to a "collection of pious phrases."<sup>35</sup> While second and third generation rights are noble concepts, in a legal sense, the Lorax<sup>36</sup> has no standing.<sup>37</sup>

This is not to discount all international regimes dealing with the environment. However, the most successful seem to deal first with economic concerns and only later, with environmental concerns. Consider for example, the International Maritime

Organization which began merely as a United Nations body to establish international norms for shipping and only later became the designated shepherd of the maritime environment.<sup>38</sup> This pragmatic body along with its derivative, the International Oil Pollution Compensation (IOPC).<sup>39</sup> Funds have led to the creation of a fund for victims of oil pollution caused by oil tanker accidents.<sup>40</sup> Ultimately the polluter pay scheme does not slow the flow of oil but is the impetus for greater caution lest the companies pay up for their mess.<sup>41</sup>

Moving forward on the host of environmental problems means taking this more pragmatic approach: damage will occur, but we have the ability to counteract this damage, correct the damage, and encourage industries to adapt to a more sustainable method of operation. While the Arch Druids<sup>42</sup> would have us conserve what is left and shut down industry entirely, this monolithic approach is realistic neither in a domestic effort, nor in an international effort. Actions by any individual country result in a zero-sum game;<sup>43</sup> for example, a sudden shift in fuel efficiency in the United States would create a glut on the world market causing lower fuel costs.<sup>44</sup> There is little doubt that impoverished countries would "snap up the suddenly plentiful, suddenly cheap crude oil and use it to develop their own economies."<sup>45</sup>

This Article will briefly discuss the economic realities of why the carbon tax is the best solution to deal with climate change. It will then provide examples of successful national and regional carbon taxes. Third, it will posit an international carbon tax regime and the application of the regime.

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## 2. WHY CARBON TAX?

It is generally understood by all economists that in order to reduce the potential of further impacts of climate change on the world, it will be necessary to tax all parts of the production and use of fossil fuels.<sup>46</sup> A carbon tax can be an example of applying the "double dividend hypothesis" which means that the taxation scheme encourages both more efficient uses of existing resources as well as reducing the negative result of such uses.<sup>47</sup> A tax is a cost-efficient method of lowering fossil fuel consumption by making them more expensive and encouraging use of alternative technologies,<sup>48</sup> and giving more flexibility to internalize the costs of emissions.<sup>49</sup> Carbon taxes could affect any industry with the capacity to pollute.<sup>50</sup> However, the burden will likely fall upon the energy and transportation sectors.<sup>51</sup> Additionally, once a tax is levied on energy and transportation sectors, there may be room to apply it to other industries as needed. For example, a tax on plastic producers could create an incentive to produce more durable plastics or induce them to lobby local governments to increase the recyclability of their products. Even in the cases where alternative methods of Command-and-Control Regulation, Cap-and-Trade, and Government Subsidies have worked, they can

still work concurrently with a Carbon Tax model. The advantages and disadvantages of each are discussed below.

#### A. COMMAND-AND-CONTROL REGULATION

Though Command-and-Control was once the preferred singular method of dealing with emissions, it is best when the substance intended on being regulated is so toxic and destructive that there is little economic advantage to balance the negative ramifications of its use.<sup>52</sup> An example of this is the phasing out of CFCs when the use of them was demonstrated as a causative relationship to the thinning of the ozone layer.<sup>53</sup> With CFCs, there was a host of alternative chemicals to replace the CFCs, which did not damage the ozone including hydrochlorofluorocarbons, hydrofluorocarbons, and hydrocarbons.<sup>54</sup> However, the use of command and control regulations means large government agencies and complicated litigation when things went awry.<sup>55</sup> Such a draconian approach requires that the chemicals be of the most dangerous type in order to apply a regulation that can effectively destroy a market rather than tailoring it to reach greater efficiency.

There are other success stories for schemes that reward “good” behavior and punish “bad” behavior. Consider the example of Germany taxing leaded gas at a much higher rate than unleaded gas.<sup>56</sup> In a manner of a decade, such incentives virtually eliminated leaded gas in Germany.<sup>57</sup> Similar to the successes with leaded gasoline are the CAFE<sup>58</sup> standards in the US, which have significantly increased auto efficiency since their first use during the oil crisis of the 1970s.<sup>59</sup> Despite the initial burdens placed upon the industry, the auto industries have survived in both countries. However, it is important to remember that more efficient autos do not necessarily mean more efficient drivers. An auto with 50 percent better fuel economy can save gas, but a driver who drives 50 percent more with the savings uses the same amount of gas.<sup>60</sup>

#### B. CAP-AND TRADE

A Cap-and-Trade program creates a government-informed maximum amount of carbon emissions from a given party.<sup>61</sup> Allowances in the form of metric tons are allotted and companies which fall below their respective caps are able to sell their leftover allowances to other companies.<sup>62</sup> On the other hand, Cap-and-Trade takes much of the power from government and into the hands of private enterprise, encouraging them to become more efficient in order to sell their allotments for a profit.<sup>63</sup> However, Cap-and-Trade is complicated, and depending on the regime, does little to actually reduce net carbon; it merely insures more efficiency of production.<sup>64</sup> That efficiency is responsible for some economic growth due to better allocation of resources, but not to the extent of that wrought from a Carbon Tax. The advantage of the Cap-and-Trade system seems to be the political viability for politicians who can honestly (albeit misleadingly)

insist they are not raising taxes, when avoiding the use of the word tax means that legislation may more likely to survive the political process.<sup>65</sup> An important issue to consider is that Cap-and-Trade can slow the growth of emissions but may not actually cut emissions.<sup>66</sup>

In addition to the failure to actually cut emissions is the impossibility of government to always stay ahead of economic trends which can create very inefficient allocation of allotments without a clear knowledge of a proper balance.<sup>67</sup> An example of this is the European Union’s Environmental Trading System (EU-ETS).<sup>68</sup> This was the most robust carbon-trading system in the world, but often viewed as a failure in retrospect. The worst aspect is that the inability to adapt allotments during the economic recession meant a glut of allotments for trade, and as with all supply-demand balances, the price of carbon crashed.<sup>69</sup> The fact that the European Parliament declined to bolster it in 2013 is perhaps the best indicator of its failings.<sup>70</sup> Other experiments in Cap-and-Trade have also had similar difficult learning curves including in the US where carbon markets often “experience volatile, often unforeseen, price shifts.”<sup>71</sup> From 2005 to 2011, EU-ETS cost Europe some \$287 billion and had “almost zero impact” on the overall emissions.<sup>72</sup> The proverb of putting good

money after bad comes to mind when considering calls that we have not given carbon trading enough time.

#### C. GOVERNMENT SUBSIDIES

Government subsidies continually pose the problem of government participation in the market. Governments often lack the flexibility to

recognize what consumers will use or emerging technologies that supersede that which the government wishes to sponsor through subsidies. Even the most developed nations may be guilty of the proverbial “surplus of left shoes.”<sup>73</sup> An example of this in recent history is Solyndra which defaulted on a \$535 million loan for the development of solar technology guaranteed by the Department of Energy amid accusations of fraud by many political opponents of the Obama Administration.<sup>74</sup> It is dishonest to say that all products of the American Recovery and Reinvestment Act<sup>75</sup> under which Solyndra was subsidized were a failure—far from it.<sup>76</sup> In fact the majority of investments in green technology by the US government in the American Recovery and Investment Act seem to have been a success.<sup>77</sup> However, the rapid increase of investment in renewable energy around the same time seems to indicate that the free market had beaten Congress and the Obama Administration to the punch. For example a 2008 study<sup>78</sup> showed that wind capacity increased by 51 percent and solar photovoltaic capacity increased by 44 percent from 2007.<sup>79</sup> Moreover private sector investments had exceeded \$23 billion in 2008.<sup>80</sup> Arguably, the \$32 billion allocated to clean energy projects in 2009 was quite late to the party.<sup>81</sup>

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In addition to the private sector outpacing the government, there is a real concern of creating an “iron triangle.”<sup>82</sup> The example which best demonstrates the Iron Triangle from the perspective of the US is the military industrial-complex which is regularly accused of producing large quantities of outdated technology<sup>83</sup> or producing technology so far beyond the capabilities of our opponents that it defies reason.<sup>84</sup> It is a reasonable extrapolation that alternative energy industries would create just as much of a boondoggle as past cooperation between government and an industry. That a recent Oklahoma bill penalizes homeowners for installing solar panels while simultaneously subsidizing traditional power plants is indicative of how slowly the government can react once subsidies for a given industry are in place.<sup>85</sup>

Of course, not all subsidies are as problematic as the examples above, but a subsidy does not come from out of thin air, it is a result of diverting tax dollars from somewhere else. In revenue producing carbon taxes discussed later in this Article at least some of the money can be diverted into subsidies. While not meant to completely demolish the function of subsidies, at the very least this section suggests that subsidies should be a light touch that does not create industry dependency and involves a sound reallocation of taxes on other industries.

### 3. EXAMPLES OF SUCCESSFUL CARBON TAX REGIMES AT THE NATIONAL AND SUBNATIONAL LEVEL

An economic theory is best illustrated by practical successes. While individual successes may be questioned or even dismissed on evidence of other causes, success is a possibility for taxation at a local or national level. Worldwide, at least 15 countries have some sort of carbon tax regime, but many provide such broad exemptions for various sectors or households that one wonders if they serve any purpose.<sup>86</sup> In North America, three Canadian provinces have experimented with carbon taxation.<sup>87</sup> Australia instituted a carbon tax over a two-year period from 2012 to 2014.<sup>88</sup> In Europe, Ireland has had tentative success on its carbon tax introduced in 2010.<sup>89</sup> An analysis of these programs is included below.

#### A. CANADIAN PROVINCES

British Columbia, Quebec, and Alberta have attempted taxation schemes to reduce GHG. In October 2007, Quebec introduced the first North American carbon tax by introducing a duty of \$3 per ton of CO<sub>2</sub> on bulk sales of fossil fuels.<sup>90</sup> Alberta taxed large industrial emitters (greater than 100,000 tons) at a rate of \$15 per ton of CO<sub>2</sub>.<sup>91</sup> British Columbia followed a few months later to introduce a consumption-based tax designed to reduce GHG emissions in February 2008.<sup>92</sup> British Columbia's rates were set up to result in \$10 per ton of CO<sub>2</sub> emissions, but were levied at the consumer level.<sup>93</sup>

The above reductions must also be taken into consideration alongside the fact that Canada ratified the Kyoto Protocol in December of 2002 to reduce Canadian GHG emissions by six percent from the 1990 level of 599 million tons of CO<sub>2</sub> emissions.<sup>94</sup> Despite such an endeavor, Canadian GHG continued to increase to more than thirty four percent of Canada's commitment under

the Kyoto Protocol.<sup>95</sup> This was in no small part due to the failure to introduce substantive policy changes beyond increased “public education, voluntary initiatives, and fiscal incentives.”<sup>96</sup> Such “pious hopes and good intentions”<sup>97</sup> were sought by the Liberal Party in control of the Canadian government, but the Conservative Party under direction of Stephen Harper fared no better and the Canadian government reneged on the commitments in its ascension to the Kyoto Protocol.<sup>98</sup> It is with such a political background that prompted the above attempts by British Columbia and Quebec to deal with global warming.

A retrospective look indicates a success for British Columbia. In British Columbia, “[t]he carbon tax has been good for the environment, good for taxpayers and it has not hurt the economy.”<sup>99</sup> Such a pronouncement is backed by a drop in per capita fuel consumption by 4.5 percent and unemployment remaining below the national average.<sup>100</sup> Use of all fuels covered by the tax is down by sixteen percent in six years while Canada's Kyoto target was a six percent reduction over twenty years.<sup>101</sup> Additionally, the shift in GHG production seems to be in defiance of presumed economic trends and carbon leakage. While Canada entered an economic downturn in 2007 and continuing until the present,<sup>102</sup> fuel use in other provinces continued to rise by three percent annually from 2008-2013.<sup>103</sup> Likewise, cross border fuel purchases are said to account for only 1-2 percent of British Columbia's sixteen percent reduction in fuel use.<sup>104</sup> On the other hand Alberta and Quebec have had less success, though at the time of this writing, little conclusive research indicates a reason why. The devil is in the details.<sup>105</sup>

#### B. AUSTRALIA

Australia's flirtation with carbon tax was brief, lasting only two years as the “political stepchild” of political wrangling to achieve a coalition government in 2011-2012.<sup>106</sup> While GHG gas emissions had been falling for years, the drop from 2012 to 2013 was the largest in 24 years with total emissions falling by 0.8 percent reported in the Sydney Morning Herald, a right of center daily newspaper.<sup>107</sup> The national electricity market experienced the most marked change in total emissions. Emissions fell by between 5 and 8 million tons from 2012 to 2013 and between 6 and 9 million tons from 2013 to 2014.<sup>108</sup> After the repeal of the carbon tax in 2014, emissions have fallen back to their previous levels.<sup>109</sup> It is unclear if the sudden rise is directly attributable to the repeal of the carbon tax as “the government was ‘ripping away’ at other policies curbing emissions, with plans to scrap the Australian Renewable Energy Agency, the Clean Energy Finance Corp, and energy efficiency programs.”<sup>110</sup> As with Alberta and Quebec, the lack of conclusive peer-reviewed data makes it difficult to make firm conclusions, but the economic data may be helpful.<sup>111</sup>

#### C. IRELAND

Ireland instituted its carbon tax regime in 2010 and has been “quite successful”<sup>112</sup> when considering economic data and overall emissions.<sup>113</sup> The Irish method involved taxation directly on the consumer in a draconian method that included even the weighing of non-recycled residential garbage for taxation.<sup>114</sup>

The tax was implemented in the wake of the global financial crisis and ahead of the Kyoto Protocol deadline of 2012.<sup>115</sup> Bearing in mind that emissions other than electricity production had been slowly falling for some time since the late 1990s, emissions fell dramatically in the period immediately after the tax by 22.4 percent between 2010 and 2012.<sup>116</sup> Total emissions declined again in the by an additional 0.7 percent from 2012 to 2013.<sup>117</sup>

#### 4. BUT WHY AN INTERNATIONAL CARBON TAX REGIME?

The idea of an international carbon tax in scholarly circles is not new, but it is generally mentioned merely as a footnote in broader discussions of international environmental issues. The Honorable Richard L. Ottinger posited an international carbon tax in 1991, stating affirmatively that “[i]t is time to institute one.”<sup>118</sup> However, he provided no framework for such implementation and merely acknowledged the problems associated with carbon leakage and the fledgling attempts at carbon taxes in Sweden, Finland, Netherlands, Germany, Norway, and Switzerland.<sup>119</sup> Analysis remained tangential and fettered throughout the next two decades with one author suggesting that there should be a harmonization at a domestic level with all participating countries setting a standard tax rate.<sup>120</sup> The final word on analysis of an international carbon tax in the 1990s was that the Kyoto Protocol was the only viable option.<sup>121</sup> The following decade was not much of an improvement with one article positing that it was impossible to know precisely how much emission reduction could be achieved by a tax system; developed countries were already tax averse, and developing countries would need assistance.<sup>122</sup> Such concerns were reiterated shortly thereafter.<sup>123</sup> Other works have posited the benefit of an international carbon tax in their ability to incorporate existing domestic carbon taxation schemes as harmonization is reached.<sup>124</sup>

In considering successful carbon taxation schemes, a question arises on why an international solution is needed if domestic remedies have been successful; in short, domestic remedies are not sufficient. One of the problems of Kyoto was that it was not truly collective action but a commitment to set *national* targets that did not really address the collective problem.<sup>125</sup> As with any Tragedy of the Commons collective problems require collective action through some centrally administered body.<sup>126</sup> Dealing with a collective issue of GHGs, this Article argues that a carbon tax applied in a harmonized fashion at national level will accomplish such a goal. First, from a practical standpoint, carbon leakage is a key concern on any domestic regime. While earlier analysis demonstrates that economies may continue to prosper with emissions constrained by taxes, it does not entirely refute the argument that taxation will induce industries to merely move across borders to avoid taxes and cause no net change in worldwide emissions.<sup>127</sup> Second, many domestic regimes are not in a position to deal with adaptation costs.<sup>128</sup> As detailed below, international coordination to disperse revenue to the most vulnerable through a harmonized taxation scheme may be the best method to solve the above problems.

An international carbon tax envisioned in this Article will be: 1) harmonized and created by a new treaty body 2) collected by domestic governments 3) enforced by tariffs on non-participatory countries in compliance with Article XX of the GATT 4) a portion of funds collected domestically to be paid to an international agency for the purposes of funding adaptation costs. Such a domestic carbon tax harmonized across all countries offers a cost-effective means of obtaining CO<sub>2</sub> reductions.<sup>129</sup> Additional taxes upon existing national frameworks will differ from country to country to account for existing taxes and other constraints.<sup>130</sup> Furthermore, rather than an arbitrary allocation of quotas with discord between developed and developing countries, a carbon tax will be a mutually agreed upon action for all.<sup>131</sup> Finally, though there are other GHGs responsible for climate change, CO<sub>2</sub> is the most ubiquitous and under current production, the most harmful. Other GHGs can be dealt with as the CO<sub>2</sub> regime becomes entrenched and successful.

#### A. HARMONIZATION

We must begin to look at the producers of pollutions as the giant Multinational Enterprises (MNEs), which eclipse the economic power of many nations. While some would argue that the nation states should be responsible for the pollutions of its economic citizens, this is short sighted for three reasons. First, the proliferation of MNEs means great difficulty in establishing the nexus of a business' operation. Secondly, if we consider gross profits as analogous to a country's GDP, the profits of the largest multi-national companies have allowed them to eclipse many gross domestic products of individual nations.<sup>132</sup> Most developed nations have instituted eco taxes at some level of another.

Such an international scheme is not unprecedented, as some have proposed a sort of UN Global Transaction Tax.<sup>133</sup> A criticism is that allowing the money to pass through the hands of individual governments creates suspicion that the money is not going directly to the appropriate areas.<sup>134</sup> Though some might suggest that states could merely earmark based on appropriate demands,<sup>135</sup> this relies on the political whims of the nation states involved. Lasting positive change will come in the form of some sort of international accord, protocol, or treaty.<sup>136</sup> Such an explanation of how a treaty regime can work is described later in the section on how to collect and allocate an internationally pooled fund.

#### B. A TAX UPON WHOM?

Moving forward will mean not repeating the same mistakes of the Kyoto Protocol. Taxing only industrialized countries gives those countries an incentive to not participate with political talking points to justify that lack of participation.<sup>137</sup> While the Kyoto Protocol seemed to ignore the rising emissions of the developing countries, all countries should levy a comprehensive tax scheme on point-source producers of GHGs. This will serve to avoid the problems of Kyoto with countries like the United States not participating at all or countries like Canada pulling out when it is politically expedient. Targeting point-source producers rather than consumers is necessary because the consumer lacks the economy of scale to make large-scale adjustments to a sudden increase in price while a point-source producer can spread initial

costs among myriad consumers while simultaneously working to increase efficiency to maintain profitability in the long run. Because countries generally report to the IMF on their macroeconomic policies, GDP, and other information, it is easy to establish a baseline on existing revenues and profits of the major industries subject to a harmonized tax regime.<sup>138</sup> Finally, it is folly to say that companies and nations would revolt at such a large-scale tax scheme. Within the confines of the European Union (EU) nations have been willing to assent to a broader scheme.<sup>139</sup> Likewise, businesses in the US and the EU have been willing to comport to attempts at carbon trading; therefore, it is reasonable to conclude that other measures can be met with the same grudging acceptance.

### C. METHOD OF ENFORCEMENT

One of the biggest problems in the Kyoto Protocol was the disheartening lack of participation by countries like the US in the final negotiations and ratification process.<sup>140</sup> Any taxation scheme will require buy-in from all the major and developing nations. But without coercive measures, what can be done about free riders among developed nations, which have persistent resentment of taxation, regardless of the source or justification?<sup>141</sup> Border adjustments<sup>142</sup> may serve to force harmonization on imports from nations who refuse to participate in an international carbon tax regime and can provide the method by which participatory nations can coerce the outliers into compliance.<sup>143</sup> Such border adjustments work in two ways to ensure compliance. First, they protect one nation from a lack of competitiveness for domestic producers at the hands of foreign producers not subject to a similar tax scheme.<sup>144</sup> Secondly, they reduce the incentive of free riders to not apply taxes domestically, because taxes levied on exports at their destination will mean no direct benefit to the companies who avoid domestic tax burdens. Moreover, not only are such measures likely in compliance with the GATT, but also have actually been recommended in the past as a way to salvage the Kyoto Protocol.<sup>145</sup>

GATT Article XX is an avenue to justify preferential measures that would otherwise violate GATT provisions, provided these measures are not “arbitrary or discriminatory.”<sup>146</sup> However, a WTO Panel is responsible for determining whether something falls within an Article XX exclusion or whether it runs afoul of Articles I<sup>147</sup> and III.<sup>148</sup> Whether a coercive measure attempting to harmonize taxation when dealing with nonparticipating free riders is within exceptions under Article XX<sup>149</sup> is subject to debate, but at least some preliminary analysis suggests they would be. GATT Article III allows taxation on imports under its “national

treatment”<sup>150</sup> clause.<sup>151</sup> Though differentiation is made between final product national treatment and process-based national treatment, at least some preliminary analysis of WTO cases suggest that Article III can be avoided.<sup>152</sup> GATT Article I is the largest concern generally under the most-favored-nation clause, which would disallow taxes to be levied on one nation but not the other given that all signatories are to be afforded most-favored-nation status under the WTO.<sup>153</sup> However, *Shrimp/Turtle*<sup>154</sup> has demonstrated a “fundamental shift in WTO jurisprudence”<sup>155</sup> when considering environmental concerns. In either case, it seems that border adjustments that serve to protect human animal and plant life or ensure the conservation of an exhaustible natural resource are acceptable within the WTO framework.<sup>156</sup> While such wording seems to be the flowery language of unenforceable treaty bodies criticized in the introduction to this Article, they have been directly confirmed in *EC-Asbestos*<sup>157</sup> contingent on how “vital or important [the] common interests and values”<sup>158</sup> pursued by such a border adjustment could actually be.<sup>159</sup>

The scheme as proposed in this Article creates a market incentive. Lower taxes after abiding by WTO norms mean lower prices. This encourages the buy-in from consumers on whether or not a company is “green” and means the consumers are merely thinking with their wallets.<sup>160</sup>

### D. REVENUE GAINING TAX

One of the purposes of an international agreement to harmonize domestic carbon tax regimes is to create revenue, which can be spent in two ways. First some of the money can be turned around for subsidies, which were discussed previously as a half-measure to be used alongside a responsible taxation regime.<sup>161</sup> Such subsidies would result in more efficient manufacturing and production as well as greener technology. Secondly, some of the money should be allocated toward an adaptation fund that will serve to help nations with little responsibility for CO<sub>2</sub> production but face much of the consequences.<sup>162</sup> Some 634 million people live within the low elevation coastal zone, a region defined as being less than ten meters above sea level.<sup>163</sup> How to defend them from rising sea levels is the first question among many in considering how to deal with climate change and how to spend revenue from a carbon tax. Something akin to a superfund can serve any number of purposes. The easiest target is protection from flooding caused by rising seas. As pointed out earlier, delay is a false economy, and the long-term damage caused by flooding is far more expensive than the short-term costs of preventing it.<sup>164</sup>

Some have posited a revenue neutral tax, meaning that for every dollar of tax created, taxes will be cut somewhere else.<sup>165</sup> However, when considering the amount of revenue that can be

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*“One of the biggest problems  
in the Kyoto Protocol was the  
disheartening lack of participation  
by countries like the US in  
the final negotiations and  
ratification process.”*

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generated by a tax on point-source producers may stagger the imagination. The top five oil companies alone consistently earn around \$100 billion annually.<sup>166</sup>

#### E. NATIONALLY ADMINISTERED OR POOLED FUNDS?

The trickiest question about an international carbon tax is whether funds from a revenue producing tax should be nationally administered or pooled. It is a laughable proposition that nations would willingly send billions of tax dollars out of the country, but it is not beyond the realm of possibility that countries can be induced to contribute to at least some sort of international fund that would help developing nations. Such a hypothetical pooled fund may result in a two-fold benefit: 1) it serves as a show of good faith by developed nations for taking responsibility for past action. 2) as developing nations begin to incorporate changes pushed for by an international carbon tax regime, earmarks can be set aside to fund the education of key people in the developing world which is a growing source of pollution and unsustainable development. Such a method can help bring the developing countries to a higher level and reduce the short-term costs imposed in international environmental regimes that unfairly punish the developing countries going through the same growing pains of the OECD nations during the 1800s and 1900s.

Of course, any funds taken out of the country to be invested abroad can be justified as an incentive for countries to “cheat” on their levies, but cheating can still be mitigated with the coercive measures in the previous section dealing with why border adjustments are acceptable under Article XX of the WTO. Facing taxation on exports overseas for failure to comply means there is no incentive to dodge domestically. On the other hand, even a tiny fraction of levied taxes could go a long ways when pooled together in a sort of superfund. Ireland’s 2010 yield from taxation came to \$330 million.<sup>167</sup> This is a paltry sum as individually imposed and less than one percent of Ireland’s 2012 GDP of \$224 billion,<sup>168</sup> but a similar figure applied to the current Gross World Product (GWP) would amount to \$111 billion in total taxes collected.<sup>169</sup> A mere one percent fund to be targeted at the most vulnerable areas could go a long way to repairing some of the harm caused by global warming.<sup>170</sup>

This sort of “eco-tax”<sup>171</sup> is not placed upon nations by an international body. Such a move is not only unprecedented but far too bold within the current paradigm. Eco-taxes are not a new concept unto themselves,<sup>172</sup> but can be analogized to the numerous countries which have applied eco-taxes upon citizens and businesses. However, such a tax should be applied upon businesses rather than upon the nations, for it is the businesses responsible for the damage rather than the collectivity of the nations. Though the nation state is the dominant regime for political purposes, a tax upon a nation moves beyond the “polluter

pays” principle favored by many economists.<sup>173</sup> By levying the tax upon business, the cost is internalized and placed upon the consumer, which allows the free market to continue thriving while a race to lower prices functionally conserves the environment as producing less environmental harm means less taxation and thus lower internalization of costs.<sup>174</sup>

A treaty regime is necessary to overcome the fear of action by nations holding a “you first”<sup>175</sup> stance on climate change. Carbon leakage happens when a nation or a group of nations attempts to change the dynamic of carbon usage allowing third parties to take advantage of the glut in cheaper fossil fuels, production techniques, etc.<sup>176</sup> While countries could protect key industries from such unfair international competition, to do so would be nonsensical as these key industries would be the largest source of carbon production leaving behind only half measures with little gains to show.<sup>177</sup> The only way to prevent free riders is to develop an international scheme that has all the major actors, whether developed or developing, on the same page of taxation in a manner that allows the free market to establish new paradigms without the problems associated with carbon trading, command and control regulations, and subsidies.

The road map forward will look similar to that which has already been accomplished in the International Maritime Organization (“IMO”). The IMO is a 171-nation strong specialized agency of the United Nations, which develops comprehensive regulations for shipping as well as deal with environmental issues, maritime security and efficiency in world ship-

ping.<sup>178</sup> Throughout the last 35 years of history, the IMO has been part of a fund which was to be used as a payout for countries and individuals hurt by oil spills.<sup>179</sup> The name and function of the fund has changed with time, but the 1992 Fund Convention boasts 114 parties and the 1992 Supplementary Fund Protocol 31.<sup>180</sup> The 1992 fund capped the maximum amount payable to 135 million Special Drawing Rights (SDR),<sup>181</sup> which at the time of this writing has an exchange rate of approximately .72 SDR to 1 USD.<sup>182</sup> The 2003 Protocol limits compensation to 750 million SDR and is funded by annual contributions to the fund from any person who has received total quantities of oil exceeding 150,000 tons, assuming the individual is a member of a state with at least 1,000,000 tons of oil.<sup>183</sup> The fund itself is independent of the United Nations and actually governed by the International Oil Pollution Compensation Funds (IOPC Funds).<sup>184</sup>

The IOPC Funds can be considered a success. There first use was in the 1999, Erika Spill in which a Maltese-registered tanker broke into two sections 60 nautical miles from the Brittany coast.<sup>185</sup> Approximately 19,800 tons of the 31,000 tons of heavy oil aboard the ship spilled onto 400 kilometers of shoreline.<sup>186</sup> After a series of legal wrangling to determine how much would be paid by private insurance and to determine the

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*“A treaty regime is necessary to overcome the fear of action by nations holding a ‘you first’ stance on climate change.”*

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actual damage, some €116.9 million had been paid by IOPC 2014 to some 131 claimants.<sup>187</sup>

## 5. SYNTHESIS AND CONCLUSION

The treaty envisioned in this Article is unlike anything else currently in existence; though analogies can be made in several manners. There are two key features. First, countries agree to a harmonized carbon taxation regime to be levied at the domestic level. Second, a small percentage of the national tax is allocated to a pooled fund which serves to deal with adaptation cost, as well as to help developing nations grow in a more sustainable and responsible manner than their developed predecessors.

This broad deference to national governments resembles the Kyoto Protocol, but differs in two significant ways. First, it does not give a pass to “developing nations” including China which now has a rapidly growing per capita share of the world’s largest economy. Second, a cabal of industrialized nations can coerce nonparticipants with an exhaustible resources exception under GATT Article XX.<sup>188</sup> Where Kyoto failed, this treaty can succeed.

The second feature of the treaty is more questionable from a logistics standpoint. Though nations can coerce participation in the harmonized taxation scheme, it is unlikely that the type of coercion allowable under GATT Article XX will also allow punitive measures to hold nations hostage over their unwillingness

to participate in an international fund. However, it is a relatively small burden on national budgets that can have huge implications for world-wide adaptation costs.

Though the IOPC has been used as an example of an international fund, what is envisioned in this treaty is different for the fact that it would include all nations rather than just oil importers. It also differs in that, resources will be allocated in an anticipatory manner for issues related to an ongoing low level catastrophe of climate change, rather than payment for a single major event like an oil spill. Such analysis of where the money can and should be spent is beyond the scope of this Article.

Not all environmental issues can be solved with a taxation scheme. As with CFCs, some require draconian measures to completely eliminate a problem. The use of technologies and resources which create GHGs is so pervasive, there is no way to remove the problem from society without turning the clock back some 200 years. However, that does not mean we must take a fatalistic approach. We can reduce the flow of CO<sub>2</sub> into the atmosphere, and we can work toward more sustainable development. If we have reached the point of no return, then we can seek to reduce the harms caused by climate change. This is an international problem that requires an international solution. The methods outlined above are a possible means of moving forward.

## ENDNOTES: DEVELOPING AN INTERNATIONAL CARBON TAX REGIME

<sup>1</sup> See generally Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, U.N. Doc FCCC/CP/1997/7/Add.1, 37 I.L.M. 22 (1998) [hereinafter Kyoto Protocol].

<sup>2</sup> See Robert Townsend, *Revisiting the Kyoto Protocol: Reducing CO<sub>2</sub> to Prevent Climate Change Disasters*, OLD DOMINION UNIV. MODEL UNITED NATIONS SOC’Y 1, 2 (2014), <https://www.odu.edu/content/dam/odu/offices/mun/2014/unwc/wc-revisiting-the-kyoto-protocol-reducing-co2-to-prevent-climate-change-disasters.pdf>.

<sup>3</sup> See generally Kyoto Protocol, *supra* note 1.

<sup>4</sup> See Richard N. Cooper, *Toward a Real Global Warming Treaty*, FOREIGN AFFAIRS 66, March/April 1998, available at <https://www.foreignaffairs.com/articles/1998-03-01/toward-real-global-warming-treaty>.

<sup>5</sup> See generally *Global Greenhouse Gas Emissions*, U.S. ENVTL. PROT. AGENCY, <http://www3.epa.gov/climatechange/science/indicators/ghg/global-ghg-emissions.html> (last visited Apr. 19, 2016) (referencing “key points” section).

<sup>6</sup> Townsend, *supra* note 2, at 3.

<sup>7</sup> United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3-14, Rio Declaration on Environment and Development, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), principle 7 (1992).

<sup>8</sup> See Charlie E. Coon, *Why President Bush Is Right to Abandon the Kyoto Protocol*, HERITAGE FOUNDATION (May 11, 2001), <http://www.heritage.org/research/reports/2001/05/president-bush-right-to-abandon-kyoto-protocol> (noting that four fifths of countries were not required to comply with the goals of the Kyoto Protocol, in addition to the United States declining the ratification of the Kyoto Protocol). See generally *Overview of Greenhouse Gases*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/climatechange/ghgemissions/gases/co2.html> (last visited April 14, 2016) (referencing the graph showing an increase of Carbon Dioxide Gas Emissions during the 1990s, the stabilization of these emissions, and their subsequent decrease since 2006 in the United States albeit its decision to decline ratifying the Kyoto Protocol. Though some equate the drop in CO<sub>2</sub> to the recession, after economic recovery, the United States resumed its reduction in GHGs from 2010-2012 with 2012 coming to a twenty-year low in CO<sub>2</sub> Emissions.) [hereinafter *Overview of Greenhouse Gases*]; Rachel Nuwer, A

*20-Year Low in U.S. Carbon Emissions*, N.Y. TIMES: GREEN ENERGY, THE ENV’T. AND THE BOTTOM LINE (August 17, 2012 6:24 P.M.), [http://green.blogs.nytimes.com/2012/08/17/a-20-year-low-in-u-s-carbon-emissions/?\\_r=0](http://green.blogs.nytimes.com/2012/08/17/a-20-year-low-in-u-s-carbon-emissions/?_r=0) (indicating that carbon dioxide has dropped a significant amount during this decade); *Overview of Greenhouse Gases*, *supra* (noting that there was a slight rise in 2013 and 2014 can likely be attributed to a continued strengthening of the US Economy but one could view this as a return to the relatively stable emissions beginning in 2004).

<sup>9</sup> See *CO<sub>2</sub> Emissions (Metric Tons Per Capita)*, WORLD BANK, <http://data.worldbank.org/indicator/EN.ATM.CO2E.PC> (last visited April, 14, 2016).

<sup>10</sup> See *id.*

<sup>11</sup> The United States, China, and India report steady population growth rates with the United States at seven percent, China five percent, and India one and one-tenth percent. *Population Growth (Annual %)*, WORLD BANK, <http://data.worldbank.org/indicator/SP.POP.GROW/countries> (last visited Apr. 2, 2016) (using dataset from 2011-2015).

<sup>12</sup> Using estimates from the World Bank from previous footnotes, I have extrapolated the data to show that China will surpass current per capita CO<sub>2</sub> emissions of the United States within 16 years, India within 18 years. I lack the algebraic expertise to predict the exact convergence of per capita downward trends in the US and upward trends in India and China.

<sup>13</sup> *Canada Under Fire Over Kyoto Protocol Exit*, BBC (Dec. 13, 2011), <http://www.bbc.com/news/world-us-canada-16165033>.

<sup>14</sup> See Nastassia Astrasheuskaya, *Russia Will Not Cut Emissions Under Extended Kyoto Climate Pact*, REUTERS (Sept. 13, 2012 9:39 A.M.), <http://www.reuters.com/article/2012/09/13/us-russia-kyoto-idUSBRE88C0QZ20120913>; see also *CO<sub>2</sub> Emissions (Metric Tons Per Capita)*, *supra* note 9 (indicating that Russia has maintained its an average of 12.6 metric tons per year of Carbon Dioxide Emissions).

<sup>15</sup> See Townsend, *supra* note 2, at 3.

<sup>16</sup> See TIM HERZOG ET. AL., NAVIGATING THE NUMBERS: GREENHOUSE GAS DATA AND INTERNATIONAL CLIMATE POLICY, WORLD RESOURCES INSTITUTE 63, available

## ENDNOTES: THE KEY TO ENGAGING WITH THE SDGs: UTILIZING RIO PRINCIPLE 10 TO SUCCESSFULLY IMPLEMENT THE U.N. SUSTAINABLE DEVELOPMENT GOALS

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<sup>17</sup> Countries currently lacking Right to Information laws include: Cuba, Venezuela, Paraguay, Libya, Kenya, Tanzania, Madagascar, Saudi Arabia, Iran, Cambodia, Malaysia, and Papua New Guinea. ARTICLE 19 MAP, *supra* note 4.

<sup>18</sup> David Banisar, *The Role of the Right to Information in Sustainable Development*, in *Governance for Sustainable Development—Ideas for the Post-2015 Agenda 3* (Friends of Governance for Sustainable Development ed., 2015).

<sup>19</sup> *Id.*

<sup>20</sup> RIO DECLARATION, *supra* note 1.

<sup>21</sup> There is no internationally agreed upon definition of FPIC, but a general description of it is “the right to participate in decision making and to give, modify, withhold or withdraw consent to an activity affecting the holder of this right. Consent must be freely given, obtained prior to implementation of such activities and be founded upon an understanding of the full range of issues implicated by the activity or decision in question; hence the formulation free, prior and informed consent.” FOREST STEWARDSHIP COUNCIL, FSC GUIDELINES

FOR THE IMPLEMENTATION OF THE RIGHT TO FREE, PRIOR AND INFORMED CONSENT, 11 (FSC International Center GmbH, Version 1, Oct 30, 2012).

<sup>22</sup> UNITED NATIONS DEV. PROGRAMME, ACCESS TO JUSTICE—PRACTICE NOTE 7 (2004).

<sup>23</sup> This is usually accomplished through legal court systems or other forms of informal institutions of justice and grievance mechanisms.

<sup>24</sup> UNITED NATIONS DEV. PROGRAMME, ACCESS TO JUSTICE AND RULE OF LAW, [http://www.undp.org/content/undp/en/home/ourwork/democraticgovernance/focus\\_areas/focus\\_justice\\_law.html](http://www.undp.org/content/undp/en/home/ourwork/democraticgovernance/focus_areas/focus_justice_law.html) (last visited Mar. 24, 2016).

<sup>25</sup> SDSN INDICATORS AND MONITORING FRAMEWORK REPORT, *supra* note 14 at 2.

<sup>26</sup> See, UNITED NATIONS SUSTAINABLE DEV. GOALS, IAEG-SDGs, <http://unstats.un.org/sdgs/iaeg-sdgs> (last visited Mar 2, 2016).

<sup>27</sup> SDSN INDICATORS AND MONITORING FRAMEWORK REPORT, *supra* note 14 at 2.

<sup>28</sup> *Id.* at 7.

## ENDNOTES: DEVELOPING AN INTERNATIONAL CARBON TAX REGIME

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at [http://www.wri.org/sites/default/files/pdf/navigating\\_numbers.pdf](http://www.wri.org/sites/default/files/pdf/navigating_numbers.pdf); see also, *Sources of Greenhouse Gas Emissions*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/climatechange/ghgemissions/sources.html> (noting that transportation (not including the grid to support such transportation), accounts for twenty percent of U.S. Greenhouse Gas emissions) (last visited Apr. 14, 2016).

<sup>17</sup> See *Atmospheric CO<sub>2</sub>*, CO<sub>2</sub>.EARTH, <https://www.co2.earth/> (last visited Apr. 14, 2016) (referencing Keeling Curve monthly).

<sup>18</sup> See Andrew Freeman, *The Last Time CO<sub>2</sub> Was This High, Humans Didn't Exist*, CLIMATE CENT., <http://www.climatecentral.org/news/the-last-time-co2-was-this-high-humans-didnt-exist-15938> (last updated May 2, 2013).

<sup>19</sup> See HERZOG ET. AL., *supra* note 16, at 3 (showing that in 2004 Atmospheric Carbon Dioxide measured at about 380 PPM).

<sup>20</sup> Freedman, *supra* note 18.

<sup>21</sup> Gavin A. Schmidt & Thomas R. Karl, *Annual Global Analysis for 2014: 2014 was Warmest Year on Record*, NASA/NOAA (Jan. 2015), <http://www.ncdc.noaa.gov/sotc/briefings/201501.pdf>. Measurements go back as far as 1880. Methodology varies slightly overtime, but by all accounts, the warmest 10 years since or. growth over the past 30 years on, .ext (indicating that emtn l threat on their own lands, while abusing the environment of devganized measurements began have occurred since 1998. *Id.*; Freedman, *supra* note 18.

<sup>22</sup> James Hansen et al., *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?*, NASA/GODDARD INST. FOR SPACE STUDIES 1 (2008), <http://arxiv.org/ftp/arxiv/papers/0804/0804.1126.pdf>.

<sup>23</sup> *Id.* at 12.

<sup>24</sup> David P. Vincent, *Internalizing Externalities: An Economic and Legal Analysis of an International Carbon Tax Regime*, 92 OR. L. REV. 163, 167 (2013), available at <https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/13577/Vincent.pdf?sequence=1> (citing Brad Plumer, *When Do We Hit the Point of No Return for Climate Change?*, WASH. POST (Nov. 10, 2011), [http://www.washingtonpost.com/blogs/wonkblog/post/when-do-we-hit-the-point-of-no-return-for-climate-change/2011/11/10/gIQA4rri8M\\_blog.html](http://www.washingtonpost.com/blogs/wonkblog/post/when-do-we-hit-the-point-of-no-return-for-climate-change/2011/11/10/gIQA4rri8M_blog.html)).

<sup>25</sup> Stephen Sewalk, *Europe Should Dump Cap-And-Trade in Favor of Carbon Tax with Reinvestment to Global Emissions*, 5 WASH. & LEE J. OF ENERGY, CLIMATE & ENV'T 355, 361 (2014) (citing Junjie Zhang, ASIA SOCIETY POL'Y INST., DELIVERING ENVIRONMENTALLY SUSTAINABLE ECONOMIC GROWTH: THE CASE OF CHINA 2 (2012) (“China has achieved miraculous economic growth over the past 30 years.... However, growing the gross domestic product (GDP) at any cost has created a series of social and environmental problems.”)).

<sup>26</sup> Steven Specht, *Dispute Resolution in the Transpacific Partnership: Pillar or Pitfall*, SSRN, Apr. 16, 2016, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2765750](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2765750).

<sup>27</sup> Vincent, *supra* note 24, at 166-67.

<sup>28</sup> The Gross World Product has increased from ~\$7 trillion in 1960 to more than \$75 trillion today. See J. BRANDFORD DELONG, ESTIMATING WORLD GDP, ONE MILLION B.C.-PRESENT 8-9, available at [http://delong.typepad.com/print/20061012\\_LRWDGP.pdf](http://delong.typepad.com/print/20061012_LRWDGP.pdf). Adjusting the 1960 number for inflation brings

the 1960 number to \$55 trillion. This is a thirty six percent increase compared with a twenty seven percent increase in the same time period for measuring atmospheric CO<sub>2</sub> from 1958 to the present.

<sup>29</sup> Chlorofluorocarbons were the primary culprit in the weakening of the ozone layer above the South Pole. This will be discussed in more depth in the section dealing with the problems of alternatives to a carbon tax.

<sup>30</sup> See DAVID L. ALLES, ASIAN AIR POLLUTION 23 (David L. Alles ed. 2013), available at <http://fire.biol.wvu.edu/trent/alles/AirPollution.pdf> (last updated April 24, 2013).

<sup>31</sup> See *id.* at 52, 55, 56, 65.

<sup>32</sup> See Marzia Sesini, *The Garbage Patch in the Oceans: The Problem and Possible Solutions* (Aug. 2011) (unpublished M.S. thesis, Columbia University) (on file with Columbia University), available at [http://www.seas.columbia.edu/earth/wtert/sofos/sesini\\_thesis.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/sesini_thesis.pdf) (noting that while the Great Pacific Garbage Patch in the northern portion of the Pacific Ocean is commonly mentioned in media, similar concentrations of plastic particles also coalesce in gyres of the South Pacific, North and South Atlantic, and the Indian Ocean).

<sup>33</sup> See *Desertification: The Invisible Front Line*, UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION 10 (2014), [http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/Desertification\\_The%20invisible\\_frontline.pdf](http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/Desertification_The%20invisible_frontline.pdf) (highlighting that some forty percent of conflicts have been disputes over resources and eighty percent of conflicts have occurred in areas with resource shortages. It is also a reasonable correlation to link a rise in Islamic fundamentalism gripping the central Africa to the slow creep of the Sahara. Now Nigeria, one of the largest oil suppliers in the world is gripped in a desperate fight with Boko Haram.)

<sup>34</sup> See generally *Multilateral Environmental Agreements 1950 through 2012*, INTERNATIONAL ENVTL. AGREEMENTS (IEA) DATABASE PROJECT, [http://iea.uoregon.edu/page.php?query=summarize\\_by\\_year&yearstart=1950&yearend=2012&inclusion=MEA](http://iea.uoregon.edu/page.php?query=summarize_by_year&yearstart=1950&yearend=2012&inclusion=MEA) (last visited April 15, 2016) (according to the IEA, which tracks MEAs and Bi-Lateral Environmental Agreements (BEAs), there are currently 1248 MEAs and 1598 BEAs. The number of MEAs in 2007 was 972 meaning an average of more than 39 agreements per year.)

<sup>35</sup> These were the words of the Russian delegate who declined to sign the Universal Declaration of Human Rights. See Nick Fraser, *Dignity and Hope: Too Much to Ask For?*, GUARDIAN (Sept. 20, 2008, 7:01 P.M.), <http://www.theguardian.com/world/2008/sep/21/humanrights>.

<sup>36</sup> See DR. SEUSS, *THE LORAX* (1971); see also Rhona Lyons, *How the Lorax Can Save the Truffula Trees: The Environmental Remedies Available to the Individual*, 51 MO. L. REV. 1013 (1986), available at <http://scholarship.law.missouri.edu/cgi/viewcontent.cgi?article=3359&context=mlr> (discussing how an individual affected by pollution of natural resources should have standing to bring claims against the polluter in Court, similar to the story in *The Lorax*).

<sup>37</sup> While the Supreme Court did not specifically cite to Dr. Seuss, they did reject arguments by the Sierra Club on behalf of the environment, and greatly

reduced remedies for individuals not directly affected by development. See *Sierra Club v. Morton*, 405 U.S. 727, 734-35 (1972).

<sup>38</sup> See generally *The International Maritime Organization and the Environment*, INT'L MAR. ORG., <http://www.imo.org/OurWork/Environment/Documents/IMO%20and%20the%20Environment%202011.pdf> (last visited Apr. 15, 2016). It is necessary to note that the United States is a full member of the IMO, despite often being the outlier in various UN Conventions focusing on second and third generation rights. The inclusion and exclusion of all the world's dominant economies will become more relevant later in this paper.

<sup>39</sup> See *Funds Overview*, INT'L OIL POLLUTION COMP. FUNDS, <http://www.iopcfunds.org/about-us/> (last visited March 23, 2016).

<sup>40</sup> See *New Fund Heralds Better Deal for Oil Pollution Victims*, INT'L MAR. ORG., [http://www.imo.org/blast/mainframe.asp?topic\\_id=848&doc\\_id=4531](http://www.imo.org/blast/mainframe.asp?topic_id=848&doc_id=4531) (last visited Apr. 15, 2016).

<sup>41</sup> Cf. *Parties to the International Liability and Compensation Conventions*, INT'L OIL POLLUTION COMP. FUNDS, <http://www.iopcfunds.org/about-us/membership/map/> (last visited Apr. 15, 2016). It must be pointed out that the United States has retained observer status in the IOPC. The United States actually lobbied for higher standards of liability and in absence of this has enacted similar domestic legislation under the Oil Pollution Act of 1990 which set up the Oil Spill Liability Trust Fund. See *The Oil Spill Liability Trust Fund*, U.S. COAST GUARD: NAT'L POLLUTION FUNDS CTR., [http://www.uscg.mil/npfc/About\\_NPFC/oslftf.asp](http://www.uscg.mil/npfc/About_NPFC/oslftf.asp) (last visited Apr. 15, 2016).

<sup>42</sup> See generally JOHN MCPHEE, ENCOUNTERS WITH THE ARCHDRUID (1971) (providing a series of interviews, where the author discusses development, conservation, and preservation with David Brower who rails against any sort of human development, even human development that increased biological diversity e.g. man-made reservoirs).

<sup>43</sup> See *Zero-Sum Game*, INVESTOPEDIA, <http://www.investopedia.com/terms/z/zero-sumgame.asp#ixzz42R71zdNg> (last visited Apr. 15, 2016) (defining zero-sum game as a "situation in game theory in which one person's gain is equivalent to another's loss, so the net change in wealth or benefit is zero.").

<sup>44</sup> See SHI-LING HSU, THE CASE FOR A CARBON TAX 2 (2011).

<sup>45</sup> *Id.* at 2-3. It is a reasonable observation that developing countries would perhaps have even more negative effects with the use of such cheap oil. Consider that rising CAFE standards in the US have resulted in a burgeoning sell of used vehicles to the developing world. The fact that vehicles are no longer able to be used in the US suddenly on the road in another country means little to no direct change in emissions. See Lucas W. Davis & Matthew E. Kahn, *International Trade in Used Vehicles: The Environmental Consequences of NAFTA*, 2 AM. ECON. J. 58, 71(2010), available at <http://pubs.aeaweb.org/doi/pdfplus/10.1257/pol.2.4.58> (demonstrating that cars traded from one country to another result in similar if not worse pollution in the country that the car is being exported to).

<sup>46</sup> See Barry Rabe, *The Political Viability of Carbon Taxation*, BROOKINGS INST. (Dec. 5, 2012), <http://www.brookings.edu/blogs/up-front/posts/2012/12/05-carbon-tax-rabe>.

<sup>47</sup> See generally Don Fullerton & Gilbert E. Metfalg, *Environmental Taxes and the Double Dividend Hypothesis: Did You Really Expect Something for Nothing?*, 73 CHI.-KENT L. REV. 221 (1998). The analysis of carbon tax regimes later in the paper suggest a greater body of anecdotal evidence indicating that, at least within the realm of carbon taxation, double dividend hypothesis is firmer than some have posited). But see Lawrence H. Goulder, *Environmental Taxation and the "Double Dividend": A Reader's Guide* 18, 31-32 (Nat'l Bureau of Econ. Research, Working Paper No. 4896, 1994), available at <http://www.nber.org/papers/w4896.pdf> (noting that the hypothesis has been called into question for the lack of empirical proof).

<sup>48</sup> See JUAN-CARLOS ALTAMIRANO-CABRERA ET AL., A GLOBAL CARBON TAX TO COMPENSATE DAMAGE AND ADAPTATION COSTS 1 (2008), available at <http://gemini-e3.epfl.ch/webdav/site/gemini-e3/shared/A%20global%20carbon%20tax%20to%20compensate%20damage%20and%20adaptation%20costs>.

<sup>49</sup> See William D. Nordhaus, *To Tax or Not to Tax: Alt. Approaches to Slowing Global Warming*, 1 REV. OF ENVTL. ECON. & POL'Y 26, 40 (2007), available at [http://www.econ.yale.edu/~nordhaus/homepage/nordhaus\\_carbontax\\_reep.pdf](http://www.econ.yale.edu/~nordhaus/homepage/nordhaus_carbontax_reep.pdf).

<sup>50</sup> See Amy J. Holzinger, *Eco-Taxes in the European Union: The Need for a Uniform Structure*, 21 WIS. INT'L L.J. 185, 204 (2003).

<sup>51</sup> See *Environmental Taxes*, EUROPEAN ENV'T AGENCY, <http://www.eea.europa.eu/publications/92-9167-205-X/page016.html> (last visited Apr. 15, 2016) (outlining how the vast majority of environmental taxes in Europe have come from energy and transportation).

<sup>52</sup> See JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 137 (2013) (using the example of the United States in the 1970s when it wanted to reduce sulfur dioxide).

<sup>53</sup> *Id.*

<sup>54</sup> See *Alternatives to CFCs*, EASYCHEM.COM.AU, <http://www.easychem.com.au/monitoring-and-management/the-atmosphere/alternatives-to-cfcs> (last visited Apr. 15, 2016). This is of course not taking into account that these chemicals bring about their own issues including adding to the mix of GHGs responsible for global warming. This merely shows the limited successful role of Command-and-Control Regulation. *CFC Substitutes: Good for the Ozone Layer, Bad for Climate?*, SCI. DAILY, <http://www.sciencedaily.com/releases/2012/02/120224110737.htm> (last visited Apr. 15, 2016).

<sup>55</sup> HSU, *supra* note 44, at 19.

<sup>56</sup> David Gee, *Economic Tax Reform in Europe: Opportunities and Obstacles*, in TIMOTHY O'RIORDAN, ECOTAXATION 94 (1997).

<sup>57</sup> *Id.*

<sup>58</sup> Corporate Average Fuel Economy (CAFE) standards require that the average fuel efficiency of a given manufacturer meet a certain standard. See *Fuel Economy Regulations and Standards*, U.S. ENVTL. PROT. AGENCY, <http://www3.epa.gov/fueleconomy/regulations.htm> (last visited April 15, 2016).

<sup>59</sup> See VIRGINIA MCCONNELL, THE NEW CAFE STANDARDS: ARE THEY ENOUGH ON THEIR OWN? 5 (2013), available at <http://www.rff.org/RFF/Documents/RFF-DP-13-14.pdf>.

<sup>60</sup> A car operating at 20 miles per gallon will travel 200 miles with 10 miles of gas. A second car operating at 30 miles per gallon can accomplish the same distance in 6.7 gallons of gas. However, if savings on fuel efficiency is redirected into increasing driving by 50 percent, the driver who goes 300 miles with the second car still uses 10 gallons of gas.

<sup>61</sup> See Stephen Sewalk, *Europe Should Dump Cap-and-Trade in Favor of Carbon Tax with Reinvestment to Global Emissions*, 5 WASH. & LEE J. ENERGY, CLIMATE & ENV'T, 355, 367 (2014).

<sup>62</sup> *Id.*

<sup>63</sup> HSU, *supra* note 44 at 20.

<sup>64</sup> HSU, *supra* note 44, at 21.

<sup>65</sup> Sewalk, *supra* note 61, at 371.

<sup>66</sup> See *National Greenhouse Gas Emissions*, ENV'T CAN., <https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=FBF8455E-1> (last updated April 11, 2014) (demonstrating Canada's experience with greenhouse gas emissions) [hereinafter "*Greenhouse Gas Emissions*"].

<sup>67</sup> See Sewalk, *supra* note 61, at 369.

<sup>68</sup> See *id.* at 366 (providing a brief description of the program's inception).

The EU ETS included all members of the EU at inception as well as Norway, Iceland, Croatia, and Liechtenstein. See *EU-ETS 2005-2012*, EUROPEAN COMM'N, [http://ec.europa.eu/clima/policies/ets/pre2013/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/pre2013/index_en.htm) (last visited April 15, 2016). Croatia's accession to the EU in 2013 made it the 28th nation of the EU. See *Croatia Joins the EU*, EUROPEAN UNION NEWSROOM, [http://europa.eu/newsroom/highlights/special-coverage/croatia-joins-eu/index\\_en.htm](http://europa.eu/newsroom/highlights/special-coverage/croatia-joins-eu/index_en.htm) (last visited Apr. 15, 2016).

<sup>69</sup> See Tim Laing et al., *Assessing the Effectiveness of the EU Emissions Trading System 1* (Ctr. for Climate Change Econ. and Policy Working Paper No. 126, 2013), <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2014/02/WP106-effectiveness-eu-emissions-trading-system.pdf> (last visited April 10, 2016).

<sup>70</sup> See *ETS, RIP?*, ECONOMIST, (Apr. 20, 2013), <http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets>.

<sup>71</sup> Sewalk, *supra* note 61, at 369 (citing Julien Chevallier et al., *Options Introduction and Volatility in the EU ETS*, 33 RESOURCE & ENERGY ECON. 855, 873 (2011) (explaining the uncertain nature of predicting the behavior of carbon markets)).

<sup>72</sup> Sewalk, *supra* note 61, at 375 (citing Sid Maher, *Europe's \$287bn Carbon "Waste": UBS Report*, THE AUSTRALIAN (Nov. 23, 2011), <http://www.theaustralian.com.au/national-affairs/europes-287bn-carbonwaste-ubs-report/story-fn59niix-1226203068972#> ("UBS says the European Union's emissions trading scheme has cost the continent's consumers \$287 billion for "almost zero impact" on cutting carbon emissions . . ."). At the same time the trading scheme costs consumers some €210bn which could have been allocated to replace the dirtiest power plants for a reduction of emissions by forty-three percent. See Maher, *supra*.

<sup>73</sup> This is a reference to the problems of centrally planned economies in the Soviet Union which lacked the flexibility to adjust their targets swiftly. Two examples include a surplus of left shoes or a surplus of 1.5 million

sewing machines when bureaucrats working to reduce a shortage of sewing machines forgot to turn the program off. See Richard C. Longworth, THE CALL-LEADER, Nov. 9, 1967, at 10, available at <http://call-leader.newspapers.com/newspage/87896896/>.

<sup>74</sup> See Jeff Brady, *After Solyndra Loss, U.S. Energy Loan Program Turning a Profit*, NPR, <http://www.npr.org/2014/11/13/363572151/after-solyndra-loss-u-s-energy-loan-program-turning-a-profit> (last updated Nov. 20, 2014).

<sup>75</sup> Am. Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 145 (codified as amended at 42 U.S.C. § 16516 (2009)), available at <http://www.gpo.gov/fdsys/pkg/PLAW-111publ5/pdf/PLAW-111publ5.pdf>.

<sup>76</sup> See Henry C. Jackson, *Program that Funded Solyndra Failure Producing Success Stories*, WASH. POST (Dec. 30, 2014), available at [http://www.washingtonpost.com/politics/program-that-funded-solyndra-failure-producing-success-stories/2014/12/30/3e896b46-9074-11e4-a900-9960214d4cd7\\_story.html](http://www.washingtonpost.com/politics/program-that-funded-solyndra-failure-producing-success-stories/2014/12/30/3e896b46-9074-11e4-a900-9960214d4cd7_story.html).

<sup>77</sup> *Id.* (“[The stimulus] has been a tremendous success; I mentioned \$30 billion in loans with a 2 percent default rate—that is pretty enviable in my portfolio.”).

<sup>78</sup> RACHEL GELMAN & STEVE HOCKETT, U.S. DEP’T OF ENERGY OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY, 2008 RENEWABLE ENERGY DATA BOOK 3 (Michelle Kubik ed., 2009), [http://www1.eere.energy.gov/geothermal/pdfs/data\\_book.pdf](http://www1.eere.energy.gov/geothermal/pdfs/data_book.pdf). (2008 is emphasized for the fact that the American Recovery and Investment Act at issue in this discussion was in 2009).

<sup>79</sup> See Aaron Tucker, *Government Intervention in Clean Energy Technology During the Recession*, 42 TEX. ENVTL. L.J. 347, 349 (2012) (citing GELMAN & HOCKETT, *supra* note 78, at 3).

<sup>80</sup> *Id.*

<sup>81</sup> The total amount of the American Recovery and Investment Act was \$787 billion. Of this \$75 billion was for green investments. However, much of the green investments were for improving existing infrastructure (for example insulation of old buildings). Environment America which is a federation of state-based advocacy groups estimated the total amount of stimulus for clean energy projects came to \$32.8 billion. See *How do “Green Projects” Create Jobs?*, SCIENTIFIC AM. (July 16, 2009), <http://www.scientificamerican.com/article/how-do-green-projects-create-jobs/>.

<sup>82</sup> The Iron Triangle is composed of interest groups, Congress, and bureaucracy, which can be united in preserving a specific spending paradigm. See F. Gregory Hayden, *Policymaking Network of the Iron-Triangle Subgovernment for Licensing Hazardous Waste Facilities*, 36 J. OF ECON. ISSUES 477, 479 (2002), available at <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1007&context=cbafacepub>.

<sup>83</sup> The defense industry still puts out a large quantity of Cold War era technology such as Abrams Tanks which serve little purpose in the last 20 years of overseas contingency operations. Military planners would prefer to “use [defense spending] in a different way.” Phillip Swartz, *Lawmakers Force Pentagon to Buy Tanks, Keep Ships and Planes it Doesn’t Need*, WASH. GUARDIAN (May 9, 2013), <http://www.washingtontimes.com/news/2013/may/9/lawmakers-force-pentagon-to-buy-tanks-keep-ships-a/?page=all>. However the paradox of the iron triangle preventing meaningful reform is outlined by representatives from Ohio where Abrams tanks are manufactured. Congressman Jim Jordan, OH-4, when pushed on his support of shaving \$42 billion from the defense budget but blocking a cessation of producing Abrams tanks in his district. “My job is to represent the 4<sup>th</sup> Congressional District [of Ohio].” *Id.* His colleague in Ohio’s 10<sup>th</sup> Congressional District was equally honest. “An additional \$120 million for Abram’s tank upgrades” “keeps the production lines open in Lima, Ohio, and ensures that our skilled, technical workers are protected.” See Richard Sisk, *Congress Again Buys Abrams Tanks the Army Doesn’t Want*, MILITARY TIMES (Dec. 18, 2014), <http://www.military.com/daily-news/2014/12/18/congress-again-buys-abrams-tanks-the-army-doesnt-want.html>.

<sup>84</sup> An example of this incredible gap in technology is fears that Chinese Stealth Technology might catch up with that of the F-35. What must be pointed out is that the most advanced jet in the Chinese arsenal is currently on par with the F-15 and the F-18, jets whose most recent models were rolled out in 1989 and 1995 respectively. See Dave Majumdar, *U.S. Pilots Say New Chinese Stealth Fighter Could Become Equal of F-22, F-35*, U.S. NAVY INST. (Nov. 6, 2014), <http://news.usni.org/2014/11/05/u-s-pilots-say-new-chinese-stealth-fighter-become-equal-f-22-f-35>. See also F-15E STRIKE EAGLE FACT SHEET, U.S. AIR FORCE (Apr. 15, 2005), <http://www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104499/f-15e-strike-eagle.aspx> (providing a background on the F-15E Strike Eagle Aircraft); F/A-18 FACT FILE, U.S. NAVY (May 26, 2009), [http://www.navy.mil/navydata/fact\\_display.asp?cid=1100&tid=1200&ct=1](http://www.navy.mil/navydata/fact_display.asp?cid=1100&tid=1200&ct=1) (providing a background on the F/A-18 Aircraft).

<sup>85</sup> See Bobby Magill, *Okla. Utilities Hit Homes Using Solar With Extra Fee*, CLIMATE CENT. (Apr. 22, 2014), <http://www.climatecentral.org/news/oklahoma-solar-surcharge-bill-becomes-law-17335>.

<sup>86</sup> See *Putting a Price on Carbon with a Tax*, WORLD BANK, [http://www.worldbank.org/content/dam/Worldbank/document/SDN/background-note\\_carbon-tax.pdf](http://www.worldbank.org/content/dam/Worldbank/document/SDN/background-note_carbon-tax.pdf) (last visited Apr. 15, 2016).

<sup>87</sup> See generally *Where Carbon is Taxed*, CARBON TAX CTR., <http://www.carbontax.org/services/where-carbon-is-taxed/> (last modified Jan. 15, 2015).

<sup>88</sup> *Id.*

<sup>89</sup> *Id.*

<sup>90</sup> David G. Duff, *Carbon Taxation in British Columbia*, 10 VT. J. ENVTL. L. 87, 90 (2008); Nicholas Rivers & Brandon Schaufele, *Carbon Tax Salience and Gasoline Demand* 1 (Dep’t of Econ.: Faculty of Social Sciences U. of Ottawa, Working Paper No. 1211E, 2012), available at <http://socialsciences.uottawa.ca/sites/default/files/public/eco/eng/documents/1211e.pdf>.

<sup>91</sup> Duff, *supra* note 90, at 90. The Albertan system was done alongside a carbon trading regime. *Alberta’s Climate Change Program*, IETA, <http://www.ieta.org/Resources/Resources/101s/ab-climate-change-program-april2015.pdf> (last updated Apr. 2015).

<sup>92</sup> Duff, *supra* note 90, at 91.

<sup>93</sup> *Id.* at 97 (noting that at the time of introduction, gasoline was taxed at 2.41 cents per liter, diesel at 2.76 cents per liter propane at 1.53 cents per liter of propane, aviation fuel at 2.45 cents per liter. Other similar numbers were introduced for natural gas, low-heat-value coal, high-heat-value coal, coke, peat, and tires.); see also *Greenery in Canada: We Have a Winner*, ECONOMIST (July 21, 2011), <http://www.economist.com/node/18989175> (discussing that the rate of \$10 per ton was an introductory rate intended to increase over time by \$5 annually.); Stewart Elgie, *British Columbia’s Carbon Tax Shift: An Environmental and Economic Success*, WORLD BANK (Sept. 10, 2014), <http://blogs.worldbank.org/climatechange/british-columbia-s-carbon-tax-shift-environmental-and-economic-success> (reporting that as of September 2014, the amount had risen to \$30 per ton).

<sup>94</sup> See Duff, *supra* note 90, at 88.

<sup>95</sup> See *id.*

<sup>96</sup> See *id.*

<sup>97</sup> JEFFREY SIMPSON ET AL., HOT AIR: MEETING CANADA’S CLIMATE CHANGE CHALLENGE 87 (2011) (explaining that cynicism on the subject of well-intended but functionally failed policies is alive and well as these authors point out that change is needed, but that it will take decades to see any lasting change from sensible policies).

<sup>98</sup> See Duff, *supra* note 90, at 89.

<sup>99</sup> *Greenery in Canada: We Have a Winner*, *supra* note 93.

<sup>100</sup> See *id.* (noting the national unemployment rate for Canada is 6.7 percent while those in British Columbia are 5.5 percent); *Labour force characteristics, seasonally adjusted, by province (monthly)* (Saskatchewan, Alberta, British Columbia), STATISTICS CAN., available at <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/lfs01c-eng.htm> (last visited April 24, 2016).

<sup>101</sup> See Elgie, *supra* note 93 (noting that Canada withdrew from the Kyoto Protocol in 2012); see also Kyoto Protocol, *supra* note 1, at ch. XXVII.

<sup>102</sup> See *Canada GDP Growth Rate 1961-2015*, TRADING ECON., <http://www.tradingeconomics.com/canada/gdp-growth> (highlighting the Canadian economy began to retract in late 2007 and plummeted to a nearly two percent decline in 2009. The economy has since regained positive growth that remains below one percent annually) (last visited Apr. 24, 2016) [hereinafter “*Canada GDP Growth Rate*”].

<sup>103</sup> See Elgie, *supra* note 93.

<sup>104</sup> See Yoram Bauman, *The Canadians Are Coming!*, SIGHTLINE DAILY (May 21, 2014, 6:30 AM), <http://daily.sightline.org/2014/05/21/the-canadians-are-coming/>; Andy Skuce, *The Effect of Cross-Border Shopping on BC Fuel Consumption Estimates*, CRITICAL ANGLE (Aug. 18, 2013), <http://critical-angle.net/2013/08/18/the-effect-of-cross-border-shopping-on-bc-fuel-consumption-estimates/>.

<sup>105</sup> See Nicholas Rivers, *The Case for a Carbon Tax in Canada*, CANADA 2020 (Nov. 11, 2014), <http://canada2020.ca/canada-carbon-tax/> (explaining among Canadian provinces, Alberta is the second highest producer of per capita GHG emissions. This is likely due to its role in developing the Athabasca Oil Sands. However, alongside a carbon tax, Alberta has also instituted a carbon trading program which has resulted in reductions of 51 million tons of GHG according to the Albertan government. This seems to be a slow in growth of emissions rather than an aggregate reduction as the Canadian government shows GHG production to rise from an estimated 231 tons to 249 tons from 2005-2012. Compared with the growth from 169 in 1990, the rate of growth has shifted

from 2.7% annually to 1.1%. Placed alongside the booming development of oil resources, the growth of emissions has been more than halved, something akin to success by some estimates.); cf. *Greenhouse Gas Emissions*, *supra* note 66 (comparing Quebec, which has the least amount of per capita GHG production to begin with but has shown an overall drop in per capita GHG production. The fact that so much information exists for the overwhelming success of British Columbia while so little information exists for the lesser successes in Alberta and Quebec is akin to a drunk looking for his keys under a street lamp, because "that is where the light is.").

<sup>106</sup> *Where Carbon is Taxed*, *supra* note 87.

<sup>107</sup> See Peter Hannam, *Fall in Greenhouse Gas Emissions Biggest in 24 Years*, SYDNEY MORNING HERALD (June 13, 2014), <http://www.smh.com.au/environment/climate-change/fall-in-greenhouse-gas-emissions-biggest-in-24-years-20140613-zs7be.html> (last visited April 10, 2016).

<sup>108</sup> See Marianna O'Gorman & Frank Jotzo, *Impact of the carbon price on Australia's electricity demand, supply and emissions*, CTR. FOR CLIMATE ECON. & POL'Y (July, 17, 2014), [https://ccep.crawford.anu.edu.au/sites/default/files/publication/ccep\\_crawford\\_anu\\_edu\\_au/2014-07/ccep1411.pdf](https://ccep.crawford.anu.edu.au/sites/default/files/publication/ccep_crawford_anu_edu_au/2014-07/ccep1411.pdf).

<sup>109</sup> See Oliver Milman, *Carbon tax demise leading to large rise in emissions, says academic*, THE GUARDIAN (Nov. 4, 2014), <http://www.theguardian.com/environment/2014/nov/04/carbon-tax-demise-leading-to-large-rise-in-emissions-says-academic>.

<sup>110</sup> Hannam, *supra* note 107.

<sup>111</sup> See *Canada GDP Growth Rate*, *supra* note 102; *Australia GDP Growth Rate 1959-2016*, TRADING ECONOMICS, <http://www.tradingeconomics.com/australia/gdp-growth> (last visited April 15, 2015). (explaining that Australia suffered less in the global decline of 2007-2008 and has had two minor recessions in 2008 and 2010. GDP growth rate has typically stayed within 0.5 and 1.5% annually over the last decade. Any attempt to make a correlation with GDP growth rate and the sudden rise in emissions fails, as the change in GDP following the change in government was actually a decline from 1.1% to 0.5%. The growth rate remains at 0.5% per quarter, down from the 0.7% per quarter average in the eight quarters during which the carbon tax was in place.).

<sup>112</sup> Jenny Fung, *Informing Green Tax Policy Through the Laffer Curve*, 9 WASH. U. UNDERGRADUATE RESEARCH DIGEST 4 (2014), available at [http://open-scholarship.wustl.edu/vol9\\_iss2/3](http://open-scholarship.wustl.edu/vol9_iss2/3); see also *Where Carbon is Taxed*, *supra* note 87.

<sup>113</sup> See Fung, *supra* note 112, at 4.

<sup>114</sup> See *Where Carbon Is Taxed*, *supra* note 87.

<sup>115</sup> See Fung, *supra* note 112, at 8.

<sup>116</sup> *Id.* at 10.

<sup>117</sup> See IRELAND'S PROVISIONAL GREENHOUSE GAS EMISSIONS IN 2013: KEY HIGHLIGHTS, IRELAND EPA 1 (2014), available at <http://www.epa.ie/pubs/reports/air/airemissions/GHGprov.pdf>.

<sup>118</sup> Richard L. Ottinger, *Energy and Environmental Challenges for Developed and Developing Countries; Keynote Address Presented at the United Nations Meeting on Energy and Environment in the Development Process*, 9 PACE ENVTL. L. REV. 55, 102-03 (1991).

<sup>119</sup> See *id.*

<sup>120</sup> See Robert N. Stavins, *Policy Instruments for Climate Change: How Can National Governments Address A Global Problem?*, U. CHI. LEGAL F. 293 (1997).

<sup>121</sup> See Jonathan Baert Wiener, *Global Environmental Regulation: Instrument Choice in Legal Context*, 108 YALE L.J. 677, 786 (1999) (citing Stuart Eizenstat, *Stick with Kyoto: A Sound Start on Global Warming*, FOREIGN AFF. at 119-120 (May/June 1998), (rebutting the advocacy of an international greenhouse gas tax)).

<sup>122</sup> See Sangmin Shim, *Korea's Leading Role in Joining the Kyoto Protocol with the Flexibility Mechanisms As "Side-Payments"*, 15 GEO. INT'L ENVTL. L. REV. 203, 231 (2003).

<sup>123</sup> See Paul G. Harris, *Collective Action on Climate Change: The Logic of Regime Failure*, 47 NAT. RESOURCES J. 195, 213 (2007) (noting that it was "never likely that an international carbon tax would be implemented").

<sup>124</sup> See Hsu, *supra* note 44, at 20. See generally Chris Hastings, *Implementing a Carbon Tax in Florida under the Clean Power Plan: Policy Considerations*, 43 FLA. ST. U. L. REV. 1035, 1054 (2016).

<sup>125</sup> See Cooper, *supra* note 4, at 67-68 (emphasis added).

<sup>126</sup> See WILLIAM FORSTER LLOYD, TWO LECTURES ON THE CHECKS TO POPULATION 17 (Oxford Univ. Press 1833) (stating that "the influence of different institutions and conditions of society, according as they are favourable or unfavourable to the preventive check, will form an interesting subject of inquiry.").

<sup>127</sup> See John D. McKinnon & Scott Thurm, *U.S. Firms Move Abroad to Cut Taxes*, WALL ST. J. (Aug. 28, 2012, 9:38 PM), available at <http://www.wsj.com/articles/SB1000087239639044230504577615232602107536> (explaining a company's domicile is often determined by the most favorable taxation rates).

<sup>128</sup> See UNEP Report: *Developing Countries' Adaptation Costs Likely to Far Surpass Previous Estimates*, UNITED NATIONS ENV'T. PROGRAMME (Dec. 5, 2014), <http://www.un.org/climatechange/blog/2014/12/unep-report-developing-countries-adaptation-costs-likely-far-surpass-previous-estimates/> (noting adaptation costs are those associated with the "intensifying impacts of climate change such as drought, floods and rising sea levels.") [hereinafter "UNEP"].

<sup>129</sup> See *Working Group III: Mitigation*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, <http://www.ipcc.ch/ipccreports/tar/wg3/index.php?idp=251> (last visited April 10, 2016).

<sup>130</sup> See Michael Hoel, *Harmonization of Carbon Taxes in International Climate Agreements*, 3 ENVTL. & RESOURCE ECON. 221, 221 (1993).

<sup>131</sup> See Cooper, *supra* note 4, at 74.

<sup>132</sup> See *Special Report: The Global 2000*, FORBES (April 2, 2008, 6:00 PM), available at [http://www.forbes.com/lists/2008/18/biz\\_2000global08\\_The-Global-2000\\_Prof.html](http://www.forbes.com/lists/2008/18/biz_2000global08_The-Global-2000_Prof.html).

<sup>133</sup> See generally Stephen Spratt, *Preface to A Sterling Solution*, STAMP OUT POVERTY 2 (Sept. 2006), <http://www.stampoutpoverty.org/wp-content/uploads/2012/10/A-Sterling-Solution.pdf>.

<sup>134</sup> See Holzinger, *supra* note 50, at 194 (2003).

<sup>135</sup> See ORG. FOR ECON. CO-OPERATION AND DEV., ENVTL. TAXES AND GREEN TAX REFORM 16-18 (1997).

<sup>136</sup> See Lloyd, *supra* note 126.

<sup>137</sup> See ALTAMIRANO-CABRERA ET AL., *supra* note 48 at 12.

<sup>138</sup> See generally *World Economic Outlook Database*, INT'L MONETARY FUND, <http://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx> (citing "By Countries (country-level data)" hyperlink) (last visited Apr. 26, 2016).

<sup>139</sup> See Charles D. Patterson, III, *Environmental Taxes and Subsidies: What is the Appropriate Fiscal Policy for Dealing With Modern Environmental Problems?*, 24 WM. & MARY ENVTL. L. & POL'Y REV. 121, 124-25, 127 (2000) (noting the different kinds of management systems at a corporation's disposal).

<sup>140</sup> But see Coon, *supra* note 8.

<sup>141</sup> See Shim, *supra* note 122, at 229-31 (2003) (addressing some potential solutions to the free-rider problem).

<sup>142</sup> *Report by the Working Party on Border Tax Adjustments*, ¶ 4, L/3464 (Nov. 20, 1970), at 2, available at <http://worldtradelaw.net/document.php?id=reports/gattpanels/bordertax.pdf> (explaining a Border Adjustment as "[A]ny fiscal measures which put into effect, in whole or in part, the destination principle (i.e. which enable exported products to be relieved of some or all of the tax charged in the exporting country in respect of similar domestic products sold to consumers on the home market and which enable imported products sold to consumers to be charged with some or all of the tax charged in the importing country in respect of similar domestic products.")).

<sup>143</sup> See DAVID G. VICTOR, *THE COLLAPSE OF THE KYOTO PROTOCOL AND THE STRUGGLE TO SLOW GLOBAL WARMING* 5, 7 (Princeton Univ. Press 2001) (noting that developing nations are extremely cautious in entering into these taxes as it may place an economic burden on them in order to keep up with the developments of greenhouse gas controls).

<sup>144</sup> See Vincent, *supra* note 24, at 167.

<sup>145</sup> See *id.* at 176-79.

<sup>146</sup> *Id.* at 180.

<sup>147</sup> See GATT 1994: General Agreement on Tariffs and Trade 1994, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, art. I, THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 17 (1999), 1867 U.N.T.S. 187, 33 I.L.M. 1153 (1994) [hereinafter GATT 1994].

<sup>148</sup> See *id.* at art. III.

<sup>149</sup> See *id.* at art. XX.

<sup>150</sup> See *id.* at art. III.

<sup>151</sup> Vincent, *supra* note 24, at 181.

<sup>152</sup> See *id.* at 180-83.

<sup>153</sup> See *id.* at 183-84.

<sup>154</sup> See generally Gregory Shaffer, Note, *United States - Import Prohibition of Certain Shrimp and Shrimp Products*, 93 AM. J. INT'L L. 507, 508 (1999) (providing a background on Shrimp/Turtle); Victor, *supra* note 143, at 88 (explaining that Shrimp Turtle opened the door to enforce legitimate environmental goals in international trade).

- <sup>155</sup> Vincent, *supra* note 24, at 180 (quoting Timothy E. Deal, *WTO Rules and Procedures and Their Implications for the Kyoto Protocol* 8, U.S. COUNCIL FOR INT'L BUS. (2008), [http://www.uscib.org/docs/wto\\_and\\_kyoto\\_2008.pdf](http://www.uscib.org/docs/wto_and_kyoto_2008.pdf)).
- <sup>156</sup> See *id.* at 185 (citing GATT art. XX).
- <sup>157</sup> See generally Laura Yavitz, *The World Trade Organization Appellate Body Report, European Communities – Measuring Affecting Asbestos and Asbestos Containing Products*, Mar. 12, 2001 WT/DS135/AB/R, 11 MINN. J. GLOBAL TRADE 43, 66 (2002) (stating that “Article XX’s exceptions can be accepted if they can explain trade measures in terms of protecting people, animals, plants or exhaustible natural resources within their own jurisdictional limits and without requiring others to change any policies or production methods.”).
- <sup>158</sup> TRADE AND ENVIRONMENT AT THE WTO, WORLD TRADE ORG. 21, 52 (2004), [https://www.wto.org/english/tratop\\_e/envir\\_e/envir\\_wto2004\\_e.pdf](https://www.wto.org/english/tratop_e/envir_e/envir_wto2004_e.pdf).
- <sup>159</sup> See Vincent, *supra* note 24, at 187.
- <sup>160</sup> See Patterson, *supra* note 139, at 127. See generally ALEXANDRE KISS & DINAH SHELTON, *INTERNATIONAL ENVTL. LAW* 215 (Transnational Publishers, Inc. 2d ed. 2007).
- <sup>161</sup> See Kate Gordon, *Why Renewable Energy Still Needs Subsidies*, WALL ST. J. (Sep. 14, 2015, 8:20 AM), <http://blogs.wsj.com/experts/2015/09/14/why-renewable-energy-still-needs-subsidies/>.
- <sup>162</sup> See UNEP, *supra* note 128.
- <sup>163</sup> See *New Research Analyzes Countries at Greatest Risk from Climate Change Impacts*, EARTH INST. AT COLUMBIA U. (March 29, 2007), <http://www.earth.columbia.edu/news/2007/story03-29-07.php>. See generally PERCENTAGE OF TOTAL POPULATION LIVING IN COASTAL AREAS, UNITED NATIONS, [http://www.un.org/esa/sustdev/natlinfo/indicators/methodology\\_sheets/oceans\\_seas\\_coasts/pop\\_coastal\\_areas.pdf](http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/oceans_seas_coasts/pop_coastal_areas.pdf) (detailing the global population living in coastal areas) (last visited April 26, 2015).
- <sup>164</sup> See Jochen Hinkel et al., *Coastal Flood Damage and Adaptation Costs Under 21st Century Sea-Level Rise*, 111 PROCEEDINGS OF THE NATIONAL ACAD. OF SCI. OF THE U.S. 3292, 3293 (Jan. 31, 2013), [http://www.eenews.net/assets/2014/02/04/document\\_ew\\_01.pdf](http://www.eenews.net/assets/2014/02/04/document_ew_01.pdf) (“Without adaptation, 0.2–4.6% of global population is expected to be flooded annually in 2100 under 25–123 cm of global mean sea-level rise, with expected annual losses of 0.3–9.3% of global gross domestic product. Damages of this magnitude are very unlikely to be tolerated by society and adaptation will be widespread. The global costs of protecting the coast with dikes are significant with annual investment and maintenance costs of US \$12–71 billion in 2100, but much smaller than the global cost of avoided damages even without accounting for indirect costs of damage to regional production supply.”).
- <sup>165</sup> See Cooper, *supra* note 4, at 74.
- <sup>166</sup> See *2015 Ranking of the Global Top 10 Oil and Gas Companies Based on Net Income (in Billion U.S. Dollars)*, STATISTICS PORTAL (2015), <http://www.statista.com/statistics/272711/top-global-oil-and-gas-companies-based-on-net-income/> (indicating that it is unclear at the time of this writing precisely how to deal with subsidies of gas and oil companies by Western governments or how to properly levy a tax on the state-owned enterprise (SOEs) that exist in Russia and China); see also Daniel J. Weiss & Miranda Peterson, *With Only \$93 Billion in Profits, the Big Five Oil Companies Demand to Keep Tax Breaks*, CTR. FOR AM. PROGRESS (Feb. 10, 2014), <https://www.americanprogress.org/issues/green/news/2014/02/10/83879/with-only-93-billion-in-profits-the-big-five-oil-companies-demand-to-keep-tax-breaks/>.
- <sup>167</sup> See Eric Gargan, *Reflections on the Implementation of the Carbon Tax in Ireland*, ENERGY AND ENVTL. TAXATION, FISCAL POL’Y DIV. (May 16, 2012), [http://www.nesc.ie/assets/files/downloads/project\\_climate%20change/ucd\\_workshop/ericgargan.pdf](http://www.nesc.ie/assets/files/downloads/project_climate%20change/ucd_workshop/ericgargan.pdf).
- <sup>168</sup> See *Ireland GDP 1960-2016*, TRADING ECONOMICS, <http://www.tradingeconomics.com/ireland/gdp> (last visited Apr. 26, 2016).
- <sup>169</sup> See *Gross Domestic Products of Nations*, WORLD BANK, <http://databank.worldbank.org/data/download/GDP.pdf> (last visited Apr. 26, 2016).
- <sup>170</sup> See *Guyana*, CLIMATE HOT MAP, <http://www.climatehotmap.org/global-warming-locations/guyana.html> (providing Guyana as an example of a vulnerable nation) (last visited Apr. 26, 2016); *Guyana GDP 1960-2016*, TRADING ECON., <http://www.tradingeconomics.com/guyana/gdp> (highlighting a fund would help protect the economies of developing nations which in turn means increased purchasing power to participate in international markets. For example, 80 percent of the Guyanese population lives in a low-lying coastal region along with most of the national industry and agriculture. The cost of dealing with a predicted global sea level rise of two meters comes to a little more than \$1 billion which is far less than the economic damage caused by flooding or the long term cost of regional instability caused by a weakened Guyanese economy. However, the \$1 billion price tag is roughly 33 percent of Guyanese GDP as of 2014, an insurmountable cost for mere domestic measures) (last visited Apr. 26, 2016).
- <sup>171</sup> See Holzinger, *supra* note 50, at 186.
- <sup>172</sup> See JEAN-PHILIPPE BARDE, *ENVIRONMENTAL TAXATION: EXPERIENCE IN OECD COUNTRIES* 230 (1997).
- <sup>173</sup> See KISS & SHELTON, *supra* note 160, at 215.
- <sup>174</sup> See Holzinger, *supra* note 50, at 190.
- <sup>175</sup> Andrew C. Revkin, *A Closer Look at China’s ‘You First’ Stance in Climate Treaty Talks*, N.Y. TIMES (Nov. 22, 2013, 2:43 PM), [http://dotearth.blogs.nytimes.com/2013/11/22/a-closer-look-at-chinas-you-first-stance-in-climate-treaty-talks/?\\_r=0](http://dotearth.blogs.nytimes.com/2013/11/22/a-closer-look-at-chinas-you-first-stance-in-climate-treaty-talks/?_r=0).
- <sup>176</sup> See Vincent, *supra* note 24, at 165–66.
- <sup>177</sup> See *id.* at 175.
- <sup>178</sup> See *Member States, IGOs, and NGOs*, INT’L MAR. ORG., <http://www.imo.org/en/About/Membership/Pages/Default.aspx> (last visited Apr. 26, 2016).
- <sup>179</sup> See *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage*, INT’L MAR. ORG., <http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-the-Establishment-of-an-International-Fund-for-Compensation-for-Oil-Pollution-Damage-%28FUND%29.aspx> (last visited Apr. 26, 2016) [hereinafter “FUND”].
- <sup>180</sup> See *Parties to the International Liability and Compensation Conventions*, INT’L OIL POLLUTION CLEANUP, <http://www.iopcfunds.org/about-us/membership/map/#> (explaining notable absences include the oil producing countries of the United States, Libya, and Iraq. As the fund is for those receiving oil rather than exporting it, this is reasonable.) (last visited Apr. 26, 2016).
- <sup>181</sup> See FUND, *supra* note 180.
- <sup>182</sup> See *SDR Valuation*, INT’L MONETARY FUND, [https://www.imf.org/external/np/fin/data/rms\\_sdrv.aspx](https://www.imf.org/external/np/fin/data/rms_sdrv.aspx) (last visited Apr. 26, 2016).
- <sup>183</sup> See FUND, *supra* note 180.
- <sup>184</sup> See *id.*; *Home*, INT’L OIL POLLUTION COMPENSATION FUND, <http://www.iopcfunds.org/> (last visited Apr. 26, 2016).
- <sup>185</sup> See *Erika*, INT’L OIL POLLUTION CLEANUP FUND, <http://www.iopcfunds.org/incidents/incident-map/#111-1999-235-December> (last visited Apr. 26, 2016).
- <sup>186</sup> See *id.*
- <sup>187</sup> See *id.*
- <sup>188</sup> Vincent, *supra* note 24, at 180, 184.

## ENDNOTES: THE LAW OF THE SEAS: A BARRIER TO IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOAL 14

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<http://opiniojuris.org/2013/05/27/law-of-the-sea-symposium-whaling-wars-non-state-actors-and-international-responsibility/>.

<sup>28</sup> See *Sea Shepherd Seeks Dutch Prosecution of Japanese Whalers*, ENV’T NEWS SERV. (Mar. 24, 2013) <http://ens-newswire.com/2013/03/21/sea-shepherd-seeks-dutch-prosecution-of-japanese-whalers/> (detailing SSCS’s claim that IRS’s “commercial whaling in the waters south of 60 degrees violated the Antarctic Treaty that prohibits commercial activity in the waters around the continent of Antarctica”).

<sup>29</sup> See *Flags of Inconvenience*, *supra* note 25 (explaining that cargo owners and shipping companies are excluded from the authority of UNCLOS).

<sup>30</sup> See *Goal 14*, *supra* note 4.

<sup>31</sup> See *In deep water*, THE ECONOMIST (Feb. 22, 2014), <http://www.economist.com/news/international/21596990-humans-are-damaging-high-seas-now-oceans-are-doing-harm-back-deep-water> (“Two-thirds of fish stocks on the high seas are over-exploited—twice as much as in parts of oceans under national jurisdiction”).

<sup>32</sup> See *Goal 14*, *supra* note 4.