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### Recommended Citation

Jerger, David B. , Jr. "Indonesia's Role in Realizing the Goals of ASEAN's Agreement on Transboundary Haze Pollution." *Sustainable Development Law & Policy* 14, no. 1 (2014): 35-45, 70-74.

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# INDONESIA'S ROLE IN REALIZING THE GOALS OF ASEAN'S AGREEMENT ON TRANSBOUNDARY HAZE POLLUTION

By David B. Jerger, Jr.\*

## I. INTRODUCTION

During monsoon season, from May to September, the Southeast Asian mainland and Borneo face the prospect of haze arriving from the Indonesian archipelago.<sup>1</sup> This haze primarily consists of the dissipated smoke from fires on the Indonesian island of Sumatra.<sup>2</sup> Human activity creates the haze when individuals and companies cut down trees and burn peatlands<sup>3</sup> to clear the land for small-scale agricultural purposes or for industrial purposes, such as palm oil plantations and logging.<sup>4</sup> Because of monsoon wind patterns and Sumatra's geographical proximity to peninsular Malaysia and Singapore, these two countries are especially susceptible to haze.

Haze can hang over Malaysia and Singapore for weeks and even months.<sup>5</sup> The inhabitants and governments normally have no recourse but to wait for storms that may shift the haze elsewhere.<sup>6</sup> It is difficult to predict where and when the haze will arrive, how long it will remain, and how thick it will be.<sup>7</sup> These variables depend on the number of "hotspots"—burning activities resulting in haze—each year.<sup>8</sup> Moreover, air pollution is complex and therefore hard to regulate effectively. Even when pollution originates from domestic sources providing governments with jurisdiction over regulation, creating a regulatory regime is still problematic.<sup>9</sup> Regulation becomes even more problematic when the pollution source lies beyond the affected country's borders. The main reasons transboundary pollution<sup>10</sup> is so difficult to regulate are threefold: (1) there is generally no political will to impose costs domestically when the effects of pollution are felt abroad; (2) the polluted country faces jurisdictional hurdles when bringing a suit against the polluter country; and (3) judgments can often be difficult to enforce.<sup>11</sup>

The Association of Southeast Asian Nations' ("ASEAN") Agreement on Transboundary Haze Pollution ("Agreement"), which entered into force in 2003, attempts to create a framework that will allow parties to reduce transboundary pollution and the associated harm.<sup>12</sup> However, Indonesia, the region's greatest source of transboundary air pollution, has not ratified the treaty.<sup>13</sup> Indonesia has repeatedly promised to ratify the Agreement, but its legislature has refused to act without guarantees from other ASEAN states that they will not buy timber illegally imported from Indonesia.<sup>14</sup>

This article argues that Indonesia should ratify the Agreement because it creates an effective framework for reducing transboundary haze pollution without placing new burdens on Indonesia. As a framework treaty, the purpose of the

Agreement is to gather information on the causes of transboundary haze pollution and the actions member-states are taking to mitigate it. This information will lead to a more complete understanding of what actions parties should take to reduce pollution and how those actions affect pollution. As a result, parties will adjust their behavior over time, leading to greater mitigation. The Agreement makes this information compiling and sharing possible by omitting sanctions or binding adversarial proceedings from its provisions, which incentivizes a collaborative approach toward addressing the pollution and gives member-states less of a reason to report false or inaccurate data.

This article begins by discussing the origin of transboundary haze pollution in Southeast Asia, moves to the background to and structure of the ASEAN Agreement on Transboundary Haze Pollution, and finally argues that Indonesia should ratify the Agreement.

## II. CAUSES OF TRANSBOUNDARY AIR POLLUTION IN SOUTHEAST ASIA

Haze describes the amount of particulate matter in the air and its effect on visibility.<sup>15</sup> Particulate matter usually enters the air as a result of smoke from fires and gathers when humidity is low.<sup>16</sup> Air is considered "hazy" when ground level visibility is between 1000 and 2000 meters.<sup>17</sup> In windless conditions haze tends to remain in one location, creating adverse health effects including reduced lung capacity in the young, cardiovascular problems, and reduced life expectancy.<sup>18</sup> People living in areas affected by haze may deal with it for weeks or months at a time, breathing in smoke particulates until a storm system powerful enough to move or dissipate the dense, "hazy" air passes through the affected area.

Because storms and wind patterns affect the haze's location, haze from one source can travel great distances, even across national borders, when strong wind patterns prevail.<sup>19</sup> Haze pollution becomes transboundary pollution when it travels from the state in which it originated ("source state") across national borders to the "affected state."<sup>20</sup> Transboundary pollution is an especially challenging issue in international environmental law because it is difficult to figure out how transboundary pollution works and because the benefit of the activity causing the

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pollution in the source state outweighs the cost of the pollution there.<sup>21</sup>

Transboundary pollution is complicated because it is often difficult to understand what factors are causing the problem and how these factors affect each other.<sup>22</sup> Scientists and policymakers must determine where pollutants originate and how the pollutants interact with large systems such as global air-flow patterns, which is a highly technical endeavor.<sup>23</sup> The science that deals with these problems is also often being examined for the first time.<sup>24</sup> This introduces a degree of uncertainty to explanations of how the pollution occurs and predictions about where it will occur next.<sup>25</sup>

Although transboundary pollution primarily harms affected states, source states often experience some harm as well.<sup>26</sup> But source states also enjoy the benefits of the activities that cause the transboundary pollution. The existence of such pollution suggests that the source state has determined the benefits of the polluting activity outweigh the cost of regulating the pollution.<sup>27</sup> This imbalance makes it unlikely a source state would agree to a treaty that penalizes the creation of transboundary pollution. However, the categories of source state and affected state are not mutually exclusive; in fact, it is common that a state is both a source state and an affected state.<sup>28</sup> In the case of air pollution, a state can change from a source state to an affected state as easily as the wind changes direction.<sup>29</sup>

### *A. Indonesian Fires*

Fires in Indonesia are widely considered the largest contributing factor to Southeast Asia's regional haze.<sup>30</sup> The haze that originates in Indonesia is so massive that it has reached beyond peninsular Malaysia to Thailand, Cambodia, and Laos on the Asian mainland, and Brunei and the Malaysian states on the island of Borneo.<sup>31</sup> This haze results from fires in Indonesia and the Indonesian government's inability to prevent or control them.<sup>32</sup>

Indonesia's fires are largely a result of its agricultural industry. Indonesia has ideal growing conditions for palm trees which produce palm oil, a major cash crop,<sup>33</sup> and is also home to valuable tropical timber.<sup>34</sup> About sixty percent of Indonesia's territory is forest land<sup>35</sup> and twenty-two million hectares—half the size of Sweden—are peatlands.<sup>36</sup> In recent years, many peatlands have been drained to make palm oil and forest plantations.<sup>37</sup> Drained peatlands are more likely to catch fire, and these fires can continue burning underground even after they have been extinguished on the surface.<sup>38</sup> Although some fires occur as a result of "lightning strikes on parched, peat-rich lands,"<sup>39</sup> there is widespread agreement that the bulk of Indonesia's fires are the result of the

slash-and-burn agriculture employed by the palm oil plantations and logging industries.<sup>40</sup>

Slash-and-burn agriculture, which relies on fire to clear otherwise seemingly indestructible vegetation, is a traditional practice for clearing land in Southeast Asia, especially in Indonesia.<sup>41</sup> Plantation owners and farmers alike prefer the slash-and-burn technique because it is cheap, easy, and effective—just light a match and control the burn.<sup>42</sup> The indiscriminate use of this method, however, destroys the vegetation that covers peatlands, leaving them exposed and vulnerable to fire.<sup>43</sup>

Although small-scale farmers do cause fires, their impact is minimal compared to the impact of logging companies and plantations.<sup>44</sup> Plantation owners use slash-and-burn to convert logged areas into plantations for palm oil and other cash crops and for timber and pulp production areas.<sup>45</sup> The large-scale nature of plantations and logging means that these two activities contribute the most to creating the conditions that lead to widespread and uncontrollable fires.<sup>46</sup> The plantations and timber industry have been able to perform slash-and-burn agriculture on such a large scale in part because they have been effective in influencing Indonesian land-use and forest policies to maximize their own short-term gains.<sup>47</sup>

The Indonesian government did ban using fire to clear land in 1995, but this ban has not been effectively enforced due to Indonesia's relative poverty and the fact that slash-and-burn agriculture is a traditional land-clearing technique believed to create more fertile land.<sup>48</sup> The end result is that haze from fires in Indonesia travels across national borders to Malaysia and Singapore, creating an international issue.

### *B. Indonesia's Failure to Control Fires*

In addition to political influence, Indonesia's size and geography make it difficult for the government to adequately prevent these fires.<sup>49</sup> Indonesia is the largest archipelagic state in the world, consisting of 17,508 islands, 6,000 of which are inhabited.<sup>50</sup> Roughly three times as large as Texas, its territory straddles the Equator and stretches from the Indian to the Pacific Ocean.<sup>51</sup> Indonesia's geography as a sprawling archipelago coupled with its lack of infrastructure leads to delays in governmental response time to fires.<sup>52</sup>

Peninsular Malaysia and Singapore are most affected by Indonesian haze because of their geographical proximity to the larger islands of the Indonesian archipelago and prevailing wind patterns.<sup>53</sup> In the summer of 2012, Malaysia measured "unhealthy" air quality throughout the country from Kuala Lumpur, the capital and largest city, to Port Klang, Malaysia's largest port.<sup>54</sup> During this time, the Malaysian Meteorological

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Department also released reports on air quality and sources of haze, including satellite-identified sources across the Indonesian archipelago where “uncontrolled daily burning in Sabah, Sarawak, and Kalimantan” was taking place.<sup>55</sup>

### III. REGULATING TRANSBOUNDARY AIR POLLUTION

Given the interstate nature of transboundary air pollution, it is regulated, if at all, by international environmental law. International environmental law is a field that has developed in the twentieth century through adjudications, soft law declarations, and multilateral agreements. General principles of international law that have emerged include state sovereignty over natural resources,<sup>56</sup> good neighborliness and international cooperation,<sup>57</sup> sustainable development,<sup>58</sup> the precautionary principle,<sup>59</sup> the polluter pays principle,<sup>60</sup> and common but differentiated responsibility.<sup>61</sup> The advantage of these principles is their clear explanation of a state’s rights and responsibilities with respect to another state’s environment. Their disadvantage is that they place a large burden on source states because they require the source state to act against its self-interest by modifying activities from which it largely benefits simply because they harm another state. This burden makes it unlikely that source states would agree to treaties that rigidly adhere to these principles or to recognize the jurisdiction of an international court or arbitration panel that would apply these principles.<sup>62</sup>

Recognizing these problems, an effective treaty for regulating transboundary pollution should not pit parties against one another, but rather create a framework that allows them to work toward a common goal.<sup>63</sup> Such a treaty acknowledges that: (1) states can work collaboratively to regulate transboundary pollution, even in the absence of coercive measures such as sanctions or arbitration; (2) international agreements evolve over time, as do the national implementing measures, so state cooperation in refining the treaty outweighs state compliance at any single time;<sup>64</sup> and (3) while states are the primary actors, other actors including intergovernmental, nongovernmental, and private industrial and commercial organizations, also play an important role.<sup>65</sup>

#### A. Problems of Regulating Transboundary Pollution

Transboundary pollution has proven especially difficult to regulate by way of international treaty for several reasons.<sup>66</sup> First, it is difficult to gain consent from source states over an issue with asymmetrical costs and benefits.<sup>67</sup> This is true whether that consent takes the form of agreeing to adjudicative measures or ratifying a treaty. Second, even when source states have consented, affected states rarely invoke litigation under those principles.<sup>68</sup> Consequently, affected states settle for multilateral environmental agreements (“MEAs”) that only weakly bind parties.<sup>69</sup>

Source states may be reluctant to agree to an arrangement that will upset the *status quo* because the source state receives most or all of the economic benefits of the economic activity that creates the pollution.<sup>70</sup> The state has presumably decided that the cost associated with the pollution that stays within its borders is an acceptable tradeoff.<sup>71</sup> Moreover, if the pollution

results from a disaster, rather than economic activity, the source state would rather spend resources on disaster response than pay damages to another party. At the same time, the affected state obtains no benefit from the economic activities occurring in the source state.<sup>72</sup> Rather, the affected state is forced to bear the cost of mitigating the transboundary pollution.<sup>73</sup>

Logically, the source state should bear the cost of its pollution, as is consistent with the polluter pays principle. The source state, however, is unlikely to consent to an arrangement that would evaluate its behavior based on these principles<sup>74</sup> precisely because its behavior directly conflicts with them.<sup>75</sup> Although the affected state will argue that it is fair to make the source state bear the costs of its pollution, it is difficult in practice to compel a source state to agree because of this imbalance of interests.<sup>76</sup>

Some scholars have suggested that measures such as litigation, arbitration, or sanctions are the most effective way to stop transboundary pollution.<sup>77</sup> This argument is appealing because it relies on procedures that result in binding judgments for deterring certain activities and enforcing domestic environmental regulation.<sup>78</sup> But despite clear legal principles governing responsibility for transboundary pollution and existing forums to pursue such claims, affected states rarely invoke coercive measures in international disputes.<sup>79</sup> For instance, the Trail Smelter case,<sup>80</sup> an arbitration that established the polluter pays principle in the international context, is arguably as famous for that legal principle<sup>81</sup> as it is for being an exception to the rule that adjudicatory measures are not invoked to resolve international environmental issues.<sup>82</sup> Even the Chernobyl disaster did not result in litigation, despite radiation travelling to over twenty downwind states and millions of dollars of monetary losses.<sup>83</sup>

In order for coercive measures—the threat of sanctions or a binding judgment—to affect behavior, parties must closely monitor one another’s behavior and be willing to report and punish noncompliance. This is especially problematic in the environmental context because environmental problems involve complex systems, verifying compliance would require developing expensive monitoring methods and systems, and scientific uncertainty makes parties reluctant to agree on concrete targets for emissions or technology standards.<sup>84</sup>

Moreover, sanctions would not likely stop transboundary pollution and its causes.<sup>85</sup> First, if it is important to the source state to continue activities that create the transboundary pollution, it will likely be willing to accept economic sanctions.<sup>86</sup> The source state can divert resources to work around sanctions that it could have used to reduce transboundary pollution, as the polluting activity continues unabated. Second, if the sanctions do change the source state’s behavior, it may also require a long period of time before the effects are significant enough to benefit the affected states.<sup>87</sup>

Further, sanctions impose costs on affected states: the affected states must expend resources to administer the sanctions regime and must assemble and maintain a broad consensus among parties with respect to the necessity and legitimacy of those sanctions.<sup>88</sup> Because of these costs, states do not enforce sanctions regularly or effectively.<sup>89</sup> The irregular enforcement

that does occur may be more for domestic political reasons than an interest in reliable enforcement.<sup>90</sup> Such enforcement then erodes the legitimacy of the sanctioning body because of the inconsistent enforcement outcomes.<sup>91</sup>

In the absence of litigation that results in coercive measures, international environmental law has turned to multilateral environmental agreements (“MEAs”) to regulate international environmental issues. Despite the ineffectiveness of existing coercive measures, MEAs have been criticized for both lacking such coercive measures and for consequently having low compliance and weak targets.<sup>92</sup> Some have even argued that MEAs are not meaningful law because they have no mechanism that will change a party’s behavior.<sup>93</sup> Instead, these MEAs require a meeting of the parties for the purpose of “developing procedures for implementation and noncompliance within the framework of the agreement.”<sup>94</sup>

### *B. Using a Managerial Model to Regulate Transboundary Haze Pollution*

Despite their seeming ineffectiveness, due at least in part to the lack of coercive measures,<sup>95</sup> MEAs are not failures. Rather, they are aspirational<sup>96</sup> and use a “managerial model” framework that allows compliance to increase over time.<sup>97</sup> While they are not contracts that commit parties to take action to solve a problem,<sup>98</sup> the managerial model allows the MEA to respond to changes in technology, scientific understanding, and politics.<sup>99</sup> These treaties no longer memorialize political settlements and arrangements; rather they provide a framework for countries to use to address complex and ongoing problems, like transboundary pollution.<sup>100</sup> In fact, MEAs that only weakly bind parties to meet loosely defined obligations and have weak or nonexistent penalties for failing to meet these obligations are an effective way to mitigate transboundary air pollution.<sup>101</sup>

#### 1. COERCIVE MEASURES DO NOT LEAD TO GREATER COMPLIANCE

It is impractical and undesirable for an MEA to rely primarily on a coercive system to regulate transboundary pollution. Coercive systems alienate source states, which adversely impacts affected states because they have a compelling interest in keeping the source state at the table. If the transboundary pollution is problematic when the source state is party to the MEA, how much worse might it be if the source state was not?<sup>102</sup> The answer to this question reveals the paradox of regulating transboundary pollution: in some ways, the source state has greater bargaining power. Absent its participation, the MEA would almost certainly be ineffective in regulating the transboundary pollution.<sup>103</sup> In most cases, the source state is best able to monitor the pollution at its creation and early stages, and to take

action to prevent it from becoming transboundary pollution. The source state is also the only state with authority to regulate the activities taking place within its borders and to sit in judgment when actors violate its laws.<sup>104</sup>

This is not to say that coercive measures have no place in MEAs. Coercive measures can set targets that have an action-forcing effect even if parties never invoke them.<sup>105</sup> However, coercive measures will have no effect if the source state is not already a party to the MEA. In fact, such provisions may persuade some source states to remain outside of the MEA.

#### 2. THE MANAGERIAL MODEL ALLOWS COMPLIANCE TO INCREASE OVER TIME

When MEAs are thought of as frameworks, there is less emphasis on satisfying specific terms in the MEA at any single point in time.<sup>106</sup> The emphasis shifts to the parties periodically reevaluating “the interpretation, elaboration, application, and, ultimately, enforcement of international rules” as new information about the nature of transboundary pollution and state behavior becomes available.<sup>107</sup> The managerial model uses certain techniques to make this more discursive approach work: increased transparency, coordination among the parties, data collection, and reliance on non-state actors.<sup>108</sup> This approach especially makes sense for transboundary pollution where parties view the issue as “a problem to be solved, rather than a claim to be settled or a wrong to be adjudicated.”<sup>109</sup>

Unlike the traditional model with its coercive measures, the managerial model fosters cooperation between parties.<sup>110</sup> This cooperation allows parties to periodically review actions taken by parties to the agreement and non-parties.<sup>111</sup> The managerial model relies on transparency, coordination, reporting, verification, and monitoring to ensure that cooperation between the parties leads to more effective solutions.<sup>112</sup>

To create transparency, an MEA must ensure parties have access to information on the activities each party is undertaking and that policies governing their activities exists.<sup>113</sup> After parties have evaluated the information, they can better determine what objectives to focus on. They can then decide what actions each party *should* take to meet those objectives, while taking into account what actions each party *can* take. This information lets parties know whether other parties are following the MEA’s norms, rules, and procedures, and thus making a good faith effort to comply with the MEA, which can also lead to greater effectiveness.<sup>114</sup>

Transparency may also serve as a deterrent for parties that are considering noncompliance.<sup>115</sup> If all parties are complying with their obligations under the MEA, it may motivate a wavering

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*“[Parties] can then decide what actions each party should take to meet those objectives, while taking into account what actions each party can take.”*

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party to make an effort to comply in order to avoid being an outlier. In addition, this information can be used to mold the MEA's norms, rules, and procedures if parties are unable to comply, or compliance has not lead to greater effectiveness in mitigating transboundary pollution.<sup>116</sup> In the managerial model, rather than blaming parties for noncompliance or ineffective action, the parties modify the MEA to more effectively address the problem.

The managerial model also relies on parties coordinating with one another to mitigate transboundary pollution and otherwise meet the MEA's goals.<sup>117</sup> These coordination efforts can take the form of notifying a party about pollution, setting up information exchanges, or simply requiring parties to take "all appropriate measures" in preventing and mitigating transboundary pollution.<sup>118</sup> In some cases, these measures are all that is needed to mitigate transboundary pollution.<sup>119</sup> Coordination is especially important for addressing problems too complex for one party to solve on its own,<sup>120</sup> and for reducing higher costs of coordinating on an ad hoc basis.<sup>121</sup>

One example of an MEA successfully addressing transboundary air pollution through coordination is the Convention on Long Range Transboundary Air Pollution ("LRTAP").<sup>122</sup> LRTAP entered into force in 1983<sup>123</sup> and now binds forty-three states in Europe, Asia, and North America.<sup>124</sup> LRTAP was initially conceived to combat air transport of sulphur dioxide ("SO<sub>2</sub>"),<sup>125</sup> which leads to acid rain, although the treaty's provisions were written broadly enough to encompass other pollutants that can be conveyed through the air.<sup>126</sup> In fact, it has been amended several times since entering into force to include other pollutants and has led to substantial reductions in the level of covered pollutants present in the atmosphere.<sup>127</sup>

LRTAP came about because Scandinavian states believed increased SO<sub>2</sub> emissions were acidifying lakes in the region.<sup>128</sup> Under LRTAP's first incarnation, parties were required only to report their SO<sub>2</sub> emissions.<sup>129</sup> Scientists at the European Monitoring and Evaluation Program ("EMEP") then analyzed these reports, which resulted in the standardization of data collection and reporting procedures across countries.<sup>130</sup> After doing so, they were able to compare the emissions data to the rate of acidification of lakes and forests while taking into account wind patterns and concluded that acid rain was damaging forests and lakes, as the Scandinavians had suspected.<sup>131</sup> The national reporting that LRTAP mandated and the EMEP data standardization led to the coordination of national scientific efforts, which in turn led to the overall success of LRTAP.<sup>132</sup>

As the LRTAP example shows, cooperation can reduce transaction costs by creating standard reporting formats and uncertainties by generating information.<sup>133</sup> LRTAP requires parties to report, but the reports are not reviewed by any formal body; they are simply published with gaps and showings of noncompliance.<sup>134</sup> Importantly, LRTAP did set targets on emissions,<sup>135</sup> but the reports are not used to single out violators.<sup>136</sup> They are instead used to "generate pressure for cooperative action to improve overall regime effectiveness."<sup>137</sup> As the success of LRTAP shows, the importance of coordination cannot

be exaggerated when trying to mitigate a problem as complex as transboundary air pollution.

Reporting and data collection often begin by member states self-reporting.<sup>138</sup> This avoids the problems of infringing on state sovereignty and coercion.<sup>139</sup> However, "the level of reporting [depends] on a variety of factors, most prominently the importance of the subject matter, the effectiveness of the secretariat or other central [MEA] institutions, and the capacity and resources of the reporting state."<sup>140</sup>

Most MEAs rely on parties self-reporting.<sup>141</sup> Secretariats often are required to verify the information, but many do not expend the resources or have the capacity to do so systematically.<sup>142</sup> Verification of monitoring results is used to determine how effectively the problem is being dealt with, rather than to search for violators to punish.<sup>143</sup> Once the center that records the data standardizes it, the data becomes easier to verify.<sup>144</sup> For example, the EMEP serves this function for LRTAP.<sup>145</sup> Assessment allows parties to learn how to improve performance by individual parties and the regime as a whole.<sup>146</sup>

It is very important that MEAs achieve high-quality reports because these reports provide information on a party's compliance and the effectiveness of the MEA. The nature and scope of the reporting requirements directly impact the quality of response.<sup>147</sup> Reporting provisions can require that parties report on a number of topics, for example: measures taken to implement the MEA,<sup>148</sup> success in meeting MEA obligations,<sup>149</sup> proposed future policies and programs relevant to the MEA's objectives,<sup>150</sup> and advance notification of activities that may cause transboundary haze pollution.<sup>151</sup> In this way, reporting can detect compliance problems or the potential for compliance problems early on.<sup>152</sup> Because environmental agreements often require highly scientific or technical reports, reporting can be particularly difficult for developing countries, which have greater constraints on their resources.<sup>153</sup> One way to reduce the burden of reporting on developing countries is to provide a fund to help them buy monitoring equipment and train people to use it.<sup>154</sup>

Also embodied in the managerial model is the notion that effective regulation can result from cooperation not only between parties, but between an array of institutions, including private businesses and nongovernmental organizations ("NGOs").<sup>155</sup> This concept recognizes that legal systems do not operate as machines, but rather as "a kind of regulatory commons, where effective action is dependent upon alliances of groups overcoming collective action barriers and pressuring administrators to respond."<sup>156</sup> Because NGOs have the ability to affect state behavior, they play a role in addressing the enforceability concerns some have about MEAs.<sup>157</sup>

NGOs can assist in creating effective MEAs<sup>158</sup> by collaborating with governments to improve implementation of MEA obligations<sup>159</sup> and raising awareness of activity that impacts the environment.<sup>160</sup> They can provide independent information and data or verify data reported by the parties.<sup>161</sup> NGOs can also bring pressure on noncompliant states in ways that a party to the MEA, which may have broader concerns about maintaining international relations, could not.<sup>162</sup>

The managerial model enhances cooperation between parties by focusing their attention on common goals to be achieved. This is in contrast to the traditional approach, with its focus on setting targets and then punishing parties when they do not reach those targets. This model in turn provides states with an effective framework for mitigating international environmental problems such as transboundary air pollution.

#### IV. ASEAN AGREEMENT ON TRANSBOUNDARY HAZE POLLUTION

The ASEAN Agreement on Transboundary Haze Pollution follows the managerial model and thus illustrates how MEAs that follow the managerial model can: (1) bring together parties that are skeptical of binding agreements; and (2) enhance cooperation among parties in mitigating transboundary pollution. ASEAN adopted the Agreement on Transboundary Haze Pollution (“Agreement”) in June 2002.<sup>163</sup> The Agreement entered into force on November 25, 2003, after ratification by six countries<sup>164</sup> and places binding obligations on the parties to take steps to “prevent and monitor transboundary haze pollution, which should be mitigated” in a way consistent with sustainable development.<sup>165</sup> The current parties to the Agreement are Singapore, Malaysia, Myanmar, Brunei, Vietnam, Thailand, the Philippines, and the Lao People’s Democratic Republic.<sup>166</sup> Indonesia has signed but not ratified the Agreement.<sup>167</sup>

The origins of the Agreement trace back to the regional haze crisis of 1997.<sup>168</sup> In that year, Southeast Asia faced an environmental catastrophe that led to “unprecedented health and financial damages” throughout the region.<sup>169</sup> Fires in Indonesia from logging and palm plantations, especially on Sumatra and Kalimantan, raged, in part because of severe drought caused by El Niño conditions.<sup>170</sup> When wind patterns shifted, the haze from the fires traveled from Indonesia to Malaysia, Brunei, Singapore, Thailand, and the Philippines.<sup>171</sup>

Throughout the crisis, the U.S. National Oceanic and Atmospheric Administration monitored the affected areas.<sup>172</sup> Schools and offices shut down, planes crashed, and people died from acute respiratory failure.<sup>173</sup> By the time the fires were brought under control, the region had suffered widespread forest destruction, losing nearly ten million hectares.<sup>174</sup> The fires destroyed portions of seventeen protected forest areas in Indonesia and land that could have otherwise been used for agriculture.<sup>175</sup>

The effects were not limited to the natural environment: millions of people in the region were exposed to the haze for weeks.<sup>176</sup> The haze and its attendant harm were concentrated most heavily among Indonesians living on Sumatra and Kalimantan, the islands where the fires began.<sup>177</sup> While the ultimate cost of the fires and their haze is incalculable, estimates run into the billions, from US\$ 4.5 billion to US\$ 9.3 billion.<sup>178</sup> These figures include the destruction of farmland, both small-scale and industrial timberland and the haze’s impact on “tourism, foreign investment and additional health care costs.”<sup>179</sup> In addition, the haze impacted long-term human health, biological

diversity, farmland productivity, and atmospheric levels of greenhouse gases.<sup>180</sup>

#### A. ASEAN Norms

ASEAN has reinforced the principles of non-interference and national sovereignty in the region, a concept referred to as the “ASEAN way.”<sup>181</sup> Because ASEAN member-states prefer to address issues in a “non-legal, consensual” manner,<sup>182</sup> it is notable that every ASEAN member-state has signed the Agreement and, with the exception of Indonesia, ratified it.<sup>183</sup>

ASEAN was founded in 1967 by Indonesia, Malaysia, Thailand, the Philippines, and Singapore through the Bangkok Declaration.<sup>184</sup> Created to counteract the destabilizing effects of the Vietnam War on the region and restive separatist populations around border areas,<sup>185</sup> ASEAN established goals to “promote active collaboration and mutual assistance on matters of common interest,” provide “training and research assistance,” “collaborate more effectively . . . , raise the living standard of their peoples,” and “maintain close and beneficial cooperation with existing regional and international organizations” in light of the recognition that the world is becoming “increasingly interdependent.”<sup>186</sup>

While the Bangkok Declaration’s emphasis on cooperation and working together might suggest member-states would cede authority to a central governing body, this has not been the case.<sup>187</sup> The region has seen relative stability during ASEAN’s forty-six year existence, and ASEAN member-states have successfully worked together to overcome external threats, while adhering to the ASEAN norms. In keeping with the “ASEAN way,” ASEAN’s first response to the 1997 fire crisis was to develop the nonbinding Regional Haze Action Plan.<sup>188</sup> The ASEAN Ministerial Meeting on Haze endorsed the Plan in 1997,<sup>189</sup> and in 2002 the Plan was superseded by the Agreement.<sup>190</sup>

Building on ASEAN’s past environmental treaties,<sup>191</sup> the Agreement places binding obligations on the parties to take steps to “prevent and monitor transboundary haze pollution, which should be mitigated” in a way consistent with sustainable development.<sup>192</sup> However, despite being referred to as “binding,” the provisions are written in a way that gives parties broad discretion over the extent and types of activities they will engage in to mitigate the transboundary pollution, consistent with the managerial model’s de-emphasis on specific, binding targets that parties must meet.<sup>193</sup> Also in keeping with the managerial model,<sup>194</sup> the Agreement expects parties to settle disputes about compliance through consultation or negotiation.<sup>195</sup>

In these respects, the Agreement is similar to LRTAP: they both impose few concrete obligations on the parties and are drafted to allow for interpretation. For instance, parties to the LRTAP were bound to “endeavor to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution.”<sup>196</sup> Nearly every word in this provision gives parties power to interpret the obligations they are taking on—“endeavor,” “as far as possible,” and “gradually reduce” are all qualifiers typical of the managerial model’s focus on collaboration rather than coercion. These provisions

seem to impose few substantive requirements on parties, but that LRTAP has still managed to achieve substantial reductions in transboundary air pollution, suggests that the Agreement can also be successful and lead to the mitigation of transboundary haze pollution in Southeast Asia.<sup>197</sup>

The Agreement does place some binding obligations on parties, but most obligations are defined in general, conditional terms. In all cases, parties must take “legislative, administrative and/or other measures to implement their obligations.”<sup>198</sup> But rather than meet quantitative targets, parties must “undertake measures” to prevent and control activities that may lead to transboundary pollution.<sup>199</sup> This conditional language does not concern itself with whether parties are complying with the Agreement at any point in time. Rather, it uses the managerial model, which recognizes that an MEA’s goals and paths to those goals will change as new information about the causes of transboundary pollution and the effects of parties’ mitigating actions come to light.<sup>200</sup>

According to the agreement, parties must: (1) “*promote* [a] zero burning policy . . . [e]nsuring that legislative, administrative and/or other relevant measures are taken to control open burning and to prevent land clearing using fire;”<sup>201</sup> (2) “[*p*]romot[e] and utiliz[e] indigenous knowledge and practices in fire prevention and management;”<sup>202</sup> (3) “*strengthen* local fire management and firefighting *capability* and co-ordination;”<sup>203</sup> (4) “*promot[e]* public education and awareness-building campaigns and *strengthen* community participation in fire management;”<sup>204</sup> (5) take *appropriate measures* to monitor all fire prone areas, all land and/or forest fires, environmental conditions conducive to such land and/or forest fires, and haze pollution arising from such land and/or forest fires;<sup>205</sup> and (6) “*promote and support* scientific and technical research programmes related to the root causes and consequences of transboundary haze pollution.”<sup>206</sup> The parties’ more concrete obligations include: (1) “[i]dentifying and monitoring areas prone to the occurrence of land and/or forest fires;”<sup>207</sup> (2) designating a National Monitoring Centre;<sup>208</sup> (3) initiating immediate action to control or put out fires;<sup>209</sup> (4) designating Competent Authorities and a Focal Point, which will oversee the administration of the provisions of the Agreement;<sup>210</sup> (5) preparing standard operating procedures for national action;<sup>211</sup> and (6) being able to mobilize the resources needed to respond to and mitigate haze pollution.<sup>212</sup>

As is apparent from the Agreement’s language, many of the specific activities parties are required to undertake are conditional. This choice reflects the fact that parties have limited resources to devote to the activities, and that because there are still gaps in information, it is not clear exactly what steps need to be taken. These gaps allow parties to experiment with different approaches to the obligations and report their successes and failures.

## B. Managerial Model Components of the Agreement

The Agreement relies on several structures to facilitate coordination and information reporting and sharing among parties, each of which is consistent with the managerial model of MEAs.<sup>213</sup> These structures are: (1) the ASEAN Coordinating

Centre for Transboundary Haze Pollution Control, (2) the Secretariat, and (3) the Transboundary Haze Pollution Control Fund.<sup>214</sup>

The ASEAN Coordinating Centre for Transboundary Haze Pollution Control (“Centre”) promotes transparency and coordination by gathering data, and then standardizing and releasing that data to parties much like the EMEP.<sup>215</sup> The Centre’s functions are an extension of ASEAN’s Specialised

Meteorological Centre (“ASMC”), which was established in 1993 to enhance collaboration between member-states’ national meteorological services.<sup>216</sup> Since 2003, ASMC has worked in conjunction with the Centre by monitoring the ASEAN region for land and forest fires and transboundary haze.<sup>217</sup> By performing these functions, the Centre and the ASMC are both collecting and generating information that will give parties more advance notice of conditions in which transboundary haze pollution may affect them.

The Centre also receives data compiled by parties’ national monitoring centres.<sup>218</sup> Like the EMEP, the Centre “consolidate[s] and analyze[s] the data” so that it can assess environmental and human health risks each party faces from fires and consequential transboundary haze pollution.<sup>219</sup> Having a centralized database allows for more efficient communication and thus decreases the time parties need to spend searching for this data. Rather than soliciting the other parties one by one when a party believes they have data suggesting transboundary haze is imminent, parties can obtain that data from the Centre.<sup>220</sup> In addition to quicker access to the data, parties are able to understand the data better because the Centre standardizes reporting formats. This means parties will not have to spend time and resources trying to make sense of data that is reported. As the Centre becomes more sophisticated, it could even play a more proactive role by analyzing the data and reporting it to parties.

Parties must also inform the Centre and other parties of the measures they have in place to implement the Agreement.<sup>221</sup> By reporting on these steps, all parties are reassured that each is making a good faith effort to comply with the Agreement, which will reinforce the parties’ confidence in one another and lead to greater coordination.<sup>222</sup> Moreover, reporting allows the Centre to analyze the relative effectiveness of each party’s measures and determine why some succeed and some do not. This role is particularly important in the case of “zero burning” policies because Agreement parties currently have little experience enforcing and explaining the benefits of these policies to communities where they remain the primary method of clearing land.<sup>223</sup>

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*“These provisions seem to impose few substantive requirements on parties . . .”*

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The ASEAN Secretariat plays an important role in implementing the Agreement by facilitating coordination among the parties.<sup>224</sup> To facilitate coordination, the Secretariat arranges meetings and disseminates information to parties.<sup>225</sup> Above all, the Secretariat must arrange the Conference of the Parties to provide the parties an instance to evaluate the progress toward the Agreement's goal of mitigating transboundary haze and the effectiveness of the methods used to reach that goal.<sup>226</sup> Based on this evaluation, parties can decide to revise parties' obligations or impose more concrete obligations in light of evolving scientific understanding and the relative effectiveness of implementation measures.<sup>227</sup>

To assist parties in implementing the Agreement, the Agreement established the Transboundary Haze Pollution Control Fund ("Fund").<sup>228</sup> The Secretariat administers the Fund, which parties and other sources contribute to on a voluntary basis.<sup>229</sup> For developing countries, a fund is essential for the success of an environmental agreement, as some countries will not have the resources to set up monitoring stations and train personnel.<sup>230</sup> Unfortunately, the parties have only contributed US\$ 240,329 to the Fund to date,<sup>231</sup> while the annual cost of dealing with transboundary haze may be as high as US\$ 60 million.<sup>232</sup> However, the Agreement is silent on how to allocate the money in the Fund giving the Secretariat discretion to redirect spending to more effectively implement the Agreement in response to new information.<sup>233</sup>

### C. Other Coordination Provisions

The Agreement also contains two unique coordination provisions. Parties must: (1) "[p]romote the development of markets for the utilization of biomass and appropriate methods for disposal of agricultural wastes;"<sup>234</sup> and (2) "[f]acilitate mobilisation of appropriate resources within and outside the parties."<sup>235</sup>

The "biomass" provision recognizes that peatlands, as biomass, are a large cause of the fires that create transboundary haze.<sup>236</sup> By developing markets for biomass, the Agreement incentivizes the harvest and controlled burning of peat by turning it into a product rather than a byproduct.<sup>237</sup> The market also creates an incentive to manage peatlands more effectively so that the peat is not wasted. This provision, with its emphasis on reducing the chances of peatlands catching fire, is akin to the "zero burning" policies in that both protect peatlands vulnerable to fire.<sup>238</sup>

The "mobilisation of appropriate resources" provision is a feature of the Agreement that at first seems to conflict with ASEAN's emphasis on sovereignty and noninterference. Under this provision, parties can request assistance from other states, including non-parties, and international organizations to help mitigate haze pollution within their territory.<sup>239</sup> However, parties have almost total control over the requested assistance when it is in their territory. When a party declares an emergency, it can request that the Centre solicit assistance from other parties.<sup>240</sup> Parties then decide whether they will provide assistance and if so, what kind of assistance they will provide.<sup>241</sup> If parties do provide assistance, the receiving party will facilitate entry to,

departure from, and transit within its territory, and exempt the assisting party from taxes, and any other charges that would normally be assessed.<sup>242</sup> In addition, the party receiving assistance will control all aspects of the assistance when it is in their territory.<sup>243</sup> Thus, states still retain their sovereignty and enjoy the benefit of greater resources.

With its conditional language, its establishment of structures that facilitate information gathering, and overarching goal of coordination between the parties, the Agreement is consistent with the managerial model. Despite these features, the Agreement's ultimate success depends on Indonesian ratification.

## V. INDONESIAN RATIFICATION: A STEP TOWARD MITIGATING TRANSBOUNDARY HAZE POLLUTION

Although the Agreement provides an effective framework for mitigating transboundary haze pollution, Indonesia has not ratified it.<sup>244</sup> The ASEAN community and Indonesia's president favor ratification, but Indonesia's domestic politics have created a barrier to ratification.<sup>245</sup> Even so, Indonesia has effectively been complying with the Agreement through its actions.<sup>246</sup> These actions have generated information and contributed to implementing the Agreement's provisions, but they have taken place on an *ad hoc* basis that is inadequate to mitigate the transboundary haze.<sup>247</sup> Both the ASEAN community and Indonesia would benefit by Indonesia's ratification of the Agreement.

### A. Barriers to Ratification

Domestic politics can be a barrier to ratification, especially when a state is concerned that ratification will create expensive obligations.<sup>248</sup> Once ratified, the state will likely be the primary enforcer of the MEA and the primary decision-maker on how to implement it to achieve compliance.<sup>249</sup> However, because the Agreement follows the managerial model, Indonesia would have latitude in deciding what its terms mean and how to comply with the standards created.<sup>250</sup> Despite international consensus that Indonesia should ratify the Agreement, its failure to do so reflects the difficulty of "navigat[ing] between what is achievable internationally while constantly negotiating and using what is acceptable domestically."<sup>251</sup> At a recent meeting in Bangkok, the other ASEAN environmental members "urged Indonesia to ratify the [Agreement] as soon as possible."<sup>252</sup> While Indonesia has publicly stated it is prioritizing ratifying the Agreement,<sup>253</sup> ratification has been stalled by the legislature since 2008 when the legislature voted against ratification because it felt ASEAN was not doing enough to reduce the trade in timber illegally logged and exported from Indonesia.<sup>254</sup>

### B. Advantages of Indonesian Ratification

Indonesian ratification would allow ASEAN to more effectively deal with transboundary pollution. Indonesia is already taking action to mitigate transboundary haze, but Indonesia's current *ad hoc* approach is not sufficient to address such a complex problem. The Agreement creates a framework that will allow Indonesia to perform the activities it is already engaged in more systematically. These activities bring Indonesia effectively

into compliance with the Agreement, and would form the basis for future efforts within the Agreement.

## 1. INDONESIA'S CURRENT ACTIONS

Indonesia is also already taking action to mitigate transboundary haze. Although not a party to it, Indonesia is effectively complying with the Agreement. For instance, Indonesia recognizes the damage that fires from plantations and logging operations cause domestically and has taken steps to prevent this damage by passing a zero-burning policy and creating a fire brigade, each of which is an action required to comply with the Agreement.<sup>255</sup> Further, Indonesia has committed to international efforts through the Sub-Regional Ministerial Steering Committee on Transboundary Haze Pollution ("MSC") and Indonesia's Plan of Action, as well as efforts by an NGO, the Roundtable for Sustainable Palm Oil.

Indonesia is a member of the Sub-Regional Ministerial Steering Committee on Transboundary Haze Pollution formed in November 2006.<sup>256</sup> Many of the MSC's activities are similar or identical to the activities parties are required to take under the Agreement. For instance, the MSC has discussed sharing concession maps that show where burning is taking place and holding those who are doing the burning responsible.<sup>257</sup> Recently, the MSC agreed to share concession maps between governments.<sup>258</sup> The MSC has also agreed to establish a Technical Task Force whose role would be to monitor fires for MSC members.<sup>259</sup>

The MSC also discussed implementing the Strategic Review of MSC Programmes and Activities in 2012.<sup>260</sup> The Strategic Review includes bringing on early warning systems, refining the Fire Danger Rating System, introducing training courses offered by the Regional Haze Training Network, and organizing an MSC Forum.<sup>261</sup> Moreover, because the actions required under the MSC are similar to actions the parties to the Agreement take, the MSC is creating inefficiency by requiring parties to the Agreement to perform duplicate work. Indonesia, on the other hand, is already sharing information, monitoring fires, and evaluating programs it has in place, but none of this information is submitted to the Centre.<sup>262</sup> Having this data in separate locations delays the standardization of the information, and by extension, coordination.

Indonesia also has a Plan of Action in Dealing with Transboundary Haze Pollution that creates obligations similar to the Agreement's.<sup>263</sup> This Plan involves educating people about zero burning techniques and developing and maintaining a firefighting force.<sup>264</sup> The Plan is designed to educate local communities about methods to prevent and mitigate forest and land fires.<sup>265</sup> As part of the Plan, Indonesia has identified "[thirty-five] fire-prone districts in [eight] provinces" that need special attention.<sup>266</sup> The Plan has also invited ASEAN member states, all of whom are parties to the Agreement, to cooperate with one area in particular to build its capacity to deal with land and forest fires.<sup>267</sup>

As a part of the Plan, Indonesia has also cooperated bilaterally with Singapore to mitigate transboundary haze pollution<sup>268</sup> by reducing fires in the Jambi Province.<sup>269</sup> The Jambi province is

located on Southern Sumatra<sup>270</sup> and has 92 thousand hectares of palm oil plantations and 59 thousand hectares of rubber plantations.<sup>271</sup> Part of the region has peatland areas between fifty and eight hundred centimeters deep which are prone to catching fire due to the plantations' use of slash-and-burn agriculture.<sup>272</sup> As part of this coordination effort, Singapore set up air monitoring systems, trained Indonesians how to use them, and donated them to the Jambi province.<sup>273</sup> While this coordination is a positive development and may improve conditions there, it could be more effective at mitigating transboundary haze overall if it took place within the Agreement because this effort could be more easily duplicated and improved upon if all parties were exposed to its development.

Some ASEAN members believe that sustainable palm oil production is one avenue to reducing regional haze as well as a way to increase palm oil farmers' salaries.<sup>274</sup> Marketing a sustainably farmed product has become possible because consumers are becoming aware of the environmental effects of industrial agricultural practices taking place in Indonesia.<sup>275</sup> The Roundtable for Sustainable Palm Oil ("Roundtable"), established by the World Wildlife Fund in 2001, has created a designation for palm oil products produced sustainably.<sup>276</sup> The Roundtable's work thus creates an incentive for Indonesia to ratify the Agreement so that the country can take advantage of this label.

Taken together, these actions show that Indonesia is effectively complying with the conditional language of the Agreement. But because these actions are occurring through various unconnected arrangements, the lessons learned are not being exploited to their full potential.

## 2. RATIFICATION WOULD BRING THE BENEFITS OF THE MANAGERIAL MODEL TO THE AGREEMENT

Indonesia's efforts to mitigate transboundary haze are important in their own right. But if it were to take these actions as a party to the Agreement, both Indonesia and other parties would benefit from the consolidation of information and enhanced coordination. Indonesia itself would benefit from ratifying the Agreement through: (1) more systematic and sustained coordination, (2) access to the Fund, and (3) the ability to shape the content of the Agreement.

By ratifying the Agreement, Indonesia would benefit from greater coordination from the greater aggregation of information, the standardization of that information, and greater assistance from parties who are reassured by Indonesian ratification. Indonesia's coordination with Singapore in addressing haze in Jambi province has provided information on how to mitigate transboundary haze pollution. The value of this information is limited if it is not shared with other parties. Moreover, if Indonesia's coordination efforts are restricted to ad hoc arrangements, it is more likely that the improvements in mitigating transboundary haze and the lessons learned from efforts such as the Jambi province effort will remain limited only to the goals of those arrangements. By reporting this information to the Centre as a party, however, the information is no longer standing alone;

it is now one piece used to solve the larger puzzle. Indonesia would also get the benefit of learning from other parties' experiences in implementing "zero burning" policies.

In addition, Indonesia would benefit from the Centre's work on standardizing data. For each ad hoc arrangement to which Indonesia is a party, the resultant data could be communicated in a different format. Working within the Agreement, the Centre would standardize this information so that it is more meaningful for the country. Indonesian ratification would also lead to greater coordination because it will reassure parties that Indonesia takes the transboundary haze pollution seriously.<sup>277</sup> As a result of this act, which is largely symbolic given Indonesia's ongoing efforts, parties may be more willing to devote resources to the Fund.

Further, because the Secretariat's only guidelines are to use the Fund to "implement" the Agreement, the entire Fund could very well be spent on implementation measures within Indonesia.<sup>278</sup> Because the transboundary pollution is almost totally unidirectional,<sup>279</sup> it would make sense for resources in the Fund to be spent on problems relating to the monitoring and prevention of fires, problems which are largely in Indonesia.<sup>280</sup> In this way the Fund could reduce the asymmetry of the costs and benefits that often accompany transboundary pollution, making ratification more attractive to Indonesia.<sup>281</sup>

Using the Fund to prevent and monitor fires (as opposed to haze) also has the advantage of reducing the amount of pollution that becomes transboundary pollution most effectively by addressing the pollution at its source.<sup>282</sup> Admittedly, given the disparity between the Fund and the estimated cost of mitigating transboundary haze, a promise to allocate the Fund in this way may not create large benefits for Indonesia, at least initially. However, the Fund may grow if Indonesia ratifies the Agreement. Indonesian ratification would allow the Fund to be spent more efficiently. As the biggest source state, and thus the biggest contributor of transboundary haze pollution, it is most efficient to spend Fund resources in Indonesia.

Indonesia should also ratify the Agreement to be able to take a more active role in shaping the goals and implementation measures of the Agreement. If a state has an interest in a framework MEA's goals and the MEA is based on the managerial model, it may be in the state's interest to ratify the treaty. As a party to the MEA, that state has a role in reevaluating the MEA as new information on compliance, effectiveness, and the understanding of the causes and effects of transboundary haze emerge.<sup>283</sup>

Ultimately, discussions between the parties shape the MEA's framework.<sup>284</sup> Moreover, because of the importance of keeping source states in the MEA, affected states may be more willing to compromise, which gives Indonesia an advantage if it is at the table.<sup>285</sup>

If the Indonesian legislature is still concerned with the illegal timber trade and its role in contributing to fires in Indonesia, it makes more sense to ratify the Agreement and then push for changes to protect Indonesian forests rather than to make protection a precondition for ratification. By becoming a member party, Indonesia would not only have more opportunities to share information and coordinate with other parties, it would also have a framework within which it could advocate for changes it thinks best mitigate transboundary haze pollution. The Agreement obligates parties to study the "root causes" of the haze, so Indonesia could begin compiling data on the effects that deforestation from illegal logging has on haze creation.<sup>286</sup> This information could lead to an expansion of parties' obligations under the Agreement's "biomass" provision, which focuses on protecting degraded peatlands from catching fire but is silent on preventing the peatland degradation that leaves the peatlands vulnerable to fire in the first place.<sup>287</sup> If Indonesia can persuade the other parties that the illegal timber trade results in a greater likelihood of peat fires, it may also be able to persuade other

parties that an emphasis on legally sourced timber is one measure that can prevent peat fires. This could be accomplished through a variety of ways (e.g. strengthening domestic laws or devising a way to identify legally or sustainably sourced timber). But as the parties better understand the issue and experiment with implementation measures to address it, they will become more effective at achieving this goal.

### 3. BENEFITS FOR ASEAN

ASEAN will also benefit from Indonesian ratification. Greater information sharing by Indonesia will correct the data imbalance between source states and affected states, and Indonesia's efforts to manage peatlands may prove useful to other countries as they industrialize.

Absent systematic sharing by Indonesia, the major source state, only affected states are submitting information to the Centre. This means the Centre is compiling and analyzing information about monitoring and preventing haze, which affects the source states, but not about fires, which occur in Indonesia, the major source state. One important exchange of information is the sharing of

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*“While the Agreement may not eliminate the transboundary haze pollution immediately, it can bring all the stakeholders together to facilitate a more lasting solution than they would otherwise be able to reach on their own.”*

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concession maps,<sup>288</sup> and data Indonesia has that cross-references hotspot<sup>289</sup> locations to identify companies burning in those areas.<sup>290</sup> By sharing these maps with the precise locations of plantations, affected states can perform more targeted monitoring because they will better understand where the fires originate. This monitoring can then lead to a more complete understanding of how the haze pollution travels, allowing the Centre to develop information about preventing and managing fires.

While Indonesia may be the only source state at present, other states may become source states. ASEAN member-states are industrializing, and the region has thirty-five million hectares of peatland.<sup>291</sup> As pressure on the natural resources of other states increases, the likelihood of transboundary haze originating in these states also increases. Just as other states may become source states, Indonesia may become an affected state. Parties will be able to deal more effectively with these shifts in roles if there is information about monitoring and preventing haze and fires for them to draw on.

## VI. CONCLUSION

The benefits of ratification to Indonesia and ASEAN should be enough to overcome the domestic hurdles to ratification. These benefits include greater coordination among the parties in addressing the transboundary haze originating in Indonesia by facilitating the spread of information and by allowing Indonesia to shape the Agreement based on its experiences as the only major source state in the region. These benefits are not limited to the current problem; they will also apply in the future when other states become source states.

Indonesia should ratify the Agreement because it creates an effective framework for mitigating transboundary haze pollution. By following the managerial model, the Agreement recognizes that complex problems like transboundary haze pollution are best addressed through systematic and sustained coordination between parties. While the Agreement may not eliminate the transboundary haze pollution immediately, it can bring all the stakeholders together to facilitate a more lasting solution than they would otherwise be able to reach on their own. 

## Endnotes: Indonesia's Role in Realizing the Goals of ASEAN's Agreement on Transboundary Haze Pollution

<sup>1</sup> See *Indonesia Blamed as Haze Returns to Malaysia*, JAKARTA GLOBE, June 16, 2012, <http://www.thejakartaglobe.com/home/indonesia-blamed-as-haze-returns-to-malaysia/524654/> (noting that haze has become an annual problem causing air quality to deteriorate in the summer months).

<sup>2</sup> See *id.* (explaining that while the practice of using fire to clear land has been banned by Indonesia's government, weak enforcement of the law has maintained the haze issue).

<sup>3</sup> Peatlands are formed by dead plant material decomposing into a thick layer of soil under conditions with permanent water saturation. See IWAN TRI CAHYO WIBISONO ET AL., PEATLANDS IN INDONESIA'S NATIONAL REDD+ STRATEGY 1, 8 (2011), available at <http://www.wetlands.org/LinkClick.aspx?fileticket=9Nesl6BC11U%3D&tabid=56> (discussing the state of Indonesia's peat swamp forests). For a map of peatlands in Southeast Asia, see *Peatlands in Southeast Asia*, ASEAN PEATLAND FORESTS PROJECT, [http://www.aseanpeat.net/aeimages/File/Publications/peatmap\\_FA\\_OL.pdf](http://www.aseanpeat.net/aeimages/File/Publications/peatmap_FA_OL.pdf) (last visited Nov. 12, 2013) (showing estimated peatland area per ASEAN country).

<sup>4</sup> See Liz Gooch, *Malaysia Haze Points to a Regional Problem*, N.Y. TIMES, June 23, 2012, available at <http://www.nytimes.com/2012/06/24/world/asia/smoky-haze-over-malaysia-signals-a-regional-problem.html> (noting fires set on palm oil and rubber plantations to remove old trees and clear land are a major source of haze pollution).

<sup>5</sup> Dennis Wong, *Residents Blame Plantations for Haze*, NEW STRAITS TIMES, Oct. 11, 2012, <http://www.nst.com.my/nation/general/residents-blame-plantations-for-haze-1.155458> (explaining that citizens of the affected countries cope with haze by ignoring it, despite its continuing presence).

<sup>6</sup> See *id.* (referencing a thunderstorm that was the first downpour in more than two months).

<sup>7</sup> See *infra* Part II.A.

<sup>8</sup> See *infra* Part II.A.

<sup>9</sup> Air pollution is not a new problem for governments either. As far back as 1285, Londoners complained of poor air quality caused by coal fumes. See JEAN GIMPEL, *THE MEDIEVAL MACHINE: THE INDUSTRIAL REVOLUTION OF THE MIDDLE AGES* 82–84 (1976). This led to King Edward issuing a proclamation in 1306 banning coal in open furnaces in London and punishing third-time offenders with death. See CEES FLINTERMAN ET AL., *TRANSBOUNDARY AIR POLLUTION: INTERNATIONAL LEGAL ASPECTS OF THE CO-OPERATION OF THE STATES*, at vii (Cees Flinterman et al. eds., 1986).

<sup>10</sup> Thomas Merrill defines transboundary pollution as “a physical externality or spillover that crosses state lines. More precisely, transboundary pollution occurs when a potentially harmful environmental agent is released in one political jurisdiction (the source state) and physically migrates through a natural medium such as air, water, or soil to another political jurisdiction (the affected state).” Thomas W. Merrill, *Golden Rules for Transboundary Pollution*, 46 DUKE L.J. 931, 968–69 (1997) (noting and comparing the differences between pollution of the commons and transboundary air pollution).

<sup>11</sup> See *id.* at 932 (crediting the transboundary pollution phenomenon with the centralization of environmental law).

<sup>12</sup> ASEAN Agreement on Transboundary Haze Pollution, art. 12, June 10, 2002, available at [http://haze.asean.org/?wpfb\\_dl=32](http://haze.asean.org/?wpfb_dl=32) [hereinafter Agreement] (affirming the parties’ “willingness to further strengthen international cooperation to develop national policies for preventing and monitoring transboundary haze pollution”).

<sup>13</sup> See Gooch, *supra* note 4. During publication of this article, Indonesia announced at a meeting of the regional environmental ministers that it pledges to ratify the Agreement in early 2014. Abhrajit Gangopadhyay & Ben Otto, *Indonesia Plans to Ratify Haze Pact*, July 17, 2013 12:53PM, <http://online.wsj.com/news/articles/SB10001424127887324448104578611241859487394>.

<sup>14</sup> See Ahmad Pathoni, *Indonesia Lawmakers Set to Reject ASEAN Haze Pact*, REUTERS, Mar. 14, 2008, [http://www.enr.com/top\\_stories/article/32966/print](http://www.enr.com/top_stories/article/32966/print) (citing Indonesian lawmakers’ concerns that neighboring countries are turning a blind eye to the link between illegal timber received in their countries and haze pollution); Adianto P. Simamora, *Govt Wants Haze Agreement Ratified*, THE JAKARTA POST, Jan. 22, 2011, <http://www.thejakartapost.com/news/2011/01/22/govt-wants-haze-agreement-ratified.html> (noting Indonesian lawmakers’ desire to include an effort to reduce the export of illicit wood from illegal logging practices into the agreement); Adianto P. Simamora, *ASEAN haze deal still faces complications*, THE JAKARTA POST, Feb. 16, 2011, <http://www.thejakartapost.com/news/2011/02/16/asean-haze-deal-still-faces-complications.html> (explaining that ratification would create burdens for Indonesia because of the difficulty involved in controlling traditional land clearing practices by local citizens).

<sup>15</sup> See Asmala Ahmad et al., *The Use of Remote Sensing and GIS to Estimate Air Quality Index (AQI) over Peninsular Malaysia*, GISDEVELOPMENT.NET, <http://www.gisdevelopment.net/application/environment/air/mm038pf.htm>,

*continued on page 70*

<sup>29</sup> *Id.*  
<sup>30</sup> *Genetically Modified or Sustainable Agriculture?*, GREENPEACE, <http://www.greenpeace.org/eu-unit/en/campaigns/EU-farmers-ditch-GM-crops/>.  
<sup>31</sup> See Stephanie Strom, *Misgivings about How Weed Killer Affects the Soil*, N. Y. TIMES, Sept. 19, 2013, <http://www.nytimes.com/2013/09/20/business/misgivings-about-how-a-weed-killer-affects-the-soil.html>.  
<sup>32</sup> See Harmon, *supra* note 17.  
<sup>33</sup> Strom, *supra* note 31.  
<sup>34</sup> *New Poll Finds Widespread Support for GMO Labeling as New Hampshire House Committee Prepares to Vote on GMO Labeling Law*, FOOD DEMOCRACY

Now! (Nov. 5, 2013), [http://www.fooddemocracynow.org/blog/2013/nov/5/new\\_poll\\_finds\\_90\\_percent\\_NH\\_voters\\_loveGMO\\_labels/](http://www.fooddemocracynow.org/blog/2013/nov/5/new_poll_finds_90_percent_NH_voters_loveGMO_labels/).  
<sup>35</sup> *Id.*  
<sup>36</sup> *Id.*  
<sup>37</sup> Tarini Parti & Jenny Hopkinson, *Monsanto, DuPont Pour Millions into GMO Fight*, POLITICO (Sept. 11, 2013), <http://www.politico.com/story/2013/09/monsanto-dupont-pour-millions-into-gmo-fight-96643.html>.  
<sup>38</sup> Lindsay Boerma, *Critics Slam Obama for "Protecting" Monsanto*, CBS NEWS (Mar. 28, 2013), <http://www.cbsnews.com/news/critics-slam-obama-for-protecting-monsanto/>.

## Endnotes: INDONESIA'S ROLE IN REALIZING THE GOALS OF ASEAN'S AGREEMENT ON TRANSBOUNDARY HAZE POLLUTION

*continued from page 45*

(last visited Feb. 21, 2013). Haze also contributes to "greenhouse gas and haze emissions from deforestation, land-use conflicts, loss of biodiversity, indigenous rights violations, pollution of waterways and the disruption of eco-systems." Jenny Marusiak, *Big Job ahead for Sustainable Palm Oil Group*, ECO-BUSINESS.COM, Oct. 31, 2012, <http://www.eco-business.com/features/big-job-ahead-for-sustainable-palm-oil-group/>. The U.S. Environmental Protection Agency ("EPA") defines regional haze as "visibility impairment that is produced by a multitude of sources and activities which emit fine particles and their precursors and which are located across a broad geographic area." Regional Haze Regulations, 64 Fed. Reg. 35714, 35715 (July 1, 1999) (to be codified at 40 C.F.R. pt. 51). Haze is further distinguished by the size of the particulate matter—PM<sub>2.5</sub> is haze with particulates up to 2.5 microns wide, and PM<sub>10</sub> is haze with particulates up to 10 microns wide. See Ahmad et al., *supra*. ASEAN is concerned with monitoring PM<sub>10</sub>. Ahmad et al., *supra*.

<sup>16</sup> See Ahmad et al., *supra* note 15; Alan Rogers, *Haze – Brown Clouds*, BORNEO POST (Nov. 4, 2012), <http://www.theborneopost.com/2012/11/04/haze-brown-clouds/> (explaining that low humidity means dry air which is stable and characterized by no horizontal or vertical air movement).

<sup>17</sup> See Ahmad et al., *supra* note 15; Rogers, *supra* note 16. On a clear day, ground visibility can extend up to seven miles. *Glossary: Visibility*, WEATHER NETWORK, <http://www.theweathernetwork.com/index.php?product=glossary&pagecontent=visibility> (last visited Feb. 21, 2013).

<sup>18</sup> See Rogers, *supra* note 16 (noting that the variability of air pollution is affected by local meteorological conditions); Laura S. Henry et al., *From Smelter Fumes to Silk Road Winds: Exploring Legal Responses to Transboundary Air Pollution over South Korea*, 11 WASH. U. GLOBAL STUD. L. REV. 565, 584 n.96 (2012) (citing WORLD HEALTH ORG., THE HEALTH RISKS OF PARTICULATE MATTER FROM LONG-RANGE TRANSBOUNDARY AIR POLLUTION 1, 11 (2006), available at [http://www.euro.who.int/\\_data/assets/pdf\\_file/0006/78657/E88189.pdf](http://www.euro.who.int/_data/assets/pdf_file/0006/78657/E88189.pdf)).

<sup>19</sup> See Regional Haze Regulations, *supra* note 15 (noting that visual impairment occurs because haze covers a broad geographical area); Merrill, *supra* note 10, at 970 (discussing the drifting nature of transboundary pollution).

<sup>20</sup> See Merrill, *supra* note 10, at 968 (defining transboundary air pollution).

<sup>21</sup> See Tom Ginsburg & Gregory Shaffer, *The Empirical Turn in International Legal Scholarship*, 106 AM. J. INT'L L. 1, 38 (2012).

<sup>22</sup> *Id.* (noting the varied effects of environmental regulation on states involved in the regulatory solution).

<sup>23</sup> *Id.* For an example dealing with ozone, see Jonathan Remy Nash & Richard L. Revesz, *Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants*, 28 ECOLOGY L.Q. 569, 599–601 (2001).

<sup>24</sup> See Ginsburg & Shaffer, *supra* note 21, at 38 (explaining the growing field of international environmental law and its extremely technical complexities).

<sup>25</sup> Ginsburg & Shaffer, *supra* note 21, at 38.

<sup>26</sup> See Merrill, *supra* note 10, at 970 (noting that transboundary pollution can be partial, unidirectional, or reciprocal, but usually has an impact on both the source and affected states).

<sup>27</sup> Merrill, *supra* note 10, at 970 (noting a source state will consider the cost of pollution incurred by its residents before adopting regulation).

<sup>28</sup> See Merrill, *supra* note 10, at 971 (referencing reciprocal pollution as when the pollution from A affects B and the pollution from B affects A).

<sup>29</sup> See Merrill, *supra* note 10, at 971. These characteristics, which Merrill refers to as "partial" and "reciprocal" transboundary pollution, are instrumental

in his argument that transboundary pollution disputes should be governed by his "golden rules," which would allow affected states to apply the source state's liability rules against it. *Id.* Though this model may be attractive if it is restricted to norm creation in treaties, its emphasis on assigning liability may be a fatal defect if source states have not ratified the treaty. *Id.*

<sup>30</sup> The haze is also an issue in other areas of ASEAN member states. See, e.g., Kultida Samabuddhi, *Haze Returns to the North*, BANGKOK POST, Feb. 27, 2012, <http://www.bangkokpost.com/learning/easier-stuff/281819/haze-returns-to-the-north> (discussing haze in Thailand's northern provinces); Wanwisa Ngamsangchaikit, *Haze the Next Threat*, TTR WEEKLY, Nov. 2, 2012, <http://www.ttrweekly.com/site/2012/11/haze-the-next-threat/> (discussing haze's impact on tourism in North Thailand). It is likely that, as the region continues to industrialize and haze pollution increases overall, more transboundary haze issues will arise. See, e.g., Alan Khee-Jin Tan, *The ASEAN Agreement on Transboundary Haze Pollution: Prospects for Compliance and Effectiveness Suharto Indonesia*, 13 N.Y.U. ENVTL. L.J. 647, 653–55 (2005); Gooch, *supra* note 4; Ahmad et al., *supra* note 15; Koh Kheng-Lian, *A Breakthrough in Solving the Indonesian Haze?*, in INTERNATIONAL UNION FOR CONSERVATION OF NATURE ENVIRONMENTAL LAW AND POLICY PAPER No. 72 at 225 (Sharella Hart ed., 2008) (blaming President Suharto's Mega Rice Project which attempted to turn one million hectares of peatland into rice paddies for potential increase in transboundary haze pollution).

<sup>31</sup> See Gooch, *supra* note 4 ("The haze, attributed mostly to fires burning on the Indonesian island of Sumatra, has become a recurring summer blight, engulfing parts of Malaysia, Thailand, Brunei and Singapore, and leaving a litany of health and economic costs in its wake.").

<sup>32</sup> See *infra* Part IV.A.

<sup>33</sup> See Khee-Jin Tan, *supra* note 30, at 653 (noting that Indonesia's common practice is to log an area and convert the land into a cash crop plantation).

<sup>34</sup> See Khee-Jin Tan, *supra* note 30 at 653. (explaining that logging involves removing the valuable tropical timber to make way for plantations).

<sup>35</sup> See *Indonesia*, UN-REDD PROGRAMME (2009), <http://www.un-redd.org/CountryActions/Indonesia/tabid/987/language/en-US/Default.aspx> (last visited Nov. 12, 2013) (noting Indonesia is the third largest area of tropical rainforest in the world). For more on the problem tropical deforestation poses from a climate change perspective, see William Boyd, *Ways of Seeing in Environmental Law*, 37 ECOLOGY L.Q. 843 (2010).

<sup>36</sup> Peatlands are important for maintaining biological diversity and storing carbon. See *Values of Peatlands in Indonesia*, SUSTAINABLE MGMT. OF PEATLAND FORESTS IN SE. ASIA, <http://www.aseanpeat.net/index.cfm?&menuid=128&parentid=68> (last visited Feb. 21, 2013); *Fact Sheet Norway-Indonesia Partnership REDD+*, <http://www.norway.or.id/Page-Files/404362/FactSheetIndonesiaPeatMay252010.pdf> (last visited Feb. 21, 2013).

<sup>37</sup> See *Values of Peatlands in Indonesia*, *supra* note 36 (noting that Indonesia emits about five times as much carbon dioxide yearly from degraded peatlands as it does burning fossil fuels).

<sup>38</sup> See Andrew C. Revkin, *The Fire Down Below*, N.Y. TIMES DOT EARTH BLOG, Aug. 20, 2010, 12:01 PM, <http://dotearth.blogs.nytimes.com/2010/08/20/the-fire-down-below/> (referring to this underground burn as smoldering fires, which have been reported in boreal, temperate, and tropical forests). For a domestic example, see Willie Drye, *Vast Peat Fire may Burn for Months in North Carolina*, NAT'L GEOGRAPHIC NEWS, June 13, 2008, <http://news.nationalgeographic.com/news/2008/06/080613-wildfire-peat.html>. Greenpeace

estimates Indonesia's peatlands have 35 million tons of carbon stored in them. *Indonesia*, GREENPEACE INT'L, <http://www.greenpeace.org/international/en/campaigns/forests/asia-pacific/?accept=4ec91d9249b193d19915d251e4a93f16> (last visited Nov. 2, 2013).

<sup>39</sup> See Khee-Jin Tan, *supra* note 30, at 653–55.

<sup>40</sup> See Khee-Jin Tan, *supra* note 30, at 653–55 (noting these slash-and-burn fires are deliberate).

<sup>41</sup> See Khee-Jin Tan, *supra* note 30, at 653–55.

<sup>42</sup> See Khee-Jin Tan, *supra* note 30, at 653–55.

<sup>43</sup> See Khee-Jin Tan, *supra* note 30, at 653–55.

<sup>44</sup> See Khee-Jin Tan, *supra* note 30, at 653–55.

<sup>45</sup> See Khee-Jin Tan, *supra* note 30, at 653–55.

<sup>46</sup> See Khee-Jin Tan, *supra* note 30, at 653–55 (noting the root cause of the haze pollution problem in Indonesia is clearly man-made).

<sup>47</sup> See Khee-Jin Tan, *supra* note 30, at 671–72.

<sup>48</sup> See PARUEDEE NGUITRAGOOL, ENVIRONMENTAL COOPERATION IN SOUTHEAST ASIA: ASEAN'S REGIME FOR TRANS-BOUNDARY HAZE POLLUTION 77 (2010).

<sup>49</sup> For a discussion of the problems posed by geography, known as the “core-periphery problem,” see for example Edith Brown Weiss, *Understanding Compliance with International Environmental Agreements: the Baker's Dozen Myths*, 32 U. RICH. L. REV. 1555, 1576 (1999) (“National governments enter into international agreements with other countries, but the authority of national governments may not reach effectively into local areas. While local communities may be essential to implementing the agreement, they may be unaware of the international commitments or have no interest in complying with them. This is sometimes described as a core-periphery problem, in which the core government has difficulty ensuring compliance by actors who are geographically on the periphery.”).

<sup>50</sup> See CIA WORLD FACTBOOK, *East & Southeast Asia: Indonesia*, [https://www.cia.gov/library/publications/the-world-factbook/geos/print/country/countrypdf\\_id.pdf](https://www.cia.gov/library/publications/the-world-factbook/geos/print/country/countrypdf_id.pdf).

<sup>51</sup> See *id.*

<sup>52</sup> See Gooch, *supra* note 4 (noting fires are a recurring summer blight for the islands of Indonesia).

<sup>53</sup> See Gooch, *supra* note 4 (revealing both Malaysia and Singapore have provided Indonesia with equipment to help fight fires and detect hot spots in an attempt to decrease haze).

<sup>54</sup> See JAKARTA GLOBE, *supra* note 1 (explaining the Air Pollutant Index, which measures air quality as unhealthy when registering a reading ranging from 101–200, has reached 127 in the capital, Kuala Lumpur, and as high as 144 in other Malaysian cities).

<sup>55</sup> States that have ratified the Transboundary Haze Pollution Agreement have access to this information, which can help “reduce the potential haze particles drifting to an adjoining country,” but Indonesia has not ratified the Agreement and thus may not have access to this resource. See Rogers, *supra* note 16.

<sup>56</sup> See United Nations Conference on the Human Environment, Stockholm, Sweden, June 5–16, 1972, *Declaration on the Human Environment*, art. II, princ. 21, U.N. Doc. A/CONF.48 (1972) [hereinafter Stockholm Declaration].

<sup>57</sup> The principle of good neighborliness originates in the U.N. Charter and requires states to honor treaty obligations and to improve international relations in general. U.N. Charter art. 74. See also Phillippe Sands, *International Environmental Law: An Introductory Overview*, in GREENING INTERNATIONAL LAW i, xii (Phillippe Sands, ed. 1994). In the environmental context, this principle was at issue in Hungary and Slovakia's dispute over the construction of the Gabčíkovo Dam. See Case Concerning the Gabčíkovo-Nagymaros Project (Hung. v. Slov.), 1997 I.C.J. 3, 63 (Sept. 25).

<sup>58</sup> Sands sees four objectives of sustainable development as that term is used in the Brundtland Report: (1) preserving natural resources so they will benefit present and future generations; (2) setting standards or quotas for exploiting natural resources; (3) requiring states take into account the needs of other states when exploiting a resource; and (4) requiring that economic plans integrate environmental concerns. Sands, *supra* note 57, at xxxiii. See also United Nations, *Report of the World Commission on Environment and Development*, U.N. Doc. A/42/427 (Dec. 11, 1987); Pacific Fur Seal Arbitration (U.S. v. Gr. Brit.).

<sup>59</sup> This principle holds that those responsible for pollution must bear the costs of the harm it causes. Sands, *supra* note 57, at xxxiv. Sands doubts this principle has attained the status of customary international law in part because of the absence of relevant case law. *Id.*

<sup>60</sup> See Robert V. Percival, *Liability for Environmental Harm and Emerging Global Environmental Law*, 25 MD. J. INT'L L. 37, 41 (2010); Stockholm

Declaration, *supra* note 56, at art. II. The Stockholm Declaration recognizes the right to a healthy environment. Stockholm Declaration, *supra* note 56, at art. I.

<sup>61</sup> This principle holds that all states have a common responsibility to protect natural resources, but the degree of action states take to do so depends on factors such as how responsible it is for creating a particular problem and the extent to which it can eliminate, “prevent, reduce or control the problem.” See Sands, *supra* note 57, at xxxiv.

<sup>62</sup> French obstruction of the International Court of Justice's jurisdiction in a case about the environmental effects of France's nuclear tests in the Pacific is instructive. See Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) Case (N.Z. v. Fr.), 1995 I.C.J. 288 (Sept. 22).

<sup>63</sup> See Brown Weiss, *supra* note 49, at 1559 (noting all actors to the agreement interact in different ways as the agreement evolves over time).

<sup>64</sup> See Brown Weiss, *supra* note 49, at 1559.

<sup>65</sup> See Brown Weiss, *supra* note 49, at 1559 (explaining while the states “are the primary actors, . . . other actors are also essential, including intergovernmental organizations, secretariats to the agreements, nongovernmental organizations, private industrial and commercial organizations, and individuals”).

<sup>66</sup> See Merrill, *supra* note 10, at 967–972.

<sup>67</sup> See Jonathan Wiener, *On the Political Economy of Global Environmental Regulation*, 87 Geo. L.J. 749, 762 (1999) (noting consenting states bind themselves to regulation because they view themselves as winning parties).

<sup>68</sup> See *id.* (explaining opponents block and delay agreement and negotiations, raising the cost for would-be winners).

<sup>69</sup> See Antonia Chayes, *International Agreements: Why they Count as Law*, 103 AM. SOC'Y INT'L L. PROC. 158, 160 (2009); see also Brown Weiss, *supra* note 49, at 1584–85.

<sup>70</sup> For more on the problems of state consent to MEAs, see Wiener, *supra* note 67; and Merrill, *supra* note 10, at 980–81.

<sup>71</sup> See Wiener, *supra* note 67, at 774; Merrill, *supra* note 10, at 980–81.

<sup>72</sup> See Wiener, *supra* note 67, at 774; Merrill, *supra* note 10, at 980–81.

<sup>73</sup> See Wiener, *supra* note 67, at 774; Merrill, *supra* note 1100, at 980–81.

<sup>74</sup> See Brown Weiss, *supra* note 49, at 1584–85 (“The coercive measures found in international environmental agreements are of three kinds: those that provide for trade sanctions, those that withdraw certain privileges of membership, and those that provide for publication of infractions in official publications accessible to the public.”).

<sup>75</sup> See Abram Chayes, *Environmental Concerns: Dispute Resolution has a Role to Play*, 4 No. 3 DISP. RESOL. MAG. 25, 26–27 (1998) (“Some commentators have regarded these ‘incentives’ and ‘sanctions’ as the key to the committee's success.”). See also Merrill, *supra* note 10, at 980–81. An arrangement that simply reversed the asymmetry, with the source state bearing most of the cost, and the affected state enjoying most of the benefits, is also undesirable from a Coasean perspective. See generally Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

<sup>76</sup> See Wiener, *supra* note 67, at 749.

<sup>77</sup> See Wiener, *supra* note 67, at 749 (noting these measures are a deviation from the consent approach to the agreement).

<sup>78</sup> See Wiener, *supra* note 67, at 749.

<sup>79</sup> On the question of why states do not invoke coercive measures, see *infra* Part III.A. The difficult factual problems are another limit on the use of litigation and arbitration to stop transboundary haze pollution. See generally Wiener, *supra* note 67; Henry et al., *supra* note 18.

<sup>80</sup> See Trail Smelter Arbitration (U.S. v. Can.), 3 R.I.A.A. 1905 (1938) [hereinafter Trail Smelter I] (requiring the Canadian company operating the Trail smelter to cease causing further damage to the State of Washington), further proceedings 3 R.I.A.A. 1938 (1941) [hereinafter Trail Smelter II] (holding Canada responsible for the Trail smelter pollution and requiring Canada to conform to its treaty obligations). See generally John E. Read, *The Trail Smelter Dispute*, 1 Can. Y.B. INT'L L. 213 (1963) (describing the Trail Smelter arbitration). Trail Smelter Arbitration (U.S. v. Can.), 3 R.I.A.A. 1905 (Apr. 16, 1938), further proceedings 3 R.I.A.A. 1938 (Mar. 11, 1941). The Canadian Trail Smelter was polluting U.S. waters as recently as 1994. See Austen L. Parish, *Trail Smelter Déjà vu: Extraterritoriality, International Environmental Law, and the Search for Solutions to Canadian-U.S. Transboundary Water Pollution Disputes*, 85 B.U. L. REV. 363, 371–73 (2005).

<sup>81</sup> Due to the paucity of case law, it is debatable whether the “polluter pays” principle has reached the status of customary international law. See Sands *supra* note 57, at xxxiii.

- <sup>82</sup> See Percival, *supra* note 60, at 39; Trail Smelter Arbitration, *supra* note 80. This responsibility, known as the *sic utere* principle, is embodied in article 2 of the Stockholm Declaration. See Stockholm Declaration, *supra* note 56, at art. II.
- <sup>83</sup> See Merrill, *supra* note 10, at 958 (noting that despite the radioactivity levels that harmed individuals and condemned agriculture, there was never a suit for compensation brought against the Soviet Union).
- <sup>84</sup> See ABRAM CHAYES & ANTONIA CHAYES, *THE NEW SOVEREIGNTY* 187 (Harvard University Press 1995); see also Brown Weiss, *supra* note 49, at 1573. For an example of a reporting regime providing scientific certainty, see *infra* Part III.
- <sup>85</sup> See CHAYES & CHAYES, *supra* note 84, at 2.
- <sup>86</sup> See CHAYES & CHAYES, *supra* note 84, at 2.
- <sup>87</sup> See CHAYES & CHAYES, *supra* note 84, at 2. (noting the slow process of behavioral change is a disincentive for sanctions).
- <sup>88</sup> See CHAYES & CHAYES, *supra* note 84, at 2, 63-66 (claiming that while this is not the most obvious cost, it is the most important cost of sanctions).
- <sup>89</sup> See CHAYES & CHAYES, *supra* note 84, at 2, 63-66.
- <sup>90</sup> See CHAYES & CHAYES, *supra* note 84, at 2 (explaining that high political costs associated with sanctions often lead to intermittent efforts to impose sanctions where the sanctioning state is responding to political exigencies, and not the need for enforcement).
- <sup>91</sup> See CHAYES & CHAYES, *supra* note 84, at 3.
- <sup>92</sup> When an MEA has “low compliance” it means that parties have not sufficiently changed their behavior to meet the obligations imposed by the MEA. When there is low compliance, the MEA is not effective. When an MEA has “weak targets” it means that although parties may be in compliance with the terms of the agreement, compliance with these terms does not lead to the MEA’s goal of mitigating the transboundary pollution. See Tseming Yang & Robert Percival, *The Emergence of Global Environmental Law*, 36 *ECOLOGICAL Q.* 615, 655-57 (2009). For a discussion of how domestic politics can lead to MEAs with weak targets, see Robert Putnam, *Diplomacy and Domestic Politics: The Logic of Two Level Games*, 42 *INT’L ORG.* 427 (1988). See also Merrill, *supra* note 10, at 961 (1997); Brown Weiss, *supra* note 49, at 1582-83.
- <sup>93</sup> See George Downs, et al., *Is the Good News About Compliance Good News about Cooperation?*, 50 *INT’L ORG.* 379, 379-406 (1996).
- <sup>94</sup> See Brown Weiss, *supra* note 49, at 1582-83.
- <sup>95</sup> Antonia Chayes, *supra*, note 69, at 160.
- <sup>96</sup> See Yang & Percival, *supra* note 92, at 655-57.
- <sup>97</sup> See Brown Weiss, *supra* note 49, at 1558-59.
- <sup>98</sup> See CHAYES & CHAYES, *supra* note 84, at 22-28.
- <sup>99</sup> See CHAYES & CHAYES, *supra* note 84, at 22-28.
- <sup>100</sup> See CHAYES & CHAYES, *supra* note 84, at 1.
- <sup>101</sup> See Antonia Chayes, *supra* note 69, at 160.
- <sup>102</sup> See Abram Chayes, *supra* note 75, at 25-26.
- <sup>103</sup> See Abram Chayes, *supra* note 75, at 27 (“It is not clear, however, which side had the greater bargaining leverage on this score. Russian compliance is crucial to the overall success of the ozone regime, while the [Global Environmental Facility] funding was not in any way necessary for Russia’s overall economic program.”).
- <sup>104</sup> Some states have laws that regulate activity that takes place beyond their borders. See e.g. Alien Tort Claims Act, 28 U.S.C. § 1350; Foreign Corrupt Practices Act, 15 U.S.C. §§ 78dd-1-3.
- <sup>105</sup> See Brown Weiss, *supra* note 49, at 1586 (“The threat of coercive measures can induce conforming behavior even though the coercion is never invoked . . . [t]hey are particularly useful for countries whose intention to comply is weak or who face strong domestic pressures to lapse into noncompliance.”); CHAYES & CHAYES, *supra* note 84, at 115.
- <sup>106</sup> See Yang & Percival, *supra* note 92, at 654-57.
- <sup>107</sup> See CHAYES & CHAYES, *supra* note 84, at 118.
- <sup>108</sup> See CHAYES & CHAYES, *supra* note 84, at 22-25.
- <sup>109</sup> See Abram Chayes, *supra* note 75, at 27.
- <sup>110</sup> See CHAYES & CHAYES, *supra* note 84, at 3.
- <sup>111</sup> Periodical reevaluations allow parties to determine the effect compliance and noncompliance (meeting the MEA’s obligations) have on overall effectiveness (the extent to which the MEA solves the problem it was intended to solve). For more on the interaction between compliance and effectiveness, see Kal Raustiala, *Compliance & Effectiveness in International Regulatory Cooperation*, 32 *CASE W. RES. J. INT’L L.* 387, 391-99 (2000).
- <sup>112</sup> See CHAYES & CHAYES, *supra* note 84, at 22-25.
- <sup>113</sup> See CHAYES & CHAYES, *supra* note 84, at 135.
- <sup>114</sup> See CHAYES & CHAYES, *supra* note 84, at 135, 142-51.
- <sup>115</sup> See CHAYES & CHAYES, *supra* note 84, at 151-53.
- <sup>116</sup> Transparency serves other functions as well: it reassures parties that others are making good faith efforts to comply with the MEA and may serve as a deterrent for parties that are considering noncompliance. See CHAYES & CHAYES *supra* note 84, at 135, 142-53.
- <sup>117</sup> See Merrill, *supra* note 10, at 966-67.
- <sup>118</sup> See Merrill, *supra* note 10, at 966-67.
- <sup>119</sup> See CHAYES & CHAYES, *supra* note 84, at 135.
- <sup>120</sup> See CHAYES & CHAYES, *supra* note 84, at 136-37.
- <sup>121</sup> See CHAYES & CHAYES, *supra* note 84, at 137.
- <sup>122</sup> See CHAYES & CHAYES, *supra* note 84, at 138-39. LRTAP is the first MEA to regulate transboundary air pollution. See *Convention on Long-Range Transboundary Air Pollution*, AIR POLLUTANT INFO. SYS., [http://www.apis.ac.uk/overview/regulations/overview\\_CLRTAP.htm](http://www.apis.ac.uk/overview/regulations/overview_CLRTAP.htm) (last visited Nov. 12, 2013). LRTAP is also an exception to Merrill’s theory that transboundary pollution is easiest to regulate when there are a small number of parties involved. See Merrill, *supra* note 10, at 934-35.
- <sup>123</sup> See *Status of the Convention on Long-range Transboundary Air Pollution and its related Protocols*, UNITED NATIONS ECON. COMM’N FOR EUR. 1 (June 22, 2012), [http://www.unece.org/fileadmin/DAM/env/documents/2012/air/Status\\_of\\_the\\_Convention.pdf](http://www.unece.org/fileadmin/DAM/env/documents/2012/air/Status_of_the_Convention.pdf).
- <sup>124</sup> Twenty-six states have ratified LRTAP and seventeen have acceded to LRTAP, which legally binds them to its terms. See *id.*
- <sup>125</sup> See *Convention on Long-range Transboundary Air Pollution* at pmbl., Nov. 13, 1979, 1302 U.N.T.S. 217.
- <sup>126</sup> See *id.* at art. 1(a) (defining air pollution and air pollutants as “substances or energy [in] the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment”); *id.* at art. 8(a) (“Data emissions at periods of time to be agreed upon, of agreed air pollutants, starting with sulphur dioxide.”).
- <sup>127</sup> See *Convention on Long-Range Transboundary Air Pollution*, *supra* note 122. Between 1990 and 2006, “SO<sub>2</sub> levels have dropped by 70% within the European Union, and by 35% in the United States;” “[nitrous oxide] levels have dropped by 35% within the European Union, and by 23% in the United States;” “[ammonia . . . levels have dropped by 20% in the European Union;” “non-methane volatile organic compounds have decreased by 41% in the European Union;” and “[haze] has declined by 28% in the European Union.” *UNECE’s Convention on Long-range Transboundary Air Pollution celebrates 30th Anniversary*, UNITED NATIONS ECON. COMM’N FOR EUR., <http://www.unece.org/env/lrtap/30anniversary.html> (last visited Nov. 12, 2013).
- <sup>128</sup> See Lothar Gundling, *Multilateral Co-operation of States under the ECE Convention on Long-Range Transboundary Air Pollution*, in *TRANSBOUNDARY AIR POLLUTION: INTERNATIONAL LEGAL ASPECTS OF THE CO-OPERATION OF STATES* 19, 19-20 (Cees Flinterman et al. eds., 1986).
- <sup>129</sup> See CHAYES & CHAYES, *supra* note 84, at 138.
- <sup>130</sup> See CHAYES & CHAYES, *supra* note 84, at 138-39.
- <sup>131</sup> See CHAYES & CHAYES, *supra* note 84, at 138-39.
- <sup>132</sup> See CHAYES & CHAYES, *supra* note 84, at 139.
- <sup>133</sup> See CHAYES & CHAYES, *supra* note 84, at 139.
- <sup>134</sup> See CHAYES & CHAYES, *supra* note 84, at 247.
- <sup>135</sup> See Merrill, *supra* note 10, at 963-64.
- <sup>136</sup> See CHAYES & CHAYES, *supra* note 84, at 247.
- <sup>137</sup> See CHAYES & CHAYES, *supra* note 84, at 247.
- <sup>138</sup> See CHAYES & CHAYES, *supra* note 84, at 154-55.
- <sup>139</sup> See CHAYES & CHAYES, *supra* note 84, at 155. One drawback to this approach is that parties may fail to report, or may report inaccurate information. See CHAYES & CHAYES, *supra* note 84, at 155.
- <sup>140</sup> See CHAYES & CHAYES, *supra* note 84, at 159.
- <sup>141</sup> See CHAYES & CHAYES, *supra* note 84, at 184.
- <sup>142</sup> See CHAYES & CHAYES, *supra* note 84, at 184.
- <sup>143</sup> See CHAYES & CHAYES, *supra* note 84, at 184.
- <sup>144</sup> See CHAYES & CHAYES, *supra* note 84, at 185.
- <sup>145</sup> See CHAYES & CHAYES, *supra* note 84, at 185. An example of a more invasive verification procedure can be found in the Antarctic Treaty, which allows for onsite inspections. Antarctic Treaty art. VII, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71. For an analysis of the Antarctic Treaty, see David J. Bederman & Soniya P. Keskar, *Antarctic Environmental Liability: The Stockholm Annex and Beyond*, 19 *EMORY INT’L L. REV.* 1383 (2005).
- <sup>146</sup> See CHAYES & CHAYES, *supra* note 84, at 229-31.
- <sup>147</sup> See CHAYES & CHAYES, *supra* note 84, at 154.
- <sup>148</sup> See CHAYES & CHAYES, *supra* note 84, at 166.
- <sup>149</sup> See CHAYES & CHAYES, *supra* note 84, at 167.

- <sup>150</sup> See CHAYES & CHAYES, *supra* note 84, at 167.
- <sup>151</sup> See CHAYES & CHAYES, *supra* note 84, at 168. Providing advance notice is customary international law under the Rio Declaration. United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development*, UN Doc. A/CONF.151/26 (Vol. I), 31 I.L.M. 874 (1992). See also Lake Lanoux Arbitration (Fr. v. Sp.), 12 R.I.A.A. 281 (Arbitral Tribunal 1957); Abram Chayes, *supra* note 75, at 27 (discussing the Lake Lanoux Arbitration as an example of party cooperation).
- <sup>152</sup> See CHAYES & CHAYES, *supra* note 84, at 155.
- <sup>153</sup> See CHAYES & CHAYES, *supra* note 84, at 155.
- <sup>154</sup> See CHAYES & CHAYES, *supra* note 84, at 195-96.
- <sup>155</sup> This concept is sometimes referred to as global environmental law. See Yang & Percival, *supra* note 92, at 623 (“Global environmental law’s content is the common set of legal principles developed by national, international, and transnational environmental regulatory systems. It includes substantive values, principles, and procedural approaches. Among the most readily identifiable principles and tools are the precautionary principle, ‘polluter pays,’ environmental impact assessments, and pollution permitting. One might also readily assert that protection of public health and the integrity of ecological systems are among the most important substantive goals in environmental law.”).
- <sup>156</sup> See Merrill, *supra* note 10, at 985.
- <sup>157</sup> See, e.g., Yang & Percival, *supra* note 92, at 633-34.
- <sup>158</sup> See CHAYES & CHAYES, *supra* note 84, at 250-270.
- <sup>159</sup> See Robert V. Percival, *The Globalization of Environmental Law*, 26 PACE ENVTL. L. REV. 451, 459 (2009).
- <sup>160</sup> See Percival, *supra* note 60, at 49 (“Greenpeace International, for example, was among the first global NGOs to expose toxic waste dumping in developing countries.”); Ginsburg & Shaffer, *supra* note 21, at 38-39 (“Nongovernmental actors frequently play major roles in the politics of international environmental lawmaking, including by heightening global concern about the environment and by framing issues to be addressed.”).
- <sup>161</sup> See CHAYES & CHAYES, *supra* note 84, at 251.
- <sup>162</sup> See CHAYES & CHAYES, *supra* note 84, at 251.
- <sup>163</sup> See Khee-Jin Tan, *supra* note 30, at 648.
- <sup>164</sup> See Khee-Jin Tan, *supra* note 30, at 648.
- <sup>165</sup> Agreement, *supra* note 12, at art. 2.
- <sup>166</sup> *Status of Ratification*, HAZE ACTION ONLINE (Mar. 8, 2010), <http://haze.asean.org/hazeagreement/status>.
- <sup>167</sup> See Khee-Jin Tan, *supra* note 30, at 648.
- <sup>168</sup> See Khee-Jin Tan, *supra* note 30, at 648-49.
- <sup>169</sup> See Khee-Jin Tan, *supra* note 30, at 648-49.
- <sup>170</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>171</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>172</sup> See Nicholas A. Robinson, *Forest Fires as a Common International Concern: Precedents for the Progressive Development of International Environmental Law*, 18 PACE ENVTL. L. REV. 459, 475 (2001).
- <sup>173</sup> See Pathoni, *supra* note 14; see also *Moments Before Indonesian Crash, Jet Pilot Blinded by Haze*, CNN, Sept. 26, 1997, <http://www.cnn.com/WORLD/9709/26/indonesia.crash.pm>.
- <sup>174</sup> See Khee-Jin Tan, *supra* note 30, at 656-57. A hectare is 10,000 square meters. *Hectare*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/hectare> (last visited Nov 12, 2013).
- <sup>175</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>176</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>177</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>178</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>179</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>180</sup> See Khee-Jin Tan, *supra* note 30, at 656-57.
- <sup>181</sup> See Tom Ginsburg, *The State of Sovereignty in Southeast Asia*, 99 Am. Soc’y Int’l L. Proc. 419, 420 (2005). ASEAN’s 1976 Treaty of Amity and Cooperation laid out these principles: “1) respect for state sovereignty; 2) freedom from external interference; 3) non-interference in internal affairs; 4) peaceful dispute settlement; 5) renunciation of the use of force; and 6) cooperation.” *Id.* Relying on these principles, ASEAN has historically dealt with issues facing the region by “non-legal, consensual decision-making.” See Khee-Jin Tan, *supra* note 30 at 648-49. See also Ginsburg, *supra*, at 420-21 (“The ASEAN Way is also a style of informality. The organization proceeds responsively, and institutionalization has been slow . . . . The quiet, private, and nonconfrontational style of the meetings and their minimal institutionalization have allowed the forums to expand.”).
- <sup>182</sup> See *infra* Part IV.A.
- <sup>183</sup> Khee-Jin Tan, *supra* note 30, at 648-49.
- <sup>184</sup> The Association of Southeast Asian Nations Declaration (Bangkok Declaration) Aug. 8, 1967, 6 I.L.M. 1233 [hereinafter Bangkok Declaration].
- <sup>185</sup> See Ginsburg, *supra* note 181, at 420-21.
- <sup>186</sup> See Bangkok Declaration, *supra* note 184.
- <sup>187</sup> In contrast to ASEAN, which has reinforced state sovereignty, the EU has eroded it. For a discussion of these differences see BAHAR RUMELILI, *CONSTRUCTING REGIONAL COMMUNITY AND ORDER IN EUROPE AND SOUTHEAST ASIA* (2007); Michael Leifer & Soedjati Djiwandono, *Europe and Southeast Asia, in EUROPE AND THE ASIA PACIFIC* 198 (Hanns Maull et al. eds., 1998).
- <sup>188</sup> See Kheng-Lian, *supra* note 30, at 230-31.
- <sup>189</sup> See Kheng-Lian, *supra* note 30, at 230-31.
- <sup>190</sup> See Kheng-Lian, *supra* note 30, at 230-31.
- <sup>191</sup> Agreement, *supra* note 12, at pmb1.
- <sup>192</sup> Agreement, *supra* note 12, at art. 2.
- <sup>193</sup> See *supra* Part III.B.
- <sup>194</sup> This is also in keeping with the “ASEAN way.” See *supra* Part IV.A.
- <sup>195</sup> Agreement, *supra* note 12, at art. 27.
- <sup>196</sup> See Convention on Long-range Transboundary Air Pollution, *supra* note 125, at art. 2 (emphasis added). Article 3 of the Convention similarly requires parties to “develop *without undue delay* policies and strategies which shall serve as a means of combating the discharge of air pollutants.” Convention on Long-range Transboundary Air Pollution, *supra* note 125, at art. 3 (emphasis added).
- <sup>197</sup> See *supra* Part III.B.
- <sup>198</sup> Agreement, *supra* note 12, at art. 4.
- <sup>199</sup> Agreement, *supra* note 12, at art. 9.
- <sup>200</sup> See *supra* Part III.B.
- <sup>201</sup> Agreement, *supra* note 12, at art. 9 (emphasis added).
- <sup>202</sup> Agreement, *supra* note 12, at art. 9 (emphasis added).
- <sup>203</sup> Agreement, *supra* note 12, at art. 9 (emphasis added).
- <sup>204</sup> Agreement, *supra* note 12, at art. 9 (emphasis added).
- <sup>205</sup> Agreement, *supra* note 12, at art. 7 (emphasis added).
- <sup>206</sup> Agreement, *supra* note 12, at art. 7.
- <sup>207</sup> Agreement, *supra* note 12, at art. 9.
- <sup>208</sup> Agreement, *supra* note 12, at art. 7.
- <sup>209</sup> Agreement, *supra* note 12, at art. 7.
- <sup>210</sup> Agreement, *supra* note 12, at art. 6.
- <sup>211</sup> Agreement, *supra* note 12, at art. 10.
- <sup>212</sup> Agreement, *supra* note 12, at art. 11.
- <sup>213</sup> See CHAYES & CHAYES, *supra* note 84, at 3.
- <sup>214</sup> See Agreement, *supra* note 12, at arts. 5, 19, 20 (Article 5 establishes the Centre, while the Secretariat and the Fund are established by articles 19 and 20, respectively).
- <sup>215</sup> Agreement, *supra* note 12, at art. 11.
- <sup>216</sup> See ASEAN Specialised Meteorological Centre, SING. NAT’L ENVTL. AGENCY, [http://www.weather.gov.sg/wip/web/ASMC/About\\_Us](http://www.weather.gov.sg/wip/web/ASMC/About_Us) (last visited Nov. 12, 2013). ASMC also displays hotspots at <http://www.weather.gov.sg/wip/web/ASMC/home>.
- <sup>217</sup> See *id.*
- <sup>218</sup> Agreement, *supra* note 12, at art. 8.
- <sup>219</sup> Agreement, *supra* note 12, at art. 8.
- <sup>220</sup> Agreement, *supra* note 12, at art. 8.
- <sup>221</sup> Agreement, *supra* note 12, at art. 11.
- <sup>222</sup> CHAYES & CHAYES, *supra* note 84, at 135.
- <sup>223</sup> See *supra* Part II.B.
- <sup>224</sup> Agreement, *supra* note 12, at art. 18.
- <sup>225</sup> Agreement, *supra* note 12, at art. 19.
- <sup>226</sup> Agreement, *supra* note 12, at art. 18; see BHARAT H. DESAI, *MULTILATERAL ENVIRONMENTAL AGREEMENTS: LEGAL STATUS OF THE SECRETARIATS* 134-35 (2010).
- <sup>227</sup> See DESAI, *supra* note 226, at 134-35.
- <sup>228</sup> Agreement, *supra* note 12, at art. 20.
- <sup>229</sup> Agreement, *supra* note 12, at art. 20.
- <sup>230</sup> See *supra* Part III.B.
- <sup>231</sup> Sok Lak, *ASEAN Tackle Transboundary Haze in Region*, WONDERLAK, Nov. 29, 2011, 3:17 PM, <http://wonderlak.blogspot.com/2011/11/asean-tackle-transboundary-haze-in.html> (describing the ASEAN Haze Fund).
- <sup>232</sup> Sujadi Siswo, *ASEAN Begins Voluntary Contribution Towards Fund to Fight Haze*, CHANNEL NEWS ASIA, Nov. 11, 2006, <http://www.wildsingapore.com/news/20061112/061111-1.htm> (detailing the cost of fighting haze pollution).
- <sup>233</sup> Agreement, *supra* note 12, at art. 20.
- <sup>234</sup> Agreement, *supra* note 12, at art. 16.
- <sup>235</sup> Agreement, *supra* note 12, at art. 16.

236 Agreement, *supra* note 12, at art. 16.  
 237 Agreement, *supra* note 12, at art. 16.  
 238 Agreement, *supra* note 12, at art. 9.  
 239 Agreement, *supra* note 12, at art. 12.  
 240 Agreement, *supra* note 12, at art. 5.  
 241 Agreement, *supra* note 12, at art. 12.  
 242 Agreement, *supra* note 12, at art. 14–15.  
 243 Agreement, *supra* note 12, at art. 13.  
 244 See Gooch, *supra*, note 4.  
 245 See *ASEAN Pressures Indonesia over Rise in Haze Pollution*, BANGKOK POST, Sept. 24, 2011, <http://www.eco-business.com/news/asean-pressures-indonesia-over-rise-in-haze-pollution/> (citing a “change of Parliament” as the reason for the delay).  
 246 See *infra*, Part V.B.  
 247 See *infra*, Part V.B.  
 248 See Ginsburg & Shaffer, *supra* note 21, at 38 (explaining the challenges in international environmental law).  
 249 See Abram Chayes, *Panel III: International Law, Global Environmentalism, and the Future of American Environmental Policy*, 21 *ECOLOGY L.Q.* 480, 481 (1994).  
 250 See *supra* Part III.B.  
 251 Antonia Chayes, *supra* note 69, at 160.  
 252 *Indonesia Urged to Ratify Haze Agreement Soon*, ASEAN-KOREA CENTER, Sept. 27, 2012, 4:45 AM, <http://blog.aseankorea.org/archives/14035>; *Residents Blame Plantations for Haze*, NEW STRAITS TIMES, Oct. 11, 2012, <http://www.nst.com.my/nation/general/residents-blame-plantations-for-haze-1.155458> (explaining that locals blame plantations for making the haze worse).  
 253 Media Release, 14<sup>th</sup> Meeting of the Sub-Regional Ministerial Steering Committee (MSC) on Transboundary Haze Pollution, ASEAN (Oct. 31, 2012), available at <http://www.asean.org/news/asean-secretariat-news/item/media-release-14th-meeting-of-the-sub-regional-ministerial-steering-committee-msc-on-transboundary-haze-pollution> [hereinafter Media Release] (declaring that Indonesia is committed to reducing haze pollution).  
 254 See BANGKOK POST, *supra* note 245; Simamora, *supra* note 14 (discussing the government’s dissatisfaction with the activities of ASEAN countries which impacts negatively on Indonesia).  
 255 See *supra* Part IV.B.  
 256 Media Release, *supra* note 253, at para. 1; *Indonesia-Singapore Collaboration to Deal with the Land and Forest Fires in Jambi Province*, HAZE ACTION ONLINE (Feb. 21, 2013), [http://haze.asean.org/?page\\_id=234](http://haze.asean.org/?page_id=234) (noting that the members of the MSC are Brunei, Indonesia, Malaysia, Singapore, Thailand—the states most affected by transboundary haze).  
 257 Media Release, *supra* note 253, at para. 3.  
 258 See Woo Sian Boon, *Haze Meeting: Govts Agree To Share Concession Maps*, TODAY ONLINE, July 18, 2013, <http://www.todayonline.com/singapore/haze-meeting-govts-agree-share-concession-maps>.  
 259 Media Release, *supra* note 253, at para. 3.  
 260 Media Release, *supra* note 253, at para. 6.  
 261 Media Release, *supra* note 253, at para. 6.  
 262 See *supra* Part V.B.  
 263 See generally Media Release, *supra* note 253.  
 264 Media Release, *supra* note 253, at para. 4.  
 265 See *Indonesia-Singapore Collaboration to Deal with the Land and Forest Fires in Jambi Province*, ASEAN HAZE ACTION ONLINE, [http://haze.asean.org/?page\\_id=234](http://haze.asean.org/?page_id=234) (last visited Nov. 12, 2013) [hereinafter *Indonesia-Singapore Collaboration*].  
 266 *Id.*  
 267 *Id.*  
 268 *Id.*  
 269 See Media Release, *supra* note 253 at para. 7.  
 270 See *Indonesia-Singapore Collaboration to Deal with the Land and Forest Fires in Jambi Province*, SING. NAT’L ENVTL. AGENCY at 5 (last visited Nov. 12, 2013) available at [http://haze.asean.org/?wpfb\\_dl=137](http://haze.asean.org/?wpfb_dl=137) [hereinafter SING. NAT’L ENVTL. AGENCY].  
 271 *Id.* at 43–44.  
 272 *Id.* at 44–45.  
 273 *Id.* at 9, 30, 35 (noting that other steps included: (1) workshop to develop the capacity of the Jambi officers in reading and interpretation of satellite imagery and hotspot information; (2) socialization workshop of sustainable farming and zero-burning practices; (3) development of a land use map for Mauro Jambi regency; (4) installation of a geographical information system to support regional fire and haze monitoring and assessment; (5) setting up air and weather

monitoring stations and development of a Fire Danger Rating System; (6) review of the fire prevention and suppression capability and capacity of plantation companies and relevant stakeholders in Mauro Jambi regency; and (7) training workshop on fire prevention and suppression capabilities). Indonesia has also signed a memorandum of understanding with the U.S. EPA to further cooperation between the United States and Indonesia (“MOU”). *Memorandum of Understanding Between the Environmental Protection Agency of the United States of America and the Ministry of the Environment of the Republic of Indonesia*, U.S. DEP’T OF STATE (June 27, 2011), available at <http://www.state.gov/documents/organization/177115.pdf> (stating that the MOU covers “prevention and management of greenhouse gases[.] . . . air pollution . . . environmental degradation[.] . . . threats to human health and to ecosystems[.] . . . environmental policy and management[.] e[n]vironmental education and public awareness[.] and] environmental governance[.]” and that to accomplish this, parties will exchange technical and governance information, organize workshops and training, and participate in joint projects).  
 274 See Thomas Cho & Dylan Loh, *Plantation Owners Responsible for Sustainable Production: Stakeholders*, CHANNEL NEWS ASIA, Oct. 31, 2012, <http://wildsingaporenews.blogspot.com/2012/11/create-virtuous-cycle-to-ensure.html#.UnKrM5FUO5l> (discussing the increasing demand for palm oil); Marusiak, *supra* note 15.  
 275 See Cho & Loh, *supra* note 274.  
 276 See Marusiak, *supra* note 15.  
 277 See Abram Chayes, *supra* note 75, at 26–27.  
 278 If the Secretariat were to pledge to allocate the Fund so that Indonesia received the bulk of the Fund, it could reduce the Indonesian legislature’s opposition to ratification.  
 279 See *supra* Part II.A.  
 280 See *supra* Part II.A.  
 281 See *supra* Part II.A.  
 282 See Coase *supra* note 75 (recognizing that this approach is not unlike a Coasean bargain).  
 283 See *supra* Part III.B.  
 284 See *supra* Part III.B.  
 285 See *supra* Part III.B.  
 286 See Kathy Marks, *Illegal Logging Responsible for Loss of 10 Million Hectares in Indonesia*, THE INDEPENDENT, Oct. 26, 2009, <http://www.independent.co.uk/news/world/asia/illegal-logging-responsible-for-loss-of-10-million-hectares-in-indonesia-1809417.html> (noting that illegal logging has destroyed half of Indonesia’s rainforests).  
 287 *Need for New Intervention*, SUSTAINABLE MGMT. OF PEATLAND FORESTS IN SE. ASIA, <http://www.aseanpeat.net/index.cfm?&menuid=96&parentid=92> (last visited Nov. 1, 2013).  
 288 *Indonesian Activists Demand Minister’s Transparency on Concession Map*, THE JAKARTA POST, July 28, 2013, available at <http://www.asianewsnet.net/Indonesian-activists-demand-ministers-transparency-49571.html> (noting that although concession maps show where companies’ oil palm plantations are located, these maps are not publicly available); *ASEAN To Have Haze Monitoring System*, BANGKOK POST, Oct. 10, 2013, 12:58 PM, <http://www.bangkokpost.com/breakingnews/374005/asean-leaders-approve-joint-monitoring-system-to-prevent-haze> (recognizing that governments have agreed to share maps with one another); *Southeast Asia Agrees To Adopt Haze Monitoring System*, REUTERS, Oct. 9, 2013, 3:29 AM, <http://www.reuters.com/article/2013/10/09/us-asia-summit-haze-idUSBRE99807920131009>. World Resources Institute, an NGO, has what it claims are concession maps from 2010. Nigel Sizer et al., *Peering Through the Haze: What Data Can Tell Us about the Fires in Indonesia*, WORLD RESOURCES INSTITUTE (June 21, 2013), <http://insights.wri.org/news/2013/06/peering-through-haze-what-data-can-tell-us-about-fires-indonesia>.  
 289 See *Ministry of Forestry WebGIS*, MINISTRY OF FORESTRY: DIRECTORATE GEN. OF FORESTRY PLANNING, <http://webgis.dephut.go.id> (last visited Nov. 12, 2013).  
 290 *Residents Blame Plantations for Haze*, NEW STRAITS TIMES, Oct. 11, 2012, <http://www.nst.com.my/nation/general/residents-blame-plantations-for-haze-1.155458> (discussing ASEAN meeting’s consensus on the necessity of hot spot identification).  
 291 *Peatlands in SEA*, SUSTAINABLE MGMT. OF PEATLAND FORESTS IN SE. ASIA, <http://www.aseanpeat.net/index.cfm?&menuid=9> (last visited Nov. 12, 2013) (explaining the prevalence of peatlands in Southeast Asia).