Compliance Strategies to Deliver Climate Benefits

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A cargo ship at berth using shoreside power, or "cold ironing", at the Port of Long Beach. Courtesy of the Port of Long Beach.

Senior Compliance and Enforcement Officer and colleagues from Kenya's National Environment Management Authority inspect canisters of HFC-134a and other refrigerants. Courtesy of the National Environment Management Authority.

Coal power plant in Datteln, Germany. Image by Arnold Paul.

PREFACE

Strengthening Enforcement and Compliance Is Essential for Fast Climate Protection

Climate change increasingly threatens the health of our planet and the stability of our economies at the local, regional and global levels. Many countries are already suffering from climate impacts—severe water shortages, intense droughts and wildfires, and record-breaking floods, along with disappearances of indigenous species and outbreaks of invasive ones. Communities in coastal areas and islands must also brace for impacts of ocean warming and sea level rise, including shoreline erosion and the intensification of hurricanes and typhoons, which fall into a new category of "super storms".

The current climate impacts are early indicators of more severe threats to come unless society starts prioritizing climate change governance and management. Climate impacts also will undermine efforts to protect environmental resources and improve livelihoods. Slowing climate change will benefit human health and the environment and enable countries to pursue sustainable development agendas.

The global community is committed to negotiating a new agreement by the end of 2015 that would have legal force and be applicable to all countries in the period after 2020. In the interim, there are many existing and emerging laws and regulations that respond, directly and indirectly, to climate change mitigation and adaptation. This *Special Report on Compliance Strategies to Deliver Climate Benefits* supplies examples of successful strategies for compliance and enforcement of both laws that explicitly target climate change and other laws and policies that confer collateral climate benefits.

To avoid the worst impacts of climate change, not only must governments enforce rigorously laws that limit climate pollutants and protect and expand carbon sequestration in the natural environment—including those that protect forests, wetlands, mangroves, peat lands, grasslands, and other sources of biomass. They also must enforce rigorously the laws governing the short-lived climate pollutants. Such laws include those that control black carbon (soot), often regulated as particulate matter, tropospheric ozone, the principle component of ground-level smog, and methane, along with laws that control factory-made hydrofluorocarbons (HFCs) and other fluorinated gases. Recent scientific analysis indicates a global effort to reduce these short-lived climate pollutants would cut the rate of global warming in half through 2070, and by two-thirds in the fragile Arctic.

Many laws mitigating climate pollutants already exist; while they often focus on the health and agricultural benefits, the climate benefits are significant and critical. For instance, by reducing black carbon particulates and tropospheric ozone, national air pollution laws aimed at improving air quality and preventing respiratory and cardiovascular illnesses and deaths will also produce climate benefits. Other existing laws that confer co-benefits for climate include those that prohibit the use or trade of fluorinated gases phased out under the Montreal Protocol, since these substances, including chlorofluorocarbons and hydrochlorofluorocarbons, are also strong climate pollutants. The leaders of the G20 largest economies, along with more than 100 other countries, are committed to using the Montreal Protocol to phase down production and consumption of HFCs, while leaving accounting and reporting in the United Nations Framework Convention on Climate Change.

All of these fast action strategies are complementary to the global effort to produce a strong climate treaty that goes into effect in 2020. Even now, market mechanisms, including emission trading, play an important role in reducing carbon dioxide and other climate pollutants. Market based emission reduction strategies are proliferating worldwide; here, strict compliance is paramount to ensuring the integrity of trades and thus delivering climate benefits. This is equally true with regulatory programs to incentivize renewable energy, such as wind and solar power and biofuels, as well as those that encourage energy efficiency in buildings and appliances. To succeed, these laws require high levels of compliance.

The International Network for Environmental Compliance and Enforcement (INECE) is dedicated to assisting countries and regulators that are interested in reducing their air pollution and climate pollution by working through networks to strengthen compliance with the relevant national, regional, and international laws.

INECE invited colleagues around the world to contribute to this Special Report on climate change compliance and enforcement. It contains a wealth of information on existing activities in the field of climate change compliance and

enforcement as well as emerging efforts to organize and implement new strategies to assure compliance with climate related laws. We envision this to be a dynamic process and welcome further submittals of practical approaches to assuring compliance with laws that deliver climate change benefits.

Together with efforts to strengthen climate laws and to develop a strong international response through the United Nations process, identifying the most effective tools and methods for climate compliance and enforcement is essential to safeguarding environmental resources, human health, and sustainable development.

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This Special Report is
available online at
http://inece.org/resource/climate-report/.

SPECIAL REPORT: COMPLIANCE STRATEGIES TO DELIVER CLIMATE BENEFITS

SUMMARY

This Special Report is a collection of articles that demonstrate the importance of compliance and enforcement to the success of global efforts to mitigate climate change. It offers practical strategies for designing robust laws and standards, implementing effective climate regimes, monitoring emissions, detecting and reporting violations, and sanctioning non-compliance and fraud, among other actions to assure compliance with climate laws. The major themes that emerge include the European experience producing compliance in carbon markets as emissions trading expands worldwide, the importance of enforcing existing laws that have climate benefits, and the advantages of interagency cooperation and networking to effectively enforce climate laws and maximize limited resources.

1 INTRODUCTION

The growth and success of laws and policies to combat climate change at the national and regional levels will directly impact the ambition and effectiveness of the new international climate change treaty planned to be adopted at the Conference of the Parties to the United Nations Framework Convention on Climate Change in 2015. The success of national laws and policies, which have multiplied in recent years, depends on high levels of compliance driven by effective implementation and enforcement.

Through case studies and short articles from a diverse set of contributors, this Special Report provides practical examples to assist practitioners in all countries to strengthen their capacity to implement and assure compliance with climate laws. The Report is intended to provide advice, best practices, and tools directly relevant to real work on the ground. However, it also contains a number of articles focused on climate change laws in early implementation stages as well as some innovative hypothetical suggestions for compliance and enforcement strategies.

The International Network for Environmental Compliance and Enforcement (INECE) is in a unique position to produce this report given the expertise and knowledge of its long standing network. INECE began promoting cross-boundary environmental enforcement cooperation in 1989 and, since then, has convened nine international conferences, the last of which was attended by more than 170 participants from governments and organizations from 65 countries and institutions. INECE regularly produces tools and resources for practitioners, such as its Environmental Compliance and Enforcement Indicators and its Principles of Environmental Compliance and Enforcement Handbook to support practitioners in designing effective requirements, monitoring compliance, and conducting enforcement response. Enforcing laws and policies to combat climate change has become an increasingly important part of INECE's efforts to enhance environmental compliance.

When INECE issued its Call for Contributions for the Special Report, it cast a wide net in terms of suggested topics, requiring only that articles focus on climate change mitigation and contain a strong compliance and enforcement element. In the areas of national and local enforcement, suggested topics were carbon markets, renewable fuel mandates, detecting violations, effective prosecution, energy efficiency, environmental impact assessments, short-lived climate pollutants, penalties and sanctions, motor vehicles, and unconventional gas extraction. In the area of global governance, INECE sought articles on the Montreal Protocol, Reducing Emissions from Deforestation and Forest Degradation, the marine environment and seaports, Nationally Appropriate Mitigation Actions, and the governance provisions of the Green Climate Fund.

In response to its Call, INECE received excellent contributions on most of these topics, resulting in the inclusion of twenty of the best. In the future, other articles under development may be added and existing articles updated, and proposals for additional articles are welcome. The Special Report is intended to be a living document.

2 BACKGROUND: GLOBAL TRENDS

In recent years, introduction, implementation, and enforcement of climate laws have progressed despite a global economic crisis that hindered national plans and constricted resources for development and enforcement of climate regulation. In a few countries, new laws and regulations have been launched, and, under existing climate change regimes, climate change

compliance and enforcement practitioners have refined standards, honed techniques for monitoring and reporting, and improved methods for detection of violations and assessment and enforcement of penalties. Although participation under the Kyoto Protocol has declined, a number of complementary, climate-change related activities may help fill the emissions gap and provide near-term mitigation before the new international treaty enters into force in 2020.

2.1 New laws and policies

Across the world, new climate governance has taken the forms both of small sector-specific regulations and sweeping comprehensive legislation, such as Mexico's comprehensive General Law on Climate Change. Some of these laws have prompted the creation of statutory authorities or dictated the creation or consolidation of agencies to regulate and coordinate action on climate change, for instance, Australia's Clean Energy Regulator. Many other countries, especially small developing states, have adopted national policies to combat or adapt to climate change that may serve as the foundations for laws. New climate laws offer opportunities for enforcement practitioners but also present challenges with respect to learning new procedures (and educating regulated entities), assigning new duties, anticipating forms of non-compliance, and identifying loopholes and assisting policymakers to close them.

2.2 Lessons from enforcement of existing laws

Lessons can be taken from established climate change regimes where accurate greenhouse gas monitoring and reporting is at the core of climate compliance. Compelling all regulated entities to properly reduce their emissions below set limits is essential to the fairness of these systems and delivery of full climate benefits. To this end, regulatory authorities have improved regulations in three major areas: (1) facilitating compliance, (2) detecting violations and (3) imposing sanctions.

2.2.1 Facilitating compliance

Where resources are limited, offering positive incentives is not an option, but authorities have assisted the regulated community in other ways, by setting and clarifying standards, sometimes tailoring them to specific sectors, and by harmonizing accounting practices. Some policymakers and regulators have also developed safe harbor options, which set forth acceptable compliance procedures and thereby limit risks and uncertainty to businesses without modifying their obligations under the law.

Emissions trading schemes are popular instruments that allow regulated facilities to flexibly satisfy emissions rules, but these systems must carefully designed and well-enforced to produce the intended climate benefits. Accordingly, European authorities have strengthened compliance procedures related to credit allocations and auctions so as to minimize opportunities for abuse of the market, including manipulation of demand or prices. The experience of the European Union's Emissions Trading System during the first commitment period of the Kyoto Protocol is instructive and can serve as an example for Australia, which plans to launch an emissions trading system in 2015, and other countries, such as South Korea and China, which have introduced pilot emissions trading programs.

2.2.2 Detecting violations

The abilities of regulatory authorities under existing regimes to detect violations have improved greatly with practice and innovation. Conventional components of compliance monitoring are on-site inspection and review of information required to be submitted. Regulatory authorities have developed sophisticated, technological approaches to reviewing and tracking emissions and gauging whether reported amounts are reasonable.

The private sector and the general public have also bolstered enforcement by means of registering tips or complaints about non-compliance. As public awareness of climate change laws has increased, so has this type of civilian assistance. Additionally, offers to reduce penalties have incentivized self-disclosure and remedial action on the part of regulated entities.

With respect to emissions trading, detecting violations is a specialized practice that has grown up around the European markets and matured in ensuing years. It encompasses tracking the issuing, holding, deduction and transfer of emissions allowances.

2.2.3 Imposing sanctions

Assessment of effective penalties, including formulas to calculate amounts necessary to deter non-compliance, have been refined by enforcement agencies over the years. Regulators must have the legal ability to effectively impose sanctions, which is sometimes hindered by political or judicial action. On the other hand, prosecutions and civil court cases have resulted in assessment of additional damages, augmenting the deterrent effect of administrative sanctions.

2.3 Decreased participation in the Kyoto Protocol

Another trend is decreased political will to undertake ambitious, binding commitments, as evidenced by reduced participation in the second commitment period of the Kyoto Protocol. However, improvements in compliance mechanisms under the Kyoto Protocol and other multinational treaties, such as the Montreal Protocol, provide models for mechanisms being negotiated for the new treaty. Additionally, Parties to the United Nations Framework Convention on Climate Change are formally discussing complementary strategies to raise ambition, produce near-term climate mitigation, and close the so-called emissions gap before the new treaty enters into force in 2020.

2.4 Climate change related laws and complementary initiatives

Few countries have comprehensive climate change laws, but almost all have "climate change related" laws and policies. High levels of compliance, in part through effective enforcement, have been critical to the success of complementary laws and initiatives. These include clean air laws (particularly those that target emissions of climate pollutants such as black carbon), alternative energy policies, renewable fuel standards, energy efficient building codes, and national plans for sustainable economic development. Rigorous enforcement of multilateral environmental treaties such as the Montreal Protocol on Substances that Deplete the Ozone Layer, which reduces production of many chemicals that are also powerful climate warming agents, has already contributed significantly to global climate change mitigation. International complementary initiatives such as the Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants offer near-term climate mitigation strategies and may provide models for successful, cooperative action.

In recognition of the past and potential future contributions of existing climate change-related laws, the theme "promoting compliance with climate-related requirements" was one of seven primary focuses of INECE's 9th International Conference, and national implementation of air pollution and clean energy laws will be a key theme of INECE's 10th International Conference, tentatively planned for mid-2015.

In formal discussions of pre-2020 mitigation action, the Parties to the United Nations Framework Convention on Climate Change are exploring validating and linking to some of these international complementary initiatives. Along with strong enforcement of countries' obligations under the Kyoto Protocol, by both international and national regulators, enforcement of climate-change related laws and international complementary initiatives can contribute significantly to climate change mitigation before 2020.

3 SPECIAL REPORT TOPICS AND THEMES

The Special Report comprises a mix of articles, diverse in topical, sectoral and geographical representation. A number of cross-cutting themes emerge, many of which reflect the global trends considered above. Many of the articles adhere to the central theme of compliance and impart useful advice on tools for implementing regulation and monitoring, reporting and verification, as well as appropriate penalties for both negligent and intentional non-compliance with regulatory requirements. Some of the articles highlight specific technologies or specific sectors or laws, but the advice they contain is adaptable to other contexts. Some of the specific advances described in these articles with respect to facilitating compliance, detecting violations, and imposing sanctions are also encompassed in the lessons section (2.2) above.

The Report begins with a collection of six articles concerning carbon emissions trading, encompassing the experience of enforcement practitioners under the European Union's Emissions Trading System and development of new emissions trading systems in Australia and South Korea. These are followed by articles on enforcement of a carbon tax, preventing illegal trade of ozone depleting substances under the Montreal Protocol, the Compliance Committee of the Kyoto Protocol, enforcement challenges to Mexico's comprehensive climate change law, climate change-related prosecution, compliance with a renewable fuel standard, private prosecution, climate change enforcement networking, emissions accounting practices, a regional clean air program, green seaports, carbon forestry, and emerging climate laws in Pacific islands.

Emissions trading and expansion of the European Union's system is the unifying theme of the first articles, and articles on a carbon tax, the Compliance Committee of the Kyoto Protocol and South Korea's forestry program can be associated, compared and contrasted with these. Another thread is the Montreal Protocol, enforcement of which produces climate mitigation by controlling ozone depleting chemicals that are also greenhouse gases. Two articles focus on government preventing illegal trade of ozone-depleting substances, while another uses past taxes on these substances as a model for a hypothetical carbon tax.

Enforcement of climate-change related laws is a major theme that cuts across the Montreal Protocol-focused pieces as well as an article on a regional clean air programme in East Africa and articles on compliance with the United States' Renewable Fuel Standard and emerging climate laws in Pacific islands (many of which currently address climate change through national energy policies or disaster risk management plans).

Another broad theme is interagency cooperation and the roles of environmental enforcement agencies, financial regulators, local law enforcement, and prosecutor's offices, as reflected by the articles on carbon markets and a case study of a prosecution for a fraudulent sale of renewable fuel credits. Launching emissions trading schemes and building strong court cases are two activities that necessarily require wide coordination. Participation of fiscal and business experts is particularly important in order for compliance and enforcement to keep pace with new forms of sophisticated financial exchanges, derivatives and auctions, as well as to detect fraudulent transactions under emissions trading systems and other credit and offset arrangements.

Interagency cooperation, including consolidation of agencies and offices in some jurisdictions, also maximizes limited enforcement resources, which are extremely scarce in many developing countries, and, under current economic conditions, worldwide. Technical and financial resources can also be pooled through partnerships with non-governmental organizations and businesses as well as through networking and other non-traditional approaches. These themes are present in the Special Report in the articles about enforcement in the context of carbon markets, an article on applying an evaluation technique for environmental enforcement networks to climate change networks, all of the articles based on experiences of developing countries, especially that which describes the regional coordination of a clean air programme in East Africa, and the article on nascent climate laws in the Pacific.

4 CONCLUSIONS

Despite the global economic crisis, countries have continued with national plans to adopt, implement, and improve national climate change laws in preparation for agreement on a new international climate change treaty in 2015. Under such rapid progress at the legislative level, the challenge to compliance and enforcement practitioners at the national level is vast, and resources and political will are often thin.

The articles in the Special Report reflect some of the trends in global climate change governance, compliance, and enforcement, including the experiences of competent authorities to produce compliance under the European Union Emissions Trading Scheme, enforcement of climate change related laws, and interagency cooperation to combat climate change comprehensively and maximize resources. On markets, the European experience provides valuable lessons on enforcement and ensuring the integrity delivery of climate benefits for other countries like Australia and South Korea that have plans to launch emissions trading systems. With respect to climate related laws, national air pollution, clean energy, and other laws providing climate change benefits will only work if there is effective implementation and enforcement to maximize compliance. Enforcement of conventional environmental laws, including using networks, can also serve as examples for the climate change enforcement community.

The Special Report is intended to be a living document, and INECE invites readers to propose additional items and to submit comments and questions. INECE also encourages all readers to express their interest in participating in INECE's carbon compliance network by contributing their experiences, posing issues for further evaluation, and demonstrating leadership over such initiatives.

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FIGHTING NON-COMPLIANCE IN THE EUROPEAN GREENHOUSE GAS EMISSION TRADING SCHEME: ENFORCEMENT EXPERIENCES OF THE GERMAN COMPETENT AUTHORITY

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SUMMARY

Common causes for non-compliance with the European Union's Emissions Trading Scheme reporting requirements include non-participation, disregarded emissions and inaccurate reporting. These occur because of intentional actions by operators or due to negligence or want of care. Non-compliance is not uncommon despite oversight and review by both the competent authorities and also private verifiers. The sheer volume of data makes discrete review of each impossible, but sophisticated analyses and formulas developed by technical experts can help detect some reporting errors. When mistakes are discovered, sufficiently high penalties must be assessed as dissuasive consequences. In Germany, the competent authority has developed tools and calculations to help deter non-compliance that can be applied to the system as a whole.

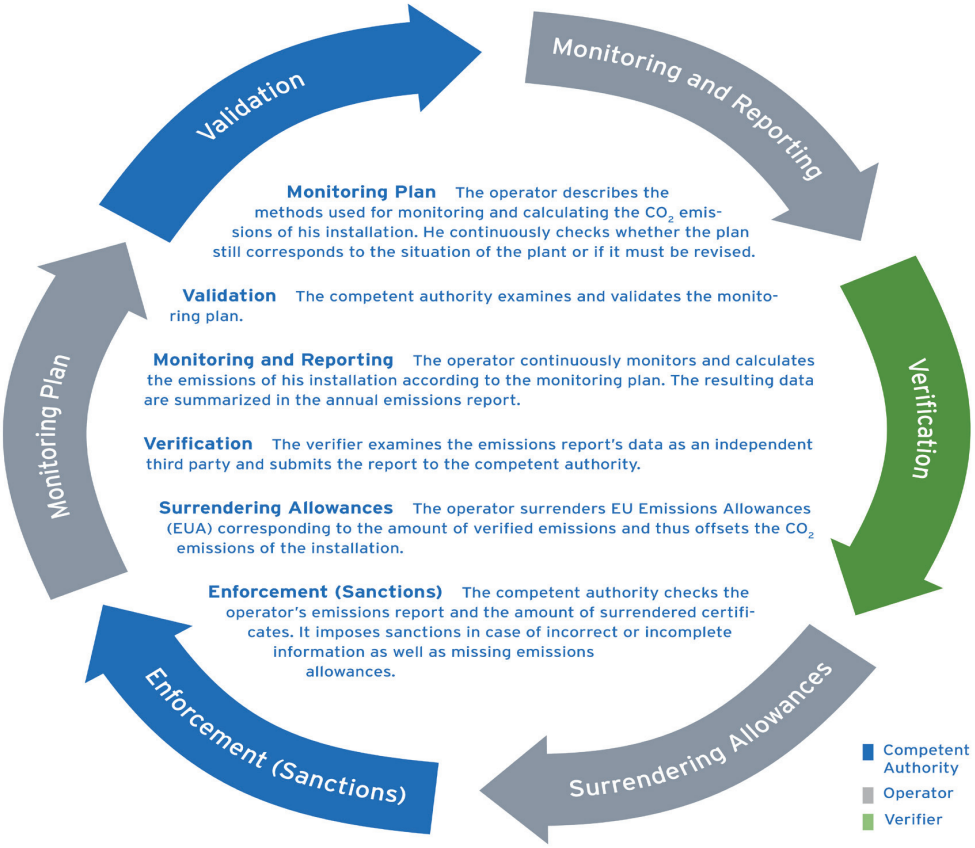
1 INTRODUCTION

Emission Trading is based upon the allocation of a limited number of allowances that have to be surrendered annually according to the amount of emissions caused. Hence, the complete and most accurate determination of annual emissions is a crucial factor for the effective functioning of such a "Cap and Trade System". For example, the foundation of the European Union Greenhouse Gas Emission Trading Scheme (EU ETS) compliance cycle is proper and up-to-date monitoring and reporting by operators, as validated and verified by third party verifiers and competent authorities at alternating steps in the cycle (See **Figure**). The challenge is to enhance the quality of these fundamental activities with innovative methods for detection of negligent or intentional errors or overlooked emissions sources, and to enforce sanctions sufficient to dissuade deficient reporting or incomplete surrendering of emissions allowances.

Under the EU ETS, operators of stationary installations and aircrafts are responsible for the monitoring and reporting of their emissions. The amount of single data that have to be measured, collected, and aggregated is enormous. Although this takes place under supervision by independent private verifiers and competent authorities, the result of the annual reporting outcome still depends heavily on the reliability of the monitoring of operators. An annual emissions report for a large aircraft operator, for example, easily contains a few million pieces of data (aircraft used, fuel consumption, departure and arrival for every single flight). Even a less complex coal fired power plant aggregates tens or hundreds of thousands of single pieces of data for annual reporting regardless of whether emissions are directly measured in the chimney or calculated on results of weighed fuel input and analysed carbon content of the coal.

The consequence of non-compliance is an avoidance of the polluter pays principle if mistakes, omissions or false data cause an underestimation of emissions and the operator surrenders allowances insufficient in comparison to the emissions caused. In particularly serious cases, competitive distortion can be a further consequence, e.g., where operators or installations falling within the scope of the EU ETS do not participate at all while compliant competitors are burdened with bureaucratic effort and the costs to fulfill their surrender obligations.

Figure. EU ETS Compliance Cycle. Source: German Emissions Trading Authority (DEHSt)



Ensuring compliance under these conditions cannot be done using only administrative control. Even with support of third party verifiers the amount of annual data cannot be checked completely. The need for additional independent checks by competent authorities is unquestionable, but "quality compulsion" on operators is also necessary to ensure compliance, and thereby improve reliability and functioning of the system and fair competitive conditions. Building such quality compulsion can be done best by making non-compliance a dissuasive financial risk for operators.

2 COMMON CAUSES FOR NON-COMPLIANCE

Apart from operators unwilling to implement their obligations under the EU ETS, there is a wide range of reasons that operators become non-compliant and infringe their surrender obligations, including unintentional and intentional non-participation, disregarded or overlooked emissions sources, and other cases of want of care and negligent error. Beyond both passive non-compliance and open objection, some operators try to outsmart or manipulate the system or, worse, commit outright frauds.

2.1 Non-participation

The scope of the EU ETS is defined by capacity thresholds for stationary installations and by route and purpose of flights in the aviation sector. Especially in borderline cases, where, for example, installations just exceed the capacity thresholds of EU ETS, there is a tendency not to participate. The number of such undetected cases is unknown, and the reasons for non-participation probably vary (lack of knowledge, misinterpretation of the scope of EU ETS, intent), but it seems to happen too often. In general, this kind of non-compliance concerns installations with a low amount of greenhouse gas emissions in relation to the most relevant emitters such as coal fired power plants, steel refineries, or cement manufacturing plants.

2.2 Disregarded emission sources

Disregard of emission sources is another cause of non-compliance, particularly in complex installations where many emission relevant processes take place and sometimes a few dozen fuels or materials are used. Mostly, the source streams concerned are of low relevance, which relativises the problem. Only when complete processes are forgotten, e.g., recovery activities, does disregard of source streams become substantial. More often, what is disregarded are only fuels used during start-up or shut-down processes or test materials with very low greenhouse gas outputs. These fuels or materials with low rates of use are sometimes disregarded even in less complex installations with low numbers of source streams.

2.3 Other cases of want of care

Typical cases for want of care, or negligence, are:

- aggregation of data (e.g., missing weighting in generating emission factors, carbon contents or net calorific values);
- wrong conversion (e.g., gas volumes measured under operating conditions into wrong standard conditions);
- use of unrepresentative analysis data (caused by unrepresentative sampling, inappropriate preparation of samples, or incorrect analysing of samples);
- type errors; and
- omitted implementation of the approved monitoring plan.

Whereas such errors are often in the details, the resulting errors in final calculations can be considerable in comparison to the total emission amount of a single installation. The mistake could go in either direction, meaning operators may mistakenly surrender more or less allowances than required. In both ways they may risk significant amounts of money.

2.4 Intentional non-compliance

In addition to wilful non-participation, intentional non-compliance can include abuse of the system and frauds perpetrated by operators. An example of abuse, or possibly fraud, is the selective rejection of analysed data (emission factor, carbon content) that would increase reportable emission amounts or otherwise be unfavourable for the operators. To ascertain such an evasion of the monitoring and reporting rules is hard, especially considering that a single fuel or material is analysed a few hundred times per year.

3 Capabilities of Competent Authorities to better ensure Compliance

In a system so dependent on the quality of work by those who have to be controlled—including both the operators, and those contracted by them, the private verifiers—ensuring compliance is virtually impossible without targeting their behaviour by providing incentives or, conversely, putting financial pressure on them to implement acceptable compliance procedures for their businesses. This cannot be done without administrative control. The first step is to approve monitoring methodologies and thereby defining the binding rules for the individual installation before the beginning of the reporting period. However, establishing rules and practices is not sufficient on its own; business operations and annual reporting outcomes need at least a minimum of administrative inspection.

In practice, enforcing this abstract approach is not that simple. Redoing the verifier job, performing site visits, and examining measurement results and their aggregates can be costly and time-consuming. Even well-staffed competent authorities have finite resources and could perform comprehensive checks on a small number of operators only. Therefore, it is important for competent authorities to develop risk based inspection strategies, starting with broadly plausibility checks and narrowing them down to manageable numbers of suspicious reports that will be checked in detail.

An indispensable tool in such a risk based regulatory strategy is information technology. By defining comparative values or realistic ranges for emission factors, carbon contents and net calorific values per type of fuel, inspectors supported by information technology programs can easily detect suspicious numbers. This applies to the comparison of activity or production data for different years too. Abnormal data can be filtered out automatically and transmitted to competent authorities' inspectors for immediate action. For example, when an operator reported a more than 25% lower net calorific value for a certain kind of hard coal than in former years, this discrepancy was highlighted by information technology-based checks and led to a correction of the whole reported emission amount. Therefore information technology approaches should be central to monitoring, combined with targeted inspections based on selected monitoring issues as well as random inspections and reviews.

Whereas the detection of inaccurate data aggregation or type errors in this way is relatively manageable, only self-indictment and coincidence will manifest other types of non-compliance. This applies especially to "forgotten" source streams. To search for them systematically with any degree of success is almost impossible because of the enormous data flood and complexity. Rather, instances of detection owe more to providence than robust enforcement. For example, the so-called Claus process, a way of desulfurizing gases in refineries that produces carbon dioxide emissions, was a relevant source stream not reported over the years by most of the operators concerned. Authorities were unaware that the Claus process caused between 1,000 and 30,000 metric tonnes of carbon dioxide per refinery annually, until an inspector's eye caught a research report in a scientific magazine.

Finally, administrative support and compliance assistance can help prevent incorrect emissions monitoring and reporting that results from operator's inexperience or insufficient resources. However, with or without assistance, better training and allocations of resources can also often be prompted by sanctioning of infringements.

4 Dissuasive Sanctioning as a Tool to prevent Non-Compliance

To prevent negligence and fraud by the private sector, detected infringements must be followed by dissuasive consequences. Considering that administrative detection of non-compliance ranges from not guaranteed to not likely, depending on the cause, the need for incentives to ensure compliance is obvious. However, a system such as the EU ETS, the core of which is levies, does not leave much room for positive incentives. Therefore, it must take the reverse approach and rely on preventive sanctions.

In order to effectively use sanctions to prevent non-compliance, two issues should be considered: the financial benefit of non-compliance and the risk of discovery. The relationship between these two factors is illustrated by the following calculation: assuming that the benefit of non-compliance would be €100,000 and that the risk of discovery by the competent authority is 10%, the penalty needs to be higher than €1,000,000 to be dissuasive.

The EU ETS is guided by these principles, but it uses a constant factor of €100 per allowance shortfall. The suitability of such a constant factor is debatable, because all infringements are treated equally, independent of the degree of operator's fault. The member states have implemented this sanction rule in different ways. Whereas the German Emissions Trading Authority penalizes every shortfall caused by non-compliance in the way described above, other member states sanction only where non-compliance was intended by the operator. Currently, a case is pending at the European Court of Justice concerning enforcement actions carried out in Sweden that did not take into account intent of the operator.

This case demonstrates that the sanctioning system needs further development. To only penalise intended infringements would debilitate the EU ETS. There would be no incentive for operators to monitor and report diligently. Consequently, the reliability of emissions data could be ensured only by high effort of verifiers and ultimately competent authorities in their control activities. Such a shift of responsibilities seems not only inefficient, but also unjust. The operators rule the emission data. Hence, it is just and reasonable to hold them liable if these data were not collected in compliance with the rules. But, in pursuance of this principle the balance between deterrence and proportionality has to be achieved. To meet this requirement, the degree of penalty shall depend on the degree of fault, the potential benefit for the operator, and the detection risk.

5 CONCLUSION

Despite oversight by private verifiers and the authorities, the quality of emissions reporting under the EU ETS depends heavily on the participation, cooperation and precision of the operators of regulated entities. Therefore, operators must be skilled, for which support might be appropriate, and they must be dissuaded from intentionally or negligently misreporting data. When errors in reporting are detected by either information technology processes or by luck, dissuasive but fair consequences must follow. Only by penalizing all mistakes, both intentional and negligent, will operators be compelled to exercise care and report diligently. Striking the right balance between the responsibilities of operators and competent authorities is the key to the effective functioning of the EU trading system.

EFFECTIVE AUCTIONING OF EUROPEAN UNION EMISSIONS TRADING SCHEME ALLOWANCES IN A GLOBALIZED MARKET FOR CARBON DIOXIDE

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1 INTRODUCTION

The European Union Emissions Trading Scheme (EU ETS) is the largest trading program in the world to combat global climate change. However, the effectiveness of the system—scrutinized since its inception in 2005 by both economists and lawyers—is thus far flawed. The crucial importance of a well-developed implemented compliance chain has been neglected. Only after it was discovered that carbon trading fraudsters may have accounted for up to 90% of all market activity in some European countries, with criminals pocketing billions, according to European law enforcement agencies, the compliance issue received increased attention. The EU ETS legislation originally left a considerable amount of discretion to Member States. That decentralized approach pursued in the Directive has adversely affected the effectiveness of the system. Later amendments to the EU legislation on the ETS have gradually reduced the level of decentralization.

The latest changes made to the ETS, the ones that apply to the third trading phase (2013-2020), have greatly centralized the ETS. In particular, Auctioning Regulation 1031/2010 coordinates auctions by establishing common auctioning platforms, sets forth sanctioning responsibilities of auction platforms in cases of suspected criminal or abusive behavior by participants, and endows financial and other competent national authorities with broad investigative and enforcement powers. In this contribution we will focus on how market abuse is prevented under this system, and we will examine what national and interregional regulators should take into consideration when designing and enforcing integrated auctioning systems.

2 PHASE 3: REGULATORY IMPROVEMENTS ON A COMMON AUCTIONING SYSTEM

Building on improvements to monitoring, reporting and verification made in the second phase (2008-2012), the start of phase 3 of trading saw additional changes pertaining to a strict, robust and transparent system deemed essential for compliance and enforcement, including series of reforms in accordance with Auctioning Regulation 1031/2010.

Under the new Auctioning Regulation, a common auctioning infrastructure where a common auction platform conducts the auctions is expected to reinforce the price signal to achieve abatement of emissions at least costs. Such an approach should also avoid market abuses, such as the widely reported strategy of demand reduction, under which firms falling under the EU ETS understate their demand for allowances in order to buy them at lower prices. Auctioning is considered the most transparent allocation method to prevent this and has therefore become the default method of allocating allowances within the EU ETS.

The Auctioning Regulation assigns different tasks regarding enforcement and monitoring to different actors at different levels: auction platforms, an Auction Monitor and several national authorities supervising the financial sectors. The Regulation explicitly grants enforcement powers to both the auction platform and national authorities for the financial markets, which will be highlighted below. For the effective and efficient prevention and detection of market manipulation it is important to understand how crucial information between the various actors is to be exchanged.

2.1 Auction Platforms

Auctions are held by auction platforms appointed by national governments, but each auction is open to buyers from anywhere in the European Union and the European Economic Area-European Free Trade Association. The Auctioning Reg-

ulation provides for the Member States and the European Commission to procure jointly a common platform to auction emission allowances on behalf of the Member States. Member States are entitled to opt out of the common platform and appoint their own auction platform, which Germany, Poland and the United Kingdom have decided to do.

Two auction platforms are already in place. The European Energy Exchange in Leipzig is the common platform for the large majority of countries participating in the EU ETS. The European Energy Exchange also acts separately as Germany's domestic auction platform. The second auction platform is Intercontinental Exchange Futures Europe in London, which acts as the United Kingdom's platform. All Member States are required to submit monthly reports on auctioning for publication on the Commission's website. A single consolidated report is produced on behalf of all Member States participating in the common platform.

The Auctioning Regulation allows, and in some cases requires, that the auction platforms take independent enforcement actions. Article 21 states that persons willfully or repeatedly breaching the Auctioning Regulation have to be sanctioned by the auction platform by refusal, revocation or suspension of admission to bid in auctions. The same sanction must be applied in cases of money laundering, terrorist financing, criminal activity or market abuse, unless the platform is instructed not to apply sanctions by competent national authorities investigating or seeking to apprehend the perpetrators. Furthermore, auctioning platforms are obliged to report suspected money laundering, terrorist financing and other finance-related criminal activity to the financial intelligence unit instituted under the European Union Anti-Money Laundering Directive. Auctioning platforms also have to inform the competent national authorities for the investigation and prosecution of market abuse when such abuse is suspected.

Similar sanctions can be imposed on persons negligently in breach of the Regulation, or persons who otherwise behave in a manner that is prejudicial to the orderly or efficient conduct of an auction. Other sanctioning powers of the auction platform include setting a maximum bid-size and taking any other remedial measures necessary to mitigate an actual or potential discernible risk of market abuse, money laundering, terrorist financing or other criminal activity.

Actions taken by auction platforms are subject to an extra-judicial mechanism, as well as to the right of appeal.

2.2 The Auction Monitor

The Auction Monitor has as its central task to observe the conduct of the auctions. It is informed by the auction platforms about any suspected market abuse and by the measures undertaken. The Auction Monitor also receives information about the auction from the competent national authorities. However, the information is only made available upon request, and it could therefore be argued that information flows between national competent authorities, auction platforms and the Auction Monitor should be automatically linked.

2.3 National Financial Authorities

National financial authorities have the most extensive enforcement powers under the Auctioning Regulation. These competent national authorities are established under Directive 2004/39/EC on financial instruments, Directive 2003/6/EC on insider dealing and market manipulation and Directive 2005/60/EC on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing and are charged with tasks falling under the scope of these directives. In order to carry out all the different tasks designated under these instruments, Member States should clearly assign specific competences to national authorities. Often Member States have chosen one single national authority to be responsible for the implementation, application and supervision of EU financial legislative instruments.

The national authorities receive relevant information on suspicion of market abuse from the auction platforms, other national authorities, and from bidders. There exists thus a constant flow of information that should make it easier to detect large-scale market manipulation. Supervision and enforcement of the prohibitions set in the Auctioning Regulation have been put first and foremost in the hands of the national authorities for the financial markets, who have powers to:

- access any document in any form whatsoever, and to receive a copy of it;
- demand information from any person;
- carry out on-site inspections;
- require existing telephone and existing data traffic records;
- require the cessation of any practice that is contrary to the provisions adopted in the implementation of the above provisions;

- suspend trading;
- request the freezing and/or sequestration of assets; and
- request temporary prohibition of professional activity.

Member States have the obligation to impose effective, proportionate and dissuasive administrative sanctions against the persons responsible for non-compliance. Criminal proceedings as well as measures under national administrative law may be instituted by Member States, possibly by the same competent national authorities that lead the investigation. Through a revision of the Market Abuse Directive, the investigative and administrative sanctioning powers of regulators will be further reinforced in the near future, for instance by criminalising offenses at the EU level.

3 CONCLUSION

A wide range of revisions in the regulatory system facilitating the EU ETS has been implemented, all aimed at improving the robustness of the system through centralization and through tightening the rules on monitoring and compliance. Despite these revisions, checking compliance still is mainly in the hands of national institutions of the 28 Member States. The effectiveness and reliability of the ETS, therefore, still depends on each of their efforts. A lack of compliance in one or a few Member States may harm the functioning of the ETS in the entire EU. This issue becomes even more pressing when third states are joining the EU ETS. The EU's policy is aimed at a gradual expansion of the ETS, with the final aim of transforming the ETS into a global system. Australia is the first non-EU state that will link its ETS to the EU ETS (apart from the European Free Trade Association countries that already were linked earlier).[1]

For phase 3 the legal framework for auctioning EU ETS allowances has been tightened in order to address market abuse in an effective and efficient way. The Auction Regulation endows different actors with enforcement powers. Both the national authorities and the auction platforms can take enforcement measures independently. The exchange of information between these different entities is crucial to ensure that these concurring competences are complementary to each other. This should be done in close cooperation with the Auction Monitor as the central entity of oversight.

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[1] This publication is part of the ENTRACTE research project, funded by the European Commission under the EU FP7 programme. In a follow up to this paper, we will research the actual compliance efforts in several EU Member States, to test our proposition that centralization of the EU ETS is only effective when such centralization is carried through to the compliance phase as well. The results of this research will become available in 2014.

REGULATORY OVERSIGHT FOR THE AUSTRALIAN CARBON MARKET

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1 BACKGROUND

The Clean Energy Regulator was established in April 2012 to oversee the implementation of an Australian carbon pricing mechanism and a primary carbon market. The new Regulator combines the functions of previously separate regulators of the National Greenhouse and Energy Reporting Scheme, Renewable Energy Target, and Carbon Farming Initiative.

The carbon pricing mechanism is part of a significant economic reform under the Australian Government's Clean Energy Future plan, which aims to reshape the economy, cut carbon pollution, drive innovation and support industries and householders that are impacted by the changes.

Much has been learned from the experience in Europe with emissions trading, resulting in extensive legislative powers across several Australian Government regulators to address all aspects of carbon pricing, ranging from secondary market regulation to tackling money laundering risks, in a coordinated way. While the Clean Energy Regulator has principal oversight of the carbon pricing mechanism, other Australian Government regulators have responsibility for specific components and the legislative ability to share information specific to intelligence gathering and law enforcement (Table 1).

Table 1.

Australian Securities and Investments Commission	Australian Competition and Consumer Commission	Australian Taxation Office	Australian Transaction Reports and Analysis Centre	Department of Sustainability, Environment, Water, Population and Communities
Regulates emissions units as financial products under the *Corporations Act 2001* and *Australian Securities and Investments Commission Act 2001*	Addresses misrepresentations about the impact of carbon price on the price of goods and services	Applies equivalent carbon price to specific fuels under the Fuel Tax legislation and, utilising risk management strategies, ensures the appropriate tax treatment arising from carbon price emissions liabilities	Regulates the trading of emissions units in the secondary market under the *Anti-Money Laundering and Counter-Terrorism Financing Act 2006*	Applies equivalent carbon price to synthetic greenhouse gases under the Ozone Protection and Synthetic Greenhouse Gas Management legislation

Legislative powers available to the Clean Energy Regulator range from administrative and civil penalties through to criminal prosecution. For example, an automatic shortfall charge is applied to entities that do not acquire and surrender sufficient units to meet their liability, while other options include enforceable undertakings, infringement notices, and restriction or cancellation of access to scheme benefits, supported by court action where necessary.

The Australian National Registry of Emissions Units, administered by the Regulator, is the Australian Government's unit repository for the carbon market and is supported by legislation providing the Regulator with strong controls over its use.

Protecting the integrity of the Australian National Registry of Emissions Units

The Registry has been designed to United Nations Framework Convention on Climate Change and Australian information technology and protective security requirements, with penetration testing undertaken prior to each major system release.

Rigorous gatekeeping is applied to entities wishing to obtain an account in the Registry with applicants and their authorised representatives providing proof of identity and their fit and proper person status. Checks are conducted on criminal history, prior non-compliance with other relevant Australian or foreign laws, and insolvency.

To prevent or minimise abuse or criminal activity within the Registry, the Clean Energy Regulator may: close, suspend, or apply conditions to accounts; and defer or refuse an instruction to transfer units.

2 ENCOURAGING COMPLIANCE

In May 2012, the Clean Energy Regulator published a Compliance, Education and Enforcement Policy setting out principles aimed at optimising compliance with its schemes. Central to the policy is the facilitative approach to encouraging voluntary compliance, the core elements of which are assisting clients to understand their rights and obligations;

- making it as easy as possible for clients to meet their obligations;
- supporting clients who want to do the right thing;
- actively pursuing those who opportunistically or deliberately contravene the law.

As liable entities progress through their first compliance year under the carbon pricing mechanism, the Clean Energy Regulator is applying significant resources to outreach, guidance and education.

The Clean Energy Regulator is publishing a wide range of information, including on: liable entities and their emissions numbers; individual allocations of free carbon units; carbon offsets projects; and Registry account holders and any significant unit holdings they retain. A high level of transparency in the carbon pricing mechanism will facilitate the efficient operation of the carbon market, and build investor and consumer trust in its integrity.

Mandatory reporting of emissions and energy data has been in place for four years. Data assurance is provided through a mixture of mandatory and Regulator-initiated audits. Pre-submission audits, performed to a reasonable assurance level, are required for:

- emissions reports for large liable entities;
- carbon offsets project reports;
- applications for free carbon units by emissions-intensive, trade-exposed entities and eligible electricity generators.

Further assurance over data integrity is gathered through annual audit programs initiated by the Clean Energy Regulator and desk-based analysis of applications and reports. In 2010-11 the Clean Energy Regulator successfully ran a pilot audit program to test the National Greenhouse and Energy Audit Methodology. The first full audit program in 2011-12 indicated high levels of voluntary compliance, with specific results being used to target education for future emissions reporting.

Enforcement activities and outcomes are also published to encourage voluntary compliance and provide confidence to the market that the Clean Energy Regulator is acting to protect the integrity of the schemes.

3 LOOKING TO THE FUTURE

The carbon pricing mechanism will operate with a domestic fixed carbon price until 30 June 2015, after which it will move to a flexible price determined by the market. Development of a robust and secure auction system for allocating flexible price carbon units is currently under way.

Linking with the European Union's Emission Trading Scheme will occur in two phases: one-way linking to allow the use of European allowances to acquit liability in Australia from 1 July 2015; and two-way linking with mutual recognition of European and Australian units from 1 July 2018. Australia-European Union collaboration will be required to ensure ongoing carbon market integrity, including effective sharing of information and intelligence to support detection and investigation of non-compliance impacting across the two jurisdictions.

ENFORCEMENT OF CONSUMER PROTECTION LAWS IN RELATION TO CARBON CLAIMS IN AUSTRALIA

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SUMMARY

Under the Australian Consumer Law, it is illegal for companies to make unsupported or misleading claims that their businesses are climate friendly or green. False statements or exaggerations related to the impact of Australia's carbon pricing mechanism may also run afoul of the law. This article describes the role of the Australian Competition and Commission in ensuring compliance with the law, as illustrated by a few notable investigations, which were informed by consumer complaints and resulted in enforcement action against companies engaging in misleading or deceptive practices.

1 BACKGROUND

The commencement of the Australian government's carbon pricing mechanism on 1 July 2012 has the potential to place upward pressure on the cost of goods and services provided to consumers by Australian businesses. In addition, carbon consciousness amongst consumers continues to grow with an increasing number of companies seeking to market themselves and their products as "carbon neutral" and others offering services to measure and offset the carbon emissions of business and individuals. Under Australian law, the Competition and Consumer Commission (ACCC) is responsible for ensuring that any representations made by businesses regarding the effect of the carbon pricing mechanism on the price of goods and services or on their green credentials are not false and misleading.

2 COMPLIANCE REGIME

Underpinning consumer protection in Australia is the Australian Consumer Law which is contained in schedule 2 of the Competition and Consumer Act 2010.

Two provisions of the Australian Consumer Law are relevant to the regulation of 'green claims' and have historically been relied upon for enforcement action. First, section 18 prohibits *misleading and deceptive conduct*.[1] According to this section a person must not engage in conduct that is misleading or deceptive or is likely to mislead or deceive. Importantly, there need not be an intention to mislead, but instead the question is an objective one that sets a high standard of disclosure and justification.[2]

Secondly, section 29 prohibits *false or misleading representations about goods or services*.[3] Particularly relevant is section 29(1)(a), which prohibits representations that are false and misleading regarding the performance characteristics of a particular product. These two particular prohibitions apply to all representations by a person in the process of trade and commerce. Relevant examples include claims that an event is carbon neutral when it is not or falsely attributing price increases to the carbon pricing mechanism.

In relation to carbon offsetting, the Australian Consumer Law is supplemented by The National Carbon Offset Standard which provides guidance on what a genuine carbon emissions offset is and sets minimum standards for calculating, auditing and offsetting carbon emissions to achieve carbon neutrality.

3 THE ACCC IN ACTION

The Australian Consumer Law provides the ACCC with significant enforcement powers including the ability to issue civil monetary penalties, banning orders, infringement notices and public warnings. In relation to carbon claims, it has the power to impose penalties of up to AUD$1.1 million.[4]

Since 2008, the ACCC has actively pursued companies with respect to green claims. In *ACCC v GM Holden*,[5] the ACCC brought a case against the retailer of Saab cars in Australia in relation to carbon neutral claims made in a number of national advertisements. Two statements were in contention. Firstly, the headline of "Grrrrrreen" was considered to be overly general and likely to mislead consumers. The more contentious claim though, was the statement "Every Saab is green. With carbon emissions neutral across the entire Saab range". Saab supported this assertion by saying that it would plant 17 native trees on the purchasers' behalf in the first year as a carbon offset. The ACCC alleged that the advertisements were misleading or deceptive under section 52 of the Trade Practices Act 1974 (now section 18 of the Australian Consumer Law) as the carbon dioxide emissions of a Saab vehicle would not be neutral over the life of that car. Instead the 17 trees would only sequester a year's worth of carbon emissions. This point was agreed in the facts at trial. Furthermore this assertion was held to be a false representation as to performance characteristics under section 53(C).

In the lead up to the commencement of the carbon pricing mechanism, the Australian Treasurer directed the ACCC to:

- prioritise the investigation of businesses who engage in practices concerning the impact of the carbon price;
- encourage compliance with the Competition and Consumer Act by informing and educating businesses about their responsibilities under the Australian Consumer Law concerning carbon claims; and
- raise awareness amongst consumers about their rights under the Australian Consumer Law in regards to carbon claims.[6]

Furthermore, the Government announced an additional AUD$12.8 million in funding for the ACCC over four years to support its implementation of the above directions. [7]

Since the commencement of the carbon pricing mechanism the ACCC has received over 2,900 carbon pricing complaints and inquiries from the general public. In the first 100 days the ACCC undertook more than 65 formal investigations and issued a number of enforcement notices. The key areas in which claims were being made related to the extent to which the carbon pricing mechanism would increase the price of goods and services provided by businesses (particularly those that would not be directly liable under the mechanism) and the time from which increased prices would arise (some businesses sought to pass through costs before the carbon pricing mechanism commenced and well in advance of when liability would begin to accrue).

One early example was an ACCC investigation into Brumby's Bakery over allegations it encouraged its franchisees to increase prices and blame the carbon pricing mechanism. As a result of the investigations Brumby's Bakery was forced to enter into a court enforceable undertaking that it would educate its franchisees and staff about their legal obligations under the Australian Consumer Law. Another example involved Genesis Fitness Club which told its members that Gym fees would rise by up to 15% due to the carbon pricing mechanism and they should therefore renew their contracts under a new offer. In that case Genesis Fitness was fined $6,600.

These well publicised enforcement actions, along with the development of industry specific guides and a carbon claims hotline, have increased business and community awareness about the risks of making false claims, resulting in a steady decrease in the number of complaints to the ACCC in recent months.

4 KEY POINTS FOR EFFECTIVE ENFORCEMENT

- Misleading and deceptive conduct prohibitions under the Australian Consumer Law regime provide a basis to prosecute businesses who make false carbon claims;

- Strong Government support and funding early in the commencement of the carbon pricing mechanism had a positive effect on educating both the public and business and decreasing consumer exploitation in relation to carbon claims; and
- Businesses need to carefully evaluate their carbon strategies to ensure that they are not found to be misleading the public. In this regard, claims regarding the effect of the CPM on business operations must be substantiated.

5 CONCLUSION

The implementation of a national carbon pricing mechanism will inevitably lead to some increases in the price of goods and services. Businesses have a right to pass these on to consumers. Consumer protection laws have an important role in ensuring consumers are not exploited by business seeking to mislead as to the effect of a carbon pricing mechanism or their green credentials. The Australian example demonstrates that consumer protection can be achieved through robust laws and early action by proactive enforcement agencies.

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THE EVOLUTION OF ENFORCEMENT: INNOVATIONS IN AUSTRALIA'S EMISSIONS TRADING SYSTEM

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SUMMARY

In July 2012, Australia implemented one of the most comprehensive economy-wide greenhouse gas cap and trade systems in the world. The scheme, known as the Clean Energy Package, has drawn on lessons from the United States, Europe and Australia to create a robust and innovative enforcement framework. Unlike other schemes, the Clean Energy Package directs penalties toward inaccurate emissions reporting, and particular attention has been placed on creating a secure permit market to ensure transactional certainty and guard against fraud. The Clean Energy Regulator, the agency charged with administering the system, has been endowed with a broad range of investigative mechanisms and enforcement powers, not dissimilar to Australian financial regulators. If these powers are deployed skillfully and efficiently, the innovative Australian cap and trade system may prove to be a shining light as more nations aim to tackle climate change, including by developing their own trading schemes.

1 POWERS AND FLEXIBILITY OF THE CLEAN ENERGY REGULATOR

It is no accident that the Clean Energy Regulator considers the Clean Energy Package an economic reform rather than an environmental one. Indeed, the Regulator's compliance and enforcement mechanisms are in many cases identical to those of other economic regulators, such as Australian Securities and Investments Commission and the Australian Tax Office.

Practitioners will find themselves familiar with the new scheme and the new regulator. This is, of course, exactly the point. Similar requirements, powers and procedures will maximise efficiency and minimise compliance headaches in a scheme that could otherwise be majorly disruptive.

The Clean Energy Regulator has equivalent powers in examining documents, demanding production of documents, searching premises and compelling testimony, even when it may incriminate the individual.[2] Practitioners will also be familiar with the Clean Energy Regulator's likely enforcement strategies. Just like other Australian regulators, it has been endowed with an array of enforcement options ranging in severity. This grants the regulator significant flexibility in addressing violations in the most appropriate and efficient manner.

The Clean Energy Regulator can address minor or accidental contraventions efficiently with infringement notices or small fines.[3] They may also seek enforceable undertakings, a mechanism described by ASIC as 'one of our most flexible and effective remedies to improve and enforce compliance with the law'.[4] The severest enforcement options are civil and criminal penalties, including fines of up to AUD$1.1 million and criminal penalties of up to 12 months in prison.[5]

These options form what regulators call an 'enforcement pyramid' ranging from the easiest to enforce to the most severe and time-consuming.[6] This structure allows for an escalated response to individual actors and action tailored to the motivation and nature of specific breaches. The Clean Energy Regulator also has a limited discretion to remit certain automatic penalties where corrections are voluntary or breaches unintentional.[7]

2 THE EVOLUTION OF EMISSIONS TRADING

The Australian regulatory framework reflects years of development in emissions trading design including the astonishingly efficient United States Acid Rain Program, less successful regional US agreements, the pioneering New South Wales Greenhouse Gas Reduction Scheme, the international Kyoto Protocol, and the European Union's supranational system.

A significant development in the evolution of emissions trading policies has been the structure and focus of penalty design. Ensuring companies file accurate emissions reports in systems targeting greenhouse gases has emerged as a fundamental issue.

An emissions trading scheme regulator must ensure that participants both submit accurate emissions reports and surrender enough permits to acquit liability. This is important to ensure the integrity of the emissions permit market in which billions of dollars are invested. Inaccurate reporting or the failure to purchase required permits can weaken the trading price and undermine the system's emissions cap.[8]

Schemes such as the Acid Rain Program, the United States Regional Clean Air Incentives Market, and the European Union's Emissions Trading System have focussed attention on high penalties for shortfalls in the permits surrendered, rather than for the filing of false emissions reports. This attention is perhaps due to the challenge of fluctuating permit prices which demand attention when formulating penalties (if the permit price rises above the penalty, then it becomes cheaper to pay the fine).

The United States Environmental Protection Agency's Acid Rain Program had a very high shortfall penalty, but no reporting penalty. The Program relied on the shortfall penalty to punish participants for inaccurate reports. The high, automated and non-discretionary nature of this penalty is credited with the Environmental Protection Agency achieving the near 100% compliance. Since then, policy theorists have advocated for a shortfall penalty 'many times higher' than the carbon price.[9]

However, high shortfall penalties have been criticised for leading to 'unintentional bankruptcies' and causing industry resentment.[10] Indeed, it is far more likely that the limited and trackable nature of the emissions covered by the Acid Rain Program combined with the continuous monitoring technology used were the primary reasons for the program's success.

Recent studies have shown that a regulator's primary focus should be on accurate reporting, given that failure to surrender sufficient permits to acquit reported liability is immediately obvious. Experiments have shown that high shortfall penalties have little deterrent effect if there are robust reporting penalties.[11] In an emissions trading scheme for greenhouse gases, which come in various forms from various facilities, ensuring consistent and accurate reporting can be a significant challenge.

As one of the more recent schemes, the Australian emissions trading system incorporates these lessons into a framework dissimilar to those of earlier systems. While the Acid Rain Program and the European Union Emissions Trading System have penalties up to ten times the price of permits, the Australian penalty will be just 130% in the fixed price phase, and 130-200% thereafter. This low shortfall penalty is complemented by the Clean Energy Regulator's robust investigative powers. The regulator will ensure that firms comply with proscribed monitoring and reporting standards specific to each type of emitter, which are anticipated to evolve as technology becomes more sophisticated.[12]

Firms filing false reports may incur penalties of up to AUD$1.1 million. The Clean Energy Regulator also intends to use the Commonwealth Criminal Code to pursue criminal charges against liable individuals who may face up to 12 months in prison.[13] Furthermore, it is likely that entities producing more than 125,000 tonnes of greenhouse gas each year will face mandatory compliance audits.[14] This auditing threshold equates to a liability of roughly AUD$3 million in early phases.

About 30 firms are set to face a bill of more than AUD$50 million, and Macquarie Generation, Australia's largest emitter, may have to purchase more than AUD$500,000 worth of permits. [15] These firms have an increased incentive to underreport emissions and the deterrent effect of the fine will be lower, although they will face the fine *and* a shortfall penalty if found in violation. It is therefore essential that this auditing process be credible and thorough to avoid breaches which have the potential to destabilise the carbon market.

3 FRAUD AND THEFT IN THE EUROPEAN UNION EMISSIONS TRADING SYSTEM

The Clean Energy Regulator notes that much has been learned from the European Union's Emissions Trading System. While popularly maligned, it should be noted that in terms of enforcement, the European Union scheme is widely regarded as a success, despite some specific exceptions.[16]

Although the system has been widely criticised for a collapse in permit prices, this was not the fault of poor enforcement, but rather overly generous industry assistance and an economic downturn which resulted in lower demand for permits. This fall in permit prices can partly be seen as a powerful demonstration of the market-based nature of the reform. Prices

responded dynamically to demand, allowing the targeted emissions cap to be achieved at a cost which was both efficient and immediately responsive to economic conditions.

As an economy contracts, permit prices would fall and have a lower impact on firms, while as it expands, the price signal would increase accordingly, precisely when it can be afforded. It is hard to imagine expenditure on direct government action being as responsive to economic conditions as a market price signal, especially given the level of commitment, political support, and lead time that 'direct action' would require.

Despite high compliance rates, lessons can be learnt from the European Union's failures. The European Union's Emissions Trading System left the development and administration of unit registries – through which allowances are held and traded – to individual Member states.[17] This segmented system suffered damaging incidents of tax fraud, laundering, phishing, double-selling and theft.

Over 2010 and 2011 more than €50 million worth of credits were stolen from accounts in Greece, Austria, Romania, the Czech Republic and other countries. Organised criminals exploited weaknesses in less secure registries, a disjointed system of multiple registries, and the naivety of market participants themselves.[18]

Emissions permits are particularly vulnerable to such fraud given their intangibility, the immediacy of transfers, and the ease money transfers.[19] As noted by the Clean Energy Regulator, the European experience has been taken into account in Australia, with increased powers granted to a number of government regulators to address these risks in a coordinated way. The Clean Energy Regulator also has the power to delay and refuse transfers, suspend Registry accounts, and impose restrictions on the operation of accounts.[20]

This is not the first time the country has had to find a legal mechanism to deal with a high risk of property fraud. It was Robert Torrens in South Australia who devised a system of legal title to land through registration, which is now used globally.[21] Such a system is ideally suited to protecting permit ownership.

As a result of submissions on draft legislation, policymakers included a provision in the *Clean Energy Act* granting indefeasible legal title to owners registered on the Australian National Registry of Emissions Units.[22] In this way, the government has sought to promote transactional certainty, encouraging the development of stable and transparent markets.[23]

4 CONCLUSION

It's heartening to see the Clean Energy Regulator giving primacy to protecting the integrity of the national registry given the turbulence experienced in Europe. Coordination with other agencies will be important for efficient and effective enforcement. Focussing on the integrity of emissions reports rather than unit shortfalls is both progressive and sensible given the challenge of monitoring greenhouse emissions and the latest findings in emissions policy research. The eyes of policy-wonks around the word will be on the Clean Energy Regulator as this now framework is deployed, with robust auditing procedures needing to play a critical role. The flexible and comprehensive range of enforcement powers available to the regulators is both appropriate and consistent. However, Parliament cannot legislate for skilled application of the laws. It will be a test of judgment to see whether the Clean Energy Regulator can maintain a productive relationship with industry on the one hand, while knowing when to use muscle with the other. Given the depth of prior international legislation and regulatory experience, there will be no excuse for the scheme's failure.

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TRANSITION TO A LOW-CARBON ECONOMY THROUGH MARKET MECHANISM: A CASE OF SOUTH KOREA

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SUMMARY

Under the 2012 Act on Allocation and Trading of Greenhouse Gas Emissions, South Korea plans to launch an emissions trading scheme in 2015. In light of a recent change in government, proponents were concerned about the future of the trading program, but it survived in part due to strength of the Framework Act on Low Carbon, Green Growth, which laid the foundation for a comprehensive preparatory phase and mandated numerous forms of promotion, public education and processes for stakeholder participation. Domestic progress on the green growth agenda and emissions trading has also been reinforced by prominent climate change action by Korea at the international level.

1 BACKGROUND

Even though it is a non-Annex I country under the Kyoto Protocol, South Korea has shown initiative by voluntarily setting carbon emissions reduction goals within its export-intensive economy. In furtherance of its Framework Act on Low Carbon, Green Growth, which provides for a 30% reduction in national emissions by 2020,[2] Korea's National Assembly passed the Act on Allocation and Trading of Greenhouse Gas Emissions Allowances with a near unanimous vote in May 2012. In November 2012, the Presidential Decree implementing the Emissions Trading Scheme also received an official approval. However, in February 2013, a new administration came into power, led by Park Geun-hye, Korea's first female president.

2 CHALLENGE AFTER CHALLENGE

2.1 Initial Challenges

From the very beginning, legislators and policymakers faced fierce opposition from businesses, especially from those 500 of the country's largest emitters who will have to reduce their emissions to avoid the fine of US$88 per each ton. They argued that the Emission Trading Scheme would affect the country's export competitiveness. As South Korea has grown through export-oriented industrialization and still has high dependency on exports, companies who have to compete at international level have become concerned.

The then-administration exerted a lot of effort to ease the opposition, including introducing an Emissions Target Management Scheme prior to the implementation of the Emissions Trading Scheme.[3] This preparatory phase commenced in March 2011, after more than 100 consultations with the regulated community. Under the scheme, the government imposes the target for greenhouse gas emissions, as well as the energy use to designated entities based on the records verified by the third parties, and it monitors the achievements of those entities.[4] Penalties are assessed for both non-compliance and failure to report or make public emissions records. At first, in order to alleviate industry resistance, the government reduced the maximum penalty to about US$8,800, but it later announced the intent to strengthen penalties.[5]

As part of this preparation, companies with high greenhouse gas emissions also participated in mock trading from 2010 to 2012 under the supervision of the Korea Power Exchange. During this pilot phase, which was broken into four-month periods, the companies were exposed to real trading, and, at the end of each period, the authority concluded by reviewing lessons learned.

The Emissions Target Management Scheme has hereby helped familiarize the regulated entities with measuring, reporting and verification and emissions reductions, better preparing them for the Emission Trading Scheme. It also introduced them to an institutional infrastructure that is expected to be carried over into the Emissions Trading Scheme stage.

2.2 Challenges for Continuation

Strong political will and leadership of former President Lee Myung-bak made climate change legislation possible. Successful implementation now depends on President Park Geun-hye's support of green growth, in particular, support of emissions trading. The implementation stage seems poised to be more difficult than the legislation stage. Although President Park has not publicly or officially annulled the project, actions taken by the government have indicated a lack of enthusiasm for trading and for green growth in general.

One sign of this was the demotion of the Presidential Commission on Green Growth, which was originally set up as a unit under the President's Office but was then moved to that of the Prime Minister. This was expected to weaken the Commission, the main driver of the green growth policy in Korea. The post of ambassador for green growth was abolished as well. A number of ministries either removed the word "green" from titles of their offices or divisions or downsized those offices. In contrast to the previous administration's clear vision and identification of a market mechanism as the method to reduce greenhouse gases, the new administration did not show a clear direction in its policy agenda for climate change issues,[6] which was released early this year.

Another negative sign was that the President appointed a powerful advisor who has been a strong opponent of the Emissions Trading Scheme, a man who has argued that the industry may lose its competitive edge and that a trading scheme would put burden on the whole economy from higher electricity cost. [7]

These recent acts—which also included a delay in selecting the host city for carbon trading exchange—were viewed as part of an effort to try to dilute former President Lee's legacy in a new administration and also to keep distance from previous environmental and climate change-related controversies.[8] All these signs created concern among people who support Korea's green growth strategy and businesses that invested heavily to prepare for the Emissions Trading Scheme.

3 LESSONS-LEARNED FOR ENDURING CLIMATE LEGISLATION

Despite the apparent de-prioritization of the green growth agenda, it seems unlikely that the new administration will be able to abandon or significantly undermine the country's climate change mitigation efforts during its term. Although it is too optimistic to foresee absolute harmony until the implementation stage, President Park's administration would face a number of obstacles if it sought to discontinue plans for green growth and the Emissions Trading Scheme. Three reasons for this endurance were (1) the robust preparatory phase, (2) public awareness and promotion and (3) Korea's international reputation as a climate leader that was firmly established by the Lee administration.

First, the Emissions Trading Scheme is well-tested owing to the Emissions Target Management Scheme.[9], The preparatory phase, including emissions trading piloting, allowing for businesses to familiarize themselves with the rules of trading and measuring, reporting and verification. Base on this phase, they are also well aware of the penalties that can be triggered by non-compliance. For the Emissions Trading Scheme phase, these are set to start at US$3,000 for the first strike, US$6,000 for the second, and US$10,000 per violation after three or more. For failure to report, delayed reporting or false reporting a fine of US$10,000 will apply. Thus, while many businesses may still not be fully in favor of trading and targets, they have been provided abundant information and experience on which to base compliance plans.

Second, the general public is already well-educated with the subject matter. According to the recent poll, more than 97% of the respondents said the green growth policy should be sustained under the new government, while about 84% said the initiative has contributed to addressing climate change and tackling energy crises.[10] The concept was well promoted mainly thanks to the structured policies arranged under the guidance of Framework Act on Green Growth.[11]

Third, Korea has openly declared its intent to undertake mitigation efforts at international level, establishing a reputation as a trailblazer for climate change action. Korea's emission cutting strategy and plan was substantially discussed in official reports by the United Nations Environment Programme and the Organisation for Economic Co-operation and Development. Former president Lee also declared Korea's greenhouse emissions reduction target of 30% of business as usual emissions by 2020 in Copenhagen in 2009. Although non-binding, since it was a promise made at the formal international setting, the current government would not be able to just backpedal on it.[12] The government will not risk hurting its national credibility, especially since Korea was selected to host the Green Climate Fund based on its recent leadership in the domain of international climate change mitigation.

As a result, Korea's green growth agenda and Emissions Trading Scheme have survived, and, along with examples from Mexico and other climate pacesetters,[13] Korea's experience may contain lessons for policymakers worldwide who are seeking to set up laws and trading mechanisms that will endure.

Accordingly, during the recent conference 'Towards a global market: prospects for emissions trading' held in Germany in April 2013, the Deputy Minister of the Ministry of Environment of Korea confirmed that Korea will not succumb to industry pressure and that its carbon dioxide emissions target will not be revised.[14] He also added that the Ministry will produce detailed policies to cut the emissions within the current framework. With uncertainty and delays now resolved, local governments have started campaigning to host carbon trading exchange to be selected in the second half of this year.[15]

4 CONCLUSION

Consistency in policies can be interrupted by leadership change, but Korea's green growth plans and Emissions Trading Scheme were able to weather the government transition. The Framework Act enabled all the relevant parties to come together and signal a consistent message to the industry, to the general public and to investors. It also laid the foundation for a robust preparatory phase, before and during which consultations occurred frequently with the regulated community on reporting and other compliance and enforcement issues. Domestic progress on these initiatives was reinforced by Korea's bold assumption of international commitments.

For a successful execution stage beyond 2015, it is important that the government not delay in establishing carbon trading exchanges and that it apply the lessons of the pilot phase to future regulation. More challenges lie ahead, but the perseverance of Korea's Framework and Emissions Trading Acts thus far can serve as an example to other developing countries embarking on the road to the low-carbon and green economies.

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[1] Narae Lee is currently working at the Inter-American Development Bank, managing energy efficiency and carbon financing projects and is expected to complete her study on climate change and energy policy at Johns Hopkins University May 2014. She also wrote chapters on Private Public Partnerships and Green Growth Financing in Green Growth Best Practice, to be published by the Global Green Growth Institute during the United Nations Climate Change Conference COP 19th session in Warsaw.
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[6] The then incoming Park Geun-hye administration announced a road map to a "new era of people's happiness and hope" with five major initiatives in February. Five strategies include; an innovative economy focused on job creation; providing targeted welfare and job programs; enriching people's lives with creative education and culture; creating a society that is safe and unified; and establishing the foundation for an era of unification. Under the 4th priorities, there are two items, number 98 (climate change mitigation efforts through GHG emissions reduction, etc.) and 99 (climate change adaptation efforts) respectively, directly related with climate change.
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[9] Supra, note 3.
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HOW TO ENFORCE A CARBON TAX: LESSONS FROM THE MONTREAL PROTOCOL AND THE UNITED STATES' EXPERIENCE WITH THE OZONE DEPLETING CHEMICALS TAX[1]

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SUMMARY

Many economists believe that a carbon tax is the most effective option for reducing greenhouse gas emissions, and a carbon tax is supported by the majority of Americans. However, before Congress considers enacting a carbon tax, it should examine a similar tax designed to reduce the use of ozone depleting substances (ODS). While there are differences between a carbon tax and an ODS tax, important lessons can be learned from the United States' experience with the ODS tax. Black market smuggling may occur in certain markets, and will require training and additional government resources. U.S. Customs and U.S. Environmental Protection Agency staff, as well as other relevant agencies, should be well educated about the means of smuggling and the types of fossil fuels and carbon intensive commodities that might be smuggled. Money for additional investigators and training should be included in any carbon tax legislation. Without adequate enforcement, smuggling will rise alongside the increasing carbon tax and could threaten the effectiveness of the tax. If these enforcement concerns are understood and factored into any ensuing legislation, a carbon tax can be the United States best means of solving the greatest environmental challenge of our time.

1 INTRODUCTION

Climate change is one of the most controversial environmental and political issues of our time. The scientific community has reached a consensus that the earth's atmosphere is warming and that anthropogenic greenhouse gas emissions contribute to that warming.[4] Yet there is still considerable political debate over the consequences of such warming and what steps, if any, governments should take in response.

Many economists believe that a carbon tax is the most effective option for reducing greenhouse gas emissions. They argue that it is superior to other market-based approaches because it is simpler to implement, transparent, provides price certainty, and is more efficient.[5] Several countries have agreed with this line of reasoning and implemented carbon taxes. Although the United States does not have a carbon tax, it has support from the majority of Americans.[6]

Before Congress considers enacting a carbon tax, it should examine a similar tax designed to reduce the use of ozone depleting substances (ODS). While there are differences between a carbon tax and an ODS tax, important lessons can be learned from the United States' experience with the ODS tax.

2 OZONE DEPLETING SUBSTANCES PHASE-OUT AND TAX

2.1 International Command-and-Control Regulation to Phase Out Use of ODS

In 1987, the United States signed the Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal Protocol),[7] an international agreement to phase out ODS.[8] In developed countries[9] such as the United States, the phase-out began in 1989 when command-and-control regulations froze production of the most harmful group of ODS, chlorofluorocarbons (CFCs), at 1986 levels.[10] Production was further reduced and then completely phased out by 1996.[11] The next most harmful group of ODS, mainly hydrochlorofluorocarbons (HCFCs), will be reduced by 90 percent by 2015 and by 100 percent by 2030.[12] In developing countries, the phase-out of CFCs began in 1999,[13] with a complete phase-out in 2010.[14] For developing countries, HCFCs will be frozen in 2016 at 2015 levels and reduced to a 100 percent phase-out by 2040.[15]

Notably, the Montreal Protocol's phase-out schedule does not include a restriction on consumption. ODS that has been lawfully produced or imported into a country can continue to be used until stockpiles are depleted. In addition, the

Protocol allows for the continued consumption and trade of recycled or "used" ODS that is reclaimed to proper standards for re-use.

2.2 United States' ODS Tax

To accelerate the removal of ODS from the market and encourage the creation and use of non-ozone depleting alternatives, Congress also established an excise tax on ODS.[16] This tax is imposed on the sale or use[17] of ODS by an importer or manufacturer.[18] Additionally, a floor stock tax is imposed on "any person (other than the manufacturer or importer of the ODS) that holds ODS for sale or for use in manufacturing on January 1 of each year."[19] The excise tax and floor tax level the playing field for ODS sales. Manufacturers or importers, who might stockpile ODS that was manufactured prior to the phase-out, must still pay the excise tax at the rate in place when the ODS is eventually sold. Likewise, a person who holds ODS for longer than a year has to pay a yearly floor stock tax on any unsold ODS. In this manner, both ODS manufacturers and wholesalers pay an equivalent tax on the ODS they hold or sell.[20]

3 ENFORCEMENT CHALLENGES WITH THE ODS PHASE-OUT TAX

3.1 ODS Phase-Out Schedule and Border Tax Incentivized Smuggling

Prior to the Montreal Protocol phase-out period, lower ODS production costs in developing countries created an incentive to manufacture ODS in developing countries for eventual lawful import to the United States and other developed countries. Once the phase-out period began, this disparity in production costs created an immediate financial incentive for smuggling. Added to that incentive was the additional ten years that the Montreal Protocol provided developing countries to continue production of CFCs before requiring their phase-out.[21] Thus, as the phase-out commenced, supply of ODS in developed countries tightened and the economic incentive to illegally import ODS manufactured in developing countries increased. In the United States, the profit for illegal ODS imports from developing countries was further heightened by the ODS tax. As a point of reference, illegally smuggled ODS through the port of Miami was second only to cocaine during the early stage of the phase-out in the mid-1990s.[22]

3.2 United States Initially Unprepared to Uncover Entities Gaming the ODS Phase-Out and Tax

When the phase-out commenced, the United States was ill-equipped to respond to ODS smuggling. On the one hand, the United States Environmental Protection Agency was well aware of the companies that had consumption allowances and was careful to check these companies' reported use of the allowances to make sure that they were not importing more than their share of ODS; however, Environmental Protection Agency was largely unaware that companies with no consumption allowances were importing ODS completely outside the regulatory scheme. The United States Customs Service (Customs)[23] on the other hand had excellent information on the companies that were importing CFCs, but did not know about the Montreal Protocol or the Clean Air Act phase-out schedule. Smugglers were able to exploit this communication failure between Environmental Protection Agency and Customs and illegally imported hundreds of thousands of pounds of ODS, largely without detection.[24] This enforcement gap created immense uncertainty in the marketplace, and threatened to undermine the Protocol.[25] However, when law enforcement was alerted to the problem, its forceful response ultimately curtailed the black market and helped level the playing field for those businesses that were abiding by the new laws.[26]

4 APPLICATION OF ODS DEFICIENCIES TO A CARBON TAX

If a carbon tax is implemented, Congress should anticipate that many of the same problems with ODS could be repeated. Focusing on the potential for illegal imports and exports, our review below suggests that black market smuggling may occur in certain markets, and will require training and additional government resources. The carbon-related import with the profit margin most comparable to ODS is carbon-intensive goods, followed by fossil fuels.

4.1 Smuggling of Carbon Intensive Goods

Carbon-intensive goods—a category of imports likely included under a carbon tax—may be relatively easy to smuggle in ways consistent with ODS smuggling. Carbon intensive goods include iron, steel, steel mill products, aluminum, cement, glass, pulp, paper, chemicals, industrial ceramics, and could include other products manufactured by processes emitting significant quantities of greenhouse gases.[27]

In the context of ODS smuggling, the failure to train law enforcement on the new regulatory scheme allowed smugglers to import ODS without any significant subterfuge. It was not until law enforcement became aware of both the regulatory scheme and the smuggling that smugglers needed more creative ways to illegally import ODS. One of the more common schemes was to import virgin ODS misrepresented as recycled ODS (which were legal).[28] This tactic could be used for carbon-intensive goods. Under the Clean Air Act, "used" ODS were exempt from import restrictions and unlimited quantities could be imported into the United States for reclamation and eventual reuse.[29] Carbon-intensive goods, such as steel, aluminum, glass, and oil, are commonly recycled, and shipping manifests could be falsified based on claims of recycled goods. Document falsification is neither labor- nor resource-intensive, and importers may be inclined to falsify their documents for only a small profit margin. As was the case with ODS, customs officials without in-depth training will have no way of determining whether a good is virgin or reclaimed and knowledge of such facts would require investigation in the exporting country,[30] an intensive step infrequently undertaken.

Shipments of carbon intensive goods could also be mislabeled with a false country of origin. Under such a scenario, the falsely listed country of origin would be a country with an equivalent carbon export duty, but the real country of origin would be one without any tax or equivalent restriction on carbon intensive goods. This is comparable to ODS smuggling, where importers used a false country of origin to import large quantities of ODS.

In addition to mislabeling, other smuggling methods could be utilized for carbon intensive goods. ODS were smuggled through transshipment and triangulation,[31] two types of misrepresentation. Transshipment occurs when a ship stops in an intermediate country—while in transit to a named country—and ODS are switched out and sold on the black market.[32] The empty containers continue on to the named country and the ODS stay in the transit country for sale on the black market. For example, CFCs from Northern Europe were exported to South America on ships that stopped in Spain.[33] The ODS never made it to South America, and the importing company in South America did not exist.[34] In triangulation, ODS are shipped to another country, disguised, and sent to a developed country where they are illegally imported.[35] In the case of ODS, European countries would send the ODS to a European outpost under colonial rule—in the Caribbean, Canary Islands, or French Pacific—where the ODS would be disguised and returned to Europe.[36] Other known methods of ODS smuggling included shipping ODS cylinders as "returned merchandise,"[37] and falsely labeling full cylinders as empty containers. All of these methods were used to smuggle ODS into the United States and could be repeated again with carbon intensive goods.

4.2 Smuggling of Fossil Fuels

In addition to the smuggling of carbon intensive goods, a carbon tax may also lead to the smuggling of fossil fuels. The chart below shows the price increase for gasoline that would result for a domestic carbon tax comparable to Australia's.

Short Term Energy Price Impacts of $ 23.81 / tonne CO_2 tax				
	Unit	Price per Unit (in dollars)	Tax per Unit (in dollars)	Price Increase (%)
Gasoline	Gal	3.92	0.21	5.72

Refined petroleum is the fossil fuel most likely to be smuggled. The United States currently imports about 3.5 million barrels per day of refined petroleum.[38] Such a quantity creates numerous smuggling opportunities,[39] including bunker fuels in shipping. A price increase will drive ships to fuel or refuel in countries without a carbon tax.[40] Fuel use is harder to track on ships, making a surcharge more difficult to impose.[41]

Fuel smuggling is already an issue on a small scale. Chartered ships are buying more fuel than needed and doctoring consumption records to show that all the fuel is used when it is not.[42] Currently, shipping companies use this illegal fuel themselves, but if the fuel price rise from a carbon tax is large enough, they will have the incentive to sell it on the black market instead.

A large smuggling potential for fossil fuels also lies with aviation fuels, particularly in regard to international flights. Fuel for domestic flights is charged at the refinery, but it is impossible to know if the fuel will be used domestically or internationally.[43] The International Civil Aviation Organization prohibits taxing fuel for international flights.[44] If the United States violates this treaty or renegotiates it to allow the carbon tax, a smuggling and leakage problem will arise. Whenever possible, airplanes will simply fuel or refuel in countries without a carbon tax. Fuel left over from international flights could be used for domestic flights.

A similar smuggling problem could arise on an individual level. Individuals could drive across the border to Canada or Mexico and fill their tanks with gas to avoid paying a carbon tax. This is comparable to Canadians driving to the United States to purchase cigarettes to avoid Canada's steep cigarette tax. Although this smuggling is at a very small scale, and will have a minimal impact on CO_2 emissions, it must still be considered. The scale of this smuggling problem may never be large enough to cause the carbon tax to fail; however, it will prevent a level playing field for domestic supply.

5 APPLYING LESSONS LEARNED TO A CARBON TAX

5.1 Training and Resources for Administering a Carbon Tax and Corresponding Border Tax

In the United States, one of the major problems with the ODS tax was enforcement. To help reduce smuggling, effective enforcement systems must be in place. Customs and Environmental Protection Agency staff, as well as other relevant agencies, should be well educated about the means of smuggling and the types of fossil fuels and carbon intensive commodities that might be smuggled. Particularly, they should be trained to recognize fraudulent documents and to distinguish between virgin and recycled fuels and goods. Money for additional investigators and training should be included in any carbon tax legislation. Without adequate enforcement, smuggling will rise alongside the increasing carbon tax and could threaten the effectiveness of the tax.

5.2 Imposing a Border Tax on Imports

Border adjustments are critical for a carbon tax to be effective. A border tax ensures that imports from countries without a comparable emissions price are not given a comparative advantage.[45] It also prevents leakage. Specifically, leakage can occur when there is a shift of energy production to countries without a price on emissions, where fossil fuels and energy intensive goods can thereby be extracted and/or manufactured at a lower cost and then imported back into the countries such as the United States that have imposed a price on emissions.[46] The draw of industry to countries with lower manufacturing costs is an issue of serious concern to United States manufacturers and can only be addressed through an imposition of a border tax.[47]

5.3 Tax on Exports

In addition, serious consideration must be given to a tax on exports. If no such tax is imposed, nothing would prevent fossil fuels from being extracted in the United States and then exported and combusted in a country without carbon regulation, and carbon intensive goods could also be exported to these countries for consumption. Taxing such exports could disadvantage United States businesses in the global marketplace, but the failure to do so might undermine the tax's intended purpose of reducing carbon emissions.

6 CONCLUSION

Today a carbon tax is a simple, easy to implement market-based means of reducing greenhouse gas emissions. Although smuggling can be problematic, the lessons learned from the ODS tax can be our guide to implement an effective enforcement system. Carbon tax legislation with strong enforcement provisions could be the most equitable way to reduce carbon emissions. Congress should be careful to understand the tax's limitations in that it will be more successful in stimulating energy efficiency than in changing consumer preferences or making alternative energy sources on par with fossil fuels. If these limitations are properly understood and factored into any ensuing legislation, a carbon tax can be the United States' first best step at solving the greatest environmental challenge of our time.

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[17] ODS are considered to be used in the manufacture of a product if it is "[i]ncorporated into the product . . . [r]eleased in to the atmosphere in the process of manufacturing the product . . . or [is] [o]therwise used in the manufacture of the product." 26 C.F.R. § 52.4682-3(d)(2) (2012). Therefore, substances used in the production process that are not physically incorporated in the final product are taxed. The predominant production method approach is used if there is no information about the amount of ODS used in the production process.
[18] I.R.C. § 4681(a)(1) (2006).
[19] IRS, *supra* note 10.
[20] There are a few tax exemptions. One notable exemption is for use in further manufacture, i.e., use as a feedstock. *Id.*
[21] *See* United Nations Env't Programme, *supra* note 29 (Article 5, section 1 entitles developing countries to a ten-year delay for complying with the control measures set out in Articles 2A to 2E).
[22] Stephen O. Andersen & K. Madhava Sarma, Protecting the Ozone Layer: The United Nations History 184 (Lani Sinclair ed., 2002).
[23] The United States Customs Service is now the United States Customs and Border Protection. *About CBP,* CBP.gov, http://www.cbp.gov/xp/cgov/about (last visited Feb. 27, 2013).
[24] Steven P. Solow, *The Big Chill: How Federal Agencies Are Working Together to Stop CFC Smuggling*, 12 Nat'l. Envtl. Enforcement J. 9, 11 (1997).
[25] It was not until a border agent in the Miami area had her car air-conditioning replaced (a repair involving ODS) that the Customs started to become generally aware of the Montreal Protocol and the phase-out of ODS. When the inspector returned to her duty post, she was alarmed at the quantity of ODS that was being imported into South Florida without restriction. She contacted Environmental Protection Agency and discovered that many of the noted importers were illegal. *Id.* at 11.
[26] *Id.* at 9.
[27] America's Energy Security Trust Fund Act of 2009, H.R. 1337, 111th Cong. § 4694(a)(5)(A), (6) (2009).
[28] Lary Cook Larson, *The Art of Smuggling: What Customs Officers Need to Know*, *in* U.N. Env't Programme, Illegal Trade in Ozone Depleting Substances: is there a hole in the Montreal Protocol 16 (2001).
[29] *See* 40 C.F.R. § 82.154(g), (creating exceptions for reclaimed or recycled Class I and II substances under the Clean Air Act).

[30] *Id.*
[31] Larson, *supra* note 28, at 17.
[32] *Id.*
[33] Envtl. Investigation Agency, Unfinished Business: The Continued Illegal Trade in Ozone-Depleting Substances and the Threat Posed to the Montreal Protocol Phase-out (2001).
[34] *Id.*
[35] Larson, *supra* note 28, at 17.
[36] Envtl. Investigation Agency, *supra* note 33.
[37] Larson, *supra* note 28, at 17.
[38] Gilbert Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 Harv. Envtl. L. Rev. 499, 527 (2009).
[39] *Id.* at 529.
[40] *Id.*
[41] *Id.*
[42] *See, e.g.*, Joint Factual Statement at 3, United States v. Mislang, 2:11-cr-00262-HGB-ALC (E.D. La. 2011), EFC No. 15 (providing an example of an instance in which a commercial cargo ship master admitted to altering reports on weather conditions in order to claim maximum fuel consumption regardless of whether the fuel was actually used).
[43] Metcalf & Weisbach, *supra* note 38, at 529.
[44] *Id.* at 528–29 (citing Int'l Civil Aviation Org. [ICAO], Convention on International Civil Aviation, art. 24, Dec. 7, 1944, T.I.A.S. No. 1591, 15 U.N.T.S. 295 (9th ed., ICAO Doc. 7300/9, 2006)).
[45] According to a recent study by the Massachusetts Institute of Technology Joint Program on the Science and Policy of Global Change, a carbon price (which could be imposed as a border tax) is a better means of controlling leakage and reducing greenhouse gas emissions abroad compared to a border adjustment requiring importers to purchase emissions allowances. A carbon price of only one-tenth of a cent would achieve greenhouse gas reductions comparable to this border adjustment. Niven Winchester, Sergey Paltsev, & John Reilly, Will Border Carbon Adjustments Work? 15 (MIT Joint Program on the Sci. and Pol'y of Global Change) (2010).
[46] Bernd G. Janzen, *International Trade Law and the "Carbon Leakage" Problem: Are Unilateral U.S. Import Restrictions the Solution*?, 8 Sustainable Dev. L. & Pol'y 22, 22 (2008).
[47] Metcalf & Weisbach, *supra* note 38, at 540.

EFFECTIVE ENFORCEMENT OF THE MONTREAL PROTOCOL IN KENYA

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SUMMARY

In the past few years Kenya has overcome numerous challenges to operate a very successful implementation programme for the Montreal Protocol. In the absence of adequate local technical capacity and human resources, compliance with national laws has been made possible by collaborative initiatives and cooperative efforts of various regional and international players in the regulatory regime. The compliance and enforcement successes of this programme are illustrated by three case studies of actions leading to impoundment of illegal ozone depleting substances (ODS) in Kenya between June 2010 and December 2012. Through the enactment and collaborative implementation and enforcement of the ODS Regulations, Kenya is on the right path to meeting its international obligations under the Montreal Protocol.

1 BACKGROUND

Upon the discovery that chlorofluorocarbons (CFCs) and other man-made substances are leading to depletion of the ozone layer, the international community negotiated the Vienna Convention for the Protection of the Ozone Layer in 1985. Following this, the Montreal Protocol on Substances that Deplete the Ozone Layer was negotiated in 1987 with the objective of reducing and finally phasing out the production and consumption of ozone-depleting substances (ODS) including chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), carbon tetrachloride (CTC), methyl chloroform, halons, and methyl bromide.[1] Kenya is a signatory to the Vienna Convention and its Montreal Protocol. The Montreal Protocol is the only multilateral environmental agreement with universal membership.[2]

Kenya's framework environmental legislation, the Environmental Management & Co-ordination Act, was passed in 1999.[3] Under the provisions of section 56 of the Act, the National Environmental Management Authority is mandated to issue guidelines and institute programmes concerning, *inter alia*, the elimination of substances that deplete the stratospheric ozone layer. Pursuant to the foregoing statutory provision, and in an effort to implement the Vienna Convention and its Montreal Protocol, Kenya enacted the Environmental Management and Coordination (Controlled Substances) Regulations in 2007, popularly known as the "*ODS Regulations*".[4]

The National Environmental Management Authority is charged with the responsibility of enforcing the ODS Regulations in cooperation with the relevant Lead Agencies (other government ministries and departments). With specific examples and case studies from Kenya, this paper examines the strategies that have been employed in the successful implementation of the Montreal Protocol through the enforcement of the ODS Regulations. This paper seeks to demonstrate that local collaborative strategies to implement national environmental laws can help to achieve international obligations under Multilateral Environmental Agreements.

2 CONTROL OF ODS IN KENYA

Just like in most developing countries, the largest remaining sector in which ODS are used in Kenya is the refrigeration and air-conditioning servicing sector. Since Kenya does not produce ODS, its consumption depends solely on imports. Thus, Kenya's ODS Regulations seek to control the import, use and consumption of ODS through licensing and permitting of imports and exports and oversight over trade, handling and use of ODS.

Under the ODS Regulations, it is an offence to deal in and/or import any banned ODS into the country. It is also an offence to deal in and/or import any controlled ODS without a license from the National Environmental Management Authority.

Further, it is also an offence to mislabel and/or misdeclare any banned or controlled ODS. Sanctions for offenders include criminal prosecution with the penalty of a fine or prison term, revocation of license and/or an order to reship the goods at own cost to the country of origin.[5]

Case Study No. 1: Lifting Equipment Company Limited, June 2010

A Kenyan company, Lifting Equipment Company Limited (LECOL), obtained a license from the National Environment Management Authority (NEMA) to import a consignment of 204 cylinders of refrigerants (60 of R410A and 144 of R404A). When the consignment reached the Mombasa Port, the Customs Department conducted a routine analysis of the refrigerants through random sampling using a chlorofluorocarbon (CFC) meter/identifier. The results of the sampled cylinders were positive for CFCs. The Customs Department therefore impounded the whole consignment of 204 cylinders of refrigerants and called upon the NEMA together with the Environmental Police Unit to carry out a full verification of the entire consignment. The verification exercise was carried out in the presence of the company's representatives, and it indicated that:

- The cylinders labeled as R404A contained 100% R134A. This was treated as a case of mislabeling, an offence under the ODS Regulations, 2007.
- The cylinders labeled as R410A contained on average 7% to 9% of the banned CFC R12, 3% to 6% R134A, 17% to 30% R22 and 61% to 80% hydrocarbons. This was not only treated as a case of mislabeling but also as a case of importation of banned CFCs based on the percentages contained in the cylinders.

Action Taken: NEMA ordered the company to reship at its own cost the entire consignment to the country of origin. The company's annual import license was also revoked.

Source: Report of Verification Inspection at Mombasa Port, NEMA, June 2010.

Despite the enactment of Kenya's ODS Regulations in 2007, the implementation of the same did not take off successfully until 2008. This delay in implementation is attributed to several factors including lack of technical and human capacity within the relevant environmental regulatory institutions and ineffective inter-agency collaboration. However, since 2008 there have been very strong and consistent institutional commitments and resolve to ensure effective implementation of the ODS Regulations. The collective effort of individuals and institutions over the past three years has resulted in tremendous achievements in enforcement of and compliance with the ODS Regulations. Kenya has successfully employed a number of strategies including putting in place an ODS licensing system, improving inter-agency cooperation, building capacity and enhancing enforcement and penalties.

2.1 Effective ODS Licensing System

Kenya's ODS Regulations require that any person dealing in ODS must obtain a license from the National Environment Management Authority. The license specifies, among other details, quantities of substances to be imported, the type of substances as well as the details of the importer or dealer. There is in place a robust ODS licensing desk with a senior officer in charge. The National Environment Management Authority works closely with the Customs Department of the Kenya Revenue Authority to ensure compliance with licensing conditions.

2.2 Improved Inter-agency Cooperation

Since 2010 Kenya has seen a marked improvement in the enforcement of the ODS Regulations following successful partnerships in environmental enforcement by various governmental agencies. Under the auspices of the East African Network for Environmental Compliance and Enforcement (EANECE),[6] various regulatory agencies including the National Environment Management Authority, Customs Department, Kenya Police Service, Kenya Bureau of Standards, among others, have come together to cooperate and collaborate on priority environmental compliance and enforcement issues. EANECE was set up in 2010 as an informal network of environmental regulators in the East African nations of Burundi, Kenya, Rwanda, Tanzania and Uganda. The network's mission is to promote the rule of law, good environmental governance and sustainable development through efficient and effective implementation and enforcement of environmental requirements. EANECE's programmes include capacity building for environmental regulatory officials, raising awareness of environmental requirements and the benefits of compliance, and building and strengthening personal relationships between environmental regulatory officials for effective enforcement of environmental requirements. The Network has a regional secretariat that coordinates with national networks in each of the member countries. National networks meet to

share information regularly on a continuous basis, and regional meetings are held at least twice every year to share best practices. The enhanced cooperation under the Network has created personal relationships among regulatory officials and resulted in more regular communication among the various players in the regulatory cycle hence greater information and intelligence sharing.

Case Study No. 2: Mishkat Limited, April 2012

The National Environment Management Authority (NEMA) and the Customs Department seized a consignment of 55 cylinders containing the banned CFC R12 at the Mombasa Port. The seizure followed a routine random testing and analysis by Customs to ascertain the contents of the consignment. The cargo originated from Dubai and was imported by a Kenyan company, Mishkat Limited. The company had a license from the NEMA import controlled refrigerants R410A and R404A. However, upon random testing, one cylinder among the imported consignment was found to contain sufficient quantities of R12, and a full verification of the entire consignment was ordered. The verification exercise was conducted jointly by the NEMA, Customs and the Environmental Police Unit in the presence of the company's representatives. The results of the verification revealed that all of the 55 cylinders contained between 11.5-12.9% and of the banned CFC R12.

Action Taken:

- NEMA ordered the company to reship at its own cost the entire consignment to the country of origin.
- NEMA also considered revocation of the company's annual licence to deal in controlled refrigerants. The licence expired, so revocation was not necessary.

Source: Report of Verification Inspection of Refrigerants Containing Banned Controlled Substances In Mombasa, NEMA, April 2012.

2.3 Improved regional cooperation through networking

Every developing country, including Kenya, has a National Ozone Unit, and every region has a UNEP Regional Ozone Office that organizes periodic meetings to strengthen and co-ordinate activities. Because of the network offices, news about illegal trade; the technical, economic, and environmental performance of technology to replace ODSs; and successful national ozone enforcement policy travels fast and authoritative answers to any questions are available very quickly. This avoids duplication of effort, allows selection of sustainable technology, and reduces costs through group know-how and information sharing. For example, network offices share information on which foreign companies are suspected of illegally trading ODS refrigerants and what techniques are used to conceal illegal ODSs in shipments.

2.4 Capacity Building

Through the collaborative efforts of the Ministry of Environment, the National Environmental Management Authority, the National Ozone Unit, United Nations Environment Programme, the German organization Gesellschaft für Internationale Zusammenarbeit (GIZ) and other development partners, there have been several capacity building initiatives including training for environmental inspectors, the police and customs officials. The training focuses on priority areas such as: the international response to ozone layer depletion; national intervention mechanisms and obligations; the national licensing regime; identification of ODS and ODS-based products; role of various stakeholders; illegal trade in ODS; and many other areas. There have also been several targeted compliance promotion initiatives for dealers in ODS including traders, technicians and consumers such as hotels. In addition, the capacity building efforts have focused on provision of technical equipment such as ODS identifiers for customs officials at transit points, airports and sea ports.

2.5 Enhanced Enforcement and Penalties

The National Environment Management Authority in liaison with other agencies such as the Customs Department and Police have in the recent past stepped up environmental inspections at transit points, particularly the Port of Mombasa. In this regard, two environmental inspectors from the National Environment Management Authority have been deployed to the Mombasa Port to continuously work with the customs officials and other enforcement agencies to monitor the illegal imports and exports of ODS, hazardous materials and wastes and other related environmental matters. This effort has led to increased detection of various illegal imports of ODS into the country. Several offenders have been prosecuted criminally before the courts of law while others have faced administrative action.

Case Study No. 3: Gee Pee Trading Company Limited, December 2012

Following a tip off, the National Environment Management Authority (NEMA) laid an ambush on the premises of a Nairobi based clearing and forwarding agent, Trade Base Company. A consignment of refrigerants was found in the premises, and the owner of the consignment was confirmed to be Gee Pee Trading Company Limited. Upon checking the Import Declaration Form, it was discovered that the goods had been declared as refrigeration accessories and spare parts with absolutely no mention of the refrigerants. In total there were 100 cylinders of assorted refrigerants; R22 – 30, R134A – 40 and R404A – 30. An analysis of the refrigerants was conducted, and the results were as follows

- All the 40 cylinders labeled as R134A were found to contain 100% of the banned CFC R12.
- All the 30 cylinders labeled as R404A contained over 25% of the banned CFC R12.
- All the 30 cylinders labeled as R22 contained 100% R22.

Action Taken: NEMA ordered the company to reship at its own cost all the 70 cylinders of R134A and R404A to the country of origin.

Source: Interim Report on ODS Monitoring Exercise Carried Out In Nairobi, NEMA, January 2013.

3 CONCLUSION

From the foregoing discussion and case studies, it is clear that in the past few years Kenya has had a very successful implementation programme for the Montreal Protocol. Despite numerous challenges such as inadequate technical capacity and human resources, Kenya has demonstrated that through local collaborative initiatives bringing together various players in the regulatory regime, it is possible to achieve greater compliance with national environmental laws and at the same time meet international obligations under Multilateral Environmental Agreements. Through the enactment and collaborative implementation and enforcement of the ODS Regulations, Kenya is in the right path to meeting its international obligations under the Montreal Protocol.

4 REFERENCES

[1] The Vienna Convention and the Montreal Protocol were adopted by the Conference of Parties on 23rd March, 1985 and 16th September, 1987 respectively.
[2] Kenya ratified the Vienna Convention and the Montreal Protocol on 9th November, 1988.
[3] Act No. 8 of 1999.
[4] Legal Notice No. 73 of 2007.
[5] Legal Notice No. 73 of 2007.
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ENFORCEMENT STRATEGIES FOR COMBATTING ILLEGAL TRADE IN OZONE DEPLETING GREENHOUSE GASES

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SUMMARY

The Montreal Protocol on Substances that Deplete the Ozone Layer has successfully phased down hundreds of ozone depleting substances many of which are also potent greenhouse gases, but a black market trade in some of these has arisen as a side effect. Low cost adaptations can be made to existing national enforcement systems to improve their effectiveness for addressing illegal trade. Excerpted from a newly-published booklet of case studies and practical advice, this article provides guidance for establishing and implementing effective ODS licensing systems, one of the seven pillars of an effective national enforcement program for preventing illegal trade in hydrochlorofluorocarbons (HCFCs), and other ozone-depleting greenhouse gases being phased out under the Protocol.

1 INTRODUCTION

The International Network for Environmental Compliance and Enforcement and the United Nations Environment Programme recently jointly published a booklet entitled *Enforcement Strategies for Combating the Illegal Trade in HCFCs and Methyl Bromide*.[1] Containing case studies and examples from both developed and developing countries, the booklet is intended to assist enforcement officials in developing and implementing enforcement strategies to prevent clandestine trade in hydrochlorofluorocarbons and other ozone layer and climate damaging refrigerant gases. With a focus on flexible approaches that maximize scarce human and financial resources, the booklet is organised into seven chapters which represent the seven pillars of an effective national enforcement program to prevent illegal trade in ozone depleting substances (ODS).

The purpose of this article is to provide basic information about the causes of illegal trade in ODS, to briefly outline the components of a national strategy to improve enforcement, and to provide an example of one of these strategies. As such, only portions of Chapter One of the booklet which relates to the first pillar (laying the foundation for effective enforcement) and of the Background chapter are reproduced here.

2 BACKGROUND

The Montreal Protocol on Substances that Deplete the Ozone Layer is widely considered the most successful international environmental agreement. However, unchecked black market trade in ozone-depleting substances regulated under the Montreal Protocol could undermine its success.

In the early 1990's, a burgeoning black market trade in chlorofluorocarbons (CFCs) and other ODS arose as an unintended result of Montreal Protocol controls. Thanks to the efforts of government, industry, academia and non-government organisations, the illegal trade in CFCs and other ODS has declined significantly since the problem was first discovered, and global awareness of the problem of illegal trade in ODS is at an all-time high.

As Parties begin to implement phase-out schedules for hydrochlorofluorocarbons, they can work to avoid a similar threat. HCFCs became the first generation of substitute chemicals for CFCs when production and consumption of CFCs were phased out under the Montreal Protocol (the phase-out was completed as of 1 January 2010, with certain exemptions). Current uses of HCFCs include refrigeration, foam, solvent, aerosol and firefighting sectors. Although having considerably lower ozone depleting potential than CFCs, HCFCs pose a significant threat to the global climate, with global warming potentials between 700 and 2,300 times that of carbon dioxide.

Recognising the ozone and climate impact of the continued use of HCFCs, the Parties to the Montreal Protocol agreed in 2007 to accelerate the phase out of these substances. HCFCs are to be completely phased out in developed countries by 2020 and in developing countries by 2030, with an initial freeze in 2013 and a 10% reduction step in 2015.[2] A number of countries, both developing and developed, have decided to phase out HCFCs faster than required by the Montreal Protocol and have introduced bans for selected uses. The limited supply creates demand for HCFCs in these countries, which in turn provides incentives for HCFC smuggling.[3]

Effective enforcement is crucial for ensuring compliance with the initial HCFC phase-out commitments for developing countries. As national controls come into place, it is important that countries are prepared to prevent a surge in illegal trade in HCFCs, as was experienced with CFCs in the past. Enforcement consists of the measures national governments take to compel compliance with the law. In the context of the Montreal Protocol, enforcement measures usually focus on implementation of ODS trade controls (i.e., the national import/export licensing system, import quota system and/or equipment or ODS bans). However, national environmental regulations associated with ODS storage, recycling, transport, use, emissions, and safety may also be implicated, as well as tax and Customs laws. **Figure 1** outlines the seven pillars of an effective national program for combatting the illegal trade in ODS. Enforcement officers who are in the initial stages of establishing an enforcement program may find it useful to consider all pillars, while those with well-established enforcement programs may prefer to focus on areas needing improvement.

Figure 1. Seven Pillars of an Effective National Enforcement Program to Prevent Illegal Trade in ODS

1. **LAY THE FOUNDATION FOR EFFECTIVE ENFORCEMENT**: In addition to establishing and improving licensing quota and data management systems, laying a foundation for effective enforcement includes: identifying stakeholders, implementing national legislation to address illegal trade, collecting trade and ODS use data and establishing systems for monitoring compliance.

2. **BUILD CAPACITY AT THE FRONTLINES**: Establishing a good working relationship between the National Ozone Unit and Customs and other stakeholders working at the frontlines, such as port and police authorities, is an essential early step to building an effective enforcement program.

3. **COLLABORATE ACROSS NATIONAL BORDERS**: International cooperation through the use of informal prior informed consent (iPIC) and other mechanisms can go a long way to preventing illegal trade in ODS thereby saving resources that might otherwise be used for investigation and prosecution. Therefore, early establishment of these processes in an enforcement program is highly recommended.

4. **CRACK DOWN ON SMUGGLERS**: Enforcement operations are a great way of testing enforcement programs by focusing on criminal apprehension. Both well-established and new programs benefit from trying to put their data, laws, and cooperation mechanisms to use.

5. **PROSECUTE ODS CRIMES**: Bringing criminals to justice is crucial to demonstrating the value of an enforcement program and creating a deterrent effect.

6. **WORK WITH INDUSTRY AND OTHER NON GOVERNMENT ORGANISATIONS (NGOs)**: Outreach to all stakeholders, including industry and other NGOs, should be an ongoing activity. Early interaction and regular communication with stakeholders is essential to combating the illegal trade in ODS.

7. **USE NETWORKS AND INTERNATIONAL INFORMATION EXCHANGE TO COMBAT ILLEGAL TRADE**: Similarly, international cooperation to share information and resources should be an early and ongoing activity to improve enforcement capacity. Regional and international organisations, including both formal and informal enforcement networks, the Ozone Secretariat, United Nations Environment Programme, Interpol, the World Customs Organization and NGOs, such as INECE, all play an important role in sharing information, tools and other resources for ODS enforcement.

3 PILLAR ONE IN FOCUS: STRATEGIES FOR IMPROVING LICENSING SYSTEMS AND ODS INFORMATION MANAGEMENT

In 1997, in response to the illegal trade in CFCs and other ODS, the Parties to the Montreal Protocol required the establishment of national licensing systems for the import and export of all controlled ODS, including those contained in mixtures.[4] National licensing systems, which are now in place in nearly all countries, remain at the heart of national-level efforts to combat illegal trade.

The objective of a national licensing system is to ensure that import and export of controlled ODS does not take place unless the potential importer or exporter first applies for and obtains an import or export license. Thus, licensing systems facilitate the monitoring of imports and exports, the collection of trade data and help Customs and enforcement officers to distinguish between legal and illegal trade. In most countries, the national licensing system goes hand-in-hand with a national ODS quota system, which establishes the quantity of individual substance (or group of substances) that an eligible importer is allocated for a given period of time (usually for one calendar year).[5] Each Party is free to structure its licensing and quota system in the way it finds most appropriate to facilitate reporting to the Ozone Secretariat, which is Secretariat for the Vienna Convention and for the Montreal Protocol, to promote compliance, and to prevent illegal trade.

The case study from Argentina highlights a national ODS licensing system which contains a number of features making it particularly useful for preventing smuggling. It is internet-based, which is beneficial, but not prerequisite of an effective system.

3.1 Argentina's Web-Based Licensing System for ODS[6]

In Argentina, all licensing system procedures are conducted via an internet-based computer system maintained by the National Ozone Unit (NOU). Each user has a unique password to access registration and license data. The NOU has access to all components of the system, while other users, such as importers and exporters, only have access to the parts they need to use.

All ODS use is licensed on a per-shipment basis.[7] The licensing process begins when an importer or exporter applies for a license online. Each application is reviewed by the NOU for compliance with applicable regulations and quota limits. If approved, the license is issued via the web system and the applicant is required to later confirm how the ODS was used. If an import permit is not used within twenty days from the estimated date of operation, the system automatically alerts the NOU.

Argentina's system includes a risk profiling feature to assist the NOU in screening shipments (Customs has its own risk profiles). The NOU uses information provided by importers, refrigeration technicians and background information about other countries to create the profiles. Argentine Customs officers categorise ODS imports as either orange (document check only) or red (full documentation and physical check of goods). Imports in the orange category may be re-categorised as red if certain risk profile criteria are triggered. This mechanism has already helped officials detect four cases of illegal trade.

For example, when the NOU discovered that misleading labeling being used to potentially disguise a mixture containing HCFC-22 as HFC-134a (information received from the market), a risk profile was created and Customs authorities were alerted. The next time that this product was imported, the shipment was interdicted and an investigation was launched.

Argentina's system has received high praise from industry representatives who are pleased with the minimal added costs and are satisfied with the efficiency in processing of permit requests. Licenses are usually issued in one or two days.

Likewise, the NOU has found the system to be extremely beneficial for a number of reasons. For example, it produces extremely detailed real-time data (e.g., number of shipments to date to a particular country/importer) and statistics. This information has been particularly valuable for Argentina's work on its HCFC Phase-out Management Plan. The system has also helped facilitate close collaboration with Customs by increasing information sharing and regular contact. In addition, the system has improved the NOU's knowledge of the types and qualities of ODS-containing mixtures entering the country. To manage the licensing system, all that is needed is a computer connected to the Internet. The software and database can be managed by one operator.

3.2 Benefits and Features of Argentina's Licensing System

- Facilitates real-time internet-based information exchange between industry and government officials eliminating the delays caused by a paper-based system.
- Permits a wide variety of user types to use the tool without compromising the security of the data.
- Tracks exempted uses, such as critical use exemptions and quarantine and pre-shipment uses, in addition to uses of ODS that require a license.
- Requires "information closure" to ensure that once a permit is issued, its use is recorded.
- Collects information that is useful for creating risk profiles and generating statistics to assist in Argentina's reporting to the Montreal Protocol Secretariat
- Improves communication with Customs by facilitating regular information exchange and contact (Customs officers have a password to access the Licensing System and exercise control over each license).
- Creates risk profiles that are used to channel ODS for further scrutiny.
- Alerts the NOU and Customs of irregularities.
- Requires only one person to manage and operate, which makes it very cost-effective.

4 RECOMMENDATIONS FOR IMPROVING ENFORCEMENT OF NATIONAL LICENSING SYSTEMS TO COMBAT SMUGGLING

The following recommendations are drawn from the case study of the Argentinian licensing system and other countries' experiences with web-based systems and registries for ODS.

- Licensing systems should have comprehensive controls on ODS imports and exports, including licensing requirements for:
  - mixtures containing ODS;
  - recycled ODS;
  - hydrofluorocarbons (HFCs);
  - all products and equipment containing or relying on ODS (where feasible);
  - ODS imported or exported for all uses (including process agent, laboratory and analytical uses, feedstock and quarantine and pre-shipment, and destruction); and
  - all Customs procedures (including transit, duty free zones and Customs warehousing).
- Tracking the use and eventual disposal of ODS is important to ensuring that ODS are used for their intended purpose. Licensing systems or other information management tools should include a means of tracking the use and disposal of ODS and ODS-containing products and equipment.
- NOU's should work with Customs to determine how the licensing system can be used to:
  - collect information to generate risk profiles for targeting enforcement;
  - increase the efficiency of the screening process; and
  - complement their existing duties and workload.
- Where appropriate, NOUs should liaise between Customs and environmental inspection authorities in order to develop a comprehensive ODS tracking system that can operate both on the borders and within the country's territory.
- Where feasible and helpful, NOUs may wish to consider conversion to an internet-based system that facilitates real-time data exchange, improves processing time, provides around-the-clock access and cuts down on administration. While the upfront costs may be high, experience shows that computer-based systems cut down on administrative costs and burdens in the long run.[8]

5 REFERENCES

[1] Grabiel, D.F. (ed.), Enforcement Strategies for Combating the Illegal Trade in HCFCs and Methyl Bromide, 2013 (United Nations Environment Programme, Nairobi, Kenya), available at http://inece.org/wp-content/uploads/2013/06/Illegal_Trade_HCFCs_Methyl-Bromide.pdf.

[2] In this article, the term "developing country" is not strictly limited to Article 5 Parties. The Montreal Protocol defines Article 5 Parties as follows: "Any Party that is a developing country and whose annual calculated level of consumption of the controlled substances in Annex A is less than 0.3 kilograms per capita on the date of the entry into force of the Protocol for it, or any time thereafter until 1 January 1999, shall, in order to meet its basic domestic needs, be entitled to delay for ten years its compliance with the control measures set out in Articles 2A to 2E, provided that any further amendments to the adjustments or Amendment adopted at the Second Meeting of the Parties in London, 29 June 1990, shall apply to the

Parties operating under this paragraph after the review provided for in paragraph 8 of this Article has taken place and shall be based on the conclusions of that review." Article 5, Montreal Protocol. For additional explanation, see also: http://ozone.unep.org/Publications/MP_Handbook/MP-Handbook-2012.pdf.

[3] For more detailed information about the threat of illegal trade in HCFCs, please see the EIA/UNEP report entitled, "Risk Assessment of Illegal Trade in HCFCs" at: http://www.unep.fr/ozonaction/information/mmcfiles/7507-e-risk_assessment.pdf.

[4] Article 4B of the Montreal Protocol on Substances that Deplete the Ozone Layer, available at http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=21.

[5] Recently, the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, in Decision 63/17 from the 68th meeting of the Executive Committee (early 2013), is requiring, for all submissions of new HCFC projects, that countries confirm that they have established an enforceable licensing and quota system for HCFC imports, and – if relevant – also for HCFC production.

[6] Interview with Laura Beron and Juan Miguel Alter, Subsecretaria de Promocion del Desarrallo Sustentable, Oficina Programa Ozono, Argentina (Mar. 30, 2012); Interview with Gustavo Torres, Realidades Consultoría Empresaria S.A.) (Mar. 21, 2012); *see also* Chatham House and the Environmental Investigation Agency, ODS Tracking: Feasibility Study on Developing a System For Monitoring the Transboundary Movement of Controlled Ozone Depleting Substances Between the Parties, (Sept. 2006), available at http://www.chathamhouse.org/sites/default/files/public/Research/Energy,%20Environment%20and%20Development/odstrac king0906.pdf .

[7] HCFC licensing requirements have been part of Argentina's system since 2005. With the new phase-out schedule and reduction steps, the only change in the system will be the allocation of quotas for each substance (HCFC) rather than by Annex as was done before (i.e., quotas for CFC, methyl bromide, etc.).

[8] Interview with Ene Kriis, Estonian Environmental Research Centre, National Ozone Unit, Estonia (Mar. 15, 2012).

THE COMPLIANCE COMMITTEE OF THE KYOTO PROTOCOL: TOWARDS A ROBUST ASSESSMENT OF COMPLIANCE WITH TARGETS FOR THE FIRST COMMITMENT PERIOD[1]

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SUMMARY

The article highlights the major issues addressed by the enforcement branch of the Compliance Committee of the Kyoto Protocol to date, outlines the key contributions made by the branch in developing a framework for assessing compliance with Annex I Parties' targets for the first commitment period of the Protocol, and reflects on elements that have resulted in an effective compliance mechanism. These include the establishment of rules of procedure that are robust but flexible and a rigorous decision-making process that has produced a body of decisions that provides not only guidance to Parties on actions to remedy particular cases of non-compliance but also indications on how the enforcement branch of the Compliance Committee may treat similar questions of implementation in future.

1 INTRODUCTION

Since 2008, the enforcement branch of the Compliance Committee of the Kyoto Protocol has considered questions of implementation[2] with respect to eight of the thirty-eight Parties included in Annex B to the Kyoto Protocol (Annex B Parties),[3] declared seven of them in non-compliance with relevant provisions of the Protocol and related guidelines, and suspended six of them from participation in the market-based mechanisms under Articles 6, 12 and 17 the Protocol. All six suspended Parties have since been reinstated.

The determination of compliance by Annex B Parties with their quantified emission limitation or reduction commitments for the first commitment period of the Kyoto Protocol is not expected until 2015 at the earliest. Until then, the work undertaken by the Compliance Committee, in particular, by its enforcement branch, is expected to contribute to the framework for a robust compliance assessment.

2 LAYING THE BASIS FOR COMPLIANCE ASSESSMENT

2.1 The Compliance Committee of the Kyoto Protocol and the Building Blocks for Compliance Assessment

Compliance with an Annex B Party's quantified emission limitation or reduction commitment for the first commitment period of the Kyoto Protocol will be determined by comparing that Party's aggregate anthropogenic greenhouse gas emissions for the first period with the quantity of Kyoto Protocol units retired by that Party for that period.[4] Effective compliance assessment requires reliable estimates of a Party's greenhouse gas emissions from 2008 to 2012 as well as accurate information on its transactions in and holdings of, Kyoto Protocol units until the end of the 'true-up period.'[5] A functioning national system[6] is necessary for the former, while a national registry[7] that meets the relevant technical requirements is imperative for the latter. These elements are demonstrated through Parties' reports and assessed through the expert review process under Article 8 of the Protocol.

2.2 Compliance Issues Addressed by the Enforcement Branch

All questions of implementation considered by the enforcement branch to date have originated through the Article 8 review process, i.e., these questions were identified by expert review teams in their review reports.[8] One question of implementation

concerned a delay in the establishment of a Party's national registry,[9] and three others related to calculations of emission estimates that were incomplete and/or not prepared in accordance with the relevant methodological requirements.[10] A majority of questions of implementation involved the failure of Parties' national systems to perform either general or specific functions.[11] Issues included institutional arrangements for these systems, technical competence of those involved in inventory planning, preparation and management, quality assurance/quality control of a Party's inventory or parts thereof, and gaps in reporting on land use, land-use change and forestry.

All of the Annex B Parties suspended by the enforcement branch from participation in the market-based mechanisms have now been reinstated. The branch's decisions indicate[12] that these Parties' efforts at resolving the questions of implementation relating to them, in particular, through the plans to address the underlying issues that resulted in non-compliance, have produced considerable improvements in their national systems.

3 ELEMENTS OF SUCCESS AND KEY CHALLENGES

1.1 Elements of Success

In challenging decisions of the enforcement branch, Parties have largely focused on legal and technical issues. Only one final decision of the enforcement branch has been appealed to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, with the appeal being subsequently withdrawn.[13] This track record suggests trust and confidence in the compliance mechanism of the Kyoto Protocol thereby dispelling initial concerns relating to the appropriateness and effectiveness of a decision-based compliance mechanism[14].

The Committee's rules of procedure,[15] its working arrangements, and the branch's decisions, all of which are publicly available,[16] provide guidance on what the branch expects from Parties and how it is likely to address particular situations. For instance, the rules of procedure sets out what should be contained in a plan to address a Party's non-compliance,[17] indicates what the branch must review and assess with respect to such plans,[18] and sets the period within which the assessment must take place.[19]

Meetings of the branch are open to registered Party representatives and observers, and are webcast. Except when it is elaborating and adopting a decision, the branch is required to provide and agree on overriding reasons for closing down any other part of its meeting.[20]

The branch regularly takes stock of its work. Amendments to the Committee's rules of procedure, which provided greater clarity on certain aspects of the branch's work, arose from a stocktaking exercise.[21] So did the branch's acknowledgement that there is room to improve the reasoning of its decisions and its agreement to changes in the structure of its decisions.[22]

With the exception of one Party, [23] all Parties that have been found in non-compliance have been subsequently suspended from participation in the market-based mechanisms. Suspension, which took effect upon the adoption by the branch of a final decision confirming a preliminary finding of non-compliance, has been the strongest incentive to address the underlying issues relating to a question of implementation.

1.2 Key Challenges

Achieving quorum at meetings of the enforcement branch has been a challenge, particularly in the last two years. The time frames in the procedures and mechanisms require completion of the consideration of questions of implementation in a matter of weeks, providing for a very short period to consider questions of implementation and develop decisions. This situation has forced the branch to resort to collecting additional votes by electronic means at several meetings.

The Committee has repeatedly requested the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol to authorize all members and alternate members to receive funding for participating in meetings of the Committee, arguing that such funding is, "essential" for their full independence.[24] Presently, only members and alternate members from eligible developing countries and Parties with economies in transition are funded through the Committee's budget.

Consistency of reviews of Annex B Parties' reports, which has been raised by several Parties in their submissions to the branch,[25] is a standing item on the agenda of the Committee's plenary, which brings together its two branches.[26] Representatives of the Committee observe the annual meeting of inventory lead reviewers, and a joint workshop on consistency of reviews was held in March 2013 to begin a focused discussion between the Committee and inventory lead reviewers on this matter.

4 CONCLUSION

In spite of initial misgivings and the challenges described above, the Compliance Committee and, in particular, its enforcement branch, has produced a significant body of work and contributed to the development of a robust framework for future compliance assessment. This decision-based regime has worked, thanks to the political will and the trust and confidence reposed by Parties in the regime.

5 REFERENCES

[1] The views expressed herein are those of the authors and do not necessarily reflect the views of the United Nations and in particular the Secretariat of the United Nations Framework Convention on Climate Change and its Kyoto Protocol.
[2] For the purposes of this paper, the phrase "question of implementation" is spelled out completely, but it is commonly abbreviated "QoI".
[3] Annex B to the Kyoto Protocol lists thirty-eight States and the European Union. The United States is not a Party to the Kyoto Protocol, although it is listed in Annex B. The authors note that Canada's withdrawal from the Kyoto Protocol took effect on 15 December 2012 and that, from that date, Canada is no longer a Party to the Kyoto Protocol.
[4] "Modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol", decision 13/CMP.1, FCCC/KP/CMP/2005/8/Add.2, annex, paragraph 14 (hereinafter referred to as decision 13/CMP.1) and "Guidelines for review under Article 8 of the Kyoto Protocol", decision 22/CMP.1, FCCC/KP/CMP/2005/8/Add.3, annex, paragraph 91. Kyoto units refer to emission reduction units (ERUs), certified emission reduction units (CERs), temporary CERs, long-term CERs, assigned amount units (AAUs) and removal units (RMUs). For the definition of these units, see decision 13/CMP.1, annex, paragraphs 1–4 and "Modalities and procedures for afforestation and reforestation project activities under the clean development mechanism", decision 5/CMP.1, FCCC/KP/CMP/2005/8/Add.1, annex, paragraphs 1 (g) and (h).
[5] The 'true-up period' is also referred to as the 'additional period for fulfilling commitments.' See "Procedures and mechanisms relating to compliance under the Kyoto Protocol", decision 27/CMP.1, FCCC/KP/CMP/2006/8/Add.1, annex, section XII (hereinafter referred to as the procedures and mechanisms).
[6] "A national system national system includes all institutional, legal and procedural arrangements made within a Party included in Annex I for estimating anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Kyoto Protocol, and for reporting and archiving inventory information." See the "Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol", decision 19/CMP.1, FCCC/KP/CMP/2005/8/Add.3, annex, paragraph 2 (hereinafter referred to as decision 19/CMP.1).
[7] "A national registry shall be in the form of a standardized electronic database which contains,
Inter alia, common data elements relevant to the issuance, holding, transfer, acquisition, cancellation and retirement of Emissions Reduction Units (ERUs), Certified Emissions Reductions (CERs), Assigned Amount Units (AAUs), and Removal Units and the carry-over of ERUs, CERs and AAUs. The structure and data formats of national registries shall conform to technical standards to be adopted by the [CMP] for the purpose of ensuring the accurate, transparent and efficient exchange of data between national registries, the clean development mechanism (CDM) registry and the international transaction log." Decision 13/CMP.1, annex, paragraph 19.
[8] While the procedures and mechanisms also allow for a Party trigger (see section VI, paragraph 1), no Party has submitted a question of implementation with respect to itself or with respect to another Party.
[9] See the decision not to proceed further with respect to Canada, CC-2008-1-6/Canada/EB.
[10] See the decision on preliminary examination with respect to Croatia, CC-2009-1-2/Croatia/EB, paragraphs 4 and 5 and the decision on preliminary examination with respect to Slovakia, CC-2012-1-2/Slovakia/EB, paragraph 4.
[11] For a listing of these general and specific functions, see section V and VI of the annex to decision 19/CMP.1.
[12] See, for instance: (a) the decision to reinstate Greece, CC-2007-1-13/Greece/EB; (b) the decision to reinstate Bulgaria, CC-2010-1-17/Bulgaria/EB; (c) the decision to reinstate Ukraine, CC-2011-2-16/Ukraine/EB; (d) the decision to reinstate Romania, CC-2011-1-15/Romania/EB; and (e) the decision to reinstate Lithuania, CC-2011-3-14/Lithuania/EB.
[13] On 10 January 2010, the secretariat received an appeal by Croatia against a final decision of the enforcement branch, which was adopted on 26 November 2009. See the "Appeal by Croatia against a final decision of the enforcement branch of the Compliance Committee. Note by the secretariat", FCCC/KP/CMP/2010/2. Croatia subsequently withdrew its appeal on 4 August 2011. See "Withdrawal by Croatia of its appeal against a final decision of the enforcement branch of the Compliance Committee. Note by the secretariat", FCCC/KP/CMP/2011/2.
[14] These were referred to by the Convention's Subsidiary Body for Implementation as the "initial concerns relating to the appropriateness and effectiveness of the procedures and mechanisms in determining and addressing cases of non-compliance with the provisions of the Kyoto Protocol contained in the annex to decision 27/CMP.1," FCCC/SBI/2012/33, paragraphs 138 –139.

[15] "Rules of procedure of the Compliance Committee of the Kyoto Protocol", decision 4/CMP.2, FCCC/KP/CMP/2006/10/Add.1, annex (hereinafter referred to as the rules of procedure).
[16] http://unfccc.int/kyoto_protocol/compliance/items/2875.php.
[17] See rule 25 bis, paragraph 1, of the rules of procedure.
[18] See rule 25 bis, paragraph 3, of the rules of procedure.
[19] See rule 25 bis, paragraph 2, of the rules of procedure. Citing another example, working arrangements adopted in 2011 indicate how a member of alternate member who is approached by a Party with respect to which there is a question of implementation pending before the branch (a Party concerned) should conduct himself or herself and specify what type of information the secretariat may provide to such Parties. See the working arrangements relating to contact with a Party concerned, contained in the sixth annual report of the Compliance Committee to the CMP, FCCC/KP/CMP/2011/5, paragraphs 18–19.
[20] See rule 9 of the rules of procedure.
[21] See the report on the sixth meeting of the enforcement branch, CC/EB/6/2008/3, annex. Amendments to the rules of procedure of the Compliance Committee were adopted by the CMP at its fourth session. See "Compliance Committee", decision 4/CMP.4, FCCC/KP/CMP/2008/11/Add.1.
[22] See the annex to the report on the eighteenth meeting of the enforcement branch, CC/EB/18/2012/3.
[23] In the case of Slovakia, the enforcement branch determined that the partial operational impairment of the performance of some of the specific functions of Slovakia's national system during the review of Slovakia's 2011 annual submission resulted in non-compliance with Article 5, paragraph 1, of the Kyoto Protocol and the guidelines thereunder but does not result in non-compliance with the eligibility requirements under Articles 6, 12 and 17 of the Kyoto Protocol. See paragraph of 24 of the preliminary finding with respect to Slovakia, CC-2012-1-7/Slovakia/EB, adopted on 14 July 2012. This preliminary finding was subsequently confirmed through a final decision adopted on 17 August 2012, CC-2012-1-9/Slovakia/EB.
[24] See the seventh annual report of the Compliance Committee to the CMP, FCCC/KP/CMP/2012/6, paragraph 32. See also the sixth annual report of the Compliance Committee to the CMP, FCCC/KP/CMP/2011/5, paragraph 63; the fourth annual report of the Compliance Committee to the CMP, FCCC/KP/CMP/2009/17, paragraphs 34–36; the third annual report of the Compliance Committee to the CMP, FCCC/KP/CMP/2008/5, paragraph 38; the second annual report of the Compliance Committee to the CMP, FCCC/KP/CMP/2007/6, paragraph 27; and the first annual report of the Compliance Committee to the CMP, FCCC/KP/CMP/2006/6, paragraph 26.
[25] See, for instance, the further written submission of Greece, CC-2007-1-7/Greece/EB, part B, pp. 3–4; the written submission of Croatia, CC-2009-1-5-Croatia/EB, 4th paragraph, p. 10 and its further written submission, CC-2009-1-8/Croatia/EB, p. 2, paragraph 3 (e); and the written submission of Romania, CC-2011-1-5/Romania/EB, pp. 21–28, paragraphs 48–59 and 60–63 and its further written submission, CC-2011-1-7/Romania/EB, paragraphs 31–39.
[26] Apart from the enforcement branch, the Committee also has a facilitative branch.

MEXICO'S THREE KEY CHALLENGES TO IMPLEMENT AND ENFORCE THE GENERAL LAW ON CLIMATE CHANGE

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SUMMARY

Mexico is internationally recognized as an up-and-coming player in the global climate change arena. This is mainly due to its adoption of ambitious targets for reducing greenhouse gas emissions; its promulgation of comprehensive legislation that sets a system distributing authority to federal, state and municipal entities; and its aspirational goal of becoming a low-carbon economy.

Despite salient advances in policy and legislation, three major challenges still remain to effectively implement and enforce Mexico's General Law on Climate Change and related laws and policies. First, Mexico needs to move away from its dependency on (and emissions from) petroleum and hydrocarbons. Second, it must address climate change as an issue of national security. Third, it must uphold and effectively enforce its environmental laws and coordinate environmental and climate change enforcement.

1 BACKGROUND

In 2012, Mexico passed an innovative, comprehensive General Law on Climate Change (GLCC).[1] This legislation provides authority to federal state and local agencies to undertake a range of actions to address climate change, including researching specific impacts, increasing capacities to mitigate or adapt to those impacts, setting an organizational framework for policy implementation (regulation, funding, monitoring and controlling emissions of greenhouse gases), and setting goals and targets that must be met for a transition to a low-carbon economy.

Under the GLCC, Mexico adopted ambitious commitments to reduce its greenhouse gas emissions as well as to expand clean energy production and comprehensively assess climate change vulnerabilities. Mexico, which contributes approximately 1.4% of global greenhouse gases emissions,[2] adopted voluntary emission reduction targets for both 2020 and 2050.[3] Using the year 2000 as a baseline, Mexico's targets are a 30% reduction of greenhouse gas emissions by 2020 and a 50% reduction by 2050.[4]

Mexico's dedication to act on climate change is also reflected by its hosting the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change in Cancun in 2010, where it proposed that international adaptation efforts be equal to those devoted to mitigation. Mexico has submitted five National Communications under the Convention, the only Non-Annex I Party to accomplish this.[5] Mexico has the fourth largest number of registered projects under the clean development mechanism, and it is actively involved in the design of pilot projects under the programme to reduce emissions from deforestation and forest degradation.[6]

While the GLCC sets the overall framework for action on climate change, Mexico's National Strategy for Climate Change outlines different mechanisms and instruments that must be included to address the effects of climate change comprehensively.[7] These are planning, funding (with creation of a Climate Change Fund), tools (emissions inventory, risk atlas, economic tools, information system, Mexican Official Standards, and National Emissions Registry), evaluation and enforcement. The planning stage comprises the National Strategy itself and state and municipal programs to address climate change, as called for by the GLCC. Funding, tools and coordination of the evaluation are in all in preparatory stages and will derive from administrative provisions and policy implementation.

2 CHALLENGES

Despite the aforementioned advances in law, policy and project development, Mexico faces three key challenges to fulfilling its goals under the GLCC and substantiating its reputation as an emerging global leader on climate change.

2.1 Challenge 1: Move Away from Dependency on Petroleum

Mexico is responsible for approximately 1.8% of global primary energy production, and, in 2010, it obtained 61.6% of its energy from petroleum and other hydrocarbons.[8] The two major single source emitters of carbon dioxide in the country are Petróleos Mexicanos, the state-owned primary oil producer, and the Comisión Federal de Electricidad, the state-owned power generation enterprise.[9] Mexico has immense potential to reduce emissions from energy production, especially by these state-owned entities.[10] However, these entities produce significant revenues; for instance, in 2007, Petróleos Mexicanos contributed about 15% of the country's total net revenue and about 40% of the public sector-generated income.[11]

To decrease petroleum usage in a manner consistent with sustainable economic development, Mexico could take lessons from the international initiatives on best practices for renewable energy development, efficiency measures and benchmarking, insofar as these can be appropriately adapted to Mexico.[12] A clear regulatory framework could attract investment in development of Mexico's vast, untapped wind, solar and geothermal resources, which could help to replace both the energy and profits generated by fossil fuels.[13]

More ambitious aspirational commitments at the international level could also compel domestic action to reduce fossil fuel usage. For instance, while Mexico is a member of the Organization for Economic Cooperation and Development, it is not a member of the International Energy Agency, which would require it to develop a demand restraint programme for reducing national oil consumption by 10%, among other requirements.[14]

2.2 Challenge 2: Address Climate Change from a National Security Approach

Mexico is one of twelve countries on the planet known as mega-diverse; these countries are home to 60 to 70 percent of all known species of flora and fauna.[15] However, 15% of Mexico's diverse territory—as well as 68% of Mexico's human population—is highly exposed to direct adverse effects of climate change.[16] This exposure affects about 71% of Mexico's gross domestic product. Because of the dramatic levels of vulnerability, Mexico needs to address climate change as an issue of national security and integrate efforts to mitigate and adapt to the adverse effects of climate change.

In a study of Mexico, the United Nations Development Programme identified direct impacts of climate change on water resources, agriculture and forests in Mexico.[17] Water availability faces the greatest threat, with negative implications for human hydration and domestic and agricultural activities. Vulnerability of water resources is exacerbated by pollution and overexploitation of aquifers, some of which is illegal, but water protection and conservation rules lack enforcement due to low enforcement capacity. [18] Likewise, unsustainable farming practices increase the vulnerability of agricultural systems, and the degradation of forests and biomass reduces the buffer effect against floods. The combination of climate change and irresponsible environmental practices is likely to worsen floods and droughts and could lead to more extreme meteorological events.

In terms of human and financial tolls, one flood event in Tabasco, Mexico between September and November 2011 forced a temporary displacement of more than 100,000 people and caused damages in excess of MX$10 billion.[19] As with most catastrophes, costs were primarily paid by Mexico's National Fund for Natural Disasters.

Failure to recognize the links between climate change, water shortages, agricultural production, and frequency and severity of extreme weather events may have caused an underrating of the overall threat of climate change. If the national security angle were recognized by key players at high levels, a precautionary and proactive approach could be crafted and assigned high priority in the political agenda. A national security approach could be implemented and coordinated through Mexico's Climate Change National System that comprises different secretariats of the federal government and state and municipal governments.

2.3 Challenge 3: Broaden the Scope of Climate Change Enforcement to Encompass Environmental Governance

To maximize effectiveness of greenhouse gas emissions reduction provisions of the GLCC, monitoring and enforcement must be coordinated with enforcement of environmental statutes, [20] and environmental enforcement must be robust. Information

sharing, multiagency coordination and intelligence-led enforcement will play key roles in the effective implementation of both climate and environmental laws and governance by streamlining efforts and targeting resources to areas where they are most needed.

2.3.1 Key environmental laws

The General Law for Ecological Equilibrium and Environmental Protection (LGEEPA) is Mexico's primary environmental law, providing the basis for environmental protection, conservation of natural resources, environmental impact assessment, establishment and management of terrestrial and marine protected areas and carbon sinks, and management and control of mobile sources and industrial facilities. This law also sets the general framework and administrative procedures for environmental compliance and monitoring and outlines the provisions for verification and enforcement.

Other statutes, such as the General Law for Sustainable Forest Development, the General Wildlife Law, and the General Law for the Prevention and Management of Waste, help to both prevent emissions and minimize the vulnerability of biodiversity and ecosystems to the adverse effects of climate change. In addition, a Federal Environmental Liability Law, which was issued on June 7, 2013, will be useful to provide standing for suits to prevent and get compensation for environmental damages.

Environmental governance and enforcement—including but not limited to climate related provisions of statutes—are the foundations of climate change regulation and offer abundant opportunities for coordination.

2.3.2 Coordination with enforcement officials and others

The Federal Attorney's Office for Environmental Protection (Profepa) is the body responsible for monitoring compliance with environmental statutes, investigating claims, conducting inspections and environmental audits, deciding administrative appeals, and imposing sanctions. Profepa works alongside entities such as the Mexican Water Commission, which enforces regulation concerning water extraction permits and management and oversight of water resources.

Profepa is an administrative agency that does not possess the ability to criminally prosecute offenders, but it may impose fines. According to LGEEPA, penalties assessed by Profepa must take into account the following factors: seriousness of the violation, financial situation, prior violations, intentional action and negligence, and benefits to the offender.[21] The sanction for failure to provide information in a timely manner ranges between five hundred to three thousand days of general minimum wage and three thousand to ten thousand days for false information. Additional civil or criminal penalties may be imposed by a court of law for false reporting.

Some provisions of the GLCC authorize enforcement specific enforcement activities by Profepa. For instance, Article 111 of the GLCC gives authority to Profepa to verify information on emissions reported to the Secretariat of the Environment and Natural Resources, with verification conducted in accordance with GLCC regulations. Profepa will face many new challenges as it embraces its role as a primary enforcer of the GLCC, but should also be able to apply many of the tools and strategies used for environmental compliance.

Enforcement can also be enhanced through collaboration with non-government actors and entities and private stakeholders. Partnerships with key private stakeholders, such as industry associations, and with environmental non-governmental organizations that can support environmental enforcement agencies to better target and streamline actions will be a salient component of effective environmental governance. Programs to promote environmental leadership, such as Industria Limpia, a certification schema offered by Profepa, could also be used to facilitate climate compliance.

3 CONCLUSION

Mexico has introduced legislation that fixes emissions reductions targets and enables actions to mitigate and adapt to adverse effects of climate change. Key to Mexico achieving its ambitious objectives and targets under the GLCC are (1) reduced dependency on a petroleum-based economy, (2) political recognition of climate change as a national security issue, and (3) enhanced enforcement of environmental laws, coordinated with that of climate change laws.

As to the first challenge, Mexico's petroleum based economy and the roles of the state owned Petróleos Mexicanos and Comisión Federal de Electricidad seem entrenched, but there is strong potential for incorporating alternative and renewable energy generation. Second, identification of climate change as a matter of national security based on disasters such as

Tabasco's flood could enhance political will to adopt a precautionary and proactive approach and elevate it to priority status. Finally, upholding environmental regulation and effectively enforcing environmental laws could bolster good governance broadly and enhance the ability of enforcement agencies to contribute to attaining the goals and objectives of the GLCC.

4 REFERENCES

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[9] OECD Environmental Performance Reviews: Mexico 2013 Assessment and Recommendations, available at: http://www.oecd.org/env/country-reviews/oecdenvironmentalperformancereviewsmexico2013assessmentandrecommendations.htm
[10] In 2010, carbon dioxide emissions by category were the following: energy 67.3% (503,817.6 Gigagrams (Gg)), agriculture 12.3% (92184.4 Gg) industrial processes 8.2% (61226.9 Gg), land use, land use change and forestry 6.3% (46892.4 Gg) and 5.9% waste (44130.8 Gg), according to the Fifth National Communication. *Supra* note 4.
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CLEAN GREEN FUEL: THE ONLY "GREEN" HE WAS AFTER WAS MONEY

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1 INTRODUCTION

Rodney R. Hailey was a businessman with no business. He held himself out as a producer of bio-diesel fuel, manufactured, he said, from waste oil from over 20,000 restaurants, and he was able to generate and sell $9 million worth of Renewable Identification Numbers ("RINs" or "credits") to major oil producers like Conoco Phillips that needed the credits to satisfy quotas set by the United States Environmental Protection Agency (EPA). The truth was that he produced absolutely nothing: he had no plant, no equipment, no chemicals, and no employees with the requisite technical expertise. All he produced were fraudulent RINs, and he got away with it for 18 months until his own greed and arrogance exposed the fraud.

Hailey's missteps triggered a concerted effort among state and federal agencies to investigate and put him on trial for violations of the United States Clean Air Act as well attendant crimes of money laundering and wire fraud. The prosecution of Hailey was the first in the nation to charge wire fraud for the sale of fraudulent RINs and can serve as a model for other investigations and prosecutions. These will be essential components of enforcement of climate-change related laws, especially where legal regimes are new, untested and susceptible to fraud.

2 THE BIO-FUEL PROGRAM

The EPA's bio-fuel program was intended to transfer the cost of producing renewable fuel from small producers to large ones by allowing the large energy companies to satisfy renewable fuel quotas by buying credits from the small producers instead of producing the fuel themselves. The marketplace took over, and there was high demand for RINs that companies like Hailey's Clean Green Fuel produced. But no one was checking to make sure the credits were linked to the actual production of fuel.

The EPA simply did not have the capacity to inspect all of the plants reportedly producing the renewable fuels reflected in the credits being sold on the market. In fact, Hailey's fraud was not discovered by the EPA; it was discovered by a county police detective investigating a complaint that Hailey was blocking the school bus stop in his neighborhood with his fleet of luxury cars: Maseratis, Bentleys, Lamborghinis, a powder blue Rolls Royce—22 cars in all—that he purchased with the money he made selling fraudulent RINs.

3 BUILDING THE CASE AGAINST HAILEY

Working in tandem with the U.S. Marshals Service, the U.S. Attorney's Office, and later with the EPA's Criminal Investigation Division and other federal agencies, the county detective obtained Hailey's bank records with a grand jury subpoena. The records indicated that Hailey was receiving large sums of money from oil companies and brokers, which turned out to be payments for bio-diesel RINs. In all, records obtained from the EPA showed that between March 2009 and December 2010, Hailey sold over 35 million RINs, representing 23 million gallons of bio-diesel fuel. When interviewed by inspectors, Hailey claimed that his operation produced bio-diesel from vegetable oil collected from restaurants in eastern Maryland and Delaware, but interviews with Hailey's employees quickly revealed that Hailey was not actually producing any fuel.

After obtaining an indictment alleging multiple counts of wire fraud and money laundering as well as violations of the Clean Air Act, the Government prepared the case for trial. The prosecutors at the U.S. Attorney's Office were members of the Fraud and Asset Forfeiture and Money Laundering Sections who specialized in investigating "white collar" crimes and the recovery of criminal proceeds. Although Hailey's fraud and spending were flagrant, the Government still had the challenge of presenting the case to a jury, including explaining some highly technical issues.

The first step was to demonstrate that Hailey had none of feedstock, equipment and production expenses that a legitimate bio-diesel fuel producer would be expected to have. Two witnesses, an EPA scientist and the Chief Executive Officer of a company that produces bio-diesel fuel, explained the process of using methanol and sodium hydroxide to convert waste oil to bio-diesel fuel, as well as the tanks, mixers, heaters and other equipment needed to process, store and distribute the finished product and dispose of the waste.

The second step was to introduce a forensic analysis of Hailey's bank records, which indicated that nine million dollars flowed in and out of Hailey's bank account without a single expense related to the purchase of waste oil, trucking services, chemicals, or the disposal of waste. Instead, what the jury saw were luxury cars, rented jets for trips to Disney World, diamonds, and a large number of ladies shoes.

4 OUTCOME OF THE TRIAL

At the conclusion of the six-day trial, Hailey was sentenced to 12 ½ years in prison and was ordered to forfeit over $9 million in proceeds, of which $3 million – in the form of the cars, his house and other luxury items – has been recovered. The sentence was greater than it might otherwise have been because, under the federal sentencing guidelines, it was enhanced by two levels (resulting in 30 extra months of incarceration) because Hailey deliberately obstructed the Government's efforts to recover the property. The week after being served with a restraining order, for example, he and his wife went on a $10,000 shopping spree in New York.

Hailey was also ordered to pay over $42 million in restitution to 20 different victims. Some of the forfeited property could be used for this purpose, but the actual losses to Hailey's victims were far greater – more than $30 million greater – than the amount he obtained from the fraud. Because of the way the market worked, each sale of a RIN generating a commission for a broker and an inflated price as the demand grew and the ultimate purchasers of Hailey's false credits paid far more for the RINs than Hailey received. Moreover, when the EPA discovered the fraud, the large producers had to scramble to replace the worthless RINs at sky-high prices and pay penalties to the EPA as well.

5 CONCLUSION

The lesson has been learned: in the future it will be much more difficult for someone to reap a benefit from the bio-fuel program without producing any renewable fuel. The EPA has increased its oversight, requiring certifications and inspections designed to prevent a recurrence of Hailey's fraud. Moreover, the large energy companies have become more vigilant and will no longer buy a credit from just any unknown, small producer. The consequence of that, however, is that legitimate mom-and-pop operations that invested heavily in start-ups designed to produce renewable fuels out of waste products are being driven out of the marketplace, which decreases competition and overall market effectiveness.

With the intent of reviving liquidity in trading and improving efficacy of the Renewable Fuel Standard program, the EPA has proposed a voluntary quality assurance program to ensure that RINs are validly generated. The quality assurance program may offer opportunities for small producers that are adaptable.

As for prosecutors, they will be busy for some time with other cases like Hailey's – if not quite as flagrant – in which regulated entities or new market participants take advantage of the lax oversight in the first years of programs. Successful prosecutions will depend on interagency cooperation to investigate and build strong cases, participation by attorneys with experience prosecuting financial crimes, and testimony by witnesses from industry and forensic accountants who can explain to juries how authentic businesses operate, bringing into relief the fraud perpetrated by defendants.

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[1] The views expressed in this article are solely those of the author and do not necessarily reflect the views of the Department of Justice or any of its agencies.

THE QUALITY ASSURANCE PROGRAM FOR COMPLIANCE WITH THE RENEWABLE FUEL STANDARD

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SUMMARY

In response to a deluge of complaints by petroleum refiners and importers concerned about the difficulty of complying with federal Renewable Fuel Standard rules, the United States Environmental Protection Agency has proposed a voluntary quality assurance program that would limit liability for members of the regulated community that perform due diligence according to preapproved plans on renewable fuel credits they are obligated to acquire. Petroleum industry players, who must purchase renewable fuel credits to satisfy federally imposed quotas on the use of biofuels, are reeling from the aftermath of several highly publicized cases in which refiners and importers were held liable for the unintentional use of fraudulently generated credits. The proposed quality assurance program would offer regulated entities two options (sets of prescribed procedures) that would provide limited safe harbors if all required steps are followed.

1 INTRODUCTION

In January 2013, the United States Environmental Protection Agency proposed a new voluntary quality assurance program that could help fuel refiners and importers that have renewable fuel quotas under the federal Renewable Fuel Standard program decrease the risk of civil liability arising from the unintentional use of invalid Renewable Identification Numbers (RINs). RINs are credits that represent an amount of biofuel blended into fossil fuels used in the United States. These credits are generated by renewable fuel producers and purchased by companies refining and importing fuels in order to meet their quotas under the law.

Several high-profile cases involving fraudulent RINs have resulted in reluctance on the part of many regulated entities to purchase RINs from smaller producers, resulting in a significant lack of liquidity in the RIN market. The penalties incurred by fuel refiners, importers and blenders, referred to as "obligated parties" under the law, supports a form of compliance with the Renewable Fuel Standard, but the regime on the whole is weakened when small producers are unable to participate.

The proposed quality assurance program will allow obligated parties to undertake actions to limit their exposure including hiring approved auditors who would share the liability for unintentional use of invalid RINs. Although small producers will face the challenge of adapting to the new regime—which may prove unworkable for some—the program should support the efficient functioning and intent of the Renewable Fuel Standard. As auditors acquire increased expertise and auditing methods are refined, compliance with the law will be continually enhanced.

2 BACKGROUND

Under the Energy Policy Act of 2005 (subsequently modified by the Energy Independence and Security Act of 2007), the Environmental Protection Agency is required to set annual percentage standards that mandate the quantity of renewable fuels that must be blended with fossil fuels, based on gasoline and diesel projections from the Energy Information Administration.[1] Petroleum refiners and importers are "obligated parties" under federal Renewable Fuel Standard regulations and purchase RINs to demonstrate compliance.[2] The regulations specify the conditions under which RINs are invalid, the liability of parties that use or transfer invalid RINs, and procedures for replacing invalid RINs.

3 THE REGULATED COMMUNITY'S LIABILITY PROBLEM

The Environmental Protection Agency has applied a "buyer beware" approach to the purchase of RINs. Obligated parties are responsible for taking appropriate measures to ensure the validity of any RINs they use or transfer. A handful of prominent cases involving fraudulently generated RINs, accompanied by widespread concerns over the difficulty of avoiding liability,

have resulted in significant pressure from the regulated community for the Environmental Protection Agency to provide some form of regulatory relief. To date, the agency has alleged that three biodiesel production companies (Clean Green, Absolute Fuels, and Green Diesel) have sold over 140 million invalidly generated RINs.[3] Obligated parties, which are liable not only for the costs of original RINs purchased, but also replacement RINs and civil penalties, assert that the task of screening and verifying the validity of RINs imposes an unreasonable burden on their industry.

The Environmental Protection Agency is reconsidering its strict "buyer beware" approach, recognizing that even rigorous due diligence efforts by obligated parties will not detect or prevent certain issues. For example, once a producer has generated and sold a RIN, the RIN can be interchangeably assigned to any volume of renewable fuel, making it easy for dishonest dealers to misrepresent volume the RIN was intended to represent.

The fraud cases have given rise to an industry of RIN auditing companies (third-party verifiers), which include Ecoengineers, GoldRIN, LLC, Genscape's RIN Integrity Network, RINPlus, RIN-tegrity Survey, and RINTrust, LLC. However, obligated parties who use auditors are still civilly liable if the auditors do not catch problems with invalid RINs. Liability concerns have pressured obligated parties and RIN resellers to purchase predominantly from the largest renewable fuel producers. Small producers, including those who have had their production audited and their RINs certified, have found that refiners are hesitant to purchase their fuel and the corresponding RINs.

4 A PROPOSED SAFE HARBOR FOR OBLIGATED PARTIES

In its Notice of Proposed Rulemaking, the Environmental Protection Agency proposed a mechanism to efficiently ensure that RINs sold for compliance with the Renewable Fuel Standard program are valid, and to address the problem of RINs that become invalid after they have entered the stream of commerce.[4] The major provisions of the program establish minimum requirements for quality assurance plans – individual plans that third-party verifiers may use (after securing Agency approval) to assure the validity of RINs purchased by their clients. The proposal would provide a limited safe harbor for obligated parties who purchase RINs that have been verified by an independent third-party auditor, under precisely circumscribed conditions.

The Environmental Protection Agency proposes two voluntary verification options, the stringent Option A and the less stringent Option B, for obligated parties to choose from to manage the risk of using or transferring invalid RINs (**Table 1**).[5] The options would establish minimum requirements for the auditing the production of renewable fuel and verifying the validity of RINs generated at the production facility. The requirements would include the monitoring of components related to feedstock, fuel production, RIN generation, and RIN separation (the ability to sell RINs separately from the fuel). The options also establish the elements of an affirmative defense to civil liability in each scenario. Obligated parties would not be required to avail themselves of either option and could continue to comply under the current regulatory regime.

Table 1. Quality Assurance Program Verification Options

Option A
Option A would provide the highest degree of protection from civil liability and is primarily targeted to companies with the means to outsource to third-party auditors full responsibility for conducting oversight of the integrity of the RIN generating process. Under Option A, if the Environmental Protection Agency determines that certain verified RINs have been invalidly generated, the third-party auditor would be responsible for retiring the invalid RINs if the obligated party has successfully established an affirmative defense.

The proposed quality assurance requirements for Option A would be more comprehensive than those for Option B, since obligated parties would exercise minimal or no oversight over the auditor's verification process. Registered third-party auditors would need to use EPA-approved quality assurance programs to audit the production of renewable fuel and the generation of RINs at the producer's facilities. The quality assurance procedures for Option A would involve continuous, ongoing monitoring for many components, while requiring quarterly monitoring for certain other components.

In order to establish this affirmative defense under Option A, an obligated party would be required to prove the five elements. First the party must show that the invalid RINs in question were verified by an independent third-party auditor with an Agency-approved quality assurance program. Second, the party must demonstrate that it did not know about the invalidity. Third, the party must inform the Environmental Protection Agency by the next business day after identifying invalidly generated RINs. Fourth, the party must show that it did not cause the invalidity of the RINs. Finally, the party must not have had any financial interest in the company that generated the invalid RINs.

Option B
Option B is designed for obligated parties with more limited resources, who may undertake due diligence measures and oversight themselves. Under this option, an obligated party would remain liable for the replacement of any invalid RINs, even if the obligated party is able to assert an affirmative defense under the new rules.

Under Option B, all audited components (feedstock, fuel production, RIN generation, and RIN separation) would require only quarterly monitoring. Establishing an affirmative defense to civil liability would require all the elements in Option A, as well as a sixth element. The obligated party must show that if it used the invalid RIN for compliance purposes, the party made necessary corrections to the records, reports, and calculations it prepared for compliance with the regulations, unless it could show that the entity generating the RIN took remedial action, such as replacing the invalid RIN with a validly generated one.

5 CONCLUSION

United States' fuel refiners, importers and blenders are likely to welcome the liability-limiting features of the Environmental Protection Agency's proposed Quality Assurance Program. Third-party auditors have wasted little time in preparing for implementation of the program, having already pre-registered with the Agency a variety of "pathways" (approved audit procedures) for RIN generation across a range of biofuel types, feedstocks, and production processes. Yet some uncertainty remains. Comments submitted by fuel industry representatives have indicated concern over the short timeframe (one day) permitted between determining that a RIN *may* be invalid and providing notice to the Environmental Protection Agency. In addition, it is not clear that the Quality Assurance Program will have its intended effect on the liquidity of the RIN market, particularly with respect to RINs generated by small and medium-sized producers. Under either Option A or Option B, rigorous due diligence will be costly. Parties that are liable for the replacement of defective RINs (third-party auditors or obligated parties) will likely minimize the number of operations they are required to monitor, thus preserving the preference for larger producers of RINs.

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[1] CAA § 211(o), Energy Policy Act of 2005 as amended by the Energy Security Act of 2007 under the Clean Air Act; The RFS program was created under the Energy Policy Act (EPAct) of 2005, and established the first renewable fuel volume mandate in the United States.
[2] 40 CFR §80.1406 (a)(1). These standards are set for advanced biofuel, biomass-based diesel, cellulosic biofuel, and total renewable fuel.

[3] RFS Renewable Identification Number (RIN) Quality Assurance Program, 78 Fed. Reg. 12,158, 12,163 (Feb. 21, 2013) (to be codified at 40 C.F.R. pt. 80) [hereinafter *Proposed Rule*]. The explanation for the proposed rule states that the invalid RINs generated by these three companies represented about 13% of the nationwide biodiesel volume in 2010 and 4% in 2011. On June 25, 2012, the owner of Clean Green was found guilty of wire fraud, money laundering, and violating the Clean Air Act in the United States District Court for the District of Maryland. Final resolution has not yet been reached with respect to the other two companies to which the EPA has issued notices of violations (NOVs).

[4] A RIN may become invalid after generation if it is used, for example, for a nonconforming purpose or if the RIN is separated from the fuel in an improper way, such as being assigned to a greater volume of renewable fuel.

[5] *Proposed Rule*, *supra* note 3, at 12,165–12,166. The U.S. Environmental Protection Agency held a public hearing on March 19, 2013 and the public comment period closed on April 18, 2013. *Available at* http://www.gpo.gov/fdsys/pkg/FR-2013-02-21/pdf/2013-03206.pdf.

TROUBLE IN PARADISE: PRIVATE PROSECUTION OF CLIMATE CHANGE RELATED LAWS IN NIGERIA

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SUMMARY

A private prosecution is a criminal proceeding initiated by a private individual or organization instead of a public prosecutor representing the state. In Nigeria, private prosecutions are less common than they once were but still have an important role to play in enforcement of environmental and climate change related laws, including the prospective enforcement of a proposed Climate Change Bill. This is especially true after a recent court decision removed a consent-related administrative hurdle to private prosecution. These prosecutions are not intended to displace public prosecutions but rather to supplement them and bring attention to provisions of laws that are new or underused. This article highlights recent developments in private prosecution in Nigeria and suggests additional measures to enable private prosecutions of climate change related actions.

1 BACKGROUND

Nigeria, according to the 2006 national census, has a population of 140,431,790, making it the most populous nation in Africa.[1] Richly endowed, it possesses substantial reserves of diverse natural and mineral resources including uranium, gypsum, marble, tin, bitumen, coal, iron, and more importantly, it is the 6th largest oil producer in the world, the 1st largest in Africa.[2] Also, it is unique for a variety of ecosystems, from mangroves and rainforests on the Atlantic coast in the south, to the savannah in the north.[3]

Largely due to its activities in the oil sector, Nigeria is, however, ranked among the top three global flarers,[4] making it a main contributor to global climate change. With the deforestation rate at 3.7%, one of the highest in Africa, its rich ecosystem is susceptible to adverse effects of climate change.[5] What is more, Nigeria contributes to the global efforts to mitigate climate change, as it is a national site for sustainable projects on alternative energy under the Clean Development Mechanism[6] and forest conservation under programs related to Reducing Emissions from Deforestation and Forest Degradation.[7]

Climate related laws include the 1999 Constitution,[8] the African Charter on Human and Peoples' Right (African Charter),[9] Environmental Impact Assessment Act (1992),[10] National Environmental Standards and Regulations Enforcement Agency (Establishment) Act (2007),[11] the Associated Gas Re-Injection Act of 2004,[12] the proposed Climate Change Bill (2007),[13] and Petroleum Industry Bill (2012).[14] Generally, the implementation and enforcement of climate related laws rest with state and its agents including the public prosecutors who litigate on behalf of the chief law officer of the federation or state, that is, the Attorney General, as the case may be.[15] Climate related laws also provide for safeguards in the form of requirements for consent,[16] limitation of suits,[17] and pre-action notice.[18] These provisions are a valid basis for the position that it is within the contemplation of these laws that a party apart from the state or its agencies, that is, a private citizen, can prosecute by way of claims and remedies necessary for the enforcement of climate related laws. These can involve nuisance, negligence in relation to flaring of gas, non-compliance with the Environmental Impact Assessment Act, non-prevention or non-remediation of environmental damage, and infringement of human rights.

2 CHALLENGE

Generally, vesting the implementation and enforcement of climate related laws in state and its agents and providing for safeguards in form of requirements for consent, limitation of suits, and pre-action notice are an impediment to effective implementation and enforcement of climate related laws by a private person in Nigeria. There are good bases for this viewpoint. Foremost among them is that the wide power exercised by the state and its agents and the safeguards they impose reflect the interest of state in exercising control over complaints relating to climate change issues. For instance, judicial decisions have generally ruled that where a limitation clause prescribes a period within which an action must be

commenced, legal proceedings cannot be properly or validly instituted after the expiration of the prescribed period.[19] Also, failure of a private citizen to give pre-action notice is fatal to claims.[20] On the requirement for consent, it was only lately that the Supreme Court dealt with common law requirement for consent of Attorney General to sue on public nuisance.[21]

In addition to the challenge that the trend in judicial interpretation in relation to power and safeguards reserved for the state or its agents, there are other constraints which may continue in the application of climate change related laws. These other challenges are around legal costs of litigation and the technical nature of the subject of climate change as well as the extent of the involvement of law, particularly, human rights law. Hence, despite its potential, the space for a private person in litigating issues which may arise from the operationalization of climate change related laws is problematic.

3 OVERCOMING CHALLENGE

From the outset, it is noteworthy again that private prosecution in relation to public nuisance has been judicially recognised. In *Adeniran and Anor v. Interland Transport Limited*,[22] the Supreme Court of Nigeria held that section 6(6) (b) of the 1979 Constitution entitles a private citizen to sue in public nuisance without obtaining the leave of the Attorney General or without joining him as a party.[23] Accordingly, there is significant reason to be hopeful that in matters relating to climate change, the approach may not be different. This trend is already emerging as evidenced by the decision of court in *Gbemre v. Shell Petroleum Development Company Nigeria Limited and Others*.[24] In that case, the court granted leave to the applicant to institute proceedings in a representative capacity for himself and for each and every member of the Iwherekan Community in Delta State of Nigeria, and declared the activities of the respondents (Shell and Nigerian National Petroleum Company) in continuing to flare gas as contributing to climate change and therefore in violation of the Environmental Impact Assessment Act, the Associated Gas Re-Injection Act and the 1999 Constitution. This, at least, offers hope that the consent of the Attorney General is not required by a private person to use public nuisance as a basis of claims against emitters of greenhouse gases.

However, the challenge remains the requirements for pre-action notice and limitation clause. Arguably an effective approach in relation to prosecuting claims around climate change law is ensuring the removal or non-inclusion of these requirements through legislative intervention. Generally, the requirements of pre-action notice and limitation clause are aimed at ensuring that the state is given the opportunity for inward assessment and redress of alleged complaints. However, this is questioned, particularly considering the urgency in relation to addressing the impact of climate change, which distinguishes it from other subject matter to which these requirements conventionally apply. Urgent cases compromised as the state may not respond on time or return a response requiring for more time to look at issues, while issues underlying complaints deteriorate. Hence, advocacy targeted at excluding the application of these requirements is an important step in ensuring the enforcement of climate related laws through private prosecution.

Apart from advocacy for removal of such requirements, the space for private prosecution can be strengthened through innovative interventions by practitioners on claims and redresses stemming from climate change related laws. These can be achieved through interventions in form of class action, amicus curiae brief filings and expert witness testimony.

3.1 Class Action

A private citizen can institute an action in the name of all the people who have suffered damages in relation to non-compliance with climate related laws. This was the position in *Gbemre* where the applicant sued on behalf of the entire community. However, except pursued by a private person who is substantial or a non-governmental organisation with strong financial base, the cost of prosecuting an action of this nature makes it less recommendable despite its benefits.

3.2 Amicus Curiae

This is otherwise known as a friend of the court who files a brief in an existing case in order to allow his or her view to be heard by the court while deciding the suit. In Nigeria, rules of court, particularly, the Supreme Court, allow some discretion to entertain an amicus curiae, provided the leave of court is obtained.[25] Potentially, this can be used by a private person to help shed light on technical or yet to be tested issues that may arise from climate change related laws in Nigeria. In terms of costs, this may not be as intensive as pursuing a court action.

3.3 Expert Witness Testimony

A major challenge in relation to climate change, as earlier indicated, is the technical nature of the subject, which means that legal or judicial expertise cannot be taken for granted. In Nigeria, the rules and procedures in most states as well as the Evidence Act which apply in trial proceedings allow for an expert opinion to be entertained by courts from an individual or organisation with vast knowledge and skills in laws that are relevant to facts.[26] Individuals with vast experience in climate change laws, when invited by the party, can help in shedding light on technical aspects of climate related laws and thereby contributing, at the very least, to the quality of prosecution.

4 CONCLUSION

Nigeria has rich natural resources and ecosystems but is susceptible to adverse effects of climate change. It has a range of climate related laws, but they contain requirements, particularly consent, limitation of suits and pre-action notice which may compromise the implementation of climate change related laws. While private prosecution of climate related laws will benefit from a judicial decision holding that consent is no longer required in matters of public nuisance, challenges remain in the application of limitation of suits and pre-action notice. Addressing the challenge posed by limitation of suits and pre-action notice may be done through advocacy for exclusion of the application of these requirements in actions involving climate change. In addition, intervention by private prosecution through class action, amicus curiae and expert witness options can strengthen private prosecution of climate related laws in Nigeria.

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[9] African Charter, Cap. A9 Vol. 1, LFN 2004.

[10] EIA Act, 1992, sections 2, 13 and 60.

[11] EIA Act, 1992, sections 1, 3, 4 and 5.

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[16] For example Climate Change Bill, article 15.

[17] For example PIB, section 37 (2); Climate Change Bill, article 13(2).

[18] *See*, *e.g.*, PIB, section 37(3); Climate Change Bill, article 13(2).

[19] *See* Ogboru v. S.P.D.C. (Nig.) Ltd. [2005] 17 NWLR (Pt.955) 596; Amadi v. N.N.P.C. (2000) 10 NWLR (Pt.674) 76; *Fawehinmi Construction Co. Ltd. v. O.A.U. (1998) 6 NWLR (Pt.553) 171*.

[20] *See* Peter v. NNPC (2010) 8 NWLR(pt 1195) p. 192; Nwoye v. Anyichie (2005) 2 NWLR (pt 910) p. 649.

[21] Adediran and Anor v. Interland Transport Ltd (1991) 9 NWLR, pt 214. Earlier decisions considered failure to obtain such consent as fatal. *See* Amos and Ors vs. Shell BP Petroleum Development Company of Nigeria Ltd. (1977) 6 Sc p9.

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ENVIRONMENTAL ENFORCEMENT NETWORKS AND THE NETWORK EVALUATION MATRIX: THEIR ROLES IN CLIMATE CHANGE COMPLIANCE AND ENFORCEMENT[1]

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SUMMARY

Compliance and enforcement of environmental protection laws often present greater challenges than the enforcement of more established traditional laws. Agencies and Inspectors can be assisted by utilising environmental enforcement networks, which pool both financial and technical resources. Networks change over time, generally in response to pressures and controlling interests, presenting a variety of considerations for network leaders and members when setting the future directions of a network. The Network Evaluation Matrix is an assessment tool to evaluate the maturity of an environmental enforcement network at any given point in time and to facilitate the network evolution by setting new goals and priorities. Enforcement of climate change laws could also benefit from more extensive networking as well as review using the Network Evaluation Matrix to enable future expansion into more intensive forms of working together such as cooperation and collaboration.

1 ENVIRONMENTAL ENFORCEMENT NETWORKS

In an effort to 'do more with less' government regulators have increasingly sought to leverage off one another and other stakeholders to achieve efficiencies. Whilst environmental enforcement networks, have assisted government regulators to achieve efficiencies - they should not be seen as a 'cheaper option' or alternative to adequately resourcing and funding compliance and enforcement efforts.

Several issues become clear when considering the government regulators engaged in climate change regulation. First, there are many of them. Second, they have access to different resources whether they are human, financial or technological, and their frequency of access to such resources is variable. Third, resulting from the public sector reforms of recent decades, there are greater demands and expectations being placed upon government to be more outwardly focused,[4] outcomes based[5] and operate more collaboratively.[6] Understandably, government regulators cooperate with one another for mutual benefit to achieve efficiencies especially in circumstances where their interests intersect and overlap.[7]

Environmental enforcement is more challenging than mainstream law enforcement due in part to the relative youth of environmental protection laws.[8] Interpretation and application of laws by courts and regulators are critical enablers of enforcement.[9] Since most countries have not yet introduced climate change legislation, such legislation will also largely operate during its early years without specific guiding legal precedent. An added complication for climate change enforcement arises from the fact that it will involve offences that span various crime types, including traditional crime (i.e. fraud and theft of permits in carbon markets), environmental crime, and crossover crime (i.e. money laundering).[10]

2 THE NETWORK EVALUATION MATRIX

The Network Evaluation Matrix is an assessment tool to categorize and determine the maturity levels of existing networks and to establish a typology of networks. Moreover, the Network Evaluation Matrix contains a series of guiding considerations relating to development or change in a network's form or function, so that deliverables can be readily managed by establishing new priorities, goals and targets.[11] This is especially important in guiding the establishment, development and future maintenance of environmental enforcement networks focused on climate change compliance in coming years.

The Network Evaluation Matrix reflects five comprehensive and representative levels of network maturity. These phases are as follows:

- Absent
- Emerging
- Fragile
- Maturing
- Well established[12]

Additionally, five major themes present core criteria by which it is possible to assess an environmental enforcement network:

- Membership
- Finances
- Governance
- Support
- Deliverables[13]

Each criterion is further refined with three sub-criteria, as shown on the Network Evaluation Matrix, which is reproduced in the **Appendix** to this report. The Matrix readily shows paths for the evolution of environmental enforcement networks through various phases of development and maturity.

3 POTENTIAL FOR A CLIMATE CHANGE ENFORCEMENT NETWORK

A climate change enforcement network has the potential to bolster climate change compliance and enforcement activity and outcomes, but should not be seen as a panacea. All forms of working together come at a cost to participating entities, but the efficiencies produced by leveraging off each other and sharing information and resources potentially exceed the costs. Networking is the most preliminary of the four levels of working together.[14] Such ventures then progress through levels of cooperation, coordination and collaboration.[15] The different forms of working together and exchanges involved in the various relationships are reflected in the category descriptions within the Network Evaluation Matrix to show the strengthening and increase in the maturity of environmental enforcement networks.

The International Network for Environmental Compliance and Enforcement (INECE) as a "network of networks"[16] has assisted a number of regional and thematic environmental enforcement networks in their establishment and ongoing activities.[17] Focusing on a specific commodity issue, the INECE Climate Compliance Network runs workshops and produces publications, which support practitioners working in the field of climate change compliance and enforcement.

4 CONCLUSION

Environmental enforcement networks provide unique utility in the particular field of environmental compliance and enforcement.[18] Further, networks have the ability to coalesce environmental compliance and enforcement expertise, which enables agencies to engage in bilateral or multilateral projects and initiatives.[19]

Environmental enforcement networks also provide individuals, teams, and agencies with access to a vast array of environmental compliance and enforcement expertise. Practitioners and network office holders particularly value access to this expertise. As reliance on networks grows, groups should work to continue the development or maintenance of their network. Efficiencies may be realised that prove even more beneficial in periods of fiscal tightening, restricted resources and increased pressure to be visibly delivering additional services.

Environmental enforcement networks provide these climate change regulators with a tried and tested means to assist them with *how* to act - especially in building and enhancing their compliance and enforcement capacity.

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IMPROVING GREENHOUSE GAS VERIFICATION THROUGH COMPREHENSIVE GUIDANCE AND POLICY REQUIREMENTS

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SUMMARY

After audits indicated that greenhouse gas regulations in Alberta were not being interpreted and applied consistently, Alberta Environment and Sustainable Resource Development brought together professionals from different disciplines, in particular, accountants and engineers, in order to align the approaches to greenhouse gas auditing. The product of this effort was the Technical Guidance for Greenhouse Gas Assurance at Reasonable Level Assurance, which sets forth common principles and standards for auditing and disclosures but does not prescribe specific methods of measurement or regulation. Early responses of verifiers indicate they find the guidance helpful, and their views and other changes to the document are planned to be incorporated over the next year.

1 BACKGROUND

In 2007, Alberta Environment and Sustainable Resource Development (ESRD) passed the *Specified Gas Emitters Regulation,* mandating all large final emitters in Alberta to reduce greenhouse gas emissions by 12% on an intensity basis. Companies are required to have compliance submissions third party verified by a professional engineer or accountant with relevant greenhouse gas and auditing experience. ESRD conducts an audit of approximately 10% of compliance submissions annually to ensure conformance with program requirements.

Government audit identified a number of inconsistencies in interpretation of verification requirements between firms and across disciplines. ESRD engaged with the Alberta Institute of Chartered Accountants and the Association of Professional Engineers and Geoscientists of Alberta to review current audit practices and develop comprehensive guidance to support verification in the province.

2 CHALLENGE

Engineering and accounting firms have fundamentally different approaches to greenhouse gas verification with complementary strengths. Accountants have strong background in processes, data system management, and controls, and are able to leverage significant experience from financial auditing. Engineers are strong on processes, inventory completeness, and emissions categorization and quantification. From a government policy perspective, the best outcome is a verification that blends the strengths of both disciplines. Professional accounting and engineering firms have difficulties working together because of legal and financial reasons. Accountants tend not to be hired as verifiers in engineering firms and vice versa.

The challenge was to work with representatives from both disciplines to develop a comprehensive guidance document that blended two international standards on greenhouse gas assurance, that of the International Organization on Standardization (*ISO 14064-3*) and that of Canadian Society of Association Executives (*CSAE 3410*), with government policy and disclosure requirements. Further, ESRD was committed to shifting from limited (negative) assurance to reasonable (positive) assurance, and felt that guidance was needed to support this transition to ensure verifiers were performing based on the same minimum standards.

3 HOW THE CHALLENGE WAS OVERCOME

A Joint Task Force was convened with both professions to clearly articulate current practices and understanding of limited and reasonable level of assurance, and then to articulate these requirements such that both professions could understand and implement them. This further provided the regulator (ESRD) a benchmark to assess program performance.

A basic framework and principles-based approach was used for this guidance document. The team articulated the verification process, rational, and context. Specific procedures (analysis, tools, samples) were left to the discretion of the verifier. This approach:

- allowed verifiers the flexibility to expand on existing internal approaches;
- avoided being overly prescription;
- maintained independence from the regulating authority (ESRD);
- reinforced the responsibilities of the verifier; and
- recognized there are many ways of achieving the same outcome.

The task force chose not to pursue a prescriptive approach for the following reasons:

- Prescriptive approaches could have compromised existing American National Standards Institute accreditation.
- It is difficult or impossible to foresee all possible future scenarios and/or nuances across all regulated sectors (e.g., gas plants, pipelines, landfills, oil sands, refining, manufacturing, etc.) and offset project types (agricultural practices, forestry practices, energy efficiency and renewable energy projects, etc.).
- Prescriptive procedures may imply to the verifier that only these procedures are necessary, thus not addressing the principles of the assurance.
- Prescriptive procedures may eliminate options for managing future scenarios and situations.
- Flexibility was needed to implement reasonable assurance verification across the sectors.

ESRD's verification guidance document is available at: http://environment.gov.ab.ca/info/library/8802.pdf, and key outcomes are summarized below:

- *ISO 14064:3* was adopted as the base auditing standard that all parties must adhere to. Accountants were able to incorporate other requirements from CSAE 3410 as required by their professional organizations.
- Verifications were to be done in four phases: 1) a client evaluation to assess the feasibility of accepting the engagement, 2) a pre-assessment to review data and develop the verification plan, 3) implementation, and 4) conclusion and issuance of the verification statement and report.
- Minimum disclosure requirements for the verification report were clearly stated to provide consistent reporting criteria to support program transparency.

4 KEY POINTS FOR EFFECTIVE PRACTICE

This process identified a number of key points that support effective and consistent verification within a program.

- Clearly articulated principles ensure a common reference point for all practitioners. This will help to ensure consistency across the program to ensure minimum requirements are met.
- Clearly stated reporting requirements provide a context for what information the regulator needs to assess compliance with regulations. Greenhouse gas verification is a relatively new field of practice (approximately 15 years old) and has not reached the level of maturity as financial auditing (approximately 50 years old). Additional disclosure helps improve the overall system.
- The guidance sets out clear expectations to ensure that both verification professions are meeting the same requirements. The risk of different requirements was that one party would sign off on a compliance submission that another party would subsequently fail because the second verification applied a different focus. Material errors are costly to fix, and if identified after the facility has submitted their annual compliance submission and trued up, can be costly to correct. Improving guidance provides a more comprehensive initial review to reduce the likelihood of errors being identified during government audit. Note, this guidance does not guarantee that future errors and true-up will not occur, but rather provides a better framework for consistent application of verification requirements.

- Incorporating experience from the financial auditing adjusted for the nuances of greenhouse gas verification provided further explanation of audit theory and tools for verifiers. This was particularly helpful in distinguishing the amount and type of verification procedures expected under reasonable (positive) level of assurance.
- Practical examples grounded in ESRD's observations from the first five years of program implementation were included to provide context and rationale for requirements provided in the document. Examples included distinguishing matters of emphasis in verifier reports, areas of challenge in verifications, and typical records to be maintained by verifiers.

ESRD's Technical Guidance for Greenhouse Gas Assurance at Reasonable Level Assurance was formally released in January 2013 for use in the 2012 compliance year. Full results from this guidance document will be seen next year once verifiers have had a chance to fully assess and incorporate changes; however, preliminary feedback has been positive. Verifiers have indicated that the additional guidance has been helpful for them to understand government requirements and identified opportunities for improvement in internal processes.

5 CONCLUSION

Greenhouse gas verification is a new and emerging field. Taking the time up-front to articulate expectations and requirements can support more consistent application of verification criteria within a system and across disciplines. It can also provide the regulator with a better platform to assess program performance and feedback being provided by the verifications. A principles based approach establishes rigor and while maintaining the flexibility needed for a complex system. While guidance alone will not resolve all problems, it does ensure that program participants have access to the same basic information and a reference for assessing future compliance.

EFFECTIVE STRATEGIES TO REDUCE GREENHOUSE GAS EMISSIONS FROM SHIPS CASE STUDY: THE PORT OF LONG BEACH

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1 BACKGROUND

Guided by its Green Port Policy adopted in 2005, the Port of Long Beach has been at the forefront of the fight against air pollution from port-related sources. Developed in 2006 and updated in 2010, the San Pedro Bay Ports Clean Air Action Plan was prepared by the Port of Long Beach and Port of Los Angeles, in collaboration with the United States Environmental Protection Agency, the California Air Resources Board, and South Coast Air Quality Management District. The Clean Air Action Plan is a comprehensive, voluntary plan aimed at significantly reducing the health risks and air quality impacts posed by sources associated with the movement of goods, including ships, trains, trucks, terminal equipment, and harbor craft. The Clean Air Action Plan was primarily designed to provide direction for developing and implementing strategies and programs necessary to achieve measurable air quality benefits by reducing emissions of criteria pollutants including diesel particulate matter, nitrogen oxides, and sulfur oxides, some of which contribute to climate change in addition to damaging human health and air quality.

2 PROACTIVE APPROACH

In order to accommodate the projected growth in trade, the Clean Air Action Plan was designed to develop and implement strategies and programs necessary to reduce air emissions and health risks while allowing port development to continue. The Port of Long Beach has taken proactive approaches to improve air quality and reduce emissions from goods movement activities and strategies under the Clean Air Action Plan, such as vessel speed reduction and ship electrification (shore power), which also provide the co-benefit of reducing greenhouse gas emissions that contribute to climate change. Since the Port implemented these measures, they have been identified by the California Air Resources Board as early actions to reduce greenhouse gas emissions in the Climate Change Scoping Plan prepared pursuant to California's Global Warming Solutions Act of 2006 (also known as AB 32), which aims to reduce California's greenhouse gas emissions to 1990 levels by 2020.

3 EFFECTIVE STRATEGIES TO REDUCE GREENHOUSE GAS EMISSIONS FROM SHIPS

Originally a strategy to reduce nitrogen oxide emissions from ships during transit, the voluntary vessel speed reduction program was initially established by the Port in 2001 and was enhanced with the incentive-based Green Flag Program in 2006. Ship operators who reduce their ship speeds to 12 knots within 20 or 40 nautical miles of the Port are awarded "Green Flags" and reduced dockage fees. The speed of every ship in the speed-reduction zone is monitored and tracked by the Marine Exchange of Southern California, and the data collected for individual ships is used to determine compliance with the program. In 2011, 96 percent of vessels reduced their speeds within 20 nautical miles, and 80 percent within 40 nautical miles. As a result of ships slowing down, greenhouse gases were reduced by more than 45,000 tons during 2011.

The California Air Resources Board adopted a regulation in December 2007 requiring container ships, refrigerated ships, and cruise ships to use electrical power—also known as shore power, by shutting down their diesel-fuel auxiliary engines while they are at-berth. Starting in 2014 at least 50 percent of a ship fleet's visits to the Port must use shore power. The percentage of fleet visits required to use shore power at berth increases to 70 percent in 2017 and 80 percent in 2020.

Prior to adoption of the shore power regulation, in 2006, the Port began requiring shore power through "Green Leases" with shipping terminal operators. Green Leases provide the opportunity for the Port as a proprietary landlord, to negotiate and require measures in a terminal's lease to reduce emissions, increase performance on voluntary or incentive-based programs, or require operators to implement specific emissions reduction strategies. As part of the Clean Air Action Plan, the Port continually seeks out opportunities to increase the use of shore power beyond the compliance levels required by the

regulation and determine the availability of feasible alternative technologies for ships not covered under the shore power regulation, such as bulk vessels, tanker vessels, and automobile transport vessels. The Port currently has shore power at four berths including the World's only shore power-capable tanker facility. By 2014, the Port will outfit all of its container terminals with shore power in preparation for the state regulation that will require ship fleets to shore power at least 50 percent of their visits to California ports.

4 CONCLUSION

The San Pedro Ports Clean Air Action Plan has significantly redefined what ports can do within their authority to ensure that surrounding communities are not adversely impacted by port-related operations by addressing overall reductions in air pollutants and the corresponding health risks associated with emissions of diesel particulate matter, nitrogen oxides, and sulfur oxides from maritime goods movement. By working collaboratively with the port industry and air quality regulatory agencies, programs such as the Port of Long Beach's Green Flag Vessel Speed Reduction and Shore Power programs have proven to be effective strategies to reduce both criteria pollutants and greenhouse gas emissions from goods movement activities. Since 2005, overall greenhouse gas emissions from port-related sources at the Port of Long Beach have been reduced by 23%.

DEVELOPING A REGULATORY GOVERNANCE PROGRAMME FOR CLEAN AIR IN EAST AFRICA

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1 BACKGROUND

Air pollution, especially in urban areas, contributes not only to climate change but also to increases in cases of respiratory diseases such as bronchitis, lung cancer and asthma. East Africa has some of the fastest growing cities in the developing world.[1] These include Nairobi, Dar-es-salaam, Kampala, Mombasa, Kisumu, Arusha, Jinja and many others. Most if not all of these cities are home to an increasing number of processing and manufacturing industries, as well as service industries. As a result, large populations have migrated from the countryside to seek employment in these industries, hence rapid urbanization is taking place. With this pressure of urbanization comes increasing transportation demand and rising personal vehicle ownership. The combined emissions from the manufacturing and transportation sectors is causing significant impacts on urban air quality and greenhouse gas emissions, and this is compromising both human health and the global climate.

All of the East Africa nations, including Kenya, Tanzania and Uganda, have some form of framework environmental legislation that makes general provisions for the sound management of the environment. However, none of these countries has passed specific laws and standards to assure clean air, especially in the rapidly growing urban centres. Whereas some attempts have been made at the national level in Kenya and also at the East Africa Community[2] level to come up with harmonized regional air quality standards, the process has stalled owing to various challenges including insufficient funding, differences between states on the need for fast economic growth vis-à-vis the proposed standards, and strong opposition by the business community and industry.

2 THE EANECE CLEAN AIR PROGRAMME

In order to address the aforesaid gap, the East African Network for Environmental Compliance & Enforcement (EANECE)[3] is currently developing a multi-year programme to build the foundation for a regulatory governance approach to clean air in East Africa. The overall goal of the programme is to create sound governance framework, i.e., policy, legal and institutional infrastructure for assuring clean ambient air especially in urban areas and cities in the East Africa nations of Kenya, Tanzania and Uganda.

The programme will focus on priority air pollutants and especially short lived climate pollutants, namely: Black Carbon, Tropospheric Ozone, Methane and Hydrofluorocarbons. Black Carbon was selected as a focus because research demonstrates significant and immediate health benefits from reducing exposure to fine particulate matter.[4]

Within the context of the foregoing goal, the objectives of the programme include:

- to control air pollution from mobile sources (mainly forms of transport, especially motor vehicles - cars, bus fleets, trucks, trains) by encouraging the adoption of clean fuels, clean vehicle technologies and other necessary regulatory measures;
- to control air pollution from point sources (mainly atmospheric emission stacks and chimneys) and other stationary sources including landfills, open burning of farm and other waste) by encouraging the adoption of cleaner production technologies and practices, installation of air pollution control technologies and other necessary regulatory measures;
- to build the capacity of the environmental regulators and other players in the regulatory cycle including inspectors, prosecutors, attorneys and judiciary in order to assure implementation of and compliance with the proposed air quality legislation;
- to undertake compliance promotion and assistance among the regulated community in order to achieve greater compliance with the proposed air quality legislation; and

- to foster enforcement cooperation among diverse players in the regulatory regime for the effective implementation and enforcement of the ambient air quality legislation.

The programme will be implemented in Kenya, Tanzania and Uganda and will primarily target national environmental regulatory agencies alongside the relevant environment ministries, departments, local government authorities, other lead agencies and key stakeholders including business/industry and civil society. EANECE has proposed to implement this programme in collaboration with the International Network for Environmental Compliance and Enforcement (INECE) and other local and international partners to be identified.

3 PROPOSED PROGRAMME APPROACH

The Programme will be implemented in three phases, which will include legislative drafting that incorporates stakeholder input, development of capacity building programmes and enforcement cooperation, and promotion of compliance through education and raising awareness.

3.1 Phase I – Legislative Drafting

This phase will involve, among others, targeted stakeholder engagement to brainstorm on and propose and develop appropriate policy, legal and institutional frameworks for assuring clean ambient air. In the case of Kenya, however, the focus will be to review and update the draft Ambient Air Quality Regulations and Standards of 2009 and to align the same with the recently passed Kenya Constitution which now vests air pollution control to the newly established forty seven devolved governance units, the counties.

3.2 Phase II – Capacity Building & Enforcement Cooperation

This phase will involve the design and development of capacity building programmes specific to clean air laws including training of regulatory agency officials and other players in the regulatory cycle including inspectors, attorneys, prosecutors and judiciary on implementation and enforcement of the clean air legislation. Exchange Programmes—sector specific twinning arrangements at national, regional and international levels—will help facilitate some of this training. Sector specific approaches, guidelines and strategies on deterrence, penalties and sanctions will be developed during this phase, as will indicators to measure effectiveness of the programme and a communication strategy for the programme, including a dedicated hotline and website. Relevant agencies in each country will identify focal points and plan regional coordinating activities on compliance promotion and enforcement.

3.3 Phase III – Compliance Promotion

This will be the final phase of the programme and will involve education and outreach to the regulated community and the public on the benefits of compliance with the clean air laws to business, the environment and public health. It will also raise awareness about practices that cause non-compliance and alternative technologies and practices to meet the law.

4 CONCLUSION

The global warming effect and public health impacts of air pollutants, especially the short lived climate pollutants, are well documented globally. Whereas Africa remains one of the most vulnerable regions of the world, few African countries have put in place effective programmes to deal with the increasing air pollution problem. It is hoped that the proposed EANECE programme will go a long way in filling this gap.

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FOREST CARBON PROGRAMS OF SOUTH KOREA

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1 BACKGROUND

South Korea has pledged to reduce its greenhouse gas emissions by 30% from the business as usual emissions in 2020, as submitted to the Copenhagen Accord in January 2010. It is the first non-Annex I country to announce that it will adopt quantifiable emissions targets for 2020. Arguably the goal is the most ambitious of the non-Annex I countries, which are mostly developing countries not obligated by caps.[1] The purpose of this article is to show how forest carbon programs are legislated in Korea to meet the national greenhouse gas reduction target.

2 CHALLENGES

As seen in Table 1, forest and land use is the only sector in Korea that has decreased greenhouse gas emissions in the last two decades. In fact, 42.9 million tonnes carbon dioxide equivalent was removed in 2009, which represented an 85.6 % decrease from the 1990 level. Given the proven potential of forests, Korea introduced the Forest Carbon Offset Program in 2010, which implemented 17 pilot projects in order to establish reliable measurement, reporting and verification (MRV) and a legal basis for the future.

Table 1. GHG emissions and removals by sector for the last two decades

	1990	1995	2000	2005	2009
Energy	243.1	357.7	414.4	469.6	516
Industrial Process	20.2	51.3	58.4	64.1	56.7
Agriculture	22.7	23.5	22.4	20.3	19.8
Forest/Land Use	-23.1	-22.4	-36.5	-32.4	-42.9
Waste	10.4	15.5	18.5	16.3	15.1
Gross Emissions	296.4	448.1	513.7	570.3	607.6
Net Emissions	273.3	425.6	477.2	537.9	564.7

Source: Korea (2011)[2] (Unit: million tonnes CO_2 equivalent)

For instance, Shinsegae Group signed a contract with the Korea Forest Service to run a pilot project in the land located in Yeoncheon-gun, which is projected to offset 1,988.36 tonnes of carbon dioxide equivalent for 30 years from 2011. Another pilot project, an afforestation/reforestation in Goseong, Gangwon-do, was recently registered as a Clean Development Mechanism project under the United Nations Framework Convention on Climate Change and it is estimated that this project will remove 12,415.8 tonnes of carbon dioxide equivalent.

From the experience of pilot projects, it became evident that legal grounds should be prepared for managing and improving forest carbon sinks. Also, several challenges emerged such as lack of basic data, technology, and human resources and uncertain profitability of forest carbon offsets, all of which make MRV and enforcement particular challenges. In fact, in scholarly literature 'reversal' is cited as one of the most fundamental risks to forest carbon offset projects, which is the intentional or unintentional release of carbon back to the atmosphere due to storms, fire, pests, land use decisions, and many other factors.[3]

3 HOW CHALLENGES ARE BEING ADDRESSED

To respond to climate change by managing and improving the role of forests as carbon sinks, 'Act on the Management and Improvement of Carbon Sink' was enacted in 2012 and entered into force in February 2013. To promote the economic efficiency and markets for forest carbon stock, participating business types and entities must be diverse by law. Examples of business types include afforestation/reforestation, revegetation, forest management, use of harvested wood products, utilization of forest biomass energy, prevention of deforestation and forest degradation, all of which can spur multiple forest carbon sinks. It is also open to various forms of organizations and individuals that can undertake a forest carbon offset project, for example public institutions including local governments, private organizations, business enterprises, and citizens.[4] Since timber and forest biomass such as wood pellets are renewable natural resources that function as alternative fuel and carbon sinks, timber supply systems have been constructed to enhance the value added of domestic timber resources as well as to stimulate new timber demand by developing eco-friendly wooden goods.[5]

For the transparent management and distribution of information and statistics of forest carbon stock, a forest carbon registry will be operated by the Korea Forest Service according to the United Nations Framework Convention on Climate Change and other relevant international norms.[6] Measurement, reporting and verification, as well as registration of every project are uploaded to and provided by the Forest Carbon Center website at http://carbon.kgpa.or.kr/. A 'Carbon Tree Calculator' program was also developed by the Korea Forest Research Institute to calculate emissions from daily activities such as wedding parties or trips and the number of trees needed to offset the emissions. To enhance the public awareness of the role of forests as carbon sinks, it is being widely used for the purposes of education in Korea. It is available both in Korean and English online at Korea Forest Service website and also was developed into a smart phone application for iPhone and Android users.

For sustainable management and improvement of forest carbon sinks, education and training programs are to be provided by the Korea Forest Service for both Korean domestic human resources and foreign professionals for international cooperation.[7] Indeed, through the Association of Southeast Asian Nations-Korea Environmental Cooperation Project, more than 20 students from the Association of Southeast Asian Nations students have graduated from Korean universities under its master's and doctoral programs, which has developed into a forest-focused Asian regional intergovernmental institution named Asian Forest Cooperation Organization.[8] The Korea Forest Service can also designate certain graduate schools and/or high schools as specialized in carbon sinks to train professionals to manage and improve carbon sinks.[9]

A system for MRV of forest carbon stock will be established by the Korea Forest Service to scrutinize absorption and emission of greenhouse gases from forests, coefficients and statistics used for calculating the absorption and emissions by adopting the best use of international standards.[10] For example, carbon dioxide emission factors by major tree species in Korea were developed based on the guidelines of the Intergovernmental Panel on Climate Change,[11] as shown in Table 2. The Greenhouse Gas Inventory & Research Center was set up in 2010 to collect greenhouse gas statistics from each sector, including forestry, and to implement quality assurance and quality control for the national greenhouse gas inventory.

Last, concerning the issue of reversal, it is stipulated that the Korea Forest Service shall formulate and implement necessary measures such as the creation of fire resistance forest belts and coastal disaster prevention forests.[12]

Table 2. Carbon emission factor by major tree species in South Korea

	Tree Species	Carbon Emission Factor		
		D*	BEF^	R**
Needleleaf trees	Pinus densiflora (Gangwon Province)	0.40	1.47	0.26
	Pinus densiflora (Central part of South Korea)	0.47	1.40	0.25
	Pinus rigida	0.51	1.39	0.43
	Pinus koraiensis	0.41	1.85	0.26
	Pinus thunbergii	0.48	1.43	0.31
	Chamaecyparis obtusa	0.42	1.39	0.21
	Larix kaempferi	0.45	1.32	0.28
	Cryptomeria japonica	0.35	1.31	0.25

Broadleaf trees	Quercus variabilis	0.72	1.33	0.34
	Quercus acutissima	0.70	1.43	0.33
	Quercus mongolica	0.66	1.50	0.42
	Populus tomentiglandulosa T. Lee	0.36	1.18	0.16

Source: Son et al. (2010)[13]
D*: Basic Wood Density
BEF^: Biomass Expansion Factor
R**: Root-Shoot Ratio

4 KEY POINTS FOR EFFECTIVE PRACTICE

It is noteworthy that a law specialized in forestry has been made to meet Korea's national greenhouse gas reduction targets. Having the pilot phase run for 2–3 years before the introduction of official legislation was helpful to identify the problems and design policy instruments to address them. There still exist challenges to Korea's Forest Carbon Offset Program, including the uncertainty over treatment of the forestry sector in the United Nations Framework Convention on Climate Change. However, given that the country will launch its emissions trading scheme by 2015, a domestic forestry offset program that includes MRV supported by rigorous science could play a major role in qualifying forest preservation initiatives as offset projects that could yield eligible credits in the future.[14]

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EMERGING CLIMATE LAWS IN THE PACIFIC

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1 INTRODUCTION

The Pacific Island countries are perhaps the least responsible for climate change, yet they are likely to suffer some of the worst effects. Perhaps because of this, the Pacific Island countries have been vocal in the international arena and almost all have ratified the United Nations Framework Convention on Climate Change and the Kyoto Protocol.[1] It is clear, however, that the Pacific nations will face significant challenges mitigating and adapting to climate change, largely due to a limited human, technical, financial and legal resources.

2 CLIMATE CHANGE RELATED LAWS AND POLICIES

The Pacific island countries have recognised the importance of national action to address climate issues. Whilst in most cases, there has been 'very limited integration of climate change issues into national legislation in the region',[2] the action that has been taken is significant. For example, the Solomon Islands, along with Kiribati, Samoa, Tuvalu and Vanuatu, have developed National Adaptation Programmes of Action (NAPAs).[3] The Fiji Islands and Niue have developed climate policy frameworks, and Samoa has also sought financial assistance in order to do so.[4]

Some Pacific Island countries have established institutions with responsibilities to address climate issues such as Papua New Guinea's Office of Climate Change and Carbon Trading,[5] Palau's Office of Environmental Response and Coordination,[6] and the Republic of the Marshall Islands' Office of Environmental Planning and Policy Coordination.[7] The Solomon Islands has created the Ministry of Environment, Climate Change, Disaster Management and Meteorology, and Tonga has established a Ministry of Environment and Climate Change to prepare climate change plans and policies and, relevantly, to ensure 'laws ... relating to ... climate change adaptation and mitigation are ... enforced'.[8]

If the actions referred to above are to have long-term effect, then binding regulatory regimes are needed to implement policy and provide a framework for compliance. In some this may involve existing 'relevant legislation, regulations, standards and practices'.[9] For example, the Fiji Islands has developed a National Climate Change Policy Framework, to be implemented through existing legislation.[10] The Tongan Environment Management Act 2010 makes specific reference to climate change, and the Vanuatu Environmental Management and Conservation Act 2002 has been amended the definition of 'significant environmental impact' to include 'the degree to which the adaptation to, and mitigation of climate change is affected'.[11]

In other cases, specific climate laws are envisaged. Niue has developed a National Climate Change Policy, one objective of which is to 'establish an effective regulatory and institutional framework'.[12] Palau has also initiated a process to develop their National Climate Change Policy Framework.[13] One existing mechanism that may bolster the forthcoming climate policy is the National Development Bank of Palau's programme to encourage energy-efficient households via mortgage lending for new buildings.[14] Such examples may offer valuable lessons for other Pacific island States, should they wish to develop similar laws and policies.

3 COMPLIANCE AND ENFORCEMENT

Even if legally binding regimes are established, compliance and enforcement will remain a challenge. Many Pacific Island nations have limited resources and therefore international support and regional action is likely to be needed. The international community can play an important role by providing financial resources and setting standards. In addition, the Pacific island countries are fortunate in having a number of strong regional organisations including the Secretariat of the Pacific Community (SPC),[15] the Pacific Islands Forum Secretariat (PIFS),[16] the Secretariat of the Pacific Environment Programme (SPREP),[17] and the Pacific Islands Applied Geoscience Commission (SOPAC), which has climate change as one of its focus areas.[18]

Regional compliance treaties have been developed in other areas, such as fisheries, and a similar approach could be followed here.[19] In other areas, legislative models have been developed to assist Pacific Island States in preparing domestic legislation.[20] Again this approach could be taken in relation to climate action. In any event, it will be necessary to recognise that Pacific Island countries are legally pluralist nations in which state-based and customary laws operate. So the future implementation and enforcement of climate laws is likely to be characterised by cooperative approaches, whether that be at the local, regional or international level.

4 CONCLUSION

Climate change is an issue of critical importance to Pacific island nations. This has been recognised, and it is a legislative priority in most Pacific islands. Many are developing comprehensive policies to deal with adverse impacts, and in some Pacific island countries explicit references are made to climate change in existing legislation. However, limited resources for the development and enforcement of laws, as well as challenges posed by the complex cultural context, will likely necessitate more cooperative and collaborative approaches to climate protection in the Pacific islands.

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[15] Membership includes American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji Islands, France, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States of America, Vanuatu and Wallis and Futuna.

[16] The members are Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. The forum observers are Timor Leste, Tokelau, Wallis and Fortuna, the Asian Development Bank and the World Bank.

[17] American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, France, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States of America, Vanuatu and Wallis and Futuna.

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ENVIRONMENTAL REGULATORY AND COMPLIANCE ISSUES RELATED TO UNCONVENTIONAL GAS EXTRACTION

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SUMMARY

INECE convened an international group of experts to identify key environmental regulatory and compliance issues related to unconventional gas extraction. Following a series of remote meetings and an extensive drafting process, the Unconventional Gas Experts Group finalized a Discussion Draft on regulatory compliance issues related to unconventional gas extraction. The discussion draft presents an overview of the unconventional gas extraction process and related environmental issues, the current landscape of environmental regulation in select jurisdictions, and emerging compliance and enforcement approaches to better regulation. This article presents an overview of the longer Discussion Draft. This article, which summarizes the longer Discussion Draft, does not necessarily reflect or represent the views of the experts or countries involved in the Experts Group.

1 INTRODUCTION

As unconventional gas production and corresponding regulatory efforts develop, a significant opportunity exists for raising awareness and on key environmental regulatory issues across jurisdictions, as well as sharing best practices and developing effective responses to these issues. In particular, since unconventional gas extraction is still in its early stages in many countries and jurisdictions, there is a clear opportunity to share regulatory compliance and enforcement lessons learned from jurisdictions where activities are already underway with those where activities are more nascent. There are also clear needs for input into regulatory frameworks in a number of countries where significant unconventional resources are likely to be developed in the immediate future. Finally, there is an opportunity to consider how environmental compliance and enforcement related to unconventional gas can be strengthened at all levels of governance.

Recognizing these opportunities, INECE convened an international group of experts to identify key environmental regulatory and compliance issues related to unconventional gas extraction. The expert group outlined key compliance issues, with the main output being recommendations on good practice and critical components for unconventional gas regulation, particularly looking at issues surrounding compliance and enforcement. The full report, *INECE Unconventional Gas Experts Group: Discussion Draft*, is available online at http://www.inece.org/unconv_gas_report.pdf.

2 OUTCOMES

Many of the environmental compliance and enforcement issues and violations arising from unconventional gas activities are not dissimilar from those experienced with conventional gas. As such, dramatically new or different regulation may not be needed. Rather, updating of existing regulations and compliance and enforcement capacity to meet the significant and growing scale and scope of unconventional gas activities will be critical to protecting the environment and human health and to maintaining the industry's social licence to operate.

On the regulatory side, responding to issues of scale can mean updating laws and policies to keep apace with new technologies and more numerous, dispersed drilling activities. On the compliance and enforcement side, it involves a number of considerations, from ensuring sufficient number of trained, retained inspectors, to identifying creative alternatives to traditional deterrence tools. Where genuinely new concerns such as chemical disclosure have arisen, new policies and regulations can be necessary to fill gaps. New compliance and enforcement approaches, including independent audits/verification, and improved monitoring technologies, may also be necessary to observe and report unique environmental issues, such as sub-surface incidents.

Ultimately, data availability, information sharing, and continued sharing of best management, regulatory, and enforcement practices and best practice technologies will be critical in keeping regulatory and enforcement frameworks up to speed with industry. While there are many potential environmental challenges associated with unconventional gas, there are also numerous approaches that exist to address and mitigate them. Sharing what is known about how to implement these approaches most effectively will benefit not only the environment and human health, but also the unconventional gas sector as it looks to continue its expansive growth in the future.

While regulation of unconventional gas extraction is still in its early stages, there are already lessons to be learned from compliance and enforcement efforts of existing regulations, drawing on approaches in different jurisdictions around the world. This section is intended to spur discussion and further information sharing. Emerging good practices identified include:

1) **Transparency to address public environmental, health, and safety concerns and to secure an ongoing "social license."** The websites FracFocus.org (in the US) and FracFocus.ca (in Canada) provide information about chemicals and chemical use related to unconventional gas, and represent a useful approach to public disclosure, reporting, and transparency.

2) **Initiatives to coordinate and streamline efforts across institutional frameworks**. For example, the USEPA Office of Enforcement and Compliance Assurance's (OECA) National Enforcement Initiative on energy extraction provides for a comprehensive and coordinated commitment across different regions where activities are concentrated, to address violations that may cause or contribute to significant harm to public health and/or the environment.

3) **Clear division of responsibilities between regulators and across jurisdictions, with dedicated enforcement and compliance units to ensure regulations are appropriately implemented.** In the UK, for example, the Health and Safety Executive coordinates with the Department of Energy and Climate Change and the local Mineral Planning Authority (MPA), as well as the national environmental regulator both on regulatory oversight and under a working together agreement on inspections. The UK's Department of Energy and Climate Change's Office for Unconventional Gas and Oil, is an example of how a dedicated entity can serve as a focal point for regulatory oversight and a coordinator of enforcement across government.

4) **Maximized "boots on the ground time," and minimised "windshield time."** With experienced inspectors as a scarce resource, their time is at a premium. Anything that can be done to make the processes they undertake more efficient and standardized, *e.g.* using information technologies, digitizing forms, and minimizing "windshield time" spent driving between sites, makes best use of the inspector's time, freeing them up to cover more ground. In addition, using information technologies when acquiring data can allow reviews of individual well-sites to be compiled and used by specialists in a centralized location to track trends, find good practices that are working, and to be more transparent and provide assurances to elected officials and the public.

5) **Specialised personnel allocated strategically for efficiency and consistency.** As noted above, frontline enforcement units can cover ground and report back to central teams of experts. Centralised assessment and regionalised compliance functions allow for efficiencies and strong consistency. For example, in Queensland, a dedicated intelligence officer helps the compliance team understand everything from company structures and contractor charts to progress on individual projects, future work programs for drilling sites, trends on compliance and complaint data, etc.

6) **Use of technology.** New technology can maximise efficient use of inspector time and leverage the knowledge and skills of specialised personnel. Technology can also help better target risk identification, allowing regulators to avoid wasted site inspections and to use those they undertake more intelligently. For example, using applications on iPads that allow GPS capability, preloaded with mapping layers developed by regulators, can allow inspectors to focus on portions of sites they are truly interested in, e.g. environmentally sensitive areas that may overlap with a project site. In Australia, desktop analysis of satellite imagery and other data have proven useful in focusing inspections. This is a critical advantage in the face of numerous, physically dispersed unconventional gas activities. 3D and 2D imagery can also play an important role in providing regulatory "eyes" underground, e.g. understanding how factures propagate in preventing induced seismic activities.

7) **Surface owners vested in the process**. It matters where and how mineral rights are vested, and in cases where mineral rights are vested with the state it is important to provide for landholder access to conduct and compensation rules. Differentiating landholder questions relating to mineral rights versus environmental health and safety can also be important, and can be helped by providing a "one-stop-shop" for inquiries.

8) **Centralised "one-stop-shops" for public inquiries and complaints.** Establishing a "one stop shop" for landowner and/or public complaints, *e.g.* the CSG compliance unit in Queensland, or the USEPA complaint number in the US, ensure that that affected parties and members of the public aren't required to navigate a complex web of multiple regulators to get in touch with the appropriate authority. In Queensland, each landholder gets one point of contact and a case manager that ensures follow-up, with the CSG able to provide the requested information, appropriately file a complaint, or refer or escalate an issue to the appropriate place.

9) **Tailored risk-related tools and assessments for unconventional gas.** Risk assessments based on appropriate data can help identify where likely compliance activities will be coming from for a given year. Putting this information online can help deter non-compliance and encourage companies to get their operations in order before enforcement activities begin.

10) **Creative alternative enforcement approaches.** Prosecution and penalties in a high dollar market may not mean much. One concept used in place of fines that can be effective in the unconventional gas sector is severance. When instituted, an operator is not allowed to move oil from their lease until they pay fines and correct non-compliant actions. Severance is a strong deterrent for violators who may not otherwise be swayed by more traditional deterrents. Publication orders, where violations are published in the state paper, represent another creative alternative enforcement approach that builds on a company's desire to maintain its social licence to operate.

11) **Resources providing regulatory guidance to assist companies and the public to understand compliance responsibilities.** The Scottish Environmental Protection Agency's guide presenting regulatory guidance for unconventional gas technologies presents an example of how regulators can make information on air, water, land, waste, and chemical regulations and requirements easily accessible in one location, and comprehensible for companies—an important compliance promotion and teaching tool.

12) **Different compliance tools, e.g. permits and rules, used differently for different environmental issues.** Compliance and enforcement should be outcome-based, except where there are higher risks requiring more prescription. Strategic use of permitting, particularly supported by visual inspection, can be appropriate where risks are higher and preventative actions can improve outcomes. For example, robust well casing is key to protecting surface and groundwater. Drilling permit applications can implement regulatory requirements for casing depth, reinforced by inspectors to check the casing on site at the time of installation. Having a witness and documentation of this critical phase can minimize the likelihood of future contamination. Alternatively, setting rules rather than permitting requirements, *e.g.* for water recycling, saves time for operators and builds-in incentives for the activity. Reviewing permit requirements and codifying general conditions can also free up precious staff and other limited resources to focus on compliance.

13) **Voluntary and industry-driven initiatives to complement regulation with best management practices (BMPs).** Examples include the American Petroleum Institute's set of BMPs, the Center for Sustainable Shale Development's performance standards in the US, and the Canadian Association of Petroleum Producers 2012 Canada Hydraulic Fracturing Guidance Principles and Operating Practices.

14) **Financial provisions can provide compliance and enforcement support, penalties for non-compliance, and insurance in case of accident/emergency.** Ensuring an adequate budget is essential for adequate compliance and enforcement activities. Violation penalties can provide a strong disincentive, and both front-end bonding and back-end clean-up contribution requirements can provide insurance in case of accident or emergency. This can provide an important safety net in cases where companies go bankrupt or are otherwise unable to manage the necessary clean up.

15) **Multi-media initiatives that take a comprehensive approach.** While regulatory and enforcement attention in some countries often focuses on fracking, environmental impacts can occur at all stages of unconventional gas extraction activities, and can impact multiple environmental mediums. Comprehensive approaches to regulation and enforcement can respond to the full set of environmental issues and concerns, and can promote cross-pollination of good practices between media and stages of extraction.

3 NEXT STEPS

The goals of the INECE Unconventional Gas Project going forward will be to continue to raise awareness and build capacity within the regulator and enforcement communities by creating a platform for the exchange of best practices and lessons

learned for the protection of climate, air, water, land, biodiversity and human health as the global communities seeks to utilize this vast supply of energy.

Areas identified for further work include improving and sharing data, including access to data currently held by industry; development of a central source of information about regulations and other information that could support compliance and enforcement experts; and ongoing opportunities for sharing of best management practices and best practice technologies.

APPENDIX – The Network Evaluation Matrix

Absent Criteria				
Members	**Finances**	**Governance**	**Support**	**Deliverables**
N/A	N/A	N/A	N/A	N/A
Emerging Criteria				
Members	**Finances**	**Governance**	**Support**	**Deliverables**
Membership Typically low within networks sphere of influence Restricted to core member agencies or individuals operating within networks sphere of influence	***Budget*** Nonexistent or modest to initiate / commence the network	***Access*** Member access to foundational and guiding documents No open source access to networks guiding documents	***Liaison*** Limited or no liaison with other networks	***Events*** A few singular events for members Limited number of members working together on specific projects
Leadership Few individuals / member agencies take lead role across network	***Contributions*** Limited in-kind contributions restricted to central core member agencies or individuals	***Review*** Informal review by foundation members	***Support base*** Network effectiveness reliant on core members providing ad hoc coordination	***Outcomes*** Prospective members considering potential of network Limited functionality within network to deliver outcomes
Value Negligible or questionable value to non-core members Core members only active participants with few benefits realised	***Project funding*** Non-existent or minimal	***Structures*** General Aims and Objectives laid down Typically developing and fluid No written procedures	***Supporting functions*** Base level administrative tasks undertaken for network If not for a few key individuals, network would not continue	***Products*** Low number of publications disseminated Publication limited to contributions of members
Fragile Criteria				
Members	**Finances**	**Governance**	**Support**	**Deliverables**
Membership Generally increasing across significant actors within network sphere of influence	***Budget*** Contributions are spasmodic and are made by small number of sources Not sustainable	***Access*** Central repository of information and communiqués to members Limited open source access to networks guiding documents	***Liaison*** Emergent and exploratory liaison with other networks undertaken Information sought from other networks	***Events*** Irregular events with increasing frequency Preliminary attempts to undertake cooperative exercises
Leadership Wider range of key individuals / member agencies taking on leadership roles across network	***Contributions*** Few core member agencies / individuals providing in-kind support	***Review*** Regular changing of operating rules, Constitutional documents, etc. to fit circumstances	***Support base*** Growing level of support base Increasing numbers of interested individuals	***Outcomes*** Low level coordination to deliver outcomes Members seeking benefits
Value Tangible benefits available for active members Most members inactive / passive and question value of network Low level communications disseminated to members from core members	***Project funding*** Very limited, if available Sourced from lead member in project team	***Structures*** Guiding documentation developed reactively to situations. Clear Aims and Objects set out for network	***Supporting functions*** Central support function to support membership and administrative tasks only	***Products*** Infrequent publications being developed and disseminated Range of network members contributing to publications

Maturing Criteria				
Members	**Finances**	**Governance**	**Support**	**Deliverables**
Membership Expanded to reach critical / core number of potential members within relevant network area of operation	***Budget*** Sufficient funding for network to continue for short to medium term (2-3 years)	***Access*** Increasing access of members to network steering / guiding documents Open source access to limited network produced documents	***Liaison*** Interest by and liaison with other networks Capacity and capability discussions to identify areas of commonality	***Events*** Held on semi regular basis Delivered across network Range of events relevant to all members Restricted range of members working conjointly
Leadership Critical mass of individuals / member agencies take on leadership roles Wide range of membership not represented in leadership roles	***Contributions*** In-kind support provided by central member agencies / individuals	***Review*** Third Party review of constitutional documents and guidance considered	***Support base*** Widening support base across network sphere of influence	***Outcomes*** Member agencies receiving identifiable benefits Individuals professionally realise benefits
Value Leading members displaying demonstrable benefits through active participation Level of inactive / passive members reducing Increasing engagement and communication between members	***Project funding*** Project funding - increasing but ad hoc Project leaders are able to source limited funding to support project	***Structures*** Proactive development of guiding documentation with consultation across membership Development of Operation and Strategic Plans to set direction of network	***Supporting functions*** Administrative tasks major part of function Low level of coordination and project capacity	***Products*** Are of useable standard and considered as a step towards better practice across industry Contributions from those outside of network being included

Well Established Criteria				
Members	**Finances**	**Governance**	**Support**	**Deliverables**
Membership Maximum or near maximum of possible members within relevant operation of network coverage	***Budget*** Secured on permanent basis Sustainable arrangements	***Access*** Open and transparent access to network steering papers across membership and support base Foundational and guiding documents available as open source	***Liaison*** Level of support from other networks seen through interaction and joint activities Good working relationships between networks	***Events*** Held regularly and well attended Coordinated centrally for delivery across membership Members readily work collaboratively
Leadership Large proportion of members taking leadership roles across network	***Contributions*** High proportion of members contributing in-kind support to projects, events and initiatives	***Review*** Governance structures reviewed and consistent with better practice Subject to external scrutiny and review	***Support base*** Strong support and contribution base from practitioner and senior management alike	***Outcomes*** Delivering tangible benefits to members Serve as attractor drawing new members into network Members overtly promoting the benefits of involvement
Value Majority of members readily realise benefits of membership attained through active participation Open communication across members	***Project funding*** Projects driven by / within network are readily funded Projects undertaken by network bring in associated funding	***Structures*** Robust written governance structures in place Membership well represented on guiding body	***Supporting functions*** Central function for coordinating network activities, project and events Administrative tasks minor part of function	***Products*** High standard and considered better practice across industry Subject to review and improvement process Wide range of contributors to network publications

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INECE's Goals

INECE's goals are to:

- Improve enforcement and compliance through better cooperation.
- Strengthen capacity throughout the regulatory cycle to implement and secure compliance with environmental requirements.
- Raise awareness of the importance of environmental compliance and enforcement to sustainable development.

Environmental compliance and enforcement play a fundamental role in building the foundation for the rule of law, good governance, and sustainable development

INECE develops and implements practical and innovative activities that strengthen environmental compliance and enforcement at all levels of governance – local, national, regional, and international. INECE builds the capacity of compliance and enforcement stakeholders to contribute to the rule of law and good governance in areas that advance sustainable development.

The Network is comprised of environmental regulators, investigators, prosecutors, judges, and employees of international environmental and development organizations. Officials from customs, the police, non-governmental organizations, academia, the media, and business also participate.

Founded in 1989, INECE is the only global organization focused exclusively on achieving compliance with environmental law through effective compliance promotion and enforcement strategies, including administrative, civil, criminal, and judicial enforcement. INECE works on both national implementation of domestic environmental laws and on improving the effectiveness of multilateral environmental agreements.

INECE communicates that environmental compliance and enforcement play a fundamental role in building the foundation for the rule of law, good governance, and sustainable development.

To collaborate with INECE on its work on climate compliance and other initiatives, please contact Durwood Zaelke(zaelke@inece.org) or Ken Markowitz (kjm@earthpace.com) to learn more about current projects and opportunities.

http://inece.org/