An examination of the Kyoto Protocol from the small island perspective

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Abstract
Economically and physically, the countries most immediately vulnerable to the impacts of global warming are small island developing states (SIDS). SIDS are already beginning to feel the effects of global warming on their economies, their cultures, and their ecological systems, and should serve as a harbinger for the rest of the global community. For while geography dictates that SIDS will be the first to confront the tangible effects of climate change, it is soon to be a universal problem. Shared vulnerability was a strong factor in establishing the Alliance of Small Island States (AOSIS) in 1990. Since that time, AOSIS has been a very active participant in the climate change negotiations – advocating stronger commitment from industrialised countries and intensified involvement of developing countries.

The authors contend that the Kyoto Protocol is a significant improvement over the Convention on Climate Change, in that it contains quantifiable goals and commitments. However, the guidelines that it establishes are regarded as not nearly so stringent as AOSIS had deemed scientifically necessary or politically feasible. In addition, the Protocol still contains serious loopholes and ambiguities that have the potential to interfere with its effectiveness. It is imperative that steps be taken not only to strengthen and tighten the language of the Protocol, but to further enable the participation of non-Annex I countries. This paper closely examines the strengths and weaknesses of the Protocol, examining articles that pertain to compliance, co-operation, and flexibility. Particular attention is paid to Articles 2, 3, 4, 6, 12, and 17.

Introduction
The ten hottest years in recorded history have all occurred since 1980. The World Meteorological Organization identified 1996 as the eighteenth consecutive year with positive global anomalies. The Intergovernmental Panel on Climate Change (IPCC) announced in its Second Assessment Report in 1995 that the planet has entered a period of climatic instability likely to cause ‘widespread economic, social, and environmental destruction over the next century.’
Economically and physically, the countries most immediately vulnerable to the impact of global warming are small island developing states (SIDS). There are many drawbacks associated with small size, magnified by the fact that the small island states are not only small, but are spread across a number of small islands. Small islands have limited resources, which forces specialisation and high dependence on imports as well as over-use and depletion of natural resources. The limits to freshwater supplies are often palpable. Population densities are high, as are public administration and infrastructure costs, especially in the transportation and communication sectors. Size and isolation also limit institutional capacity and domestic markets. Each of these conditions is compounded by the threat of climate change. SIDS are already beginning to feel the effects of global warming on their economies, their cultures, and their ecological systems. Geography dictates that SIDS will be the first to confront the consequences of climate change, but it is expected that larger and less isolated economies will soon feel the impacts as well.

What are the most imperative threats of climate change?

Sea-level rise is perhaps the most critical climate change-related threat to SIDS, as it touches the very life force of island communities. Even a sea-level rise of twenty centimetres could have devastating effects on small islands. In some island groups, like Kiribati, Seychelles, and Maldives, up to 80% of the land area is less than a metre above present sea level. Higher islands will also experience serious impacts on their communities, economic activities, and infrastructural development as a result of climate change. For most SIDS, the most immediate threats posed by global warming include the following:

**Weather:** It is predicted that climate change will most likely result in increased frequency and intensity of extreme weather events such as tropical storms. Greater damage from associated storm surges is also expected. Tropical storms are causing unprecedented devastation in SIDS in almost every region of the world as they become more frequent, more severe, and much more damaging in terms of their financial costs and damages to infrastructure.

**Erosion:** In most cases, over half of the population of island communities resides within two kilometres of the coast. This portion of the island populations is very vulnerable to sea-level rise and loss of property and livelihood to coastal erosion.

**Freshwater:** Inadequate supplies of freshwater and water conservation are critical in all developing countries. The issue is especially imperative for SIDS, as supplies of potable water can be particularly limited on islands. Small island vulnerability is compounded by threats of drought due to climate change, and by saline intrusion into freshwater lenses and wells because of rising sea-levels.

**Biodiversity:** Small islands tend to have high degrees of endemism and levels of biodiversity. However, populations of various species are typically limited in size, and at high risk of extinction. Even minor changes in temperature and sea level can result in serious alteration of habitats. Coral reefs, often described as the rain forests of the ocean because of their rich biodiversity, are particularly vulnerable to temperature increases, and could be seriously depleted.

**Agriculture:** Crops can be extremely sensitive to climate factors such as temperature and water levels. Warmer weather, droughts, excessive precipitation, and floods, all of which may result from climate change, could result in significant loss of crops that may once have flourished on islands.
Industry: Small economies are extremely susceptible to external economic and trade shocks. This creates real constraints for SIDS in the sustainable development of trade and industry sectors. The potential impact of climate change on SIDS economies and environments elevates the perceived investment risk levels for industry.

Culture: Loss of life, loss of livelihood, declines in productivity, and economic dislocation may all result from the effects of climate change. In addition to the dramatic economic implications of these circumstances, entire cultures may be obliterated.

Economics: The financial burdens that stem from the effects of global warming are likely to have a tremendous impact on the economies of the majority of SIDS. The costs will include population relocation, loss of crops, loss of natural resources, loss of land and other property, increased illness, loss of human resources, increased insurance costs, loss of tourism, and scarcity of food and potable water.

Principle 6 of the Rio Declaration promised that the 'developing countries most vulnerable' would be given special priority. All SIDS should fall within this category. The financial pressures of coping with the effects of climate change are likely to be overwhelming for the average developing country. Because of their augmented vulnerability, this may prove even more of a struggle for SIDS. A recent study examined the likely impacts of an accelerated one-metre sea-level rise on the Marshall Islands by 2100. The study determined that between ten and thirty percent of the shoreline would erode and 60 percent of the arable land would be lost. There would also be a significant increase in the frequency of severe floods, and the underground freshwater that the islanders rely on would become increasingly scarce. The cost of protecting the coast is estimated to be four to six times the country's current gross domestic product.

**What is the role of AOSIS in the climate change negotiations?**

For small islands, climate change is an issue of survival. This shared vulnerability was a strong factor in establishing the Alliance of Small Island States (AOSIS) in 1990. AOSIS now consists of 43 member states from all over the world, including Africa, the Caribbean, the Mediterranean, the Atlantic, the Pacific, and the South China Sea.

Since SIDS are particularly vulnerable to global climate change, climate variability, and sea-level rise, the concerns being voiced by the members of AOSIS possess the genuine quality of those facing real and immediate jeopardy. However, the very tangible consequences of climate change that small islands are starting to experience will eventually, inexorably, pose threats to larger island and continental countries. AOSIS’s calls for action are not selfish. They are a reflection of concerns that will become imperative around the planet in coming years. It would behoove the international community to take note of the actions and recommendations of the small island nations.

Throughout the negotiations, the Alliance has maintained a strong and active presence in the design of the climate change regime. The government of the small island state of Malta was the first to sponsor a United Nations General Assembly resolution calling for the establishment of an intergovernmental negotiating committee for a framework treaty aimed at combating global warming. At the first session of this committee, in 1991, AOSIS submitted a framework of concepts and
principles to guide the negotiations of what would become the first binding international treaty addressing climate change. Many of the essential design features of the 1992 United Nations Framework Convention on Climate Change (UNFCCC), including its emphasis on science, precaution, and equity, were supported by or derived from AOSIS proposals. Although the Alliance was unable to overcome the reluctance of industrialised countries to undertake concrete emissions reduction commitments at that time, it worked diligently to ensure that the Convention, once in force, would provide for the rapid review of the adequacy of Parties’ commitments, in the light of the latest science, and would require the Parties to ‘take appropriate action.’

AOSIS had strength in numbers, which was not an insignificant factor in the rapid entry into force of the Convention in 1994. By 1995, at the first meeting of the Conference of the Parties (COP-1), the UNFCCC’s procedural obligations forced the consideration of proposals for a new legal instrument to strengthen industrialised countries’ commitments. Just prior to COP-1, AOSIS submitted a draft protocol to the Convention, which included a proposal for industrialised (Annex 1) Parties to the Convention to cut their emissions of CO₂ by 20% from 1990 levels by 2005. While no legal instrument was adopted at COP-1, the AOSIS protocol proposal provided a rallying point for developing countries and Non-Governmental Organisations (NGOs) as well as a centre of focus for media around the world. The momentum that the AOSIS protocol helped generate led to the adoption of the Berlin Mandate, which set the terms of reference for the negotiation of a legally binding instrument containing quantified targets and timetables for Annex 1 Parties.

In 1997, at COP-3, it was agreed that industrialised countries would strive for a 5% reduction from 1990 levels of greenhouse gas emissions by 2012. This target fell well short not only of the AOSIS proposal, but also of the 60% reductions recommended by the Intergovernmental Panel on Climate Change (IPCC). Nevertheless, AOSIS remains committed to the Kyoto Protocol as the best hope for a response from the international community to the threat of global warming. Since Kyoto, AOSIS has focused its energies on striving to clarify and further develop the Protocol to ensure that the climate system benefits fully from the 5% reduction.

**How does the Protocol fall short?**

The Protocol that was developed at Kyoto contains legally binding commitments to limit and reduce greenhouse gas emissions. This characteristic alone defines it as a quantum improvement over the largely superficial Convention. The innovative ‘flexibility’ mechanisms included in the Protocol, though largely untested, have the potential to enable significant cost savings in emissions reductions, and to directly engage the private sector in the implementation of an international environmental agreement. However, due to politics and limited negotiation time, the Protocol was left with many ambiguities and potential loopholes. AOSIS’s work since the adoption of the Protocol has focused on four aspects of particular concern:

- designing a robust and effective compliance system to back up the Protocol’s binding commitments;
- promoting the use of rigorous scientific analysis, in combination with the precautionary principle, to ensure that remaining methodological imprecision is resolved in a manner that promotes the best environmental outcome;
• ensuring that the complexity of the Protocol’s flexibility mechanisms does not open opportunities for Parties to avoid genuine emissions reductions; and
• maintaining the long-term momentum of the regime in strengthening the commitments of industrialised countries and seeking ways of engaging developing countries as their emissions begin to rise.

Both the scientific and the regulatory components of the Protocol are great improvements over those of the Convention. However, there are still many substantial ambiguities. It is therefore necessary to closely examine the agenda established in Kyoto and address the areas of weakness. The most significant of these include:

• adoption of the legally binding and quantifiable targets and timetables;
• multilateral commitment to deploying innovative but untested mechanisms, the details of which remain to be negotiated;
• heavy reliance on approaches that entail considerable methodological imprecision and institutional and scientific uncertainty; and
• vulnerability resulting from political uncertainties that may influence the future development of the regime.

AOSIS is making a concerted effort to facilitate the resolution of these ambiguities. The Alliance is also working to ensure that the untested mechanisms move forward in the most transparent, accountable, and effective manner possible. The following section addresses the above ambiguities through a discussion of the strengths and weaknesses of the Kyoto Protocol. The subsequent section examines specific components of the Protocol more thoroughly.

What are the strengths and weaknesses of the Kyoto Protocol?

**Targets and timetables**

The question of targets and timetables was central to the Kyoto negotiations. It was also the most difficult, and therefore the last to be resolved. In assessing the sufficiency of the targets and timetables established by the Protocol, it is important to consider its legal adequacy, scientific adequacy, and equity between parties.

**Legal adequacy**

The terms of Article 3 of the Protocol strengthen the legal character of Annex I targets. The text refers specifically to emissions limitations and reduction commitments rather than objectives. The targets are clear and quantified. In this way, Parties have moved away from the ‘soft’ targets that existed under the Convention, thus resolving an essential weakness of the Convention.

During the negotiations, AOSIS strongly advocated flat reductions, rather than differentiated targets. The reason for this was that it seemed more likely that flat reductions would foster equal efforts by all Annex I Parties. At this point, the Protocol contains as near a flat rate as can be expected from the three most important Parties – the United States, the European Union, and Japan. Differentiation among the other Parties was necessarily accepted as a political compromise.

Overall, there has been significant progress in achieving ‘legal adequacy,’ but the agreement is still lacking an effective compliance regime. Article 18 addresses issues of non-compliance, but leaves the specific guidelines to be discussed at later negotiations. A good deal of effort has gone into preparing such a mechanism. However, it has become evident that a more comprehensive approach is necessary.
Specifically, the issue is complicated by the fact that the enforcement of legal requirements will be reliant on the acceptability, accuracy, and reliability of corresponding scientific measures. AOSIS has been closely involved in the compliance-related negotiations, and has stressed the need for the revised system to be:

- preventative and precautionary, in that it should aim to prevent non-compliance, before it occurs, and carry out assessments based upon the precautionary approach;
- comprehensive and coherent, in that it should address issues related to all commitments under the Protocol;
- credible, in that it should be able to take up, examine, and effectively resolve compliance related issues, without political intervention;
- transparent, in that its rules and procedures should be clearly and simply stated, and the reasoning and results should be based on sound information and be publicly available;
- graduated and proportionate, in that the procedures and mechanisms should take into account the cause, type, degree, and frequency of non-compliance, and the common but differentiated characteristics of Parties’ commitments and capacities;
- predictable, in that Parties should be informed, in advance, of the range of consequences that might be attached to different categories of non-compliance; and
- based on principles of efficiency and due process, in order to allow Parties an opportunity for a full, fair, and timely resolution of compliance-related issues.

**Scientific adequacy**

The legal character of the Protocol is only as sound as the corresponding science. The most important components to be examined when considering the scientific adequacy of the Kyoto agreement include the size of the targets, their coverage, the timing, and the inclusion of sinks.

**Targets.** Article 3 of the Protocol requires an overall emissions reduction of six gases by at least 5% from 1990 levels by 2012. This falls well short of the 60% global reduction called for by the Intergovernmental Panel on Climate Change (IPCC) and of the 20% CO2 reduction proposed by AOSIS. AOSIS considers the implications of this discrepancy to be egregious. While there is some uncertainty, the vast majority of scientists have accepted unequivocally that the global climate system is changing. Indeed, the Kyoto Protocol is the political endorsement of this scientific assessment. Furthermore, there is widespread acknowledgement of the inadequacy of the current global climate change initiatives. In future commitment periods it will become necessary to take better account of the scientific parameters, to ensure that the ability to make reductions is not overshadowed by a political reluctance to take the necessary steps.

**Coverage.** It is impressive that the Protocol will eventually cover six greenhouse gases (GHGs). However, the inclusion of all of these gases may engender greater uncertainties with regard to the calculation of emissions from less known sources and the convertibility of these gases into units of CO2 equivalents, using the estimations provided by their global warming potentials.

**Timing.** Another feature of the Protocol is the new and innovative use of budget periods or commitment periods. The AOSIS proposal suggested a 2005 deadline. This relatively short time period was based on what seemed scientifically necessary
and politically feasible. AOSIS members were disappointed when the end of the first commitment period was designated as 2012 in the Protocol. However, there is something of a compromise outlined in the Protocol. According to Article 3.2, by 2005 each Annex I Party shall have made ‘demonstrable progress’ in achieving its commitments under the Protocol. How that progress is to be measured has yet to be determined.

**Sinks.** The agreement on sinks, which remained an issue until the eleventh hour, was the final element that enabled the negotiation of the Protocol targets. Without this measure, the Kyoto Protocol would not have been possible. The agreed-upon provision will ensure that further IPCC work on sinks is undertaken immediately. It will also require the Parties to address uncertainties and methodological problems. In addition, once the Protocol review process starts, this mechanism will ensure that sinks will be dealt with in a verifiable and transparent manner.

There is, however, still potential for problems. While the inclusion of sinks may increase the effectiveness of the Protocol, it may also introduce methodological uncertainties and possibly distract the regime from focusing on its main policy task of shifting the global economy away from dependence on fossil fuels. Offering sinks as a means of meeting emissions mitigation commitments may also impart the erroneous idea that sinks are an acceptable and less expensive alternative to energy efficient or renewable energy technologies. In this way, the cheaper sink-based option creates a significant economic disincentive for the development and expansion of these technologies. This means that developing countries are likely to miss opportunities for technology transfer, adding to future emissions problems as these economies continue to grow. In addition, while trees will sequester carbon from the atmosphere, there is no prediction or guarantee as to the length of time they will sustain such a function. AOSIS has addressed these issues and a number of other sink-related problems in several detailed submissions.

**Equity**

The distribution of emissions reduction commitments between Annex I countries varies widely. For example, the European Union has committed to -8% of 1990 levels, and the United States to -7%, while Australia’s goal is +8% and Iceland’s is +10%. These distributions are not based on any identifiable, agreed-upon criteria. Rather, they were derived largely from heavily politicised negotiations, and based in large part on perceived political and economic ‘ability’ to bear the burden.

Equity would demand that Parties with the capability to do more should pledge to do so. At this stage, there are solid, equity-based reasons for developing countries, which currently have no obligations under the Protocol, not to take on responsibility. However, the inability of the Annex I countries to develop a rule-
based approach to differentiation, as demonstrated by the ambiguity of the existing targets, will complicate the agreement and distribution of obligations when the regime expands to include new Parties.

**Innovative, but untested mechanisms**

The Kyoto Protocol outlines several major innovations for ways of meeting emissions reduction commitments. These include:

- Joint commitments or the bubble arrangement under Article 4, which, in effect, formalises the European Union umbrella arrangement. This provision is also open to any two or more countries that are willing to commit to each other for a five-year compliance period.
- Joint implementation among Annex I countries through project-based trading of emissions offsets under Article 6.
- Joint implementation between Annex I Parties and developing countries using the Clean Development Mechanism detailed in Article 12.
- Emissions trading of unused emissions allowances among Annex I countries under Article 17.

Each of these mechanisms is a groundbreaker for international law and is intended to allow Annex I countries to use market-based and co-operative mechanisms to take advantage of lowest cost options for emissions reduction. Each also challenges the traditional understanding of sovereign obligation and state responsibility, as they allow Parties to fulfil obligations through activities that take place outside their territory, and in some cases to subcontract their responsibilities to the private sector. Tracing these obligations and holding the contracting states liable for any shortfalls of performance will present unique challenges to the climate regime.

**What are the specific components of the Protocol that need to be addressed?**

In the post-Kyoto period, AOSIS has determined its primary task to be identifying and eliminating loopholes in the Protocol in order to ensure that scientific and regulatory uncertainties are reduced as much as possible. Fortunately, the text of the Kyoto Protocol provides significant opportunities to introduce greater rigor into the Protocol’s commitments and, in particular, its flexibility mechanisms. This section examines specific components of Articles of the Protocol. The section that follows considers the potential for combining measures called for under different Articles.

**Article 2: Policies and measures**

There are no binding policies and measures (PAMs) in the Kyoto Protocol. The language used to describe possible actions is relatively soft. For example, the term ‘such as’ in Article 2.1(a) implies that the outlined PAMs are provided simply as examples of actions the Parties may wish to use in meeting their quantified emissions limitation and reduction commitments (QELRCS). It is possible, however, that the PAMs listed in Article 2 may be the preferred means by which Parties achieve their QELRCS. This use of PAMs may provide an important interim benchmark for assessing Party compliance, which could, in turn, prove instrumental to the Protocol’s long-term goals. Article 2 receives no express mention in the Protocol’s provisions on reporting (Article 7) or ‘in depth review’ (Article 8). However, it is clearly covered in Article 7(2) by a reference to the obligation for each Annex
I Party to provide ‘supplemental information necessary to demonstrate compliance with its commitments under this Protocol.’

During the negotiations, AOSIS and the European Union supported a mechanism for the international coordination of PAMS. The idea was to encourage harmonisation at as high a standard level as possible, and to avoid any potential negative impacts on developing countries. Such a mechanism was not included. However, Article 2.1(b) captures the spirit of the concerns that had prompted AOSIS. The last sentences of Article 2.3 and Article 2.4 also preserve the right to reintroduce proposals for a coordination mechanism.

Article 2.2 requires Annex I parties to negotiate limitations and reductions on aviation and marine bunker fuels. While this is one of the fastest growing emissions sectors, negotiators were unable to agree on how to attribute responsibility for ship and aircraft emissions that may be expended in international air space or international waters. With respect to climate change, AOSIS is in support of regulation of these emissions. However, the majority of SIDS, which are so vulnerable to the impacts of global warming, are also particularly dependent on air and sea transport for trade and tourism. This catch-22 is compounded by the fact that the rules agreed to by the Annex I countries will help to predetermine regulations that may later be applied to developing countries.

Article 2.3 reflects an effort, in the context of the implementation of PAMs, to balance the interests of those countries concerned about the impacts of climate change, such as SIDS, and countries that are worried about the impact of responses to climate change, like fossil fuel exporters. Petroleum export countries may try to use this paragraph to challenge PAMS that affect the petroleum market. However, this provision is balanced out by others that enumerate Party vulnerability in a manner that is applicable in this situation.

In the same context, Article 2.3 also refers to ‘further action, as appropriate’ that may be taken by the Conference of Parties serving as the Meeting of Parties (COP/MOP), but nothing specific is detailed. Article 3.14 contains similar language and requires preparation for a COP-4 decision based on consideration of ‘actions related to funding, insurance, and transfer of technology.’ This has provided an opportunity for AOSIS to raise issues concerning impact-related insurance, and for countries belonging to the Organization of the Petroleum Exporting Countries (OPEC), for example, to revive proposals related to compensation for economic loss caused by response measures. Whether this latter action is to be deemed ‘appropriate’ for ‘further action’ remains to be decided.

**Article 3, Annexes A and B: Emissions limitation and reduction commitments**

Perhaps the most significant improvement of the Protocol over the Convention lies in the binding legal character of emissions limitation and reduction commitments, which are clearly stated in Article 3 and Annex B. These quantified emissions limitation and reduction commitments (QELRCs) consist of commitment periods during which an Annex I Party may not exceed the ‘assigned amount’ of greenhouse gas emissions indicated in Annex B. This discussion of Article 3 reviews specific core design aspects of the QELRCs.

**Coverage of gases**

Article 3.1 and Annex A of the Protocol list the six greenhouse gases to be monitored and controlled under the Protocol. The inclusion of methane and nitrous oxide will
raise significant methodological challenges, both with regard to the measurement of emissions from sources and removals by sinks of these less well known gases. The conversion of these measurements into accurate ‘carbon equivalents’ by comparing their global warming potentials (GWPs) also presents some difficulty. Although Article 5 of the Protocol provides that measurement and GWP methodologies accepted by the IPCC and agreed upon at the COP will serve as the default approach, even these have significant ranges of uncertainty associated with them. At the Kyoto conference there were proposals to discount emissions reductions claimed for gases with higher levels of uncertainty. No agreement was reached, however.

Coverage of sinks

AOSIS did not support the blanket inclusion of sinks in the Kyoto Protocol out of concern that the benefits of regulatory flexibility would be outweighed by the ambiguity caused by methodological uncertainties. In addition, focusing on carbon sequestration without taking into account biodiversity and environmentally positive or neutral forestry principles could be damaging to long term sustainable forest management, especially in developing countries. Under tremendous pressure from a coalition of Annex I delegations interested in increased flexibility, the treatment of ‘removals of emissions’ by sinks has been divided into two categories of activities within the Protocol:

Article 3.3 authorises Annex I Parties to include emissions from sources and removals by sinks of greenhouse gases that are derived from human activities in their inventories. This clause is the first such category, and refers only to human-induced land-use change and forestry activities, limited to afforestation, reforestation, and deforestation since 1990;

Article 3.4 anticipates that the COP/MOP will decide on modalities, rules, and guidelines for a second category of ‘additional human-induced activities’ including those affecting agricultural soils and other land-use change and forestry categories.

Under these provisions Parties can begin to calculate and subtract removals from their inventories without further authorization from the COP/MOP. Once the COP/MOP has approved additional categories, Parties may apply these to the first commitment period and must apply them to subsequent commitment periods.

Article 3.7 is an additional source of concern for AOSIS, as it allows countries that experienced a net increase of emissions from their land-use and forestry sectors in 1990 to include those net emissions in their 1990 baseline. In effect, this provision creates more leniency for countries that engaged in extensive timber extraction and land clearing during that year by allowing them a higher 1990 baseline from which to measure net reductions.

Timetables and commitment periods

Article 3.2 provides for an intermediary review of progress toward the Protocol commitments in 2005. The Protocol’s innovative use of commitment periods provides Annex I Parties with more flexibility with regard to timing and at the same time appears to allow for a more precise measurement of emissions reductions. However, extension of the first commitment period until 2012 has the potential to delay action well beyond the timetable of 2005 that AOSIS worked to install. The implications of this delay could be compounded by the uncertain status of emissions reductions achieved prior to 2008.
Article 3.13 allows for the ‘banking’ of over-achievements. This means that emissions reductions in excess of a Party’s set goal in the first commitment period may be carried over into a second commitment period. Clearly, if emissions reductions achieved prior to 2008 are part of an overall trend, they will facilitate a Party’s efforts to remain below its assigned amount during the first commitment period. It should be noted, however, that it was not possible prior to the advent of the first commitment period for a Party to formally ‘bank’ emissions reductions to offset its assigned amount in the first commitment period. There is one exception to this restriction. Emissions reductions units generated through the clean development mechanism (see Article 12, below) may, from the year 2000, be banked and used to offset some, as yet undefined, ‘part of’ a Party’s assigned amount.

Differentiation in base year
Article 3.5 allows Parties that are considered economies in transition (EITs) to use a base year other than the uniform 1990 established in the Protocol for measuring the allotted reduction amounts. This mechanism is contingent upon COP approval of a specified base year or average base year. However, when executed, this measure will allow EITs to use the special base as the starting point for measuring progress towards long-term Protocol obligations. In addition, any EIT that joins the Protocol in the future that has not already submitted its national communication under the Convention may also submit a baseline other than 1990, with the approval of the COP/MOP.

Currently, Bulgaria is to use 1989 as a base year, Hungary to use an average from 1985 to 1987, Poland to use 1988, and Romania 1989. This deviation from 1990 may therefore be deleterious to the overall effectiveness of the Protocol as these variations of base years decrease the obligations of these countries, and may result in an increase of the amount of ‘hot air’ that these countries may trade with other Annex 1 Parties in the future. This Article also sets an interesting precedent for any future ‘voluntary’ commitments pledged by developing countries at a later stage in the development of the Protocol. Further, Article 3.8 allows any Annex I Party to choose a 1995 base year for the purpose of measuring reductions of emissions of the three long-lived ‘trace’ gases included in Annex A. This is an issue of some concern because unlike Article 3.5, which relegates the authority of approval of base year changes to the COP/MOP, Article 3.8 changes can be made without approval from higher authority.

What are the pros and cons of the flexibility mechanisms?
The most innovative and untested aspects of the Kyoto Protocol can be grouped together as the four ‘flexibility mechanisms.’ These include Article 4, bubble; Article 17, trading; Article 6, joint implementation (JI); and Article 12, the clean development mechanism (CDM). Although they all have important, distinguishing features, each is based on the principle that the Protocol will operate most efficiently if Parties and/or private entities are allowed to invest in emissions reduction opportunities where they are least expensive to achieve. In effect this will allow Annex I Parties, and in some cases private entities, to purchase or invest in the creation of ‘emissions reduction units’ which can then be used to offset their obligations under the Protocol. Table 1 (page 74) sets out the core issues that have arisen or are likely to arise and points out where design aspects converge and diverge.
After a brief explanation of each of these provisions, selected crosscutting issues that are raised by each mechanism will be reviewed.

**Article 4: Bubbling**

Article 4 allows any two or more Parties to enter into an agreement, prior to the start of the first compliance period, to share responsibility for achieving their combined emissions. The text was introduced by the European Union to provide a clearer legal basis for the bubble under which its 15 member states are to combine efforts and commitments through the rules and institutions of the European Community, a Regional Economic Integration Organization (REIO).

AOSIS and others were sharply critical of earlier versions of this text, primarily with regard to its potential application to Annex I Parties outside the European Community.
Unlike other flexibility mechanisms, there is no opportunity under Article 4 for international oversight of the amount of a Party’s obligations that could be transferred through a bubble agreement. Nor is there an opportunity for market disciplines to set the terms of such transfers.

The main concern of the Alliance is that a Party with a fairly large reduction obligation could team up with a Party that has leeway to increase its emissions. For example, Russia might determine that it will overachieve its commitment to stabilize its emissions at 100% of 1990 levels by 4%. Using global warming potentials (GWPs), this ‘over-achievement’ can be translated into tonnes of carbon equivalent. These carbon units could then be determined to represent a portion, say 2%, of United States 1990 emissions. Under an Article 4 bubble, Russia would agree to reduce its ‘assigned amount’ from 100% to 96% of its 1990 levels, and allow the United States to increase its assigned amount from 93% to 95% of its 1990 levels. The United States and Russia would have to notify the secretariat of the new distribution of QELRCS that resulted from their agreement, but there would be no opportunity for other Parties to challenge the terms of the agreement. These new, modified QELRCS will replace the amount assigned to the Parties in Annex B as their legally binding commitment.

Although Article 4 was clearly designed to accommodate the European Union, any two or more Parties could declare a ‘bubble’ prior to the commencement of the first commitment period. As such, countries like the United States and/or Canada could form an agreement, say with Russia, in order to discharge some of their obligations. This could result in a significant and potentially unchecked increase in the amount of North American emissions, which could not be challenged by any other Party.

There are some who downplay the risk associated with a bubble between the United States and Russia. There has even been some speculation that without U.S. participation countries that might otherwise want to establish bubble arrangements with Russia would consider it too risky, for economic and other considerations, to tie their successful implementation of the Protocol to a currently unstable economy. The risk factor is further emphasised by the requirement that the bubble be valid for the full five years of the commitment period. Unlike the trading regime anticipated for Article 17, the exchange of obligations under Article 4 would remain static during the commitment period, and could not be exchanged in response to fluctuations in the market value of emissions reduction units. The more restrictive aspect of Article 4 might make it less attractive to the United States. However, the liability provisions included in Article 4 place the legal risks associated with failure to meet a bubble commitment on the transferor or seller of emissions reduction units, in this case Russia.

**Article 17: Emissions trading**

Articles 3.10 and 3.11 authorise Annex I Parties to ‘trade emissions’ by acquiring emissions reduction units and transferring any part of an assigned amount, according to the provisions in Article 17. The relevant principles, modalities, rules, and guidelines, particularly for verification, reporting and accountability are to be defined by the COP. Conceptions of what these modalities should look like, to the extent that they have formed any detailed positions at all, are likely to vary widely.

At the moment, most of the available conceptual work on emissions trading has been produced by academics and intergovernmental organisations. The Organisa-
tion for Economic Co-operation and Development (oecd) and United Nations Conference on Trade and Development (unctad) have been particularly engaged. Perhaps the clearest distinguishing factor between the approach of oecd and that of unctad is the extent to which they would involve private parties in trading. oecd literature has thus far examined a system of state to state trades. This would essentially be a more dynamic form of the European bubble whereby sovereign States might regularly re-negotiate the exchange of their assigned amounts. Although potentially complex, such arrangements could rely upon fairly traditional forms of international instruments and mechanisms. Other approaches, including some of the work commissioned by unctad, call for the establishment of fiscal instruments that could be bought and sold in an open market by both sovereign States and private actors. This method would likely draw upon methods from the international financial markets, including stock markets and commodity exchanges. In fact, most of the various trading scenarios being discussed are modeled on stock market rules. However, each national stock market uses different security criteria, which may make it difficult to harmonise approaches to issues such as compliance with emissions trading rules. Whichever approach gains favour, it is possible that one approach may evolve to include the other.

For those seeking to reduce the regulatory uncertainties associated with a system of emissions trading, it is useful that Article 17 stresses the need for rules on verification, reporting, and accountability. The negotiating process may be further helped by the fact that the United States, the most adamant proponent of emissions trading, has voiced the need for stringent compliance mechanisms. This is to ensure Parties trading in emissions permits that the emissions obligations on which the permits are based will be backed by legal consequences. However, while these principles are advocated strongly, there is an underlying concern that some Parties have more experience than others with exploiting loopholes.

Developing countries will most likely not be engaged in emissions trading until and unless they undertake commitments. A main focus for them will be the extent to which the popularity of this mechanism could reduce opportunities offered to them, especially under Article 12 (cdm). The text of Article 17 states clearly that emissions trading must be supplemental to domestic actions and there are similar clauses in Articles 6 and 12. As such, the cop/mop may choose to limit the amount an Annex I Party may use to offset its obligations through emissions trading.

**Article 6: Joint Implementation**

Article 6 and Article 12 are the two ‘project-based’ flexibility mechanisms defined in the Protocol. Along with Article 3.11, Article 6 allows Annex I countries to offset emissions reductions units resulting from projects in other Annex I countries. In the short term, most Article 6 investments are expected to be funded by the wealthier Annex II countries or investors, and to take place in Annex I countries with eits, where opportunities for energy-related investments will probably be less expensive. Unlike the other flexibility mechanisms, under Article 6 Parties are not required to delineate rules beyond those outlined in the Article. The provision states only that the cop/mop may ‘elaborate’ further guidelines, including those for verification.

Developing countries, including members of aosis, may come to view Article 6 as both a competitor and a forerunner for the conceptually similar project-based
activities of the clean development mechanism (CDM). The clearest distinction
between Article 6 and Article 12 is in their institutional characteristics. Article 6
seems to be intended to operate primarily on a bilateral basis. Although Parties and
institutions of the Protocol may intervene to enforce aspects of this bilateral bar-
gain, including with regard to compliance conditionality, Article 6 does not
require an overall administrative structure such as the 'executive board’ established
to supervise Article 12 activities.

The less interventionist approach outlined in Article 6 may reflect negotiators’
perceptions that the scientific and regulatory risks associated with emissions
reduction investments in Annex I countries are inherently lower than those in
developing countries. All Annex I countries, including Article 6 hosts, will be
required to report their emissions annually, and to demonstrate progress in meet-
ing their commitments under Articles 2 and 3. This suggests that climate change-
related projects initiated under Article 6 will take place within a regulatory frame-
work that might be absent from Article 12 projects.

In addition to the more laissez-faire approach of Article 6, its projects will not
be subject to the mandatory administrative and adaptation surcharges imposed by
Article 12. No reference is made in Article 6, as it is in Article 12, to independent
auditing or certification processes. This may make Article 6 investments more
attractive to Annex I countries than Article 12 projects. This is an important issue
for developing countries, and many other developing country advocates have an interest in working to
ensure that the lower transaction costs associated with Article 6 do not draw atten-
tion and investment away from Article 12 activities. The possibility of adding an
adaptation surcharge to Articles 6 and 17 activities has therefore been strongly
advocated by AOSIS.

Article 12: Clean Development Mechanism

The concept of a ‘clean development fund’ was introduced late in the Kyoto Pro-
tocol negotiations by the delegation from Brazil. It was originally intended to serve
the dual purpose of providing an incentive for Annex I Party compliance and pro-
viding a source of revenue for developing country implementation of the Proto-
col by assessing financial penalties against Annex I Parties that exceeded their
assigned emissions amounts.

The Clean Development Mechanism (CDM) was approved in its current form
because its proponents downplayed its role in enforcing Protocol compliance.
Instead, the CDM borrows from pilot arrangements for ‘activities implemented
jointly’ such as Costa Rica’s national ‘certified tradeable offset’ programme and the
U.S. initiative on joint implementation. Because it evolved from a developing
country proposal and incorporates a number of design principles proposed by
Southern delegations, the CDM is expected to enjoy greater support than previous
incarnations of ‘joint implementation’ did.

As mentioned earlier, the presence of an ‘executive board’ is the main feature
that distinguishes Article 12 ‘project activities’ from Article 6 ‘projects.’ A number
of developing countries supported the inclusion of a mechanism for multilateral
supervision not because developing country investments are inherently more
risky, but out of a perceived need to develop a transparent and consistent process
for the negotiation of Article 12 projects. Indeed, several delegations suggested that
the regulatory and scientific uncertainties associated with Article 12 projects were more likely to be exploited by Annex I countries seeking the highest financial return on their investments rather than by developing countries trying to sell projects with less than satisfactory features. The intervention of an executive board, as well as independent auditing and certification processes, were installed to reduce potential risks.

Despite broad-based support for Article 12, the agreement in Kyoto masks significant remaining political and ideological differences between countries as to how the CDM would best function. There are many inherently complex questions to be answered. There is also tension between those that wish to see the CDM up and running quickly, and with the lowest transaction costs possible, and those that remain cautious and are willing to increase costs in exchange for greater accountability. Parties at both ends of this spectrum place the CDM at risk, either by undermining its credibility or by crushing it with an over-burdensome bureaucracy.

It was expected that the implications of pre-commitment period banking would be analysed at COP-4. However, neither COP-4 nor COP-5 saw any closure on the matter. At this point, Article 12.10 authorises Annex I Parties to offset Article 3 commitments using certified emissions reductions 'obtained' beginning in 2000. While the final decisions on the CDM may only be made by the COP/MOP, there will be considerable pressure from both potential hosts and potential investors to establish an 'interim CDM' that could pre-authorise projects and pre-certify emissions reductions.

AOSIS delegations played a significant role in designing and supporting the inclusion of the CDM. It is clear that some delegations view the adaptation surcharge provision in Article 12.8 as the price AOSIS demanded for a more enthusiastic encouragement of joint implementation with developing countries. However, others will expect AOSIS to continue to maintain a sceptical approach to joint implementation and to demand the highest level of transparency and accountability with regard to emissions reductions units generated in developing countries to offset Annex I country commitments.

What are the key issues to be considered in order to optimise the flexibility mechanisms?

This section touches briefly on a number of significant design issues that crosscut each of the flexibility mechanisms discussed above. Each is discussed within the context of how it might complement or compete with the other. This discussion is intended to provide a basis for harmonising the transparency and accountability aspects of each mechanism at the highest possible level.

Limitation on use: preserving equitable allocations

The bargain struck in Kyoto, however imperfect, represents an allocation of obligations based, to some extent, on an appropriate allocation of burdens among Annex I countries and between Annex I and developing countries. Each of the Protocol’s flexibility mechanisms provides an opportunity to redistribute these burdens through the principle of cost-effectiveness. In order to maintain a sense of equity and, more specifically, ensure that Annex I countries take action domestically, Articles 6 and 17 require that joint implementation and emissions trading are supplemental to domestic action. Article 12 states that the CDM can 'contribute'
to compliance only as a part of Article 3 commitments, as determined by the COP/MOP. Each of these qualifiers may provide an opportunity to limit the use of flexibility mechanisms to preserve aspects of the allocations identified in Annex B.

Coverage of sinks
Articles 4 and 17 contain no reference to ‘removals by sinks.’ However, they are likely to be subject to the same restrictions as any other Article 3 effort. The absence of any mention of sinks in Article 12 provides a solid basis for ensuring that the CDM focuses exclusively on high quality and reliable emissions mitigation projects unless and until Parties agree to sufficiently robust criteria and methodologies for the inclusion of land-use change or forestry projects.

Environmental and financial additionality
Additionality requires project proponents to establish that the investment will yield genuine net reductions in emissions that are additional to what would otherwise have occurred. These criteria are relevant primarily to the project-based transfers of Articles 6 and 12. Additionality can be broken down into the closely related concepts of environmental and financial additionality.

Environmental additionality requires that project proponents demonstrate that the investment will result in genuine net emissions reductions that would not have occurred without the investment. In the context of an Article 6 project, environmental additionality is easily established, as the Annex I host country is operating under its own emissions cap. Thus, any investment that leads to over-achievement of an Annex B allowance should be available for certification and transfer.

Environmental additionality is far more difficult to establish in projects of non-Annex I countries operating under Article 12. Because developing countries are not subject to emissions reduction obligations there is no reliable pre-determined baseline against which progress may be measured. It is therefore impossible to know whether the emissions reduction unit produced by the investment would not have otherwise been achieved, or that it has not been ‘ Cancelled out’ by emissions growth elsewhere in the country.

Financial additionality requires an assessment of whether the investment would have taken place in the absence of the regulatory incentive provided by the Convention or the Protocol. Financial additionality is important to regulators because it can provide important evidence for environmental additionality; that is, the additional financial resources that are flowing toward climate-friendly projects may provide important evidence that the emissions reductions resulting from an investment might not otherwise have occurred.

Proof of financial additionality is important to developing countries in particular, because it helps reassure them that financial resources such as Global Environmental Facility (GEF) funding, ‘regular’ flows of Official Development Assistance (ODA), or Foreign Direct Investment are not being redirected to CDM-related investments from investments that would otherwise have received a higher national priority. Explicit references to financial additionality in draft documents during the discussions in the Ad Hoc Group on the Berlin Mandate (AGBM), and in the activities implemented jointly (AIJ) guidelines were not incorporated into Article 12. In fact, it is not clear that the CDM will involve the transfer of funds in any traditional sense of ODA.
This lack of clarity raises the possibility of multinational corporations 'laundering' their emissions through techniques not dissimilar to the transfer pricing used to avoid taxes. A parent corporation based in an Annex I country could pay for its energy efficiency investment in a subsidiary in one non-Annex I country by simultaneously allowing an emissions increase in a subsidiary based in another non-Annex I country. The reductions generated in the first non-Annex I country might then be used to offset the parent corporation's emissions in the home country, leading to an overall global increase. This type of example indicates clearly that the ambiguities of private sector responsibility and liability that are raised by their participation in flexibility mechanisms will have to be considered and addressed in the post-Kyoto process.

Certification provisions
Each of the Protocol's flexibility mechanisms requires some form of 'government approval.' This may happen at the point of transfer or at the point that the portion of the assigned amount, or emissions reduction unit, is added to or deducted from the obligation of the Annex I Party, as per Article 3. However, only Article 12 provides for a process of auditing and certification that would require an objective assessment of whether the transfer will result in net emissions reductions. The additional guidelines and rules that will be developed for Article 6 and 17 should incorporate the precedent set by Article 12.

Compliance conditionality
A further inconsistency in the Protocol's approach to flexibility is that the compliance conditionality measures outlined for Article 6 transfers are fairly strict, while the others are much more lenient. Under Article 6.1(c), an Annex I Party is prohibited from acquiring emissions reduction units unless it is in compliance with its inventory and reporting obligations under Articles 5 and 7. Furthermore, should a question arise through the Protocol's 'in-depth review' procedures with regard to a Party's compliance with Article 6.4, it may not apply its emissions reduction units until the question is resolved. As such, the role that compliance conditionality plays in enforcement of the Protocol could serve as a strong argument for the inclusion of such a measure within Articles 12 and 17.

Liability provisions: Who bears the risk?
As an instrument of public international law, negotiated, signed, and ratified by states, the Kyoto Protocol will represent an exchange of sovereign obligations and be subject to classical international rules of State responsibility. However, the flexibility mechanisms outlined above were formulated with the anticipation that the static obligations reflected in the allocation of commitments in Annex B will be made fluid. This will allow a potentially infinite series of transactions through which emissions reduction units representing the Annex B commitments are bought, sold, and reallocated.

Article 4.5 contains the only clear liability provision related to the Protocol's flexibility mechanisms. It operates on the principle that the seller or the transferor of the emissions credit bears the full risk of the transaction. For example, in the theoretical scenario discussed earlier, if Russia failed to meet its newly calculated amount, it would be in violation of the Protocol. However, under Article 4.5, the United States would still be allowed to emit the full 95% it bargained for in the bubbling agreement, rather than the 93% agreed to in Kyoto.
There is considerable logic to the 'seller beware' principle which, through liability rules, holds the 'host' Party responsible, as the host is in the best position to ensure that the bargained-for emissions reductions actually take place. The same logic may well justify extending these principles to emissions trading under Article 17. However, transitioning and developing economies wishing to participate in Article 6 or CDM projects should be aware that Article 4.5 could provide a precedent for any liability rules that emerge under that mechanism. Accordingly, host countries could be liable should the projects they are hosting fail to generate the promised emissions reductions. In these transactions, a far wider range of actors may be responsible for the success or failure of the project, including those involved in its design, funding, and certification. This complicates the legal relationships and the chain of liability associated with an 'emissions reduction unit' considerably. Disputes could arise between and among states, private entities, and intergovernmental organisations, each of which may share interest in and responsibility for the success or failure of a project.

One way of reducing the regulatory risk associated with project-based flexibility mechanisms is to allow emissions reductions units to be certified and transferred only after the activity has been completed. For example, should a project consist of an investment in the retooling of a power plant with a 20-year life span, only the emissions reduced during the specified commitment period could be offset against that period’s assigned amount. There is some basis for this 'ex post' approach in the texts of Articles 6 and 12, which refer to emissions reductions ‘resulting from’ project activities. This language suggests that they must have already occurred to be credited. There will, however, be pressure from investors to offset the full projected value of their investment as soon as possible.

**Conclusion**

While much was achieved in Kyoto, there is no room for complacency. Climate change is happening. The devastating effects that it could have, from the forests of Southeast Asia to the floodplains of Africa and China, to the blistering heat of recent American summers, must continue to drive the development of the Convention and its Protocol.

The existence of the Protocol is a demonstration of international recognition of the need for action. However, there is very strong evidence to suggest that the commitments being made are not strong enough. The science is overwhelming and the consequences of inaction are clear. The IPCC has repeatedly described mitigation actions that are not only technologically feasible, but economically beneficial. For those of us preparing to watch our crops, our land, our ecology, and our cultures disappear, it is impossible to contemplate failure to take action. The future of small island States represents the future of the planet. Islands are the planet’s coral reefs, offering early warning signals, which only the negligent would ignore.

The level of effort required to resolve the uncertainties set out in this article must be placed in the context of the very real possibility that the Protocol may not succeed. The Protocol could fail if it does not receive the requisite combinations of numbers and emissions levels of Parties required to bring it into force. If the United States, the country with the highest level of emissions, cannot build the necessary political support in Congress to become a Party to the Protocol, failure is also imminent.
Scientific evidence points to the use of fossil fuels by industrialised nations as the primary cause of global warming. However, given the growth rate in the developing world, unless effective measures are deployed immediately, developing country emissions will exceed those of industrialised countries within 25 years. Because of this, it is imperative that steps be taken not only to strengthen and tighten the language of the Protocol, but to further enable the participation of non-Annex I countries. The principle employed must truly be that of common but differentiated responsibilities.

At this point, especially given the comparatively low targets set for developed countries, it seems that Annex I countries must be fairly circumspect in establishing the right environment for the involvement of developing countries in terms of Annex I emissions efforts and in the transfer of financial resources and the right technologies. The participation of developing countries will be, to a large degree, dependent on the development and transfer of appropriate, affordable, and environmentally sound technologies.

Many developing countries, including members of AOSIS, are already devoting considerable time, effort, and funding to this work. Political, financial, and technical support from the international community will be vital if this work is to progress further. It is also important to acknowledge that many major developing countries are undertaking significant emissions-saving and emissions-reducing activities. Examples include the ‘Gazol’ program in Brazil, biomass research and practical application in India, wind energy in China, and solar water heaters in Barbados. AOSIS put forth a proposal for the assumption of voluntary commitments by developing countries but it did not survive Kyoto. There is need for considerable political groundwork to convince many developing countries to make Kyoto-oriented commitments. Recognising that many developing countries are already taking steps, others should be convinced to do likewise. Early action by Annex I countries will help developing countries to access advancements, and to avoid missteps or pitfalls, through a process of technological ‘leap-frogging.’

Ahead lies an interim period of legal and institutional limbo. What is done during this time to maintain momentum and to ensure integrity of the climate regime will be a genuine challenge. It is beyond the reach of current norms and institutions of international law. At the core of this very political issue is the personal issue of obligation. As individuals, and even as governments, many of us feel an obligation to secure a better future for our children. This human need must undergo the very difficult process of being translated into international policy.

References


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