Negotiating an Effective Multilateral Climate Change Agreement Using the Contingent Agreement Approach

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INTRODUCTION

For nearly two decades, the issue of climate change has been debated in social, scientific, international, and political arenas. Despite the evidence provided by the Intergovernmental Panel on Climate Change (IPCC) and independent research, there are some who still question the existence of, and humankind's responsibility for, this global threat. However, a majority of the world's scientists and governments agree that climate change is a genuine danger and action must be taken to mitigate its effects.

According to the IPCC, human activity, most notably the burning of fossil fuels for energy, has increased the global concentrations of greenhouse gases (GHGs) by 30% since 1850 (IPCC 2001). GHGs trap the sun's heat in the atmosphere and keep the Earth warm. These increased GHG concentrations have caused the average global temperature to rise at an alarming rate. This warming trend is expected to continue, and extreme changes in climate and sea level are anticipated. The environmental, economic, and social impacts of climate change are hard to quantify but are anticipated to be severe.

Though multilateral efforts have been made to mitigate climate change, these efforts have been weak at best and have yet to be implemented. These efforts have generally followed the traditional "convention-protocol" approach (Susskind 1994) to international environmental negotiation. This two-step approach involves first an acknowledgement by the international community that there is a problem and that something must be done to address it. This is the convention step, which usually includes general initiatives and vague timetables along with a commitment to further study and provisions to strengthen commitments in the future. Second is the protocol step; this often involves actual targets and timetables and concrete national commitments to address the problem at hand.

Several problems have been identified with the convention-protocol approach. First, because of the overwhelming diversity of opinions (often more than 100 countries along with hundreds of non-state actors, all with their own agendas) on what actions should be taken to mitigate a problem, it is nearly impossible for parties to formulate an effective agreement. This results in a "lowest-common-denominator" treaty that does little to effectively address the issue at hand. Second, most environmental problems are charged with a considerable amount of scientific, economic, and political uncertainty. Some parties may argue that the future outlook is too uncertain to warrant any present action. Others may be cautious simply because it is hard to know what the impacts of any action might be. Finally, the convention-protocol approach often takes several years or decades to produce an agreement. By the time an agreement enters into force, the nature and severity of the problem may change and render the agreement useless (Susskind 1994).

A creative answer to the negative impacts of uncertainty and the lengthy and often ineffective convention-protocol approach to negotiation is the use of contingent agreements (Susskind 1994). The concept is simple: negotiate multiple agreements at the same time while also assuming different levels of future knowledge and/or different outcomes to future events. These multiple agreements consist of a base agreement accompanied by several contingent agreements. When the treaty enters into force, the base agreement takes effect. This agreement remains in effect until a predetermined threshold is crossed at which point one of the contingent agreements enters into force. Inevitably, some of the pre-negotiated contingent agreements may never come into effect if their assigned thresholds are not crossed. Because all contingent agreements are negotiated simultaneously, there need be only one convention to construct such an agreement, saving considerable time. Furthermore, uncertainty can be addressed on several levels by contingent agreements, thus reducing it as an impediment to an effective agreement.

The convention-protocol approach has failed to adequately address the problem of climate change. In light of this, this paper examines the viability of the contingent agreement approach as a method to negotiate an effective climate change agreement. The analysis will first provide a brief overview of the Kyoto Protocol and identify specific problems with this agreement. This will be followed by a cogent discussion of the contingent agreement approach, providing examples and identifying strengths and weaknesses. A full contingent agreement on climate change will be proposed with emphasis on addressing the problems associated with the Kyoto Protocol.

THE KYOTO PROTOCOL AND ITS FLAWS

As with most global environmental threats, the traditional convention-protocol approach was taken to address the problem of climate change, with one exception. Prior to the convention step, the World Meteorological Organization (WMO)and the United Nations Environmental Program (UNEP) took initial action by creating the IPCC with the goal of providing a common basis of scientific research to assist in future climate change negotiations. During the 1992 Rio Earth Summit, 154 countries signed the Framework Convention on Climate Change. This agreement called for reductions of GHGs to "earlier levels" and several other vague and unenforceable commitments. After several years of further negotiations, the Kyoto Protocol was adopted in 1997.

The Kyoto Protocol calls for Annex 1 (industrialized) countries to make an overall cut of five percent of GHG emissions from 1990 levels in by 2012. The protocol defines six major compounds as anthropogenic GHGs: sulfur hexafluoride (SF_6), carbon dioxide (CO_2), methane (CH_4), Nitrous Oxide (N_2O), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). CO_2 by far is the most important GHG accounting for 80 percent of the aggregate warming potential (Nordhaus 1994). In order to keep abatement costs low, the protocol provides a system for trading GHG emission rights between countries and a "clean development mechanism" (CDM) allowing Annex 1 countries to make clean energy investments in non-Annex 1 (developing) countries to offset their own emissions. The rules for both of these provisions are undecided and contain several loopholes (Porter et al. 2000). The least of these loopholes are so-called "paper trades" that allow non-Annex 1 countries to do little to reduce emissions and then sell their emissions rights to Annex 1 countries,

effectively allowing Annex 1 countries to buy their way out of reductions (Barrett 2003). The Kyoto Protocol is set to enter into force once 55 countries, whose emissions represent 55 percent of Annex 1 countries' 1990 CO_2 emissions, ratify it. The protocol has nearly reached this point; however, it has yet to enter into force due to President Vladimir Putin's hold-up of Russia's ratification.

As is often the case with the convention-protocol approach, the Kyoto Protocol represents a lowest-common-denominator-environmental agreement. Because of the innumerable dissenting opinions from international and domestic players in the negotiations process, the resulting actions require the lowest level of substantive commitment. Indeed, many feel that the reductions mandated by the protocol fall far short of what is needed (Porter et al. 2000). The IPCC reports that in order to stabilize global CO_2 concentrations at 450 ppm (70 ppm more than current concentrations), total global GHG emissions must be reduced below 1990 levels within the next two decades (2001). This scenario will only stabilize GHG atmospheric concentrations; it would do little to mitigate expected climate change effects and rising sea levels in this century.

One of the main impediments to achieving an effective climate change agreement is uncertainty. The most serious types of uncertainty in this case are scientific, economic, and political. Though the IPCC has conducted exhaustive research on the threat of climate change, it is impossible to know exactly what Earth's climate will be like in 50 or 100 years. The IPCC has made great strides in reducing uncertainty and much of its modeling data has proven to be accurate (IPCC 2001); however, there is also uncertainty as to what actions to take and the severity of those actions in the mitigation of climate change. It is more difficult to foresee what may happen to national economies or the global economy when mitigation programs are implemented.

Fossil fuel combustion is the basis for all industrialized economies. Any reductions in GHG emissions will have to mean reductions in fossil fuel use and changes in behavior. It is difficult to know what road to take to reduce GHG emissions without reducing economic output and overall well-being. Climate change is a long-term problem. Politicians have a hard time taking action on issues that will not result in immediate benefits to their constituents. Any reductions in GHG emissions will not provide measurable benefits for at least 100 years (IPCC 2001). Thus, political uncertainty is especially fervent due to the ties between economic and scientific uncertainty. Politicians will have a difficult time explaining to their constituents that they must shift their economy away from fossil fuels (substantially changing their way of life) so that their great-grandchildren may avoid hotter summers, droughts, and higher seas.

Another problem that is evident in climate change negotiations is the length of time the convention-protocol approach takes from identifying the problem to producing an agreement. Nearly 15 years have passed since climate change was identified as a possible global threat, and there is still no multilateral agreement in force to address it. Furthermore, GHG emissions have continued to increase over this period making the problem worse. If Kyoto does enter into force, it will cost significantly more for countries to comply given the short amount of time left to reach the 2012 target (Barrett 2003). If Russia fails to ratify the Kyoto Protocol, the international community will have no choice but to start from scratch on a new agreement. This may take another 15 years with even higher concentrations of GHGs in the atmosphere and no guarantee of effective action.

Other problems inherent in the Kyoto Protocol include the absence of emissions reduction targets for non-Annex 1 countries. This is because many such countries refused to participate otherwise. However, GHG emissions from these countries are expected to account for two-thirds of global emissions by 2025 (Porter et al. 2001). This lack of commitment by non-Annex 1 countries led to the near impossibility of the U.S. ratification of Kyoto. The U.S. Senate refused to ratify any agreement that did not hold all countries to the same standard. In 2001, the U.S. (the largest contributor of GHGs accounting for 25 percent of total emissions), led by President George W. Bush, effectively withdrew from the agreement, citing excessive economic costs. This action severely diminished any effect the protocol could have on mitigating climate change.

Two final key problems with the Kyoto Protocol are the interrelated issues of compliance and enforcement. The protocol calls for national monitoring and reporting along with verification procedures, but this is where binding commitments end. Article 18 calls for parties to the protocol to determine compliance measures that include "an indicative list of consequences" at their first meeting. Unfortunately, any compliance measures must be approved by amendment, which entails at least a three-fourths majority vote and individual country ratification. Furthermore, if an amendment passes, which is unlikely, dissenting parties are not required to comply. Due to the difficulty of passing any compliance amendment, a non-binding compliance rule was agreed upon during the Bonn conference of the parties. It requires any parties in noncompliance in 2012 to reduce their emissions by larger targets during the next target period. Because of the non-binding nature of this rule and its reliance on self-punishment, its effectiveness is questionable (Barrett 2003).

The above overview of the results of the convention-protocol approach to addressing the issue of climate change, demonstrate several weaknesses in this traditional method. Before proposing a contingent agreement approach to this issue, it is first necessary to illustrate what this method is and provide an example of how it works.

THE CONTINGENT AGREEMENT APPROACH

Contingent agreements have rarely been employed except in the business world where they are commonly incorporated into the compensation portion of contracts (Israelsson 2003). Actors, athletic stars, corporate executives, and construction contractors often have contracts in which a portion of their pay is contingent on job performance. If a CEO increases the value of his/her company, they then receive extra compensation. If a contractor completes a project on time or under budget, they then receive a bonus. This "if-then" format is the key to the contingent agreement approach. Essentially, each negotiating party bets on future events related to the agreement. This allows all parties to sidestep uncertainty about the future, thereby providing a gain to both sides (Israelsson 2003).

This ability to circumvent arguments of uncertainty makes the contingent agreement approach an attractive method for negotiating environmental agreements. Moreover, the nature of this approach requires contingencies to be negotiated all at once, saving a considerable amount of time. Indeed, the main argument against the use of this approach is that it requires more extensive initial negotiation (Susskind 1994). However, despite any lengthy initial negotiations, the process would be more expedient than the status quo. Thus, the contingent agreement approach is a sound alternative to the convention-protocol tradition.

There is a surprising lack of literature on the subject of contingent agreements. This has been attributed primarily to a lack of knowledge about this approach and to a lack of precedents in the field of international negotiation (Israelsson 2003). However, the potential complexity of a contingent agreement has also been cited as a deterrent to its use (Kolstad 2002). The first two issues can only be corrected through education and further exploration of the contingent agreement approach, of which this study is a part. The last issue, complexity, must be deliberately addressed at the time of negotiations, perhaps by setting rules that limit the total number of contingencies.

Few published examples exist of possible contingent agreements. In proposing the contingent agreement approach as a convention-protocol alternative, Susskind provides the following example:

> ...in future negotiations over the protection of forests, multiple protocols could be negotiated and signed at the same time as a framework convention. The first protocol, calling for substantial restrictions on the cutting of virgin or old-growth forests would come into effect only if a certain threshold of worldwide forest losses was passed. The second protocol, with far fewer restrictions, would remain in effect unless or until the first protocol was triggered (Susskind 1994: 81).

Here we see that the second protocol is similar to what might be the base agreement of a traditional convention. Few restrictions are imposed; this satisfies parties that claim there is no problem or those who refuse to address the problem. However, parties that do feel there is a threat to world forest resources are also satisfied because safeguards are in place to prevent widespread degradation. The example also provides an incentive to logging interests to better manage virgin and old-growth forests for if they fail to do so, substantial restrictions will be imposed on their operations.

The simplicity of the forest example above is intentional. Indeed, Susskind asserts that contingent agreements "need not be overly complicated, and the number of contingent options or protocols need not be large" (1994: 81). In fact, keeping the number of contingencies low is beneficial to the negotiation process. The fewer options there are, the less complicated the process; nevertheless, there will still be far more options available than in the traditional convention-protocol approach.

Israelsson provides four categories in which the environmental aspects of agreements can be modified by various contingent protocols (2003). These categories help to break down a contingent agreement into manageable parts. These categories are: scope, mitigation, monitoring/enforcement, and economic. Scope refers to the process or actors included under an agreement. Mitigation involves the actual regulatory measures imposed to deal with the environmental threat. Monitoring and enforcement are self-explanatory. Finally, economic considerations refer to financial assistance for compliance, as well as pollution permit trading schemes and transfers of technology. These categories will be discussed in depth later in this paper.

Before exploring the possibilities of a contingent climate change agreement, it is essential to identify what issues this approach does not address. The importance of monitoring the environmental threat that is subject to an agreement is compounded by a contingent agreement. As is the case in the example above, optional protocols are only

brought into force when a certain threshold of degradation is crossed. Monitoring data is a key component of any contingent agreement, and insufficient or unreliable data make the process more complicated. Therefore any contingent agreement must provide a dedicated, politically palatable, and reliable source of broad monitoring data with regard to all parties involved.

Another issue that contingent agreements cannot address is political economy. Though this approach does bypass the need for consensus in the face of uncertainty, certain actors will still work to weaken an agreement. The lack of strict enforcement provisions in existing environmental agreements is a good example of parties succeeding in diminishing a treaty's effectiveness. The monitoring and enforcement provisions of a contingent agreement would be the natural targets of such activities. Another undermining action would be implementation of unrealistic thresholds into the agreement, effectively prohibiting stricter protocols from entering into force. Unfortunately, this approach can do little to diminish these actions. Contingencies can be implemented that call for moderate initial monitoring with options for more extensive data acquisition if initial monitoring is found to be inadequate. The latter issue can only be addressed at the time of negotiations.

Now that problems with the existing climate change agreement have been identified and the contingent agreement approach has been illustrated, the discussion will now investigate and demonstrate what a contingent climate change agreement might look like.

APPLYING THE CONTINGENT AGREEMENT APPROACH TO THE THREAT OF CLIMATE CHANGE

As written above, the contingent agreement approach to negotiation is especially useful when dealing with an issue that has a high degree of uncertainty. Climate change is a threat that is rife with uncertainty. Furthermore, valuable time has been wasted in addressing this threat — the world can ill afford another decade-and-a-half of negotiations, especially if there is no guarantee of an effective agreement at the end of them. A contingent climate change agreement (CCCA) could be negotiated in a fraction of the time the convention-protocol approach has taken to get us where we are now.

A contingent agreement may make it easier to address uncertainty and the need for consensus. Nevertheless, like any other multilateral agreement, the CCCA must take into account scientific and political realities. It is one thing to design an agreement that would be successful in a perfect world. Our world, however, is far from perfect, and, therefore, several issues must be kept in mind in order for any parties to consider or adopt a proposed agreement.

PRELIMINARY CONSIDERATIONS

Any proposed agreement must have provisions that are attractive enough to bring a substantial number of parties to the table. The CCCA would need to address the role that science would play in negotiations and which bodies would be granted power to carry out its provisions. Perhaps most importantly, the long-term nature of the climate change problem must be taken into account as well as ways for parties to plan and manage this threat in the long term. Monitoring conditions must be acceptable to all parties. The differences between the developing nations of the South and the developed nations of the North must also be recognized.

First, a scientific body would have to carry out several provisions of the CCCA. This body would perform many functions. It would determine whether new compounds should be listed in the scope of the CCCA in the future if they become a problem. It would oversee measurements to determine whether or not contingency protocols are triggered as well as calculate what emission reductions are needed. It would also carry out research and monitoring to continuously increase the understanding of the threat and any effects the agreement has on that threat.

Clearly, this body would have significant power over the governance of the treaty. Creating a new entity to administer these functions would be extremely controversial due to the politics of choosing who serves and from which countries members would come. Therefore, I propose to circumvent some of this controversy by expanding the role of the IPCC. To date, the IPCC has only been a source of scientific advice to decision makers. This advice has been consistent and reliable and relatively free of political bias. Some of the most knowledgeable climate change experts are members of the IPCC; therefore, it seems an apt candidate to handle expanded responsibilities.

Second, the long-term threat of climate change is problematic in the sense that goals must be set with regards to the realities of the problem. Several IPCC models show that GHG concentration goals must be established up to hundreds of years into the future. The changing nature of the problem, the volume of current emissions, and the structure of present economies make it impossible to set realistic goals any shorter than this. A recurring problem in negotiations is a tendency to minimize the importance of future conditions, especially when the time frame is hundreds of years. However, establishing long-term goals is not impossible. Several entities conduct long-term management plans. The U.S. government manages the Social Security program with the intent of keeping the fund solvent for decades to come. Pulp and paper companies manage their forest resources with harvests planned anywhere between 15 and 75 years after initial planting. To manage long-term targets to address climate change, it would be easier to establish decade-long targets and thresholds. Every 10 years parties would be required to comply with GHG emission targets. This would allow governments to implement and manage abatement policies while at the same time incrementally fulfilling the overall treaty goals.

Third, monitoring must not violate individual party sovereignty, although accurate data is crucial to the CCCA. Reliable information must be obtained to determine whether or not a party is in compliance with the treaty. National reporting has been the general standard in past agreements, and it is likely to be the only acceptable method for the CCCA. However, the IPCC could simultaneously conduct atmospheric measurements to assure that global GHG emissions equal the aggregate reports of all parties. This would provide an added incentive for parties to produce accurate reports.

Finally, consideration should be given to the rift between the interests of parties from the North and the South. Countries of the South feel that the industrialized countries of the North are primarily to blame for climate change. Developing countries of the South also do not want to be constrained in their own development efforts. On the other hand, the North claims that any climate change agreement must hold developing countries to the same standards as industrialized ones. The countries of the North also fear the economic impact of drastic emission reduction requirements. Any provisions of the CCCA must address these conflicting concerns if a significant number of countries are to come to the table.

With these concerns in mind, this paper will now illustrate the CCCA. First, it will discuss the scope of the treaty, followed by an in-depth exploration of the crucial question of contingency metrics, concluding with a discussion of contingencies in the categories of mitigation, monitoring and enforcement, economics and implementation.

SCOPE

The scope of the CCCA would largely resemble that of the Kyoto Protocol. The six major GHGs (CO_2, N_20, PFCs, HFCs, CH_4, SF_6) would be listed as compounds whose atmospheric concentrations must be reduced. The difference would be the addition of a contingency that would allow the inclusion of other compounds (most likely synthetic) to the list if they are developed and used widely enough to have an impact on the climate system in the future. The IPCC would be responsible for identifying and considering possible compounds to be listed as controlled GHGs. Therefore, rules and criteria would need to be negotiated to guide the IPCC in deciding whether or not any new compounds would be added to the CCCA.

These compound criteria would need to address the climate impact of the chemical in relation to CO_2, how widely it is used, its persistence in the atmosphere and whether or not its presence is attributable to human activity. This last point is important because there are compounds in the atmosphere at significant concentrations that are GHGs that are not easily attributed to human activity. The best example is water vapor. Once a compound is listed, parties to the agreement would be responsible for controlling emissions of that compound just as they would any other listed GHG.

METRICS

The establishment of a reliable, politically acceptable, and scientifically appropriate threshold metric is the linchpin of the CCCA. The threshold metric will determine what contingency protocols are triggered and when. In the case of climate change, there are several measurements available. Some of the possibilities include global atmospheric GHG concentrations, national GHG emissions, sea level increases, and the reduction of polar ice caps. However, all of these options are really surrogate indicators for increases in global mean temperature (Israelsson, 2003), the primary threat that the CCCA is intended to address. Therefore, direct annual measurements of global temperature would be an ideal metric. A better, more scientifically appropriate measurement may exist, but it also may be too abstract for most parties to understand. To keep the CCCA at a certain politically comprehensible level, the global temperature measurement would be best.

To compensate for annual fluctuations in global mean temperature, a 10-year mean would be used. This decadal global mean temperature (DGMT) would better reflect any future warming trends than just one year's data. Thresholds would be established by negotiating various rates of increases in DGMT. DGMT would be tracked yearly, however, a threshold could only be crossed on a year ending in nine. This would allow any stricter contingency protocol to come into affect the following year, immediately after the past decade's emission targets were met. It also would give parties prior warning as to the following year's tougher reduction targets.

A uniform 10-year contingency period gives parties to the treaty a manageable period of time to implement emissions reduction programs that allow them to reach their respective decadal targets. If a contingency were to enter into force in the middle of a decade, stricter targets are imposed in mid-course, which may catch parties off-guard or ill-prepared to meet the more rigorous reduction goals. It is difficult to imagine that parties would accept an agreement that does not allow a predictable and unchanging time frame to meet established targets.

The use of direct global temperature measurements invokes the inevitable question: Who collects the data and how? Considering the changing nature of politics and technology and the extremely long time frame this agreement would cover, it may be best not to be explicit in answering these questions. The CCCA would give the IPCC the responsibility of determining the best methods for data collection and perhaps even the duty of conducting such measurements. It has been reliable in gathering such data in the past. Satellites and national reporting could both be used, and data could be checked and balanced to maintain its integrity. Furthermore, the IPCC would be given the flexibility to change methods if new technology were to provide a way to acquire more accurate data.

CONTINGENCY ACTIONS

Now that the CCCA contingency metric has been established, it is necessary to discuss the actions that might be triggered by such metrics. Before doing so, the emissions reduction framework must be illustrated.

The CCCA emissions reduction framework would contain a long-term GHG atmospheric concentration stabilization goal that would be subject to whatever contingency protocol is in force. To reach this goal, decadal emission allowances would be issued to all parties to the agreement. These allowances would have to be met every decade with target deadlines in years ending in zero. All targets would require reductions from year 2000 emission levels.

The distribution of such allowances would be a key point of contention. Developed countries would want distribution to be based on current emissions as they have been in past negotiations. Developing countries would argue for a global per-capita GHG intensity distribution. The former prospect is not preferred by developing countries because it allows the largest emitters (developed countries) to continue their disproportionate share of resource use. The latter would actually allow developing countries to emit more GHGs initially because most developing countries have very low per-capita emissions in relation to developed countries. However, this distribution would also require industrialized nations to dramatically cut emissions as soon as the treaty enters into force. Therefore it is unlikely that developed countries would participate if allowances were distributed on a per-capita basis.

Any actual allowance distribution scheme would most certainly be decided at the time of negotiations. A few points can be made that would increase the chances of getting most parties to agree. Allowances should be distributed in a way that is attractive to all parties. The best way to do this may be to start with a distribution close to current emission levels (which is attractive to the North) with a transition over time to a per-capita distribution in 50 years (McLaren 2003). This provides guarantees to developing countries that a more equitable distribution is included in the agreement. To prevent some countries

from increasing their population in order to gain more allowances in the future, any per-capita distribution would be based on year 2000 population data. Another possible incentive to get developing countries into the agreement would be to grant such countries a 10-year grace period in which they would not be subject to reduction targets. However, to prevent any rapid growth in developing country emissions under this provision, targets after the grace period expires would be based on year 2000 levels.

Once initial emission allowances have been set, each party would have to keep its GHG emissions within these allowances over each 10-year period. An emissions trading framework would be implemented to allow parties to trade allowances. This would help keep abatement costs low and allow some countries to emit more than their allowances while others would reduce their emissions more than they are required. This framework will be detailed in a later section.

Each decade, new targets would be set. The IPCC would have the responsibility of calculating and assigning national emission reduction targets in accordance with whatever agreement is reached on distribution and which protocol is in force. Each decadal target would reduce global GHG emissions further and further in accordance with the long-term GHG atmospheric concentration goal. If a stricter contingency protocol were triggered, the stabilization goal would be more dramatic and in turn decadal reduction targets would be more extreme. All targets would be set in metric tons of CO_2 with other GHG targets converted to CO_2 equivalents.

Figure 1 illustrates the proposed base agreement and contingency protocol stabilization goals. Given the long-term nature of the climate change problem, the goals in some cases span more than 200 years. As was previously mentioned these goals would be translated into decadal reduction targets to allow parties to better manage them over the long-term. On the left is the threshold for each contingency protocol. To compensate for time, the threshold is calculated as the rate of change in decadal global mean temperature (DGMT) in degrees Celsius with a baseline temperature derived through observations from 1991-2000. The base agreement has an upper threshold that corresponds to the mean rate of change in global temperature observed in the 20th century. From there, the thresholds increase in anticipation of any warming trend that may be more severe than previously experienced.

Figure 1:Base Agreement and Contingency Stabilization Goals

Threshold* (rate of change in DGMT, ºC/decade)	**Protocol**	**Atmospheric CO_2 Concentration Stabilization Goal (in ppm)**
0.0-.060	Base agreement	750 by year 2250
.061-.120	Contingency 1	650 by year 2200
.121-.275	Contingency 2	550 by year 2150 (or 50 years after trigger)
.276-.399	Contingency 3	450 by year 2150 (or 25 years after trigger)
.400 or unforeseen catastrophic event	Contingency 4 (worst-case scenario)	Reconvene parties to negotiate immediate measures to address the event

Corresponding to each higher threshold is a stricter contingency protocol that imposes tougher long-term stabilization goals that in turn translate into harsher decadal emission reduction targets. Therefore, if the problem gets worse (the Earth gets warmer), stricter controls would automatically enter into force requiring deeper cuts in emissions. This is very similar to the initial contingent agreement example presented earlier in this paper. The one exception is Contingency 4. In developing a contingent agreement in the face of future uncertainty, there are some events that cannot be planned for in advance. Therefore the CCCA contains a worst-case scenario clause. If a devastating catastrophe that is a direct result of climate change takes place in the future, such as the halt of the Gulf Stream, or if DGMT increases faster than .5ºC/decade, the CCCA calls for all parties to assemble immediately in order to negotiate actions to address the event. This clause also signifies that the CCCA provisions were not adequate in addressing the threat. If the worst-case scenario contingency is triggered, the CCCA is nullified requiring all parties to negotiate a more effective agreement.

To better illustrate this overall framework, below is an example.

Figure 2: Contingency Framework, Year 2029

Temperature change from 1991-2000 decadal mean	**Contingency triggered**
0.0- .180ºC	None
.181-.360ºC	1
.361-.825ºC	2
.826-1.05ºC	3
1.06ºC or greater	4: Worst-case scenario

Figure 2 shows what the contingency thresholds would look like for the year 2029. The IPCC would establish the GMT for the past decade and compare it to these thresholds. In this hypothetical case, the base agreement would still be in affect if the DGMT up to 2019 had not increased faster than .06ºC/decade. Now let's say that the DGMT for 2019-2029 increased substantially so that the change in temperature was .20ºC greater than the baseline. Contingency 1 would be triggered and would enter into force in 2030. This would result in stricter emissions targets that all parties would have to meet by 2040. These stricter measures would be in line with the new long-term goal of stabilizing global GHG concentrations to the equivalent of 650ppm of CO_2 by the year 2200.

Once a stricter contingency is triggered, it would remain in force indefinitely unless one of two things were to happen. If a higher threshold were crossed and an even stricter protocol were triggered the previous protocol would be overruled. A less strict protocol could be retriggered and less strict measures could be implemented if the DGMT were to stay within a lower threshold than the current in force protocol for two consecutive decades. In the example above, after Protocol 1 had been triggered, if the rate of increase of the

DGMT were to stay below 0.6°C/decade from the baseline for the next two cycles (2039 and 2049) then the base agreement would re-enter into force in 2050. This is a safeguard in case technology or better scientific understanding of the problem proves that climate change is easily reversible.

MONITORING COMPLIANCE AND ENFORCEMENT OF THE CCCA

Now that the key contingencies of the CCCA have been illustrated, it is necessary to discuss the interrelated issues of monitoring and enforcement. As noted above, in light of political realities it is likely that national reporting of GHG emissions would be the only practical method of monitoring treaty compliance. This would be done on a decadal basis similar to other provisions of the CCCA. Parties to the agreement would be required to submit a progress report to the Secretariat of the CCCA on years ending in five. Then in years ending in zero, a comprehensive emissions report would be submitted to the Secretariat. Both of these reports would be subject to specifications designed by the IPCC to ensure the uniformity of data regardless of the country of origin. The Secretariat would then rule if a party is in compliance.

The contingent agreement approach provides a way to strengthen the national reporting provision. The IPCC would be monitoring the global concentrations of GHGs while the CCCA is in force. If serious discrepancies were to arise between direct global measurements and national reporting, all parties would be subject to an emissions audit. If any party were found to be submitting false data, it would be subject to reduce its emissions as if the next strict protocol were triggered. For example, if the base agreement were in force and IPCC GHG atmospheric concentration measurements did not match up with national reports, each party's reports would be audited by the Secretariat. Any parties found to be in violation would immediately have to reduce emissions to targets that correspond with Protocol 1. This provides parties with a substantial incentive to accurately report emissions.

The same enforcement penalties would apply if a party did not meet its decadal emissions targets. Regardless of which protocol is in force at the time, parties in noncompliance with the CCCA would have to adhere to the next-strict protocol. Once again this provides an incentive to reduce emissions to the established targets. In both cases, once a party has complied with the stricter protocol targets, it then would be subject to the less strict targets that all other parties adhere to.

CCCA EMISSIONS TRADING PROGRAM

Failure to meet decadal emissions targets is somewhat unlikely because any party in risk of non-compliance would have the option of purchasing allowances from other parties. Emissions trading programs have become fairly common. Indeed, the Kyoto Protocol includes an emissions trading provision. The key is to keep this trading system simple and auditable. It is necessary to ensure that parties understand the rules and workings of the system while simultaneously ensuring the integrity of each exchange.

The CCCA emissions trading program would accomplish two things. First, it would allow all parties to equalize their emission reduction costs through the buying and selling of allowances. Second, through a trading fee of U.S. $.03 per metric ton of CO_2 (indexed to inflation), the program would generate revenue that would provide dedicated funding for the Secretariat and the IPCC to carry out all provisions of the treaty.

The Secretariat would have the responsibility of constructing an electronic exchange in which all parties could buy and sell allowances. All trades would be documented and compared with decadal emissions allowances. Purchases of offsets and investments in renewable energy projects would not count toward the earning of emissions allowances because of the complexity involved and the difficulty of verification. Only emissions allowances distributed in a specific decade would count.

As illustrated above, all parties would be distributed allowances by the IPCC. These allowances would exist on a decadal basis after which they would expire. Therefore, allowances can be banked, bought, or sold within a decade but not between decades. In effect, an allowance can be used only once to meet one reduction target.

This simple program would provide opportunities for parties to achieve the most affordable emission reductions. Many developing countries could benefit simply by shutting down inefficient plants and selling the surplus allowances. This would provide valuable income for these cash-strapped economies.

IMPLEMENTATION

The last aspect of the CCCA that requires illustration is the issue of when and how the agreement would enter into force. To avoid the problems that have arisen from the lengthy ratification process of the Kyoto Protocol and other treaties, I propose the use of early action incentives. These credits would reward the first 20 percent of parties on each continent (the Caribbean included with North America, Australia and New Zealand included with all Pacific island states) that ratify the agreement. These credits would count as an extra 20 percent of allowances in the first decade in addition to the initial allowances each party would receive. This would greatly accelerate the rate of ratification.

The exact provisions for the treaty to enter into force would surely be decided at the time of negotiations. However, the Kyoto benchmark of 55 countries representing 55 percent of global GHG emissions is a good start. No party to the CCCA would be allowed to take part in trading provisions or any other aspect of the treaty until that party has ratified the agreement and the treaty has entered into force.

CONCLUSION

The preceding proposal has endeavored to identify a different and innovative approach to negotiating an effective agreement to combat the threat of climate change. The contingent agreement approach as illustrated above would provide options that would address different perceptions of the threat at hand while ensuring that necessary actions would be taken to address the problem. With the apparent failure of the Kyoto Protocol, this proposal stands as a possible solution to many of the problems associated with the convention protocol approach. Though the contingent agreement approach has not been employed in past treaty-making efforts, perhaps the threat of climate change may be the catalyst to propel this idea into the mainstream. If one precedent-setting contingent agreement were to enter into force it could open up the prospect of a new way of negotiating multilateral agreements. As is the case in this proposal, contingent agreements do not solve all the problems of environmental negotiation. However, the notion of a stronger agreement negotiated in less time is a real possibility. This proposal is an attempt to prove as much.

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