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Designing a Global Post-Kyoto Climate Change Protocol that Advances Human Development

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I. Introduction

This Paper proposes a new formula for a post-Kyoto Protocol on climate change. The authors believe that the formula presented here is a win-win formula which, if adopted as the basis for the negotiations for a post-Kyoto climate change protocol, would accomplish the following:

- (i) Break the present grid-lock between those countries, in particular the United States, which hold the position that a workable protocol must impose emissions reduction/avoidance obligations on the major, newly industrializing countries, key among them, China, India, Brazil, Mexico and South Africa and the G77; until now, these countries have steadfastly refused to accept emissions reduction/avoidance obligations, thereby enabling agreement to be reached in the negotiations on a post-Kyoto protocol;

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- (ii) By requiring all countries to assume emissions reduction and/or avoidance obligations, facilitate the achievement of the ultimate objective of the United Nations Framework Convention on Climate Change (“UNFCCC”)¹, that is, the avoidance and/or reduction of greenhouse gas (GHG) emissions with the aim of mitigating further climate change; and
- (iii) By allocating to *all* countries, developed and developing alike, GHG emissions entitlements on the basis of a matrix whose fundamental (but not the sole) premise is the Human Development Index, contributing to the sustainable development of poor countries.

The Paper critiques the Kyoto Protocol² to the UNFCCC and makes the point that it is fundamentally flawed insofar as it allocates emissions reduction entitlements to some countries but not to others. The Paper argues that, in doing so, the Kyoto Protocol missed the opportunity to place the concept of GHG emissions entitlements at the centre of a new global development paradigm, under which the emission of GHGs becomes a proxy for economic development in which all countries must share on the basis of equity and sustainable use. Viewed as such, it is clear that all countries, and not just developed countries, must be allocated emissions entitlements. The Paper argues that the failure of the Kyoto Protocol to allocate GHG emissions entitlements to all countries is the single most important reason why the Clean Development Mechanism (CDM) has disproportionately benefited the major newly industrializing developing countries (principally China and India) at the expense of the poor countries, thus undermining its ability to equitably bring about sustainable development. The Paper further critiques the Kyoto Protocol for imposing emission reduction obligations on only the developed countries, leaving developing countries without emission reduction and/or avoidance obligations since, being a global phenomenon, the effective mitigation of climate change cannot be achieved unless all countries act to reduce and/or avoid GHG emissions. In this context, the Paper refutes the assumption underlying the Kyoto Protocol that the principle of common but differentiated responsibilities necessarily exempts developing countries on account of their historically low GHG emissions from emissions reductions and/or avoidance obligations.

The Paper argues that in order to effectively mitigate climate change the post-Kyoto Protocol climate change mitigation regime must do the following:

¹ United Nations Framework Convention on Climate Change, *opened for signature* June 4, 1992, I.L.M. 849 (1992) (entered into force March 21, 1994) [hereinafter UNFCCC].

² Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 37 I.L.M. 22 (1998) (entered into force Feb. 16, 2005) [hereinafter Kyoto Protocol].

- (i) Taking account of the precautionary principle, stipulate an absolute cap on allowable GHG emissions, which the global atmospheric system can tolerate without dangerous climate change;
- (ii) Allocate the allowable GHG emissions to all countries on the basis of a formula that is based on a combination of four factors: the Human Development Index; the efficiency of energy use; historical and present per capita emissions; and projected future per capita emissions;
- (iii) Permit countries' use of flexible mechanisms in meeting reduction commitments; and
- (iv) Provide for technology transfer and capacity building to enable poor countries to embark on a sustainable development path based on low carbon energy efficient and renewable energy technologies.

The Paper is divided into various sections. After a brief historical background in Section II, Section III outlines the legal basis under the Kyoto Protocol for the obligation to reduce GHGs. Section IV discusses the principle of common but differentiated responsibility and traces its historical development in international law instruments. This section argues that the use to which this principle has been put in the context of the UNFCCC is a departure from its historical rationale. In Section V we argue that GHG emissions can be stabilized by using energy efficiently, thereby contributing to the achievement of the ultimate objective of the UNFCCC. In Section VI we make the case for our proposed formula for a post Kyoto Protocol climate change regime, which takes account of the different circumstances of the various country groupings. The Paper concludes with recommendations as to how a post-Kyoto climate change regime should be designed to meet the extraordinary challenge of mitigating GHG emissions and preventing dangerous climate change. Central to our proposal is that the regime assigns real, common, but equitably differentiated responsibilities to all nations of the world, and that all countries maximize the efficiency of their use of energy. Our proposal can realistically mitigate GHG while substantially improving human development. Finally, our proposal presents a framework within which the poor developing countries can meaningfully participate in negotiating an effective post-Kyoto climate change legal regime.

II. A Brief Historical Background

The history of the UNFCCC and the Kyoto Protocol is well documented.³ In 1979, climate change was identified as an “urgent world problem” at the first

³ See Kyoto Protocol, UNFCCC, http://unfccc.int/kyoto_protocol/items/2830.php (last visited March 28, 2008); Linkages Coverage of United Nations Framework Convention for Climate Change, COP-3, IISD Reporting Services, <http://www.iisd.ca/climate/kyoto/coverage.html> (last visited March 28, 2008) (reports on every day of every UNFCCC COP, subsidiary body and intercessional meeting since February 1995).

World Climate Conference; in 1979 the World Climate Programme was established by the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), and the International Council of Scientific Unions.⁴ Over the next nine years, scientific research proceeded, and a number of intergovernmental conferences in climate change took place.⁵ By 1988 there was significant international consensus that climate change must be addressed in a comprehensive framework convention, and later that year the U.N. General Assembly, in Resolution 43/53, declared that “climate change is a common concern of mankind.”⁶ In 1988 the WMO and UNEP created the Intergovernmental Panel on Climate Change (IPCC). In 1990 the IPCC issued the First Assessment Report, and in December 1990 the U.N. General Assembly established the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change, which in five meetings from February 1991 to May 1992, negotiated the text of the UNFCCC; it was signed a few weeks later at the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro.⁷

The UNFCCC puts in place an international framework for tackling global warming. It imposes, as a long term objective, the stabilization of atmospheric concentrations of GHGs. Rather than impose specific limitations on the amounts of GHG that member states may emit into the atmosphere, the 1992 Convention establishes a mechanism for more specific steps to be taken over time as scientific evidence evolves.

The process initiated under the UNFCCC led to the adoption of the Kyoto Protocol on November 11, 1997, which mandated the following:

- (i) Required Annex I countries to reduce GHG emissions by 5% below 1990 levels within a defined timeframe, ending in 2012;
- (ii) Assigned to each Annex I country an amount of allowable GHG emissions in the period ending in 2012;
- (iii) Allowed countries the use of “flexible mechanisms” (emissions trading, joint implementation, and the Clean Development Mechanism) in meeting their allowable emissions reduction targets.

Under the Kyoto Protocol, only Annex I countries assumed emission reduction obligations. Of particular significance is the fact that, as a corollary, only Annex I countries were assigned allowable GHG emissions under the Kyoto Protocol. In this lies the key design flaw of the Kyoto Protocol.

⁴ UNFCCC Secretariat, United Nations Framework Convention on Climate Change Handbook 17 – 19 (2006), <http://unfccc.int/resource/docs/publications/handbook.pdf>.

⁵ *Id.*

⁶ *Id.*

⁷ *Id.*

III. The Obligation To Reduce GHG Emissions

Article 3 of the Kyoto Protocol obliges Annex I country parties to reduce their GHG emissions in the following terms:

“The Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases listed in Annex A *do not exceed their assigned amounts*, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with this Article, with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012.” (Emphasis added)

The obligation assumed by Annex I country parties is to ensure that their emissions “do not exceed their assigned amounts.” The pillar on which the reduction commitment stands, therefore, is the assigned amounts. The aim which the Protocol seeks to achieve in limiting countries’ GHG emissions is to reduce their overall emissions by at least 5% below 1990 levels in the commitment period 2008 to 2012. Additionally the commitments assumed by countries in the commitment period 2008 to 2012 are but one step in achieving the ultimate objective of the UNFCCC, which is “the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”⁸

The question that must be answered is this: can the methodology of assigning certain countries – but not others – amounts of greenhouse gases combined with their commitment to not exceed the assigned amounts lead to the achievement of the ultimate objective of the UNFCCC? This Paper argues that it cannot.

The Kyoto Protocol obligations⁹ are premised on an allocation of emission entitlements to Annex I countries – developed countries¹⁰ but not to non-Annex I

⁸ UNFCCC, *supra* note 1, art. 2.

⁹ Kyoto Protocol, *supra* note 2, art. 3 ¶ 1 (“The parties included in Annex I [of the UNFCCC] shall... ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases ... do not exceed their assigned amounts, ... inscribed in Annex B, ... in the commitment period 2008 – 2012.”)

¹⁰ Kyoto Protocol Annex B is slightly larger than UNFCCC Annex I because of the break up and merger of several nations between 1992 and 1997, and the addition of Monaco. The nations with Kyoto emission limitations are: Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, European Community, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation,

countries. African countries are all non-Annex I countries, along with a whole host of other non-industrialized and newly industrializing countries.¹¹ A number of the present non-Annex I countries (such as China, India, Brazil, Mexico, Indonesia and South Africa) have sizeable economies and potentially will become large emitters in the near future, in several cases even outstripping the emissions by some countries appearing on the list of Annex I countries. In fact, China is now the world's largest CO₂ emitter, and if China achieves its goal of quadrupling its gross domestic product by 2020 following a business as usual path, its GHG emissions could double and drown the world's mitigation efforts.¹²

The decision to not impose reduction obligations on countries with the capacity and potential to emit large quantities of GHG in the future means that, regardless of whether Annex I countries comply with their obligations, overall GHG emissions worldwide may continue to rise on account of the emissions from those potentially future large emitters who are presently not placed under reduction obligations.¹³ If this happens, the achievement of the ultimate objective of the UNFCCC would be defeated. This point has been cited by the United States in refusing to ratify the Kyoto Protocol.

Secondly, the Kyoto Protocol allows countries to take advantage of flexible mechanisms based on the market principle.¹⁴ But, to the extent that some countries are under an obligation to reduce emissions while others are not, the flexible mechanisms become incapable of achieving the ultimate objective of the UNFCCC on account of serious leakage problems, i.e., the displacement of emissions where only project based considerations are factored into the

Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom and United States of America. Turkey is a UNFCCC Annex I country, but is not listed on Kyoto Protocol Annex B.

¹¹ See List of Non-Annex I Parties to the Convention, UNFCCC, http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php (last visited March 28, 2008).

¹² Margret Kim & Robert E. Jones, *China: Climate Change Superpower and the Clean Technology Revolution*, NATURAL RES. & ENV'T 9 (Winter 2008).

¹³ FLORIAN BRESSAND, ET AL., MCKINSEY GLOBAL INSTITUTE, CURBING GLOBAL ENERGY DEMAND GROWTH: THE ENERGY PRODUCTIVITY OPPORTUNITY 25 –29 (2007) [hereinafter CURBING GLOBAL ENERGY DEMAND GROWTH]. Exhibit 7 shows that nearly 85% of energy demand growth from 2003 to 2020 is projected to occur in developing countries; the report notes that “global energy emissions will grow more quickly than energy demand over the next 15 years – at a 2.4 percent annual rate versus 2.2 percent.” *Id.* At 29.

¹⁴ Clair Breidenich et al., *Current Development: The Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 92 AM. J. INTL. L. 315, 324-27 (1998).

calculations of the emissions avoided or reduced as a result of a project undertaken in a non-Annex I country.¹⁵

That the Kyoto Protocol, as presently designed, is incapable of facilitating the achievement of the ultimate objective of the UNFCCC is, in our view, beyond dispute. That having been said, understanding what led to its design is important in charting the strategy for the negotiations on a post-Kyoto protocol. This is because, if state parties are to be persuaded to depart from the Kyoto Protocol architecture in favor of another one, they – state parties – must appreciate the fallacy in the assumptions that dictated the adoption of the Kyoto Protocol architecture.

IV The Principle Of Common But Differentiated Responsibilities

The design of the Kyoto Protocol reflects the generally held view that by excluding developing nations from any obligations, it was operationalizing the UNFCCC principle of “common but differentiated responsibilities.” Most negotiators – perhaps with the exception of the U.S. negotiators – accepted as a matter of course that the principle of common but differentiated responsibilities meant that only industrialized countries would assume reduction obligations under the UNFCCC and subsequent protocols. The rationale appears to have been that GHG reduction obligations would undermine the economic development of non-Annex I countries, which would be unacceptable because it would undermine the global effort towards the eradication of poverty.

(i) The Role of the Principle of Common but Differentiated Responsibilities in the UNFCCC Regime

The obligations of the UNFCCC are premised on the principle of common but differentiated responsibility. Article 3 (*Principles*) establishes the obligation that “Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities...”¹⁶ and Article 4 (*Commitments*) subjects all of its requirements to the specific

¹⁵ Jonathan B. Weiner, *Think Globally, Act Globally: The Limits of Local Climate Change Policies*, 155 U. PA. L. REV. 1961, 196–68 (2007) (“Subglobal action... to reduce GHGs has several disadvantages... perhaps most important, it suffers from cross-border “leakage” of emissions: subglobal regulatory coverage encourages source activities to shift or “leak” to unregulated areas over time . . . The total amount of leakage depends on the force of these three levers [a price effect, a “slack off” effect, and a capital relocation effect] and on a fourth variable: the relative emissions per unit of economic activity in the regulated and unregulated places”).

¹⁶ UNFCCC Art. 3(1).

condition that “[a]ll Parties, taking into account their common but differentiated responsibilities ...shall...”¹⁷

The obligations of the Kyoto Protocol are similarly premised on the UNFCCC principle of common but differentiated responsibility. Kyoto Protocol Article 10, which imposes obligations on *all* Parties with respect to the formulation of GHG management programmes among other measures, qualifies these obligations on the basis of common but differentiated responsibilities ...”

But equally significant are the provisions that stipulate that the consequence of the adoption of the principle of common but differentiated responsibility is that developed country parties must take the lead in tackling the global problem of climate change. This is premised on the “historical responsibility” of developed country parties for the present level of GHG emissions in the atmosphere as well as the “sustainable development needs” of the developing countries, which, it is argued, can only be met by increasing their “per capita” emissions of GHGs.

The Preamble to the UNFCCC notes that “the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions of developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs...” Similarly, Article 4(1) which stipulates the principles by which the Parties shall be guided, the first of which is the principle of common but differentiated responsibilities, argues that “[A]ccordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof...”

On the basis of the assumption that, in keeping with the principle of common but differentiated responsibilities, reduction commitments would only be imposed on developed country parties, the Kyoto Protocol does not impose any such obligations on non-Annex I Parties. Indeed, Article 10, which imposes obligations on “All Parties”, is at pains to stress that these obligations are “...without introducing any new commitments for Parties not included in Annex I, but reaffirming existing commitments under Article 4, paragraph 1 of the Convention ...”

The developing country view would appear to be that the principle of common but differentiated responsibilities implies that developing countries must not assume emissions reduction commitments under even a post Kyoto climate change regime. This is shown by the following quote attributed to Yvo de Boer, the Executive Secretary of the UNFCCC Secretariat. Describing it as the “consensus of the international community,” the quote goes on to state that:

¹⁷ UNFCCC Art. 4(1).

Developing countries ... have unshirkable responsibilities for climate change and should fulfill their major obligations. They should fully meet their emission reduction targets set by the Kyoto Protocol and continue to take the lead in cutting emissions after 2012, when the Protocol expires. For developing countries, as their accumulative emissions in the past and per capita emissions are low, their primary task at present remains economic growth and poverty eradication. To this end developing countries will have a growing demand for energy, a basic prerequisite for their development. At current stage it is inappropriate to impose compulsory emissions reductions targets on developing countries. These countries, should nevertheless take actions in line with their specific conditions, to tackle climate change. They need to pay special attention to introducing advanced clean technologies and adapting them to their own conditions so as to contribute within their power, to this global endeavor.¹⁸

The view that developing country parties should not assume emissions reduction obligations even under a post-Kyoto Protocol climate change regime puts developing countries at odds with the United States, which refuses to participate in the Kyoto Protocol or any other international legal regime unless the major emitters among the developing countries assume reduction obligations. A GHG control regime that does not impose binding responsibilities on all countries has no chance of succeeding in achieving its ultimate objective. The prevailing developing country view opposing any new developing country obligations jeopardizes the chances of successfully negotiating a post-Kyoto Protocol regime, or, even if one is adopted, of getting the required ratifications to bring it into effect.

The United States (even as long ago as during the Clinton Presidency) opposed exempting developing countries from climate change obligation in the negotiations leading up to Kyoto. According to then Under Secretary of State Timothy Wirth:

Let me be clear -- developing countries must participate in this treaty. The rationale for developing countries to act is clear: while at present they are responsible for less than half of global emissions, over the next decades, their percentage of the total will grow, despite the fact that their per capita emissions will continue to remain far below our own. We must address this trend of rising emissions if we are to truly make a dent the long-term problem.

¹⁸ Common But Differentiated Responsibilities – Basis for Tackling Climate Change, <http://www.ccchina.gov.cn/en/NewsInfo.asp?NewsId=10077> (last visited Apr. 1, 2008).

We can conclude that grouping all developing countries together is a mistake -- and we can suggest that poor countries which emit next to nothing should have different obligations than do the wealthier countries with a significant share of the global total.

We can accommodate the concerns of developing countries that differences between levels of development are real by providing flexibility in the obligations we insist they take on.

Our developing country proposal has three parts:

- (1) It calls for continuing to advance the implementation of commitments: essentially defining the specifics of what that means, and including calling on them to increase energy efficiency, to emphasize market oriented pricing, to increase the use of renewable energy, to improve their transport sector -- and in general to take actions to address climate change that are justified economically in their own right.
- (2) It creates a new category of countries (Annex B): in which developing countries would voluntarily take on legally binding emissions limitation or reductions commitments; and
- (3) It proposes that the Parties ultimately agree on provisions so that all Parties (including developing countries) have quantitative greenhouse gas emissions obligations, so that there is a mechanism for automatic application of progressive obligations to Parties based on agreed criteria.

While we may be willing to be flexible on the procedures through which each of these elements is made part of the Kyoto package, we remain absolutely convinced on the substance. Developing countries must be clearly and integrally a part of next steps in order for the U.S. to consider becoming a Party. The United States will not assume binding obligations until developing countries make adequate commitments in terms of their own obligations.¹⁹

Thus, in the U.S. view, the common but differentiated principle required that every nation make a commitment, and the "level and timing of each country's commitments must be commensurate with its national abilities and level of development. Balance and fairness must be maintained."²⁰ However, developing nations resisted all efforts to include them in any obligations under

¹⁹ *Global Climate Change: Hearing Before the Subcomm. on Int'l Econ. Policy, Export and Trade Promotion of the Senate Foreign Relations Comm.*, 105th Cong. (1997) (statement of Timothy Wirth, Under Sect'y of State for Global Affairs), 1997 WL 631222, at 4-7

²⁰ *Id.* at 7.

Kyoto and even opposed any proposed language that would encourage voluntary commitments.²¹

Whereas we share the view that developed country Parties should take the lead in tackling the global problem of climate change, our view is that the principle of common but differentiated responsibilities does not necessarily exempt developing country Parties from all emissions reduction obligations, more so the major economies among the developing countries. We argue that this is borne out by an examination of the concept, history and rationale of the principle of common but differentiated responsibilities.

(ii) Robust Common But Differentiated Responsibilities – Concept, History and Rationale

The principle known as “common but differentiated responsibilities” is relatively new to international law. It addresses the perennial challenge of how nations should share the global commons. It recognizes that there are global resources, such as the atmosphere, which human society has common interest in protecting, but which the obligation to protect will vary in accordance with a nation’s level of development, resources, and institutional capabilities.

Although the history of the principle is murky, it certainly has its conceptual roots in the ideas expressed in the Stockholm Declaration, such as Principle 1: “Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations.”²² Rights and duties must be inexorably linked: States have “the sovereign right to exploit their own resources according to their own environmental policies and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdictions.”²³ However, while all States and people must accept the duty to protect the environment, ecosystems, and natural resources for present and future generations, the efforts to fulfill this duty must be “shar[ed] equitably.”²⁴

²¹ Paul G. Harris, *Common But Differentiated Responsibility: The Kyoto Protocol and United States Policy*, 7 N.Y.U. ENVTL. L.J. 27, 34 (1999).

²² Stockholm Declaration of the United Nations Conference on the Human Environment, June 16, 1972, 11 I.L.M. 1416 (1972).

²³ *Id.* at art. 21.

²⁴ *Id.* At pmbl. para. 7.

Equitable sharing of responsibility became part of international law in the Montreal Protocol on Substances that Deplete the Ozone layer.²⁵ Although the phrase “common but differentiated responsibility” does not appear in the instrument, it was made operational by the treaty’s terms, in Article 5 “Special Conditions of Developing Countries” which obligated developing nation parties to reduce the emissions of CFCs but extended compliance deadlines substantially beyond the deadlines for developed nations. Article 10, “Technical Assistance,” requires the Parties to “tak[e] into account ... the needs of developing countries.” Three years later, the Montreal Protocol was amended in London to “[a]cknowledge that special provision is required to meet the needs of developing countries, including the provision of additional financial resources and access to relevant technologies.”²⁶ The London Amendments also modified developing nation compliance requirements and established a Multilateral Fund²⁷ to meet the incremental costs of developing nations to shift to non-CFC technology.²⁸

The first use of the phrase in an international law instrument was in 1992 in the United Nations Framework Convention on Climate Change (UNFCCC)²⁹ and in the Rio Declaration.³⁰ Five years later, the principle was again used, this time in the Kyoto Protocol to the UNFCCC.³¹ However, over the short span of five years, the meaning attributed to the phrase in the context of the UNFCCC regime changed dramatically. From a concept that started with common responsibilities equitably allocated among nations, in the UNFCCC, the concept shifted in the Kyoto Protocol to operate as a catch phrase justifying imposing no

²⁵ Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 1522 U.N.T.S. 3 (entered into force Jan. 1, 1989).

²⁶ London Amendments to The Montreal Protocol on Substances That Deplete The Ozone Layer, June 29, 1990, UNEP/OzL.Pro2/3, annex II, art. 1.A.2. (1990).

²⁷ This fund is administered by the Global Environment Facility.

²⁸ *Id.* at annex II, para. T, art. 10.

²⁹ UNFCCC, *supra* note 1, pmb., arts. 3, § 1 (“The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their *common but differentiated responsibilities...*”) (emphasis added) and art. 4, § 1 (“All Parties, taking into account their *common but differentiated responsibilities ... shall: ...*”) (emphasis added).

³⁰ Rio Declaration on Environment and Development, Principle 7, UN Doc. A/CONF.151/5/Rev.1 (June 13, 1992) [hereinafter Rio Declaration on the Environment]. Principle 7 states: “States shall cooperate in the spirit of global partnership to conserve, protect and restore the health and integrity of the Earth’s ecosystem. In view of the different contributions to global environment and development, States have *common but differentiated responsibilities.*” (emphasis added). *Id.*

³¹ Kyoto Protocol, *supra* note 2, pmb. (“*Being guided* by the Article 3 of the Convention”) (emphasis original); art. 10 (“All Parties, taking into account their *common but differentiated responsibilities...*”) (emphasis added).

responsibility on developing countries. The elimination of duty or responsibility from the principle undermines the foundation principles of sustainable development articulated in the Rio Declaration and Agenda 21 and renders the Kyoto Protocol and any subsequent agreement that is founded in this empty phrase fundamentally, if not fatally, flawed.

How, and why, did the world accept the notion that developing nations should be excluded from the fundamental obligation to participate in emissions reduction and/or avoidance within the overall framework of a global cap on GHG concentrations? The exemption of developing nations from any cap in the Kyoto Protocol was based on this notion. What arguments were advanced to support that outcome? It is unclear, but fundamentally, the world acted on the premise that economic development is (and always will be) directly and inherently correlated with the use of fossil fuel, which emits CO₂. It is based on a model of development that can only see business as usual — development based on low-cost fossil fuel. Or, to place this view into IPCC emission scenario context, it assumes scenario A1 (and more specifically, A1FI)³² will dominate the future. The idea that the efficient use of energy, particularly renewable energy, by adopting innovative policies that promote efficient technology within a reordered market framework whose price signals include the externality of global warming could create a new low-carbon development paradigm was unimaginable or implicitly rejected as simply impossible. Possibilities other than business-as-usual were completely absent absent from this thinking.

The era of development based on low-cost oil is over,³³ so we must reconceive how we will get and use the energy necessary for our economic and social lives. As we will argue later in this article, by using energy efficiently and harnessing renewable energy (which we will use efficiently) we can supply the

³² GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Summary for Policymakers*, in CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS 18 (2007) (“The A1 storyline and scenario family describes a future world of very rapid economic growth, global population that peaks in mid-century and declines thereafter, and the rapid introduction of new and more efficient technologies. Major underlying themes are convergence among regions, capacity building and increased cultural and social interactions, with a substantial reduction in regional differences in per capita income. The A1 scenario family develops into three groups that describe alternative directions of technological change in the energy system. The three A1 groups are distinguished by their technological emphasis: fossil-intensive (A1FI), non-fossil energy sources (A1T) or a balance across all sources (A1B) (where balanced is defined as not relying too heavily on one particular energy source, on the assumption that similar improvement rates apply to all energy supply and end use technologies.”)

³³ David R. Hodas, *Climate Change and Land Use in Africa*, in LAND USE LAW FOR SUSTAINABLE DEVELOPMENT 45 (Nathalie J. Chalifour et al eds., 2007).

energy services society needs, but with significantly lower emissions. Common but differentiated responsibilities can mean that developing countries have a cap, one that they can grow into and will be adequate for their sustainable development – if they are efficient and focused on renewable sources of energy. They must commit to moving to a new, low-carbon, energy future that by-passes the old low-cost fossil fuel paradigm. They are entitled to insist on substantial financial, technological, and institutional assistance in making this transition – which the developed nations must provide – but developing countries must commit to thinking and acting in new ways to fulfill their common but differentiated responsibilities.

Unfortunately, one victim of this mindset was the principle of "common but differentiated responsibility," which was used in the Kyoto Protocol to justify continued reliance by the developing countries on the old fossil fuel intensive development paradigm. Thus, in the Kyoto Protocol "common but differentiated responsibilities" lost its original meaning that all nations have a duty to protect common resources, but the nature and extent of each nation's obligations will be equitably allocated, duty being the common denominator. Instead, the concept has come to be understood as excluding developing nations from climate change obligations. The adjectives remain – *common and differentiated*, but the noun — *responsibility* — they modify has been removed from the term. There is no necessary reason why common but differentiated responsibility should mean *no* responsibility. Thus, Kyoto is flawed for the reasons described above and because it is a false articulation of common but differentiated responsibilities.

In saying this, we have not lost sight of the fact that the UNFCCC imposed on all countries, *including* developing countries, obligations relating to the creation of national inventories of GHG emissions, the implementation of national programmes to mitigate climate change, the inclusion of climate change issues in national policies and others. But it is our view that the lynchpin of the UNFCCC climate change mitigation regime is the GHG reduction and/or avoidance commitments, which, under the Kyoto Protocol, are assumed only by Annex 1 countries. The decision not to subject the developing countries to this fundamental obligation renders the other largely supportive obligations of the Convention, for practical purposes, hortatory.

The abandonment of developing nations' responsibility can be traced back to the first UNFCCC Conference of the Parties (COP) held in Berlin in 1995. The Berlin COP issued the Berlin Mandate that set the ground rules for the negotiating the first substantive protocol to the UNFCCC. At Berlin, the Parties first reaffirmed the role of common but differentiate responsibilities: "[T]he global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in

accordance with their common but differentiated responsibilities...”³⁴ But a few lines later the same Conference of the Parties announced that the negotiation process under the UNFCCC will “not introduce any new commitments for Parties not included in Annex I.”³⁵

This ban on new commitments reflected the developing nation perspective that the industrialized countries should reduce their GHG emissions before the developing countries “place their economic development at risk by adopting any similar measures.”³⁶ The developing countries approached the negotiations from the perspective that the Annex I nations’ GHG emissions account for the vast bulk of the anthropogenic increase of GHG in the atmosphere, and their economic prosperity is largely due to their GHG emissions from the fossil fuel that powered their economies. Whatever the underlying motivation for the prohibition on new commitments, the mandate in fact abandoned “common but differentiated responsibility,” despite the common but differentiated responsibility rhetoric. Any effort to rationalize no responsibility to be a form of common responsibility may be expediently attractive to defenders of this rhetoric³⁷ (or even an intriguing intellectual challenge) but is ultimately specious.³⁸ By exempting developing nations, common but differentiated responsibility in effect becomes a wealth distribution tool that makes poverty a defense justifying pollution, so that both environmental policy and welfare policy is weakened.³⁹

³⁴ Framework Convention on Climate Change Conference of the Parties, 1st Sess., Decision 1/CP.1, I(1)(e), UN Doc. FCCC/CP/1995/7/Add.1 (June 6, 1995).

³⁵ *Id.* II(2)(b) at 5.

³⁶ Clare Breidenich, Daniel Magraw, Anne Rowley, and James W. Rubin, *The Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 92 AM. J. INT’L L. 315, 319 (1998). “This view stems largely from the fact that historically the industrialized countries, because of their economic development, were the largest GHG emitters and thus are seen by developing countries as responsible for the problem of climate change.”

³⁷ See, e.g., Anita M. Halvorssen, *Common, but Differentiated Commitments in the Future Climate Change Regime – Amending the Kyoto Protocol to Include Annex C and the Annex C Mitigation Fund*, 18 COLO. J. INT’L ENVTL. L. & POL’Y 247, 256 (2007) (explaining that the Kyoto Protocol “clearly captures” the common but differentiated responsibility principle in that “[o]nly Annex I Parties were given binding reduction commitments while non-Annex I Parties were not given any targets.”).

³⁸ See, e.g., Christopher D. Stone, *Common But Differentiated Responsibilities in International Law*, 98 AM. J. INT’L L. 276, 300 (2004) (critiquing the Kyoto Protocol as an example of what he terms “inefficient CDR, [which] demands that Poor’s welfare be advanced unconditioned by mutual, if even marginal, reciprocal advances for Rich.... The inequity (perhaps ‘iniquity’) of the status quo is the very top item on the agenda.”).

³⁹ *Id.* at 294.

Unfortunately, the abandonment of the principle of common but differentiated responsibilities triggered the demise of the Kyoto Protocol in the United States, first in the U.S. Senate in the form of the Byrd-Hagel Resolution, and ultimately by the Bush Administration. The Bush Administration, which considers energy efficiency investments to be “demand destruction,” was looking for a reason to reject any U.S. obligation to reduce its CO₂ emissions, and the abandonment of common but differentiated responsibility was a handy excuse. It is a principle that must be rehabilitated in the negotiations for a post-Kyoto Protocol climate change mitigation regime.

Sustainable Development does depend on the utilization of fossil fuels, and the emission of GHGs. To that extent clearly, developing countries must be allowed to continue to emit GHG at levels above those which they emit presently. Our argument however, is that this should be premised on the principle that *all* countries must be placed under an obligation to take action to achieve the ultimate objective of the UNFCCC. The ultimate objective of the UNFCCC simply cannot be achieved under a business as usual scenario for the non-Annex I countries, particularly for major economies among them, some of whom are bigger emitters overall than the smaller economies within the Annex I group. Therefore, future emissions must be taken into account notwithstanding the imperative not to jeopardize the sustainable development prospects of the developing countries. This can be achieved by placing Annex I countries under emissions reduction obligations while placing non-Annex I countries under *emissions avoidance* obligations.

Evidence is growing that emissions avoidance *through the introduction of energy efficiency* throughout the world (developed and developing countries alike) can stabilize GHG emissions at levels that would avoid damaging climate change.⁴⁰

V. Energy Efficiency As The Way To Stabilize GHG Emissions

Are the goals of our proposal achievable, and if so, how? First, we believe that the global GHG concentrations cap is achievable if the world has the will to do so. The reports of the Intergovernmental Panel on Climate Change, among others, provide a scientific basis for determining the level of the global cap on the level of atmospheric GHG concentrations that Earth can tolerate without dangerous climate change. In determining this cap, account must be taken of the precautionary principle, articulated as Principle 15 of the Rio Declaration on Environment and Development, which fundamentally recognizes the reality of scientific uncertainty. The global cap would be the basis for allocating GHG emission entitlements - and the associated reduction and/or avoidance commitments - to countries.

⁴⁰ See UNITED NATIONS FOUNDATION, REALIZING THE POTENTIAL OF ENERGY EFFICIENCY: TARGETS, POLICIES AND MEASURES FOR G8 COUNTRIES (July 2007).

(i) A global cap on GHG concentrations as a driver for energy efficiency

At a philosophical level we trust that the free market will again do its innovation magic once the cap is established, the proper price signals are given to the marketplace, policy barriers are removed, and the private sector recognizes the profit opportunities presented. The consistent history of environmental law has been that before legal mandates are imposed, there is no technology to achieve the goal at all, or at a minimum, cost effectively. This should come as no surprise to anyone familiar with welfare economics – if no firm seeks to buy pollution control technology then no firm will invest in developing it. However, once the mandate is firmly in place, the opportunity for profit appears and the market responds with remarkable innovation, and the costs of meeting the mandate drop precipitously from the sky-high estimates businesses suggest when there is no market. Examples are legion: elimination of lead from gasoline, elimination of CFCs, the Clean Air Act SO₂ allowance program to reduce acid precipitation. We believe that a combination of energy efficiency investments and renewable energy will go a long way, and relatively quickly, towards meeting both the cap on GHG concentrations in the atmosphere and the sustainable development of even the poorest nations.

Clearly, fossil fuels and nuclear power will be needed, but they are too costly financially and environmentally to be the centerpiece of the world's energy supply. The fact that most people cannot imagine how the world could survive in a low-carbon economy does not change the reality that the free market always responds to the demands and limitations a society chooses, so long as the market is given the freedom to innovate. In 1961 the world understood the physics required to put a person on the moon but had no idea how to do it. In 1969 it was done, and along the way the world developed whole new technologies, dreamed of only by science fiction writers.

Clearly, developing nation economies need to grow. Some 1.5 to 2 billion people in the world have no access to electricity. They have no light at night (unless they burn kerosene or candles), no refrigeration, no radio. They have no cars or trucks. They burn (unsustainably) biomass to cook. Providing the poor access to modern energy sources would increase fossil fuel consumption. Even under the most efficient scenario, sustainable development in the developing world will require that a GHG emissions cap be imposed on developing nations and the poorest nations that will allow their economies to grow. As we discussed above, that is the meaning of common but differentiated responsibilities.

However, the international community also can expect (demand) that the cap must reflect an economy that uses energy very efficiently and maximizes the

use of low carbon energy. Many developing countries have a low per capita energy use, and a low CO₂ per capita emission rate, but those rates may well be much higher than need be because the energy is used so inefficiently.⁴¹ Unfortunately, in many developing countries, energy use has become less efficient over time, that is, energy intensity, and energy consumed per unit of output is increasing.⁴² Thus, in setting caps, the international community must insist that efficient per capita GHG emissions are required. On the other hand, “[a] number of technical studies have shown that if developing countries were to use the best practices and technology now available, dramatic declines in new energy requirements would theoretically be possible.”⁴³

The world simply cannot let any energy go to waste. Critical social and economic progress is at risk. It may well be that the electricity shortage crisis in South Africa⁴⁴ could have been averted or drastically mitigated if sound energy efficiency policies had been in place – instead it was “an energy-profligate nation.”⁴⁵ Moreover, the cost of making additional electric power available by using it more efficiently is far less than the cost of constructing new coal-fired

⁴¹ We do not argue that per capita CO₂ emissions are irrelevant considerations. Gross emissions are a product of the per capita emission rates times population. Moreover, in some countries, like the United States, average per capita CO₂ emissions are unreasonably high and must be significantly reduced. For instance, if the U.S. average per capita rate (about 20 tons per person) was the same as it is in California and New York, total U.S. emissions would be 40 – 45% lower than they currently are. David Hodas, *Imagining the Unimaginable: Reducing Greenhouse Gas Emissions by Forty Percent*, 26 VA. ENVTL. L.J. (forthcoming 2008).

⁴² WORLD BANK, ENERGY EFFICIENCY AND CONSERVATION IN THE DEVELOPING WORLD: THE WORLD BANK’S ROLE 19 (1993).

⁴³ *Id.*

⁴⁴ Barry Bearak & Celia W. Dugger, *Power Failures Outrage South Africa*, THE NEW YORK TIMES, ¶ 4-5 (Jan. 31, 2008), available at http://www.nytimes.com/2008/01/31/world/africa/31safrica.html?_r=2&oref=slogin&oref=slogin (“But electricity shortages, now expected to be a fact of life for the next five years, are more than an embarrassment. They threaten continued strong growth here in a nation that accounts for a third of sub-Saharan Africa’s economic output and ranks among the world’s top 25 countries in gross domestic product. Because South Africa is an engine of growth for the region, a slowdown here would also affect its neighbors, undermining global efforts to reduce poverty and damaging South Africa’s own drive to slash its woeful unemployment rate of 25.5 percent.”).

⁴⁵ *Id.*, ¶ 26 (“For its part, the government is beseeching customers to conserve power, an unfamiliar appeal in an energy-profligate nation. It has announced subsidies for solar-powered water heaters and a program to exchange energy-wasting light bulbs for more efficient ones. Solar-powered stoplights are supposed to free traffic from the whims of the enfeebled power grid.”).

power plants, and does not increase GHG emissions.⁴⁶ That saved capital could have been available for education, infrastructure, health care, and other high priority social needs.⁴⁷ What is important for all economies is not its energy use per capita, but whether the society efficiently obtains the energy services it needs to prosper – light, heat, cooling, transportation, electric power for motors and computers, etc.

So, what is the contribution that energy efficiency can make in a world with ever increasing demand for energy services? It is enormous. One major study estimates that improving the productive use of energy could reduce global growth in energy demand to less than 1% annually, inexpensively - using “existing technologies with an [internal rate of return] of 10% or more. This would free up resources to increase consumption or investment elsewhere.”⁴⁸ Additionally, this energy productivity improvement would “contribute up to a half of the GHG emission abatement required to cap the long-term concentration at 450 to 550 parts per million.”⁴⁹ The economic potential may be much higher since the McKinsey study eliminates all investments with an internal rate of return of less than 10%, and does not factor in the emergence of new technologies; also it was predicated on the price of oil being \$70 a barrel.⁵⁰ Thus the actual technical potential improvement in energy productivity is much larger.⁵¹ Another recent

⁴⁶ WORLD BANK, Energy and Mining Sector Board, IMPROVING LIVES: WORLD BANK GROUP PROGRESS ON RENEWABLE ENERGY AND ENERGY EFFICIENCY IN FISCAL YEAR 2006, 10 (December 2006) (“Energy efficiency improvements, on both the supply and demand side, commonly represent the least-cost option for freeing up generation capacity and reducing the volume of incremental investment needs.”).

⁴⁷ California has saved \$56 billion through its energy efficiency investments and estimates that by 2013 it will have saved \$79 billion. California Energy Commission. CALIFORNIA ENERGY COMMISSION, INTEGRATED ENERGY POLICY REPORT 2007 3, *available at* http://www.energy.ca.gov/2007_energy_policy/index.html.

⁴⁸ DIANA FARRELL ET AL., CURBING GLOBAL ENERGY DEMAND GROWTH: THE ENERGY PRODUCTIVITY OPPORTUNITY 12 (MCKINSEY GLOBAL INSTITUTE May 2007).

⁴⁹ *Id.*

⁵⁰ *Id.*, at 30, 32.

⁵¹ See, e.g., R. NEAL ELLIOT, THERESE LANGER & STEVEN NADEL, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY, REDUCING OIL USE THROUGH ENERGY EFFICIENCY: OPPORTUNITIES BEYOND CARS AND LIGHT TRUCKS, 7-17 (2006) (discussing potential technological efficiency improvements in the automobile industry);... Anna Monis Shipley & R. Neal Elliott, AM. Council for an Energy-Efficient Economy, *Ripe for the Picking: Have We Exhausted the Low-Hanging Fruit in the Industrial Sector?*, 3 (2006), *available at* <http://aceee.org/pubs> (discussing “numerous studies” which “have found that abundant, low-cost efficiency opportunities exist in all parts of the industrial sector” including opportunities related to new technology).

study found remarkable efficiency improvement potential in residential and commercial buildings, appliances, industry, and transportation.

(ii) The need for policy reforms

However, market forces alone are insufficient to capture the energy efficiency opportunities available. It is now well established that to achieve the technical potential of energy, efficiency policies must be put into place that make it possible for firms to profit by supply energy services through energy efficiency investments. Policies must be adopted that remove fossil fuel subsidies, a serious problem in developing countries. Also, policies must be adopted that help remove the many barriers that efficiency investments must overcome. These include, informational, institutional, behavioral, financial, and legal barriers, large and small, that make the transactional costs of becoming more energy efficient too high to overcome the inertia inherent in business as usual.⁵² Principle-agent or split incentives such as those between landlord and tenant or builder and buyer, lack of adequate information, lack of access to capital and a variety of other problems deter investments in energy efficiency even though those investments are the least-cost means of increasing usable energy for the economy and society. Policy approaches to eliminate these barriers are well known⁵³ but must be discussed more concretely another time.

On the other hand, if good legal policies are adopted, many of these barriers can be removed. Preliminary results of a recent study indicate that between 97 – 99% of a state's energy efficiency profile is determined by the kind of laws and policies the jurisdiction has implemented. For example, by adopting ambitious energy efficiency standards for refrigerators, California (and now the whole U.S. nation) the average refrigerator now uses about 75% less electricity

⁵² See, INTERACADEMY COUNCIL, LIGHTING THE WAY: TOWARD A SUSTAINABLE ENERGY FUTURE 19-56 (2007); ROBERT P. TAYLOR ET AL., WORLD BANK, FINANCING ENERGY EFFICIENCY: LESSONS FROM BRAZIL, CHINA, INDIA & BEYOND 1-20 (2008) (explaining how high transactions costs, uncertain risk, institutional barriers, and policy and legal obstacles impair investment in energy efficiency and prevent most of the potential energy efficiency to be realized.).

⁵³ See *id.*; CURBING GLOBAL ENERGY DEMAND GROWTH, *supra* note 13, at 39 –53; UNITED NATIONS ENVIRONMENT PROGRAM, UNEP HANDBOOK FOR DRAFTING LAWS ON ENERGY EFFICIENCY AND RENEWABLE ENERGY RESOURCES (Richard Ottinger and Adrian Bradbrook, eds., 2007); ; WORLD BANK, IMPROVING LIVES 48-49, *supra* note 44 ; World Bank, Clean Energy for Development Investment Framework: The World Bank Group Action Plan, DC2007-0002 (March 28, 2007); CLIMATE CHANGE TEAM, WORLD BANK ENVIRONMENT DEPARTMENT, WORLD BANK GEF ENERGY EFFICIENCY PORTFOLIO REVIEW AND PRACTITIONERS' HANDBOOK (JAN. 21, 2004); THE WORLD BANK, ENERGY EFFICIENCY AND CONSERVATION IN THE DEVELOPING WORLD: THE WORLD BANK'S ROLE (1993).

than it did in 1977, while average refrigerator size increased more than 20% and the cost of a refrigerator dropped more than 60%.⁵⁴

In developing countries, where light is provided either by candle or kerosene, or, if electricity is available, by an inexpensive incandescent bulb, new LED light technology could provide light using only 1 watt of power, which could be generated by a small solar panel and backed up by ordinary rechargeable batteries; total costs: \$25. These are examples of the astounding efficiency opportunities, which can be remotely powered without having to construct power plants or transmission lines, and which will provide light where none was before, or will eliminate GHG from burning fossil fuels or biomass.⁵⁵ These LEDs are 1000 times more efficient at generating light than fuel based light (candles or kerosene), produce no indoor pollution, and have the potential, if they replaced fuel-based lighting, to save the equivalent of about 1.3 million barrels of oil per day. That would be a savings, at \$100 per barrel oil, of about \$130 million per day – over \$47 billion per year – mostly in the poorest nations in the world, and virtually all of this money would be used to import the fuel. Reinvesting these savings in other energy efficient technologies could multiply the savings, while simultaneously improving the lives of over a billion people. And, as an added benefit, it would eliminate the 190 million tons of CO₂ released annually when the fuel is burned.⁵⁶

So, in our view, placing a GHG emissions cap - or an emissions entitlement - on developing countries need not compromise their opportunities for sustainable development: what matters is the level at which the cap is placed. As we argue, in determining the appropriate level of GHG emissions entitlement for each country account must be taken not only of the overall global GHG concentrations cap, but also of the present stage of economic development of the particular country as well as the level of efficiency of its energy use.

VI. Proposals For A Post Kyoto Protocol Climate Change Regime

For the system we propose to operate equitably and without leakage, *all* countries must be allocated emission entitlements or rights to emit GHGs as a slice of the overall global cap. This is on account of the fact that the GHG emissions allocations are in essence entitlements to emit a defined volume of

⁵⁴ InterAcademy Council, *supra* note 50, at 33-34.

⁵⁵ Allen Chen, *Reducing Developing World's Polluting Fuel-Based Lighting*, EETD NEWS, Vol. 6 No. 2, at 2 (Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory), *available at* http://eetdnews.lbl.gov/nl21/2fuel_lite.htm.

⁵⁶ Berkley Lab Research News, *Berkeley Lab Scientist Proposes Solution to Reduce Developing World's Expensive, Polluting Fuel-Based Lighting* (May 27, 2005) available at <http://www.lbl.gov/Science-Articles/Archive/EETD-diode-lighting.html>. See also, Lawrence Berkeley National Laboratory, The Lumina Project, <http://light.lbl.gov/>.

GHG in the course of productive and consumptive activities. This is because when a cap on the overall volumes that may be emitted globally without causing dangerous anthropogenic global warming is established, GHG emissions will become an exhaustible global resource.⁵⁷ This limited stock of GHG emissions must therefore be shared equitably among all the nations.

(i) **Equity as the basis for allocating GHG emission entitlements**

The poor countries' position at negotiations for a post Kyoto protocol should be that the allocation of emission entitlements should be based on the sustainable development principle of intra-generational equity, i.e., equity among the present generations. Intra-generational equity requires that the world's resources – in this case GHGs emission rights – be allocated equitably among all nations since the emission entitlements, in effect, are a proxy for the right to develop and meet the needs of one's nation and the well-being of its people.

Poor countries' position at the post Kyoto regime negotiations must be that the basis of equitable allocation should be the Human Development Index developed by the U.N. Development Program (UNDP)⁵⁸ combined with historic GHG emissions, energy use increases needed to improve low HDI and associated Human Poverty indices,⁵⁹ and efficiency with which energy is used. . .” The Human Development Index is more nuanced than the principle of per capita emissions, which currently dominates the discussions regarding the formula for assigning responsibility for mitigating climate change.

It is easy for the developing nations to argue on the basis of per capita emissions of the developed world is primarily responsible for historic GHG emissions: collectively, the United States, Russia, Germany, United Kingdom, France, Japan, Canada and Poland account for about 70% of all the CO₂ that has been emitted since 1840.⁶⁰ On a per capita basis, the historic emissions of the United States (about 1,100 tons per person) are more than an order of magnitude greater than those of China (about 66 tons per person) and India

⁵⁷ UNITED NATIONS DEVELOPMENT PROGRAMME, HUMAN DEVELOPMENT REPORT 2007/2008 111 (2007) [hereinafter UNDP] (“Living within a sustainable 21st Century carbon budget [450 ppm CO₂ equivalent] requires that rich countries cut emissions of greenhouse gases by at least 80 percent by 2050, with 30 percent cuts by 2020. If the targets are to be achieved, the collective emissions curve will have to peak and start bending in a downwards direction between 2012 and 2015. Developing countries will also have to chart a low-carbon transition pathway, albeit at a pace that reflects their more limited resources and the imperative of sustaining economic growth and cutting poverty.”).

⁵⁸ UNDP, *supra* note 55, at 355-372.

⁵⁹ *Id.* at 229-242.

⁶⁰ *Id.* at 40-41.

(about 23 tons per person.⁶¹ Moreover, this disparity continues in terms of current GHG emissions. The United States (20.4 tons per person) emits far more per person than China (3.8) or India (1.2). However, the gross national carbon footprint of some developing nations, such as China and India, are large and growing rapidly. These historic emissions created today's climate change problem and have consumed much of the atmosphere's absorption capacity - "[i]n effect, the ecological 'space' available for future emissions is determined by past action."⁶²

The sole use of per capita emissions is inappropriate on two grounds. First, the UNFCCC defines the relations and obligations of nation states, not individuals within those nation states. Under international law, rights are held by nation states, not individuals within the state.⁶³ Therefore the allocations must be aggregated and assigned to the state. Since each nation has the "sovereign right to exploit their own resources pursuant to their own environmental and development policies,"⁶⁴ the international community has no way of ensuring the equitable per capita allocation of the emission entitlements to the population within the nation state. Additionally, as we have argued, the concept of per capita emissions must be qualified by the introduction of considerations arising from the efficiency of the use of the energy allocated. Given that sustainable development is all about inter- and intra-generational equity, the principle of per capita emissions on its own does not form a sufficient basis for determining emission entitlements to the nation state.

(ii) **A world of three groups**

The following two factors comprise our proposed formula for equitably allocating a global GHG cap:

- a. The present per capita emissions of each country: the higher a country's present per capita emissions the less the volume of GHG emissions to which the country is entitled for future emissions.
- b. The potential capacity of a country for future per capita emissions: the higher a country's potential capacity for future per capita emissions the lower the volume of GHGs to which the country is entitled for future emissions.

The volume allocated would be the average of these two factors. Consequently, countries with historically low responsibility and low potential for

⁶¹ *Id.*

⁶² *Id.* at 41.

⁶³ MARK W. JANIS, AN INTRODUCTION TO INTERNATIONAL LAW 182-183 (3d ed. 1999).

⁶⁴ Rio Declaration on the Environment, *supra* note 28, Principle 2.

future GHG emissions would be entitled to the highest allocations of emissions rights under a post Kyoto Protocol climate change mitigation regime. Into this category fall predominantly African countries, but also other small economies in Asia, as well as many of the small island states. Conversely, countries with historically high responsibility for emissions and a high potential for future emissions would be allocated the lowest emissions entitlements. Into this category fall predominantly Annex I countries. The third category of countries is countries with historically low responsibility for GHG emissions but high potential for future GHG emissions. Into this category fall the large newly industrializing countries of China, India, Brazil, Mexico, South Africa, and other rapidly industrializing economies. This category of countries would be allocated moderate emission entitlements.

As can be seen, resort to this Equitable Emissions Index as the basis for determining emission entitlements gives rise to three, and not two, categories of countries. It provides a way out of the impasse that has bogged down discussions on climate change mitigation since its inception and provides a win-win formula based on equity.

An allocation based on this principle would mean that countries with low emission allocations would be forced to utilize the flexible mechanisms by carrying out development projects/activities in countries with high emission entitlements, in which most benefit is to be derived in emissions avoidance. Poor - low carbon emitting - countries which currently have limited attraction for those investing in projects under the Clean Development Mechanism, would derive economic development benefits through “clean development” options (energy efficient development activities that avoid high GHG emissions).

Middle nations, such as China, would still have the ability to grow, and could use that cap to attract significant capital investment from developed countries. Such investments could finance improving the efficiency of China’s coal fired power plants from 30% to 45% by 2030, which would reduce China’s emissions about 1.8 gigatons of CO₂ less than projected – a reduction equivalent to about one-half of the European Union’s current CO₂ emissions.⁶⁵ Energy efficiency investments will lower GHG emissions, lower the emissions of other pollutants, and reduce a nation’s energy costs. The existing low levels of energy efficiency in developing nations impair mitigation of GHG emissions. Investments that raise energy efficiency levels could transform that serious challenge to mitigation “into an opportunity, generating large gains for human development in the process.”⁶⁶ Although developing countries will benefit from energy efficiency through reduced energy costs and reduced pollution generally, and the world will benefit from the low cost reductions in CO₂ emissions,

⁶⁵ UNDP, *supra* note 55, 12, 128.

⁶⁶ *Id.* at 12.

“unfortunately, the world lacks a credible mechanism for unlocking this win-win scenario.”⁶⁷

Our proposal could help provide a key to unlocking this potential. This design leads to a number of features, which makes it a win-win solution to the climate change mitigation dilemma.

- (i) It recognizes that allocation of emission rights represent a right to utilize Earth’s resources for development.
- (ii) It gives effect to the sustainable development principle of intra-generational equity, allocating the largest development rights (represented by emission entitlements) to the poorest countries.
- (iii) It places all countries under reduction/avoidance obligations and therefore eliminates the key objection, which led the U.S. not to ratify the Kyoto Protocol, that potentially future large emitters have no reduction/avoidance obligations under Kyoto Protocol.
- (iv) It ensures that the risk of leakage arising from CDM projects, jeopardizing the chances of achieving the ultimate objective of UNFCCC, is minimized.
- (v) It eliminates the marginalization of poor countries, in particular countries in Africa, in the implementation of the market based flexible mechanisms, since these poor but GHG resource-rich countries would be the automatic choice for CDM projects. Currently the lion’s share of the CDM projects are being undertaken in the countries with the largest potential for future emissions, mainly China and India, and Africa has a negligible proportion of projects.⁶⁸
- (vi) It facilitates the flow of funds through private sector driven market based projects (rather than development aid) from industrialized to non-industrialized countries.

VII. Conclusions

For poor countries at the post Kyoto Protocol climate change mitigation negotiations to be able to effectively articulate and support the position proposed in this Paper, there is a need for capacity building and support to negotiators and to local institutions. Capacity building and support would include training and logistical and equipment support to local institutions to enable them conduct the required negotiations.

⁶⁷ *Id.*

⁶⁸ UNFCCC Interactive Project Activities Map, <http://cdm.unfccc.int/Projects/MapApp/index.html?state=Public>.

The capacity building agenda proposed to enable the poor countries to make headway in a post Kyoto Protocol climate change mitigation regime has to be geared towards demonstrating the following:

- (i) The Kyoto Protocol has operated inequitably from the perspective of intra-generational equity given that very few CDM projects have been implemented in poor, low carbon emitting countries in Africa and elsewhere, thus defeating one of the key pillars of the CDM concept: clean development.
- (ii) The inequity has arisen from the design flaw in the UNFCCC and Kyoto Protocol, because they did not impose emission reduction/avoidance obligations on all countries and they consequently failed to allocate emission rights to all countries.
- (iii) When a proper enabling environment is created, market based mechanisms can ensure that funds flow from Annex I countries (and other potentially big emitters) to poor low carbon emitting countries, which in any case, are the countries with the best chance of embarking on the path of clean development by avoiding technologies which are dependent on fossil fuel consumption.
- (iv) Policy interventions are necessary to eliminate factors that constrain the operation of climate change mitigation related private sector investments in poor countries.