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Some Legal Impacts of the Emerging International Climate Change Regime on Energy Prices

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SOME LEGAL IMPACTS OF THE EMERGING INTERNATIONAL CLIMATE CHANGE REGIME ON ENERGY PRICES

JAMES E. HICKEY, JR.¹

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I. INTRODUCTION.

From the beginning of scientific assessment of climate change in the late 1970's to the most recent conference of the parties (COP) to the Kyoto Protocol in Doha in 2012, the international community has been attempting to establish a workable legal regime to deal with climate change. The purpose of this article is to explore some of the legal effects this emerging international climate change regime may have on energy prices in the foreseeable future.

Specifically, this article in section II article accepts certain predicates relating to climate change and energy prices. In section III, it lays out briefly the thirty year, largely unsuccessful, history of the attempts to establish an international legal regime to deal with climate change. Section IV argues that despite the lack of success in

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establishing an international legal regime, certain legal principles have been established that will affect energy prices in the foreseeable future. Section V concludes that those legal principles should be taken into account by states, legislators, policy makers, energy companies, advocates, consumers and investors in making energy pricing decisions and energy pricing predictions in the coming decades.

II. CLIMATE CHANGE AND ENERGY PRICING PREDICATES.

For purposes of this article, certain fundamental assumptions are accepted. First, climate change is occurring by the accumulation of greenhouse gases (GHG) in the atmosphere. Second, since the industrial revolution the activities of human beings in the use of energy resources to do work are a major contributor to greenhouse gases. Third, the production and use of fossil fuels (coal, oil and natural gas) are the primary source of mankind's GHG released into the atmosphere. Fourth, climate change produces and potentially will produce serious and potentially harmful adverse effects on global and local societies, including warming of the planet, sea level rise, changes in ocean temperatures, melting of the polar ice caps and mountain snow packs, melting of permafrost, weird weather events, increase in insects, loss of coastal habitats, changes in agricultural lands and the like. Fifth, for the most part, the costs of climate change occasioned by mankind's production and use of fossil fuel energy resources is not accurately reflected in wholesale or retail energy prices and remain largely external to energy purchasing decisions. Sixth energy and gross domestic product (GDP) are closely linked. For developing countries to develop economically, they must have affordable and reliable sources of energy and for developed countries to maintain their economies they also must have affordable reliable energy sources. Seventh, it is likely that demand for energy overtime will increase and not decrease. Populations are increasing and there are still around a billion people without electricity. New voracious energy demands from the computer and cell phone industry are now robust and still growing. Eighth, energy supply and demand are intimately influenced by price. Finally, law (international and domestic) as well as markets can be expected to address the impact of energy production and use on climate change.

III. THE ROLE OF THE EMERGING INTERNATIONAL CLIMATE CHANGE REGIME IN FUTURE ENERGY PRICES.

Both domestic climate change-related law and emerging international law affect energy prices. Domestically, of course, states have clean energy and greenhouse gas initiatives that affect energy prices like renewable energy portfolios and feed in tariffs to encourage renewable energy projects. Regional arrangements like the Regional Greenhouse Gas Initiative (RGGI) have carbon trading schemes or programs of one sort or the other that are beginning to influence energy prices.

What is less appreciated and often somewhat overlooked is the growing impact of emerging international climate change legal principles that are relevant to energy prices. This article suggests that despite the relative lack of success of the international community to forge an international regime to deal with climate change over the past decades, certain enduring principles have nonetheless solidified out of that process that may shape the future pricing of energy products.

A. *Climate Change, Energy Prices and international Regulation.*

It has long been “officially” appreciated domestically and internationally that even putative international regulation of greenhouse gases is relevant to energy product pricing. For example, over two decades ago, the Wisconsin Public Service Commission tackled the problem of putting a dollar amount in electric rates in anticipation of international climate change regulation:

“Because of widespread concern about the risks of global warming at state, national and international levels, future regulations are likely to require the utility industry to limit its release of these gases. If so, utilities would incur real economic cost in order to comply with these regulations.”

* * *

“A national and international consensus to regulate greenhouse gas emissions is emerging. When the likelihood of future regulation is high, it is reasonable to estimate the cost of compliance to utilities. Ignoring this financial risk would be imprudent.”

* * *

“Monetizing the risk of greenhouse gas regulation is a prudent means of reducing utility business risk by hedging against the future. . . [and] considering the likelihood of . . . international greenhouse gas regulations.”²

In 2013, an International Monetary Fund (IMF) report on energy pricing reforms tied together future energy pricing and greenhouse gases:

“Even future generations are affected [by underpriced energy] through reduced availability of key inputs for growth and the damaging effects of increased energy consumption on greenhouse gas emissions and global warming.”

* * *

“Removing [economic energy] subsidies could lead to a 13 percent decline in CO₂ [carbon dioxide] emissions.”³

B. *The Emerging International Climate Change Regime.*

Despite the sort of longstanding domestic and international acceptance of the connections among climate change, energy prices and international regulation, an international climate change regime has been very slow to emerge, leading to observations that there is little international climate change “law” to apply.

² *Advance Plans for Constr. Of Facilities*, 136 P.U.R. 4th 153 (Wi.P.S.C. 1992); see generally, James E. Hickey, Jr. *The Globalization of Domestic Environmental Law*, 14 NYSBA ENV'TL LAW SECTION J.16 (1994).

³ International Monetary Fund, *Energy Subsidy Reform: Lessons and Implications*, at 1, 5 (January 28, 2013). <http://www.imf.org/external/np/pp/eng/2013/012813.pdf>.

The following selected timeline from 1979 through 2012 illustrates the challenging, rather tortured, path toward an emerging climate change regime over the past three decades.⁴

In 1979, The World Meteorological Organization (WMO) sponsored the first scientific World Climate Conference (WCC) which ultimately led to the establishment of the Intergovernmental Panel on Climate Change (IPCC).

In 1988, the IPCC was established by the WMO and the United Nations Environment Programme (UNEP).⁵ The IPCC seeks “to provide the world with a clear scientific view of the current state of knowledge in climate change and its potential environmental and socio-economic impacts”.⁶ Its first assessment report came out in 1990 and its fifth assessment is due in 2013/2014.⁷ In general terms, the IPCC assessment reports establish the importance of climate change and that it merits political action to address.

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted and it entered into force in 1994.⁸ The UNFCCC in Article 2 set forth the twofold agenda for all subsequent conferences of the parties (COP) that has guided the efforts in following years. That is, the “ultimate” objective is first to stabilize GHG concentrations in the atmosphere at a level to prevent dangerous man-made interference with the climate system and, second, to do so in a timeframe to allow ecosystems to adapt naturally to climate change in a sustainable way.

The UNFCCC is legally significant for what it does not do. It does not establish a timeframe for achieving those Article 2 agenda goals. It does not impose any obligation to curtail energy production and use that contributes GHG to the atmosphere. It contains no enforcement mechanisms or specific targets to be achieved. It is largely an aspirational legal instrument.

In 1997, the Kyoto Protocol to the UNFCCC was adopted and it entered into force in 2005. (The United States withdrew from the Protocol in 2001.) The Protocol set internationally binding GHG emissions targets to reduce emissions below 1990 levels by the period 2008-2012. Kyoto placed a heavier burden on developed countries to curtail GHG emissions than on developing countries. These targets have not been met.

In 2007, the COP met in Bali, Indonesia. The COP adopted the Bali Roadmap which included a Bali Action Plan meant to set a path and process for reaching a shared vision and to deal with climate mitigation, with adaptation, with technology

⁴ For a complete timeline see *Background on the UNFCCC: The International Response to Climate Change*, United Nations Framework Convention on Climate Change, http://unfccc.int/essential_background/items/6031.php (last visited Oct. 19, 2013).

⁵ *History*, IPCC, http://ipcc.ch/organization/organization_history.shtml (last visited Oct. 19, 2013).

⁶ *Organization*, IPCC, <http://ipcc.ch/organization/organization.shtml> (last visited Oct. 19, 2013).

⁷ *History*, IPCC http://ipcc.ch/organization/organization_history.shtml. (last visited Oct. 19, 2013). The IPCC does not itself undertake either climate change research or monitoring of climate information and data.

⁸ *Full Text of the Convention*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/essential_background/convention/background/items/1349.php (last visited Oct. 19, 2013).

and with financing. The UNFCCC website accurately terms the Bali effort “highly ambitious”, “overly optimistic” and one that “underestimated the complexity both of climate change as a problem and of crafting a global response to it.”⁹

In 2011, the COP met in Durban, South Africa. The Durban Conference stated the need for a “fresh” “blueprint” to address climate change beyond 2020.¹⁰ The COP committed to a plan to “come closer over time” to meet the “ultimate objective” of Article 2 of the UNFCCC to stabilize GHG concentrations.¹¹ The stated goal was to achieve reduction in GHG emissions “to keep average global temperatures rising no more than two degrees above their pre-industrial level...”¹² The need to “build and preserve trust” among countries was noted as well the need for “bolder and bigger actions”.

Most recently, the COP met in Doha, Qatar. The most significant action taken by the COP was to adopt a proposed amendment to the 1997 Kyoto Protocol to establish a new commitment period for countries to curtail GHG emissions since the old commitment period expired in 2012.¹³ The new period would be from 2013 to 2021. The COP also committed to reach a new agreement by 2015. Of less significance was the declaration to open a “gateway” to “greater ambition and action” on GHG emissions to “strengthen resolve”, “to streamline negotiations”, to increase “ambition” to cut GHG and “to help vulnerable countries to adapt” to climate change, and to make “progress toward” helping developing countries with financial and technological support in their efforts to make clean energy investments and have sustainable growth.

There are several factors that help to explain the lack of progress of the international climate change regime toward firm and specific legal obligations to internalize the externalities of GHG emissions in human activity including in prices for the production and use of energy that produces GHG emissions.

First, climate change involves aspects of a commons (i.e. the upper atmosphere used by all to dispose of GHG) with no legal right to exclude any one nation from so using the atmosphere. This commons characteristic impedes reaching an agreement. For example, it took nations almost thirty years from 1967 to 1994 to agree to a new ocean regime for the deep seabed –a commons deemed the “common heritage of mankind”.¹⁴

⁹ *Now, up to and Beyond 2012: The Bali Road Map*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/key_steps/bali_road_map/items/6072.php (last visited Oct. 19, 2013).

¹⁰ *Durban: Towards full implementation of the UN Climate Change Convention*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/key_steps/durban_outcomes/items/6825.php (last visited Oct. 19, 2013).

¹¹ *Id.*

¹² *Id.*

¹³ *Doha Amendment*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/kyoto_protocol/doha_amendment/items/7362.php.

¹⁴ *Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil Thereof, Beyond the Limits of National Jurisdiction*, G.A. Res. 2749 (XXV), U.N. GAOR, 1933rd plen. Mtg, U.N. Doc. A/8097 (December 17, 1970), reprinted in [1971] 10 I.L.M. 220 (1971).

Second, there is great difficulty in reaching agreement on legal obligations between developed countries and developing countries. Broadly stated, the developing countries argue that it is the developed, industrial, countries that caused the climate change problem and it is their responsibility (not the developing nations) to remedy it.¹⁵ The developed countries, for their part, argue that developing nations must take the world as they find it – a world with a need to curtail GHG and the developing countries must be part of the solution.

Third, there is tension between efforts to mitigate GHG emissions and efforts to adapt to climate change.¹⁶ Mitigation advocates argue that international climate change efforts should focus on stopping GHG emissions and adopting steps to curtail and limit GHG emissions. Adaptation advocates, to a significant degree, accept that climate change is occurring and that efforts should be taken to adapt to the change like building sea walls, changing agricultural crop selection, shifting food choices, conservation of fresh water resources, devising new building construction methods, etc. Those pushing for curtailment to mitigate climate change often view adaptation policies as a form of surrender in the battle to combat climate change that just diverts needed mitigation resources.

Fourth, there continues to be a lack of agreement on the optimum mechanism to use to address curtailment of GHG. Some urge that a voluntary GHG reduction scheme be adopted. Others push for a command and control scheme administered through a formal international organization or regime. Others urge that a market-based mechanism be utilized (some form of cap and trade mechanism similar to that used in the Clean Air Act Amendments of 1990 which created a private market in emissions rights from stationary sources of air pollution (sulfur and other pollutants)).¹⁷ Still others urge the simple adoption of a carbon tax on GHG emissions from all sectors.¹⁸

Finally, there is, of course, considerable political pressure from various, public and private, domestic and international, constituencies all attempting to influence the process and content of an ultimate international climate change regime or mechanism.

¹⁵ For the developing countries position, see Christine Batruch, “Hot Air” as Precedent for Developing Countries: Equity Considerations, 17 UCLA J. ENVTL L. AND POL’Y 45 (1998-1999).

¹⁶ MICHAEL B. GERRARD & KATRINA FISCHER KUH, THE LAW OF ADAPTATION TO CLIMATE CHANGE 3-4 (2012).

¹⁷ See 42 U.S.C.A. §§ 7401 *et seq.*; See THE ENERGY LAW GROUP, ENERGY LAW AND POLICY FOR THE 21ST CENTURY, *Environmental Protection and Energy Development*, 5-13 (2000).

¹⁸ See N. Gregory Mankiew, *A Carbon Fee That America Could Live With*, N.Y. TIMES, Sept. 1, 2013.

*C. Some Enduring Principles from the Emerging Climate Change Regime
Influencing Energy Prices.¹⁹*

Without meaningful legal agreement reached in some three decades of effort, it is tempting to dismiss the international climate change process as largely irrelevant to energy prices of GHG emitting energy products. Despite that lack of progress, there are certain overlapping, enduring, legal principles that have now become embedded in the process that should not be ignored in deciding whether, how and to what degree to reflect the present externality of GHG emissions in energy prices. Taken together, these principles, which have soft law²⁰ and hard law aspects, will legally influence, to a greater or lesser degree, both international and domestic costing of GHG emissions and the embedding of those costs in future energy prices of GHG emitting products from electricity to gasoline to natural gas.

1. Limited State Sovereignty over natural resources.

This principle of limited state sovereignty over natural resources is relevant to addressing GHG emissions generated in energy fuel cycles especially by fossil fuel use. It is a longstanding fundament of international law that states have “permanent sovereignty over their natural wealth and resources” including over fossil energy resources like coal, oil and natural gas that emit GHG.²¹ This is a strong notion in international law especially for developing nations. However, it is also a fundament of international law that that sovereignty is not absolute in a variety of ways. The related principle of sovereign equality necessarily means that one state may not exercise its sovereignty (including sovereignty over energy natural wealth and resources) in a way that encroaches on the sovereignty of another state. This notion of state responsibility in using natural resources over which a state has sovereignty is embodied in the general and well-recognized principle of international law, *sic utere tuo ut alienum non laedas* (one must so use own as not to do injury to another).²² In an environmental air pollution context, the famous Trail Smelter Arbitration held that a State is responsible for injury to the neighboring territory by noxious fumes emanating from within its territory.²³ And Principle 21 of the 1972 Stockholm Declaration on the Human Environment further extended the limitation on state sovereignty in the exploitation of natural resources “to ensure”

¹⁹ For a summation of the larger foundational predicates of the emerging international climate change regime including the principles referred to in this section, see ROWENA MAGUIRE, *Foundations of International Climate Law: Objectives, Principles and Methods in Climate Change and the Law* 83-110 (Hollo, Kalooves and Mehling, Eds., 2013); See generally, PHILLIPPE SANDS, *PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW* 231-290 (2d Ed. 2003).

²⁰ See ENERGY LAW GROUP, *supra* note 17, at 4-18-4-19.

²¹ *United Nations Generally Assembly Resolution on Permanent Sovereignty Over Natural Resources*, G.A. Res. 1803 (XVII), U.N. GAOR, 17th Sess., U.N. Doc. A/5344/Add.1 and Add/1/Corr.1. A/L.412/Rev.2 (Dec. 14, 1962), reprinted in [1963] 2 I.L.M 223(1963).

²² The Corfu Channel Case, Judgment, 1949 I.C.J. 4 (Apr. 9).

²³ Trail Smelter Arbitration (US v. CA), 3 R. Int'l Arb. Awards 1905 (1949), 35 Am J. Int'l L. 684 (1941).

environmental damage is not caused to “areas beyond the limits of national jurisdiction” and not just in neighboring state territory.²⁴

This principle of limitation on state sovereignty in the use of natural resources has been embedded in the emerging climate change regime from the outset. The 1992 UNFCCC, which is aimed at stabilization of GHG emissions by States into the atmosphere, “recalls” in its preamble that:

States have, in accordance with . . . principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental 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 jurisdiction.²⁵

The limitation on state sovereignty with regard to use of energy natural resources extends to more specific action to prevent GHG emissions action as well and not just to account for acts already done that cause harm. Of course, this is a general principle in all environmental law the object of which is to prevent pollution from occurring. Article 2 of the UNFCCC states that its objective and the objective of all subsequent instruments is “to prevent dangerous anthropogenic interference with the climate system.”²⁶

Arguably, this principle of limited state sovereignty over natural resources including a responsibility to prevent harm applies also to a state allowing or approving the pricing of energy products and goods in a way that unduly contributes to GHG that cause climate change and harm to other states, to commons areas, and to the global environment.

2. The Polluter Pays Principle.

The polluter pays principle says that actors responsible for pollution (individuals, corporations, states etc.) should pay the costs associated with their polluting activities. Thus, if the limitations on state sovereignty are ignored and preventive action is not taken and pollution results in the form of GHG, then the polluter pays principle becomes relevant. That greenhouse gases like CO₂ are pollutants is not controversial. For example, the U.S. Supreme Court in *Massachusetts v. EPA* held that the Clean Air Act authorizes federal regulation of emissions of carbon dioxide and other greenhouses because they are pollutants under the statute.²⁷

At the international climate change level, the principle is controversial and less accepted than other principles. At the same time, it is the principle that would have the most direct implications for energy prices and pricing. That is, under the principle, the costs of pollution in the form of GHG should be reflected in the prices

²⁴ *United Nations Conference on the Human Environment*, U.N. Doc. A/Conf. 48/14/Rev.1 (1973); 11 I.L.M. 1416, 1420 (1972). available at <http://www1.umn.edu/humanrts/instree/humanenvironment.html>.

²⁵ United Nations Conference on Environment and Development, Rio De Janeiro, Braz., June 3-14, 1992, United Nations Framework Convention on Climate Change, preamble, (May 9, 1992). http://unfccc.int/essential_background/convention/background/items/1349.php.

²⁶ *Id.* at art. 2.

²⁷ *Massachusetts v. EPA*, 549 U.S. 497, 532 (2007).

charged for energy products all along energy fuel cycles from production to consumption. However, at the international level the principle becomes somewhat problematic as it would have an impact both on state subsidies of various forms and on the issues surrounding the divide between developing and developed nations addressed in the principle below dealing with common but differentiated responsibilities. As a result the polluter pays is at best a soft law principle. For example, The 1992 Rio Declaration on Environment and Development (Rio Declaration) (a nonbinding soft law instrument) provides only that States “should endeavor”:

To promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.²⁸

This is the only formal appearance the principle makes in the international climate change regime process. It is not incorporated into the UNFCCC. However, the 2013 IMF Report referred to above in calling for removing economic energy subsidies and criticizing reduced availability of GHG emissions in underpriced energy could be viewed as an endorsement of the polluter pays principle.²⁹

The polluter pays principle in domestic law is better known and less controversial as a principle. Its articulation in the international climate change regime (at least in the Rio Declaration) supports its application in domestic energy pricing situations to include GHG emissions associated with energy transactions in energy prices.

3. The Precautionary Principle.³⁰

The precautionary principle is now a staple principle in international environmental law instruments generally and in the emerging international climate change regime in particular, although its precise meaning and scope of application is still evolving and variable. Generally, it is a significant extension of the polluter pays principle and the limitation on state sovereignty to not use natural resources in a way to do harm to neighboring states or commons. The precautionary principle generally raises an obligation in anticipation of conduct or activities that would result in harm. It also lessens the need for causation to be firmly established so that it may apply in cases of scientific uncertainty. It also may operate to shift the burden of proof – from the one claiming harm to establish environmental harm to potential polluters to establish that their action will not harm the environment. The principle’s efficacy increases with level of risk of harm.

²⁸ United Nations Conference on Environment and Development, Rio De Janeiro, Braz., June 3-14, 1992, Rio Declaration on Environment and Development, Principle 16, <http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=78&ArticleID=1163>.

²⁹ *Int’l Monetary Fund*, *supra* note 3.

³⁰ See generally James E. Hickey, Jr. & Vern R. Walker, *Refining Precautionary Principle in International Environmental Law*, 14 VA. ENVTL. L.J. 423 (1995); SANDS, *supra* note 19, at 266-79.

In the emerging climate change regime context, the principle is embedded as a soft law principle.

Article 3 (3) of the UNFCCC provides that States “should”:

Take precautionary measures to anticipate, prevent, or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.³¹

This would seem to encourage appropriate governmental regulatory bodies like public service commissions and other governmental bodies to reflect the cost of anticipated GHG emissions in some manner into prices under their jurisdiction.

4. The Common But Differentiated Responsibilities Principle.

This principle accepts in a climate change context, the self-evident reality that while States generally are legal sovereign equals, they are in reality not all the same. It also reflects the considerable divide in the emerging climate change regime between developed and developing nations and expressed in overarching equity and fairness terms.

Principle 7 of the 1992 Rio Declaration provides in relevant part:

In view of the different contributions to global environmental degradation, states have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.³²

And, Article 3 (1) of the UNFCCC similarly provides:

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 and respective capabilities. Accordingly, the developed country Parties should take the lead in combatting climate change and the adverse effects thereof.

Thus, under this principle all states, developing and developed, have shared obligations to protect the climate system. However, the extent of those obligations differ in relation to their contribution to climate change and their ability to do something about it. As a result, the 1995 Kyoto Protocol calling for obligations to curtail GHG, excluded developing countries from binding obligations to reduce GHGs.³³

³¹ United Nations Conference on Environment and Development, *supra* note 9, at art. 3.

³² United Nations Conference, *supra* 28, at Principle 7.

³³ See, AM. BAR ASS'N SPECIAL COMM. ON CLIMATE CHANGE AND SUSTAINABLE DEV., 1997 ANN. REP., ABA SECTION OF NATURAL RESOURCES, ENERGY, AND ENVIRONMENTAL LAW

For energy prices, this may mean that energy prices in developed countries might be under greater pressure to reflect the cost of GHG and under lesser or no pressure to include those costs in developing countries.

5. The Duty to Cooperate Principle.

This principle of cooperation is firmly entrenched in international environmental law but often overlooked and undervalued in examining obligations of individuals, corporations and States. It imposes at a minimum a duty to negotiate in good faith and may “translate into more specific commitments through techniques designed to ensure information sharing and participation in decision making”.³⁴

In a climate change context, the Rio Declaration in Principle 7 provides that “States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth’s ecosystem” and Principle 27 provides that “states and people shall cooperate in good faith”.³⁵ The UNFCCC Preamble “calls for the widest possible cooperation” and Article 3 (3) states that “The Parties should cooperate to promote a supportive and open international economic system.”³⁶

This principle of cooperation would seem to support a disclosure of pricing information, components and methodology for energy fuel cycles that produce GHG by corporations and governmental regulatory bodies.

IV. CONCLUSION.

This article accepts that science indicates that climate change is occurring by the accumulation of GHG in the atmosphere and that the use of fossil fuel sources of energy (primarily coal, oil, and natural gas) by humans contributes very significant amounts of GHG to the atmosphere. It also accepts that climate change, in turn, produces potentially adverse effects on global and local societies. It also accepts that there is a connection between GHG emissions and the price at which those fossil fuel energy products are bought and sold.

The largely unsuccessful effort over the past three decades or so to forge an international regime to address climate and GHG emissions with meaningful legal obligations that are enforceable does not mean that effort is irrelevant to pricing of energy products that contribute GHG to the atmosphere. Several enduring hard law and soft law principles have become imbedded as a result of the climate change regime process that are, and will be, germane to energy pricing decisions. Those principles include the principle of limited state sovereignty over the use of natural resource (including fossil fuel resources) to prevent extra territorial damage, the polluter pays principle, the precautionary principle, the common but differentiated responsibility principle, and the duty to cooperate.

Domestic price regulators, advocates, energy corporations, legislatures, courts, and policy makers all should be aware of these principles in determining, setting, challenging and reviewing energy prices in the decades ahead.

(1997), *reprinted in* FRED BOSSELMAN, ET AL., ENERGY ECONOMICS, AND THE ENVIRONMENT 736-38 (Robert C. Clark et. Al. eds., 3d ed. 2010).

³⁴ SANDS, *supra* note 19 at 250.

³⁵ United Nations Conference, *supra* note 28, at Principles 7, 27.

³⁶ United Nations Conference, *supra* note 9, at preamble, art. 3.