Chapter 4: Foreign Legal Developments: Comparative Law and Policy

Countries around the world have varied widely in their response to the threat of climate change. The policies and actions of the United States federal government—considered in detail in Chapter Three—have been weak in comparison to many other industrialized countries. In the United States, as described at greater length in Chapter Five, states and cities have emerged as leaders in devising laws and policies to address climate change. In contrast, the countries of the European Union (EU) have responded strongly and directly, most notably with the establishment of an EU-wide regulatory program to reduce greenhouse gas emissions. Other industrialized countries like Canada have fallen in between the U.S. and the EU in terms of their national commitment; Canada was willing to join the Kyoto Protocol, but has struggled to meet its commitments and decided not to recommit to a second Kyoto Protocol period. Large developing countries such as China and Brazil are emerging as climate change policy leaders, but they face many challenges.

With the failure thus far of United Nations Framework Convention on Climate Change (UNFCCC) negotiations to produce a binding agreement that would reduce emissions adequately to avoid risks of major impacts, the question emerges: To what extent can voluntary national policies, such as those countries commit to as Nationally Appropriate Mitigation Actions (NAMAs) under the UNFCCC, substitute for a coordinated international approach? Considering that 60 percent of greenhouse gas emissions come from just ten countries (see Table 4.1), great progress could be made through greenhouse gas reductions pursued unilaterally or through agreements among small groups of countries. The Major Economies Forum approach described in Chapter Two reflects that understanding, but has yet to result in significant, specific commitments. While the world waits for more successful UNFCCC negotiations, great importance lies in the actions that each major emitter takes.

Table 4.1: Greenhouse Gas Emissions and Other Climate Change-Related Indicators for 2005 Top 10 Emitting Countries

2005 Rank	Country	2005 GHG Emissions (MMTCE)	2005 GHG Emissions (% of World)	1990 GHG Emissions (MMTCE)	1990-2005 Emissions Difference (MMTCE)	1990-2005 Increase or Decrease (%)	2005 Per Capita GHG Emissions (tons C/person)
1	China	1,974	19.1%	981	993	101.2%	1.5
2	United States	1,892	18.3%	1,634	258	15.8%	6.4
[3][a]	European Union-27	1,378	13.4%	1,467	-89	-6.1%	2.8
3	Russian Federation	532	5.2%	800	-268	-33.5%	3.7
4	India	509	4.9%	302	207	68.5%	0.5
5	Japan	370	3.6%	326	44	13.5%	2.9
6	Brazil	276	2.7%	188	88	46.8%	1.5
7	Germany	266	2.6%	326	-60	-18.4%	3.2
8	Canada	202	2.0%	159	43	27.0%	6.2
9	United Kingdom	176	1.7%	194	-18	-9.3%	2.9
10	Mexico	176	1.7%	125	51	40.8%	1.7
Total[b] (Top 10)		6,373	61.8%	5,035	1,338	26.6%	
	WORLD	10,320	100.0%	8,380	2,189	26.1%	1.6

Source: Adapted from Larry Parker & John Blodgett, GREENHOUSE GAS EMISSIONS: PERSPECTIVE ON THE TOP 20 EMITTERS AND DEVELOPED VERSUS DEVELOPING NATIONS, Appendix B, Tbl. B-1, Congressional Research Service Report RL32721 (January 7, 2010). Notes: (a) If the EU-27 were ranked in terms of its 2005 GHG emissions, it would place 3rd; (b) Totals are of the 10 individual nations; they do not include the European Union.

Studying the different approaches of countries to climate law and policy is also important for other reasons. In many cases, principles and strategies that are ultimately adopted at the international level are first developed or used in one or more countries. Countries may also learn from the successes and failures of policies in other countries. Finally, studying other countries allows us to more honestly and thoroughly evaluate the strength and appropriateness of our own national policies. To provide this comparative perspective, this chapter analyzes the climate change policies of several of the world's largest emitters outside the United States—the EU, Canada, China and Brazil.

A. Comparative Law Approaches

Climate change will require significant legal and policy development in most, if not all, countries. Even countries that are not large emitters are likely to need policies to adapt to climate change and prevent growth of emissions. Comparative law provides an approach or framework to understand how and why legal development differs in different places.

Traditionally, comparative law consisted primarily of rule-comparison, wherein experts focused on the text of legal rules, particularly those embodied in legislative acts, as their principal object of study. Based on this approach, comparative lawyers would often advocate that countries "borrow" or "transplant" laws from other countries, particularly those viewed as more advanced in their legal development. See Alan Watson, LEGAL TRANSPLANTS: AN APPROACH TO COMPARATIVE LAW (1974). For example, the American and French Revolutionary legal reforms were widely emulated in other nations. Merryman, *supra*, at 773-74. In the environmental field, laws requiring the preparation of environmental impact studies originated in the U.S. and were widely adopted elsewhere.

Traditionally, comparative law scholars have categorized countries as part of either the civil law tradition or the common law tradition. The legal systems of most European and Latin American countries are derived more directly from Roman law and are referred to as civil law legal systems, while the England and the United States have common law legal systems. John Henry Merryman, THE CIVIL LAW TRADITION: AN INTRODUCTION TO THE LEGAL SYSTEMS OF WESTERN EUROPE AND LATIN AMERICA (1969). In civil law countries, there is a stricter separation of powers among the branches of government that precludes considering judicial opinions as a source of law. Rather, the legislature makes law and judges merely apply it to the case at hand. For these reasons, judges and courts in civil law countries are less likely to be influential actors in resolving cutting-edge legal and policy issues.

More recently, comparativists have emphasized the importance of a more contextual approach, in which the law's social and cultural context is more fully taken into account. Professor John Henry Merryman suggests that comparative law scholars should consider a wide variety of differences in legal culture, legal institutions, legal actors, and legal processes. John Henry Merryman, *Comparative Law Scholarship*, 21 HASTINGS INT'L & COMP. L. REV. 771 (1998). Relatedly, comparative law scholars have questioned the viability of legal transplants. They doubt that a law that emerged in one country's legal system can be inserted into another legal system with similar effect. Professor Pierre Legrand has argued that legal transplants are "impossible" because when a legal rule is moved to a new legal system, the meaning of the rule will inevitably change given its new social and cultural context. See Pierre Legrand, *The Impossibility of 'Legal Transplants,'* 4 MAASTRICHT J. EUR. & COMP. L. 111 (1997).

In addition to the field's theoretical and methodological complexities, there are also practical barriers to effectively comparing the laws of different countries. While differences in language can be overcome, difficulties of translation are real and important. Moreover, the cultural and historical nuances that affect legal processes and outcomes in different places often require that the legal comparativist use the research tools of social science. As Professor Legrand has written, "what is anthropology if not the study of foreign cultures? And, what does comparative legal studies address if not the study of foreign legal cultures?" Pierre Legrand, *How to Compare Now*, 16 LEGAL STUDIES 232, 238 (1996). As a practical matter, it may be difficult for one—or even of group of scholars—to amass the expertise necessary to fully understand the meaning and significance of legal change in different countries.

NOTES AND QUESTIONS

1. Assuming you can read French, how much do you think you would learn about how French climate change policy by reading a French climate change law? What limits or barriers would you face? How useful of an exercise do you think it would be to compare the text of the French law with the text of California's Global Warming Solutions Act? If you were to propose to conduct research comparing climate change law in France and California, what research activities would you include in the proposal?

2. What elements of climate change law do you think might be good candidates for legal transplant? Could rules setting forth a carbon tax or a cap-and-trade system be transplanted from one country to another? What about rules regarding coastal development or energy efficiency standards?

3. A large body of comparative scholarship exists about how environmental law is written, implemented and enforced in different countries. Focusing most often on industrialized countries, such studies have found different "national styles of regulation." The United States for example has been found to rely more on adversarial processes and adjudication to enforce environmental laws. Robert A. Kagan, ADVERSARIAL LEGALISM: THE AMERICAN WAY OF LAW (2001). The environmental agencies of countries such as Germany and Great Britain tend to deal with polluters in a more collaborative and conciliatory way. Id.; David A. Vogel, NATIONAL STYLES OF REGULATION: ENVIRONMENTAL POLICY IN GREAT BRITAIN AND THE UNITED STATES (1986). How might past differences in regulatory style influence how different countries undertake climate change law and regulation?

B. The European Union: Energetic Regulatory Action

The European Union (EU), which is the third largest greenhouse gas emitter when considered as a whole, has led in establishing a regulatory regime to reduce greenhouse gases. In 2005, the EU started an ambitious emissions trading program that covered about half of its carbon dioxide emissions. Why did the EU take this action at the same time that the U.S. federal government was largely stagnant in developing a legal and policy response to climate change? How did European lawmakers move forward when U.S. policymakers were apparently bedeviled by arguments that climate change science was uncertain and that climate change regulation would hurt the country's economy?

In order to understand the EU's climate change policy, some background on the EU's political and legal structure is helpful. The EU is composed of 27 member states, including Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom. Its origins date from the 1957 Treaty of Rome, in which six states (Belgium, France, Germany, Italy, Luxembourg and the Netherlands) formed the European Economic Community to pursue common economic objectives. In 1993, the Treaty on European Union, or Maastricht Treaty, formally constituted the EU with the membership of 12 states. Additional countries joined in 1995, 2004 and 2007.

Three institutions are primarily responsible for making law and policy in the EU. The European Council, constituted by the heads of state, is the primary policy-setting and decision-making body, The European Parliament, the members of which are directly elected, is responsible for passing legislation in coordination with the European Council. The European Commission acts as the EU's executive arm; it is responsible for initiating legislation and the day-to-day running of the EU.

The first and second sections below focus on how the European Union became a world leader in climate change policy. The third section details the workings and outcomes of the EU's emissions trading program. The final section analyzes European progress towards meeting the emissions reductions target that it committed to in the Kyoto Protocol.

1. The Precautionary Turn

The European Union's aggressive action on climate change is consistent with a broader trend since the 1990s: environmental law in Europe has become more proactive and precautionary than environmental law in the United States. The following excerpt by Professor David Vogel explores this divergence.

DAVID VOGEL, THE HARE AND THE TORTOISE REVISITED: THE NEW POLITICS OF CONSUMER AND ENVIRONMENTAL REGULATION IN EUROPE, Brit. J. Polit. Sci. 33: 557 (2003).

This article describes and explains an important shift in the pattern of divergence between consumer and environmental protection policies in Europe and the United States. From the 1960s through the mid 1980s American regulatory standards tended to be more stringent, comprehensive and innovative than in either individual European countries or in the European Union (EU). The period between the mid 1980s and 1990 was a transitional period: some important regulations were more stringent and innovative in the EU, while others were more stringent and innovative in the United States. The pattern since 1990 is the obverse of the quarter-century between 1960 and the mid 1980s: recent EU consumer and environmental regulations have typically been more stringent, comprehensive and innovative than those of the United States.

To borrow Lennart Lundqvist's formulation, which he used to contrast American and Swedish air pollution control standards during the 1970s, since around 1990 the American 'hare' has been moving forward at a tortoise pace, while since the mid 1980s the pace of the European 'tortoise' resembles that of a hare. To employ a different metaphor, in a number of significant respects European and American regulatory politics have 'traded places'. Regulatory issues were formerly more politically salient and civic interests more influential in the United States than in most individual European countries or the EU. More recently, this pattern has been reversed. Consequently, over the last fifteen years, the locus of policy innovation with respect to many areas of consumer and environmental regulation has passed from the United States to Europe.

This historical shift in the pattern of divergence of European and American consumer and environmental regulations poses two questions. First, why has consumer and environmental regulation become more stringent, comprehensive and innovative in Europe since the mid 1980s? Secondly, why did it become less stringent, comprehensive and innovative in the United

States after 1990? This article addresses both these questions, but it focuses primarily on describing and explaining the shift in European regulatory politics and policies. …

The EU has… replaced the leadership role of the United States in addressing global environmental problems. Through the 1980s most major international environmental agreements – most notably the London Convention on Dumping at Sea (1972), the Conventional on International Trade in Endangered Fauna and Flora (1973) and the Montreal Protocol (1987), which phased out the use of CFCs to protect the ozone layer – were both initiated and strongly supported by the United States, and subsequently ratified by either individual European countries or the EU. 'Since the early 1990s, however, effective US international environmental policy leadership has lapsed.' By contrast, by 1994 the Basel Convention on Hazardous Wastes (1989) had been ratified by every EU Member State but has yet to be ratified by the United States. Both the Convention on Biological Diversity (1992) and the Biosafety Protocol (2000) were signed by the EU, but not by the United States.

The EU, as well as each of the member states, has ratified the Kyoto Protocol, an international treaty to reduce emissions of greenhouse gases, and a number of European nations have established policies to reduce carbon emissions. The United States refused to ratify the 1997 Kyoto Protocol, was not a party to the 2001 Bonn Agreement, and there are no federal controls on carbon emissions, only a set of voluntary guidelines. …

Another important indicator of the extent to which the United States and Europe have 'traded places' has to do with the transatlantic direction of regulatory emulation. During the 1970s and 1980s, the European environmental agenda was strongly influenced by the United States. Thus throughout the debates in Europe during this period over automotive emission standards, American standards often served as a benchmark, with environmentalists and their supporters pressuring the national governments and the EU to adopt them. Indeed, for both Sweden and the EU, the existence of more stringent American standards actually facilitated the strengthening of European standards; since global automobile manufactures were now producing less polluting cars for the American market, it made both economic and environmental sense to require these firms to market similar vehicles in Europe. As a Swedish panel noted: 'the only realistic solution to the problem of strengthening the Swedish exhaust gas regulations seems, for the moment, to be an adaptation to the United States regulations.' …

More recently the transatlantic flow of influence has been in the opposite direction. American restrictions on leg-traps and its ban on animal feed for cattle have been influenced by developments in Europe.

Changes in European Regulatory Policies and Institutions

The emergence of the precautionary principle as a guide to regulatory decision making represents an important dimension of the new European approach to risk regulation. This principle legitimates regulation when 'potentially dangerous effects deriving from a phenomenon, product or process have been identified, and … scientific evaluation does not allow the risk to be determined with sufficient certainty [because] of the insufficiency of the data or their inconclusive or imprecise nature.' Originally developed in Germany during the 1970s and 1980s, it was incorporated in the 1993 Treaty of the European Union. Since 1994, it has been referenced in more than thirty reports and resolutions of the European Parliament.

While the precautionary principle cannot be divorced from science, since 'a scientific view of the risk is an essential component of the evaluation of risk that the principle anticipates', its growing popularity in Europe reflects the perception that scientific knowledge is an insufficient

guide to regulatory policy. It requires the extension of scientific knowledge while simultaneously acknowledging 'the possible intrinsic limitations of scientific knowledge in providing the appropriate information in good time'. The principle thus both increases public expectations of science and reflects the public's scepticism of scientific knowledge. In effect, it reduces the scientific threshold for regulatory policy making. By mandating or precluding regulatory action, in advance of scientifically confirmed cause–effect relationships, the principle, 'curtails the ability of politicians to invoke scientific uncertainty as a justification for avoiding or delaying the imposition of more stringent protection measures'. While its legal significance at both the EU and national level remains unclear, the practical effect of the precautionary principle has frequently been to permit, or even require, the adoption of more risk-averse policies. It explicitly acknowledges the inherently political nature of regulatory decision making by enabling policy makers to take into account a wide variety of non-scientific factors, including public opinion and social values. …

Explaining the New European Regulatory Regime

What accounts for these changes in European regulatory policies and institutions? Explaining a complex set of developments over a period of nearly two decades presents a difficult analytical challenge. However, three sets of inter-related factors appear to have contributed to these institutional and policy shifts. They are: a series of regulatory failures and crises; broader citizen support for more risk-averse regulatory policies within Europe; and the growth of the regulatory competence of the EU. The former two factors have affected policies at both the national and EU levels; the latter has affected regulatory policies at the European level.

Regulatory Failures and Crises

The most important factor contributing to the increased stringency of health, safety and environmental regulation in Europe has been a series of regulatory failures and crises that placed new regulatory issues on the political agenda and pressured policy makers to adopt more risk averse or precautionary policies. In 1986 both the nuclear accident at Chernobyl and the Sandoz chemical fire on the Rhine, had significant trans-border impacts as well as important health and environmental consequences. The *Washington Post* observed in December 1988: 'Dead seals in the North Sea, a chemical fire on the Loire, killer algae off the coast of Sweden, contaminated drinking water in Cornwall. A drumbeat of emergencies has intensified the environmental debate this year in Europe, where public concern about pollution has never been higher.' According to Elizabeth Bomberg, These disasters made an impact. In 1992, the protection of the environment and the fight against pollution had become an 'immediate and urgent problem' in the view of 85% of EU citizens … Eurobarometer surveys in 1989 and the early 1990s registered up to 91% of EU citizens expressing support for a common European policy for protecting the environment… Questions on the environment evoked stronger and more positive support for unified EU action than did questions concerning any other area of policy. …

Regulatory failures or crises do not automatically lead to shifts in public attitudes or public policy. After all, Europe had experienced regulatory failures prior to the mid 1980s. But the policy impact of the regulatory failures and crises during the second half of the 1980s and the 1990s has been broader and deeper. Their cumulative impact has been to increase the public's sense of vulnerability to and anxiety about the risks associated with modern society and this in turn has affected the political context in which regulatory policies have been made. …

Political Developments

A second, related, explanation for the change in European regulatory policies and institutions has to do with political developments within individual European countries. During much of the 1980s, support for strict environmental, health and safety regulations in Europe was geographically polarized. Often, Germany, the Netherlands and Denmark favoured stricter and more risk-averse regulations, while Britain, France and Italy opposed them. Much of EU environmental policy making thus represented a struggle between the EUs three 'green' member states, where constituencies representing civic interests enjoyed considerable public support and influence (the Green party has played an important role in Germany since 1983), and Britain, France and Italy, where they did not. But while Germany, the Netherlands and Denmark continue to play a role as environmental 'pioneers', in the EU (subsequently joined in 1995 by Sweden, Austria and Finland), strong public interest and support for stricter health and environmental standards has spread south and west within Europe. This change has been particularly significant in Britain and France, which are no longer regulatory 'laggards' within Europe.

During the 1990s, British public opinion became 'greener' and Britain's green lobbies become more influential. This in turn has affected a number of British policies. In 1990, as part of a broader re-examination of its environmental policies, Britain formally adopted the precautionary principle as one of the 'basic aims and principles supporting sustainable development'. The application of this principle has affected a number of British regulatory policies, including the dumping of sewer sludge in the North Sea and domestic water pollution standards. It has also strained Britain's consultative regulatory style, challenging the ability of regulators to justify lax controls or regulatory delays on the grounds that they have inadequate knowledge of harm and forcing them to take preventive action in advance of conclusive scientific opinion. …

The European Union

In addition to a series of regulatory failures, and related broadening and deepening of public support for more stringent regulatory polices within Europe, the emergence of the EU as a more important source of regulatory policy making has also affected the stringency and scope of European regulatory policies. It is significant that the changes in European regulatory policies and politics described in this article began around the time of the enactment of the Single European Act (SEA) in 1987. This amendment to the Treaty of Rome, by enabling directives to be enacted by a system of qualified majority voting instead of unanimity, significantly accelerated the EU's regulatory competence. The EU has played a critical role in changing the dynamics of European regulatory policies: each subsequent revision of the Treaty of Rome has accorded civic interests greater weight in the policy process. Combined with growing public support for risk-averse policies, these revisions have had important policy impacts.

The SEA gave environmental policy a treaty basis for the first time, specifying that preventive action should be taken whenever possible and requiring that harmonized standards take as a base 'a high level of protection'. The Treaty on the European Union (1993) made precaution a guiding principle of EU environmental policy: 'Community policy shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on the principles that preventive action should be taken'. The Treaty of Amsterdam (1997) called upon the Council and the Parliament to achieve high levels of health, safety, environmental and consumer protection in promulgating single market legislation and Article 153 explicitly defined consumer

policy and health protection as 'rights'. It also extended the precautionary principle to consumer protection.

As Majone has noted, the EU is primarily a regulatory state: issuing rules is its most important vehicle for shaping public policy in Europe. Notwithstanding frequent criticisms of the EU's 'democratic deficit', its institutions have played an important role in strengthening the representation of civic or diffused interests. The influence of consumer and environmental pressure groups on the Commission remains limited and they typically enjoy less access than representatives of business. There are, however, exceptions: the European Consumers Union did lead a successful campaign calling for the EU to ban beef hormones, while Greenpeace worked with Green parties to mobilize public and political opposition against the approval of GMOs in Europe. In addition, the 'European Court of Justice has often played a crucial role in promoting civic interests' and has been repeatedly willing 'to be influenced by consumer and civic concerns in reaching its judgments'.

EU treaties have also steadily expanded the role of the European Parliament, a body in which consumer and environmental interests have been relatively influential, in shaping European legislation. The SEA granted Parliament legislative power under 'cooperation' procedures, and these were expanded by the Maastricht Treaty which established 'co-decision' procedures, thus giving the Parliament and the Council of Ministers co-responsibility for writing legislation. The Parliament's purview over environmental legislation was expanded by the Amsterdam Treaty. 'Despite the limitations of co-decision, its use as the legislative procedure for environmental measures considerably strengthens the Parliament's role in the adoption of new environmental legislation.' The Green party has been an important political presence in the European Parliament since 1989, when it captured thirty-seven seats; following the June 1999 election it again had thirty-seven members. The Parliament has often been an effective source of pressure on the Council for the adoption of more stringent regulations…

NOTES AND QUESTIONS

1. Since its first articulation in international law in 1987, the precautionary principle has become a common element in international environmental agreements. More than ninety international agreements include the precautionary principle in one form or another, including the UNFCCC. In addition, some courts and academics consider the precautionary principle to be customary international law. The Rio Declaration of 1992 contains the most authoritative formulation of the precautionary principle in international law:

> Principle 15: In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

What aspects of climate change make it a good candidate for the application of the precautionary principle? What other environmental threats or problems do you think might be well-suited for the application of the precautionary principle?

2. The United States and Europe differ greatly in terms of their reception of the precautionary principle. The 1992 Treaty on European Union, which created the EU and instituted the euro currency, states that policy "shall be based on the precautionary principle and on the principles that preventative action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay." In 2000, the European Commission, which acts as the EU's executive arm, adopted a communication that endorsed and explained the role of the precautionary principle in the management of risk. See *Communication from the Commission on the precautionary principle*, 2 February 2000, COM (2000)1 final. How does Europe's action on climate change accord with the precautionary principle? Do you think that Europe's formal adoption of the precautionary principle helps explains its leadership in climate change policy? Does the precautionary principle counsel going even further than Europe has?

3. In the U.S., in contrast, the precautionary principle has been criticized by some academics and policymakers as anti-scientific and unworkable as a regulatory decision-making tool, while others support its greater incorporation into policy. For an example of such a critique, see Cass R. Sunstein, LAWS OF FEAR: BEYOND THE PRECAUTIONARY PRINCIPLE (2005). While the principle has not been formally recognized in national or state law in the United States, a couple of cities have incorporated it into their municipal codes. In 2003, San Francisco adopted the precautionary principle as the first chapter of the city's environment code. Ord. 171-03, File No. 030422, App. 7/3/2003. Also, the City of Berkeley amended its municipal code to add a chapter on the precautionary principle in 2006. Ordinance No. 6,911-N.S., App. 3/7/2006. How can this great difference in the level of acceptance of the precautionary principle be explained? Why do you think the precautionary principle has had most success at the local level?

2. Institutions and Leadership

In addition to the role of ideas, the role of institutions must be considered in explaining the European Union's commitment to action on climate change. The following account by Professors Miranda Schreurs and Yves Tiberghien analyzes the role that different EU institutions have played in shaping its policy in the wake of the United States choosing not to move forward with Kyoto Protocol commitments.

MIRANDA A. SCHREURS AND YVES TIBERGHIEN, *Multi-Level Reinforcement: Explaining European Union Leadership in Climate Change Mitigation,* GLOBAL ENVIRONMENTAL POLITICS, Vol. 7 Issue 4, p. 19-46 (2007)

The most significant instance of EU leadership is arguably its decision to move forward with ratification of the Kyoto Protocol after President George W. Bush made clear on March 28, 2001 that his intention was to withdraw the US from the agreement. The US pull-out left Europe in a conundrum. The US accounted for 36.1 percent of the 1990 CO2 emissions of industrialized countries. The EU as a whole was responsible for a somewhat smaller 24.2 percent. If the protocol was to survive, the EU would have to convince states representing another 30.8 percent of 1990 industrialized country CO2 emissions to join it in ratifying the agreement in order to meet the Kyoto Protocol's somewhat arbitrary requirement that 55 percent of industrialized

states' 1990 CO2 emissions be represented by ratifying states in order for the agreement to go into effect. This meant that the EU, at a minimum, would have to convince Japan (responsible for 8.5 percent of 1990 industrialized states' emissions) and Russia (responsible for 17.4 percent) to ratify.

Despite these obstacles, the European Council formally agreed to the Kyoto Protocol on 25 April 2002. …

Why did the European Union feel so strongly about preserving Kyoto? What were the factors motivating the Europeans to be so disapproving of the Bush administration's actions? The US pull out could have provided Europe with an easy way out of a treaty that few states in Europe would find easy to fulfill. As of 2000, many states were already far off their Kyoto targets. Why then was European reaction so strongly opposed to Bush's abandonment of the agreement?

EU leadership has been driven by a combination of factors. While public opinion and the presence of green parties were certainly important to creating a milieu supportive of action, EU leadership resulted from a process of mutual leadership reinforcement by different actors involved in the EU's process of multi-level governance. The leadership roles played by several Member States (especially Germany, the UK, the Netherlands, and Denmark but also Austria, Finland, Luxembourg, and Sweden) were important. This leadership often played out in particularly strong ways at times when Member States held the presidency of the European Council. Perhaps recognizing the importance of this responsibility, Member States at times also showed a willingness to strategically pass the leadership baton off to the next player. As UK Foreign Secretary Margaret Beckett said during a speech in Berlin just prior to Germany assuming the dual responsibility of the presidency of the European Union and of the G8: "We are willing to work with you on a concrete proposal [for climate change] to come out of your twin presidencies. . . [W]e will support you. But you must lead. . . The baton has passed to Germany. Please don't drop it."

The [European] Commission has also played a central role. In many ways, for the Commission, climate change is seen as one of the European Union's most important and defining issues, and the Kyoto Protocol a crucial show case of the EU's willingness and ability to lead on foreign policy matters. … The Commission is well aware that a failure to fulfill Kyoto Protocol obligations could hurt European credibility in any future global environmental negotiations and raise legitimate questions regarding Europe's ability to lead. To remedy the emerging gap between the Kyoto target and reality, a first batch of implementation measures was introduced by the Commission under the European Climate Change Program adopted in June 2001. Since then, the Commission has pushed several new directives dealing with the promotion of renewables, higher efficiency in heat and power generation, the energy performance of buildings, and emissions trading, among others.

The [European Parliament] has also been a frequent champion of EU leadership, supported by green parties and environmental NGOs. In many ways, its role has been reinforcing of the leadership exhibited by key member states and the Commission. EU leadership on climate change may also have been partly self-serving. It became a wedge issue for the EU, a way for the EU to build coalitional strength with other nations and in the process enhance its strength vis-à-vis the United States. It can also be argued that not only has the EU successfully promoted Member State and international cooperation in the obtainment of a collective good, despite at times high individual costs, but also enhanced its own institution building goals in the process.

NOTES AND QUESTIONS

1. Professors Schreurs and Tiberghien explains how the European Council, Commission, and Parliament have all acted in support of climate change policies. In the same period of time, the roughly parallel institutions of the United States, namely the executive and legislative branches, have been gridlocked on the issue. How can this difference be explained? Are U.S. political institutions ossified in a way that prevents them from being able to respond to new environmental threats? It is perhaps worthy of note that almost all significant environmental laws in the United States date from the 1970s and 1980s. The 1990s and 2000s have, in contrast, been a period of "regulatory recoil and reinvention," wherein U.S. environmental law has been on the defensive against claims that it is inefficient and bad for the economy. Robert V. Percival et al., ENVIRONMENTAL REGULATION: LAW, SCIENCE AND POLICY 88 (2006).

2. At COP-15 in Copenhagen in 2009, the European Union pushed for a binding agreement to succeed the Kyoto Protocol. The European Union was effectively sidelined in the last stretch of the negotiations, in which the United States, China, India, Brazil and South Africa brokered the non-binding Copenhagen Accord. At COP-16 in Cancun in 2010, the European Union favored legally-binding emissions reduction targets, but the Cancun agreements instead endorsed the voluntary commitments of the Copenhagen Accord. At COP-17 in Durban in 2011, the Kyoto Protocol parties decided to establish a second commitment period, but only the European Union has made clear commitments thus far, and other parties like Canada, Japan, and Russia have indicated that they will not commit to further targets and timetables. What do the outcomes of these COPs imply about the EU's future role in international climate change negotiations? Can the EU regain the leadership role that it once had, or will it be necessary for the U.S. and China to play the leading roles?

3. The European Union Emissions Trading Scheme

The largest regulatory system ever established to address climate change has been operating in the European Union since 2005. The EU Emissions Trading Scheme (ETS) is a cap-and-trade program that regulates about 11,500 stationary sources in the 27 European member states. A cap-and-trade program establishes an overall limit (or cap) on the emissions of covered sources, creates a corresponding number of emissions allowances, and allows sources to trade allowances in markets. The EU ETS covers about 40 percent of all greenhouse gas emissions in the EU.

A cap-and-trade program was first suggested as an important component of the European Climate Change Programme in a Green Paper issued by the European Commission in March 2000. *See* A. Denny Ellerman & Paul Joskow, THE EUROPEAN UNION'S EMISSIONS TRADING SYSTEM IN PERSPECTIVE (Pew Center on Global Climate Change, 2008). The European Parliament and Council issued the final Emissions Trading Directive in October 2003, just over a year before the program was slated to begin (Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:275:0032:0046:EN:PDF)

An EU Directive is a framework that has to be given legal force and implementation through a process called transposition, which requires each member state government to issue legislative

and regulatory measures to implement the directive. In late 2003 and 2004, European member states developed the national laws and policies necessary to implement the program, including the National Allocation Plans that set forth how greenhouse gas emission allowances would be allocated to affected industry sectors. Despite the tight time table, the program successfully came online in 2005.

An interesting aspect of Europe's pioneering adoption of the EU ETS is that Europe had initially been against the use of emissions trading to reduce the emissions of greenhouse gases. In the Kyoto Protocol negotiations, the United States advocated for using this new market-based instrument to achieve reductions more efficiently, while Europe argued that traditional command-and-control-type regulatory mandates would be more effective and reliable. The next reading explores some reasons why the EU ultimately embraced emissions trading.

A. DENNY ELLERMAN, FRANK J. CONVERY, AND CHRISTIAN DE PERTHIUS, PRICING CARBON: THE EUROPEAN UNION EMISSIONS TRADING SCHEME 29-31 (Cambridge University Press, 2010)

As a result of the adoption of the EU Emissions Trading Directive, a somewhat paradoxical situation has emerged in the international climate change arena. In a very short period of time, emissions trading has evolved from being a non-option for the European Union to the cornerstone of European climate policy. Meanwhile, the United States, so long the proponent of emissions trading, turned largely to voluntary measures as part of its climate strategy and refusal to ratify the Kyoto Protocol. Considering that it was only in 1997 that trading began moving from being a mainly academic interest to taking centre stage in Europe, progress with adopting this instrument has been remarkable. The European Environment Agency describes this situation as one in which Europe has gone 'from follower to leader' in terms of both understanding and applying this economic instrument to environmental policy.

The Union has a population of almost 500 million people, living in twenty-seven countries, embracing twenty-three languages, with per capita GDP in 2005 on a purchasing power parity basis ranging from €32,197 (Ireland) to €7,913 (Bulgaria). It is not always a harmonious club. Sometimes it seems that Edward Mortimer's view captures the Union's essence: 'A nation ... is a group of people united by a common dislike of their neighbours, and a shared misconception about their ethnic origins.'

Why was agreement reached? Several factors contributed to the successful establishment of the EU ETS.

First, the idea of the European common market and the Single European Act of 1986 that made it a reality were fundamental to the creation of the emissions trading scheme. By enabling the free movement of goods, people and capital across borders, the act linked the economies of member states and made the idea of a common emissions reduction objective – as expressed in the burden-sharing agreement of 1998 – a real possibility. It also helped member states overcome industry's objections to the implementation of a pan-European trading system.

Second, both the content and the political fallout of the Kyoto Protocol were key to the introduction of emissions trading within the European Union. European negotiators failed to prevent the inclusion of emissions trading in the Kyoto Protocol. It was precisely this failure, however, that led the Union to reconsider its GHG management strategy and to turn from a

tax-centred [sic] approach to the creation of a carbon market. Then the US refusal to ratify the Kyoto Protocol prompted Europe to take the lead in moving the treaty forward. The Union's ability to make trade-offs on the world stage – and in particular to secure Russian agreement to ratify the Kyoto Protocol in exchange for EU support for WTO membership – allowed the protocol to come into effect, which in turn re-emphasized the role of the EU ETS.

Third, early actions by individual European member states gave further impetus to the swift creation of a pan-European trading scheme following the Kyoto negotiations. States such as the United Kingdom, Denmark and the Netherlands were choosing to pursue their own environmental taxation and trading schemes in the absence of European action. Fears about the further expansion of this regulatory patchwork – and the implications it could have for the proper functioning of the common market – enabled the tripartite EU government to come to agreement on the EU ETS in a relatively short period of time. This agreement was facilitated by supportive information on trading from the United States, which, based on its experience with the Acid Rain Program, relayed the message that business can co-exist and prosper with emissions trading.

Finally, the design features of the EU ETS itself facilitated consensus between the EU government, industry and NGOs. A firm limit on emissions and the prospective availability of transparent data from installations assuaged environmental advocates; free allowances and allocation at the member state level helped diminish industry opposition; and the inclusion of an obligatory three-year pilot period temporarily indulged some member state preoccupations, including opt-out and pooling, and served as a way of identifying weaknesses to be corrected after 2007. These provisions, combined with a willingness on all sides to compromise and a high degree of skill and commitment at the levels of the European Commission, European Parliament, member states and some businesses and NGOs, enabled the EU ETS to go forward.

NOTES AND QUESTIONS

1. The EU ETS's first compliance period, sometimes called the "pilot phase," covered the years 2005 through 2007. At the end of the period, each facility included in the program would have to show that it was in compliance by holding enough emissions allowances to cover its emissions. For example, if a facility emitted 500,000 tons of carbon dioxide in the years 2005 through 2007, it would have to show that it held 500,000 EUAs (European Union Allowances) at the end of 2007. By 2006, however, it became clear that there was an oversupply of EUAs in the allowance market, and allowance prices collapsed. Studies showed that the EU had overallocated allowances by distributing more allowances than would be required to cover "business as usual" emissions. See Lesley K. McAllister, *The Overallocation Problem in Cap-and-Trade: Moving Toward Stringency*, 34 COLUM. J. OF ENVTL L. 395 (2009). A. Denny Ellerman & Barbara Buchner, *Over-Allocation or Abatement? A Preliminary Analysis of the EU Emissions Trading Scheme based on the 2005-06 Emissions Data*, 41 ENVTL. & RESOURCE ECON. 267 (2008);

2. While the pilot phase of the EU ETS was overallocated and ineffective in establishing an allowance price that could lead to sustained emissions reductions, it can be considered a success in setting the stage for the second compliance period of the EU ETS, which spanned

the years of 2008 to 2012. This second phase of the program is called the "Kyoto Phase" because it was designed to ensure that Europe meets its Kyoto Protocol emissions reduction commitment that applies in these years. A third phase of the EU ETS program is anticipated to cover the years from 2013 to 2020, with even more stringent emissions caps. As the Kyoto phase began, commentators observed that "the trading infrastructure of markets, registries and monitoring, reporting and verification is in place, and a significant segment of European industry is incorporating the price of CO_2 emissions into their daily production decisions." Ellerman & Joskow, *supra*, at 45.

3. The implantation of the EU ETS has, of course, not been without legal conflict. Indeed, the scheme has spurred more litigation than other major environmental regulations instituted by the European Union. See NAVRAJ SINGH GHALEIGH, *Emissions Trading Before the European Court of Justice: Market Making in Luxembourg*, in LEGAL ASPECTS OF CARBON TRADING 374-383 (2009). Most of the lawsuits have either contested the legal validity of the directive that established the EU ETS or Commission decisions on the national allocation plans. The European Court of Justice has generally upheld the scheme and the Commission's decisions.

4. The EU ETS is one part of Europe's larger climate change policy. In 2007, then-president of the European Union Angela Merkel laid out what would become known as the EU's 20-20-20 plan: to cut CO_2 emissions by twenty percent, increase energy efficiency by twenty percent, and expand renewable use to twenty percent of energy by 2020. The plan was officially agreed to by the European Parliament and Council in 2008 and became law in 2009 (see http://ec.europa.eu/environment/climat/climate_action.htm). The plan was adopted with the hope that international climate treaty negotiations would be successful in yielding a successor agreement to the Kyoto Protocol. The EU leaders offered to increase the EU emissions reduction goal to thirty percent, on the condition that other major emitting countries committed to doing their fair share in a binding treaty.

   The Copenhagen and Cancun meetings failed to produce such a treaty, but debate ensued in Europe about whether it should commit to the thirty percent emissions reductions anyhow. What arguments can be raised for and against making such a strong unilateral commitment? For the European Commission's thoughts, see European Commission, COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS: ANALYSIS OF OPTIONS TO MOVE BEYOND 20% GREENHOUSE GAS EMISSION REDUCTIONS AND ASSESSING THE RISK OF CARBON LEAKAGE, COM(2010) 265/3 (May 26, 2010).

4. European Compliance with the Kyoto Protocol

The European Environmental Agency (EEA) reported in 2009 that the EU was on track to meet its Kyoto target. EEA, GREENHOUSE GAS EMISSION TRENDS AND PROJECTIONS IN EUROPE 2009, EEA Report No 9/2009, 12 Nov 2009. The EEA further stated that the EU-15, which consists of the 15 countries that were part of the EU at the time that the Kyoto protocol was negotiated (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy,

Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom), may significantly beat its target of 8 percent below 1990 levels:

> The EU-15 could over-achieve its Kyoto target by an average 217 MT [megatons] CO2-equivalent per year over the Kyoto period if all existing and planned additional measures are fully implemented in a timely manner and if Member States use Kyoto mechanisms and enhance carbon sinks as planned. This represents a 5.1% overachievement beyond the 8% Kyoto target.

The following excerpt further explains the EU's emissions targets and compliance projections.

EUROPEAN ENVIRONMENT AGENCY, TRACKING PROGRESS TOWARDS KYOTO AND 2020 TARGETS IN EUROPE, NO. 7/2010 (2010)

2.1 Emission targets under the Kyoto Protocol and the burden-sharing agreement

Under the Kyoto Protocol, the EU‑15 has taken on a common commitment to reduce emissions between 2008 and 2012 by 8% on average, compared to base-year emissions. Within this overall target, differentiated emission limitation or reduction targets have been agreed for each of the 15 pre-2004 Member States under an EU accord known as the 'burden-sharing agreement' . . .

The EU‑27 does not have a Kyoto target, since the Protocol was ratified before 2004 when 12 countries became EU Member States. Therefore 10 of these EU-12 Member States have individual targets under the Kyoto Protocol, while Cyprus and Malta do not have targets. Of the other EEA member countries, Iceland, Liechtenstein, Norway and Switzerland have individual targets under the Kyoto Protocol while Turkey, which acceded to the Kyoto Protocol in February 2009 has no quantified emission reduction commitment, like Cyprus and Malta. Croatia has an individual target under the Kyoto Protocol.

2.2 Achieving 2008–2012 objectives: the 'Kyoto compliance equation'

To comply with its objective under the Kyoto Protocol, a Party must keep its total GHG emissions during the five years of the Kyoto Protocol's first commitment period (2008–2012) within a specific emission budget. In other words, total GHG emissions during that period must remain equal or below the Party's assigned amount, which is the total quantity of valid Kyoto units it holds (within its registry). One Kyoto unit corresponds to 1 tonne of CO2-equivalent emissions.

Each Party's assigned amount is equal to:

• an initial assigned amount, determined according to the Party's base-year emissions and its Kyoto target. This initial assigned amount is measured in assigned amount units (AAUs);
• *plus/minus* any additional Kyoto units that the Party has acquired from or transferred to other Parties through the Kyoto mechanisms (CERs [Certified Emission Reductions] from clean development mechanism projects, ERUs [Emission Reduction Units] from joint implementation

projects or AAUs [Assigned Amount Units] from international emission trading between governments);
• *plus/minus* any additional Kyoto units that the Party has issued/cancelled for net removals/ emissions from a [land use change or forestry] activity (RMUs [Removal Units]).

To comply with its Kyoto obligations, a Party needs to satisfy a 'Kyoto compliance equation', which can be summarised as follows:

'2008–2012 total GHG emissions' ≤ 'total Kyoto units'

With: 'total Kyoto units' = 'initial assigned amount (AAUs)' + 'use of flexible mechanisms (AAUs + CERs + ERUs)' + 'carbon sink removals (RMUs)'

Therefore to achieve its target, a Party can act on two sides of the 'compliance equation':
• *emissions side*: limiting or reducing its own emissions by acting at national level,
•• *assigned amount side*: increasing its assigned amount, by acquiring additional Kyoto units at international level and by further enhancing CO2 removals from carbon sink activities.

Compliance of EU‑15 Member States under the internal EU burden-sharing agreement relies on the same principles, with each Member State's initial assigned amount being determined according to its individual burden-sharing target, instead of the –8% reduction target of the whole EU‑15 under the Kyoto Protocol.

After final emissions have been reported and reviewed for the entire commitment period, Parties to the Kyoto Protocol will have 100 days to undertake final transactions necessary to achieve compliance with their commitment (the 'true-up period'). A final Kyoto compliance assessment will therefore not be possible before end 2014 or 2015.
. . .

3 Current progress towards Kyoto targets

• In 2008, the first year of the commitment period, GHG emissions in eight EU‑15 Member States (Belgium, Germany, Greece, Finland, France, the Netherlands, Sweden and the United Kingdom), nine EU-12 Member States (Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania and Slovakia) and one other EEA member country (Norway) were lower than their respective Kyoto targets, taking into account the effect of domestic emission trading schemes. These countries were therefore on track towards achieving their Kyoto commitments in 2008.

• Taking into account the intended use of flexible mechanisms and emission reductions from LULUCF activities over the full commitment period, five additional Member States (Ireland, Luxembourg, Portugal, Slovenia and Spain) and one other EEA member country (Iceland) are also on track towards their targets in 2008.

• Three EU Member States (Austria, Denmark and Italy), two other EEA member countries

(Liechtenstein and Switzerland) as well as one EU candidate country (Croatia) need to further reduce emissions by 2012 or plan to increase their quantity of Kyoto units further than they currently do in order to achieve their respective Kyoto targets.

. . .

• The EU‑15 is well on track towards achieving its commitment under the Kyoto Protocol of reducing its emissions by 8% compared to base-year levels, with a current total overachievement of 253 Mt CO2‑equivalent per year (5.9% of base year emissions) for the two years 2008 and 2009, when the intended use of flexible mechanisms and carbon sinks removals are taken into account. This assumes that the overachievement of their target by certain Member States could cover for any shortfall existing in other Member States….

NOTES AND QUESTIONS

1. The EU-15's 2008 emissions were approximately 6.2 percent below its 1990 emissions. EEA, Greenhouse gas emission trends and projections in Europe 2009, EEA Report No 9/2009, 12 Nov 2009. In considerable contrast, the United States' 2008 emissions were 13.5 percent higher than its 1990 emissions. US EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990 – 2008, EPA 430-R-10-006, (2010). An important question regards how much of this difference can be attributed to the EU ETS and other regulatory measures. Notably, most of the difference is accounted for by different emissions trajectories in the 1990s, before the EU ETS came into effect. In the 1990s, the EU-15's emissions remained relatively stable at 1990 levels while U.S. emissions grew by about 15 percent. U.S. Inventory p. ES-6.

2. Do the EU's emissions reductions since 1990 really represent a success story in the decarbonization of major industrial economies? A report by the English NGO, Policy Exchange, asserts that the answer depends on how you allocate responsibility for carbon emissions among countries. See Andrew Brinkley & Dr Simon Less, Carbon Omissions: Consumption-based accounting for international carbon emissions, Policy Exchange, available at http://www.policyexchange.org.uk/publications/publication.cgi?id=215. The report shows that Europe's "consumed carbon," the amount of carbon emitted to produce all the products and services consumed in Europe, actually rose forty seven percent since 1990. In other words, Europe "off-shored" many of its emissions, consuming more imported products that emitted greenhouse gases in the countries where they were produced. Should countries be responsible for the carbon emissions embedded in the products they consume, or just for the carbon emissions produced within their national borders?

C. Canada: Commitment without Compliance

Canada and the United States share many political and economic interests, as well as a similar cultural and legal heritage. Both of these North American countries are predominantly common law jurisdictions with colonial histories involving both the United Kingdom and France. Both have federal systems with complex dynamics between the national government and sub-national units—the 50 U.S. states and the 10 Canadian provinces (and 3 territories).

Both also have complex cultural and legal relationships with their original indigenous inhabitants.

Unlike the U.S., however, Canada is simultaneously a parliamentary democracy and a constitutional monarchy. The Prime Minister is appointed by the Governor General, acting in the name of the Queen, but generally is the leader of the political party that a plurality of the popularly-elected House of Commons supports. The Prime Minister acts as head of government, initiating most legislation and appointing Cabinet members, Senior Diplomats, Supreme Court judges, and a variety of other key public officials. The most powerful opposition party's leader becomes the Leader of Her Majesty's Loyal Opposition, which creates dynamics somewhat like the U.S. two party system.

Because of these similarities and differences, especially interesting lessons can be learned through comparing the development of Canada's climate change policies with those of the United States. As the following sections discuss, Canada committed to emissions reductions through the Kyoto Protocol, but its decisions and actions since then have made it clear that it will fail to meet its targets and timetables for the first commitment period. Moreover, Canada announced at the 2011 Durban COP that, like the United States, it would not participate in a second Kyoto commitment period.

1. Participation in the Kyoto Protocol

In the course of international climate change negotiations, Canada and the United States often have taken similar positions. Both countries handily ratified the United National Framework Convention on Climate Change in the early 1990s. Yet, as the 1990s progressed, concerns arose in both countries about the potential economic impacts of internationally committing to emissions reductions. In the United States, business warned that energy prices could rise significantly, and the Senate passed a resolution in 1997 against the ratification of any treaty that required emissions limits for developed countries but not for developing countries. In Canada, energy-intensive manufacturing industries also became more vocal, and the provinces that relied most heavily on these industries voiced their opposition. Ultimately in 1997, federal and provincial energy and environment ministers agreed to support the idea of reducing 2010 emissions to 1990 levels but no further.

Despite internal politics, the federal governments of both countries were also responding to international pressures to commit to more significant reductions. In the Kyoto negotiations, Canada explicitly based its willingness to commit on that of its neighbor: Canada was willing to commit to a reduction target that was one percentage point less stringent than the reduction target agreed to by the U.S. Indeed, as adopted in December 1997, the Kyoto protocol set forth a U.S. target of a 7 percent reduction of greenhouse gases below 1990 levels in the years 2008 to 2012, and a Canadian target of 6 percent.

In light of their similar trajectory, the next turn of events would have been very hard to predict: Canada ratified the Kyoto Protocol even after the U.S. announced that it would not. The following excerpt by Professor Kathryn Harrison explains this surprising outcome.

KATHRYN HARRISON, THE ROAD NOT TAKEN: CLIMATE CHANGE POLICY IN CANADA AND THE UNITED STATES, *Global Environmental Politics*, Vol. 7 Issue 4, p92-117 (2007).

Canada's commitment to a 6% reduction below 1990 emissions also met with strong opposition at home. If the Prime Minister's unilateral announcement of a -3% target had not

done enough damage to federal-provincial relations, provincial officials and Ministers were outraged by Canada's acceptance of a final target of -6%. Fortuitously, a First Ministers Conference was scheduled to begin in Ottawa just as the meeting in Kyoto concluded. The Premiers emerged from the meeting placated by three reassurances from the Prime Minister. First, the Prime Minister committed that "no region [would be] asked to bear an unreasonable burden," a phrase that would become something of a mantra for the provinces in the years to follow. Second, the leaders agreed to undertake a study of the costs and benefits of implementation before proceeding to ratification. Third, the First Ministers agreed that development of an implementation plan would be done in partnership with provincial and territorial governments, a concession Alberta Premier, Ralph Klein, enthusiastically declared equivalent to a "provincial veto" over implementation.

In early 1998, the federal and provincial energy and environment Ministers established the National Climate Change Process, co-chaired by Alberta and the federal government. A massive public consultation exercise ensued involving some 450 experts and 225 stakeholders in 16 "issue tables." For four years after the Kyoto meeting there with few outward signs of federal-provincial discord, largely reflecting that, although there was much discussion, little progress was being made toward a realistic plan to meet Canada's Kyoto Protocol commitment.

The nature of the challenge Canada faced changed dramatically in the spring of 2001 when President George W. Bush confirmed that the US would not ratify the Kyoto Protocol. As discussed above, Canada's commitment in Kyoto was predicated on the US accepting a comparable target. The US withdrawal thus had implications for the competitiveness of Canadian industry. The US' withdrawal from the Protocol also meant that the international community needed both Japan and Russia to ratify in order to reach the 55% hurdle for the treaty to take effect. In that context, the European Union adopted a more generous stance toward the remaining members of the umbrella group at COP-6bis in July 2001. Riding on Japan's coat tails, Canada received credit for 30 MT for business-as-usual forestry practices, which was *more* than it asked for going into the negotiations, as well as authorization for unlimited reliance on carbon sinks and international mechanisms. However, the gains made at COP-6 satisfied neither critics within the federal government nor among the provinces. Thus, after the Bonn deal was finalized at COP-7 in Marrakesh, Canada renewed an argument, already many times rebuffed by the international community, that it should receive credits for exporting natural gas to the United States, on the grounds that Americans would otherwise be burning more greenhouse gas-intensive oil or coal.

To understand the events that followed, it is critical to situate the Kyoto issue within the context of a leadership struggle ongoing in the federal Liberal party in the summer of 2002. Tensions between the Prime Minister and his long-time rival, Finance Minister Paul Martin, came to a head in June 2002, when Mr. Martin either resigned or was fired from Cabinet, depending on whose account one accepts. There was increasing pressure on the Prime Minister from the Liberal caucus, a majority of whom supported Mr. Martin's leadership bid. In response, Mr. Chrétien promised both a bold policy agenda in the months to come, and that after completing that agenda he would retire in early 2004.

In the lead up to the "Rio +10" Conference on Environment and Development in Johannesburg in late 2002, there was speculation that the government would use the occasion to ratify Kyoto, spurring an increase in lobbying from both sides. The business community released estimates that ratification of the Kyoto Protocol would cost Canada 450,000 jobs. In response, over half (96 out of 172) of Liberal members of Parliament and 23 Liberal Senators signed a

letter to the Prime Minister calling on the government to ratify the Kyoto Protocol, with or without "clean energy export credits." Ultimately, Prime Minister Chrétien announced in his plenary speech in Johannesburg that a resolution to ratify Kyoto would be placed before Canada's Parliament by the end of the year. Although the Prime Minister's speech was widely reported as a commitment that Canada would ratify, that was not in fact what Mr. Chrétien promised. In Canada, the decision to ratify international treaties rests with Cabinet, not Parliament. At the time of the Prime Minister's speech, no decision on the Kyoto Protocol had been made by Cabinet, which senior officials interviewed recalled was "evenly divided" on the issue. However, with the receipt of the backbenchers' letter, and the knowledge that ratification would be guaranteed support from both the Bloc Quebecois and New Democratic Party, the Prime Minister was confident that a resolution would pass, in turn forcing Cabinet's hand. The plan to place a resolution before Parliament thus was not an announcement of a decision on ratification so much as a strategy to circumvent dissent within Mr. Chrétien's own Cabinet.

In the fall of 2002, the business community formed the Coalition for Responsible Energy Solutions, which, among other activities, placed a series of full-page newspaper ads across Canada, arguing that ratification of Kyoto would "place Canadian business at a severe disadvantage relative to the United States" and require Canada "to make payments to countries with no targets." Federal provincial relations concerning ratification also remained contentious. Only two of ten provinces, Quebec and Manitoba, supported ratification. In contrast, the Premier of Ontario, representing almost 40% of Canadians, stated that his province would not support Kyoto if it killed "even one job." When the federal government released its much anticipated "Climate Change Plan for Canada" in late November, *all* provincial premiers signed a statement declaring the federal implementation plan "inadequate" and calling instead for a jointly devised national plan. Negotiations between the provinces and the federal government ground to a halt, effectively terminating the joint National Climate Change Process.

What is most striking about the federal implementation plan is its lack of specifics. There was a call to negotiate covenants with industrial sectors but no details as to which facilities would be asked to reduce their emissions by how much. There were promises of public spending but no budgetary commitments for particular projects. There were proposals for measures such as revisions to building codes that could only be undertaken by provincial governments, but no commitment to do so by the provinces. Almost five years to the day after Canada agreed to the Kyoto Protocol, and after a massive national consultation exercise, the federal government released what was essentially a plan to develop a plan.

In the lead-up to the House resolution, even federal Cabinet Ministers were remarkably open in their reservations concerning ratification. Fearful of risking support for his leadership campaign in Western Canada, Prime Minister-in-waiting Paul Martin maintained a position of "studied ambiguity" on the question of ratification. With the position on Kyoto not only of many backbenchers but of several of his key Cabinet Ministers uncertain, the Prime Minister declared the Kyoto resolution to be a matter of confidence, an unusual measure given that non-binding resolutions are normally free votes. The Liberal caucus duly fell into line, and on December 10, 2002, the House of Commons passed a resolution calling "upon the government to ratify the Kyoto Protocol on climate change" by a vote of 195 to 77, with all Liberal members present voting in favour. The motion was passed by the Senate two days later, and the day after that the decision to ratify the Kyoto Protocol was made by Cabinet without debate, all Ministers having already publicly supported the resolution in the House. The Environment Minister personally delivered Canada's ratification papers to the United Nations on December 17, 2002.

NOTES AND QUESTIONS

1. Canada ratified the Kyoto Protocol, but it became clear over the course of the 2000s that Canada would not meet its 6 percent emissions reduction target. Emissions continued increasing due in large part to a booming oil and gas sector. In 2006, a new Conservative government came into power that cut funding for climate change policies and declared the Kyoto target impossible to meet. See Doug Struck, *Canada Alters Course on Kyoto: Budget Slashes Funding Devoted to Goals of Emissions Pact*, WASH. POST (May 3, 2006). In 2010, the government projected that Canada's total emissions between 2008 and 2012 would be 29 percent over its Kyoto target. See ENVIRONMENT CANADA, NATIONAL INVENTORY REPORT 1990-2008: GREENHOUSE GAS SOURCES AND SINKS IN CANADA (2010). Canada's ratification seems to have had little effect on its behavior. Does that mean that the Canada's ratification was not worthwhile? What value might Canada's ratification have had even in light of its later lack of compliance?

2. Environmental NGOs in Canada sought to force the federal government to comply with its Kyoto target through litigation in the Canadian courts. Specifically, Friends of the Earth (FOE) Canada filed suit in 2007 alleging that the government violated the Kyoto Protocol Implementation Act (KPIA) of 2007. Passed by the Canadian Parliament without the support of the sitting government, the KPIA required the government to prepare annual climate change plans based on meeting Kyoto targets and to draft and enact legally binding regulations to combat climate change. In 2008, the lower federal court held that the government's obligations under the KPIA were not justiciable and that the controversy should be resolved by Parliament rather than by the courts. See Friends of the Earth v. Canada, 2008 FC 1183, available at http://reports.fja.gc.ca/eng/2008/2008fc1183/2008fc1183.pdf. The decision was affirmed by the appeals court in 2009 and denied review by the Canadian Supreme Court in 2010. Do you think that the Canadian courts were correct in finding the case nonjusticiable? Does this ruling place the Canadian government above the law in a way that jeopardizes the rule of law? For an argument that it does, see Dianne Saxe, *Canada: Climate Change, KPIA and The Rule of Law*, MONDAQ, March 19, 2010, available at http://www.mondaq.com/canada/article.asp?articleid=96270 .

3. What should the ramifications be of Canada's disregard for its Kyoto commitments? Although the Kyoto Protocol is considered to have the strongest compliance mechanism in international environmental law, it does not provide for financial penalties. Rather, countries that are not in compliance with their emissions targets will be required to make up for the deficiency in the next commitment period (post-2012) plus an additional 30 percent emissions allowance deduction. However, Canada has decided not to participate in the next commitment period, limiting the impact of that mechanism. Do you think Canada's Kyoto breach will harm its reputation as a law-abiding country? Should it?

4. In 2010, Canada signed the Copenhagen Accord with a stated target of 17 percent below 2005 emissions levels by 2020. This is the same Copenhagen Accord target inscribed by the

United States. With respect to the 1990 baseline, Canada's target actually represents an increase of 2.5 percent. How should the nations complying with the Kyoto Protocol react to Canada's setting voluntary targets that indicate non-compliance with the Protocol?

2. Alberta's Oil Sands

Part of the explanation for Canada's inability or unwillingness to comply with its Kyoto commitments relates to its growing status as a fossil-fuel exporting nation. The province of Alberta is home to a huge reserve of unconventional oil in the form of bituminous sands, generally referred to as oil sands or tar sands. As the price of oil rose in the 2000s, investment in oil sands production grew quickly. The report that follows was commissioned by the Royal Society of Canada, Canada's national academy of scientists.

The Royal Society of Canada Expert Panel, ENVIRONMENTAL AND HEALTH IMPACTS OF CANADA'S OIL SANDS INDUSTRY (December 2010), available at http://www.rsc.ca/documents/expert/RSC_ExP_ExecutiveSummary_ENG_Dec14_10_FINAL_v5.pdf

Development of the oils sands of northern Alberta has become an issue of growing public interest in recent years, with highly polarized views being presented by different stakeholders, including First nations, environmentalists, industries and governments, about the merits of oil sands development in relation to its environmental and health impacts. Regardless of what any individual chooses to believe bout these divergent views, the scale of investment and development in the oil sands is a major factor in Canada's economy, making the issues involved of vital importance to Canadians….

Context for the Project

The oil sands (or tar sands) have become a focus of intense development in recent years, and production from the oil sands has raised the prospect of Canada being a substantial net exporter of petroleum products. The oil sands have become increasingly controversial because of environmental and health issues, including: overall greenhouse gas emissions (the oil sands contribute about 5% of Canada's total emissions, but are Canada's fastest growing source); major landscape disruption from surface mining; massive tailings ponds holding wastes toxic to fish and waterfowl; and major consumptive water use.

These features have drawn the attention of international environmental groups, some of which have labeled the product from this source as 'dirty oil." The deaths of more than 1,600 ducks on a tailings pond in April 2008, and ongoing claims of a cancer cluster being caused by oil sands contamination in the downstream (primarily aboriginal) community of Fort Chipewyan, have drawn media attention.

On the economic side, the oil sands have been a major source of investment in Canada, supporting not only Alberta, but the federal government (through increased taxes), the Ontario Manufacturing sector, and skilled tradespeople from across Canada who have migrated to Fort McMurray [Alberta] for employment.

The major findings in the report addressing health and environmental issues include, in brief:

Feasibility of reclamation and adequacy of financial security: Reclamation is not keeping pace with the land disturbance but research indicates that sustainable uplands reclamation is achievable and ultimately should be able to support traditional land uses. Current practices for obtaining financial security for reclamation liability leave Albertans vulnerable to major financial risks.

Impacts of oil sands contaminants on downstream residents: There is currently no credible evidence of environmental contaminant exposures from oil sands reaching Fort Chipweyan at levels expected to cause elevated human cancer rates. More monitoring focused on human contaminant exposures is needed to address First Nation and community concerns.

Impacts on population health in Wood Buffalo: There is population level evidence that residents of the regional Municipality of Wood buffalo (RMWB) experience a range of health indicators, consistent with "boom town" impacts and community infrastructure deficits, which are poorer than those of a comparable Alberta region and provincial averages.

Impacts on regional water supply: Current industrial water use demands do not threaten the viability of the Athabasca River system if the water Management framework developed to protect in-stream, ecosystem flow needs is fully implemented and enforced.

Impacts on regional water quality and groundwater quantity: Current evidence on water quality impacts on the Athabasca River system suggests that oil sands development activities are not a current threat to aquatic system viability. However, there are valid concerns about the current regional Aquatics Monitoring Program (RAMP) that must be addressed. The regional cumulative impact on groundwater quantity and quality has not been assessed.

Tailings pond operation and reclamation: Technologies for improved tailings management are emerging but the rate of improvement has not prevented a growing inventory of tailings ponds. Reclamation and management options for wet landscapes derived from tailings ponds have been researched but are not adequately demonstrated.

Impacts on ambient air quality: The current ambient air quality monitoring data for the region show minimal impacts from oil sands development on regional air quality except for noxious odour emission problems over the past two years. Control of NOx [nitrogen oxides] emissions and regional acidification potential remain valid concerns.

Impacts on greenhouse gas emissions (GHG): Progress has been made by the oil sands industry in reducing its GHG emission per barrel of bitumen produced. Nonetheless, increasing GHG emissions from growing bitumen production creates a major challenge for Canada to meet our international commitments for overall GHG emission reduction that current technology options do not resolve.

Environmental regulatory performance: the environmental regulatory capacity of the Alberta and Canadian Governments does not appear to have kept pace with the rapid expansion of the oil sands industry over the past decade. The EIA [Environmental Impact Assessment] process relied upon by decision-makers to determine whether proposed projects are in the public interest has serious deficiencies in relation to international best practices. Environmental data access for cumulative impact assessment needs to improve.

NOTES AND QUESTIONS

1. The mining of oil from oil sands is associated with a wide range of local air, water and land pollution issues. Local communities, including Canadian aboriginal communities referred to as First Nations, bear the brunt of these impacts while benefits flow to others. How should the environmental justice concerns inherent in this situation be addressed?

2. Alberta's oil sands are second to only Saudi Arabia in their potential to supply the world's oil demand. Moreover, because of higher energy requirements, producing a barrel of oil from oil sands generates several times as many greenhouse gases as producing a conventional barrel of oil. Emissions from mining oil sands are Canada's fastest growing source of greenhouse gas emissions, and are expected to remain so. See Alastair R. Lucas, *Mythology, Fantasy and Federalism: Canadian Climate Change Policy and Law*, 20 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 41, 52–56 (2007).

3. How strong of an influence would you expect Alberta and Canadian oil interests generally to have on Canadian climate politics? Might it be so strong that Canada would lobby against laws in other countries that could restrict markets for their oil? See Climate Action Network Canada, THE TAR SANDS' LONG SHADOW: CANADA'S CAMPAIGN TO KILL CLIMATE POLICIES OUTSIDE OUR BORDERS (2010), http://www.climateactionnetwork.ca/e/news/2010/release/index.php?WEBYEP_DI=66 (alleging that the Alberta government and the Canadian federal government have lobbied against California's low carbon fuel standard and the European Union's Fuel Quality Directive, two provisions that aim to encourage cleaner transportation fuels.)

4. The U.S. is the consumer of nearly all exports from the Canada's oil sands. Indeed, the U.S. imports more oil from Canada than from any other country, and those imports amount to about 20% of the U.S.'s total oil supply. *See* Shawn McCarthy, *Oil sands on track to be biggest source of U.S. oil imports*, THE GLOBE AND MAIL (May 19, 2010). For the U.S., Canada's reserves seem to represent a safe, secure and long-term supply of oil. Should the U.S. expand its reliance on oil from the Alberta's oil sands? The proposed Keystone XL pipeline would run from Alberta through the mid-western U.S. to Texas, allowing for an increase in oil sands production and an expansion of its markets. With opposition from environmentalists and affected landowners in Nebraska, the Obama administration delayed approval in 2011 pending further study.

5. Like Canada and the U.S., Australia is very rich in fossil fuel resources. According to the U.S. Energy Information Administration, Australia was the world's largest coal exporter and

fourth-largest liquefied natural gas exporter in 2010. For many years, Australia and the U.S. were the only two signatories that refused to ratify the Kyoto Protocol. In 2007, however, Australia ratified it after a change of government, and in 2011, Australia passed major climate change legislation. Its Clean Energy Legislative Package introduces a fixed carbon price of AU$23/tonne effective July 1, 2012, and moves to a flexible price after three years.

3. British Columbia's Carbon Tax

Like some states of the United States, some provinces of Canada became leaders in climate change policy in the face of inaction at the federal level. In 2008, Canada's western province, British Columbia, became the first jurisdiction in North America to enact a carbon tax. The following excerpt from Professor David Duff describes this development.

DAVID DUFF, CARBON TAXATION IN BRITISH COLUMBIA, 10 *Vermont Journal of Environmental Law* 87-107 (2008)

On February 19, 2008, the Government of British Columbia announced that it would introduce a consumption-based carbon tax of $10 per ton of CO_2e, rising to $30 per ton by 2012 -- making the Province the most aggressive jurisdiction in Canada (and perhaps North America) when it comes to addressing climate change.

For several reasons, it is perhaps not surprising that British Columbia would be a leader in the development of public policies to reduce GHG emissions. With almost half the Province's population concentrated in a metropolitan area (Vancouver) that enjoys a more moderate climate than the rest of Canada and almost 93% of its electricity currently generated from hydroelectric power, carbon emissions in British Columbia are among the lowest in Canada on a per capita basis at 15.5 tons in 2005 compared to 23.1 tons in the country as a whole. Despite low emissions per capita, however, total emissions increased by 30% between 1990 and 2005, with the greatest growth resulting from fossil fuel production and fugitive emissions from oil and natural gas, which almost doubled during this period. At the same time, British Columbia is particularly vulnerable to the effects of global climate change, having already lost half of its lodgepole pines to the ravages of the mountain pine beetle, experiencing summer droughts and severe winter storms, and facing a major risk of flooding from sea level increases.

…

As its name suggests, the British Columbia carbon tax does not apply to all GHG emissions, but only to emissions from the combustion of fossil fuels and other specified combustibles in the Province, with rates based on CO_2e emissions associated with the various fuels and combustibles that are subject to the tax. As a result, while the tax applies to emissions of CO_2 and other GHGs from the combustion of fossil fuels, it does not apply to CO2 emissions from industrial processes such as the production of oil, gas, aluminum, or cement; or to the emission of other GHGs such as methane and nitrous oxide from the disposal of solid waste and the agricultural sector. Nor does the tax apply to the combustion of biofuels such as firewood, woodwaste, ethanol, biodiesel, and bio-heating oil, which are arguably carbon-neutral. Instead, the Provincial Budget explains:

> The tax base includes fossil fuels used for transportation by individuals and in all industries, including the combustion of natural gas to operate pipelines, as well as

road, rail, marine and air transportation. As well, the tax base includes fuel used to create heat for households and industrial processes, such as producing cement and drying coal.

Additionally, since the tax applies only to the combustion of fossil fuels within the Province, it also excludes or specifically exempts fuels exported from British Columbia and fuels used for inter-jurisdictional commercial marine and aviation purposes. As a result, the budget explains, "neither the emissions released elsewhere to produce fuel imported to BC or the emissions released elsewhere from burning fuel exported from BC are included in the tax base."

Although the British Columbia carbon tax does not apply to all GHG emissions, the substantial share of CO_2 in total GHG emissions and the equally substantial role of fossil fuel combustion as a cause of CO_2 emissions means that the tax base is quite broad, reaching approximately 70% of aggregate GHG emissions within the Province. While the exclusion of GHG emissions from industrial processes has been sharply criticized by the Opposition New Democratic Party (NDP), administrative challenges to the measurement of these emissions-which depend on production processes and can vary from facility to facility-suggest that their initial exclusion from the carbon tax is reasonable. Additionally, it seems reasonable to exclude CO2 emissions from industrial processes and other GHG emissions from waste disposal and agriculture from the carbon tax because, as the budget explains, "many of these emissions will be subject to the cap-and-trade system or other GHG reduction measures under development." The exclusion of fuels for export and fuels used for interjurisdictional commercial, marine, and aviation purposes may also be justified on the basis that the tax is intended to apply only to emissions from the combustion of fossil fuels within the Province.

NOTES AND QUESTIONS

1. Although many economists and others believe that a carbon tax is a more efficient and effective way to reduce greenhouse gas emissions than a cap-and-trade program, carbon tax proposals have not appeared politically viable in the United States. In British Columbia, the carbon tax was popular at its introduction, but opposition grew in the economic downturn of 2008. A provincial election in May 2009 effectively served as a referendum on the governing party's adoption of the carbon tax. Notably, the party won reelection as voters stood by the tax. *See Id.; see also* John Lorinc, *British Columbia's Carbon Tax Survives*, THE N.Y. TIMES, May 14, 2009, available at http://green.blogs.nytimes.com/2009/05/14/british-columbias-carbon-tax-survives/) Why might a carbon tax be viable in British Columbia, but not in a U.S. state such as California?

2. British Columbia as well as Manitoba, Ontario, and Quebec are all partners in the Western Climate Initiative (WCI), described in Chapter 5. As part of the WCI, British Columbia is also developing a cap-and-trade program for greenhouse gases. British Columbia's Greenhouse Gas Reduction (Cap and Trade) Act, which provides the statutory basis to establish the cap-and-trade program, was passed into law in May 2008. Along with other WCI partners, BC plans for the cap-and-trade program to come on line on January 1, 2012. At that point, British Columbia will have important lessons to teach about how a cap-and-trade program and a carbon tax may work together.

D. China: Industrialization in the Era of Climate Change

China has undergone an incredible surge of development in the past two decades that makes it not just a major player in economic terms, but also a major player in climate change policy. As Professor Edward Ziegler explains, "The largest construction boom in world history is currently underway in China… As China rapidly develops a modern industrial and technological economy, it joins the United States and other industrialized nations as a major consumer of resources and energy, as well as a major polluter of local and global ecosystems." Edward H. Ziegler, *China's Cities, Globalization, and Sustainable Development: Comparative Thoughts on Urban Planning, Energy, and Environmental Policy*, 5 WASH. U. GLOBAL STUD. L. REV. 295 (2007). In the first decade of the 2000s, China became the world's largest greenhouse gas emitter on an annual basis and the world's largest energy consumer. Spencer Swartz & Shai Oster, *China Tops U.S. in Energy Use*, THE WALL STREET JOURNAL, July 18, 2010, available at http://online.wsj.com/article/SB10001424052748703720504575376712353150310.html. With over 1.3 billion citizens, China accounts for almost 20% of the world's population and is the most populous country; how its per capita emissions grow thus will influence global mitigation efforts substantially.

China's economic transformation has been intertwined with a rapidly developing legal system. Although China has a long legal tradition, its legal system was effectively dismantled during the Cultural Revolution as lawyers were persecuted and law schools were closed. The number of lawyers in China has expanded from approximately 5,500 in 1981 to approximately 190,000 in 2009, mostly concentrated in major cities with people in rural areas often having limited access to them. The training and standards for lawyers also evolved significantly over this period. In 1985, less than eight percent of judicial employees held university degrees and a unified bar exam for new judges and lawyers, paired with a university education requirement, was only instituted in 2002; 360,000 people took that first unified bar exam, which had a 7% pass rate. Because these bar exam and education requirements do not apply retroactively, many older members of the judiciary have only received some on-the-job training. The Chinese legal system still struggles with corruption, bureaucracy, instability, and political interference. For an in-depth discussion of these developments and issues, see STANLEY B. LUBMAN, BIRD IN A CAGE: LEGAL REFORM IN CHINA AFTER MAO (1999); Yuanyuan Shen, *Conceptions and Receptions of Legality: Understanding the Complexity of Law Reform in Modern China*, in THE LIMITS OF THE RULE OF LAW IN CHINA 20-44 (Karen G. Turner, James V. Feinerman & R. Kent Guy, eds. 2000); William P. Alford & Fang Liufang, *Legal Training and Education in the 1990s: An Overview and Assessment of China's Needs* 21 (1994); Mo Zhang, *The Socialist Legal System with Chinese Characteristics: China's Discourse for the Rule of Law and a Bitter Experience*, 24 TEMP. INT'L & COMP. L.J. 1 (2010); Hari M. Osofsky, Social Change Through Active, Reflective Learning? Clinical Legal Education in China and the United States (draft on file with author).

This legal and economic context helps to shape China's approach to climate change. This section explores that approach by providing a brief introduction to the Chinese legal system, an overview of how China's approach to climate change has evolved over time, and a discussion of its current approach.

1. Introduction to the Chinese Legal System

China describes its legal system as "socialism with Chinese characteristics," a hard-to-define term that attempts to capture the mix of legal and cultural traditions embodied in its approach. Structurally, China is a centrally-controlled single-party state with 33 provincial-level divisions. Its sub-national units—and its citizens generally—answer to the national government with more limited degrees of freedom than those in the other major emitters described in the book, but economic development has loosened that control somewhat.

The following excerpt by Professor Jingjing Liu provides an overview of the Chinese legal system and its evolution that will help to contextualize the Chinese approach to climate change.

JINGJING LIU, *Overview of the Chinese Legal System*, 41 ENVTL. L. REP. NEWS & ANALYSIS 10885 (2011)

The People's Republic of China (PRC) was founded in 1949 by the Chinese Communist Party (CCP). For almost three decades after the PRC's establishment, there was a perception that a formal legal system for many areas of national life was unnecessary since the economy was centrally controlled and conflicts could thus be resolved through mediation or administrative means without reference to legal rights and obligations. However, the "Reform and Open Door" policy in the late 1970s, which began China's current rapid economic development and initiated the ongoing transition to a market economy, has had enormous implications for the country's legal development. The 1980s and 1990s saw massive and rapid enactment of laws, including many environmental laws, regulations, and rules.

The rebuilding of China's legal system over the past few decades has generally abandoned ideological requirements and embarked on a massive effort of law transplantation from western legal systems and internationally recognized practices, especially matters related to economic management, as a tool for attracting foreign investment. Modern Chinese law in its forms, structure, and methodologies thus exhibits many western characteristics, though it is generally modeled on the European continental civil law tradition in its legislative techniques. There has also been development in the public law areas and significant implications for protecting human rights (written into the 2004 Constitutional Amendment) since China's entry into the World Trade Organization (WTO), which imposes requirements on transparency and accessibility of law, reasonable administration of law, and impartiality, independence, and effectiveness of judicial review.

I. The Political Structure

Modern China is in form a unitary state, as compared to the federal system of the United States. All power flows from the central government in Beijing. However, economic reform has brought significant decentralization of economic administration, and in many cases, Beijing has been unable to supervise effectively the exercise of local government power, leading to substantial de facto autonomy for local governments in many areas of activities.

….

According to the Constitution, all power in the PRC belongs to the people and is to be exercised through the National People's Congress (NPC) and local people's congresses at lower governmental levels. Thus, the NPC in appearance sits on top of China's political power structure as the supreme organ of the state. As a matter of practical reality, however, most governmental

power is exercised by the Standing Committee of the Politburo of the CCP. Because the CCP has party organizations attached to government institutions at all levels and because the great majority of government officials are CCP members, the party plays an important but nontransparent role in and has enormous influence over the operation of China's government at all levels. The result is that even if the law specifies particular requirements, the policies of the Communist Party organization, through the party's influence over the government officials who are also CCP members, may greatly influence how the government implements or otherwise follows the law. The result has been significant transparency issues regarding governmental decisionmaking, including decisionmaking related to projects that have major impacts on the environment.

The NPC, as the supreme organ of state power, has the authority to issue laws binding across China, appoints the president of the nation (currently President Hu Jintao), the premier (the head of the State Council, China's cabinet, currently Premier Wen Jiabao), and the presidents of the Supreme People's Court and the Supreme People's Procuratorate (the national prosecutorial agency). NPC delegates are not elected by a popular vote; they are chosen by the people's congresses at the provincial level. Similarly, provincial people's congress delegates are chosen by people's congresses immediately below them. Direct popular elections are only held at the township and county levels. The NPC has no more than 3,000 delegates, and representation of women and ethnic minorities is required. The delegates are selected for a term of five years and can be reappointed for further terms. The NPC convenes once a year, usually in March, for several weeks to discuss important matters of the state.

The large number of delegates in the NPC and the infrequency of its meetings prevent the NPC from exercising its stipulated supreme power. To facilitate the functioning of the government, the Constitution also establishes the Standing Committee of the NPC (SCNPC) as a permanent body of the NPC. The 175 members of the SCNPC are elected by the NPC. The SCNPC is vested by the Constitution with extensive powers, including the power to interpret the Constitution, make and revise laws, certain powers to appoint top government and judicial officials, and otherwise act when the NPC as a whole is not in session. Within the environmental arena, the SCNPC and the Environment and Natural Resources Protection Committee of the NPC play an important role in making, revising, and interpreting environmental statutes, inspecting the implementation of environmental laws, as well as supervising the work of environmental protection agencies and courts.

The State Council in the central government is responsible for the day-to-day work of operating the government as the highest organ of state administration. The premier is the head of the State Council, which is divided into various ministries and commissions. This structure of a people's congress on the one hand and a day-to-day government on the other hand is replicated at the local levels as well.

The Supreme People's Court is the highest judicial organ, and the Supreme People's Procuratorate is the highest state organ for legal supervision, which includes functions of both bringing criminal prosecutions and ensuring that government agencies act in accordance with the law. The State Council, the Supreme People's Court and the Supreme People's Procuratorate are all responsible to the NPC and the SCNPC. A similar structure exists at the provincial, municipal/prefectural, and district/county level with the local governments, people's courts and people's procuratorates being responsible to the local people's congresses (see the chart below on China's governance structure). An important ministry within the State Council is the Ministry of Justice, which administers prisons, oversees the People's Mediation Committees, the lawyer

system and the notary system, manages legal education, and otherwise disseminates legal knowledge.

….

Though the NPC and the SCNPC are the main legislative bodies, the State Council is de facto the most powerful lawmaking institution, given its extensive inherent and delegated powers of lawmaking. It issues administrative regulations that touch upon almost every aspect of political, social, and economic life in China, and over 70% of the laws considered by the NPC and the SCNPC are initiated and drafted by the State Council.

II. History and Legal Context

China's modern legal system combines a number of legal traditions, including features of the continental European civil law tradition, substantial elements borrowed from the socialist law system of the former Soviet Union, and principles inherited from imperial Chinese law. In recent years, especially in the environmental area, American legal principles are also increasingly reflected in China's legal system. Unlike the western legal systems of continental Europe, however, which have been shaped by their roots in the private-law system of Rome or their early religious basis, traditional Chinese law instead centered on state concerns and dealt with private matters only incidentally. There was no special, differentiated institution, such as a "court," before which disputing parties could advance their legal claims. Instead, law was considered to be primarily an instrument for the sovereign to protect and advance the interests of the state and the rulers. As a result, traditional Chinese law was largely penal in nature; civil matters, those dealing with the interests of private parties, were largely left in the hands of customary law.

While ancient China had a highly developed and sophisticated administrative law system, its primary purpose was to ensure that officials followed the law and to increase government efficiency, not to protect individual rights from abuse by public power. The development and operation of the legal profession was strongly discouraged, and lawyers were seen primarily as "litigation tricksters." The emphasis was on substantive justice, with significant attention paid to fact-finding. Notions of procedural justice and due process were virtually nonexistent. In criminal trials, confessions were generally required for conviction, and torture was common. The heavy influence of Confucian values on traditional Chinese legal philosophy is particularly reflected in the general antipathy toward litigation and preference for extrajudicial mechanisms such as mediation as the primary means for dispute resolution. Some of these features in traditional Chinese law, to a certain degree, still influence the development of many aspects of the modern legal regime.

One of the most visible set of characteristics of China's modern legal system arises from the principles adopted from the civil-law tradition: statutory laws are of key importance; court judgments have formally no precedential effect, though they may serve as guidance….

The hierarchy of China's laws and regulations is as follows:

- *Constitution*
- *Laws* by the NPC and the SCNPC
- *Administrative Regulations* by the State Council
- *Local People's Congress Regulations* by local people's congresses and their standing committees at the provincial level
- *Rules*, including *Government Rules* by local governments of provinces, and *Ministry Rules* by central-level ministries, commissions, and agencies directly under the State Council

International treaties ratified by China are directly applicable and prevail if they conflict with domestic law.

NOTES AND QUESTIONS

1. How does China's legal system compare to that of the other countries studied in this book? What are the primary similarities and differences?

2. In what ways does China's political and legal system influence its capacity to address climate change? Does China's centralized approach make it more likely that its policies will be implemented because there will be less opportunity for democratic contestation? Or does implementation benefit from robust public participation?

   Professor Wang Mingyuan has found inadequacies in the implementation of China's energy conservation and renewable energy laws due to weaknesses in governmental administration, law enforcement, and budget resources. *See* Wang Mingyuan, *Issues Related to the Implementation of China's Energy Law: Analysis of the Energy Conservation Law and the Renewable Energy Law as Examples*, 8 VT. J. ENVTL. L. 225 (2006-2007); *see also* Dr. Xuehua Zhang, *China's Environmental Administrative Enforcement System*, 41 ENVTL. L. REP. NEWS & ANALYSIS 10890 (2011).

2. The Evolution of the Chinese Approach to Climate Change

The Chinese approach to climate change has evolved substantially from its initial stance during the UNFCCC negotiations. The following excerpt by Professor Dongsheng Zang describes that transition and how it results from China increasingly treating climate change as an energy rather than environmental problem.

Dongsheng Zang, *From Environment to Energy: China's Reconceptualization of Climate Change*, 27 WIS. INT'L L.J. 543 (2009).

II. NEGOTIATING THE UN CLIMATE CHANGE CONVENTION

China's environment suffers long lasting deficits in two areas: investment and governance. Investment refers to the financial, technological input, while governance means the institutional channel through which environment issues are identified and managed. Environmental pollution was largely ignored in Mao's China during the 1950s-1970s. In the 1980s, when China was on its "four modernization" path there were some efforts to control pollution but with little success. On the eve of the 1989 crisis, Baruch Boxer, an ecologist who closely followed China's environmental situation during this period, observed: "China's potential for finding a workable balance between conservation and growth remains problematic." This was the domestic context of China's participation of climate negotiations that eventually led to the Climate Change Convention and the Kyoto Protocol.

This Part of the essay presents a brief history of the climate negotiations, largely from 1989, when the Climate Change Convention negotiations started, to late 1997, when the Kyoto

Protocol was concluded. It pays particular attention to how the Chinese government understood the issue of climate change. Framing an issue like climate change is, of course, a complex process in which many actors and elements are involved. In this essay, discussion is limited to the official actors and their views, because the focus is on how the government in China conceptualized climate change. This Part considers the following elements to reflect this complex process: (a) who is in charge of the negotiations, (b) whose perspectives are influential in the internal deliberation, and (c) who is making decisions in response to the issues identified.

A. Before Climate Negotiations Began

In the 1980s, the basic bureaucratic structure for the negotiations was already in place. The State Council--China's cabinet--set up an Environment Protection Committee (SC-EPC) in 1984. Its stated mission was to formulate policies on the environment and to lead and coordinate the nation's environmental protection work. From 1984 to 1998, the SC-EPC was the top policymaker on the environment in the Chinese government. In 1984, the National Environmental Protection Bureau (NEPB), headed by Qu Geping, was set up under the Ministry of Urban and Rural Construction. NEPB was the executive arm of the SC-EPC. From 1984 to 1988, the SC-EPC was chaired by Li Peng, then the Vice-Premier. After he became Premier in 1987, Li Peng was succeeded by Song Jian, then Commissioner of the State Science and Technology Commission and a State Counselor of Vice-Premier level in the Chinese bureaucratic hierarchy.

In 1988, when the United Nations' Intergovernmental Panel on Climate Change (IPCC) was formed, China Meteorological Administration (CMA) became the contact agency in China. The year 1988 also saw the formation of the National Environmental Protection Agency (NEPA), an expanded and more independent governmental agency to succeed NEPB. In the meantime, the NEPA was working on national environmental legislation, the Environmental Protection Act, which was passed by the national legislature--the National People's Congress--in December 1989. However, work with the U.N. was temporarily disrupted in June 1989 when the Tiananmen Massacre occurred on June 4th. The incident, which resulted in widespread condemnation and economic sanctions from the West, pushed Beijing into diplomatic isolation. Despite all the uncertainty at the time, the scientific community in China was strongly in favor of continuing the work with the UN and keeping communications with the international *551 environment movements open. Environmental engineers looked to the West, especially the United States, for inspiration and, increasingly, research funding. In 1991, the U.S. National Science Foundation established a “Panel on Global Climate Change Sciences in China,” which organized a couple of visits to China in 1991 and interviewed members of the Chinese scientific community. The American experts observed, there “has been ever increasing pressure on Chinese institutions to seek international cooperation to carry out research projects, to gain access to expertise, training opportunities and equipment.” On the other hand, for the hardliners who have now been in control, the environment became one of the few diplomatic channels still open to the outside world. Thus, they also needed the work with the UN to continue so as to “break the ice” of isolation. The decision to continue the climate talks eventually led to China's signing of the Climate Change Convention on June 1, 1992 and ratification on January 5,1993. The Kyoto Protocol was signed on May 29, 1998 and ratified on August 30, 2002.

B. China's 1990 Position on Climate Change

Even though the hardliners in Beijing decided to continue climate talks, attempts were made to control the processes. This is most clearly demonstrated in China's first policy statement on climate change, "China's Principles and Position on Global Environmental Issues," announced in July 1990 at SC-EPC's 18th meeting. The statement set fundamental principles in a variety of global environmental issues covering climate, ozone, and biodiversity. These principles and positions were to be restated over and over again in subsequent years. The principles included: (a) environmental protection and economic development must be promoted hand in hand; (b) developed countries are mainly responsible for the environment problems, thus must bear the costs accordingly; (c) sovereignty is inalienable and any interference in domestic issues is not allowed; (d) developing countries should be given a stronger voice in global environmental issues, and developed countries should assist developing countries in finance and technology transfer; and (e) as a responsible nation, China will actively take part in global environmental issues. On climate change, the 1990 policy statement laid out the following positions: that China would actively participate in the negotiations; that developed countries are mainly responsible for climate change, including their duty to provide assistance to developing countries; and that China will take efforts to improve energy efficiency, but not to promise any specific cap on carbon dioxide emission.

It is important to note that most of these viewpoints laid out in the principles were not new. China's developing-country perspective, its insistence on sovereignty, and emphasis on developed countries' taking responsibility were all present in ozone layer and hazardous waste negotiations before the 1989 Tiananmen tragedy. What was new was the last point, that China would not make any commitment on carbon dioxide. This is perhaps where the top leadership decided to take a hard line approach in response to the sanctions from the West. This was a political decision because at the time the top leadership in China did not have scientific data on climate change and could not have possibly comprehended the implications of that stance. IPCC did not adopt their first scientific report until August 1990.

Bureaucratic control soon followed the position statement. As international environmental negotiations intensified, the State Planning Commission, the Ministry of Energy, and the Ministry of Foreign Affairs dominated the subsequent climate negotiations that eventually led to the Rio de Janeiro Conference in 1992. These departments' interests differed from those of environmental engineers at NEPA and climate scientists from the CMA. The Ministry of Foreign Affairs (MFA) was, of course, tightly controlled by the top leadership, particularly in the aftermath of the Tiananmen incident when China was facing a hostile diplomatic environment. The State Council formally decided early in 1991 that MFA would lead the climate negotiations. The State Planning Commission and the Ministry of Energy were the prototype central planning bureaucracy in the command economy. They were exclusively focused on production and largely regarded the environment as irrelevant or an obstacle to their goals.

C. The Climate Group I

Despite the attempts for political control, international climate talks helped the environmentalists and climatic scientists in China. This was in part because governments in the West largely defined and understood climate change as an environmental issue. This helped those environmental engineers and climate scientists in the Chinese delegations since they could better understand the substances than the political appointees. This became a crucial advantage giving the environmentalists some control in identifying and framing issues in their memos and proposals when they came back home. These memos and proposals addressed to the State

Council became part of the framing process because they were written either in response to the strong opposition from the powerful industry ministries or with their opposition in mind.

One such memo was by the Chinese delegation to a London international conference on ozone layer in March 1989. The delegation was impressed that China's experience in warm winters was quite consistent with the global phenomenon. In its report to the State Council in China, the delegation concluded that climate change needed leadership from the State Council and the involvement of multiple departments, since the meteorological and environmental bureaus were not enough. Thus, the delegation proposed that a planning group should be established. Another delegation, which attended the UNEP's Fifteenth Meeting from May 15 to 26, 1989 in Nairobi, Kenya, made two proposals in China. First, they proposed that because environmental issues had become major political issues in the world the SC-EPC should set up a coordinating group on international environmental issues. Second, in order to change its "awkward position" (beidong diwei) in the international arena, the delegation suggested, China should improve air quality and make necessary changes to energy policy so that CO_2 would be reduced effectively. These proposals led to the creation of the Coordinating Group on Climate Change (Climate Group I) under the SC-EPC in January 1990. Climate Group I was chaired by Song Jian.

From October 29 to November 7, 1990, another Chinese delegation was dispatched to attend the Second World Climate Conference in Geneva. In public, the delegation, led by Song Jian, expressed some skepticism on whether global warming was caused by human activities (most likely, under political instruction). In its report to the State Council, however, the delegation made four proposals, all arguing that China should play a more active role on climate change issues. First, the delegation reiterated that climate change was a serious issue and thus must be handled seriously. The memo stated that, "since we are the third largest country in terms of energy consumption and our emission is high, and both energy consumption and emission are growing rapidly, . . . we are getting a lot of attention." Second, the delegation noted that China still lacked the scientific data on climate change issues and suggested that State Planning Commission and the State Science and Technology Commission allocate more funds to support research and monitoring equipment. Third, it called for more efforts dedicated to the preparation for the climate change negotiations at Rio de Janeiro. Fourth, the delegation proposed policy changes to promote more efficient use of energy and clean energy, so as to reduce emissions. It reiterated that "since our per capita energy consumption and emission are still low, the international community cannot blame us. But once we have signed the climate change treaty, the general trend would still be to reduce emission, sooner or later."

In January 1991, the SC-EPC convened a meeting on climate change. The meeting was to hear reports of the Geneva Second World Climate Conference, a report by the CMA on warmer winters in China, and to begin planning for the upcoming UNFCCC negotiations. CMA's report confirmed that between 1980 and 1989, winter in northern China was "clearly" getting warmer, average temperatures in northern China during the 1980s was 0.3-1.0°C higher than it was in the 1950s. In his address, Song Jian highlighted this finding and suggested that more funds should be allocated to climate research. He said, "We feel awkward when attending international conferences with no data in hand." Song Jian also instructed the Ministry of Agriculture to do research on the impacts of climate change on agriculture and the State Bureau of Oceans to estimate the impacts of higher sea levels. Taking this opportunity, Song Jian suggested that, "when we run into significant questions on science in negotiations, we should invite our scientists to speak their opinions. They will make a great contribution." In this process, the SC-

EPC and NEPA gradually reinforced themselves by bringing in more members of the scientific community. When preparatory work for the Rio de Janeiro Conference started in September 1990, the Climate Group I invited a large number of scientists and engineers to act as advisors on technical issues. One year later, Song Jian made two suggestions at a SC-EPC meeting to further strengthen the influence of the scientific community. One was to set up a Scientific Advisory Group under the SC-EPC, making the channel between the Climate Group I and the scientific community official. The Scientific Advisory Group was officially formed in August 1991. The second proposal was to set up a high-level advisory group on broader policy issues, the China Council for International Co-operation on Environment and Development (CCICED, or the International Council), in order to facilitate communication between China and international organizations, foreign foundations, businesses, and experts. With support from the Canadian International Development Agency (CIDA), the International Council officially started on April 22, 1992 in Beijing.

D. The International Council

Initially, the International Council was composed of forty-three experts and publicists from China and abroad. Song Jian was elected the Chairman, and Qu Geping and Dr. Marcel Massé, President of CIDA, were elected as Vice-Chairmen. NEPA was designated as the host institution for the International Council. It maintains a Council Secretariat, also at NEPA, for administrative functions. The first Secretary General was Mr. Xie Zhenhau, then Deputy Administrator of NEPA. There were twenty-four Chinese members; four were from the scientific community, the rest were all vice-ministerial level officials representing a variety of government agencies, including SPC, SSTC, CMA, and NEPA. The nineteen international members were from a mixture of international institutions such as UNESCO, the World Bank, nonprofit organizations, such as the Rockefeller Foundation, businesses such as Royal Dutch/Shell Group, current or former government officials, and international environmental NGOs such as the World Wide Fund for Nature. The mandate of the International Council was to "provide advice and assistance to the Chinese Government in the development of an integrated, coherent approach across the areas of environmental protection, economic and social development, science and technology and related areas."

As a high-level advisory group, the International Council had access to decision-makers that any think tank would envy. In 1992, when it was formed, the members held a two-hour meeting with Premier Li Peng, who discussed in great detail China's policy on a variety of issues, from the environment to energy. The initial plan was for the International Council to be in place for five years. Apparently the Chinese government developed a viable working relationship with it so that the parties all agreed that the Council would continue. The first five years became known as Phase I (1992-97), but it has now been extended three times: Phase II (1997-2002), Phase III (2002-07) and Phase IV (2008-13). The International Council's regular channel of communication with the policymakers is its annual general meeting (AGM) where it adopts formal written recommendations. Recommendations are deliberated during its AGMs based on information from its Task Forces and Expert Working Groups covering a wide variety of issues including pollution control, environmental economics, energy strategy, scientific research, trade and sustainable development, and biodiversity.

From the configuration of its membership, the International Council seems as much an environmental advisory body as an energy advisory group. Nevertheless, it was probably behind some of the vital decisions that tend to contribute to the framing of climate change as an

environmental issue. First, immediately after the Rio Conference, China was among the first to develop the Agenda 21 action plan to implement the principles of the Earth Summit. Second, the International Council pushed for China to embrace the climate change negotiations which eventually led to the Kyoto Protocol. In 1993, the Council already recommended that, "China should play an active role in international efforts to cope with global environmental problems. For example, China should make efforts to reduce atmospheric carbon emissions which are related to international efforts." In 1996, it again called for the development of a national plan for coping with such global problems as climate change. Prior to the Kyoto Conference, the Council recommended "full Chinese participation in the negotiation of a package." Third, the International Council supported strengthening the government agency in charge of environmental protection. In 1995, it recommended that "NEPA must be given sufficient power to be able to enforce its legislation, and of course it must have corresponding resources." It linked this to the international UNFCCC, "This is all the more important if China is to observe its obligations under international treaties such as the Convention on Climate Change."

E. Climate Change as Environment: The Limits

However, despite the efforts from the elite environmentalists during the period from 1989 to 1998, success was very limited. The greatest achievement was conceptual, introducing the notion of total emission control in the Climate Change Convention and the Kyoto Protocol and translating it into domestic environmental law. Previously, China's pollution control had been based on concentration of pollutants, not total emission control, like the cap in the FCCC and the Kyoto Protocol. However, total emission control was introduced into the newly amended Water Pollution Prevention and Control Act of 1996, which allowed provincial governments to control the total discharge of major pollutants. In June 1996, the State Council's Information Office published a white paper on environmental protection, where it was declared, as a "strategic move," that pollution control be changed from focusing on concentration control of specific pollutants to a combination of concentration and "total quantity control." In August, the State Council issued a "Decision on Several Issues in Environment Protection," where the term "total emission control" was put at the center of the overall rethinking of pollution control in China. Total emission control was also written into the Air Pollution Prevention and Control Act (APPCA) of 2000.

In terms of governance, the environmentalists in NEPA and the national legislature, the National People's Congress, consciously pushed for a series of legislation on the environment. In the process, there were some signs of progress. For example, the amendment processes of APPCA in 1995 and 2000 showed the more active and independent role that the national legislature played. Western observers were initially excited by the rise of the National People's Congress, but that rise turned out to be very limited. There was also expectation of the rise of the judiciary, but the judiciary remained weak and marginal in the 1990s. More fundamentally, there was still a great mismatch between law as inspirational statement of norms and the complex economic and social structure that law had little power to shape. NEPA as the national environment agency was in no better shape. With its meager budget, SEPA was overwhelmed by its work on other more pressing issues such as acid rain (caused by sulfur dioxide) and water pollution in major lakes and river basins. Things got worse in 1998 when Premier Zhu Rongji reorganized the government. NEPA was elevated to ministry level to become the State Environmental Protection Administration (SEPA), but its staff was not expanded accordingly.

III. THE "ENERGY TURN"

After 2003, however, climate change was conceptualized as an energy policy issue. Some Chinese officials divide China's participation in international climate diplomacy into three stages: (a) negotiation of the Climate Change Convention, from 1990 to 1992; (b) negotiation of the Kyoto Protocol, from 1992 to 1997; and (c) the post-Kyoto period, from late 1997 to the present. This periodization closely follows the development of international negotiations. The Kyoto Protocol negotiations concluded in December 1997, but China did not ratify it until September 2002. This period would obscure two events in the development of climate policy in China that occurred during this period of time: one is bureaucratic change--the lead agency in charge of climate was shifted to NDRC (which was also responsible for energy policy) in 1998, when Premier Zhu Rongji reorganized the government. The other occurred early in 2003. Development Research Center of the State Council--the top think tank within the establishment--started working on a new energy strategy that proved to set the theoretical foundation for the subsequent years. These two events suggest the beginning of China's reconceptualization of climate change.

A. NDRC in Control

In 1998, Song Jian left the Climate Group I. Premier Zhu Rongji's decided to dismantle Climate Group I and establish a new group called State Coordinate Group on Responses to Climate Change ("Climate Group II"). The new entity was led by Zeng Peiyan, then Vice Premier and Chief Commissioner of the State Development and Planning Commission (SDPC, successor to the State Planning Commission). Climate Group II's office was relocated from the China Meteorological Administration to the newly formed SDPC. This is significant as the office functioned as the secretariat, in practice the office carries a lot of responsibility for climate work in China. In October 2003, when the Hu Jintao-Wen Jiabao administration took power, Climate Group II was chaired by Ma Kai, the newly appointed head of the National Development and Reform Commission (NDRC, successor to the SDPC). In 2007, the State Small Leadership Group on Climate Change, Energy Conservation and Emission Reduction (Climate Group III) was formed to replace Climate Group II, and its office was set in NDRC. Climate Group III is a high-level policy deliberation and decision-making body chaired by Premier Wen Jiabao, composed of mostly ministers from different departments. Ma Kai, the head of NDRC, was appointed as Office Director. In terms of bureaucratic structure, 1998 saw a significant change in China's conceptualization of climate change. Since 1998, the Climate Groups II and III were both heavily influenced by NDRC.

As noted earlier, during the U.N. Climate Change Convention negotiations, the State Planning Commission was not enthusiastic about climate change. The reformed NDRC is now in charge of energy policy (through its National Energy Administration), and it still closely works with the Ministry of Foreign Affairs. But the energy situation was changing dramatically for China after 1998. China has a long standing concern for dependence on foreign oil, given its experiences in the 1960s. Internal debates on energy security started as soon as China became a net oil importer in 1993. Concerns about energy were lessened temporarily by the Asian Financial Crisis in 1997-98, when the main policy focus was stimulating the economy. The debate on energy security intensified again in 2003 when China became the world's second largest consumer of oil, the United States being the first. In the volatile market of the 2000s, dependence on imported oil means vulnerability in national security and domestic stability.

Power outages in 2004 in major cities across China also added to the sense of crisis. Politically, it was also the right time to think about the long term. In November 2002, Hu Jintao succeeded Jiang Zemin to become the Party's Secretary-General, and in March 2003, Hu was to become China's President at the National People's Congress. As Hu Jintao and Wen Jiabao prepared for the leadership transition, it was natural to rethink the energy policy for the nation
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B. Rethinking China's Energy Strategy

Early in 2003, the Development Research Center of the State Council, a top establishment think tank, along with the NDRC, Chinese Academy of Science, etc., led a large-scale study on China's energy policy. The study covered a wide range of topics from energy demand and supply, oil security, conservation, environment, climate change, clean coal technology, renewable energy, to research and development (R&D) in the energy sector. The final product of the study, "Strategy and Policy for China's Energy" (Strategy) was the keynote speech and center of discussion at a high-level international workshop in November 2003 in Beijing. The Strategy set the intellectual foundation of China's subsequent energy policies of the 2000s.

The Strategy first reviewed energy during the 1980-2000 period. It noted that China's GDP grew at an annual rate of 9.7 percent, while energy only grew at 4.6 percent, less than half of the economic growth. Energy intensity--measured by the energy consumption for each unit of GDP--went down by 64 percent. This is an enormous achievement considering the world average went down by only 19 percent, and that of the Organization for Economic Co-operation and Development (OECD) countries went down 20 percent during the same period. The Strategy attributed the success to three elements. First, the change in industrial structure--the proportion of metallurgy industries decreased while that of light industries such as electronics and communication increased. Second, as result of the reform, the market forces started playing an important role in allocating resources and eliminating some of the energy-and raw material-consuming firms.

However, this trend of energy intensity going down would not continue, the Strategy projected. This is because the industrial structure would change again in the next twenty years. As living standards go up and consumption patterns change over time, demand for energy would change, especially in the areas of transportation and construction, which would grow faster than the overall economy. China is facing a tension here, asserted the Strategy. On the one hand, it is heavily dependent on fossil fuel (coal and oil), and on the other, its energy efficiency remained considerably lower than that of the world average. This creates two major concerns. One is carbon dioxide emission. China's emission of carbon dioxide increased from 394 million tons in 1980 to 832 million tons in 2001. By 2020, emissions will be even higher, "thus China would be facing increasingly more international pressure to reduce greenhouse gas emission." The other concern, the Strategy noted, is energy security. By 2020, almost 60 percent of oil would have to be imported from abroad, which would leave China in an extremely vulnerable position. Therefore, the Strategy reasoned, it is crucial that China adopt a long-term energy strategy aiming at a transformation in terms of development direction and development pattern.

At the core of a sustainable energy strategy are three elements: priority on conservation and efficiency, multiple sources, and environment-friendliness. On conservation and efficiency, the Strategy set the goal that by the year 2020 China's total energy consumption goes down by 15 to 27 percent. The Strategy reiterated that as the top priority in the new energy strategy, conservation and efficiency should be given higher priority than increasing energy supply. On

multiple sources, the Strategy recommended that China should increase the use of natural gas and actively develop renewable energy such as hydraulic power and nuclear power. The Strategy recommended the target capacity for nuclear to be 40 gigawatts (GWs), small-scale hydraulic power to be 70 GWs, wind power to be 20 GWs, and biomass to be 10 GWs. On the environment, the Strategy recommended that, "environment should be considered as an inherent element in decision-making on energy strategy." In other words, the Strategy conveyed the message that the environment is not an externality and should not be treated as one. It projected that by 2020 China's emission of carbon dioxide would be between 1.3 to 2 billion tons, reaching a per capita emission between 0.9 to 1.3 tons. Given the amount of emission, the Strategy speculated that there would be no doubt that "China would be forced to commit a cap as soon as the United States accedes into the Kyoto Protocol." At the end of the day, "it would be really hard for China to avoid any cap on greenhouse gases after 2020."

C. The National Program on Climate Change

The ideas laid out in the Strategy gradually found their way into official policy. In December 2004, the Communist Party took up the energy conservation and efficiency principle in its landmark Central Economic Work Conference. Then the energy strategy was further formulated and became part of the "Eleventh Five-Year Plan" approved by the National People's Congress in March 2006. The new energy strategy eventually became the foundation of the "National Climate Change Program," (the Program) announced by NDRC in June 2007. As the nation's second general official statement on climate change, the Program embodies the way NDRC defined climate change as an energy policy, an enormous change from the first period 1989-1998, discussed earlier.

The Program covered a broad range of issues. It described endeavors China had taken (Chapter I), the challenges China is still facing (Chapter II), its policy principles and objectives (Chapter III), measures and policies China is prepared to apply (Chapter IV), and its basic positions on climate change in the international arena (Chapter V). Though it covers industrial processes, agriculture, forestry, urban waste, etc. as key areas for emission mitigation, the Program largely defined China's climate policy through the lens of energy-- energy efficiency, conservation, technology, and renewable status. The main targets the Program sets are energy targets that: (a) China will reduce energy consumption per unit of output value in GDP by 20%, and (b) China will raise the proportion of renewable energy to 10 percent of its primary energy supply by 2010. This is in part because China does not want to set a cap for its carbon emissions, even in this purely domestic context. More fundamentally, the central theme of the Program, based on the new energy strategy, is not just to cut emissions, but to change China's economic growth pattern by improving energy conservation and efficiency. In other words, the Program saw a strategic value in energy conservation and efficiency as a means to fuel economic growth by upgrading the whole economic structure.

D. Climate Change as Energy: Challenges

The differences between climate change understood as energy policy and climate change understood as environmental policy lie in the specific context of the Chinese policymaking process. There are differences in both governance and investment. In terms of governance, NDRC preferred certain policy instruments to others based on its own experience, tradition, and jurisdiction. The National Program on Climate Change is more in favor of a "command and

control" approach--it sets standards, rules, targets, and timetables, but remains ambiguous on market incentive-based measures. SEPA, or its successor, the Ministry of Environment Protection (MEP), was interested in "cap-and-trade" and has conducted pilot projects on sulfur dioxide and chemical oxygen demand (COD), but "cap-and-trade" was not even mentioned in the Program. SEPA was also interested in a carbon tax. The Program is silent on carbon tax as well. NDRC, however, has recently made it clear that it opposes the idea. Climate change as environment would prefer a measure that can be applied across a broad range of industries and economic sectors, as a carbon tax or cap-and-trade suggest, but climate change as energy would not tolerate that because they may hurt NDRC itself. Thus climate change as energy's biggest problem is conflict of interests.

However, there are some positive elements in China's new policy. In recent years, NDRC has been aggressively investing in cleaner technology to reduce emissions. In the power generation sector, as a result, bigger (typically with capacity of 600 MW) and more efficient power generators employing supercritical (SC) or ultra-supercritical (USC) technology are replacing the smaller and old power generators. A report published in April 2009 by the International Energy Agency suggests that about ninety-five SC or USC units with a capacity of 600 MW or more had been put into operation by mid-2007, with another seventy units under construction, scheduled to be operational before 2010. Another area is renewable energy. A recent example is that a 10 GW wind farm in Jiuquan, Gansu province, northwest China, has just started construction. The Global Wind Energy Council, a Brussels-based institution, reported that in 2008, China again doubled its installed capacity by adding about 6.3 GW, to reach a total of 12.2 GW, making China the fourth in the world in terms of installed capacity. The United States added the biggest capacity in the same year, surpassing Germany to become the number one market in wind power. For China, this is the fourth consecutive year when its total capacity doubled every year. As a result of these investments 12.8 billion kilowatt-hour (kWh) of electricity came from wind power in 2008.

These areas show some signs of what Giddens calls "economic convergence," meaning that environmentally sound policy often coincide with what is good for the economy and wider political goals. China is contributing to the global move towards renewable energy. In the United States, wind power investment also has the benefit of "economic convergence." The wind industry added 35,000 jobs in 2008 resulting in a total of about 85,000 people employed in the wind industry today, up from 50,000 a year ago. In 2008, combined with new large hydropower stations, renewable energy represented 41 percent of total new global capacity, making 2008 the first year that investment in new power generation capacity sourced from renewable energy technologies (approximately $140 billion including large hydro) was more than the investment in fossil-fueled technologies (approximately $110 billion).

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NOTES AND QUESTIONS

1. How does Zang's analysis of the evolution of Chinese climate change law and policy fit within the rest of the book's exploration of the complex intersection of environment and energy? What are the advantages and disadvantages of each framing? Is there any way to get a greater convergence of environmental and energy, both legally and conceptually, with respect to climate change?

2. There are a variety of ways to measure China's contribution to climate change. When China is described as the largest emitter in the world, its responsibility to reduce its emissions seems clear. Yet other measures cast China's emissions in a different light. China's per capita emissions remain less than a quarter of the per capita emissions of the United States and Canada and about half those of the European Union. Also, between 1850 and 2002, of all the carbon dioxide emitted into the atmosphere, the U.S. and the EU were each responsible for about thirty percent, and China was responsible for only about eight percent. Kevin A. Baumert, Timothy Herzog, & Jonathan Pershing, NAVIGATING THE NUMBERS: GREENHOUSE GAS DATA AND INTERNATIONAL CLIMATE POLICY, Chap. 6, World Resources Institute (2005).

   Which of these measures matters most in deciding which countries should reduce emissions and by how much? China and other developing countries do not bear the historical responsibility for climate change, and their people do not on average enjoy the highly energy-consumptive lifestyles of Americans and Europeans. Yet, if left unchecked, the emissions of major developing countries will overwhelm any emissions reductions achieved in developed countries.

3. Another important perspective is gained by making the link between China's emissions and American consumption. One-third of China's carbon emissions come from manufacturing electronics and other goods that are exported, often to the U.S. and Europe. See Elsa Wenzel, *One-third of China's carbon emissions tied to exports*, CNET NEWS, July 29, 2008, available at http://news.cnet.com/8301-11128_3-10001150-54.html. Does this mean that the real responsibility for a large part of China's emissions should lie with the final consumers in the U.S., Europe and other countries? Professor Michael Vandenbergh suggests that the government or non-profit organizations in the U.S. should label consumer products to make clear their carbon footprint. This approach, he argues, would create consumer pressure that would induce importers of goods in the U.S. to impose carbon reduction requirements on Chinese suppliers. *See* Michael P. Vandenbergh, *Climate Change: The China Problem*, 81 S. CAL. L. REV. 905 (2008). Do you agree that this approach could create strong incentives for emissions reductions in China? If not, why not?

3. Current Chinese Climate Change Law and Policy

In line with Zang's analysis, China's 2011 Five Year Plan has a substantial interweaving of energy and climate change goals. The targets it has set for itself have generally been phrased in terms of a reduction in carbon (or energy) intensity, which is defined as the amount of carbon emissions (or energy used) per unit of economic output. A carbon intensity reduction does not require an actual reduction in carbon emissions. When economic output (i.e. gross domestic product) is growing, carbon emissions may also grow, and carbon intensity will fall as long as economic output grows more quickly than emissions.

The next reading by Professor Joanna Lewis analyzes the current Chinese approach.

JOANNA LEWIS, ENERGY AND CLIMATE GOALS OF CHINA'S 12TH FIVE-YEAR PLAN, Pew Center on Global Climate Change (2011), available at

http://www.pewclimate.org/docUploads/energy-climate-goals-china-twelfth-five-year-plan.pdf

The 12th Five-Year Plan (FYP) adopted by the Chinese government in March 2011 devotes considerable attention to energy and climate change and establishes a new set of targets and policies for 2011-2015. While some of the targets are largely in line with the status quo, other aspects of the plan represent more dramatic moves to reduce fossil energy consumption, promote low-carbon energy sources, and restructure China's economy. Among the goals is to "gradually establish a carbon trade market." Key targets include:

- A 16 percent reduction in energy intensity (energy consumption per unit of GDP);
- Increasing non-fossil energy to 11.4 percent of total energy use; and
- A 17 percent reduction in carbon intensity (carbon emissions per unit of GDP).

Energy

The relationship between energy and economic growth matters greatly in China; without a reduction in energy intensity since the late 1970s, the country would need to consume three times the energy it does today to sustain its economic growth. At the center of China's 11th Five-Year Plan (2006-2010) was a target to decrease the overall energy intensity of the economy by 20 percent. This target was implemented in response to increases in energy intensity experienced between 2002 and 2005, the first increase experienced after several decades of rapidly decreasing energy intensity. To reverse the unexpected increases in energy intensity, the government mobilized a national campaign to promote energy efficiency, targeting in particular the largest and least efficient energy consuming enterprises. The Top 1,000 Program targeted approximately 1,000 companies (consuming about one-third of the country's energy) for efficiency improvements.

The 12th FYP builds directly on the 11th FYP energy intensity target and its associated programs, setting a new target to reduce energy intensity by an additional 16 percent by 2015. While this may seem less ambitious than the 20 percent reduction targeted in the 11th FYP, it likely represents a much more substantial challenge. It is likely the largest and least efficient enterprises have already undertaken efficiency improvements, leaving smaller, more efficient plants to be targeted in this second round. Under preparation is a new "Top 10,000" program, which is modeled after the Top 1,000 Program but adds an order of magnitude of companies to the mix. But as the number of plants grows, so do the challenges of collecting accurate data and enforcing targets.

The closure of inefficient power and industrial facilities also helped contribute to the decline in energy intensity during the 11th FYP period, with a reported 72.1 GW of thermal capacity closed. Total plant closures are equivalent to 16 percent of the size of the capacity added over the period. An additional 8 GW of coal plants are reportedly to be shut down in 2011 alone with further closures no doubt on tap over the next five years.

While final data are not yet available, the country likely fell short of meeting its 11th FYP energy intensity target of 20 percent, instead achieving in the range of 19.1 percent. There is no doubt, however, that much was learned though efforts to improve efficiency nationwide. Many changes were made to how such national targets are enforced at the local level, including the incorporation of compliance with energy intensity targets into the evaluation for local officials.

The 12th FYP includes a target to increase non-fossil energy sources (including hydro, nuclear and renewable energy) to 11.4 percent of total energy use (up from 8.3 percent in 2010). While not formally enshrined in the 12th FYP, another recent notable announcement is a cap on total energy consumption of 4 billion tons of coal equivalent (tce) in 2015. To meet the cap on energy consumption, annual energy growth would need to slow to an average of 4.24 percent per year, from 5.9 percent between 2009 and 2010. The government is also trying to slow GDP growth rates, targeting 7 percent per year – far below recent growth rates. Lower GDP growth rates make it even more challenging for China to meet energy and carbon intensity targets, since energy and carbon need to grow more slowly than GDP for the country to achieve declining energy and carbon intensity.

Carbon

In the lead-up to the Copenhagen climate negotiations in the fall of 2009, the Chinese government pledged a 40-45 percent reduction in national carbon intensity from 2005 levels by 2020. To achieve this 2020 target, the 12th FYP sets an interim target of reducing carbon intensity 17 percent from 2010 levels by 2015. Whether this target will result in a deviation from China's expected carbon emissions over this time period depends on the corresponding GDP growth, but many studies have found that this target will be challenging for China to achieve without additional, aggressive policies to promote low carbon energy development.

Also promised in the 12th FYP is an improved system for monitoring greenhouse gas emissions, which will be needed to assess compliance with the carbon intensity target, and to prepare the national GHG inventories that, under the Cancún Agreements, are to be reported more frequently to the UNFCCC and undergo international assessment.

The 12th FYP establishes the goal of "gradually establish[ing] a carbon trade market," but does not elaborate. A handful of provinces have announced interest in piloting carbon trading schemes. The Tianjin Climate Exchange, partially owned by the founders of the Chicago Climate Exchange, is positioning itself to be the clearinghouse for any future carbon trading program. While some have suggested that Guangdong province may be targeted for a pilot program at the provincial level, other reports speculate that the program would begin within a single sector, such as the power sector, or begin by including only state-owned enterprises, which are often the target of early government policy experiments (as was the case with mandatory market shares for renewable energy placed on the large state-owned power companies). Other likely locations for pilots might include China's low-carbon cities and provinces.

Implementing a carbon trading scheme in China, even on a small-scale or pilot basis, will not be without significant challenges. Concerns have already been raised from both domestic and foreign-owned enterprises operating in China about how the regulation could affect their bottom lines. But the key challenge is likely technical, resulting from the minimal capacity currently in place to measure and monitor carbon emissions in China.

Industrial Policy

The 12th FYP also includes many new industrial policies to support clean energy industries and related technologies. Industries targeted include the nuclear, solar, wind and biomass energy technology industries, as well as hybrid and electric vehicles, and energy savings and environmental protection technology industries. These "strategic and emerging" industries are being promoted to replace the "old" strategic industries such as coal and telecom, (often referred to as China's pillar industries), which are heavily state-owned and have long benefited

from government support. This move to rebrand China's strategic industries likely signals the start of a new wave of industrial policy support for the new strategic industries which may include access to dedicated state industrial funds, increased access to private capital, or industrial policy support through access to preferential loans or R&D funds.

Other targets encourage increased innovative activity, including a target for R&D expenditure to account for 2.2 percent of GDP, and for 3.3 patents per 10,000 people. During the 11th FYP period, an estimated 15.3 percent of government stimulus funding was directed towards innovation, energy conservation, ecological improvements and industrial restructuring.

	The *old* pillar industries	**The *new* strategic and emerging industries**
1	National defense	Energy saving and environmental protection
2	Telecom	Next generation information technology
3	Electricity	Biotechnology
4	Oil	High-end manufacturing (e.g. aeronautics, high speed rail)
5	Coal	New energy (nuclear, solar, wind, biomass)
6	Airlines	New materials (special and high performance composites)
7	Marine shipping	Clean energy vehicles (PHEVs and electric cars)

Other Targets

The 12th FYP also includes targets to increase the rate of forest coverage by just over 21 percent and the total forest stock by 12.5 million hectares by 2015. Also mentioned are targets for the construction of 35,000 km of high-speed rail and improvements in subway and light rail coverage, as well as a goal to connect every city with a population greater than 500,000.

Outlook

The 12th FYP provides a glimpse into the minds of China's leadership as it lays out a methodological plan for moving the country forward. It includes a strong emphasis on new energy and climate programs and clearly illustrates China's commitment to increased environmental protection. The Plan itself provides a framework for progress, but leaves the details of implementation to policy makers, with many new policies and programs likely to follow in the coming weeks.

Some of the targets will no doubt prove challenging to implement. The national energy and carbon intensity targets will prove particularly difficult if economic growth rates slow in line with targets put forth in the plan. Implementation of energy conservation and efficiency programs at the facility level will prove increasingly demanding as more and more facilities are incorporated into current programs. The non-fossil energy target relies on extensive increases in nuclear energy capacity, but growth in nuclear plants may slow as efforts to improve safety and regulation will be implemented in the aftermath of the recent Japanese nuclear disaster. If nuclear targets are reduced, the share of renewable energy will need to increase even more than current targets propose.

Overall, China's Plan represents many ambitious climate and energy goals, and lays out a strategic roadmap for the county to endeavor to pursue over the next five years.

NOTES AND QUESTIONS

1. What is your assessment of this plan in the broader context of global emissions reductions efforts? To what extent does this combined focus on energy, carbon, and industry seem like an appropriate and effective approach to China addressing climate change? What are the benefits and limitations of having a five year planning horizon?

2. In 2010, China joined the Copenhagen Accord with the following pledge:

   China will endeavor to lower its carbon dioxide emissions per unit of GDP by 40-45% by 2020 compared to the 2005 level, increase the share of non-fossil fuels in primary energy consumption to around 15% by 2020 and increase forest coverage by 40 million hectares and forest stock volume by 1.3 billion cubic meters by 2020 from the 2005 levels.

   Based on widely varying projections for China's GDP in 2020, China's pledge may represent anywhere from a 15 percent decrease to a 204 percent increase in emissions as compared to 1990 levels. U.S. CAN, *Who's On Board With The Copenhagen Accord?*, available at http://www.usclimatenetwork.org/policy/copenhagen-accord-commitments. Do you think this commitment should satisfy U.S. politicians and others who have argued that the U.S. should not commit to reducing its emissions unless China takes similar action?

3. Reuters reported in February 2010 that the Chinese city of Tianjin had launched a small-scale energy-intensity trading scheme, a possible first step toward a nationwide carbon cap-and-trade scheme. *See* Emma Graham-Harrison, *Chinese City Dips Toe in Carbon Cap and Trade*, REUTERS, February 9, 2010, available at http://www.reuters.com/article/idUSTRE6182V620100209. Would establishing a nationwide cap-and-trade program be a good way for China to reach its carbon intensity goal? Ruth Greenspan Bell advises caution in the use of cap-and-trade and other market-based regulatory instruments in developing countries. Ruth Greenspan Bell, *Culture and History Count: Choosing Environmental Tools to Fit Available Institutions and Experience*, 38 IND. L. REV 637 (2005). She argues that such regulatory instruments require legal and market infrastructure that is often not sufficiently present. In China, for example, she calls out the extent to which governance has traditionally been based on personal relationships and the lack of an independent judiciary.

E. Brazil: Deforestation and Development

Like China, Brazil is a developing country that will be key to averting dangerous climate change. It is the world's fifth largest country, both by geographical area and by population. In terms of its economic and political development, Brazil successfully transitioned from dictatorship to democracy in the 1980s, and along with Russia, India and China (the "BRIC" countries) is viewed as one of the world's largest emerging economies.

Brazil is a federal constitutional democracy, with 27 states and a federal district that comprises the capital city of Brasilia (see Figure 4.1 below). Its judiciary, both at the federal and state levels, has become an important actor in environmental law, as public prosecutors and environmental groups are constitutionally empowered to file environmental public interest lawsuits. *See* Lesley K. McAllister, MAKING LAW MATTER: ENVIRONMENTAL PROTECTION AND LEGAL INSTITUTIONS IN BRAZIL (2008). Southern Brazil, where states like São Paulo and Rio de Janeiro are located, has well developed industrial, agricultural and urban economies. Northern

Brazil is less economically developed, and it is home to the Amazon, which contains the world's largest river by volume, a great deal of biodiversity, and over half of earth's remaining rainforests.

Figure 4.1. Map of the Brazilian States

Source: www.theodora.com/maps [need permission]

Tropical deforestation is a major source of greenhouse gas emissions, estimated to contribute about 20 percent of global emissions. Yet deforestation in tropical countries has proven very difficult to control, in part because of the weakness of national legal and regulatory institutions for environmental protection. In Brazil and several other countries, deforestation is closely linked to agricultural exports, which tends to be an area of significance in the development of the national economy.

In the past five years, Brazil has emerged as a leader among developing countries in climate change policy. As described below, Brazil has made significant strides in reducing deforestation in the Amazon forest and has committed to reducing it even further. Brazil is also the first developing country to pass a national law that commits it to meeting a certain emissions reductions target. These developments are explored in the two sections that follow.

1. Reducing Emissions from Deforestation

In Brazil, deforestation—primarily in the Amazon forest—is responsible for about 75 percent of the country's greenhouse gas emissions each year. Brazil's energy sector, which is more reliant on hydropower for electricity and biofuels for transportation than most other major emitters, offers relatively few opportunities for emissions reductions.

The reading that follows by Brazilian journalist Marcelo Leite gives a sense of both the achievements Brazil has made in reducing deforestation and the continuing threats that the Amazon faces.

MARCELO LEITE, THE BRAZILIAN DILEMMA: A NATION STRUGGLES NOT TO EXPLOIT ITS OWN GREATEST RESOURCE, Washington Monthly, July/August 2009

Seen from the height of 36,000 feet aboard a Brazilian Air Force jet, the Amazon rainforest looks tranquil as we approach our destination, the town of Tabatinga, a jungle outpost in the state of Amazonas where Brazil meets Colombia and Peru. A dark green velvet blankets the land as far as we can see through the fluffy clouds below us. The monotone is free of vehicle tracks, broken only by muddy threads of rivers flowing into the Upper Solimões, as the main branch of the mighty Amazon River is called where it enters the country on its 4,000-mile descent from the Peruvian Andes to the Atlantic.

But if this five-hour flight from São Paulo offers a glimpse of a vast and untouched Amazon, it also highlights the checkerboarding created by recent development. To reach the wilderness from the south, we first fly over countless towns, coffee and sugar cane plantations, and processing plants covering the state of São Paulo. Then the flight continues northward over immense cattle areas that lay siege to the unique, biologically diverse floodplain called the Pantanal, in the state of Mato Grosso do Sul. Passing over Rondônia state, an hour or so before we land, we see how soybean plantations—prominent newer stars in the country's growing array of exports—have replaced whole swaths of Amazon rainforest.

In sum, the flight gives the passenger a quick snapshot of a massive ecological dilemma. Of the original 1.5 million square miles of Brazilian Amazon forest, far and away the world's largest, some 82 percent remains intact. This entire area, roughly the size of India, is home to only twenty-four million people and is endowed with incredible biodiversity of global significance. But it continues to give way to logging, cattle, and soy plantations.

The big question is whether this southern giant will follow the development path favored by many Brazilians, once again plundering Amazonia's natural capital and suffering the severe consequences of deforestation. Or will it learn from unsustainable prior experience along its Atlantic coast, and resist dragging the Amazon rainforest into the same trap? The recent news has been good. According to satellite photos taken by Brazil's highly regarded National Institute for Space Research, deforestation rates have been dropping steadily since 2004. That was the year that President Luiz Inácio Lula da Silva, responding to increasing pressure from the international community and a growing contingent of ecologically minded Brazilian voters, revealed the Amazon Deforestation Action Plan. The plan involves tighter controls over loggers and ranchers, including fines and even imprisonment, and the refusal of credit by official banks to farmers who are not able to document that they abide by environmental regulations. Chief among these is the Forestry Code, which requires the preservation of at least 80 percent of forest cover on Amazonian properties.

Another piece of good news is Brazil's Amazon Fund, an innovative idea first announced by former Environment Minister Marina Silva at the United Nations climate conference in Bali in 2007. The fund, newly operational this year, collects voluntary contributions from other nations, companies, and even individuals: the government of Norway has pledged $1 billion to it, of which a first installment of $110 million was deposited at the end of March. Another $18 million is expected to come from Germany soon. Fund officials working at the National Economic and

Social Development Bank, a federal agency, then channel these funds to conservation groups and projects—but only after a country-wide reduction in deforestation has been achieved and documented.

The emergence of this government-run fund, a spinoff from international discussions about Reduced Emissions from Deforestation and Forest Degradation (REDD), constitutes an advance in several important ways. First, by retaining Brazilian control over how the money is spent, the fund's structure counters nationalist objections to receiving foreign funds in exchange for forest conservation and the reduction of carbon dioxide emissions. Control over the national patrimony has been a strongly valued concept in Brazil ever since the bad old days of the mid-twentieth century, when foreign interests owned local electric power and oil companies. Dreams of Amazonian prosperity arouse similar feelings. Second, for the first time after decades of resistance, the fund commits Brazil to deforestation targets. The goal is to achieve an 80 percent reduction in Amazon deforestation by 2020. Third, the willingness of Norway and other countries to hand over substantial monies to Brazil, for projects chosen by Brazil only, reflects growing international confidence in the country's ability to measure deforestation rates and select anti-deforestation controls.

But even as Brazil pursues policies to slow deforestation, it advances others that could speed it up. In particular is the government's $328 billion Accelerated Development Plan, an ambitious long-term national effort to strengthen Brazilian infrastructure and ties with neighboring countries by means of new highways, bridges, airfields, and electric power installations. Support for such initiatives comes from powerful farming and mining interests. Each new mile of road in the Amazon creates new opportunities to exploit the forests. Meanwhile, agribusiness leaders and sympathetic members of Congress have launched an offensive against the Forestry Code and some of its more restrictive provisions. They are, for example, trying to restore the 80 percent reserve rule in the Amazon to the 50 percent level previously required.

The bottom line: the battle is far from over when it comes to balancing Amazonian economic growth and conservation, and in Brasilia the tug of war continues. The severe effects of Amazonian deforestation on regional weather and the global climate are becoming ever better understood. The forest's biodiversity remains impressive, and there are still countless plant and animal species yet to be analyzed for their possible benefits to all of us. Still, the reality is that if Brazilians were forced to choose today between forest and development, many would favor the latter, matching the amount of forest that has already been lost and abandoning another 18 percent or more to development, exports, and short-term prosperity for some. Most would gladly retrace the path the nation followed along the coast while eradicating the no less diverse Atlantic forest—thus replicating the fate of most of the temperate forests in the developed world.

The factors that lead to deforestation in the Amazon are complex. While local actors such as farmers and cattle ranchers may be responsible for deforestation on the ground, their actions are often spurred by larger political and economic forces. As explained in the following excerpt by Professor Lesley McAllister, Amazonian deforestation has been driven in the last couple decades by the expansion of agro-industry, which produces food and other products for national and international markets.

Lesley K. McAllister, *Sustainable Consumption Governance in the Amazon*, 38 ENVTL L. REP. NEWS & ANALYSIS 10873 (2009)

I. Amazonian Deforestation and its Commodity Drivers

The deforestation of tropical forests is driven by complex social, political, and environmental factors that differ by region and country. Brazil, home to about 40% of the world's remaining tropical rainforests, has become one of the world's agroindustrial giants, and agroindustry has become an important driver of deforestation. This section describes historical deforestation rates in the Amazon, analyzes how expansion in the beef, soybeans and biofuel industries stimulates deforestation, and discusses the surge in Brazilian law enforcement to address deforestation in the 2000s.

A. Deforestation in the Amazon

The Amazon basin (or biome) extends through much of South America, with 60% of it within Brazil's boundaries. The Brazilian Amazon as used herein refers not just to the area of the Amazon basin with Brazil, but to a somewhat larger administrative region that in Brazil is referred to as the Legal Amazon (*Amazônia Legal*). The region is comprised of nine Brazilian states (Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, Mato Grosso, Maranhão, and Tocantins) and covers more than half of Brazil's total land area [see Figure 4.1 above]. So defined, almost three-quarters of the Brazilian Amazon consists of forests of the Amazon biome. Large areas of the states of Mato Grosso, Tocantins, and Maranhão consist of the tropical shrub-savannas of the Cerrado biome.

Studies of the Amazon refer to an "arc of deforestation" that runs through the eastern and southern extents of the Amazon forests, primarily in the states of Pará, Mato Grosso, and Rondônia. This is the Brazilian frontier, where the socially and culturally complex drama (or tragedy) of deforestation unfolds. The cast of characters is large, with primary roles played (in rough order of appearance) by landgrabbers who claim land using fraud and violence; loggers who extract the most valuable species from the land; colonists and other subsistence farmers who buy or simply occupy land; and capitalized farmers and large cattle ranchers who often buy land from the landgrabbers, colonists and subsistence farmers. Supporting roles are played by goldminers and money launderers, as well as migrant laborers who sometimes become debt slaves to landgrabbers, farmers, and ranchers. The stage is a mosaic of often-contested land tenures, consisting roughly of untitled public lands (*terras devolutas*) (35%), private lands (24%), indigenous lands (21%), and publicly protected lands (20%).

Most deforestation in the Brazilian Amazon has occurred since the 1960s, when the Brazilian government began to subsidize the settlement and development of the region. In the 1970s and 1980s, the main drivers of Amazonian deforestation involved smallholder agriculture and cattle-grazing undertaken by colonists drawn to the Amazonian frontier by governmental road-building projects and other incentives. While logging has not been a direct cause of deforestation because only a few valuable species are selectively harvested, it has often been a precursor to deforestation as farmers and ranchers move into areas made accessible by illegal logging roads and logged forests become more susceptible to fire. Between 1960 and 2001, the human population of the Amazon grew from about 4 million to over 20 million.

According to official statistics, annual deforestation in the years from 1977 to 1988 averaged about 21,000 km^2, an area roughly the size of New Jersey. International concern about tropical deforestation and the loss of biological diversity in the 1980s culminated in the

negotiation of the Convention on Biological Diversity at the 1992 "Earth Summit" in Rio de Janeiro. In the 1990s, annual deforestation in the Amazon tended to be lower, averaging about 16,000 km^2. By the turn of the twenty-first century, close to 15% of the original extent of Brazilian Amazon forests had been cleared.

Scientists have expressed concern that positive feedbacks between deforestation and climate change could devastate the Amazon, with grave consequences for the climate. With climate change, the Amazon could experience dieback as vegetation dies because of reduced precipitation and rising air temperatures, accompanied by increased risk of forest fire. A recent study suggests that without policy interventions, more than half of the Amazon forest will be destroyed or degraded by logging, agriculture, fires and drought by 2030.

B. Commodity Drivers

In the late 1990s, a new export-driven paradigm of commodity production involving primarily cattle ranching and soybean cultivation, emerged as the greatest threat to the Brazilian Amazon. The extent to which Amazonian deforestation has become responsive to international market conditions is evident in the recent fluctuations in annual deforestation rates. The years 2002 through 2004, when deforestation rates were increasing, were favorable for agroindustry expansion in Brazil because international market prices for many agricultural commodities including soy and beef were increasing and Brazil's currency devaluation lowered the price of Brazilian commodities in the international market. After 2004, the market prices of soy and beef declined and the Brazilian currency gained value against the dollar, curbing agroindustry expansion and contributing to the decline in deforestation rates from 2004 through 2007. In late 2007, when commodity prices began to rise precipitously, so too did deforestation. An analysis comparing annual deforestation rates with the annual average market prices of soy and beef in the years from 1994 through 2006 substantiated a strong correlation with beef prices and a weaker correlation with soy prices. This section describes the trajectory of the cattle and soybean industries in the Amazon, as well as the potential for world demand for biofuels to put further pressure on Amazonian forests.

1. Cattle

Cattle ranching has long been the largest driver of deforestation in the Amazon. Overall, about 70% of the area deforested in the Amazon is cattle pasture. In 1981, Norman Myers coined the term "hamburger connection" to describe how the growth in beef exports from Central America to the United States was contributing to deforestation. However, this term was not applicable to Brazil in the 1980s because almost all Brazilian beef was consumed domestically.

In the 2000s, however, a hamburger connection emerged as Brazil became the world's largest beef exporter. Between 1994 and 2005, Brazil expanded its beef exports over 450% in volume and 385% in value. Kaimowitz attributes the rapid expansion in the industry to dual causes: the favorable international market conditions for Brazilian exports and Brazil's progress towards the eradication of foot-and-mouth disease. Before 1998, the presence of foot-and-mouth disease in Brazil prevented most exports, but by 2003, 85% of the country's cattle herd was in areas that were certified as disease-free.

While the large majority of Brazil's beef exports come from southern Brazil, most of the expansion of the national herd has occurred in the Amazon. From 1990 to 2002, 80% of all

growth in Brazil's livestock population occurred in the Amazon as the region's herd more than doubled from 26 million to 57 million. By 2005 the Amazon was home to about a third of the national cattle herd. The states with most growth in cattle ranching were Mato Grosso, Para and Rondônia, which were also the states with the most deforestation. In 2004, Brazil became the world's largest beef exporter, with 38% of its exports going to the European Union, 12% to the Middle East, and 10% to Russia.

2. Soybeans

Soybean cultivation in the Amazon began in the 1990s as varieties suitable to its climate were developed and worldwide demand for soybeans as animal feed protein grew. Significant private and governmental investment in infrastructure to facilitate the inflow of agricultural inputs and the outflow of harvests occurred including the construction of storage and processing facilities, the development of a barge system and associated deepwater ports, and the paving of interstate highways. International agroindustry firms such as Cargill, Archer Daniels Midland, and Bunge have become important players in the Brazilian soybean industry. While pasture remains the dominant land use after deforestation, studies have identified "a new paradigm of forest loss" involving "larger clearing sizes and faster rates of forest conversion" for soybean cultivation.

Brazil is the world's second largest producer of soy, exceeded only by the United States. In the 2006-07 harvest, about 30% of Brazil's soy crop came from the state of Mato Grosso. While most of the crop is grown in the lowland savannah and transition areas in southern Mato Grosso, an increasing amount is being grown in the previously forested areas of northern Mato Grosso. In the forested areas of the Amazon generally, soybean cultivation grew by 15% annually from 1999 to 2004. The state of Mato Grosso has been at the center of that growth and of the related deforestation: in the years of 2001 to 2004, the state accounted for 40% of new deforestation in the Amazon. While a recent study in Mato Grosso showed that deforestation for large-scale cropland accounted for 17% of all deforestation between 2001 and 2004, most of the impact of soybean cultivation on deforestation is likely to be indirect. As prices for land risen because of the profitability of growing soy, cattle ranchers sell their lands to soybean farmers and move to more remote areas which they deforest for cattle ranching.

In 2006, Brazil replaced the United States as the world's largest exporter of soybeans. The European Union is the largest consumer of Brazilian soy, where it is used primarily as animal feed. The European Union has been especially interested in buying soy produced in the Amazon rather than in southern Brazil because the Amazonian crop is mostly free of genetically modified soy. China is also a major importer of Brazilian soy.

3. Biofuels

The quest to develop biofuels could exacerbate the conversion of forests to pasture and agriculture in the Brazilian Amazon. The United States, the European Union, Brazil, China, and India along with more than 20 other countries have enacted laws with mandatory targets for the use of biofuel in transportation fuels. Brazil is the largest producer and exporter of sugar cane ethanol to world markets, and it seeks to double its production by 2012. In addition, soybean oil can be used to make biodiesel. While biofuels were originally thought to emit fewer GHGs than petroleum fuel, studies that incorporate the deforestation and other land use changes associated with biofuels have found that they often lead to greater GHG emissions than petroleum.

The worldwide push toward biofuels could lead to increased Amazonian deforestation through several direct and indirect pathways. Most obviously, soybean cultivation for use in the production of biofuels may expand in the Amazon. It is also possible that palm plantations might be established for the production of palm oil, as is occurring in tropical Asia. Less directly, the production of biofuels elsewhere in the world may, in a variety of ways increases in the price of soybeans or cattle on the international market, thus stimulating further production of these commodities in the Amazon and the resultant deforestation. Brazilian sugar cane is cultivated primarily in southern Brazil, but increased cultivation there may displace soybean cultivation and cattle grazing, exerting pressure on the Amazon. Similarly, the cultivation of corn for ethanol may displace soy cultivation in the United States.

C. Brazilian Law Enforcement

Brazilian laws relating to deforestation in the Amazon are very strict, but have often not been enforced. In the 2000s, however, there have been signs of increasing governmental capacity at the federal and state levels in Brazil to enforce laws relating to Amazonian deforestation. The federal government has visibly cracked down on illegal logging in the Amazon and has stated its intention to establish a licensing system for rural properties in the Amazon that would enable documentation of illegal forest clearings. These initiatives are supported by the Brazilian government's sophisticated system of detecting and analyzing land clearing through satellite images.

Each year, an area of forest is selectively logged in the Amazon approximately equal to the area of forest loss. By law, a Sustainable Forest Management Plan must be prepared before a logging permit is issued by the environmental agency. However, it has been estimated that about 80% of logging in the Amazon is illegal, often because it comes from lands that are not legal owned or controlled by the loggers using logging permits based on fraudulent information. In 2004, the federal environmental agency IBAMA, in coordination with the federal police and federal prosecutors, began a campaign targeting illegal logging in the Amazon. By 2007, more than 15 sting operations had been conducted, resulting in the arrests of over 500 people for environmental crimes, including 116 IBAMA employees; the closure of 1,500 illegal sawmills; and the issuance of over 2.8 billion reais (almost US$ 1.2 billion) in fines. With the news of the spike in deforestation in late 2007, IBAMA initiated another round of sting operations. Moreover, the campaign sends an important signal regarding the government's ability and willingness to enforce environmental laws in the region.

A great deal of deforestation could be avoided if landowners complied with the Brazilian Forest Code (*Código Florestal*) that requires landowners in the Amazon to maintain a forest reserve (*reserva legal*) comprising 80% of their landholding. Landowners are also required to maintain forest cover in riparian zones, hilltops, and other "areas of permanent protection" (*áreas de preservação permanente*). Most landowners, however, do not meet these legal requirements. In 1999, the state of Mato Grosso's environmental agency initiated an ambitious licensing program for rural properties in which the agency identified land clearings through satellite data and mapped them to specific rural properties to find out whether they were licensed or not. The Rural Property Environmental Licensing System (SLAPR) revealed that 95% of large clearings in the state were illegal. The decline in the state's rate of deforestation in 2000 suggested that the program was effective in slowing forest loss. While the program was weakened after 2003 when Brazil's largest soybean entrepreneur was elected governor of Mato

Grosso, the federal government and other Brazilian states have viewed it as a model for the licensing of rural properties throughout the Amazon.

Despite Brazil's growing capacity for enforcement of laws against deforestation, it should be noted that many national laws and policies stimulate infrastructural and economic development that lead to deforestation. Since the late 1990s, the federal government's development programs have consistently called for large infrastructure projects to facilitate industrial agriculture and other economic activities in the Amazon. Such projects, including new highways, railroads, river-channelizations, gas and power lines, and hydroelectric facilities, are often viewed as drivers of deforestation in their own right. A recent study also showed that between 2002 and 2007, the Brazilian government subsidized cattle ranching in the Amazon to the tune of almost 2 billion reais or approximately US$ 840 million.

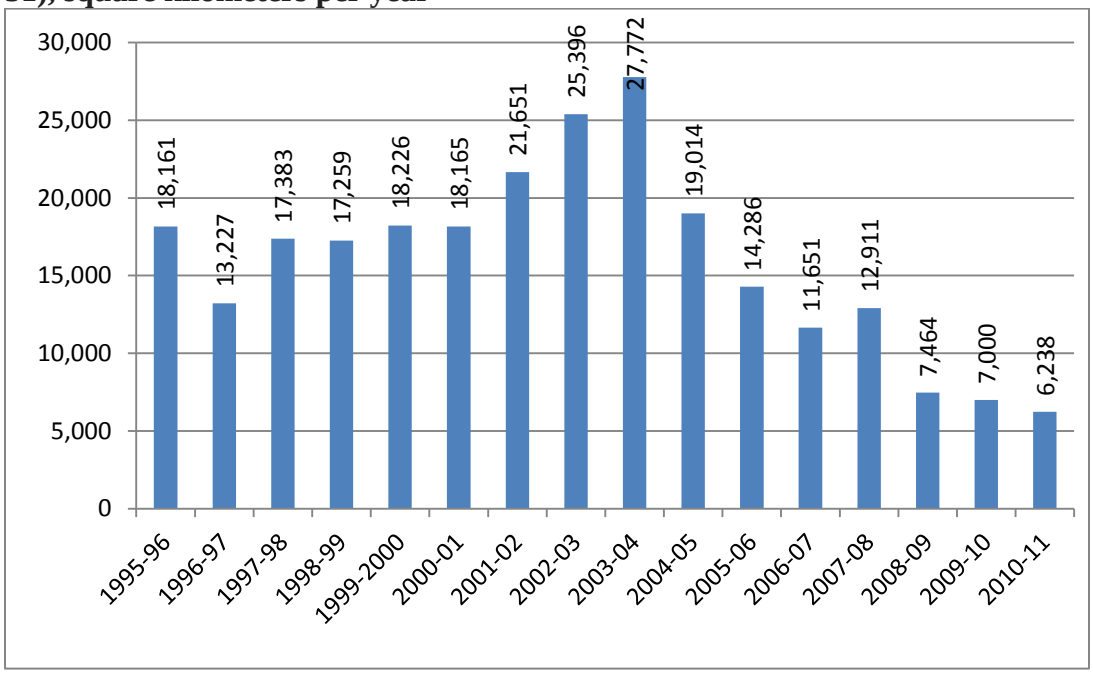
NOTES AND QUESTIONS

1. Given that Amazon deforestation is driven by export-oriented agro-industry, are the consumers in other countries who buy Brazilian beef and soybeans also partly responsible? What can such consumers do to improve the situation? Professor McAllister describes the emergence of "sustainable consumption governance," which encompasses a "diverse array of private and public activities and institutions that seek to lead market participants toward more sustainable consumption." For example, in the Amazon, one soybean export company has required its local suppliers to certify that they are in compliance with Brazilian forest law or moving towards it. See Chapter Six for more discussion of the links between consumption and climate change.

2. As shown in Figure 4.2 below, in the latter 2000s, annual deforestation declined markedly. Some of this decline may be explained by economic factors such as lower agro-export commodity prices and the recession of the late 2000s. However, the Brazilian federal government's increasing attention to and vigilance against Amazonian deforestation also seems to be having a positive effect. As part of implementing the Amazon Deforestation Action Plan, the federal government initiated a series of sting operations targeting illegal deforestation in the Amazon and created over a hundred new protected areas that together are about the size of France. Environmental Defense Fund, *Brazil National and State REDD* (2009), available at http://www.edf.org/documents/10438_Brazil_national_and_state_REDD_report.pdf.

   In 2009, the Brazilian government announced an ambitious deforestation reduction goal for the Amazon: by 2020, annual deforestation should be 80 percent below the 1996- 2005 average of 19,500 sq. km/year (or about 4,000 sq. km). *See id*.; Mario Osava, *Brazil Deforestation Down 45 Percent*, ONEWORLD.NET, available at http://us.oneworld.net/article/368025-brazil-deforestation-down-45-percent. Aside from the climate change-related benefits, what other benefits could reducing Amazonian deforestation have for Brazil? Do you think that Brazilians would favor or disfavor preserving the Amazonian forest?

Figure 4.2: Area of the Brazilian Amazon Deforested by Year, 1995-2011 (August 1 to July 31), square kilometers per year



Source: Instituto Nacional de Pesquisas Espaciais (INPE), Ministry of Science and Technology, available at http://www.obt.inpe.br/prodes/prodes_1988_2011.htm.

3. To achieve its deforestation reduction goal, Brazil has made clear that it will need international help. Indeed, REDD (Reducing Emissions from Deforestation and Forest Degradation) has become an important aspect of international climate change treaty negotiations, as endorsed by the Copenhagen Accord and further specified in the Cancun Agreements. A REDD mechanism would enable developed countries to pay developing countries to preserve their tropical forests as a means of cutting global carbon emissions. In the past, REDD has been excluded from international climate change treaties because of concerns about monitoring, leakage, additionality, and permanence. *See* Randall S. Abate & Todd A. Wright, *A Green Solution to Climate Change: The Hybrid Approach to Crediting Reductions in Tropical Deforestation*, 20 DUKE ENVTL. L. & POL'Y F. 87 (2010).

   Debates about REDD have centered on how it should be financed. Brazil has advocated for the establishment of a giant fund financed with donations from industrialized nation governments. Developing countries would receive the funds after they credibly demonstrate that they have reduced their emissions from deforestation. Brazil's Amazon Fund would serve as the model for this approach. Many other countries have favored a market-based approach, in which forest carbon credits generated from REDD projects could be used by companies and national governments to meet emission reduction targets in national cap-and-trade systems and international treaties like the Kyoto Protocol (for detailed information on the various REDD proposals, see Global Canopy Program, THE LITTLE REDD+ BOOK (2008), available at http://www.globalcanopy.org/main.php?m=117&sm=176&t=1).

Why do you think that Brazil has favored financing REDD through public funds rather than carbon credits? Why might the U.S. and other donor countries be concerned about a REDD mechanism that channels funds through developing country governments? In general, why do you think developing countries would be concerned about industrialized countries (and their companies) using forest carbon credits for compliance with their emissions reduction obligations?

4. Even in the absence of a REDD mechanism in international law, domestic laws of developed countries could allow for the purchase of credits generated by deforestation reduction projects in developing countries. The Waxman-Markey bill, which as discussed in Chapter Three was passed by the U.S. House of Representatives in 2009 but later abandoned, would have allowed U.S. companies to offset six billion tons of carbon dioxide emissions before 2025 by investing in forest conservation projects before 2025. If the United States were to ever pass comprehensive climate change legislation, do you think U.S. companies should be able to fulfill emissions reduction obligations that they have under U.S. law by buying credits from deforestation reduction projects in Brazil? Why or why not?

   In March 2010, Brazil and the U.S. signed a Memorandum of Understanding (MOU) pledging to "cooperate in areas related to capacity-building, research, development, deployment and dissemination of technologies to address climate change and its adverse effects." *U.S. and Brazil Sign Deforestation Agreement*, mongabay.com, Mar. 7, 2010, *available at* http://news.mongabay.com/2010/0307-brazil_us_mou.html. Under the MOU, Brazil and the United States established a Climate Change Policy Dialogue, which will meet at least once a year to facilitate their cooperation.

2. A National Climate Change Law

In 2008, Brazil released a National Climate Change Policy (PNMC), and in 2009, just days after the end of the Copenhagen COP, the president signed it into law. The following excerpt from the law highlights its key elements.

> **THE REPUBLIC OF BRAZIL, LAW NO. 12,187,** Diário Oficial da União (DOU) Extra Edition (December 30, 2009)

Art. 1. This Law institutes the National Policy on Climate Change- PNMC (*Política Nacional sobre Mudança do Clima*) and establishes its principles, objectives, directives and instruments.
….

Art. 3. The PNMC and resulting activities, performed under the responsibility of political entities and administrative bodies, shall observe the principles of precaution, prevention, citizen participation, sustainable development as well as the principle of common but differentiated responsibilities at international level, and, with regard to the measures adopted for their implementation, shall consider the following:

I - all have the duty to act, for the sake of the present and future generations, to reduce the impacts of anthropogenic interference with the climate system;

II - measures shall be taken to prevent, avoid or minimize identified causes of climate change with anthropogenic origin within the national territory, on which there is reasonable consensus among scientists and technicians engaged in the study of phenomena concerned;
III - adopted measures shall take into consideration the different socio-economic contexts of their application, distribute the resulting financial burden and charges across economic sectors and populations and communities concerned in an equitable and balanced way, and weigh individual responsibilities with regard to the origin of sources and occasioned effects on climate;
IV - sustainable development is the key to address climate change while conciliating it with serving the common and particular needs of the populations and communities that live in the national territory;
V - action at national level to address current, present and future climate change shall consider and integrate activities promoted at state and city level by public and private bodies.

Art. 4. The National Policy on Climate Change - PNMC shall aim at:

I - making social-economic development compatible with the protection of the climate system;
II - reducing anthropogenic greenhouse gas emissions with regard to their different sources;
…
IV - strengthening anthropogenic removals by sinks of greenhouse gases in national territory;
V - implementing measures to promote adaptation to climate change, across the 3 (three) tiers of the Federation, with the participation and collaboration of economic and social agents concerned and of beneficiaries, particularly those especially vulnerable to the adverse effects of climate change;
VI - preservation, conservation, recovery and rehabilitation of environmental resources, with particular attention to the large natural biomes regarded as National Heritage;
VII - consolidation and expansion of legally protected areas and incentives to reforestation and recomposition of vegetation cover in degraded areas;
VIII - encouraging the development of the Brazilian Emissions Reduction Market - MBRE (*Mercado Brasileiro de Redução de Emissões*).
…

Art. 11. Other public policy and governmental program principles, objectives, directives and instruments shall be made compatible with the principles, objectives, directives and instruments of this National Policy on Climate Change.

Sole Paragraph. A Decree from the Executive Power shall, in accordance with the National Policy on Climate Change, establish the Sectoral Plans of mitigation and adaptation to climate change, aiming at the consolidation of a low-carbon consuming economy, for the sectors of energy generation and distribution; urban public transport and modal interstate cargo and passenger transportation systems; manufacturing industry and durable consumer goods industry; fine chemicals industry and basic chemicals industry; paper and cellulose industry; mining; civil construction industry; healthcare services; and agriculture and ranching, with a view to meeting gradual quantifiable and verifiable anthropogenic emissions reduction targets, considering the specificities of each sector, including via the Clean Development Mechanism - CDM and via Nationally Appropriate Mitigation Actions- NAMAs.

Art. 12. To attain the PNMC objectives, the country shall adopt actions to mitigate greenhouse gas emissions with the purpose of reducing between 36.1% and 38.9% of projected emissions by 2020 as a national voluntary commitment.

Sole Paragraph. The projection of emissions for 2020 as well as the detailing of actions to attain the objective stated by the present article shall be stipulated by decree, based on the second Brazilian Inventory of Emissions … to be concluded in 2010.

NOTES AND QUESTIONS

1. Article 12 of Law 12.187 establishes a national greenhouse gas reduction target, and the law's passage made Brazil the first developing country to formalize such a target in national law. Brazil also pledged as one of its Nationally Appropriate Mitigation Actions (NAMA) under the Copenhagen Accord to undertake a series of voluntary domestic actions to achieve a reduction of 36.1 percent to 38.9 percent below projected "business-as-usual" emissions in 2020. For a listing of all of NAMAs that Brazil commited to under the Accord, see United Nations Framework Convention on Climate Change, Appendix II – Nationally Appropriate Mitigation Actions of Developing Country Parties, Brazil, http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/brazilcphaccord_app2.pdf (last visited Jan. 1, 2012). Why do you think that Brazil has emerged as a leader among developing countries in making a national commitment of this type?

2. In 1988, Brazilians wrote a new Federal Constitution after the country's transition from dictatorship to democracy. The constitution included an article dedicated to environmental protection. Article 225 declares that:

> "[e]veryone has the right to an ecologically equilibrated environment, a good used in common by all citizens and essential to a healthy quality of life, imposing a duty on the government and the community to defend and preserve it for present and future generations."

   Do you think that the Brazilian constitution's articulation of an environmental right helps explain Brazil's leadership in climate change policy?

3. To what extent are ambitious environmental laws in developing countries actually implemented and enforced? In Brazil, state and federal prosecutors have emerged as some of the most vocal and active agents in environmental enforcement. See McAllister, MAKING LAW MATTER: ENVIRONMENTAL PROTECTION & LEGAL INSTITUTIONS IN BRAZIL (2008). Prosecutors have authority to bring legal actions against not just private citizens who violate environmental laws, but also governmental agencies that fail to implement them. Their role thus bears some resemblance to the role of citizen enforcers in U.S. environmental law. Why might these Brazilian prosecutors be better situated than governmental environmental agencies to enforce environmental laws?

F. Toward Global Climate Law

An important idea within comparative law has been that by comparing legal rules across jurisdictions, it may be possible to derive "general principles of law" that are valid and useful across many jurisdictions. Professors Tseming Yang and Robert Percival have embraced a similar view in their work on global environmental law. They suggest that by comparing the laws of various countries, we can identify basic environmental provisions and principles that have become globalized.

TSEMING YANG AND ROBERT V. PERCIVAL, THE EMERGENCE OF GLOBAL ENVIRONMENTAL LAW, 36 ECOLOGY L.Q. 615 (2009).

Worldwide growth of public concern for the natural environment has been one of the most important developments in recent decades. Globalization has helped connect societies and their environmental fates more closely than ever before. At the same time, environmental problems increasingly transcend national borders and pose serious challenges to the health of the planet. The development of more effective environmental laws and legal systems throughout the world has thus become critical to directing economic development and growth onto a path of environmental sustainability.

The responses have been surprisingly progressive. Countries are transplanting law and regulatory policy innovations of other nations, even when they have very different legal and cultural traditions. Short of deliberate copying, many national regulatory initiatives also exhibit design and functional similarities that reveal a growing convergence around a few principal approaches to environmental regulation. Increased cross-border collaboration between governments, non-governmental organizations (NGOs), multinational corporations, and the growth of transnational environmental networks have also significantly influenced the development of environmental law and regulation. Such growing international linkages are blurring the traditional divisions between private and public law and domestic and international law, promoting integration and harmonization. The result has been the emergence of "global environmental law"—a field of law that is international, national, and transnational in character all at once. . . .

1. Transplantation: Environmental Impact Assessment Requirements

The Kyoto Protocol's borrowing of the U.S. Clean Air Act's pollution trading principles is a highly visible instance of legal transplantation. Yet, it is not the most significant. That designation must be reserved for the international spread of environmental impact assessment requirements, arguably the most widely adopted environmental management tool across the world.

First adopted in the United States as part of the National Environmental Policy Act of 1969 (NEPA), the tool calls for the assessments of environmental impacts of proposed projects. Its purpose is to improve environmental decision making by requiring that information be gathered about the environmental effects and potential alternatives to the project or activity at issue. In the United States, at least at the federal level, this tool has largely remained a procedural requirement. There is no mandate for particular substantive action based on the information that is revealed. Nevertheless, the significance of this tool as a mechanism of environmental governance is clear based on how ingrained it has become in environmental decision making in

the United States and worldwide. For example, from 1970 to 2007, American agencies filed 33,605 Environmental Assessments and resulting Environmental Impact Statements. Since then, the use of environmental impact assessments has spread to many nations and environmental treaties. . . .

2. Convergence: Regulatory Evolution and the Broadening of Civil Society Involvement in Environmental Governance

Apart from deliberate acts of borrowing, convergence through independent regulatory evolution has also contributed to the emergence of global environmental law. Common functional goals, governance considerations, and ecological and public health constraints have driven design, implementation, and operation of regulatory systems in similar directions. For example, the greater involvement of civil society in environmental concerns has been reflected in increased activism at the state and local levels when national governments fail to address critical environmental problems. In the United States, this heightened involvement has been especially visible in the increased activism of lower levels of governmental organizations on global environmental matters and the involvement of private actors in promoting global environmental governance.

The broadening of civil society involvement in environmental governance can serve as an important check on the economic and political influence of polluters, which can be strong at the local level. An engaged civil society and affected communities can provide important voices in regulatory decision making. Environmental behaviors by businesses and private individuals are shaped not only by laws and regulation but also by social norms, customs, and expectations.

Laws and regulations cannot be enforced by government officials all of the time. Indeed, voluntary compliance and social pressures must fill in more often than not. The role of civil society in shaping such informal influences has been especially visible in American efforts to curb climate change. . . .

3. Integration and Harmonization: Global Responses to Climate Change

One additional pathway contributing to the emergence of global environmental law is integration and harmonization. We define integration as the process of linking national legal systems and harmonization as the adjusting and conforming of their standards and requirements to an international system or to each other. Together, integration and harmonization are designed to coordinate and facilitate cooperation in order to achieve an environmental objective. The results are visible in emerging global environmental regulatory regimes. As Professor Richard Stewart explains, there has been:

> A vast increase in transnational regulation to address the consequences of global interdependency in such fields as . . . environmental protection . . . . These consequences can no longer be effectively managed by separate national regulatory and administrative measures. In response, many different systems of transnational regulation or regulatory cooperation have been established by states, international organizations, domestic administrative officials, and multinational businesses and NGOs, producing a wide variety of global regulatory regimes.

One of the most important regimes that has emerged is the climate change treaty system. It is made up of two primary treaties: the U.N. Framework Convention on Climate Change and the 1997 Kyoto Protocol. These treaties have given rise to a variety of implementing mechanisms, including the emission trading system, the CDM [Clean Development Mechanism], the Joint Implementation Mechanism, and the Non-compliance Mechanism. The emission trading system, designed to facilitate compliance with Annex B emission limitation obligations, and the CDM, which is intended to stimulate developing country participation in an effort to curb global greenhouse gas emissions, are among the most far-reaching institutions. Both have extended their influence beyond traditional governmental activities to private and business behaviors traditionally under the sole control of national regulatory authorities…

The globalization of environmental law means that regulatory approaches, legal principles, and institution structures will be similar or have analogues across different national and international systems. As a result, knowledge gained by scholars and practioners [sic] in one system is more likely to transcend geographic and political boundaries and be relevant and meaningful to the operation and effectiveness of environmental regulatory systems elsewhere. Hence, the possibility for trans-jurisdictional practice and application of environmental legal doctrines, principles, and approaches seems to be increasing.

Environmental regulatory systems at an "earlier" stage of development can profitably use many of the lessons of more developed regulatory systems. As such, environmental lawyers and regulatory specialists can share knowledge and expertise outside of their own home jurisdictions, fueling the prospect for greatly increased opportunities for environmental lawyers to supply multi-jurisdictional legal services. Though many leading international law firms are already engaged in international, multi-jurisdictional practice, the emergence of global environmental law will accelerate and broaden such opportunities.

Global environmental law suggests an additional conclusion. Our shared interest in the global environmental commons makes the creation and development of environmental law a communal endeavor. Its collective nature necessitates that environmental regulation not remain the responsibility, or sovereign prerogative, of individual national legal systems or the specialized province of international lawyers and diplomats. Instead, it is an enterprise in which environmental law practitioners, scholars, activists, regulators, and legislators worldwide share an interest.

For environmentalists, the idea that the environment and pollution do not respect political boundaries may be self-evident. Comparative law scholars, however, have long maintained that law transplantation must be considered in the context of a system's specific legal history, culture, and social mores. In other words, even if law transplantation is a common phenomenon, and legal systems appear to share common elements, Watson has denied that "one can set up a theory of general legal development applicable to all or many unrelated societies." Contrary efforts are bound to be "superficial," simply "wrong," and "scarcely systematic." The endeavor of global environmental law hardly seeks to set out a "theory of general legal development." However, it does break with Watson's premise that legal systems and cultures cannot share fundamental similarities, at least in the field of law that regulates and addresses human interactions with parts of a common external world.

NOTES AND QUESTIONS

1. In another part of this article, Professors Yang and Percival warn that American lawyers should not mistake the emergence of global environmental law for a mere extension of U.S. environmental law to the rest of the world. Rather, they explain, "American lawyers can profitably learn about environmental governance from the experiences and approaches developed elsewhere, especially in the areas of regulatory non-compliance and environmental human rights." What can the United States learn from the climate change laws and policies of the European Union, Canada, China, and Brazil?

2. How is the concept of global law different from comparative law? How is it similar? Do you think that global environmental law provides a useful approach for synthesizing and coordinating the study of domestic, foreign, and international environmental law?

3. How do these ideas of global environmental law compare to the general principles of law discussed in Chapter Two as one of the four primary sources of international law recognized by the International Court of Justice? Are they filling the gaps left by treaty law or serving in some additional function?