Over the course of almost 20 years a burgeoning field of interdisciplinary research and policy work has emerged surrounding the issues of international trade and the environment. The purpose of this book is to provide a comprehensive but not exhaustive study of the thinking and policy around these issues. The contributors comprise close to 30 of the world’s academic experts in the field, each of whom addresses the topics in his or her sub-field. The volume will serve as a guide for both undergraduate and graduate students, as well as for scholars wishing to start research in this field and to policy-makers wanting a quick and comprehensive reference to research on trade and environment.

The world economy is witnessing a new wave of economic globalization, defined qualitatively as the integration of the world’s economies through an increasing array of multilateral, regional, and bilateral trade and investment agreements, as well as numerous examples of governments that are unilaterally reducing the role of the state in economic affairs. This in part has led to large increases in the volumes of international trade and investment in the world economy. According to the World Bank, trade (exports plus imports) as a percentage of world gross domestic product (GDP) was 24 percent in 1960, 38 percent in 1985 and 52 percent in 2005. In other words, over half of all economic activity in the world economy, which is close to US$50 trillion in size, is traded.

The environment has also experienced profound change during this period. According to the recent Millennium Ecosystem Report conducted by 1300 experts from 95 countries, ‘60 percent of the ecosystem services that support life on Earth – such as fresh water, capture fisheries, air and water regulation, and the regulation of regional climate, natural hazards and pests – are being degraded or used unsustainably’ (UNDP, 2005). Such degradation is proving to be costly in economic terms. The World Bank and other international agencies estimate that the economic costs of environmental degradation range from 6 to 10 percent of GDP on an annual basis.

How closely are these trends related? In other words, to what extent is the integration of the world’s economies and the subsequent rise in world trade and investment affecting the environment and its policies and practices? Early political debates in the late 1980s and 1990s were rife with contention over this issue. In what are now seen as rather simplistic depictions of a very complex set of interactions, many argued that increased trade would automatically improve the environment, while others said that trade automatically makes the environment worse off. In the politics that ensued, for example in the negotiations surrounding the North American Free Trade Agreement (NAFTA), environment became the ‘make-or-break issue’ that led to the passage of the agreement.

The literature on trade and environment, mirrored in part by policy discussions on the subject, can be divided into three sub-categories:

1. **Trade and environmental quality**: this body of work examines the extent to which trade and investment flows, and the policies that lead to increases in such flows, affect...
environmental quality both positively and negatively. This literature consists of work largely (but not exclusively) conducted by economists and natural scientists.

2. *Trade and environmental politics*: here scholars examine the political economy of environmental aspects of trade policy and conversely the trade aspects of environmental policy. This work is largely conducted by political scientists.

3. *Trade and environmental policy*: this sub-field examines the extent to which new trade rules affect the ability of nations and the global governance institutions outside the trade regime to deploy effective environmental policy. There is also a literature on the extent to which new environmental policies will affect the ability of firms to compete internationally. This literature is often conducted by legal scholars, economists and political scientists.

After almost 20 years of research that includes countless volumes, special journal issues, articles, testimony and so forth, a number of the more contentious issues that arose at the beginning of debates over trade and environment have reached close to consensus. However, some are as controversial as ever. This brief introduction provides a context for these three sub-fields and casts the chapters included in the book in this light.

**Trade and environmental quality**

Political and policy debates over trade and environment stem from conceptions regarding the impact that trade will have on environmental quality. Since the early 1990s some have contended that trade liberalization would lead to economic growth and that once nations reached a certain level of income they would begin to reduce their negative impacts on the environment. Others countered that trade liberalization would lead to a mass migration of pollution-intensive firms to nations with weaker environmental laws. This would lead to increases in pollution in the developing world and put downward pressure on environmental regulations in nations with stringent norms. Such debates jump-started what has become a substantial literature on these questions. Ironically, there is now an emerging consensus in academic thinking regarding these questions, yet the policy community is often still mired in older debates.

**The theory of international trade**

In theory international trade and the environment can be mutually compatible, and perhaps even reinforcing. According to independent theories of international trade on the one hand, and environmental economics on the other, trade liberalization can bring economic benefits that can be distributed so as to reduce poverty and protect the environment.

The economist David Ricardo showed that because countries face different costs to produce the same product, if each country produces and then exports the goods for which it has comparatively lower costs, then all parties benefit. The effects of comparative advantage (as Ricardo’s notion became called) on factors of production were developed in the ‘Heckscher–Ohlin’ model. This model assumes that in all countries there is perfect competition, technology is constant and readily available, there is the same mix of goods and services, and that factors of production (such as capital and labor) can move freely between industries.

Within this rubric, the Stolper–Samuelson theorem adds that international trade can increase the price of products (and therefore the welfare) in which a country has a
comparative advantage. Foreign direct investment (FDI) can contribute to development by increasing employment and by human capital and technological ‘spillovers’ where foreign presence ‘crowds in’ new technology and investment. In theory, the gains from trade accruing to ‘winning’ sectors freed to exploit their comparative advantages have the (Pareto) possibility to compensate the ‘losers’ of trade liberalization. Moreover, if the net gains from trade are positive, there are more funds available to stimulate growth and reduce poverty. In a perfect world, then, free trade and increasing exports could indeed be unequivocally beneficial to all parties.

These theories have been extended to conceptualize the trade and environment relationship. The impacts on the environment can be seen as direct and indirect effects. Direct effects are the least studied but can be the most grave. Chapters in this volume by Christopher Costello, Chad Lawley and Carol McAusland, and by James J. Corbett and James J. Winebrake, examine the impacts of international trade on the introduction of alien invasive species and on global shipping emissions respectively. In a January 2000 article in the journal *BioScience*, noted scientist David Pimentel and his colleagues estimated that the annual economic costs of alien invasive species in the USA could amount to $137 billion. According to Pimentel et al., roughly 90 percent of these invasives enter the USA through trade. Therefore the trade-related economic costs are approximately $123 billion (Pimentel et al., 2000).

A recent study found that total emissions from ships are largely increasing due to the increase in foreign commerce (or international trade). The economic costs of SO$_2$ pollution range from $697$ million to $3.9$ billion during the period examined, or $77$ million to $435$ million on an annual basis. The bulk of the cost is from foreign commerce, where the annual costs average to $42$ million to $241$ million. For NO$_x$ emissions the costs are $3.7$ billion over the entire period, or $412$ million per year. Because foreign trade is driving the growth in US shipping, we also estimate the effect of the Uruguay Round on emissions. Separating out the effects of global trade agreements reveals that the trade-agreement-led emissions amounted to $96$ million to $542$ million for SO$_2$ between 1993 and 2001, or $10$ million to $60$ million per year. For NO$_x$, they were $745$ million for the whole period, or $82$ million per year (Gallagher, 2005a). The article by DeSombre in this volume (Chapter 16) gives an in-depth analysis of the politics of global shipping and the environment.

A useful framework for thinking about the indirect effects of trade on the environment has been proposed by Gene Grossman and Alan Krueger (1993). They identify three mechanisms by which trade and investment liberalization affect the environment: scale, composition and technique effects. Scale effects occur when liberalization causes an expansion of economic activity. If the nature of that activity is unchanged but the scale is growing, then pollution and resource depletion will increase along with output. Composition effects occur when increased trade leads nations to specialize in the sectors where they enjoy a comparative advantage.

When comparative advantage is derived from differences in environmental stringency, the composition effect of trade will exacerbate existing environmental problems in the countries with relatively lax regulations. Race-to-the-bottom discussions are perfectly plausible in economic theory. The Heckscher–Ohlin (H–O) theory in trade economics postulates that nations will gain a comparative advantage in those industries where they are factor abundant. Applying the H–O theory to pollution, then, it could be argued that a
country with less stringent environmental standards would be factor abundant in the ability to pollute. Therefore trade liberalization between a developed and a developing nation where the developed nation has more stringent regulations may lead to an expansion in pollution-intensive economic activity in the developing country with fewer regulations. As Brian Copeland discusses in this volume (Chapter 4), the developing country with the less stringent regulations becomes a ‘pollution haven’ for pollution-intensive economic activity.

Technique effects, or changes in resource extraction and production technologies, can potentially lead to a decline in pollution per unit of output for two reasons. First, the liberalization of trade and investment may encourage multinational corporations to transfer cleaner technologies to developing countries. Second, if economic liberalization increases income levels, the newly affluent citizens may demand a cleaner environment.

The economic and environmental dimensions of trade and sustainable development are outlined in Table I.1. From an economic perspective, when liberalization occurs and nations trade where they have a comparative advantage, the ‘winners’ are those sectors that can now export more of their goods or services. Theoretically this will not only cause expansion of exports but also of employment and wages in such sectors. The ‘losers’ in trade liberalization are those sectors that will find it harder to face an inflow of newly competitive imports. In those sectors one would expect a contraction, layoffs and wages decreases. If the gains to the export sector outweigh the losses to the import sector, the net gains are positive. This leaves the ‘possibility’ that the winners can compensate the losers, or that the gains from trade can be used to stimulate pro-poor growth.

Column 3 in Table I.1 outlines potential environmental winners and losers. There may be environmental benefits from being an economic winner. First, this can occur if trade liberalization causes a compositional shift toward less environmentally degrading forms of economic activity. Second, there is also the possibility of environmental improvements in relatively environmentally destructive sectors if those sectors attract large amounts of investment from firms that transfer state-of-the-art environmental technologies to the exporting sector.

Trade liberalization can also have negative effects. It can cause a composition effect where the economy moves toward more pollution-intensive industry. Edward Barbier
(Chapter 5) shows that trade can shift the composition of exports from a country back toward resource-intensive industries and accentuate ‘Dutch disease’. In this case a resource export boom will increase the value of a domestic currency, crowd out other export sectors and deepen the composition of exports toward an environmentally unsound extractive industry while at the same time pushing the poor into more marginal existences that can also harm the environment. Hoekstra (Chapter 8) shows that trade can shift the composition of water-intensive imports and exports for countries as well. Scale effects can also adversely impact the environment, and the health and safety of the workers in economically expanding plants that may have to handle increasing amounts of pollution-intensive inputs (see Pellow, Chapter 18).

It is often overlooked that there can also be adverse environmental effects of being a trade policy ‘loser’. Some analysts argue that the shrinking of a sector that is environmentally degrading is beneficial for an economy because by definition less economic activity will equal less pollution. On the other hand, a shrinking sector can bring with it environmental liabilities that may cost taxpayers increased amounts. Moreover, from a political-economy perspective, shrinking sectors may put pressure on governments to turn a blind eye to environmental performance in order to maintain an economic presence (in other words causing a worsening technique effect).

Losing economic comparative advantages can also hurt the environment when losing sectors are those related to positive externalities. In two separate chapters James Boyce and Tim Wise (Chapters 7 and 9) discuss how this occurred in Mexico, where smallholder maize growers are finding it hard to compete with a flood of US corn imports after the North American Free Trade Agreement (NAFTA) was signed. Mexico is the center of origin for maize and the cradle of maize crop genetic diversity. Thus pressure to leave the land or convert it to other crops is threatening such diversity and global food security. Smallholders cultivating maize are generating positive externalities of protecting a global public good and maintaining diversity. Yet such prices are not reflected in their goods. Boyce provides similar examples for jute production in Bangladesh.

In theory, then, trade liberalization can benefit the environment but only if winners compensate the social and environmental losers with the gains from trade in the form of institution-building for sustainable development. This is very difficult in developing countries for political, cultural, and economic reasons. On the political level, trade liberalization costs a great deal of political capital to begin with. It is then very difficult to get the winners of a trade policy to agree to give away a portion of their gains. What’s more, many in developing countries may not accept compensation for losing. Indigenous groups see themselves as having ancient rights to land and resources, and may not be willing to be ‘bought off’ (Kanbur, 2001). Even if they could be bought off, at what price would this come? The fields of ecological and environmental economics have made great strides in recognizing that the environment has values that need to be incorporated into the price scheme to allocate resources in a more socially optimal manner. However, the methodologies for identifying the exact prices for those values are very much in their infancy, controversial, and often inappropriate – especially in developing-country contexts (Ackerman and Heinzerling, 2004).

The evidence on the environmental effects of trade is mixed as well. Economic integration is contributing to worldwide environmental degradation, but not so much because the developing world is serving as a ‘pollution haven’ for developed-world pollution. In
1992, the World Bank’s *World Development Report* made the case that while trade-led growth may cause sharp increases in environmental degradation during the early stages of economic development, such degradation would begin to taper off as nations reached ‘turning points’ ranging between $3000 and $5000 GDP per capita (World Bank, 1992). The Bank was generalizing from a landmark 1991 paper by economists Gene Grossman and Alan Krueger. This article examined the relationship between ambient concentrations of criterial air pollutants and GDP per capita. When they plotted their regression results they found that lower-income nations had higher rates of pollution per capita whereas the reverse occurred for higher-income nations (Grossman and Krueger, 1993).

This relationship became known as the EKC (the environmental Kuznets curve), borrowing its name from the landmark article by Simon Kuznets that found a similar relationship between income inequality and GDP per capita in a cross-section of countries in the 1950s (Kuznets, 1957). For the developed countries, the three factors described earlier (scale, composition and technique effects) are seen to be interacting: as income has grown, the composition of industry has shifted toward relatively less pollution-intensive economic activity while at the same time improvements in technology and environmental regulation have occurred. Although overall levels of growth (scale) have vastly increased, they have been offset by composition and technique effects.

To this day, generalizations of these findings have been used to make the claim that nations should grow now through trade liberalization and worry about the environment later (Bhagwati and Daly, 1993). EKC studies have become a cottage industry, with close to 100 articles published since the original 1991 piece (see Stern, 2004). As Van Alstine and Neumayer show in their chapter in this volume (Chapter 3), what is ironic is that as the policy community has rushed to generalize the EKC in the political realm, the consensus in the peer-reviewed academic literature on the EKC has become much more
cautious. Most importantly, the literature shows that the empirical evidence for the EKC is relatively weak and limited. The chapter by Michael Rock and David Angel in this volume (Chapter 10) shows that as East Asian ‘miracle’ nations grew, they indeed polluted the environment significantly. The authors show that over time these nations began to improve environmental governance and performance, but this did not happen automatically. Indeed, it was conscious orchestration by the state, which integrated environmental policy into industrial and innovation policies, that led to success.

Yet opponents of free trade often claim that trade liberalization will result in a mass migration of pollution-intensive industry from developed countries with stringent environmental regulations to developing countries with lax environmental standards. Not only will such migration cause increases in pollution in developing countries; they argue that pressure will then be exerted on developed-country standards in the name of competition – effectively creating a ‘race to the bottom’ in standards.

As in the EKC literature, Brian Copeland in this volume (Chapter 4) shows that it is also ironic that the majority of the peer-reviewed literature has found very limited evidence for pollution havens but that some in the policy community continue to cite it as a dire consequence of trade liberalization. Very recently, however, a handful of studies have indeed found evidence of pollution havens in the world economy. A study by Cole (2004) examines North–South trade flows for ten air and water pollutants. Cole finds evidence of pollution haven effect, but claims that such effects are quite small relative to other explanatory variables. Another study, by Kahn and Yoshino (2004), looks at bilateral trade data over the years 1980 to 1997 for 128 nations in 34 manufacturing industries, and examines how low-, middle- and high-income nations differ regarding their income elasticity in exporting pollution-intensive products. They find that among nations outside of regional trade blocs there is general support for the pollution haven hypothesis. As national incomes rise, exports of pollution-intensive products decrease relative to exports of ‘cleaner’ goods. Nations participating in regional trading arrangements have slightly weaker pollution haven effects than those observed outside of regional trading blocs.

The reason why so many of these studies fail to find evidence for pollution havens (or find small effects) in developing countries is that the economic costs of environmental degradation are relatively much smaller than many other factors of production – especially those that determine comparative advantage. In general, the developing world is factor abundant in unskilled labor that takes the form of manufacturing assembly plants. On average, such manufacturing activity is relatively less pollution intensive than more capital-laden manufacturing activities such as cement, pulp and paper, and base metals production. A full review of this literature is beyond the scope of this chapter (see Jaffe et al., 1995; Neumayer, 2001 for comprehensive reviews of this literature).

Another misconception held by some in policy circles is that since there is weak evidence of a pollution haven, there is no rationale for linking trade and environmental policy. However, such claims overlook that the pollution haven hypothesis is a theory of firm location, and does not provide a framework for analyzing the environmental impacts of firms when they do move to another country, albeit for other reasons. The chapters in this volume by Zarsky and Sims Gallagher (Chapters 6 and 11) shed light on this. Zarsky provides an overview of the interaction between foreign investment and environment, showing that firms have the potential to be ‘pollution haloes’ whereby they bring better
environmental practices to developing nations and can help them ‘leapfrog’ to higher standards. Indeed, Zarsky also demonstrates cases where this has occurred. Sims Gallagher, however, shows that in the auto sector US firms brought dated cars without catalytic converters to China.

**Trade and environmental politics**

The contentious issues discussed in the previous section certainly spill over into the political realm.

The analysis that is thus far the most comprehensive in scope has been conducted by David Vogel. Vogel (1997) primarily draws from theories of political power (realist) and domestic politics to argue that trade liberalization and environmental protection are not incompatible. In an investigation of the EU, the WTO and the NAFTA he notes that, by and large, trade liberalization has strengthened rather than weakened the ability of nations to protect the environment. Importantly, however, he acknowledges that this did not happen automatically. Indeed, he concludes that the impact of trade liberalization on regulatory standards is a function of the preferences of powerful states (which are in part informed by domestic politics) and the level of economic integration (in other words the stronger the trade institution) between the negotiating partners. According to Vogel, ‘California effects’ occur when powerful (often correlating with wealthy) nations prod their trading partners to strengthen their policies in the integration process. ‘Delaware effects’ arise when the opposite occurs.

In this light, Vogel concludes that a ‘trade’ occurs: market access is granted by powerful states in exchange for raising consumer and environmental standards. It was the EU’s strong commitment to integration that empowered Germany (in turn empowered by its environmental community) to influence the environmental policies of other European states, whereas, in the case of the GATT, a much weaker institution, the ability of strong and wealthy countries to influence its partners was more diffuse. To Vogel, NAFTA falls in the middle. While it allows the USA to influence Mexican environmental policy more than was possible under the WTO, it does not go as far as the EU. Evoking the work of Albert Hirschman, a former student of Vogel has added that the key condition that powerful countries use to lure weaker ones into protecting their environment is access to the powerful countries’ markets (Steinberg, 1997).

The role of domestic politics is key to the formation of the powerful state’s environmental preferences. Interestingly, Vogel explains how ‘baptist and bootlegger’ coalitions are formed to push hegemons toward advocating environmental policy in trade agreements. During prohibition in the USA, two constituencies had an interest in keeping the southern states ‘dry.’ First were baptists, who had a moral case to outlaw alcohol. Second were bootleggers, who stood to gain from keeping alcohol sales illegal. In a trade and environment setting, Vogel explains:

> For producers who wish to maintain or increase trade barriers, the convergence of trade and regulatory policies provides them with two significant political benefits. First, it furnishes them with an argument for trade restrictions that has relatively wide political appeal: consumer or environmental regulation. They can argue against the removal of trade barriers on similar grounds. Second, it provides them with an important new source of political support, as consumer and environmental organizations enjoy considerable influence in a number of capitalist nations. (Vogel, 1997, p. 21)
Baptist and bootlegger coalitions can arise in various forms. DeSombre has shown how such coalitions form to increase the stringency of environmental regulations in other countries. In this case, industry is interested in such action because it fears that, since it is subject to such regulation, it will not be able to compete with firms that are not (DeSombre, 2001). So in this case industry supports trade liberalization. For NAFTA, baptist and bootlegger coalitions were also formed in opposition to trade liberalization – but the coalitions were formed for similar reasons to DeSombre’s. Under NAFTA, certain industries allied with anti-NAFTA NGOs for fear of having to compete with foreign firms that did not have to adhere to such regulation (Vogel, 1997). This coalition was even broader under NAFTA: baptists and bootleggers were joined by conservative political constituencies led by leaders such as Patrick Buchanan and Ross Perot, who questioned NAFTA’s ability to uphold the sovereignty of US regulation. Both DeSombre and Vogel describe coalitions that form for fear of being unable to compete because firms overseas do not have to comply with stringent environmental standards.

Interestingly, the USA is not always the home of stronger standards and therefore coalitions to increase standards abroad – as Henrik Selin and Stacy VanDeveer discuss in this volume (Chapter 15), as do Thomas Bernauer and Philipp Aerni (Chapter 14). Indeed, the most recent baptist and bootlegger coalition in the USA has arisen because of stringent standards for genetically modified organisms (GMOs) in Europe. Europe is a large market for US farm products, but increasingly requires that all crops sold in Europe not include GMOs. While many industries still fight such efforts, some are joining with environmental groups in the USA to push for GMO standards in that country, thus securing access to European markets for US farmers. In an attempt to draw out general lessons, then, Vogel concludes that trade liberalization is more apt to cause a California effect when the most powerful among a group of negotiating nations has influential domestic constituencies that support more stringent environmental standards. To summarize, the stronger the commitment of nations to coordinate policy, the more powerful is the California effect (Vogel, 1997; 1999).

Vogel’s work is an in-depth and pioneering analysis of the politics of trade and environment. However, while he eloquently shows how power, markets, institutions and interest groups all play a role in the formation of trade and environment regimes, he falls short of weighing the relative importance of each of these variables. Such an effort has been undertaken in two studies of NAFTA. In a volume that describes the passage of NAFTA, Frederick Mayer (1998) devotes considerable attention to explaining the determinants of the trade and environment regime that arose as a result of NAFTA. To Mayer, this regime was a necessary condition for the passage of NAFTA as a whole. Where Vogel could be said to have drawn from primarily realist and institutional approaches to trade and environment, Mayer’s explanation simultaneously blends realist, liberal and constructivist theories to explain the creation of a trade and environment regime. Drawing from game theory and process-tracing through a gamut of confidential documents and interviews, Mayer outlines three major episodes that together led to the creation of such a regime under NAFTA: the need to secure fast-track negotiating authority in the USA; the negotiations themselves; and the ratification process. With political power as a constant force in all three stages, Mayer argues that it was institutional factors that determined the first stage of NAFTA, interests the second, and constructivism the third.
For Mayer, each stage of NAFTA was determined by interactions among institutions, interests and social construction. From an institutional perspective, US fast-track and ratification policies loomed over the entire period. Interest groups saw that they would be key brokers in seeing that these institutional hurdles were cleared and began linking their demands to the negotiations. During the elections of 1992, Bill Clinton needed to support NAFTA but also had to distinguish himself from his opponent, then President George Bush. Seeing the support of interests such as environment and labor as seminal to his election campaign, he decided to support NAFTA and labor and environmental-side agreements (Mayer, 1998). By doing so he automatically opened the door to even more interest-group involvement.

In an in-depth analysis of environmental NGO involvement during NAFTA, John Audley (1997) showed how NGOS performed different roles during each stage of the process. Some used grassroots tactics to threaten the ability of the agreements to succeed, while others used that leverage to be included in the negotiating process and directly influence the outcome. Referring to these classic ‘good cop, bad cop’ tactics as preemptive leverage and accommodating politics, Audley shows how procedural rules (institutions) enabled NGOS to pre-empt negotiations. However, both pre-emptive leverage and accommodating politics were essential to gain concessions from negotiators. He also reveals that such tactics may have backfired in the end. Indeed, he argues that the coalition of accommodating environmental groups used their access to trade policy-makers and their general support for the principles of free trade to neutralize any opposition to NAFTA’s passage by the more adversarial pre-emptive groups (Audley, 1997).

The campaign to finally ratify and pass NAFTA, however, lends itself, in Mayer’s view, to constructivist analysis. In the effort to win voters during the ratification process, clashing interests waged symbolic campaigns to make their points. The final debates over NAFTA were not about its actual effect, but about what it symbolized. Those against NAFTA associated it with images of corporate greed and as triggering a ‘giant sucking sound’ of jobs and environmental regulations going south of the border. Conversely, those in favor of NAFTA attempted to create images of unanimous support by lining up all living ex-presidents with the chairs of many influential CEOs, and so forth (Mayer, 1998). Peter Newell in this volume (Chapter 13) demonstrates how similar forces have come into play in clashes over trade and environment in social movements across Latin America.

In short, the particular institutional framework (US elections and the fast-track process) in the USA that gives interest groups a number of opportunities to engage in trade policy, coupled with the ability of such interests (and the interests of the government) to wage symbolic campaigns both supporting and against NAFTA, led to a final outcome that included environmental provisions in the NAFTA text and in the form of formal and informal side agreements. For the other two parties involved, Mexico and Canada, who didn’t have these constraints, NAFTA’s environmental package was more of a formality.

Trade and environmental policy
The evidence just summarized underscores the need to couple any economic integration with social and environmental policy at the local, national and/or international level. The fact that there is only mixed evidence that trade liberalization is associated with growth
shows that trade must be coupled with institution-building. The fact that there is limited evidence for the EKC shows that economic integration cannot be relied on for automatic environmental improvements. Indeed, the evidence shows that the lack of effective institutions in the presence of economic integration has exacerbated longstanding problems in the developing world.

However, a silver lining lies in the fact that there is little evidence of pollution havens. This suggests that strengthening environmental institutions and standards in developing and developed countries alike will not deter foreign and domestic investments. Because the abatement costs of pollution are so small relative to other key costs, firms will not move to or from developing countries as regulations rise (at least to US levels). Nicholas Ashford in this volume (Chapter 24) draws the key links between environmental regulation, innovation and global trade. Michael Porter’s hypothesis (Porter, 2002) that regulation-inspired innovation to reduce environmental degradation can lead to reduced costs and therefore increased competitiveness, also deserves to be spelled out. Environmental regulation can lure firms to seek ways of increasing resource productivity and therefore reduce the costs of inputs. Such ‘innovation offsets’ can exceed the costs of environmental compliance. Therefore the firm that leads in introducing cleaner technologies into the production process may enjoy a ‘first-mover advantage’ over those industries in the world economy that continue to use more traditional, dirtier production methods (for a critical rebuttal see Palmer et al., 1995).

Rhys Jenkins (1998) has offered a synthesis of the Porter hypothesis, arguing that regulation is more likely to lead to ‘innovation offsets’ under three conditions. Note that each condition requires that a firm have substantial market power in an industry in which there is substantial innovative activity. First, because cost reductions are more likely to occur where new clean technologies are developed rather than in industries that adopt end-of-pipe solutions, the level of R&D is likely to be a factor in determining the impact on competitiveness. Second, innovation offsets are more likely in industries or firms that have the ability to absorb environmental costs, which is most often determined by profit margins and firm size. Finally, they are more likely in firms that have the ability to pass on increased costs to consumers in the form of higher prices.

Creative policy does not have to be designed by government. Conroy (2002) analyzes how advocacy organizations have used certification processes to reward firms that produce and trade goods that use high social and environmental standards in their production processes. Through such efforts, the Forest Stewardship Council has certified 60 million acres of forest between 1995 and 2001, accounting for more than 5 percent of the world’s working forests. Working on the demand side of the equation, advocacy groups set up market campaigns to pressure firms to buy these products. Indeed, some retail giants are now actually seeking to participate in these processes. When governments or citizens’ groups recognize more sustainable practices in the developing world, there are avenues to gain market access for production processes that would be deemed inefficient by an unfettered marketplace. Laura T. Raynolds and Jennifer A. Keahey in this volume (Chapter 17) present a case study on fair trade certification in Africa.

Although developing countries agreed to enter a new round of trade negotiations only on the condition that development would be the centerpiece, there are growing concerns that this promise will go unfulfilled. Key among those concerns is the notion that a new trade agreement will not give the developing world the ‘policy space’ to use the very
instruments and tools that many industrialized nations took advantage of to reach their
current levels of environmental protection and development. The jury is still out on this,
but new agreements must give countries the space to establish the necessary institutions
to steer growth toward development. If that doesn’t occur, the world trading system will
continue to confuse the means of increasing trade and investment with their ends of sus-
tainable development.

Besides preserving the space for national efforts, as J. Samuel Barkin demonstrates in
this volume (Chapter 26), three models of institutions have emerged that deal with trade
and sustainable development linkages at the regional and global levels. On the one hand
the EU has a very deep set of linkages between integration and sustainable development,
whereas the WTO has quite limited linkages. Trade arrangements negotiated by the USA
are situated somewhere in the middle.

The EU has made reducing economic, social and environmental disparities a corner-
stone of its regional integration strategies. According to Anderson and Cavanagh (2004),
the EU made $324 billion in development grants to this end between 1961 and 2001.
Annual aid for a new member of the EU can be as high as 4 percent of GDP. As a result,
the relatively less well-off European countries have improved their social and environ-
mental situations as well as having benefited economically from integration. Coupled with
development funds, the EU has established regional social and environmental ministries
that set independent standards and allow for civil society participation and monitoring as
well.

In its regional arrangements, the USA allows for a much more limited level of linkages
between trade and sustainable development. The majority of regional trade arrangements
(such as the US agreements with Chile, Jordan, Morocco, Singapore, Central America
and others) have text concerning environmental matters but leave out social concerns
completely, set up no institutions, and have very limited avenues for civil society partici-
pation. Indeed, according to Anderson and Cavanagh (2004), EU development funds
total approximately ten times the amount of US economic assistance grants to all of Latin
America. In the largest US regional arrangement, the NAFTA, a parallel agreement set
up an environmental institution called the Commission for Environmental Cooperation.
With an annual budget of $9 million, the institution can do little more than provide tech-
nical assistance to the parties involved, but it does allow interesting levels of civil society
participation. NAFTA does not include any mechanism to address regional inequality.
Thus the experience of Ireland, Spain and Greece with EU development funds has
resulted in increasing standards of living as well as social and environmental improve-
ments. Mexico, on the other hand, has become worse off since NAFTA: incomes have
grown a mere 1 percent annually and poverty and inequality have worsened. What’s more,
the economic costs of environmental degradation have reached 10 percent of GDP annu-
ally (Gallagher, 2004).

On the world stage, the WTO has limited formal linkage between sustainable develop-
ment and trade, although that may be changing. At the social end, the WTO (and the
GATT before it) has allowed for ‘special and differentiated treatment’ for developing
countries, allowing them to deploy many of the development policies that were used in
the developed world in the past but are now not allowed. However, successive rounds of
WTO negotiations are shrinking the policy space for such policies. Agreements on intel-
lectual property rights, investment rules and services have all made it much more difficult
for developing nations to deploy the development policies used by middle- and high-income nations in the twentieth century (Gallagher, 2005b).

Steve Charnovitz’s overview of the trade and environment issue in Chapter 19 is impeccable. On the environmental front, there has been a longstanding controversy regarding the extent to which WTO laws restrict the ability of nations and the world community to establish effective environmental policy. At the national level, numerous cases have gone before the WTO claiming that national environmental policies have served as unfair trade barriers to member nations. Two famous cases involving tuna and shrimp respectively occurred when developing-country governments challenged US laws that restricted imports of these fish when they were caught using techniques that also killed dolphins or sea turtles. Developing countries saw such laws as unfair trade barriers. The WTO has ruled that it does not object to environmental policy *per se*, but to environmental policies that are trade restrictive. The USA has since amended these laws (Neumayer, 2001).

The divide between developed and developing countries on trade issues is just as contentious. The widely publicized tuna–dolphin dispute is a case in point. The US Marine Mammal Protection Act (MMPA) enables the USA to impose sanctions on nations whose fishing practices harm dolphins and other protected marine life. Indeed, this is one of the effective forms of domestic internationalization discussed in the work of DeSombre. However, in the late 1980s, under MMPA the USA imposed an embargo on Mexico and Venezuela because their fishing practices were ensnaring dolphins in the process of catching tuna. Mexico filed a complaint under the GATT, arguing that GATT rules forbid nations from restricting the import of a product on the basis of how it is produced. Later that year a GATT panel ruled that the tuna embargo violated the US GATT obligations. Environmentalists went berserk, and argued that as environmental policy was moving increasingly toward focusing on the environmental impacts of products through their life cycle – including production, distribution, use and disposal – the world trading regime was moving in the opposite direction (French, 1998).

While thus far the clash of environment and trade regimes has occurred over national environmental laws, many are concerned that the key compliance mechanisms in many multilateral environmental agreements (MEAs) will be deemed illegal under the WTO. At least seven MEAs have actual trade provisions in their text: the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the Montreal Protocol on Substances that Deplete the Stratospheric Ozone Layer; the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; the Convention on Biological Diversity and the Cartagena Protocol on Biosafety; the Framework Convention on Climate Change and its subsequent Kyoto Protocol; in addition to the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (UNEP/IISD, 2000). The trade provisions of these MEAs, such as the threat of sanctions under the Montreal Protocol and CITES, have in some cases been key to their success (Barrett, 1994). Although a provision of a specific MEA has not yet been called into question by the WTO, some scholars argue that the possibility of such questioning is ‘chilling’ the regimes of MEAs so that they cannot carry out their mandates effectively. Indeed, certain export bans in the Basel Convention have been seen as an unsound precedent by the trade community, and it is possible that this is affecting the development of newer MEAs (Krueger, 1999).
As Charnovitz points out in this volume (Chapter 19), from a legal perspective, these conflicts can be boiled down to two issues that can violate a core norm in the trade regime, that of ‘non-discrimination’ – treating producers in a domestic economy in the same manner as producers that one relies on for imported goods. The two issues are those over the tools to enforce environmental policies, and environmental policies aimed at the production methods of environmentally degrading products. Many of the policies that have been the subject of WTO conflict concern attempts to enhance national (or international) environmental protection through government intervention of various forms. Interventions that use subsidies, quantitative restrictions and of course sanctions are often questioned as not being the ‘least trade restrictive’ measures to achieve environmental goals. Another set of conflicts relates to the production processes of various goods and services. Environmental policy is often concerned with processes in the ‘life cycle’ of a product that could harm or benefit the environment. What causes problems in trade law is when government measures are seen as ‘discriminatory’, that is, pertaining to one set of producers (for example those wishing to sell in a domestic market) but not others (such as domestic producers) (Sampson, 2000). The Technical Barriers to Trade (TBT) agreement under the WTO prohibits the discrimination of products on the basis of their production methods. Again, non-discrimination is the principal norm of the trade regime.

The beef hormone and tuna–dolphin cases were only the beginning of trade and environmental disputes in the world trading system. Since tuna–dolphin there have been numerous other conflicts. Among these have been cases to do with environmental aspects of food safety, fuel economy standards in cars, devices to protect endangered turtles and sanctions to protect endangered rhinoceros and tiger stocks in the wild (Schlingemann, 1998; WTO, 2001). And fears about MEAs continue to loom as well. This all came to a head in 1999 at the Seattle Ministerial of the WTO, intended to launch a new round of trade negotiations. While the USA and Europe bickered over agricultural subsidies and food safety regulations, the developing countries criticized both the EU and the USA for wanting to impose environmental regulations that developing countries saw as ‘veiled protectionism’. Outside of the negotiations hundreds of thousands from across the planet echoed these and many other concerns.

Although there has never been a WTO case to this effect, at the multilateral level there is growing concern that MEAs will be overridden by WTO laws. Many MEAs use trade restrictions as an enforcement mechanism, and the fear is that such mechanisms would be deemed WTO illegal and thus reduce the effectiveness of MEAs and ‘chill’ the negotiations of future MEAs (Neumayer, 2001). In response to this, the Doha Round of WTO negotiations (2001–present) is charged with examining the relationship between MEAs and the WTO.

Some scholars and policy-makers argue that more needs to be done, that indeed a ‘World Environmental Organization’ should be established in order to serve as a counterweight to the WTO (Esty, 1997; Speth, 2004). Indeed, such an institution has also been proposed by none other than former WTO head Renalto Ruggerio: ‘I would suggest that we need a similar multi-lateral rules-based system for the environment – a World Environment Organization to also be the institutional or legal counterpart to the WTO’ (Ruggiero, 1999). Discussion of a World Environmental Organization has become quite controversial, with many in the environmental community arguing against it on numerous grounds. Some say that the existing global environmental regime (surrounding such
bodies as the UN Environment Program) has not been able to fulfill its mandate and the focus should be on reforming the existing architecture, not creating new institutions that could become plagued with the same problems (Najam, 2003).

This brief and far from exhaustive introduction to the field opens the door to over 25 chapters that may comprise the most comprehensive treatment of the trade and environment literature in academia.

References


DeSombre, Elizabeth (2001), Domestic Sources of International Environmental Policy, Cambridge, MA: MIT Press.


Ruggerio, Renalto (1999), Address to the World Trade Organization, March.


