



Globalization and the environment

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• Introduction: globalization and environmental change	371
• History of global environmentalism	375
• Economic growth, trade, and corporations	380
• A sustainable future? Financing and regimes	386
• Conclusion	393

READER'S GUIDE

Globalization is transforming the health of the planet. There is nothing particularly controversial about this statement. Yet sharp disagreements arise over the nature of this transformation. Is globalization a force of progress and environmental solutions? Or is it a *cause* of our current global environmental crisis? This chapter explores these questions by examining the debates around some of the most contentious issues at the core of economic globalization and the environment: economic growth, production, and consumption; trade; and transnational investment. It begins with a glance at the general arguments about how globalization affects the global environment. Then, to set the stage for an analysis of more specific arguments about the global political economy of the environment, it sketches the history of global environmentalism—in particular the emergence of global environmental institutions (including regimes) with the norm of sustainable development. The last section builds on these arguments to assess the effectiveness of North–South environmental financing and global environmental regimes.

Introduction: globalization and environmental change

Globalization is altering the global environment. Few scholars of global environmental politics would challenge this statement (see Box 14.1). The nature of the change, however, is hotly debated. Some argue it is a source of progress and ingenuity and cooperation, of a future world with much better environmental conditions for all. Others argue it is accelerating the process of the capitalist exploitation of nature and humanity, spinning the globe faster and faster toward an ecological meltdown.

Globalization and a healthy planet

The optimists see globalization as a process that fosters economic growth and raises per capita incomes, both essential to generate the funds and political will for global environmental management. Optimists see other environmental benefits from globalization as well. It is promoting global integration and cooperation as well as common environmental norms and standards, which are enhancing the capacity of a system of sovereign states to manage problems like ozone depletion and climate change. It is pushing

states to liberalize trade and foreign investment, promote specialization, and eliminate subsidies, which in the past have contributed to market failures and sub-optimal economic and environmental outcomes. It is enhancing the capacity of developing states for environmental management through the transfer of technologies, knowledge, and development assistance. And it is contributing to a host of domestic reforms to policies—such as better environmental laws, stronger institutions, and more secure property rights.

Optimists such as environmental writers Julian Simon, Gregg Easterbrook, and Bjørn Lomborg see a past full of progress and a future full of hope and socio-ecological triumph. There is every reason to believe that economic growth and technological progress will continue forever. ‘The standard of living’, Simon (1996: 12) argues, ‘has risen along with the size of the world’s population since the beginning of recorded time. There is no convincing economic reason why these trends toward a better life should not continue indefinitely.’ Simon’s lifetime of work has stirred a hornet’s nest of environmental critics. Writers like Easterbrook, however, see him as

Box 14.1 Globalization

This chapter assumes globalization is an ongoing and accelerating process that is restructuring and increasing the connections among economies, institutions, and civil societies. This dynamic and multidimensional process is integrating trade, production, and finance as well as strengthening global norms and global social forces. A constellation of forces drives globalization, including new and faster technologies (like computers) as well as the increasing dominance of capitalism and Western ideologies. In the simplest terms, it is leading to a ‘world as a single place’, where changes in distant lands affect people around the globe more quickly, and with greater frequency and intensity (Scholte 1997: 14). It is, in the words of Thomas Friedman

(2002), ‘the integration of everything with everything else . . . the integration of markets, finance, and technology in a way that shrinks the world from a size medium to a size small. Globalization enables each of us, wherever we live, to reach around the world farther, faster, deeper, and cheaper than ever before and at the same time allows the world to reach into each of us farther, faster, deeper, and cheaper than ever before.’ This does not assume the process of globalization is even or equal within or across countries. The rich in Europe and America are unquestionably benefiting far more than the poor of Africa, Asia, and Latin America. The process is also not inevitable. States and societies can resist and reverse globalization.

profound and brave. 'There was a time', Easterbook (1995: xxi) argues, 'when to cry alarm regarding environmental affairs was the daring position. Now it's the safe position: People get upset when you say things may turn out fine.' Writers like Lomborg add, too, that there is little statistical evidence of a global environmental crisis—that this common misperception is more a result of media hype and non-governmental organization (NGO) fund-raising antics than real problems. 'Mankind's lot', Lomborg (2001: 4) asserts, 'has actually improved in terms of practically every measurable indicator . . . We are not running out of energy or natural resources . . . Acid rain does not kill the forests, and the air and water around us are becoming less and less polluted.'

Simon, Easterbrook, and Lomborg are at the extreme end of the optimists. Most supporters of globalization—those in governments like the United States and the United Kingdom and in global institutions like the World Bank and World Trade Organization—emphasize the need for a practical view that looks toward future generations. These supporters argue that some degree of change and loss is inevitable, but the consistent trend under globalization is toward a future that looks like Britain, France, and the United States, not one that looks like Ethiopia, Cambodia, and Guyana. History demonstrates the great strides of humanity. Just a hundred years back cities like London and New York were filthy and unhealthy. Today, health conditions in virtually every city in the North are vastly superior. One of the greatest feats has been the increase in food production. In the middle of the last century close to half of the people in the South were starving. By 1970 it was less than one-third; today it is less than one-fifth (WFS 1996: 1; Lomborg 2001: 61).

Just over two hundred years ago Thomas Malthus (1798) predicted that exponential population growth would, following the laws of basic maths, inevitably surpass arithmetic food production: mass starvation would thus ensue. Since then many scholars, now commonly called Malthusians or neo-Malthusians, have continued to tout the same logic. Yet, optimists stress, Malthus was flat-out wrong, primarily because he discounted the ability of human ingenuity to increase agricultural yields. The Green Revolution of the 1960s saw scientists and farmers work together to produce fast-growth, pest-resistant, high-yield crops

able to grow just about anywhere (with irrigation, fertilizers, and pesticides). There is, as a result, plenty of food today. And it is far cheaper—global food prices have fallen two-thirds in real terms since 1957. People starve at present because of inefficient distribution and incompetent governments, not because of insufficient global food supplies. For optimists, perhaps the most revealing statistic of all is global life expectancy: in 1900 it was a mere thirty years; in 1950 it was forty-six years; today it is over sixty-six years (Lomborg 2001: 50–51, 61; World Bank 2002*d*). Granted, such progress has demanded inevitable change, including some global environmental changes. But, optimists stress, science and human ingenuity have time and again shown the capacity to respond with even more progress.

The view that globalization is a basically positive ecological force dominates global economic and environmental negotiations and institutional decision making. The debate here ranges over how to best channel globalization so as to minimize environmental damage and maximize socio-economic progress (which, in the long run, must occur for effective global environmental management). Some argue for few, if any, restraints. Others see a need to guide globalization with national environmental agencies and strong global norms and institutions. There are, however, many scholars and activists who challenge the core assumptions behind these views—that is, they see globalization as a core cause of the current ecological crisis.

Globalization and ecological collapse

Environmental critics of globalization worry it is luring humanity toward a global fate not unlike Easter Island of 300 years ago, where ecological decay drove a once thriving people to violence and cannibalism in just a few centuries (Rees 2002: 249). Particularly worrying, so-called progress and scientific reason has created, in the words of Paul Ehrlich's (1968) infamous book title, 'a population bomb', an explosion from less than 300 million people at the time of Christ to over 6 billion today (see Figure 14.1). Globalization, critics contend, is compounding the ecological impact of the 260,000 people added to the planet

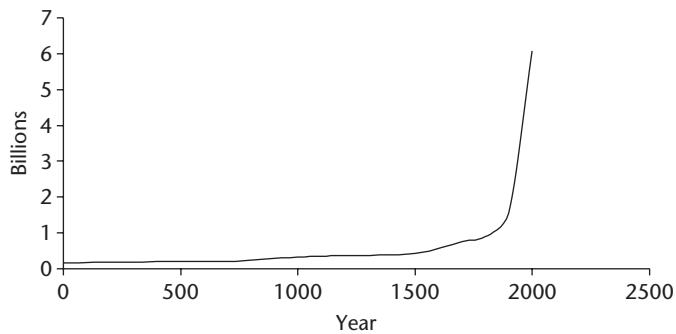


Fig. 14.1 World population AD 1–2000

Source: Facing the Future: People and Planet:
www.popinfo.org/index.htm

every day. It reinforces the neo-classical economic assumption that indefinite economic growth is both possible and necessary. It assumes, too, that it is possible and logical for the South to follow the development path of the North and continue to industrialize and intensify agricultural production. The globe can barely sustain the current population. How, critics ask, can it sustain another 3 billion in 2050? How can Africa sustain an additional 1 billion people in 2050, more than double its current population? (See Population Reference Bureau 2002: 4.)

The net effect of globalization, moreover, is to enlarge the *ecological footprint* of each person on the planet, by promoting ever more economic growth as well as cultivating an almost religious faith in the value of consumption—in the value of electronic toys, cars, and fast food (Robbins 2002)—all of which requires more and more natural resources, energy, and infrastructure to produce. The growing integration and disparities among economies are also increasing the extent and number of *ecological shadows*, which tend to shift the ecological damage of more powerful economies to weaker economies (see Box 14.2).

Critics contend, too, that globalization is encouraging ever more economic growth and production with no real concern about unequal or unsustainable patterns of consumption. It exacerbates the ecological inequality within and between countries and marginalizes women, indigenous peoples, and the poor. The global political economy is constructing, for critics like William Rees and Laura Westra (2003), a world of ‘eco-apartheid’ and ‘eco-violence’. Globalization tears, too, at the fabric of local communities, destroying historic patterns of trust, cooperation, and knowledge so essential to ecological and social balance.

In short, it destroys the living environments of much of the world’s people.

There can be, in the view of critics, no environmental justice or biological balance in a globalized world where the super-rich like Bill Gates and J. K. Rowling live alongside (metaphorically, that is, in their mansions) the 1.2 billion who live on less than US\$1 per day and the 2.8 billion who live on less than US\$2 per day. Over a billion people do not have access to clean water (UNFPA 2001: 5). Nearly 800 million people in the South suffer from chronic malnutrition (World Bank 2002*d*: 40). Unhealthy environments aggravate illnesses, contributing, for example, to the deaths of more than 4.7 million children under the age of 5 in 2000 (WHO 2002). The future under current patterns of globalization, critics argue, is one of greater horrors still: of pandemics like AIDS, which UNAIDS (2002) predicts will kill 68 million people between 2000 and 2020. Over 80 per cent of these victims will come from Sub-Saharan Africa, where already average life expectancy has fallen to just 47 years. What is needed, critics like Colin Hines (2000) argue, is not globalization, but localization.

The latest biological trends, critics note further, confirm the beginnings of a global Easter Island. Humans are now the dominant predator in every ecosystem (even in the seemingly limitless Pacific and Atlantic Oceans), and unless strict restraints are put in place humans will exhaust the globe’s natural resources, fill its sinks, and overstep the earth’s capacity to support life. Half the world’s forests and wetlands are already gone. Every day another thirty to 100 species go extinct. One of the more worrying findings in recent years, say critics, is the ten-year survey by Ransom Myers and Boris Worm (2003), which

Box 14.2 Ecological footprints and shadows

Ecological footprints

Bill Rees and Mathis Wackernagel created this concept to measure the sustainability of human lifestyles. It translates human consumption of renewable natural resources into hectares of average biologically productive land. A person's footprint is the total area in global hectares (one hectare of average biological productivity) required to sustain his or her lifestyle: food and water, clothes, shelter, transportation, and consumer goods and services. The concept allows an analyst to compare the average ecological impact of people from Africa to Australia to China to the United Kingdom to the United States. The average global ecological footprint in 1999 was 2.3 global hectares per person. There were, however, great differences across the globe. In Africa it was 1.36 global hectares (with lows in Mozambique of 0.47 and Burundi of 0.48) and in China it was 1.54. In contrast, the average footprint of someone in the United Kingdom was 5.35 and in the United States it was 9.7.

This measure also allows an analyst to compare the world ecological footprint with the total biological productive capacity of the earth. The total productive capacity of the earth in 1999 was roughly 11.4 billion hectares. From 1961 to 1999 the world ecological footprint grew by 80 per cent, reaching 13.7 billion hectares in 1999—20 per cent above the earth's biological capacity. Humanity,

the WWF laments, is now 'running an ecological deficit with the Earth'.

Sources: Wackernagel and Rees (1996); WWF (2002): 2–4, 22–8.

Ecological shadows

This concept is designed to capture the extent of the environmental impact of a nation state in jurisdictions beyond its sovereign control. Ecological shadows arise as economies, through both intentional and unintentional patterns of consumption, trade, investment, and financing, transfer the environmental harm of its citizens outside its territory. This concept is particularly useful for analysing the environmental impact of more powerful economies on weaker (dependent) economies. The United States, for example, casts a large ecological shadow over South America. Such shadows can extend down a chain of weaker economies. Japan, for example, casts an ecological shadow over Thailand, which in turn casts a shadow over neighbours like Cambodia and Laos. Ecological shadows do not arise from straightforward North–South exploitation. Often, elites in weak economies in the South profit personally from these ecological shadows, commonly acting as the agents of the ecological destruction, for example, as miners, fishers, and loggers.

Sources: MacNeill, Winsemius, and Yakushiji (1991); Dauvergne (1997).

found a 90 per cent decline in the ocean's large predatory fish—such as tuna, swordfish, marlin, cod, and flounder—over the last fifty years. The waters of Ernest Hemingway's *Old Man and the Sea* will soon be empty of the majestic marlin, a startling testimony, critics warn, not to the environmental consequences of the exploits of men like Hemingway's old man Santiago, but to the greed of industrial fishing boats plying the oceans to feed global markets.

Supporters and critics of a globalizing world, then, hold starkly different pictures of the current and future state of the global environment. The trends and statistics to support the statement 'globalization is good for the environment' seem convincing. Yet so do the trends and statistics that 'globalization is bad for the environment'. The truth seems to lie some-

where in the middle: globalization is producing *both* constructive and destructive ecological processes. The goal is to somehow harness globalization to ensure sustainability. What has the global community done so far to harness globalization and manage global environmental affairs? The next section turns to examine the history of environmentalism with an eye on this question.

Key points

- Some perceive the *net* ecological impact of globalization as positive, as a force of progress and better lives. It fosters economic growth and cooperative institutions, both necessary in the long run to manage the global environment.

- Others see the *net* impact as negative, as a force sinking the globe into a bog of ecological decay. It is accelerating the destructive process of too many people consuming too many natural resources without any concern for equality or justice.
- Both the pro- and anti-globalization camps present persuasive data and arguments. Globalization involves multiple and complex sets of overlapping processes. Inevitably, there will be manifold and at times cross-cutting effects on the global environment.

History of global environmentalism

Collective human efforts to control nature began in earnest 8,000 to 15,000 years ago as nomadic hunters-and-gatherers in various locales began to shift to settled agriculture. Great civilizations sprang up, inventing such wonders as the plough (animal drawn), the wheel, writing, and numbers. Often, nature was subsumed in the quest for human progress, and many civilizations cut down regional forests, degraded land, and polluted local waters. Environmental decay even toppled a few great civilizations, such as Mesopotamia (a land between the Tigris and Euphrates Rivers, part of contemporary Iraq), where a poorly designed irrigation system gradually poisoned the agricultural land with salt. For most of the history of civilization, however, the scale of human activity has been too small to alter the global environment—that is, to induce climate change, deplete the ozone layer, empty the oceans, or destroy global biodiversity stocks.

This began to change with the dawn of the industrial revolution some 300 years ago. Production and energy use (including the burning of coal) began to rise rapidly. The global population of 600 million or so began to multiply. There were a billion people by the early 1800s; 2 billion by the end of the 1920s. The wealthy began to extract more natural resources, faster, from increasingly remote parts of the globe (often through colonial administrations). Such activities strained local and regional environments. The evidence was stark. Smog in cities like London and New York killed thousands in the nineteenth and twentieth centuries. Once seemingly boundless species, like the plains bison of North America, were brought to near extinction. Some, like the passenger pigeon, a bird that once migrated through eastern North America in millions, went extinct (in 1914).

Governments reacted to these environmental disasters with new national and regional policies. At first these were aimed primarily at either conservation of wildlife or more effective resource management. Canada and the United States, for example, signed the Migratory Birds Treaty in 1918. Colonial powers reacted as well, putting in place policies (like sustained yield management) to try and ensure more efficient and rational resource extraction. After the Second World War, ordinary citizens began to become increasingly worried about the biological impacts of industrialization and agricultural production. Anxiety mounted after Rachel Carson's (1962) best-seller, *Silent Spring*, shocked popular consciousness with images of pesticide-laden food chains and dying ecosystems.

Worries about the health of the 'global environment' began to emerge around this time as well. The picture of the earth from space, beautiful and fragile and borderless, became a compelling global ecological image. These concerns fed into the sense of mutual economic vulnerability of post-war economies (including those in the North and South). Ehrlich's 1968 best-seller, *The Population Bomb*, added a new and perturbing image: the earth left barren by an exploding population. 'In the 1970s', he boldly predicted, 'the world will undergo famines—hundreds of millions of people are going to starve to death' (1968: xi).

Concern over the health of the global environment continued to rise in the late 1960s and early 1970s. Experts met in 1968 at the United Nations Biosphere Conference to discuss global environmental problems. The first Earth Day was held in the United States in April 1970. Twenty million rallied, one of the largest organized demonstrations in the history of the United States. That same year the US government

founded the Environmental Protection Agency (EPA). Canada created a Department of the Environment the following year. The outcome of this growing societal and political concern was the United Nations Conference on the Human Environment, held in Stockholm, Sweden, in June 1972.

The Stockholm Conference and the 1970s

The Stockholm Conference, organized by Canada's Maurice Strong, was the first global United Nations conference for state officials on the environment. There were 1,200 delegates from over a hundred countries. Swedish Prime Minister Olaf Palme and Indian Prime Minister Indira Gandhi were the only heads of state to attend. Russia and the communist bloc countries boycotted the conference to protest against the exclusion of East Germany.

The North was initially interested in addressing industrial pollution, nature conservation, and population growth. The South was more worried about development, and did not want the anxieties of rich conservationists to deny poorer countries the benefits of economic growth and industrialization (an ongoing source of conflict). There were tensions, too, over who would pay and who was responsible for solving global environmental problems. Many Southern delegates saw global capitalism as a core reason for poverty, and there was general anger that global economic institutions were pushing developing countries to export raw materials on declining terms of trade. The phrase 'the pollution of poverty' was coined at Stockholm, to express the idea that poverty was the greatest global environmental threat. Many delegates from the South called for global economic reforms to help solve the pollution of poverty.

In the end, conference delegates tried to reconcile the desire (need) for economic development in the South with the need to protect the global environment for all. Most governments came to recognize a mutual interdependence and vulnerability of North and South. The official conference documents, however, *did not* emphasize the Southern calls for global economic reforms. The conference produced a Declaration on the Human Environment (with twenty-six principles), an Action Plan for the

Human Environment (with 109 recommendations), and a Resolution on Institutional and Financial Arrangements. These were non-binding on signatory states—and most scholars agree that Stockholm produced few practical commitments to address global environmental change.

The Stockholm Conference did, however, signal a growing concern among national governments over the global environment. It also led to a General Assembly decision to create the United Nations Environment Programme (UNEP), officially launched in 1973, with Maurice Strong as the first executive director. The United Nations Environment Programme was designed as a relatively weak global institution. It was headquartered in Nairobi, Kenya, rather than in New York, Geneva, or Vienna. And it was established as a coordinating programme with a small budget rather than as a specialized agency. This was in the interest of all sides. The North did not want to finance a large institution. The South did not want a global institution with the power to interfere with development goals. And other United Nations agencies did not want to relinquish significant 'turf' (Elliot 1998: 11–13).

After Stockholm, OPEC's restrictions on oil supplies in 1973–4 rocked the global economy. Oil prices quadrupled, inflation soared, and economic growth became sluggish worldwide. This economic turbulence deflated some of the potential for more aggressive global environmental initiatives after Stockholm. The South, in particular, became even more worried about the effects on debt levels and prospects for industrial development. Still, the debate over how to handle global environmental change continued, sparked by groundbreaking books like the Club of Rome's (1972) *Limits to Growth* and E. F. Schumacher's (1973) *Small is Beautiful*. The global community also signed noteworthy global environmental treaties just after Stockholm. These include the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (the London Convention, 1972, entered into force in 1975), the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES, 1973, entered into force in 1975), and the Convention for the Prevention of Pollution by Ships (MARPOL, 1973, entered into force in 1975).

Environment slid more into the background of global affairs in the second half of the 1970s and first

half of the 1980s. There was nevertheless a great deal of environmental activity. Scientists continued to research global environmental change. Non-governmental organizations continued to campaign and pressure governments and firms. Individual states, including in the South, continued to establish environmental agencies. States continued as well to sign and ratify global environmental agreements, such as the 1980 Convention on the Conservation of Antarctic Marine Living Resources (entered into force in 1982). The global community, too, continued to debate and make some headway on how best to manage the need for development (especially in the South) with the need for a healthy global environment. Problems like the depletion of the ozone layer, and disasters like the nuclear accident at Three Mile Island in 1979, the Union Carbide chemical leak in Bhopal in 1984, and the Chernobyl nuclear meltdown in 1986, added a sense of urgency. Slowly, environmental issues began again to move back up the global agenda. The debate by the mid-1980s began increasingly to focus on the concept of *sustainable development*. The publication in 1987 of the World Commission on Environment and Development report, *Our Common Future*, synthesized and consolidated the global debates over environment and development, defining sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987: 43).

The Brundtland Commission

The World Commission on Environment and Development, commonly known as the Brundtland Commission, was chaired by the former prime minister of Norway, Gro Harlem Brundtland. There were twenty-three members serving in an expert rather than official state capacity—thirteen were from the South, including India, China, and Brazil. Among G7 countries only France and the United Kingdom did not have representatives. The Commission's report *Our Common Future*, commonly known as the Brundtland Report, is widely seen as a watershed in the evolution of environmental debates within the global community of state representatives. The content of the Brundtland Report is an ingenious

compromise. It does not foresee any necessary limits to growth, and industrialization and natural resource production are, under correct management, acceptable, indeed inevitable for some countries. The report calls for a transfer of environmental technologies and economic assistance to support sustainable development in the South. It calls, too, for more effective controls on population growth, as well as better education and food security in the South. It portrays poverty as a core cause of unsustainable development. The source of much of the poverty in the South, it argues, is the position of developing economies within the global structure. The best way forward, then, is to stimulate—not slow—economic growth: not the unchecked growth of the 1960s and 1970s, however, but growth from sustainable development.

States continued to negotiate and sign global environmental treaties leading up to and after the publication of the Brundtland Report. These include the 1985 Vienna Convention for the Protection of the Ozone Layer, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, and the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal. By the late 1980s global environmental issues had again crept back to the top of the global agenda, culminating in a 1989 United Nations General Assembly resolution to hold the first summit of world leaders on the global environment: what became the 1992 United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil.

The Rio (Earth) Summit

The UNCED Conference is popularly known as the Rio or Earth Summit. Again, as with the Stockholm Conference twenty years earlier, Maurice Strong was the secretary-general and the main organizer (Strong 2000). The Rio Summit was the largest United Nations conference to date, with most countries and 117 heads of state participating. There were thousands of non-governmental representatives at the official conference as well as at a parallel NGO forum. The recommendations in the Brundtland Report and the notion of sustainable development formed the core of the debate at Rio. Most countries endorsed the

Brundtland definition of sustainable development. Many developing countries, however, wanted specific assurances of transfers of environmental technologies and economic assistance from the North to support the additional costs of green growth. Many Northern states, on the other hand, were reluctant to assume further financial commitments (Rogers 1993: 238–9).

The Rio Summit put environment and development on the agendas of global leaders. It reinforced, too, the Brundtland Commission assumption that more growth was compatible with a better global environment. Two official Rio Summit documents of particular note are the Rio Declaration on Environment and Development, and Agenda 21. The Rio Declaration is a set of twenty-seven principles on the rights and responsibilities of states for environment and development. These principles include far more of the South's concerns about the right to development than the Stockholm Declaration on the Human Environment. Agenda 21 is a 300-page action programme to promote sustainable development (UN 1992).

The Rio Summit also produced the Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests. The original intent was to sign a legally binding forest treaty, but after irreconcilable differences arose among negotiators over the terms of an agreement the conference settled for a non-binding statement of principles (Brack, Calder, and Dolun 2001: 2). Rio also opened two conventions for signature: the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. Negotiations began, too, on a treaty on desertification. Finally, the conference established the United Nations Commission on Sustainable Development to monitor and evaluate the progress on meeting the Rio objectives.

The Rio Summit was a historic global conference hailed by many states as a great success. Critics from all sides, however, lamented the inadequate amount of 'promised' funds—especially from the North—to implement Agenda 21. More radical environmentalists, too, attacked the Brundtland definition of sustainable development—in particular its support for more economic growth and industrialization. Among activists, there was in addition a general concern that the negotiators ignored the root cause of global

environmental change: the inequalities, unsustainable industrial production and growth, and overconsumption that arise from corporate globalization and free trade. That, in fact, industry captured the agenda at Rio (Chatterjee and Finger 1994), and the outcomes were little more than an incompetent doctor (the state system) slapping a Band-Aid onto a cancerous tumour (capitalism). Other critics also felt the Rio Summit entrenched a top-down set of solutions, without nearly enough focus on the needs of local communities or the plight of women and indigenous peoples (Shiva 1993; Lohmann 1993).

The decade after Rio saw global environmental issues again slip down the list of state priorities. States turned to the threats of terrorism, chemical and biological warfare, and global financial crises. The global community nevertheless kept signing and ratifying environmental treaties. The Convention on Biological Diversity, for example, was opened for signature in 1992 (entered into force in 1993). The United Nations Convention on the Law of the Sea, though first opened for signature in 1982, entered into force in 1994. The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa was opened for signature in 1994 (entered into force in 1996). The Kyoto Protocol to the United Nations Framework Convention on Climate Change was opened for signature in 1998 (not in force as of July 2004). The Stockholm Convention on Persistent Organic Pollutants (POPs) was opened for signature in 2001 (in force as of May 2004) (see Table 14.1).

The global community also continued to discuss and review the progress of Agenda 21 and the implementation of sustainable development, including a 1997 special session of the United Nations General Assembly, known as the Earth Summit + 5. The global community prepared as well for the World Summit on Sustainable Development, eventually held in Johannesburg, South Africa, in 2002.

Johannesburg and beyond

The World Summit on Sustainable Development is popularly called Rio +10 or the Johannesburg Summit. The purpose was to evaluate the progress of

Table 14.1 Examples of international environmental agreements

Name of the agreement	Opened for signature	Entered into force	Website
International Convention for the Regulation of Whaling	1946	1948	www.iwcoffice.org
Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)	1971	1975	www.ramsar.org
Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (London Convention)	1972	1975	www.imo.org
Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES)	1973	1975	www.cites.org
Convention on the Conservation of Antarctic Marine Living Resources	1980	1982, as part of the Antarctic Treaty System	www.ccamlr.org
Montreal Protocol on Substances that Deplete the Ozone Layer	1987	1989	www.unep.org/ozone
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1989	1992	www.basel.int
Convention on Biological Diversity	1992	1993	www.biodiv.org
United Nations Convention on the Law of the Sea (LOS)	1982	1994	www.un.org/Depts/los
United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa	1994	1996	www.unccd.int
Kyoto Protocol to the United Nations Framework Convention on Climate Change	1998	Not in force as of July 2004	www.unfccc.int
Stockholm Convention on Persistent Organic Pollutants (POPs)	2001	2004	www.chem.unep.ch/pops

Source: Compiled by the author.

sustainable development since the Rio Summit in 1992. It was also designed to establish specific targets to improve implementation of the Rio goals as well as develop a strategy to implement the United Nation's Millennium Development Goals (Mehta 2003: 122). The Johannesburg Summit—with over 180 nations, over 10,000 delegates, at least 8,000 civil society representatives, and 4,000 members of the press, as well as countless ordinary citizens—was even larger than the Rio Summit. Revealingly, however, there were only about 100 heads of state, fewer than at Rio.

The official documents of Johannesburg were similar to Rio and Stockholm in their broad calls for global sustainability. The two most important were the Johannesburg Declaration on Sustainable Development, a list of challenges and general commitments, and the Johannesburg Plan of Implementation to meet these. These are non-binding,

but nevertheless represent significant political compromises. One of the most contentious issues, as was the case too at Rio, was financing. But Johannesburg also added two equally tough topics: the impact of globalization on sustainable development as well as specific timetables/targets to meet goals (Mehta 2003: 122). The Johannesburg Declaration on Sustainable Development (2002) reflects the debates over globalization. Point 12 declares: 'The deep fault line that divides human society between the rich and the poor and the ever-increasing gap between the developed and developing worlds pose a major threat to global prosperity, security and stability.' Point 14 states: 'Globalization has added a new dimension to [global environmental problems]. The rapid integration of markets, the increasing mobility of capital and significant upsurge in investment flows around the world have opened new challenges and opportunities for the

pursuit of sustainable development. But the benefits and costs of globalization are unevenly distributed, with developing countries facing special difficulties in meeting this challenge.'

Was the Johannesburg Summit a success? The answer naturally depends on the definition of success. No doubt, like Stockholm and Rio, it helped to focus the attention of world leaders on global environmental change. The preparation and outcomes also cemented sustainable development as the core organizing concept for global and national environmental institutions. Some see the outcomes as constructive and as more realistic than the outcomes of Rio. Others, though, see the conference as a symbol of the global failure to sincerely tackle global environmental problems. They see the targets and timetables as weak, and the Johannesburg Declaration as little more than a restatement of the past, doing little to promote global sustainability (Burg 2003: 116–18). These critics also see the official statements on globalization as little more than bland and evasive white-wash. The Johannesburg Summit added yet another layer to global environmentalism, but as with Stockholm and Rio it seems highly unlikely it will stem the tide of ecological decay. Paul Wapner (2003: 7), in his assessment of the Johannesburg Summit outcomes, sums this up nicely: 'The strains on the earth's sources, sinks and sites have intensified dramatically since Rio and show no sign of decreasing in the near future.' In short, critics worry that environmentalism piloted by the principle of sustainable development is too weak to manage global environmental change. It does not, in particular, have the

depth or content to restrain the ecological impacts of the globalization of production, consumption, trade, and corporations—the focus of the next section of the chapter.

Key points

- Environmental change began to accelerate some 300 years ago, after the Industrial Revolution intensified production and colonizers reached into distant lands.
- By the late 1960s governments began to recognize the need to cooperate to address global environmental problems. The result was the 1972 United Nations Conference on the Human Environment.
- A global compromise gradually emerged in the 1970s and 1980s around the concept of sustainable development, as defined by the Brundtland Commission in 1987.
- The Rio Summit in 1992 set an ambitious agenda for global sustainable development. Progress, however, was slow and uneven over the next decade. Ten years later the Johannesburg Summit endeavoured to facilitate implementation of the Rio goals.
- The net result has left thick layers of global environmentalism (treaties, norms, and institutions) with the Brundtland Commission's concept of sustainable development at the core. Supporters see this as evidence of the global community's capacity to handle global environmental change. Critics see it as camouflage for 'business as usual'.

Economic growth, trade, and corporations

What is the ecological impact of economic growth, trade, and corporations under globalization? Some see the net impact as positive for the health of the planet. It pulls destitute people—who are prone to degrade surrounding environments to survive—out of poverty. And it raises national per capita incomes, which generate the funds, technologies,

and political will to implement sustainable development. In the short run, such growth produces more food and better medical care, which in turn lengthens life expectancy and allows the global population to rise. This undeniably creates global ecological pressures. But, advocates of economic growth contend, this is a temporary problem. The global population

will stabilize at 9 or 10 billion, probably in fifty years or so, in part because globalization is raising the standards of living and education levels of women in the South.

Others see economic growth and corporate globalization as core causes of the global environmental crisis. These forces are distributing environmental effects unequally, where the rich get richer and the poor remain confined in ever-worse environments. It is also driving up per capita consumption in the South (without improving well-being) and over-consumption in the North. Already the number of humans is well beyond the earth's carrying capacity. The global population may well stabilize in fifty years' time. But that is still another 3 to 4 billion people to feed, clothe, and shelter. How many earths, these critics wonder, are we planning to live on?

Which side is correct? To begin, the next section outlines the environmental arguments for more economic growth, more free trade, and more foreign investment.

Trading for growth and a better environment

A world free of poverty, say economists at institutions like the World Bank, is critical for the long-term health of the planet. The struggle of the poor to survive is a core cause of problems like deforestation, desertification, and unsanitary water. The poor forage for wood to cook and heat homes. They exhaust nearby natural resources, such as fresh water, seafood, and wildlife. They cultivate unsuitable land to grow food and earn income. And they despoil local waterways with garbage and sewage. Stating these facts, advocates of economic growth argue, is not an attempt to assign blame. Rather, the point is far simpler: poor people have little choice if they wish to survive.

The poor and uneducated, too, tend to have more children than the rich, which creates a spiral of poverty and ecological collapse as ever more people forage for food, water, and shelter on increasingly fragile lands. This spiral occurs for many reasons besides just weak economic growth. Other factors include insecure property rights, the failure of family

planning, inadequate government services and regulations, trade distortions, and insufficient investment and development assistance. The spiral downward accelerates during times of slow growth—that is, during an economic recession or depression—since firms are less willing to invest in cleaner technologies, and states are less willing and less able to enforce environmental laws. A quick glance at environmental management in Asia during the 1997–9 financial crisis confirms this (Dauvergne 1999).

Admittedly, advocates note, economic growth can worsen environmental conditions in the short run. Air and water quality, for example, can deteriorate in the early stages of industrial production. Yet in the long run, once a society harnesses sufficient per capita wealth, environmental standards will invariably rise. Advocates of economic growth commonly illustrate this with the Environmental Kuznets Curve (see Figure 14.2). This Curve demonstrates that pollution (such as smog and lead) will rise along with economic growth during the early stages of industrial development. This occurs because governments focus on increasing industrial growth and national income rather than on pollution controls. Yet this is a temporary phenomenon. Once per capita income reaches high levels (in the past often between US\$5,000 and US\$8,000), pollution begins to fall (Grossman and Krueger 1995). This partly occurs because citizens demand better living environments, and partly because firms and governments now have the financial and institutional capacity to respond effectively. It partly arises, too, because strong economies naturally tend to move away from heavy industry and toward service and information industries.

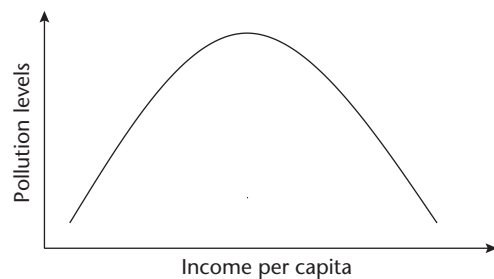


Fig. 14.2 Environmental Kuznets Curve

The Environmental Kuznets Curve usually draws on data for industrial pollution rather than natural resources. A recent study, however, found a correlation between lower deforestation and higher national income in Asia, Latin America, and Africa (Bhattarai and Hammig 2001).

Japan's environmental history fits the Environmental Kuznets Curve well. After the Second World War industrial production and economic growth in Japan soared, and by the 1960s Japan was suffering from acute pollution, 'not unlike many of the heavily polluted areas of India, China, and Southeast Asia today' (Schreurs 2002: 36). Citizen protests over the health consequences of pollution escalated in the 1960s and 1970s. In response, the Japanese government passed strict environmental regulations and Japanese business developed new environmental technologies (McKean 1981; Broadbent 1998). The result was a dramatic improvement in the domestic environment.

Environmental advocates of economic growth do not generally propose that states with low per capita incomes should blindly pursue economic growth. For most, the Environmental Kuznets Curve suggests two critical lessons. First, that in the long run economic growth will improve environmental institutions and governance. Second, that, following the logic of the Environmental Kuznets Curve, it is feasible to use measures such as ecological markets, technological advances, sound policies, and global institutions to help countries with low per capita incomes to 'tunnel' through the middle of the Curve, attaining high per capita incomes with less environmental damage.

The globalization of free trade—following the principles of absolute and comparative advantage—will also help these weak economies tunnel through the Environmental Kuznets Curve. Free trade fosters efficient worldwide production as well as the transfer of environmental technologies and higher environmental standards from the North to the South (Neumayer 2001; WTO 1999*b*). This means humanity is able to produce more goods with fewer resources, which stimulates global economic growth and raises national per capita incomes. The extra income from efficient production is necessary, too, for sustainable development. More income means that more can be spent to preserve the environment as well as enforce environmental regulations. World Trade Organization

director-general, Mike Moore, succinctly explains the logic: 'Every WTO Member Government supports open trade because it leads to higher living standards for working families which in turn leads to a cleaner environment' (WTO 1999*b*).

Trade liberalization, too, produces significant environmental rewards. Trade barriers distort price signals of natural resources. Prices therefore do not reflect real scarcities or pollution costs, which in turn creates waste and overconsumption. Liberalization also fosters cleaner production processes, as firms that produce goods behind trade barriers face less competition and have fewer incentives to upgrade facilities or use resources efficiently. States with more liberal trade policies are also, advocates argue, more likely to meet global environmental standards. 'Liberalized trade', the World Bank (1992: 67) explains, 'fosters greater efficiency and higher productivity and may actually reduce pollution by encouraging the growth of less-polluting industries and the adoption and diffusion of cleaner technologies.' Trade liberalization can further pressure producers with low environmental standards to raise these standards to gain access to markets with higher standards. This 'trading up' of environmental standards, David Vogel (1995) argues, occurred for example when California's strict auto emission standards pushed up standards across the United States as well as in Japan and Germany. Germany's willingness to support tougher European Union standards in part reflected its experience in the US market.

Restricting trade for environmental reasons, advocates of open trade argue, is on occasion necessary—such as to protect endangered species or control the dumping of hazardous waste and dangerous chemicals. Yet far more often restricting trade on environmental grounds is illogical and counter-productive. Sound policies and incentives within an open trading structure lead to much better long-term environmental management. Green markets—where prices throughout a trade chain internalize environmental and social costs, and where consumers voluntarily pay higher prices for these products—are another effective means to promote sustainable development.

The globalization of corporations, argue supporters, will further promote sustainable development. Transnational corporations (TNCs) transfer critical

technologies, expertise, and funds into the South. Without this investment, economies stagnate and slip backwards and sustain environmental degradation—a quick glance at North Korea or Sub-Saharan Africa confirms this. Transnational corporations that invest in the South also tend to employ higher environmental standards than local laws require—what Roniel Garcia-Johnson (2000) calls ‘exporting environmentalism’. This occurs for a host of reasons: partly because of more sophisticated technologies and management techniques; partly because of pressure from states, NGOs, shareholders, and consumers; partly because of internal codes of conduct and risk-management strategies; and partly because the resulting efficiencies can provide a competitive advantage.

There is as well a trend among all firms since the 1980s to voluntarily ‘green’ operations (Schmidheiny 1992). For example, Responsible Care—an environmental and safety code for the chemical industry—was established in 1985. The Global Environmental Management Initiative (GEMI) was created by the International Chamber of Commerce in 1990 to implement the Chamber’s business charter for sustainable development (Sklair 2001: 204). There was a flood of voluntary industry codes after the 1992 Rio Summit. The ISO 14001 certifiable standards for environmental management have been widely adopted by business since the mid-1990s (see Box 14.3). Industry founded the World Business Council of Sustainable Development in 1995 to address ‘the challenges and opportunities of sustainable development based on three fundamental and inseparable pillars: the generation of economic wealth, environmental improvement and social responsibility’ (Holme and Watts 2000: 5). The Johannesburg Summit saw the business community stress the need for voluntary corporate leadership to promote sustainable development. Corporations are now embracing the principle of Corporate Social Responsibility. Chairman and Chief Executive Officer of AT&T, C. Michael Armstrong, explains the logic of the greening of AT&T: ‘AT&T understands the need for a global alliance of business, society and the environment. In the 21st century, the world won’t tolerate businesses that don’t take that partnership seriously, but it will eventually reward companies that do’ (quoted in Holme and Watts 2000: 1).

Box 14.3 ISO 14000 and ISO 14001

The International Organization for Standardization (ISO), headquartered in Geneva, advances voluntary international standards for particular products and for environmental management. The ISO develops these standards relying on consensus and voluntary participation among ISO member countries. ISO 14000 is a series of voluntary environmental standards, including for environmental auditing, performance, labelling, and most importantly, the ISO 14001 Environmental Management System (EMS) Standard. The ISO 14001 standard allows for certification from an external authority. It requires a community or organization to implement practices and procedures that together comprise a system of environmental management. It also requires a policy to prevent pollution and continually improve environmental performance.

Source: ISO website, at www.iso14000.com

Most states and global institutions accept the need for more economic growth, more open trade and more foreign investment. There are critics, however, many of whom see the relentless pursuit of growth, trade, and investment under globalization as a primary cause of the global environmental crisis.

Trading away the earth for unequal consumption

Critics contend that the Environmental Kuznets Curve is misleading. They see the link between growth and lower long-term pollution as simplistic. It is possible, critics argue, for economies to get stuck along the curve, never reaching a point where pollution declines (Arrow et al. 1998; Tisdell 2001: 187). The Curve does not account for the integrity of the ecosystem as a whole and it ignores irreplaceable losses (such as biodiversity and species loss). It discounts, too, the potential for cumulative ecological change to erupt into a sudden and uncontainable crisis. It does not address the possibility that, as the amount of one toxic substance declines, the amount of another may rise. The Curve, moreover, only works

for a limited range of pollutants and resources. It fails, for example, for CO₂ emissions (the leading cause of global warming), which have been steadily rising alongside growth. Finally, a decline of a particular pollutant in one country may occur because industrial production shifts offshore. Japan's domestic environment was able to improve, for example, partly because dirty industries shifted into South-East and North-East Asia (Hall 2002).

Environmental critics of economic growth argue further that production patterns and unequal consumption—not poverty—are the driving forces of global environmental decay. The earth is already beyond its carrying capacity. The push for constant economic growth under globalization, critics contend, means that industrialization, intensive agriculture, and unsustainable natural resource extraction will continue to rise. Globalization also 'distances' production from consumption, so end users do not 'see' the ecological effects of individual purchases or disposal (Princen 1997; Clapp 2002). Products like computers often become obsolete in a few years, partly because of the design. This, along with advertising, is contributing to ever higher levels of consumption in both the North and South. Total consumption, for example, doubled in real terms from 1973 to 1998. There has been a fourfold rise in energy consumption since 1950. These rises, moreover, have not solved the gross inequalities between consumption in the South and North. Africa's per capita consumption has been declining over the past two decades. Meanwhile the North, with about 15 per cent of the global population, accounts for about three-quarters of global consumption expenditure (UNDP 1998: 46, 50). The United States alone, with a mere 5 per cent of the global population, consumes 30 per cent of the world's resources (Myers 1997: 34). Much of this consumption, critics argue, is wasteful and excessive—creating a world where obesity is the latest crisis of the North and malnutrition is the everlasting crisis of the South.

Global free trade, critics contend, merely adds to the earth's unsustainable ecological burden (Daly 1993, 1996, 2002). The prices of traded goods generally do not reflect the full environmental and social costs of production—the value, for example, of an old-growth tree as a source of biodiversity—leaving

consumer prices far too low and consumption far too high for global sustainability (Arden-Clarke 1992). Environmental critics further argue that trade and trade agreements put downward pressure on environmental standards. This occurs because governments, in a bid to become more competitive in global markets, sometimes lower or fail to strengthen environmental management. Some see this as creating a 'race to the bottom'; others see it as leaving countries 'stuck at the bottom' (Esty 1994; Porter 1999). For many, the only solution to the ecological drawbacks of trade is to impose strict controls over trade.

Production under free trade may well become more 'efficient', critics add, but the steady increase in the production of goods overrides any environmental gains—creating, for example, a world full of billions of fuel-efficient cars rather than millions of fuel-inefficient cars. Global free trade, moreover, is in fact far from 'free'. Nor is it equal or fair as highly mobile capital exploits the so-called comparative advantages of weak economies. The ideology of free trade in reality translates into patterns of exchange that exploit the labour and environments of the South and protect the interests of the North (such as farmers). The South ends up exporting unsustainable quantities of natural resources and absorbing ecological damage so the North can prosper. Production-for-export from the South tends to rely on either unsustainable quantities of natural resources or on dirty and unsafe factories (and, of course, cheap labour). Logging and mining sites and textile and electronic factories in Latin America, Africa, and the Asia-Pacific highlight the ecological damage of such production (Marchak 1995; Gedicks 2001; Karliner 1997). Global trade, critics conclude, in effect allows the North to live beyond its carrying capacity, doing so by using up the carrying capacity of the South.

Critics see corporate globalization as a fundamental cause of the escalating global ecological crisis. Transnational corporations are viewed as engines of environmental exploitation, plundering the globe's limited resources for quick profits. In particular, critics see *pollution havens* and *double standards* as real or potential threats to sustainability. A pollution haven refers to governments using lower environmental standards to induce firms to invest, thus creating a haven for polluters. It does not, as David

Wheeler (2002: 1) points out, 'necessarily refer to a region that is seriously polluted'. What really matters is 'the willingness of the host government to "play the environment card" to promote growth'. A double standard refers to cases where a firm applies one set of standards at home and another set overseas (generally lower standards in countries with weaker laws). Double standards are common, and most economists would agree, a normal outcome of the process of development. The case of the American TNC, Union Carbide, in Bhopal, India, the site of the worst industrial accident in history, is perhaps the best-known case of double standards (the US headquarters was responsible for the plant's design) (MacKenzie 2002). But there are countless others, too (Karliner 1997; Frey 1998; Ofreneo 1993). The American firms General Electric, Ford, General Motors, and Westinghouse all, for example, operate plants in Northern Mexico, thus avoiding California's much tougher regulations on toxic emissions. Critics blame these TNCs for polluting local rivers, soils, and water supplies near these plants (Bryant and Bailey 1997: 109).

There is, then, little debate about the existence of double standards. The existence of pollution havens, however, is hotly debated. Critics of TNCs commonly assert that corporate globalization is producing pollution havens around the globe. The process of globalization spreads these because corporations are increasingly willing to relocate for the smallest differences in costs. Governments, meanwhile, are more prone to use lax regulations to entice investors. Most economists, however, argue that the reason for double standards is *not* a result of host governments intentionally and explicitly playing the environment card. There are, they claim, in fact few, if any, permanent pollution havens anywhere in the world (Wheeler 2002). There are many reasons. For some industries it is impractical or too risky to relocate for market or infrastructural reasons. The main reason, however, is that costs like labour and technology are far higher than environmental costs (Ferrantino 1997: 52). It therefore does not make financial sense for a firm to relocate on environmental grounds alone.

A second and much larger strand of environmental literature, which is critical of corporations, focuses

less on the differential environmental practices of firms and more on practices 'on the ground'. These critics have filled libraries documenting the destructive and illegal practices of loggers, miners, oil companies, chemical companies, and so on (Dauvergne 2001; Gedicks 2001; Clapp 2001). Besides academics, research institutes like the World Resources Institute and countless numbers of NGOs also research and publish such findings. This research leads popular writers like Joshua Karliner (1997) to call the world a 'Corporate Planet' and David Korten (1995) to conclude that 'Corporations Rule the World'.

Key points

Advocates argue that the wealth from the globalization of trade and TNCs creates:

- Poverty alleviation, better education, population controls, and a stronger capacity of states and global institutions to implement sustainable development.
- Technological innovation and less harmful forms of production (for example, a shift from industry and agriculture to service and knowledge).
- Corporate investment that 'exports environmentalism' by transferring funds, new technologies, and higher standards to the South.
- Opportunities to use creative policies and incentives to tunnel through the Environmental Kuznets Curve.

Critics see unequal and destructive economic growth, trade, and investment that:

- Burden the South with unequal environmental costs and low environmental standards.
- Allow corporations to plunder the globe's fragile ecosystems.
- Generate consumer prices that ignore environmental and social costs of production.
- Drive overconsumption in the North and unbalanced consumption in the South, putting total global consumption well beyond the earth's carrying capacity.

A sustainable future? Financing and regimes

There is, then, a great divide between environmentalists who support and those who oppose globalization. Most agree, however, that it will no doubt require new consumption patterns, innovative markets, technological advances, corporate ethics, and cooperation to ensure a sustainable global economy. There are indeed reforms ongoing in all of these areas. Yet the global community has put much of its energy into funding sustainable development and into forming and strengthening global environmental agreements. Is sustainable development an effective core principle? Is funding sufficient? Can international agreements and sustainable development ensure globalization is a positive environmental force? Many in the global community—states and state negotiators in particular—believe in sustainable development and environmental agreements. Others, however, see them as, at best, harmless, and at worst, themselves causes of global environmental harm as the effort to reach a compromise lowers expectations, creates long delays, and ultimately contributes to ineffective policies. The next section addresses these issues with particular attention to global environmental financing and the political economy of three international regimes: ozone depletion, climate change, and forestry.

Financing sustainable development: the GEF

Few deny that the South requires assistance to implement sustainable development. How else can the South find the funds and personnel to address issues like climate change or global biodiversity? Yet critics lament the failure of environmental assistance. Some see total assistance as far too low—far below the repeated global promise of total overseas development assistance of 0.7 per cent of gross national income. The OECD average is just 0.22 per cent, while the United States is the lowest of the major donors, supplying a mere 0.11 per cent in 2001. Assistance for sustainable development is even lower. At the Rio Summit, for example, the North was only willing to

commit to US\$125 billion of the US\$625 billion estimated as needed to implement Agenda 21 (UNEP 2002: 17).

Other critics see development assistance as a cause of global ecological stress. These critics see the conditions attached to this 'aid' as a tool of donors and corporate allies to exploit labour and natural resources in the South. Multilateral donors like the World Bank and bilateral donors like Japan (the world's largest bilateral donor over the 1990s), for example, use loans to require governments to eliminate trade barriers and support foreign investors. Heavy foreign debts, these critics contend, further aggravate ecological pressures as states export natural resources to earn the foreign exchange to service and repay the debt (Rich 1994).

The Global Environment Facility (GEF) is one of the few financial sources to specifically fund global environmental initiatives in the South. The GEF was first set up as a pilot facility in 1991 just before the Rio Summit. It formally became a permanent body in 1994. The GEF has three implementing agencies—the World Bank, the United Nations Development Programme (UNDP), and the UNEP—although the World Bank is the most influential. The Global Environment Facility is formally housed in the World Bank, though functionally independent. The UNDP handles technical assistance and the UNEP coordinates between the GEF and global environmental agreements. There are fourteen donor states, eighteen recipient states, and five NGOs on the GEF Council. GEF finances global environmental policies and programmes in developing countries, including ozone depletion, biodiversity, climate change, and persistent organic pollutants (Streck 2001). The GEF currently supports over 1,000 projects in over 140 countries. The total amount of GEF grants by 2003 was US\$4 billion. The GEF has also managed to leverage US\$12 billion in co-financing from other sources.

The GEF disburses grants and technical funds to cover the additional costs for developing countries of a project targeting a global environmental objective (such as to mitigate climate change or protect

biodiversity). Some see GEF as a critical step forward to help the South absorb the financial costs of global sustainability. Others, like Bruce Rich of the NGO Environmental Defense, have lashed out at GEF, especially during the pilot phase: 'The formulation of the Global Environment Facility', he argues (1994: 176–7), 'was a model of the Bank's preferred way of doing business: Top-down, secretive, with a basic contempt for public participation, access to information, involvement of democratically elected legislatures, and informed discussion of alternatives.' These critics see GEF as little more than a financial Band-Aid that stresses top-down technological fixes rather than long-term solutions (Young 2003). These critics worry, too, that the World Bank is tying GEF grants to other World Bank loans that finance projects that damage the environment. Korinna Horta of Environmental Defense states: 'The World Bank mocks the principles and policies of the GEF by hypocritically funding and mitigating environmental destruction. The GEF "greenwashes" business as usual for the Bank' (Halifax Initiative 2002; also see Horta, Round, and Young 2002).

No doubt, funding for global sustainability is far from adequate. The global community has in some ways made more progress developing and strengthening environmental regimes.

Political economy of regimes

The global community has put great faith in international environmental agreements to guide globalization, promote cooperation, rein in free riders, and avoid the natural drift of a system of sovereign states toward a 'tragedy of the commons' (see Box 14.4). There has been a steady increase over the last three decades in the number of international and regional environmental negotiations, and today there are several hundred agreements (see Table 14.1 above, for examples).

An international environmental regime encompasses more than just international legal agreements. Steven Krasner's (1983: 2) definition of international regime is the classic one: 'sets of implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations' (see Aggarwal

and Dupont, Chapter 2 in this volume). Yet most international environmental regimes revolve around an international agreement. Such regimes tend to evolve in four phases. They begin with the recognition of a problem, including the scientific debates about the causes and severity, and the emergence of an agenda. The science here is often speculative, especially if, as with climate change, it involves looking hundreds of years into the future. Working through the science can create decades of delay during this phase as various 'experts' make claims and counter-claims. Dramatic events, like an oil spill or a chemical leak or a 'hole' in the ozone layer, can catalyse action toward the next stage—the negotiation of the rules and decision-making procedures. Here, coalitions of states or a powerful state like the USA can play a critical role either in the emergence or veto of an agreement. States may also shift gears during this phase—for example, signing an agreement then withdrawing later (for example, refusing to ratify). As with the emergence of an agenda, scientists or experts with collective policy preferences can play a key role in defining the content of an agreement (Haas 1992). So can networks of activists who work across traditional sovereign borders (Keck and Sikkink 1998). Once an agreement enters into force, parties to the agreement need to implement policies that meet their obligations. This phase can further strengthen or weaken a regime, as many states, even those legitimately striving to meet obligations, may be unable (or unwilling) to do so for technical or political reasons. Finally, regimes continue to evolve even after implementation begins, strengthening and weakening as norms shift (or sometimes as negotiators amend the formal rules).

There is a growing literature on evaluating the effectiveness of international environmental regimes (Victor, Raustiala, and Skolnikoff 1998; Young 1999, 2002; Vogler 2000, 2003). Some global environmental regimes are weak, with little influence over the behaviour of states and firms or, if there is influence, with little impact on global ecological conditions. An array of factors shape regime effectiveness. These include the scope and nature of the international rules as well as the strength of the national policies designed to meet international obligations.

National agencies are generally responsible for monitoring and enforcing international environmental

Box 14.4 Tragedy of the commons

Garrett Hardin (1968), in a now notorious article in *Science*, drew a vivid analogy of access and historical collapse of the English commons with access and future collapse of modern-day commons (like the high seas or the atmosphere or an unregulated forest). Look, he says, at a grazing pasture 'open to all'. It is in the rational self-interest of a farmer to breed and graze as many animals as possible. The addition of one more animal will enhance the wealth of the owner far more than it will degrade the pasture for the owner's

herd. Without controls, however, the logic of personal gain will inevitably overfill and destroy the pasture. The process is the same for all commons with rising populations and unrestricted access. 'Ruin is the destination toward which all men rush', he argues 'each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.' The only solution, he concludes, is 'mutual coercion, mutually agreed upon by the majority of the people affected'.

laws. To encourage compliance, however, parties generally submit implementation data to secretariats as well as attend regular meetings to review implementation. Some agreements also link financing to compliance (especially important in the South). The secretariats, however, often lack the staff and funds to verify data (as well as push laggards to submit). The combined total in 1999 of professional staff of the Framework Convention on Climate Change, the Convention on Biological Diversity, the Montreal Protocol, CITES, and the Convention to Combat Desertification was a mere 100 people. The combined total budget was just US\$43.5 million (Porter, Brown, and Chasek 2000: 150). Both figures are tiny in comparison with the international financial institutions (see Winham, Chapter 4 in this volume). Non-governmental organizations also play a key role here, publicizing violations and conducting independent studies of national implementation. The NGO Environmental Defense, for example, has been 'critical' in ensuring US regulations in fact implement the Montreal Protocol (Porter, Brown, and Chasek 2000: 149).

Implementation can pose great technical and political problems for governments in the South. Often, these governments do not have the finances, personnel, or technologies to monitor and enforce environmental legislation. Systemic corruption may further hinder enforcement. The cost of compliance, too, is frequently greater in the South than in the North, as the South has less infrastructure and experience in meeting environmental obligations, although, as mentioned earlier, funds like the ones from the GEF can help to offset the higher costs of

compliance in the South. Countries in the North, however, also struggle with implementing international environmental agreements. Scientific uncertainty may create long bureaucratic delays in implementation. Lobby groups and bureaucracies may work to weaken national legislation designed to meet international obligations. In democratic federations like Canada the federal government may sign and ratify an agreement, but then face stiff opposition from some of the provinces, as happened after the federal government ratified the Kyoto Protocol in 2002.

For all of these reasons, then, it is a formidable challenge for state negotiators and implementers to develop and uphold an effective international environmental regime. Perhaps the most common example of a 'successful' regime is the one to reduce the production and consumption of chlorofluorocarbons (CFCs), the main cause of the depletion of the ozone layer.

Ozone depletion regime

Production and consumption of CFCs, first invented in 1928, rose quickly from the 1950s to the 1970s. The main use was in aerosols, refrigerators, insulation, and solvents. In 1974 Mario Molina and F. Sherwood Rowland, who went on to win the 1985 Nobel Prize in Chemistry, published an article hypothesizing that CFCs were drifting into the atmosphere, breaking apart, releasing chlorine, then reacting to deplete the ozone layer. Ozone is a molecule of three oxygen atoms able to absorb harmful ultraviolet light. The

ozone layer refers to the region of high concentrations of ozone in the stratosphere. (The stratosphere is 15–50 kilometres above the earth's surface. Below is the troposphere where weather occurs.) The ozone layer protects us from the harmful effects of ultraviolet radiation from the sun, which can contribute to skin cancer and cataracts, decrease our immunity to diseases, and make plants less productive.

In the decade after Molina and Rowland's seminal article, global negotiators slowly worked toward a collective consensus on the causes and consequences of ozone depletion. This effort gained momentum in 1985 after British scientists found a 'hole' (in fact a severe thinning) in the ozone layer over Antarctica. This hole, which persisted for three months, was the size of North America. The same year the global community signed the Vienna Convention for the Protection of the Ozone Layer, a framework convention without legally binding targets. The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer was adopted two years later, setting mandatory targets to reduce the production of ozone-depleting CFCs and Halons (Halons are another significant ozone-depleting substance found, for example, in fire extinguishers).

Significantly, in 1990 the South agreed to phase out consumption of CFCs and Halons by 2010. The Parties to the Montreal Protocol created the Montreal Protocol Fund to assist developing countries with implementation. This is unusual, as most international agreements do not contain a funding mechanism, and instead rely on traditional development assistance and, more recently, the GEF. So far, the Montreal Protocol Fund has supplied more than US\$1

billion to phase out the consumption of ozone-depleting substances in the South. Partly as a result, many developing countries were already 'on track' by the mid-1990s to phase out CFCs and Halons ahead of schedule (Greene 1997: 329), and the South was able to reduce CFC consumption by about 15 per cent from 1986 to 2001 (UNEP 2003: 5).

Conferences of the Parties in London in 1990, Copenhagen in 1992, Montreal in 1997, and Beijing in 1999 amended and strengthened the Montreal Protocol. These conferences also added other ozone-depleting substances and accelerated the phase-out schedules. Over this time, the Vienna Convention and the Montreal Protocol became truly global agreements, and today both have over 180 Parties. The result has been a dramatic fall in global CFC production (see Figure 14.3).

The damage to the ozone layer, it is important to emphasize, is still a serious problem. Today the thickness of ozone over Antarctica, for example, is generally 40 to 55 per cent of its pre-1980 level (UNEP 2000a: 5). The stratospheric concentration of CFCs also continues to increase because the long life of CFCs means 'old' emissions are still rising into the stratosphere. Nevertheless, the UNEP (2000b: chapter 2) now predicts that the ozone layer will repair itself and return to pre-1980 levels by 2050, preventing 1.5 million cases of melanoma cancer and 130 million cases of eye cataracts (UNEP 2003: 4). This is indeed an exceptional turn-around. 'The ozone layer regime is remarkable', Marvin Soroos (1997: 169) argues, 'not only for the series of agreements limiting and phasing out the production and use of ozone-depleting substances but also for the broad acceptance of them and

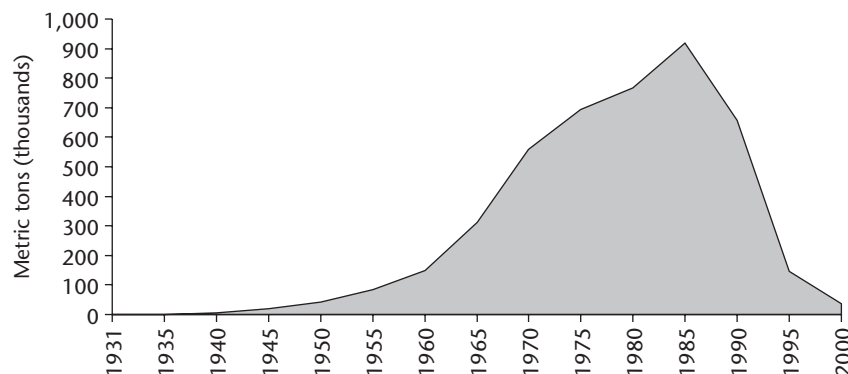


Fig. 14.3 Global CFC production

Source: Alternative Fluorocarbons Environmental Acceptability Study, available at <http://www.afeas.org>

the apparent high rate of compliance with the controls.' Most other scholars would agree. Edward Parson (2003: vii) calls it a 'striking success', noting: 'With near-universal participation of nations and energetic support from industry, the ozone regime has reduced worldwide use of ozone-depleting chemicals by 95 per cent, and use is still falling.'

Yet in many ways this was an exceptional case, one that may well tell us little about our ability to handle future global environmental crises like climate change. The consequences of less ozone were easy for the general public to understand, with skin cancer a particular worry in the North. Even more important, the causes and solutions were relatively straightforward. In the mid-1980s, twenty-one firms in sixteen countries were responsible for CFC production, with the North accounting for about 88 per cent of production. Especially notable, by 1986 the chemical company DuPont, the largest producer of CFCs (accounting for one-quarter of global production), had decided to seek substitutes for CFCs (Grundmann 2001; Parson 2003). Two years later Dupont announced it would phase out production of CFCs. The shift to CFC substitutes did not harm its profits; indeed, in many ways it gave DuPont a competitive edge as other producers soon followed suit.

Climate change regime

Most other global environmental problems involve far greater complexities and uncertainties, and will require far greater sacrifices to solve. Climate change is perhaps the most complex of all. Human activities are altering the relative volumes of greenhouse gases—such as carbon dioxide, methane, and

nitrogen oxides—in the earth's atmosphere. Figure 14.4, for example, shows the rapid increase in global emissions of carbon dioxide over the last century. The planet is warming as the 'new' atmosphere traps more heat, a process akin to rolling up a car window on a hot day. The Intergovernmental Panel on Climate Change (IPCC 2001) calculates that the mean global surface temperature has already risen by 0.3–0.6 degrees Celsius over the last 100 years. This may seem minor, but it was the largest rise of any century in the last millennium. The problem appears to be getting worse. The 1990s was the warmest decade and 1998 was the warmest year since records began. This century could be worse still. Various studies predict a rise of between 1.4 and 5.8 degrees Celsius by 2100—the fastest rate of change since the last ice age. The IPCC (2001) estimates that seas could rise by as much as 88 centimetres by the end of the century, displacing millions in low-lying coastal areas in countries like Bangladesh and submerging low-lying countries like the Marshall Islands and the Maldives.

Climate change especially alarms environmental critics of economic globalization as the primary greenhouse gases arise from core economic activities, such as automobiles, power plants, oil refineries, factories, agriculture, and deforestation. At the same time many of the consequences, such as melting polar ice, rising seas, severe storms, new diseases, and drought, are beyond the lifetimes of politicians and business leaders. No doubt, to lower greenhouse gas emissions will require significant changes to global economic production and consumption patterns. It will require, too, governmental, corporate, and personal sacrifices. Replacing CFCs, these critics note, is simply not a comparable sacrifice (Paterson 1996; Newell 2000).

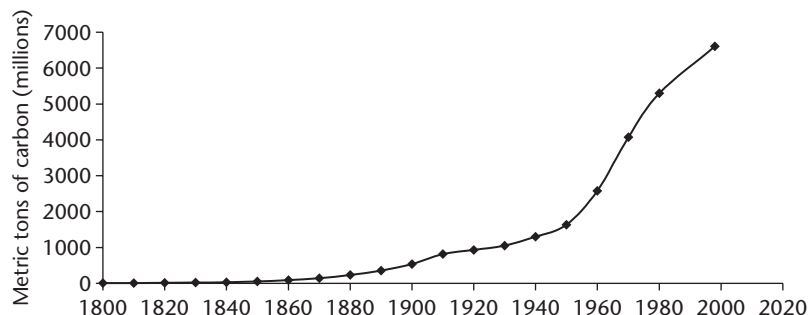


Fig. 14.4 Global CO₂ emissions from fossil-fuel burning, cement manufacture, and gas flaring
Source: Marland, Boden, and Andres 2001.

The South sees the North as largely responsible for climate change, as developed countries account for three-quarters of cumulative emissions of carbon dioxide from 1950 to 1992. The North, on the other hand, often notes the need for global efforts, as carbon dioxide emissions from the South are likely to equal those from the North by 2035. Nevertheless, specific views on climate change do not split cleanly along North–South lines. The European Union, Japan, and Canada, for example, have supported global efforts to combat climate change while the United States and Australia have remained sceptical, at times even questioning the science of global warming. Meanwhile, the states in the Organization of Petroleum Exporting Countries (OPEC) oppose efforts to reduce the global dependence on oil while, predictably, the thirty countries in the Alliance of Small Island States support every possible effort to halt the rise of sea levels.

The 1997 Kyoto Protocol to the 1992 Climate Change Convention is the core agreement in the climate change regime. It requires developed countries to reduce emissions of six greenhouse gases, on average, by 5 per cent below 1990 levels between 2008 and 2012 (calculated as an average over these years). If achieved, emissions levels in 2010 would be about 20 per cent lower than without the Protocol. Not all governments have the same ‘target’. The European Union agreed to reduce emissions by 8 per cent below 1990 levels, the United States by 7 per cent, and Japan and Canada by 6 per cent. The Russian Federation agreed to stabilize emissions at 1990 levels. Australia managed to negotiate an increase of 8 per cent above 1990 levels. Developing countries are exempt from legally binding commitments in the Kyoto Protocol, although some, like India and China, set voluntary reduction targets.

The Kyoto Protocol will enter into force ninety days after at least fifty-five Parties, accounting for 55 per cent of the 1990 carbon dioxide emissions of the developed countries, ratify it. So far, as of April 2004, over 100 states have ratified, including the European Union, Japan, and Canada—in total accounting for 44.2 per cent of 1990 emissions. The United States, however, which accounts for 36.1 per cent of 1990 carbon dioxide emissions of developed countries, withdrew support in 2001. Later, the United States vowed to reduce greenhouse gases ‘by 18 per cent over the

next decade through voluntary, incentive-based, and existing mandatory measures’ (Switzer 2004: 293). The Kyoto Protocol may still enter into force even without the United States. It now lies in the hands of Russia, which accounts for 17.4 per cent of 1990 levels. Regardless, however, most analysts agree that even with full compliance the Kyoto Protocol will not lower greenhouse gas emissions to levels that will ‘solve’ climate change. More radical groups like Greenpeace argue for a global emission reduction more in the range of 80 per cent.

Forests regime

Most environmental regimes, as with ozone and climate change, contain a core international agreement. But some, like the international forests regime, are emerging without a core global treaty. The international forests regime includes the norms and principles arising from numerous global meetings since the Rio Summit to discuss the benefits and drawbacks of negotiating a global treaty for forest management. It consists, too, of the forest-related clauses of international conventions like the ones on biodiversity, desertification, climate change, and wetlands. It also includes the sustainable forest principles of institutions like the International Tropical Timber Organization (ITTO), and the standards of organizations like the Forest Stewardship Council (FSC) (see Box 14.5). At the core of the regime is the concept of sustainable forest management. Humphreys (1999: 251) writes, ‘The forests regime has coalesced around the core concept of sustainable forest management (SFM) and the norm that forests should be conserved and used in a sustainable manner.’ Other global principles include the value of conservation, ecosystem integrity, protected areas, indigenous knowledge and values, and participation of civil society (Humphreys 1999, 2003).

Yet global norms and principles are only a small part of the basket of rules—both formal and informal—that shape forest management. National and local leaders often ignore the concept of sustainable forest management as well as the non-binding principles of institutions like the ITTO and FSC. The international forests regime is particularly weak and ineffective in Asia, Africa, and South America, most

Box 14.5 ITTO and FSC

International Tropical Timber Organization

The 1983 International Tropical Timber Agreement (in force from 1985) created the International Tropical Timber Organization (ITTO), headquartered in Yokohama, Japan. A successor agreement was negotiated in 1994 (in force since 1997). The ITTO's mandate is to facilitate consultation and cooperation among member countries that produce and consume tropical timber. There are fifty-nine members (as of 2004), representing 90 per cent of world trade in tropical timber. The organization is committed to assisting members with meeting the so-called Year 2000 Objective, which calls for members to only trade tropical timber products that originate from sustainably managed forests by the year 2000. (This is still being pursued despite the passing of the target year.) The Bali Partnership Fund is designed to assist producers with implementing sustainable forest management.

Source: ITTO website, at www.itto.or.jp/

Forest Stewardship Council

The non-profit Forest Stewardship Council was founded in 1993 to promote more effective forest management. Its members include environmental organizations, forest industries, indigenous and community groups, and forest certification bodies. The FSC accredits and monitors organizations that certify that forest products come from 'a well-managed forest'—that is, a forest that meets the FSC's Principles and Criteria of Forest Stewardship. The FSC visits certified forests to ensure compliance. It further supports the development of regional, national, and local standards that implement these principles and criteria. The FSC logo on a wood product is ultimately designed to provide a 'credible guarantee' to the consumer 'that the product comes from a well-managed forest'.

Source: FSC website, at www.fsc.org/

notably where timber profits prop up corrupt politicians, bureaucrats, and military officers. This explains in part why tropical deforestation has persisted largely unimpeded over the last few decades despite a global outcry and repeated government promises to do better (Dauvergne 2001).

International regimes, then, can solve global environmental problems. The history of the depletion of the ozone layer confirms this. Yet the regimes for climate change and deforestation, for different reasons, are still largely ineffective. Supporters of regimes argue this in part reflects the complexity of the causes and consequences of these problems, as well as the need for economic sacrifices to solve them. For them, this suggests a need to work even harder to strengthen these regimes. For critics of regimes, however, the failure to slow climate change and deforestation suggests the innate limitations of regimes as a mechanism to constrain and guide economic globalization. The energy expended on seemingly endless international negotiations on climate change and deforestation, some critics argue, would be better spent elsewhere, perhaps in labs developing new technologies or in communities developing new ethics. A few of these critics even see the focus on the development of

agreements like an international forests convention as a strategic move by powerful actors to delay real action and ensure 'business as usual' continues for as long as possible (Dauvergne forthcoming).

Key points

- All sides agree that the South needs financial and technical support to pursue global sustainability.
- Some see current efforts—for example the GEF—as a critical lifeline for weak economies. Others see such financing as too small to matter. Still others see global development assistance as a cause of the global environmental crisis as states export natural resources to service and repay foreign debt.
- Environmental regimes are the primary global mechanism for coordinating environmental management across states. It is exceedingly difficult, however, to create and maintain an effective environmental regime.
- Most agree the ozone regime has been effective, largely because the causes, consequences, and solutions of ozone depletion are straightforward.

- The climate and deforestation regimes are much weaker than the ozone regime. Advocates of regimes see this as temporary, a result of the sheer complexity and difficulty of the science, politics, and economics of climate change and deforestation. Critics, on the other hand, see weak regimes for problems like climate change and deforestation as inevitable within the current global political economy; for some, these are not a part of the solution, but part of the reasons for failure.
- Most advocates and critics of regimes agree, however, that solutions to climate change and deforestation will require far more than financing and regimes. Solving them will require a level of innovation, cooperation, and sacrifice never seen before in the history of global environmental politics.

Conclusion

What, then, is the nature of global environmental change in an era of globalization? Is globalization a force for environmental progress or crisis? Are global environmental regimes and the norm of sustainable development effectively channelling globalization to ensure a sustainable future? The record is mixed. For some problems, like ozone depletion, global cooperation has indeed been effective. But for problems like tropical deforestation, the global community appears to be making no headway at all. Perhaps the greatest environmental problem of all is climate change. Here, it also appears that global efforts are failing. Can sustainable development and regimes alone 'solve' deforestation and climate change? The answer seems clear. No. These may indeed help. But such great problems will require new national policies, new corporate ethics, more North-South financial transfers, innovative markets, technological advances, and new forms of cooperation. It will be a bumpy path forward: one

that will, because of the nature of the global political economy and global environmental change, no doubt, most unjustly, impose the greatest hardships on the world's poorest and least powerful peoples. That much seems certain.

The chapter did not strive to convince the reader to believe in a particular set of arguments. Already far too many globalization and anti-globalization 'environmental ideologues' preach or chant at, rather than talk to, each other. The goal was instead to deepen the understanding of the range of reasonable and logical arguments about the environmental impacts of the ongoing changes to the global political economy. The hope is that one day those who choose to act on their beliefs—from joining the World Bank's environment team to protesting at an anti-globalization rally—will do so with the humility of knowing the complexities and uncertainties of the relationship between globalization and the environment.

QUESTIONS

- 1 What, in the broadest terms, is the relationship between globalization and global environmental change?
- 2 What is the globalization of environmentalism? Is the overall trend positive or negative?
- 3 Is the Environmental Kuznets Curve a useful policy tool?
- 4 Which is more common: 'pollution havens' or 'exporting environmentalism'?
- 5 What are the effects of inequality and consumption on global environmental conditions?

- 6 What are the effects of trade and corporations on global environmental conditions?
- 7 What are the effects of financing and regimes on global environmental conditions?
- 8 Is there a global environmental crisis? If yes, why? If no, why?
- 9 Can we solve global environmental problems within the current political and economic structures? If yes, how? If no, why?

FURTHER READING

- Clapp, J., and Dauvergne, P. (forthcoming), *Paths to a Green World: The Political Economy of the Global Environment* (Cambridge, Mass.: MIT Press). Maps out an original typology to classify the dominant worldviews regarding the impact of the global political economy on the global environment.
- Conca, K., and Dabelko, G. D. (eds.) (forthcoming), *Green Planet Blues: Environmental Politics from Stockholm to Johannesburg*, 3rd edn. (Boulder, Colo.: Westview Press). Surveys and extracts core concepts and arguments from seminal articles in global environmental politics.
- Dauvergne, P. (ed.) (forthcoming), *Handbook of Global Environmental Politics* (Cheltenham: Edward Elgar). Collection of original and cutting-edge articles by many of the world's premier scholars of global environmental politics.
- Dryzek, J. (1997), *The Politics of the Earth: Environmental Discourses* (Oxford: Oxford University Press). Analysis of the history of environmental discourses. Collection of accompanying readings is available in: J. Dryzek and D. Schlosberg (eds.) (1998), *Debating the Earth: The Environmental Politics Reader* (Oxford: Oxford University Press).
- Global Environmental Politics* (www.mitpress.mit.edu/GEP). Scholarly journal that contains the latest innovative and original research on environment and the global political economy (first issue Feb. 2001).
- Haas, P. M. (ed.) (2003), *Environment in the New Global Economy* (Cheltenham: Edward Elgar). A collection of sixty seminal articles on environment, globalization, and the global political economy (previously published, dating from 1944 to 2001).
- Lipschutz, R. D. (2004), *Global Environmental Politics: Power, Perspectives, and Practice* (Washington DC: CQ Press). A text on the politics of the global environment that among other issues examines green thought, capitalism, power, and international environmental policies.
- Paterson, M. (2000), *Understanding Global Environmental Politics: Domination, Accumulation, Resistance* (London: Macmillan and St Martin's). Draws on the literature in international relations to provide a critical account of the environmental impacts of the global political economy.
- Pojman, L. P. (ed.) (2001), *Environmental Ethics: Readings in Theory and Application*, 3rd edn. (Belmont, Calif.: Wadsworth/Thomson Learning). Balanced collection of many of the most influential articles in environmental philosophy and politics, including deep ecology, generational obligations, population, hunger, economics, and sustainability.
- Porter, G., Brown, J. W., and Chasek, P. (2000), *Global Environmental Politics*, 3rd edn. (Boulder, Colo.: Westview Press). Introduces the academic study of global environmental politics with a focus on international agreements.
- Princen, T., Maniates, M. F., and Conca, K. (eds.) (2002), *Confronting Consumption* (Cambridge, Mass.: MIT Press). Breaks new ground in the understanding of consumption as a core problem for the global political economy.

Young, O. R. (2002), *The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale* (Cambridge, Mass.: MIT Press). Leading scholar of environmental regimes analyses the role of institutions in causing and constraining environmental change.

WEB LINKS

www.unep.org United Nations Environment Programme and **www.undp.org** United Nations Development Programme. Provide entries into environment and development data and projects of the United Nations.

www.gefweb.org Global Environment Facility. Outlines projects and programmes to finance protection of the global environment in developing countries.

www.wri.org World Resources Institute. Source of scientific environmental research and non-governmental policy proposals. Includes agriculture, biodiversity, forests, climate change, marine ecosystems, water, and health.

www.iisd.org International Institute for Sustainable Development. Monitors the proceedings of global environmental negotiations and conferences.

www.worldwatch.org WorldWatch Institute. Source of data on the global environmental 'crisis'. Challenges some of the data (and interpretations) of the United Nations, World Bank, and governments.