
ON FREE TRADE, CLIMATE CHANGE, AND THE WTO

Rafael Reuveny

This article focuses on the argument that a free global market benefits the environment. I explore the link between climate change, which has recently emerged as the greatest environmental threat, and world trade, which has grown continuously since WWII. The growth of world trade, facilitated by the GATT-WTO regime, evokes an important question. Is this regime good for the environment, or has it contributed to the increase of greenhouse gases, the primary driver of climate change? While this question cannot be fully answered in this paper alone, it is important to consider it now because many of the expected damages caused by climate change may be considerable and non-reversible. After discussing the state of knowledge on the effects of trade on the environment, we evaluate whether the biosphere can accommodate perpetual economic growth. The purpose of this paper is to integrate the insights gained by outlining a proposed research program focusing on the WTO and the environment in the context of climate change.

Keywords: *environment, economic growth, World Environmental Protection Agency.*

Introduction

The ideology of liberalism can be generally categorized into two interrelated categories, republican and commercial liberalism. Republican liberalism focuses on the causes and consequences of democracy, as opposed to autocracy. Commercial liberalism focuses on the causes and particularly the consequences of free domestic and international markets, as opposed to central governmental control of economic activities. Both types of liberalism link political and economic freedoms to many socio-political-economic forces, including international relations, war propensity, income distribution, standard of living, economic growth, quality and performance of institutions, and the state of the environment. A common thread shared by both classes of liberalism is the argument that political and economic freedom, or democracy and the free market, are superior across the board, promoting peace, prosperity, and political stability.

According to a derivative of this argument, free domestic and global economic markets also promote environmental quality and reduce environmental degradation within national and domestic systems. The argument that free global markets promote global environmental quality stands at the center of this paper.

In recent decades, climate change has emerged as the largest threat to the global environment. During the 1980s and early 1990s there was still some uncertainty as to whether climate change was occurring, particularly whether it was human-induced or

natural. Today there is a general scientific consensus that climate change is occurring and human activity, particularly the burning of fossil fuels, is the cause (IPCC 2007, 2001a).

The global market involves a number of international economic interactions, including trade flows, foreign direct investments, financial capital movements, currency exchanges, labor flows or migration, technological transfers, and movements of physical capital. Of these interactions, this article focuses on international trade flows for two reasons. First, most people identify international trade as the impetus behind a free global market. Second, and perhaps more importantly, the global policymaking community has focused more on international trade than any other subject since World War II.

A number of authors have reviewed the evolution of the international trade regime after World War II, including GATT (1991), Cole (2000), and Salvatore (2006). In 1948 several countries led by the U.S. created the General Agreement on Tariffs and Trade (GATT). The evolution of the GATT reflected the liberal view that free trade benefits everyone. In the following decades several multilateral trade negotiations took place; the Kennedy Round (1963–1967), Tokyo Round (1973–1979), and the Uruguay Round (1986–1994) removed many trade barriers. In 1994 the GATT was replaced by a newly created global institution, the World Trade Organization (WTO), which was given more powers in promoting free trade. Today, almost every country in the world has joined the WTO.

Under the GATT-WTO regime, world trade has continuously expanded. Before the 1960s it was concentrated among industrialized countries. Today it involves all the countries in the world to a greater degree, and developing countries such as China and India have become major traders. Naturally, this trade growth would not be possible without the liberalization of trade barriers. This move was spawned, nurtured, supervised, and enforced first by the GATT and then by the WTO. Today, the WTO is one of the strongest international organizations. It has jurisdiction to decide on international trade disputes, rendered by the member countries, and can also impose penalties on members that break its laws. WTO members, in turn, agree to follow the decisions of the WTO court system, as well as implement all of their contractual responsibilities according to the WTO body of law.

This paper addresses the relationship between trade liberalization and activities under the GATT-WTO regime and the global environment; particularly the risk of climate change. I specifically address the following research question: Is this regime good for the environment, or has trade liberalization under this regime contributed to the increase of greenhouse gases, the primary driver of climate change? The results obtained by answering these questions can serve as a basis for evaluating the need and possibility to include climate change concerns in future WTO policies and laws.

My question is not easy to answer since climate change is an evolving and complex phenomenon whose primary effects are still not fully manifested, nor fully understood. An investigation of this research question is complex and can yield several outcomes. We may find that free trade has nothing to do with environmental degradation, or even promotes environmental quality, thus there is no need to bring climate change concerns into the WTO. We may also conclude that even though trade has promoted environ-

mental degradation, the WTO has defended the environment, thus we should enlarge its responsibilities and powers in this regard. Alternatively, we may find free trade causes environmental degradation, including climate change, and the WTO has not addressed environmental concerns. We may even find that the WTO has made things worse, promoting environmental degradation in its pursuit of free trade.

Even though the research question is complex and cannot be fully answered within the scope of one article, it is important to start discussions now. Time is critical because many of the expected adverse damages caused by climate change, including rising sea levels, inundation of low-lying areas, seasonal changes such as lengthening of heat waves, land degradation, intensification of storms and other weather events, drying of fresh water sources, and melting glaciers, tundra, and ice-poles may be considerable and irreversible. We must therefore attempt to gain as many insights as possible on the research question today and not postpone the discussion until the time when these damages are fully manifested.

I will approach the question in three stages. First, I will discuss the state of theoretical and empirical knowledge on the effects of trade on the environment. As we shall see, trade sometimes affects the environment through the channel of economic growth. Second, this observation suggests that we could gain insights by discussing whether the global biosphere can accommodate a situation of perpetual global economic growth. Third, I will integrate the insights gained into the last section by outlining a proposed research agenda focusing on two interrelated topics: the connection between the WTO trade regime and the environment, and the public policy implications for the current design of the WTO and, more generally, trade liberalization with the goal of slowing the rate of global climate change. My research findings may perhaps suggest that attempts to bring environmental considerations into the WTO would require the design of a new international trading system.

The Effects of Trade on the Environment

International trade can affect the environment through two mechanisms. One mechanism directly influences human economic activities that affect the environment and works regardless of whether the economy grows. The second mechanism affects the environment indirectly because it affects the rate of economic growth which, in turn, affects the environment.

Mechanism One: Direct Effects

As detailed in Pugel (2007), Harris (2006), OECD (1994) and others, the total direct effects of international trade on the environment are the result of several competing channels. Each of these channels may promote or reduce environmental degradation, depending on the strength of the competing effects they represent. We can classify these effects by their types: compositional, structural, regulatory, and technological.

The compositional effect of trade can promote or reduce environmental degradation by changing the composition of traded goods. Consider, for example, a nation that produces a labor-intensive good whose production does not affect the environment and a capital-intensive good whose production damages the environment. Assume the country is capital-abundant, or has more capital relative to labor compared with other coun-

tries. This country, then, has comparative advantage in capital-intensive goods, or can produce them cheaper than other countries. Market logic implies that this country would specialize in producing capital-intensive goods, or produce more of them relative to no trade, exporting them to others. Consequently, it will also produce less of the labor-intensive goods, relative to no trade, importing them from others. Heavier production of the environmentally damaging capital-intensive good will obviously increase damage to the environment. If, in contrast, the country is labor-abundant, trade will increase production and export of the labor-intensive good and reduce production of the capital-intensive good, thereby reducing relative damage to the environment.

The structural effect of trade involves changes in the structure of the local economy due to changes in the location of consumption, investment, and production. For example, consider a country that grows chemical-intensive crops, and the chemicals employed (*e.g.*, pesticides, fertilizers) damage the environment. As the country opens for trade, it may decrease production of chemical-intensive crops, importing them from countries producing them at lower costs. This country will see a change in the structure of its economy since it will employ fewer chemicals, all other things being equal. As a result, environmental quality will rise. If, however, another country increased production of these chemical-intensive crops to satisfy greater global demand, it could face greater environmental degradation due to chemical application.

The regulatory effect of trade works by promoting certain policies. Some trade agreements, for example, require countries to keep environmental damage in check, calling for environmentally-friendly regulations. Another example involves a large and influential country pushing others to take a pro-environment approach in order to be able to sell in its markets. This effect, however, may also work in the opposite direction. If the influential country is not environmentally conscious, others may follow its lead, ignoring the degradation. In a third example, consider countries with parochial trade interests pushing to relax environmental regulations in order to employ cheaper production methods that are also less environmentally-friendly. If other countries adopt this course of action, environmental degradation may rise globally, as the relaxing of environmental regulations becomes a 'race to the bottom'.

Finally, the technological effect of international trade can raise or reduce environmental degradation by promoting changes in production methods. For example, countries may be required to reduce the quantity of fertilizers or pesticides they use in agriculture since foreign consumers may seek to consume organically grown edible plants and crops. By opening domestic societies to new ideas and innovations, international trade may also promote a move toward environmentally cleaner technologies and production methods. However, the technological effect of international trade could also globally propagate the use of environmentally damaging methods and technologies (*e.g.*, fossil fuel-based methods). Countries may use these technologies and production methods because they are cheaper to employ and legal according to extant environmental laws. This outcome may also lead to a 'race to the bottom', as countries seek to reduce their production costs by relaxing pro-environment laws and existing regulations.

Mechanism Two: Indirect Effect

Since the indirect effect of international trade on the environment works through the channel of economic growth, we need to first discuss the effect of trade on the economy. Commercial liberalism assumes that people want to maximize consumption. Economic growth, it is argued, ensures continuously rising consumption. Free markets are argued to be the best social mechanism to promote economic growth because they allocate inputs of production to their most efficient uses, and they provide incentives for innovation by granting large profits to the innovators until others learn to imitate the innovation.

The liberal argument for free international trade is an application of the general argument for free markets. Expanding trade enables national specialization in producing goods according to the principle of comparative advantage, increasing production and promoting economic growth. Nationality is not a variable in the assumptions describing the behavior of people in commercial liberalism. To put it differently, classical and neo-classical economics do not distinguish between the intrastate interactions of American producers from Philadelphia and consumers from Baltimore, for example, or producers from India and consumers from Italy. Neoclassical economists, then, implicitly make the connection that since free markets make sense domestically, they also make sense internationally.

In principle, we could end the discussion here, yet commercial liberals elaborate further. Export, they argue, promotes fuller utilization of underemployed domestic inputs since it provides new outlets for domestic production. Imports can stimulate domestic demand, ultimately enabling larger domestic production. By expanding overall production, free trade promotes more efficient division of labor between production activities and enables economies of scale, which reduces average costs and increases profits, thus providing incentives for growth. Trade also transmits new ideas and technologies across national boundaries. When countries restrict trade, they also curtail flows of technologies and improved products, which harms growth. Finally, by increasing the number of producers in the market place, trade pushes domestic producers to become more efficient, which accelerates economic growth.

The indirect effect of trade on the environment works through the ‘environmental Kuznets curve’ (EKC). The theory behind the EKC is discussed in a number of sources, including Thompson and Strohm (1997), Perman *et al.* (2003), Dinda (2004), and Li and Reuveny (2007). As argued in the preceding paragraphs, international trade promotes economic growth. This, however, is said to affect the environment. Up to some threshold, damage to the environment is said to rise as income per capita rises. Above this threshold of income per capita, environmental damage is said to decline as income per capita rises. The plot of environmental degradation as a function of income per capita thus takes the shape of an inverted U. The name EKC is given by analogy to the original Kuznets curve proposed by Nobel Prize-winning economist, Simon Kuznets (Kuznets 1955). The original curve plots income inequality in a country as a function of income per capita and also takes the shape of an inverted U (see Fig. 1 for an illustration).

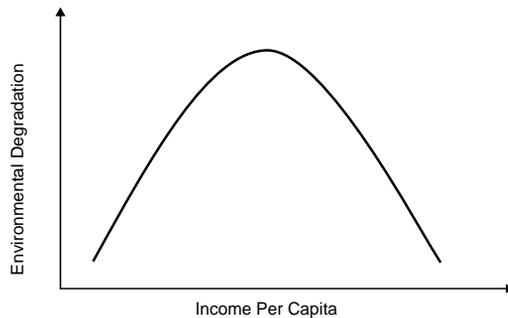


Fig. 1. A Generic Environmental Kuznets Curve

The shape of the EKC is driven by two competing forces, the scale and the income effects. With current technology, larger production and consumption generates more environmental degradation (*e.g.*, pollution, waste), denoted as the scale effect of economic growth. However, as income per capita rises, human preferences arguably shift toward consuming and producing goods that generate less environmental damage. Essentially, richer people are not only more willing to pay more for environmental-friendly goods and environmental protection, but are also able to pay for these goods. This is known as the income effect of economic growth. The scale effect, then, is positive: environmental degradation rises with income per capita. The income effect is negative: environmental degradation falls with income per capita.

According to the EKC theory, as income per capita rises, the income effect will dominate the scale effect, generating the inverted U shape that indicates a decline in environmental degradation with income. Whether the U shape exists empirically is a question of interest for us. I also seek to discover whether the EKC holds true for environmental degradation, since the EKC is primary rationale supporting the position that free trade raises environmental quality. This view sees no need for policy intervention; the system can fix itself, provided that markets are set free. However, the EKC is not a hypothesis to be tested here. Rather it is an issue into which we can gain insight by discussing existing results.

The empirical literature on the EKC effect is substantial and cannot be fully discussed here. Extensive reviews are available, for example, in Panayotou (2000, 2003), Dinda (2004), and Stern (2004). In general, the obtained empirical results are inconclusive. Some studies find that EKC exists for some air pollutants, but not for others. Other studies dispute the results. EKC results for carbon dioxide emissions and deforestation, the primary drivers of climate change (emissions on the source side and deforestation on the sink side, as forests absorb carbon dioxide), are also inconclusive. Even if the EKC effect exists, the estimated turning points of the inverted U curve, beyond which the damage arguably declines, range from about \$5000–\$30,000 in real terms, depending on the particular environmental indicator, statistical model specification, estimator, and sample. Given that real income per capita of most developing countries is much smaller than \$5000, even if the EKC effect exists, we would have to wait many years before it materializes.

The number of empirical studies on the effect of trade on environmental degradation is comparatively small. Lucas *et al.* (1992) conclude that the growth rate of toxic intensity declines with openness to trade. Grossman and Krueger (1993) find that trade openness (ratio of export plus import to gross domestic product) reduces sulfur dioxide emissions but has no effect on smoke and suspended particulate matter. Suri and Chapman (1998) report a negative effect of the ratio of import to GDP on energy consumption per capita, interpreted to indicate that air pollution falls with trade. Antweiler *et al.* (2001) find that trade liberalization reduces sulfur dioxide emissions, but the effect is very small. Barbier (2001) finds that agricultural export promotes agricultural land expansion, concluding that trade intensifies environmental pressure. Dean (2002) finds that trade liberalization promotes water pollution in China. Li and Reuveny (2007) find that trade openness promotes deforestation and does not affect land degradation.

Taken together, the results presented in this and the previous subsections are inconclusive. However, the problem of trade and the environment is in fact even more complex than has been suggested by these results. At stake is yet a bigger question: can the biosphere accommodate a constantly growing global economic system?

Perpetual Economic Growth and the Environment

For environmental damages that arguably exhibit the EKC effect, the income per capita turning points found in empirical analyses are almost always much higher than current per capita incomes of developing countries. Since the large majority of global population lives in developing countries, even if the EKC effect exists for some damages, global environmental degradation may not decline autonomously with free trade and economic growth in the foreseeable future. In no area is this issue more important than in the area of climate change.

According to the Intergovernmental Panel on Climate Change (IPCC), there were systematic patterns of climate change consistent with a tendency of global warming in the 20th century, including an increase in the frequency and duration of warm periods, glacial retreat, an approximately 20 centimeter rise in sea level, an approximately 0.10 C per decade rise in average global temperature, a 10 % decline in winter snow covers, a 40 % decline in northern sea ice thickness, a 15 % decline in summer northern sea ice coverage, and a considerable rise in the frequency and intensity of extreme weather events. These variations are attributed primarily to greenhouse gas emissions generated by man-made fossil fuel burning (IPCC 2007).

The predicted effects of climate change in this century vary, depending on assumptions about energy use, population growth, technological progress, and economic growth. However, all forecasts predict that the sea level and intensity and frequency of extreme weather events will rise. Existing predictions on the effects of a one meter sea-level rise on land and population, assuming no protective measures are taken, suggest that hundreds of millions of people will be displaced. Several small island-states in the Pacific may be completely submerged and other countries may suffer significant land loss, including Gambia, Bangladesh, Vietnam, and the Netherlands. Agriculture, forestry, fresh water, and coastal infrastructures are expected to be particularly sensitive to climate change. Forecasts suggest that lesser developed countries (LDCs) are the most

vulnerable to climate change due to their limited adaptive capacity and large dependence on the environment for generating livelihoods (IPCC 2001b).

Recalling that trade promotes economic growth, with the current state of technology and energy generation, it is apparent that as free trade expands under the auspices of the WTO, at least the scale effect of trade will intensify climate change in the coming decade. What about the income effect and the EKC effect as a whole? And what about the possibly positive direct effects of trade on the environment? Let us assume that these effects together will benefit the environment in general and mitigate climate change in particular. Does this mean that free international trade is ultimately the best policy to combat environmental degradation?

These are complex questions. To gain insight, let us assume that the EKC effect and free trade are the answers to environmental degradation. Hence, we should focus on promoting economic growth and free trade. For example, we should aid LDCs in attaining the standard of living in developed countries (DCs), and strengthen the WTO to better monitor, report, litigate and punish countries that deviate from free trade. Before we jump to this conclusion, we must ask yet another question: can the biosphere accommodate the standard of living in DCs for all people in the world? If the answer is no, even if trade and growth promote environmental quality, policies promoting these forces may prove to be counterproductive.

The English economist Thomas Malthus (1798) believed there were limits to economic growth. In the long run, he argued, the growth of food would fall below population growth and society would converge in a state of poverty and conflict. Neoclassical economists have criticized Malthus for ignoring the role of technological progress in alleviating environmental pressures, and his ideas subsequently lost favor. If Malthus was wrong, then either there are no limits to growth, or technological progress can expand them forever. One way to approach these issues is to first evaluate whether it is possible for all nations in the world to attain the current United States standard of living with current technology, then consider the possible effects of technological progress.

Existing results suggest that the current per capita ecological footprint of the United States (land and water areas required to sustain its actual production, waste, and pollution) is about five times larger than the world's per capita bio-capacity (available biologically productive land and water area). By mid century, the world's per capita bio-capacity is expected to fall by about fifty percent due to population growth (Wackernagel *et al.* 1999; Reuveny 2002, 2005; Harris 2006). Reviewing studies on the number of people the Earth can carry, Cohen (1995) shows that estimates cluster around 4–16 billion, depending on the standard of living people are expected to maintain. He further shows that studies assuming the current United States standard of living for all nations conclude that our planet could support 2–5 billion people. In sum, it seems that with the current state of technology it is impossible to attain the current United States standard of living for the Earth's population.

The issue of energy is particularly daunting. Assuming there will be 9–10 billion people by mid-century and economic growth will continue at the current rate, world energy consumption will double. Where will this energy come from? As discussed in Trainer (1998), Palfreman (2000), Hoffert (2000), Reuveny (2002), and Harris (2006),

there is no magic solution. Oil stocks will decline. Coal could power the world economy for several more centuries, but would likely speed up climate change. Even if methods were found that limit greenhouse gases from burning coal, they would not likely eliminate them. Wind and sun sources are irregularly available and require large areas, and the feasibility of a global hydrogen economy is unclear. Relying on biomass to power a global economy would require areas now allocated to agriculture, and the feasibility of nuclear fusion is debatable at best. Only nuclear energy is a viable option to replace fossil fuels to power a global economy. However, even if we ignore the problems associated with nuclear waste and security, the known amounts of Uranium-235 (a metal used in the generation of nuclear energy) would not sustain the world for long at current consumption rates (Hoffert 2000).

Can perpetual economic growth be sustained with technological progress? Commercial liberals argue that people will find solutions to existing problems as they have done in the past; there are no limits to economic growth. This argument is supported by using mathematical models assuming that people constantly generate technological progress, and progress continuously promotes total factor productivity, environmentally friendly products, less resource intensive production, and new materials to replace depleted resources. Moreover, it is assumed that all these new methods of production, goods, substitutes, and technologies have no bad side effects, and social institutions and markets work smoothly and perfectly.

These assumptions lead to the commercial liberal conclusion that economic growth can continue forever almost by definition, but they may not hold in the real world. For example, relying on innovation and markets to deliver the solution assumes that actors know all the costs and benefits. When property rights are not well developed, or when innovations exhibit public good characteristics, actors become unsure of costs and benefits. Solving complex global problems requires institutional changes, wealth, and expertise, which are not readily available in LDCs. Innovation to alleviate climate change exhibits these very problems. Moreover, so far many other large-scope projects have been deemed more important than alleviating relatively slow moving environmental problems such as climate change, be it building an international space station, accumulating nuclear weapons, promoting consumerism, or fighting international wars.

The nature of innovation is yet another issue. Commercial liberals assume that progress is always beneficial and has no bounds. However, in reality, technologies can have adverse impacts and may die out. There can also be cognitive limits to understanding the complex dynamic interactions of global ecological, social, political, and economic forces, leading to limits in technological advances. For example, current energy technology causes climate change. Energy efficiency has risen since the mid-1970s in DCs, but this improvement has slowed down. After early successes, the response of crops to synthetic fertilizers is lessening, and agricultural yields have fallen in many Green Revolution regions. Facing these examples, it seems that the effects of perpetual global economic growth may sooner or later lead to a reliance on wide-scope space colonization. However, the feasibility of a project of this magnitude in this century is unclear, to say the least. These examples do not prove that innovation must stop in the future and that solutions will not be found eventually. However, they suggest a need for caution when

it comes to formulating public policies that assume perpetual and beneficial technological progress.

WTO and Climate Change: The Road Ahead

The gradual removal of trade barriers since 1945 has played a key role in the phenomenal growth in global trade. As long as exports faced significant trade barriers, they remained highly uncompetitive in the importing markets. Once barriers were gradually removed under the auspices of the GATT-WTO regime, national comparative advantages came into effect, pushing countries to specialize in producing what they do most efficiently or least inefficiently, relative to others and exporting these goods, while importing other goods. The growth in trade promoted economic growth, which in turn led to increased consumption and production, promoting more trade. The effects of these forces on the environment, as we have seen, are debated theoretically. Empirically, the period has seen an increased use of fossil fuels to power the economic growth and larger production, and this has accelerated global warming and climate change (IPCC 2001a, 2007).

Considering the role of the GATT-WTO trade regime in addressing climate change, many questions come to light. Beyond its direct effect on trade liberalization, what will be the effect of the WTO on climate change? What is the likelihood of conflicts between a Kyoto Protocol-based climate change regime seeking to guard the environment and a GATT-WTO trade regime seeking to promote free trade? Answering these questions is speculative because the bulk of climate change effects are expected in the future, the Kyoto Protocol has not yet produced any substantial results, and the US, so far the chief contributor to climate change, has failed to ratify the protocol.

Nevertheless, analyzing the approach of the GATT-WTO regime to the trade-environment nexus in the past can provide us insights. Is it driven by considerations involving the EKC effect? Is it cognizant of the possibility that the direct effects of trade could harm the environment? Is the WTO aware of studies arguing and demonstrating the impossibility of attaining the DC standard of living for all the people on Earth? Is it cognizant of and condoning a situation in which the planet as a whole produces and consumes beyond its biological capacity, as reflected by its ecological footprint, in effect consuming and producing at the expense of future generations? Is the WTO cognizant of the links moving from trade to climate change through economic growth and the use of fossil fuels? Is the WTO approach motivated by the Precautionary Principle, which calls for avoiding potentially large damages to the environment even if the probability of adverse outcomes is less than 100 %? These are all important questions that can and should be addressed in future research.

A related question is whether the WTO slowed or prevented trade-driven environmental degradation in the past. For example, trade in some animals could diminish biodiversity, and trade in some products can damage the environment by intensifying pollution in one place or causing damages in another. Trade in fossil fuels, timber from deforestation, and crops grown in deforested areas may promote climate change by increasing consumption of fossil fuels and by eliminating natural sinks of greenhouse gases. In fact, all trade flows generate greenhouse emissions due to transportation or production. If the WTO has stood by as trade-promoted environmental degradation expanded, or rejected

attempts to block it, we would be inclined to conclude that the GATT-WTO trade regime may accelerate trade-related activities that promote climate change, or at least would not be useful in slowing them down and is not a good candidate for monitoring and enforcing trade-related activities of a climate change regime. In this case, we would conclude that we need a new global institution for this purpose, for example, a World Environmental Protection Agency.

In contrast with this bleak possibility, it is also possible that the WTO has been friendly to the environment and has rejected attempts to expand international trade at the expense of reducing environmental quality. If the WTO has been a guardian of the environment, including the environment in its policy considerations, it is possible that they will continue to do so in the future. In this case, we may not need to diminish its ability to monitor and enforce a free trade regime framework and we might even seek to strengthen and expand it. This possibility seems particularly attractive since the Kyoto Protocol climate change regime seeks to slow the rate of climate change by instituting an international system for trading carbon emission permits and clean defense mechanisms. We might conclude that trade mechanisms devised to combat climate change be promoted and implemented by the *current* WTO.

Any evaluation of the role of the WTO in environmental degradation must begin with the link between the design principles of the GATT-WTO trade regime and the environment. Restating our research question, is this regime good for the environment? Answering this question would further require conducting a set of systematic case studies focusing on the WTO policies in cases that brought environmental issues into the WTO normal deliberations and decision making. Candidates for such studies include the following: (1) Assessing the actions of the WTO Committee on Trade and the Environment (CTE), which was established in 1995 with a mandate to assess trade-environment linkages, and evaluating its effect on WTO policies; (2) Assessing relationships and links between the WTO and Multilateral Environmental Agreements such as those signed by countries to promote biodiversity or reduce the use of certain damaging materials, some of which employ trade measures in enforcing their effects on the countries that signed them; (3) Assessing the WTO case law and jurisprudence pertaining to international trade disputes brought to the WTO court, in which disputants disagree on the legality of certain trade actions that arguably damage the environment; and (4) Assessing the WTO case law and jurisprudence in cases involving use of environmental policy to impose barriers on the entry of traded goods that damage the environment into another country, which exporters argue reflect protectionism, not environmental policy.

The assessment and evaluation of these cases is very important because they could suggest a policy direction for the global community, pointing out the need for either strengthening and expanding the scope of the WTO, or alternatively, scaling down the scope of the WTO and giving priority to the global environment. For example, the global community could decide to create a new World Environmental Protection Agency that would give priority to environmental considerations of trade policy.

The potential impossibility of attaining the DCstandard of living for all people on Earth with the current state of technology suggests that our analysis might conclude that the overall costs, over time, from the WTO promotion of free international trade out-

weigh the overall benefits. Should that be indeed the outcome of the proposed research agenda, it seems that we would need to reconsider the current global adherence to the idea of free international trade, which was brought to the fore by commercial liberalism. Assuming that the current state of technology would essentially prevail in the coming decades, sooner or later the promotion of free international trade would have to play second to the much more pressing need of mitigating climate change. This global shift in attitudes would bring the era of ever-expanding free international trade volumes and global economic system to a stop, at least until we find a way to completely disentangle the current link between global economic growth and climate change.

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