

Public Affairs 856
Trade, Competition, and Governance
in a Global Economy

Lecture 28

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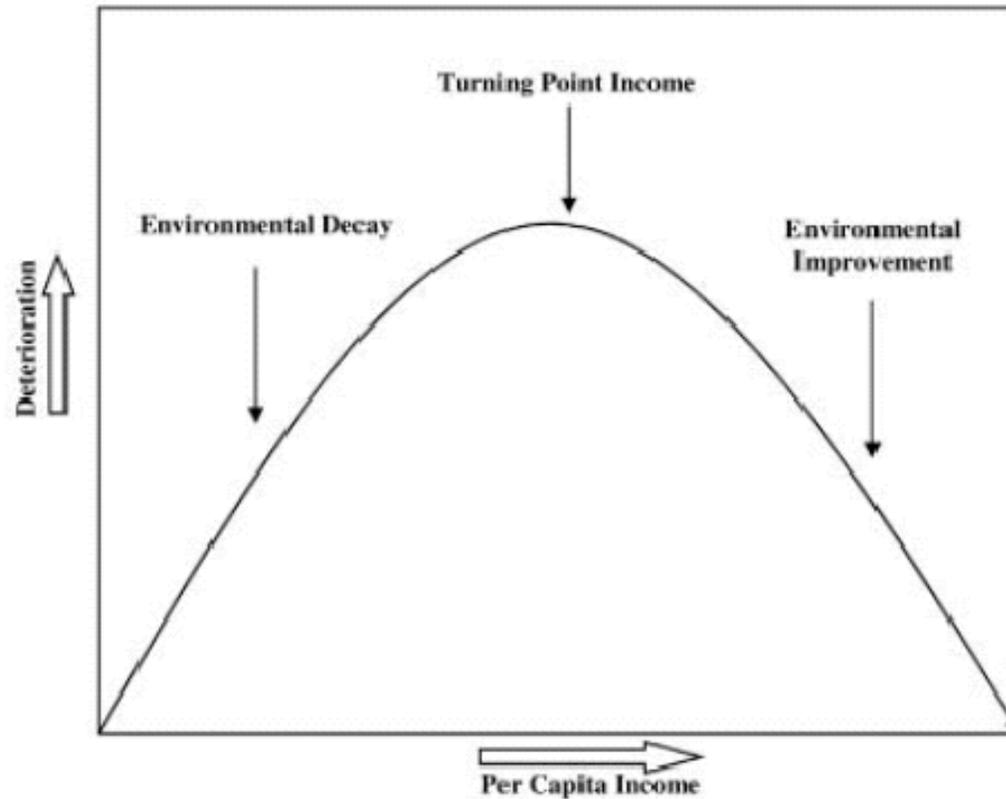
Outline

1. Trade and Environment
2. International Agreements on the Environment

1. Trade and Environment

- The environmental Kuznets curve (EKC)

Figure 1: A Typical EKC Diagram



EKC

- The environmental Kuznets curve (EKC)
- Peak is at per capita income of \$5000 to \$6000 (1985\$).
Source: Grossman and Krueger (1993, 1995).
- Interpretations: (1) Industrialization creates pollution, then as income rises, and preferences shift toward cleaner environment and resources become available for clean-up, pollution falls; (2) Compositional -- as the economy's structure shifts from agrarian to industrial to services, pollution rises and then falls.
- Simple minded conclusion: Just get rich, and pollution will solve itself. Since trade fosters income growth, trade supports the environment eventually.
- More nuanced view: The correlation arises from joint factors, so no causality can be imputed.

1 Trade and Environment

- Regulation: Win-win/elimination of distortions (i.e., eliminate subsidies to coal, barriers to imports of fuel efficient Japanese cars). Porter Hypothesis – “technology forcing”.
- Openness to trade: “Race to the bottom”?
- Gains from trade (technology, managerial efficiency)
- Factor endowments, trade, pollution havens: Belief is that lower pollution standards in LDCs will lead to movement of dirty industries from developed to developing countries. But empirical evidence suggests that opening up to trade leads to greater SO₂ emission in rich countries (because developed countries are capital abundant and dirty industries tend to be capital intensive).

2 International Agreements on the Environment

Environmental Issues in the GATT and WTO

The WTO does not directly address environmental issues; other international agreements, called **multilateral environmental agreements**, deal specifically with the environment.

2 International Agreements on the Environment

Environmental Issues in the GATT and WTO

TABLE 11-3 (1 of 2) Environmental Cases at the GATT and WTO

This table shows the outcome of environmental cases ruled upon by the GATT and WTO.

Case	Issue	Outcome
Tuna-Dolphin In 1991 Mexico appealed to the GATT against a U.S. ban on Mexican tuna imports.	The United States put a ban on imports of tuna from Mexico that were not caught with nets which were safe for dolphins (as required in the United States under the Marine Mammal Protection Act).	In 1992 the GATT ruled in favor of Mexico that the U.S. import ban violated GATT rules. But the strong consumer response led to labeling of imported tuna as "dolphin friendly."
Shrimp-Turtle In 1996 India, Malaysia, Pakistan, and Thailand appealed to the WTO against a U.S. ban on shrimp imports.	The United States put a ban on imports of shrimp from India, Malaysia, Pakistan, and Thailand that were not caught with nets safe for sea turtles (as required in the United States under the Species Act).	In 1998 the WTO ruled in favor of India, Malaysia, Pakistan, and Thailand that the U.S. import ban violated WTO rules. But the United States could still require these exporting countries to use turtle-safe nets, provided that adequate notice and consultation were pursued.

2 International Agreements on the Environment

Environmental Issues in the GATT and WTO

TABLE 11-3 (2 of 2) Environmental Cases at the GATT and WTO (continued)

This table shows the outcome of environmental cases ruled upon by the GATT and WTO.

Gasoline

In 1994 Venezuela and Brazil appealed to the GATT against a U.S. ban on gasoline imports.

The United States put a ban on imports of gasoline from Venezuela and Brazil because the gas exceeded the maximum amount allowed of a smog-causing chemical (under the U.S. Clean Air Act).

In 1996 the WTO ruled in favor of Venezuela and Brazil that the U.S. import restriction violated equal treatment of domestic and foreign producers. The United States adjusted the rules to be consistent with the WTO and still pursued its own clean air goals.

Biotech Food

In 2003 the United States appealed to the WTO that Europe was keeping out genetically modified food and crops.

Since 1998 no imports of genetically modified food or crops had been approved in the European Union.

In 2006 the WTO ruled that the European actions violated the principle that import restrictions must be based on “scientific risk assessments.” Labeling and consumer concerns in Europe will still limit such imports.

2 International Agreements on the Environment

Does Trade Help or Harm the Environment?

Externalities

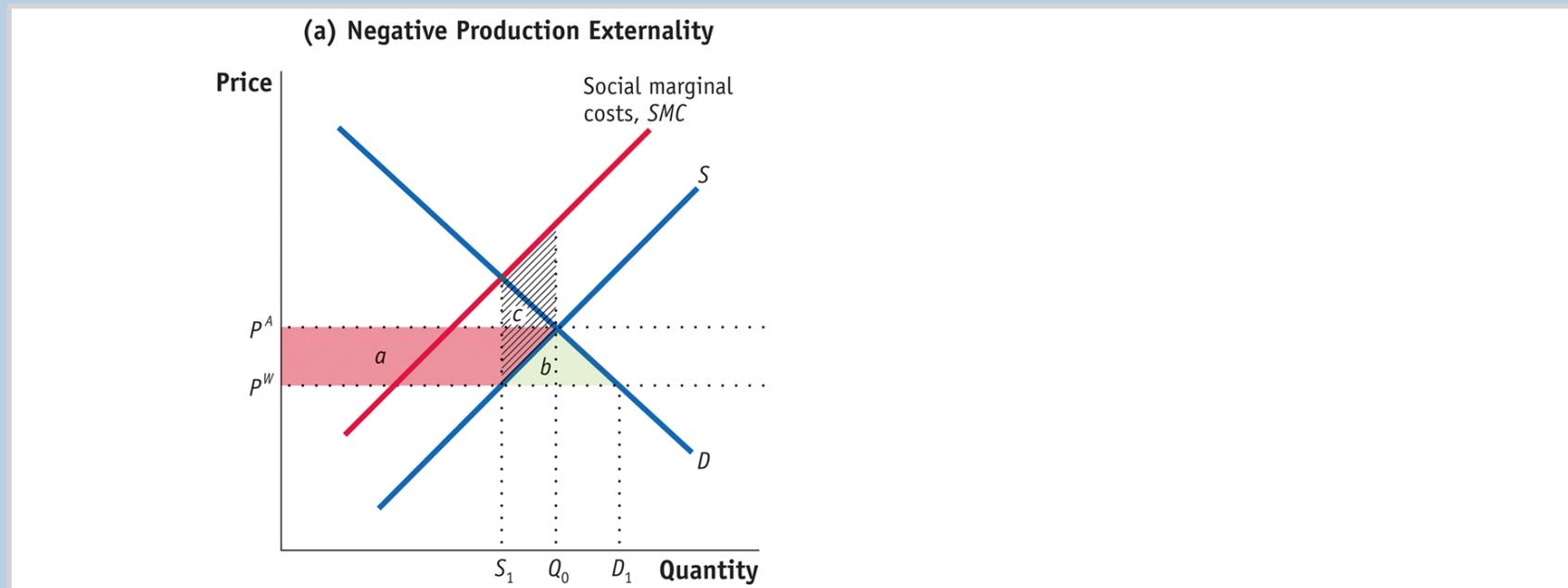
- An **externality** occurs when one person's production or consumption of a good affects another person.
- Externalities can be positive, such as when one firm's discoveries from research and development (R&D) are used by other firms, or negative, such as when the production of a good leads to pollution.
- Closely related to the concept of externalities is the idea of **market failure**, which means that the positive or negative effects of the externality on other people are not paid for.

2 International Agreements on the Environment

Does Trade Help or Harm the Environment?

Externalities and Trade

FIGURE 11-4 (1 of 2) Externalities and the Gains from Trade



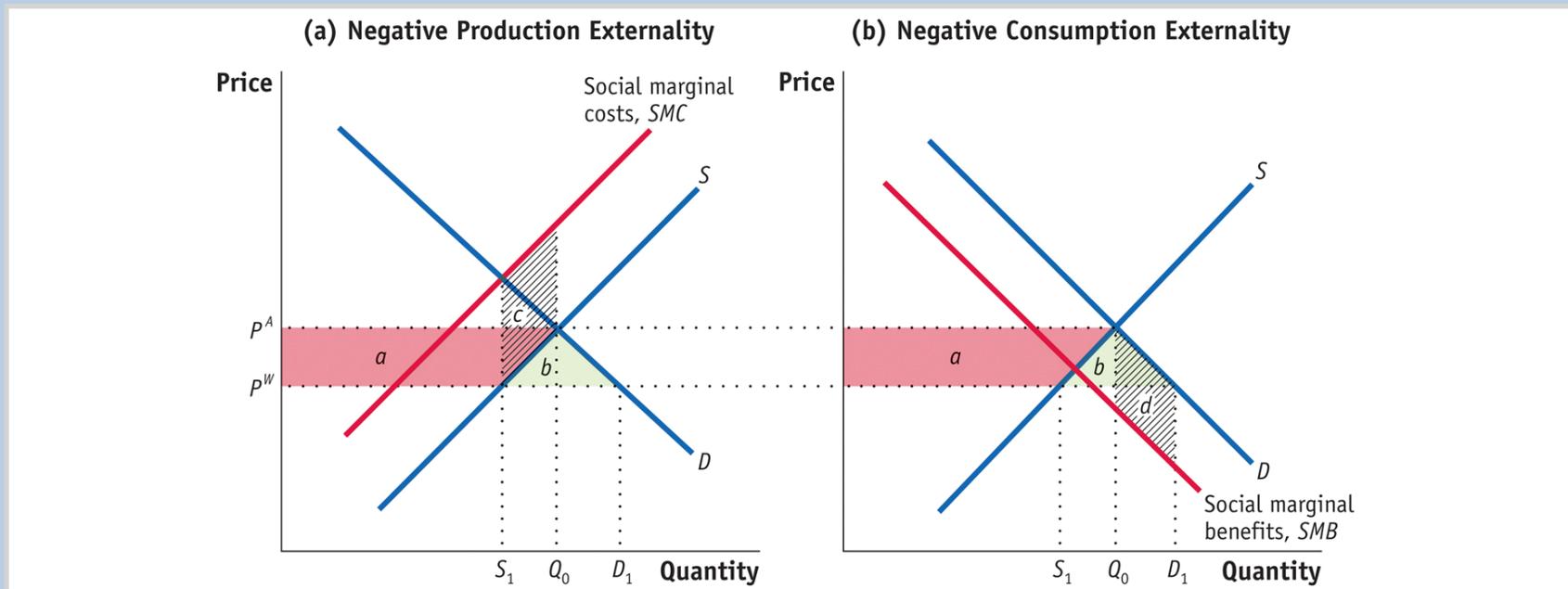
Panel (a) illustrates a negative production externality, which means that the social marginal cost curve, SMC , lies above the private marginal cost (supply) curve S . With free trade, the price falls from P^A to P^W and Home supply falls from Q_0 to S_1 . As a result, the social cost of the externality is reduced by area c , which measures a social gain that is additional to the private gains from trade, area b .

2 International Agreements on the Environment

Does Trade Help or Harm the Environment?

Externalities and Trade

FIGURE 11-4 (2 of 2) Externalities and the Gains from Trade (continued)



Panel (b) illustrates a negative consumption externality, meaning that the social marginal benefits, SMB , lie below the private marginal benefit (demand) curve D . The vertical distance between the SMB and D curve, times the quantity consumed, reflects the social cost of the externality. With free trade Home demand increases from Q_0 to D_1 . As a result, the social cost of the externality increases by area d . That area is a social cost that offsets the private gains from trade, area b .

2 International Agreements on the Environment

Examples of the Environmental Impact of Trade

U.S. Trade Restrictions in Sugar and Ethanol

- The United States maintains an import quota on sugar, increasing the price of imported sugar. As a result firms purchase corn from American farmers to produce ethanol, which can be produced from sugar or corn.
- Producing ethanol from corn is much less energy efficient. Corn depletes the soil and needs fertilizers in order to grow, which themselves use energy in their production.
- In 2012 the U.S. eliminated a 54 cents per gallon tariff on ethanol. As a result, imports from Brazil rose dramatically, to 9.6 million barrels of ethanol in 2012.
- Free trade in ethanol should in theory help alleviate the negative production externality of U.S. ethanol production from corn.

2 International Agreements on the Environment

Examples of the Environmental Impact of Trade

U.S. Automobile VER

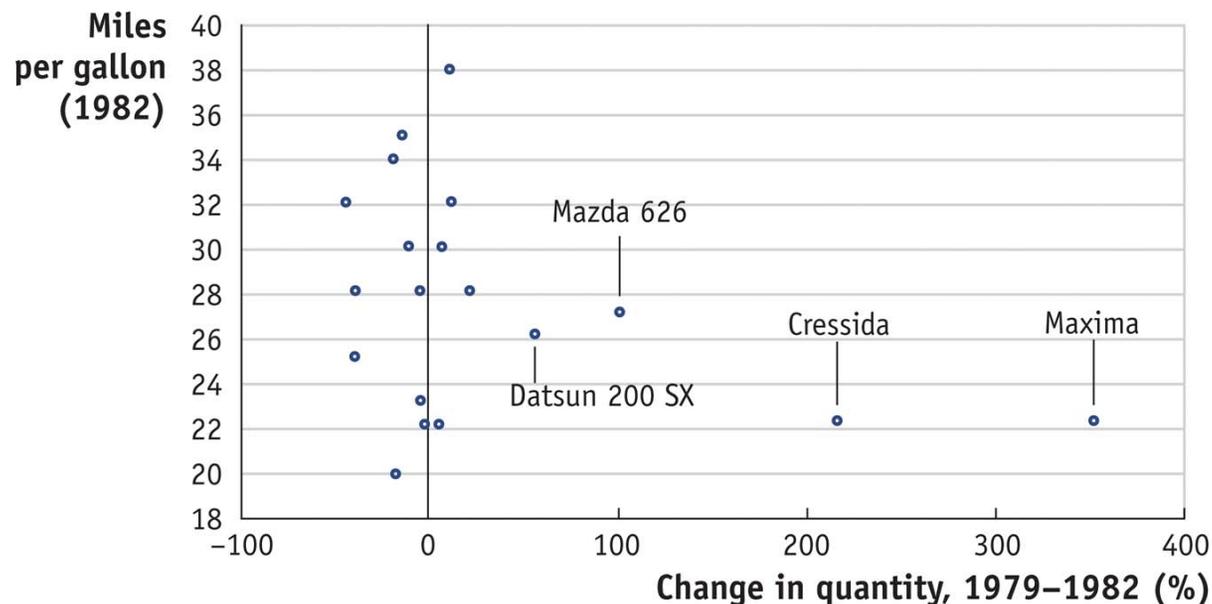
- The “voluntary” export restraint (VER) on exports of Japanese cars to the United States, which began in 1981, limited the number of cars that Japanese firms could export each year, but not their value.
- As a result, there was an incentive for the Japanese firms to export larger and/or more luxurious models.
- As the quality of the Japanese cars rose, so did the engine size and weight of the vehicles; as a result, the average gas mileage of the imported cars fell.

2 International Agreements on the Environment

Examples of the Environmental Impact of Trade

U.S. Automobile VER

FIGURE 11-5



U.S. Imports of Japanese Autos This figure uses data on Japanese imported cars from 1979 to 1982, before and after the “voluntary” export restraint with Japan began. The horizontal axis shows the change in the quantity sold (in percent) between these years, and the vertical axis shows the gas mileage of each model. The models with the lowest mileage—such as the Maxima, Cressida, and Mazda 626—had the greatest increase in sales between these years.

2 International Agreements on the Environment

The Tragedy of the Commons

Free trade can harm the environment when a resource is treated as **common property** that anyone can harvest. The resource may be subject to overuse, a phenomenon referred to as the **tragedy of the commons**.

Trade in Fish

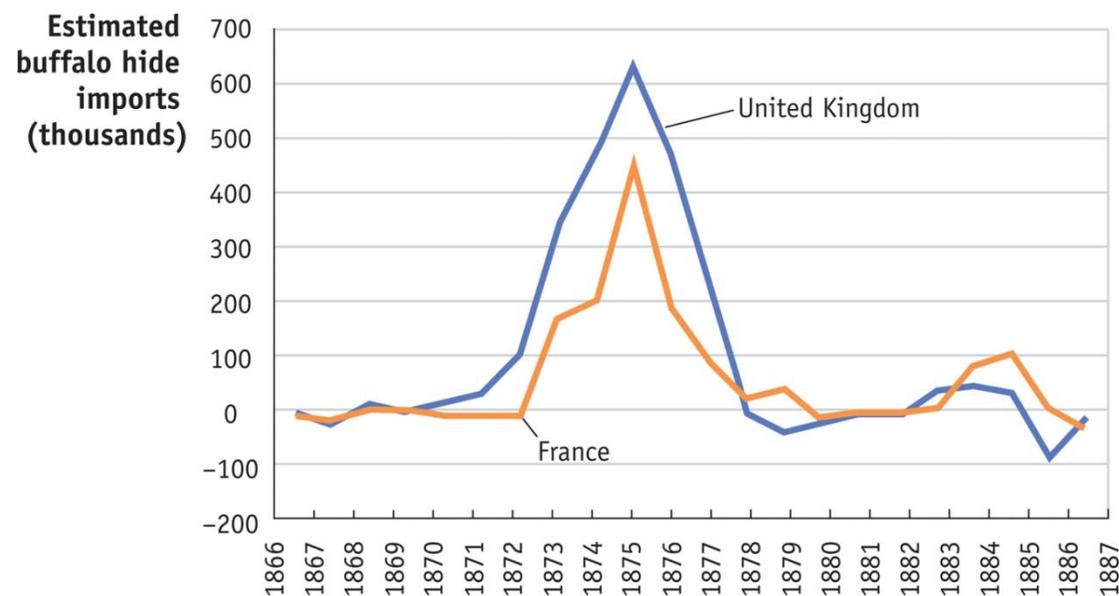
- When a resource such as fish is treated as common property that anyone can harvest, it will be subject to overfishing and its stocks will diminish rapidly over time as each producer seeks to maximize its own share of the resource.
- According to one scientific study, 29% of fish and seafood species have collapsed; that is, their catch declined by 90% or more between 1950 and 2003.

2 International Agreements on the Environment

The Tragedy of the Commons

Trade in Buffalo

FIGURE 11-6



Buffalo Hide Imports This figure shows estimates of the imports to the United Kingdom and France of buffalo hides from the United States. The amount of imports into these countries was small or negative before 1871 but then grew rapidly and peaked in 1875. In that year, the United Kingdom and France combined imported more than 1 million hides and over the entire period from 1871 to 1878 imported some 3.5 million hides. Much of this trade volume can be attributed to an invention in London in 1871 that allowed buffalo hides to be tanned for industrial use.

2 International Agreements on the Environment

The Tragedy of the Commons

Trade in Solar Panels

- When consumers install solar panels there is a *positive consumption externality*, because this source of electricity does not rely on the burning of fossil fuels, which contributes to climate change.
- The extra social gains that come from free trade are even larger when one country subsidizes the production of solar panels and exports more panels at lower prices.
- That is what the United States and the European Union believe that China has done. But rather than accept the low-priced solar panels, with the positive consumption externality, these countries have threatened to apply tariffs against China.

2 International Agreements on the Environment

International Agreements on Pollution

Global Pollutants, Payoff Matrix, Nash Equilibrium

FIGURE 11-7

		Foreign	
		Regulate	Don't regulate
Home	Regulate	Gain for Home consumers, loss for producers Gain for Foreign consumers, loss for producers	Loss for Home producers and consumers Gain for Foreign producers, loss for consumers
	Don't regulate	Loss for Foreign producers and consumers Gain for Home producers, loss for consumers	Small gain for Foreign producers, large loss for consumers Small gain for Home producers, large loss for consumers

Payoffs in an Environmental Game

This payoff matrix shows the gains and losses for Home and Foreign countries, depending on whether they adopt environmental regulations. If governments weight producer surplus more than consumer surplus, then the structure of payoffs is similar to the prisoner's dilemma because the Nash equilibrium is to have both countries not adopt regulations. That outcome can occur with "global" pollutants.

Multilateral Agreements

One example of an international agreement is the Montreal Protocol on Substances that Deplete the Ozone Layer, which has successfully eliminated the use of chlorofluorocarbons (CFCs).

APPLICATION

The Kyoto Protocol and the Copenhagen Accord

The **Kyoto Protocol** built on the United Nations' 1992 treaty on climate change, established specific targets for reduction in greenhouse gas emissions: the industrial countries should cut their emissions of greenhouse gases by a collective 5.2% less than their 1990 levels.

APPLICATION

The Kyoto Protocol and the Copenhagen Accord

There are four reasons often given to explain why the United States did not join the Kyoto Protocol:

1. although the evidence toward global warming is strong, we still do not understand all the consequences of policy actions;
2. while the United States is the largest emitter of greenhouse gases, meeting the Kyoto targets would negatively affect its economy;
3. Kyoto failed to include the developing countries, especially China and India;
4. there are other ways to pursue reductions in greenhouse gas emissions.

APPLICATION

The Kyoto Protocol and the Copenhagen Accord

- The **Copenhagen Accord** is a recognition that further increases in global average temperature should be kept below 2 degrees centigrade.
- Under this accord, an agreement was made that industrialized countries will submit goals for greenhouse gas emissions reductions, while developing countries will communicate their efforts in this regard.
- There is also the establishment of a fund to finance the needs of developing countries in fighting the effect of climate change.
- In March 2010, China and India agreed to join the Copenhagen Accord, as has the United States and more than 100 other countries.