

Interim Environmental Review

Environmental Goods Agreement

Office of the U.S. Trade Representative

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Executive Summary

Overview

As a global leader in the innovation, production and export of environmental technologies, the United States has a strategic interest in expanding market access abroad for U.S. green technology manufacturers, while improving access at home to the technologies we need to protect our environment. The Obama Administration has taken unprecedented action over the past eight years to build the foundation for a clean energy economy and healthy environment, including by working toward global free trade in environmental goods and cleaner technologies.

On July 8, 2014, the United States and 13 other WTO Members¹ launched the Environmental Goods Agreement (EGA) negotiations in Geneva, Switzerland with an aim of eliminating import tariffs on a wide range of technologies designed to address an array of environmental challenges – from air pollution control to clean energy generation; wastewater treatment to sustainable management of waste. The urgency of these challenges cannot be overstated. Approximately 6.5 million people die prematurely each year as a result of indoor and outdoor air pollution exposure.² Ten percent of the world’s population currently lacks access to safe water.³ And by one estimate, the world is on track to generate 11 million tons of waste each day by 2100.⁴ Yet import tariffs on environmental technologies – such as wind turbines, water filtration systems and emissions control equipment – can run as high as 35%, posing a significant obstacle to their deployment.⁵

The United States has been a longstanding advocate for liberalization of trade in environmental goods. In 2011, as host of the Asia-Pacific Economic Cooperation (APEC) forum, the United States secured a groundbreaking commitment among APEC’s 21 economies to reduce import tariffs on a list of 54 environmental goods to five percent or less by the end of 2015. That commitment has resulted in the reduction of duties on hundreds of tariff lines in the APEC region, impacting billions of dollars of trade in clean technologies.⁶

The EGA will build on the APEC commitment by both eliminating tariffs on the APEC list and expanding the list of covered environmental technologies. Current EGA participants represent approximately 90% of the \$1 trillion in annual global exports of environmental goods, and include the world’s largest traders of environmental goods, such as China, the European Union,

¹ Australia; Canada; China; Costa Rica; the European Union; Hong Kong, China; Japan; Korea; New Zealand; Norway; Singapore; Switzerland; Chinese Taipei (and three other WTO Members subsequently joined the negotiations: Iceland; Israel; and Turkey).

² International Energy Agency, *Energy and Air Pollution 2016 - World Energy Outlook Special Report*, June 27, 2016. <http://www.worldenergyoutlook.org/airpollution/>.

³ World Health Organization and UNICEF Joint Monitoring Programme (JMP) (2015), [Progress on Drinking Water and Sanitation, 2015 Update and MDG Assessment](#).

⁴ Hoornweg, D., P. Bhada-Tata, & C. Kennedy (2013), “Environment: Waste Production Must Peak This Century,” *Nature*, 502, 615–617, <http://www.nature.com/news/environment-waste-production-must-peak-this-century-1.14032>.

⁵ WTO Tariff Download Facility, <http://tariffdata.wto.org>.

⁶ APEC Economies’ Implementation Plans for Tariff Reduction on Environmental Goods.

<http://www.apec.org/Groups/Committee-on-Trade-and-Investment/APEC-Economies-Implementation-Plans.aspx>

and Japan.

By eliminating tariffs on environmental goods, we can improve access to the technologies that the United States and other economies need to keep our environment healthy, thus lowering the costs of environmental protection, while unlocking opportunity for U.S. exporters and supporting good green jobs.

Interim Environmental Review

Consistent with authority delegated by the President in Executive Order 13701 (80 Fed. Reg. 43901) and pursuant to Executive Order 13141 (64 Fed. Reg. 63169) and its Guidelines (65 Fed. Reg. 79442), the Office of the United States Trade Representative (USTR), on behalf of the Trade Policy Staff Committee (TPSC), issues this Interim Environmental Review of the prospective Environmental Goods Agreement (EGA), consistent with the objectives of section 105(d)(1) of the Bipartisan Congressional Trade Priorities and Accountability Act of 2015 (Trade Priorities Act).

On March 21, 2014, U.S. Trade Representative Michael Froman notified Congress of the President's intent to enter into negotiations on a plurilateral trade agreement to eliminate import tariffs on environmental goods [<https://ustr.gov/sites/default/files/03212014-Letter-to-Congress.pdf>]. Initial participants included Australia; Canada; China; Costa Rica; the European Union; Hong Kong, China; Japan; South Korea; New Zealand; Norway; Singapore; Switzerland; Chinese Taipei and the United States. Subsequently, Israel (January 17, 2015), Iceland (March 12, 2015), and Turkey (February 18, 2015) joined the negotiations. Multiple rounds of negotiations have taken place and additional rounds are scheduled. Negotiations are expected to conclude later this year.

The environmental review process examines possible environmental effects that may be associated with a proposed trade agreement. This review was formally initiated by publication of a notice in the Federal Register, which requested public comment on the scope of the review (*see* 80 Fed. Reg. 79130 (Dec. 18, 2015)). Previous notices published in the Federal Register requested public comments on the overall negotiation and on the inclusion of additional negotiating parties (*see* 79 Fed. Reg. 17637 (March 28, 2014); 79 Fed. Reg. 74803 (Dec. 16, 2014); 80 Fed. Reg. 4332 (Jan. 27, 2015)). Comments and testimony addressing environmental issues received in response to the notices were taken into account in the preparation of this Interim Environmental Review. The review also draws on the environmental and economic expertise of federal agencies. Consistent with Executive Order 13141 and its Guidelines, the focus of the review is on the potential environmental impacts of the EGA in the United States. Additionally, this review includes consideration of possible global and transboundary environmental effects.

This interim review provides provisional conclusions and identifies areas for further attention in the course of the ongoing negotiations and in the review of the final EGA. While the final terms of the EGA are not yet negotiated, including final product coverage and tariff phase-out schedules, this interim review is intended to consider the potential environmental impacts based

on the negotiations and input received from stakeholders to date. The Administration welcomes public comment on these preliminary conclusions:

- U.S. tariffs on environmental goods are already low or zero, but other trading partners charge tariffs as high as 35%. The EGA participating economies constitute significant markets for U.S.-produced environmental goods and the EGA is expected to create important opportunities for U.S. exporters, as well as environmental benefits both in the United States and other participating economies.
- Liberalization of trade in environmental goods through the EGA is not expected to have significant adverse environmental impacts in the United States. While the preliminary nature of the scope of the EGA precludes definitive conclusions, the cumulative impacts of the EGA are likely to be positive from an environmental standpoint due to the predicted increase in the trade in, and utilization of, environmentally beneficial goods.
- The EGA is expected to facilitate access to and encourage the use of environmentally beneficial technologies, which will support environmental and natural resource stewardship goals in the United States and in other EGA participating economies. Such goals include increased use of renewable energy, pollution prevention and mitigation, and better access to clean water. Removing import tariffs on these technologies will likely reduce their cost, increase their deployment, drive economies of scale, and spur innovation and product development in these sectors. Growth in global markets will also help spread the research and development risk for cutting-edge clean energy and environmental technologies.
- The proposed EGA is not expected to have a negative impact on the ability of U.S. government authorities to enforce or maintain U.S. environmental laws or regulations, nor will it require the use of certain environmental technologies over others in any way. In fact, the EGA's objective is to provide the widest choice of, and improved access to, environmental technologies to U.S. regulators and consumers of environmental goods.
- While the focus of this interim environmental review is on environmental impacts in the United States, the review takes into account a variety of transboundary and global issues to identify possible environmental concerns to be considered in the course of negotiations. There is some potential for increased environmental emissions or adverse impacts associated with environmental goods trade liberalization due to increased production and transportation of these goods from place of manufacture to final destination. As discussed below, the scope of any such potential impacts appears small in relation to the expected environmental benefits of the EGA. Moreover, because the EGA aims to increase access to many of the technologies that facilitate the implementation of sustainable production practices, and that address transport emissions, such potential negative impacts may simultaneously be addressed through the EGA.

Interim Environmental Review of the Environmental Goods Agreement

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I. LEGAL AND POLICY FRAMEWORK

A. The Trade Policy Context

The Trade Priorities Act establishes a number of negotiating objectives and other priorities relating to the environment. With respect to the environment, the Trade Priorities Act contains three sets of objectives: (i) overall trade negotiating objectives; (ii) principal trade negotiating objectives; and (iii) promotion of certain priorities, including associated requirements to report to Congress.

The Trade Priorities Act’s “overall trade negotiating objectives” with respect to the environment include:

- (1) ensuring that trade and environmental policies are mutually supportive and seeking to protect and preserve the environment and enhance the international means of doing so, while optimizing the use of the world’s resources (section 102(a)(5)); and
- (2) seeking provisions in trade agreements under which parties to those agreements ensure that they do not weaken or reduce the protections afforded in domestic environmental laws as an encouragement for trade (section 102(a)(7)).

In addition, the Trade Priorities Act establishes the following environment-related “principal trade negotiating objectives”:

- (1) ensuring that a party to a trade agreement with the United States (i) adopts and maintains measures implementing its obligations under certain multilateral environmental agreements, (ii) does not waive or otherwise derogate from, or offer to waive or otherwise derogate from, its environmental laws in a manner that weakens or reduces the protections afforded in those laws and in a manner affecting trade or investment between the United States and that party; and (iii) does not fail to effectively enforce its environmental laws, through a sustained or recurring course of action or inaction, in a manner affecting trade between the United States and that party, while recognizing a party’s right to exercise prosecutorial discretion and to make decisions regarding the allocation of enforcement resources (sections 102(b)(10)(A)&(B));
- (2) strengthening the capacity of U.S. trading partners to protect the environment through the promotion of sustainable development (section 102(b)(10)(D));
- (3) reducing or eliminating government practices or policies that unduly threaten sustainable development (section 102(b)(10)(E));
- (4) seeking market access, through the elimination of tariffs and non-tariff barriers, for U.S. environmental technologies, goods, and services (section 102(b)(10)(F));

(5) ensuring that environmental, health or safety policies and practices of the parties to trade agreements with the United States do not arbitrarily or unjustifiably discriminate against U.S. exports or serve as disguised barriers to trade (section 102(b)(10)(G));

(6) ensuring that enforceable environment obligations are subject to the same dispute settlement and remedies as other enforceable obligations under the agreement (section 102(b)(10)(H)); and

(7) ensuring that a trade agreement is not construed to empower a party's authorities to undertake environmental law enforcement activities in the territory of the United States (section 102(b)(10)(I)).

The Trade Priorities Act also provides for the promotion of certain environment-related priorities and associated reporting requirements, and specifies that the President shall:

(1) seek to establish consultative mechanisms among parties to trade agreements to strengthen the capacity of U.S. trading partners to develop and implement standards for the protection of the environment and human health based on sound science (section 102(c)(2));

(2) promote consideration of multilateral environmental agreements and consult with parties to such agreements regarding the consistency of any such agreement that includes trade measures with existing environmental exceptions under Article XX of the General Agreement on Tariffs and Trade 1994 (section 102(c)(3)); and

(3) conduct environmental reviews of future trade and investment agreements, consistent with Executive Order 13141 and its relevant guidelines, and report to the Committee on Ways and Means and the Committee on Finance on those reviews and on the content and operation of consultative mechanisms established pursuant to section 102(c) (section 105(d)(1)).

B. The Environmental Review Process

The framework for conducting environmental reviews of trade agreements is provided by Executive Order 13141 – *Environmental Review of Trade Agreements* (64 Fed. Reg. 63169 (Nov. 18, 1999)) and the associated Guidelines (65 Fed. Reg. 79442 (Dec. 19, 2000)). The Executive Order and Guidelines are available on USTR's website at: <https://ustr.gov/issue-areas/environment/environmental-reviews>.

The purpose of environmental reviews is to ensure that policymakers and the public are informed about reasonably foreseeable environmental impacts of trade agreements (both positive and negative), and help shape appropriate responses if environmental impacts are identified. Section 5(b) of Executive Order 13141 provides that “[a]s a general matter, the focus of environmental reviews will be impacts in the United States,” but “[a]s appropriate and prudent, reviews may also examine global and transboundary impacts.” Reviews are intended to be one tool, among

others, for integrating environmental information and analysis into the fluid, dynamic process of trade negotiations. USTR and the Council on Environmental Quality (CEQ) jointly oversee implementation of the Order and Guidelines. USTR, through the Trade Policy Staff Committee (TPSC), is responsible for conducting the individual reviews.

The environmental review process provides opportunities for public involvement, including an early and open process for determining the scope of the environmental review. Through the scoping process, potentially significant issues are identified for in-depth analysis, while issues that are less significant are eliminated from detailed study.

The Guidelines recognize that the approach adopted in individual reviews will vary from case to case, given the wide variety of trade agreements and negotiating timetables. Generally, however, reviews address two types of questions: (i) the extent to which positive and negative environmental impacts may flow from economic changes estimated to result from a prospective agreement; and (ii) the extent to which proposed agreement provisions may affect U.S. environmental laws and regulations (including, as appropriate, the ability of state, local and tribal authorities to regulate with respect to environmental matters).

A preliminary assessment of the potential environmental impacts of the EGA is set out in Section III below. Background information on the economy and environment in the EGA economies provides useful context for the analysis, and is set out in Section II below.

II. BACKGROUND

Section A provides background information on the economy and environment in each EGA negotiating partner. Section B outlines U.S. negotiating objectives in the EGA.

A. Economy and Environment in EGA Economies

Australia

Australia had a population of approximately 23.8 million people in 2015. Its gross domestic product (GDP) was approximately \$1.34 trillion that year, and its per capita GDP at purchasing power parity (PPP) was \$45,500.⁷ China, Japan, the United States, South Korea, and Singapore are Australia's top five trading partners. See Annex II, Tables 9-11, for additional data.

Australia is the Earth's biggest island and the sixth-largest country in the world in land area. It is 7,741,220 square kilometers in area (slightly smaller than that of the contiguous 48 states of the United States) and includes both temperate and tropical regions. Australia is the driest inhabited continent on Earth, with the least amount of water in rivers, the lowest run-off, and the smallest area of permanent wetlands of all the continents. It is also one of the world's oldest landmasses and has ten percent of the world's biodiversity and a great number of its native plants, animals, and birds exist nowhere else in the world.

⁷ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

Australia has well-established institutions and laws for protecting the environment, including procedures for considering the possible environmental consequences of government policies. Environmental issues are also among the topics addressed in the process of Australian Cabinet-level and Parliamentary consideration of proposed trade agreements.

Canada

Canada had a population of approximately 35.9 million people in 2015. Its GDP was \$1.6 trillion in 2015, and its GDP per capita at PPP was approximately \$44,300.⁸ Canada is the United States' largest foreign supplier of energy, including oil, natural gas, uranium, and electricity. Canada's major trading partners are the United States, China, Mexico, the United Kingdom, and Japan. See Annex II, Tables 12-14, for additional data.

Canada is 9,984,670 square kilometers in area (slightly larger than the United States) and varies in climate from temperate in the south to subarctic and arctic in the north; in terms of area Canada is the second-largest country in the world. Canada and the United States share the world's longest border (5,500 miles) with 90 percent of Canada's population concentrated within 100 miles of that border.

Environmental regulatory authority in Canada is shared between the federal and provincial governments. The provinces have jurisdiction over natural resources and the production and distribution of energy. The federal government regulates international and interprovincial movement of energy.

China

China had a population of almost 1.4 billion people in 2015. In 2015, its GDP reached nearly \$11 trillion, and its per capita GDP at PPP was \$14,200.⁹ China is the world's largest exporter and second largest importer. The United States, European Union, and Hong Kong, China are China's leading export markets, while the European Union, the Republic of Korea, Japan, and the United States are its largest import partners. Manufactured goods make up the vast majority of China's exports, and manufactured goods and fuels and mining products make up most of its imports. See Annex II, Tables 15-17, for additional data.

China is 9,596,960 square kilometers in area. Due to its size, China has a variety of climates, from the Himalayas in the west, to the tropical island of Hainan in the southeast, to the Gobi and Taklimakan deserts in the central and western regions. Up to one million square miles of land, spread out over 18 provinces, are suffering from desertification, which results in lost farmland, silt in rivers, soil erosion, and dust storms.¹⁰ Due to its geographical diversity, China plays host

⁸ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

⁹ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>

¹⁰ <http://www.livescience.com/27862-china-environmental-problems.html>.

to a number of rare species, including well-known ones such as giant and red pandas and Amur tigers. Some of these species are critically endangered due to habitat loss or wildlife trafficking.

China's government has begun taking environmental concerns more seriously. The government revised and strengthened the basic Environmental Protection Law in 2014, the first time in 25 years, and has increased enforcement efforts. However, pollution is a persistent concern, with pollutants and toxins often exceeding safe levels. For example, heavy water pollution has led to one quarter of China's key rivers being classified as "unfit for human contact."¹¹

Costa Rica

Costa Rica has a population of 4.8 million people, and had a GDP of \$51.1 billion in 2015. Its per capita GDP at PPP was \$15,400 that same year.¹² The United States is Costa Rica's primary trade partner, accounting for over 40 percent of Costa Rica's imports. See Annex II, Tables 21-23, for additional data.

Costa Rica is just over 51,000 square kilometers, or slightly smaller than West Virginia, with nearly 1,300 kilometers of coastline, facing both the Pacific Ocean and the Caribbean Sea. Its geography includes tropical and sub-tropical climates, as well as volcanic cones in its mountainous center regions. The country holds a bounty of biodiversity, including an estimated five percent of the earth's species.

Costa Rica's government has been active in responding to environmental threats, clamping down on exports of certain tree species as early as the 1970s, and establishing a commission to address environmental issues in 1993. Today, an estimated 26 percent of the country's land area is protected, the highest proportion of any country in the world.

European Union

The European Union (EU) had a population of 510 million people in 2015,¹³ and had a GDP of just over \$16.2 trillion. Its per capita GDP at PPP was \$37,700 that same year.¹⁴ The United States is the EU's largest import and export partner. See Annex II, Tables 24-26, for additional data.

The EU's geography is diverse, although mostly temperate. Its total territory is over 4.4 million square kilometers, stretching from the Arctic Circle south to the Mediterranean and Black Seas. (The EU also includes tropical territories of some member states.) It also includes nearly 66,000 kilometers of coastlines.

¹¹ <http://www.cfr.org/china/chinas-environmental-crisis/p12608>

¹² World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

¹³ <http://ec.europa.eu/eurostat/documents/2995521/6903510/3-10072015-AP-EN.pdf/d2bfb01f-6ac5-4775-8a7e-7b104c1146d0>.

¹⁴ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

The Single European Act of 1987 laid out the legal framework for a common environmental policy, partly driven by the fear that environmental policies would act as trade barriers between member states. Subsequent major agreements, such as the Lisbon Treaty and a series of Environmental Action Programs, define the EU's competence over environmental policy. Member states shape overall environmental policy through the Council of Ministers, made up of the relevant Ministers from each member. There is also an Environment Council that addresses these issues. The Council shares legislative power with the elected European Parliament. The European Commission has the exclusive right to propose new environmental policy for those areas in which the Commission has competence, as well as to oversee its implementation.

Hong Kong, China

Hong Kong, a semi-autonomous Special Administrative Region of China, has a population of just over seven million people, and had a GDP of \$309.9 billion in 2015. Its per capita GDP at PPP was \$56,700 that same year.¹⁵ Its economy is sophisticated, with a vibrant services sector that includes world-class finance and legal services, among others. An estimated 85 percent of employment is in services, with a commercial services trade total of nearly \$193 billion (\$59.5 billion imports, \$133.3 billion exports). See Annex II, Tables 27-28, for additional data.

Hong Kong is made up of a series of 262 small islands, combined with a coastal area bordering mainland China's Guangdong province. With a total land mass of 1,104 square kilometers, it is one of the earth's most densely populated areas.

Hong Kong's Environmental Protection Department is charged with monitoring and protecting the environment. A separate Environment Bureau oversees the formulation and implementation of environmental policies.

Iceland

Iceland had a population of just over 330,000 people and a GDP of approximately \$16.6 billion in 2015. Its per capita GDP at PPP was \$46,500 that same year.¹⁶ While its economy was originally dependent on fishing and fish products, as well as exports of aluminum and ferrosilicon, it has diversified into biotechnology, financial services, data storage and software, as well as a rapidly growing tourism industry. Services now account for over 40 percent of Iceland's exports. See Annex II, Tables 29-31, for additional data.

Iceland is an island located in the North Atlantic Ocean, with a land mass of just over 100,000 square kilometers, or about the size of Kentucky. The country is mostly a plateau, interspersed by mountain peaks, including active volcanoes. An estimated 85 percent of Iceland's energy use comes from renewable resources, including hydropower and geothermal power.

¹⁵ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

¹⁶ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

The Ministry for Environment and Natural Resources oversees environmental policy and governance. Iceland's natural environment includes some of Europe's largest untouched wilderness areas, and nearly 20 percent of the country is under some form of environmental protection. Iceland's fishing resources are tightly controlled by a government quota system, which relies on the sustainability calculations of the government-funded Marine Resources Institute.

Israel

Israel had a population of almost 8.4 million people and total GDP of over \$296 billion in 2015. Its per capita GDP at PPP was \$35,400 that same year.¹⁷ Israel's sophisticated economy includes a high-tech agriculture sector, software development, and technology manufacturing. See Annex II, Tables 32-34, for additional data.

Israel is a small, densely populated country, covering land of just under 20,800 square kilometers, slightly larger than New Jersey. Its geography includes deserts in the south, low coastal plains, and a central mountain region. Due to water shortages, Israel uses some of the world's most advanced water management systems, and is home to a vibrant green technology industry. Israel imports a high proportion of its energy needs, and has reduced energy intensity throughout its economy. However, recent natural gas discoveries suggest that the country may become less energy import dependent in the near future, along with using a lower-carbon source.

Environmental affairs are regulated by the Ministry of Environmental Protection. An estimated 20 percent of the country's land is protected.

Japan

Japan had a population of almost 127 million people in 2015. Its GDP was just over \$4.1 trillion and GDP per capita at PPP was \$37,300 in 2015.¹⁸ Japan's major trading partners are China, the United States, South Korea, Australia, and Taiwan. See Annex II, Tables 35-37, for additional data.

Japan is 364,485 square kilometers in area (slightly smaller than California) and stretches 3,000 kilometers from northeast to southwest over a wide range of climatic conditions. With four main islands plus Okinawa, and over 6,800 adjacent islands, Japan's 29,000 kilometer coastline is one of the world's longest. Japan's national parks cover a total of 2.13 million hectares (over five million acres), approximately 5.6 percent of the country's total land area.

The Ministry of Environment has primary responsibility for implementing and administering the country's environmental laws.

¹⁷ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

¹⁸ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

Korea

The Republic of Korea had a population of 50.6 million people and had a GDP of almost \$1.4 trillion in 2015; its per capita GDP at PPP was just over \$34,500 that same year.¹⁹ Its economy is diverse and sophisticated, with a traditional reliance on export sectors that is slowly changing. Korea is a major trading nation, and the United States is one of Korea's top import and export partners. Other major trading partners are China, the EU, and Japan. See Annex II, Tables 47-49, for additional data.

Korea is situated on the southern half of the Korean Peninsula, with the Sea of Japan to the east, and the Yellow Sea to the west. With a land mass of almost 97,000 square kilometers, it is almost the size of Pennsylvania. Much of the country is covered with hills and mountains, with coastal plains in the south and west. Due to its lack of fossil fuels, Korea imports much of its fuels for electricity, although nuclear energy accounts for almost 30 percent of its total mix. Renewables make up less than five percent, including hydroelectric power,²⁰ however, the government has encouraged investment in renewable energy; Korea is now a leader in renewable energy patent filings. Korea is densely populated, with nearly half of all residents living within the Seoul megalopolis.

The Ministry of Environment is responsible for administering environmental law.

New Zealand

New Zealand has a population of approximately 4.6 million people in 2015. Its GDP was nearly \$174 billion in 2014, and its GDP per capita at PPP was \$37,000.²¹ New Zealand's major trading partners are Australia, China, the United States, Japan, and Singapore. See Annex II, Tables 38-40, for additional data.

New Zealand is located in the southwest Pacific Ocean and occupies a total land area of approximately 270,550 square kilometers, about the size of Colorado. New Zealand consists of three main islands, in addition to more than 700 offshore islands. New Zealand is rich in biological diversity with more than 200 species of birds native to the country, and boasts a greater diversity of seabirds than anywhere else in the world. The country is seismically active and mountainous, especially the South Island, and has regions of rainforests, farmlands, and glacial lakes.

The Ministry for the Environment is responsible for administering environmental law.

¹⁹ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

²⁰ <http://www.khnp.co.kr/content/163/main.do?mnCd=FN05040101>;
<https://www.renewableenergy.or.kr/spc/stats/supply/selectSupply.do>

²¹ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

Norway

Norway had a population of 5.2 million people and had a GDP of over \$388 billion in 2015; its per capita GDP at PPP was \$61,500 that same year, one of the highest in the world.²² Norway's economy is highly dependent on its large oil and natural gas reserves, which account for 20 percent of GDP. The decline in oil prices since the summer of 2014 has led to a slowdown of petroleum-related industries. See Annex II, Tables 41-43, for additional data.

Norway is relatively sparsely populated, with a land mass of over 300,000 square kilometers, slightly larger than New Mexico; 80 percent of its inhabitants live within 10 kilometers of the coast. It has 2,600 kilometers of coastline, not including nearly 50,000 small islands, which make up another 22,000 kilometers of coast. Norway's river systems provide abundant hydropower, meeting over 90 percent of the country's energy needs. Nearly seven percent of Norway's land is protected, including over 150 nature reserves and 15 national parks. The country has good air and water quality, and has pioneered new approaches to reducing pollutants.

Norway is known for strong environmental protection laws and regulations. The Ministry of the Environment is the primary environmental agency.

Singapore

Singapore had a population of approximately 5.5 million people in 2015. Its GDP was \$292.7 billion in 2015, and per capita GDP at PPP was \$85,000.²³ Singapore's economy is heavily dependent on imports and exports, with total trade exceeding its GDP. Malaysia, China, Indonesia, the United States, and the EU were Singapore's top five trading partners in 2015.²⁴ See Annex II, Tables 44-46, for additional data.

Singapore is a small, island city-state (712 square miles) in Southeast Asia, across the Singapore Strait from Indonesia. It is one of the most densely populated countries in the world, and lies in a tropical climate near the equator. Much of Singapore is less than 15 meters above sea level. Consequently, Singapore is vulnerable to the impacts of climate change, especially rising sea levels. Singapore has no natural resources, and its environmental protection efforts are focused on ensuring air and water quality and combating climate change.

Singapore's Ministry of the Environment and Water Resources is responsible for administering environmental law.

²² World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

²³ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

²⁴ International Enterprise Singapore.

Switzerland

Switzerland had a population of 8.3 million people and had a GDP of \$664.7 billion in 2014. Its per capita GDP at PPP was \$60,500 in 2015, one of the highest in the world.²⁵ It has a highly sophisticated economy, with a large and international services sector. Germany is the country's largest import and export partner. Although it is not a member of the European Union (EU), Switzerland's laws and regulations increasingly conform to those of the EU.²⁶ See Annex II, Tables 50-52, for additional data.

Switzerland is just under 40,000 square kilometers, or twice the size of New Jersey. Switzerland is landlocked, sharing borders with five different European countries. The country has large hydropower resources, totaling 75 percent of its installed capacity. The SwissEnergy program, launched in 2001, has increased the share of renewable energy and reduced energy intensity to one of the lowest in the OECD.

Switzerland has strict environmental laws, and employs environmental taxes to encourage the internalization of external costs. The Federal Office for the Environment oversees and coordinates environmental protection policy, which is implemented by the cantons.

Chinese Taipei

The customs territory of Chinese Taipei has a population of 23.5 million people, and had a GDP of \$524 billion in 2014. Its per capita GDP at PPP was \$46,700 that same year.²⁷ Chinese Taipei has a sophisticated economy, with special competencies in high-tech manufacturing. Its largest trading partners are China, Japan, and the United States. See Annex II, 18-20, for additional data.

Chinese Taipei's land mass, including several small islands, is just under 32,300 square kilometers, or about the size of Maryland and Delaware combined. Air and water pollution are significant concerns in Chinese Taipei, as well as the disposal of nuclear waste and wildlife protection. Due to its political status, Chinese Taipei is not a party to any major international environmental agreements.

Chinese Taipei's Environmental Protection Administration (EPA) is responsible for administering environmental law.

Turkey

Turkey had a population of almost 79 million people, and had a GDP of \$718.2 billion in 2015.

²⁵ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

²⁶ WTO Trade Profiles.

²⁷ IMF World Outlook Database.

Its per capita GDP at PPP was \$19,600 that same year.²⁸ Although agriculture still accounts for a quarter of employment, the country's industry and services sectors are growing rapidly. The economy is rapidly becoming more diversified in nature. Germany and the United States are among Turkey's top trade partners.²⁹ See Annex II, Tables 53-55, for additional data.

Turkey's land mass is nearly 770,000 square kilometers, slightly larger than Texas, and sits at the crossroads between Europe and Asia. Turkey borders the Black, Aegean, and Mediterranean Seas. Due to its unique geography, Turkey is almost entirely covered by three of the world's 35 "biodiversity hot spots." The country's vast natural resources include coal, various metals and minerals, arable land, and hydropower, which accounts for approximately 25 percent of installed electricity capacity.

The Ministry of Environment and Urbanization oversees planning, construction, transformation, and environmental management.

B. U.S. Objectives in the EGA

The EGA is expected to foster economic growth, increase environmental protection, and support jobs in the United States by eliminating import tariffs on environmental goods, enabling U.S. companies to increase their exports of these goods to other EGA participants, and improving access to these goods for U.S. households and businesses.

The Administration has developed negotiating objectives for the EGA in close consultation with Congress and stakeholders. The specific objective for negotiations with EGA participants is to seek the elimination of import tariffs on trade in environmental goods by each EGA participant and the United States, taking into account the need to obtain competitive opportunities for exports of U.S. environmental goods while addressing U.S. import sensitivities.

III. SCOPE OF THE ENVIRONMENTAL REVIEW

To determine the scope of this interim environmental review, the Administration considered information provided by the public and input from environmental, trade, and investment experts within federal agencies, as well as publicly-available reports. In addition to providing guidance on the scope of the environmental review, any information, analysis, and insights available from these sources are being taken into account throughout the negotiating process and are being considered in developing U.S. negotiating positions. Environmental reviews are an ongoing process to examine environmental issues and inform negotiations. This document describes the results of this process at this interim stage of the EGA negotiations.

Section III. A describes the process used to solicit comments and advice on the scope of the environmental review, including a summary of the comments received. Section III. B discusses the possible direct impacts of the proposed EGA on the environment in the United States

²⁸ World Bank, World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>.

²⁹ WTO Trade Profiles.

resulting from potential changes in the U.S. economy related to the proposed EGA. This section also includes an assessment of the potential environmental impacts organized by environmental product categories. Section III. C considers potential transboundary effects of the proposed EGA. Although possible domestic impacts are the primary focus of this environmental review, global and transboundary impacts are to be considered as appropriate and prudent.³⁰ Section III.D considers whether the EGA will affect U.S. environmental laws, regulations, policies, and/or international commitments.

We note that U.S. tariffs are already low or zero on most environmental goods, and that the United States has comprehensive free trade agreements in force already with six EGA participants (Australia, Canada, Costa Rica, Israel, Korea, and Singapore), which all include tariff elimination for environmental goods. USTR has conducted environmental reviews with respect to all of these earlier agreements, with the exception of the U.S.-Israel FTA, which predates the Executive Order requiring such reviews.³¹

A. Public Outreach and Comments

This review was formally initiated by publication of a notice in the Federal Register, which requested public comments on the scope of the review (see 80 Fed. Reg. 79130 (December 18, 2015)). Notices in the Federal Register also requested public comments on the overall negotiation and the addition of new negotiating parties (see 79 Fed. Reg. 17637 (March 28, 2014); 79 Fed. Reg. 74803 (Dec. 16, 2014); 80 Fed. Reg. 4332 (Jan. 27, 2015)). The preparation of this Interim Review takes into account comments received in response to the notices and testimony at the public hearings concerning environmental issues. (See Annex I for a list of organizations providing comments.)

In response to public solicitation, several individuals and organizations submitted comments. These comments primarily focused on expressions of support for or opposition to the inclusion of specific products in the EGA. Other comments included requests for a definition of “environmental goods” against which all proposed items could be evaluated, the inclusion of a review mechanism in the EGA to ensure the EGA’s continued environmental and technological relevance, the use of international product standards, and a means to address non-tariff barriers to trade in environmental goods. While product coverage has not yet been negotiated in the negotiations, this interim review is based on product discussions to date, as well as public and stakeholder input received.

B. Potential Economically-Driven Environmental Effects in the United States

To facilitate product scope discussions in the EGA negotiations, participants developed a set of ten environmental categories under which products have been nominated: (1) air pollution control, (2) cleaner and renewable energy, (3) energy efficiency, (4) environmental monitoring, analysis and assessment, (5) environmental remediation and clean-up, (6) environmentally preferable products, (7) noise and vibration abatement, (8) resource efficiency, (9) solid and

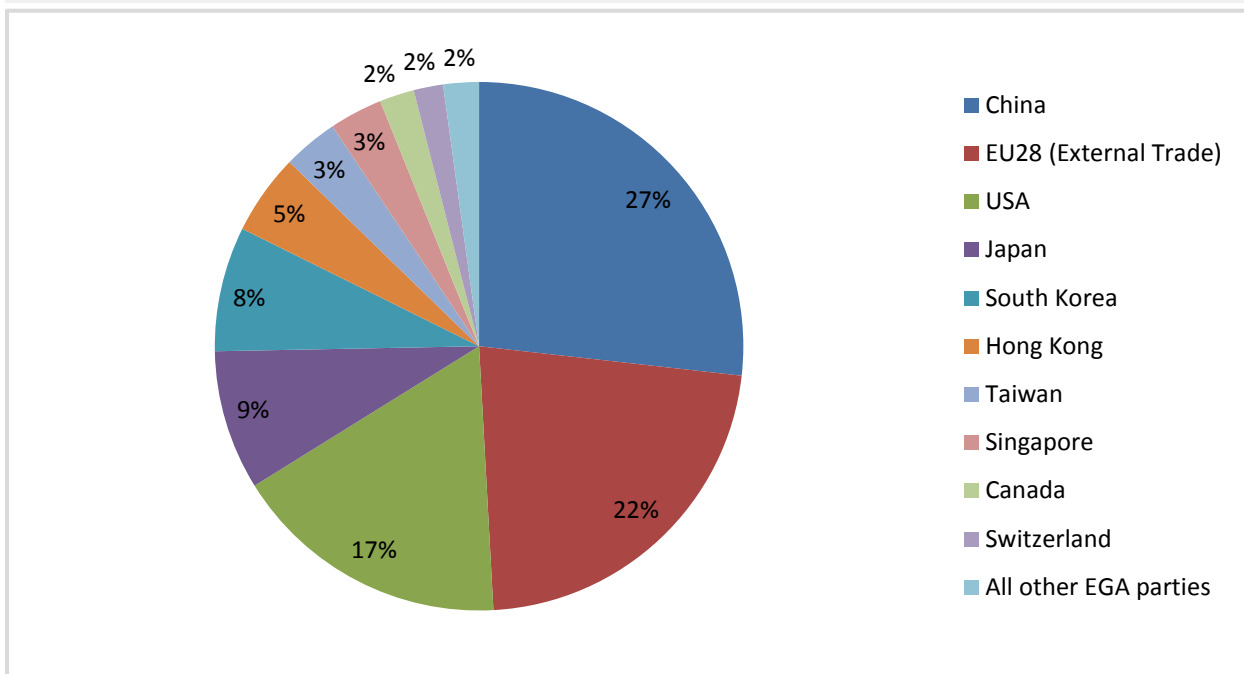
³⁰ See Exec. Order No. 13141, §5(b), 64 Fed. Reg. 63169 (Nov. 18, 1999).

³¹ Earlier environmental reviews are available at: <https://ustr.gov/issue-areas/environment/environmental-reviews>.

hazardous waste management, and (10) wastewater management and water treatment. We have organized this section around these ten environmental categories and included a few illustrative examples of products.

Global trade in environmental goods is approximately \$1 trillion annually. The United States is a major importer and exporter of these products, across all ten categories, and maintains one of the lowest average import duties (approximately 1%). See Figure 1. EGA negotiating partners are important markets for U.S. exporters, and together account for approximately 90 percent of global exports of these goods. U.S. exports of environmental goods totaled \$130 billion in 2015, supporting an estimated 676,000 U.S. jobs. U.S. imports of environmental goods totaled \$203 billion in 2015. See Annex II.

Figure 1: Exports of environmental goods, EGA participants, 2015



Source: IHS, Inc., Global Trade Atlas.

The liberalization of trade in environmental goods through the EGA is not expected to have significant adverse environmental impacts in the United States, in part because U.S. tariffs are already low or zero. While the preliminary nature of the scope of the EGA precludes definitive conclusions, the cumulative impacts of the EGA are likely to be positive from an environmental standpoint due to the predicted increase in the trade in, and utilization of, environmentally beneficial goods here and abroad.

As discussed in greater detail below, freer trade in environmental goods resulting from the EGA is expected to facilitate access to and encourage the use of environmentally beneficial technologies, which will support environmental and natural resource stewardship goals in the United States and in other EGA members. Such goals include increased use of renewable

energy, pollution prevention and mitigation, and greater access to clean water.

Removing tariffs on these technologies will likely reduce their cost, increase their deployment, drive economies of scale, and spur innovation and product development in these sectors. For example, eliminating tariffs on renewable energy technologies can facilitate increased use of renewable energy to generate electricity, if the costs of renewable electricity capacity and generation fall relative to those of fossil fuels, leading to reduced carbon emissions.³² In another example, a series of studies conducted by the OECD illustrated that imported monitoring equipment allowed several developing countries to obtain reliable air and water quality data, an essential starting point to better enforcement of clean air and clean water laws in those countries.³³

While there is some potential for increased environmental emissions or adverse impacts from trade liberalization for environmental goods throughout product lifecycles, including for example increased production of goods, shipment from place of manufacture to final destination, installation and disposal, it appears small in relation to anticipated environmental benefits. In 2015, the majority of U.S. environmental goods imports were delivered by ship, which on average, has a lower per ton-mile GHG emissions factor than other forms of transport (with the exception of rail).³⁴ Air and rail/truck accounted for the remaining means of transport for U.S. environmental goods imports in 2015, with air cargo carrying a significantly higher GHG emissions factor than rail/truck.³⁵ It is worth noting that there are current federal partnership-based initiatives underway to address the environmental impacts associated with goods movement, including work to address the impacts on local communities. Additionally, the US EPA and Coast Guard, working through the International Maritime Organization (IMO) and the International Convention for the Prevention of Pollution from Ships (MARPOL), are implementing an Emissions Control Area (ECA) around the U.S. coastal waterways. The ECA applies stringent engine emission standards and fuel sulfur limits to ships that operate in this area. Lastly, under the Clean Air Act, EPA has promulgated stringent national emission control measures for trucks and locomotives.

As discussed below, the scope of any such potential negative impacts of the EGA appears small in relation to the expected environmental benefits of the EGA. Moreover, because the EGA aims to increase access to many of the technologies that facilitate the implementation of sustainable manufacturing practices, and that reduce transport emissions, such potential adverse impacts may

³² R. Vossenaar, "Identifying Products with Climate and Development Benefits for an Environmental Goods Agreement," 2014, 4. [http://seti-](http://seti-alliance.org/sites/default/files/identifying_products_with_climate_and_development_benefits_for_an_ega.pdf)

[alliance.org/sites/default/files/identifying_products_with_climate_and_development_benefits_for_an_ega.pdf](http://seti-alliance.org/sites/default/files/identifying_products_with_climate_and_development_benefits_for_an_ega.pdf)

³³ Potier, M. and C. Tébar Less (2008), "Trade and Environment at the OECD: Key Issues since 1991", *OECD Trade and Environment Working Papers*, 2008/01, OECD Publishing, 30. <http://dx.doi.org/10.1787/235751371440>.

³⁴ Global Trade Information Services (GTIS), Global Trade Atlas database, <https://www.gtis.com>; U.S. Environmental Protection Agency, *Emissions Factors for Greenhouse Gas Inventories*, November 19, 2015. https://www.epa.gov/sites/production/files/2015-12/documents/emission-factors_nov_2015.pdf; Global Trade Information Services (GTIS), Global Trade Atlas database, <https://www.gtis.com>.

³⁵ U.S. Environmental Protection Agency, *Emissions Factors for Greenhouse Gas Inventories*, November 19, 2015. https://www.epa.gov/sites/production/files/2015-12/documents/emission-factors_nov_2015.pdf; Global Trade Information Services (GTIS), Global Trade Atlas database, <https://www.gtis.com>.

simultaneously be mitigated through the increased market access provided for under the EGA.

Additionally, as discussed in Section III.C below, the authority of regulatory agencies to regulate potential environmental impacts associated with these goods would not be limited or adversely affected under the EGA.

Lastly, we note that the preliminary conclusions reached in this interim review are consistent with the findings in the environmental impact assessments that fellow EGA members Canada and the European Union have issued on the EGA. The European Commission's Trade Sustainability Impact Assessment on the EGA finds that the EGA will contribute to environmental protection, green growth, and sustainable development. In particular, this assessment finds that the EGA could potentially reduce carbon dioxide emissions by nearly 10 million tons by 2030.³⁶ Canada's interim assessment similarly anticipates that the EGA would have an overall positive effect on the environment.³⁷

The Administration welcomes comments on these preliminary findings.

Discussion by Environmental Product Categories

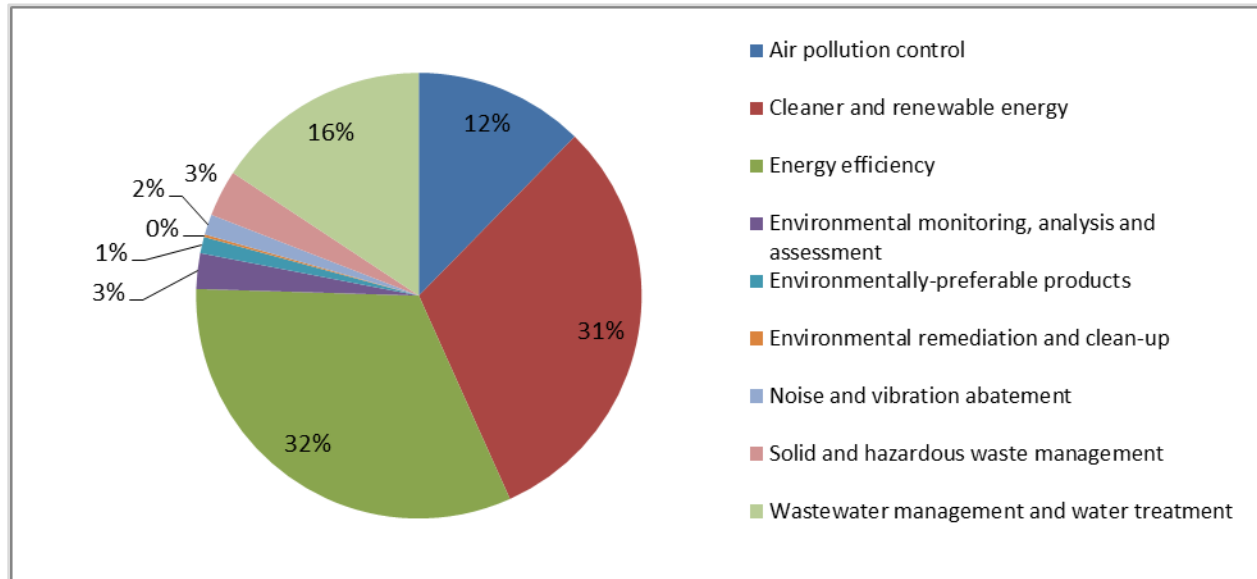
As noted above, the EGA is expected to cover a wide range of products, which fall into ten product categories that EGA participants have used to organize their discussions. See Figure 2. Below are brief descriptions of these product categories and the potential environmental impacts, both positive and negative, associated with tariff elimination for each set of associated products with the exception of the resource efficiency category.³⁸

³⁶ See "Trade Sustainability Impact Assessment on the Environmental Goods Agreement Final Report" at 91 available at http://www.egatradesia.com/sites/all/docs/Final_Report/EGA_Trade_SIA_Final_Report.pdf, concluding that "Provided that reductions in prices are passed onto consumers, we can assume that the direct result will be that environmental technologies become more accessible in countries which join the EGA. This in turn, will positively contribute to environmental protection (implementation of the MEAs, particularly the UNFCCC, and domestic environmental regulations), green growth (export opportunities and green jobs), and sustainable development (contribution to SGDs)."

³⁷ See "Initial Environmental Assessment of the Environmental Goods Agreement," available at <http://www.international.gc.ca/trade-agreements-accords-commerciaux/wto-omc/env-ega.aspx?lang=eng>, finding that "The EGA would be expected to have an overall positive environmental impact. The EGA would facilitate trade liberalization of goods that benefit the environment, thereby facilitating the use of these goods and the realization of the environmental benefits associated with their use. Additional benefits could also occur as lower priced environmental goods could replace similar goods that have higher environmental footprints. Moreover, positive environmental externalities would be expected to arise as it would create an incentive for green innovation, thus furthering the positive impact of the EGA on the environment."

³⁸ For purposes of this review, "resource efficiency" products are captured in the Energy Efficiency and Environmentally Preferable Product category analyses.

Figure 2: Global exports of environmental goods, 2015



Source: IHS, Inc., Global Trade Atlas.

Air Pollution Control

Air pollution control (APC) technologies refer to products that control, reduce, or eliminate pollutants emitted directly into the air as a result of manufacturing, transportation, buildings, or other industrial processes. These include products such as catalytic converters, electrostatic precipitators, and soot removers for boilers. APC products also include instruments for the monitoring and analysis of air quality.

Most imports of APC products already enter the United States duty free and, therefore, the EGA is not likely to result in significant increases in U.S. imports.³⁹ But U.S. exports of APC products face tariffs as high as 26% among major environmental goods traders.⁴⁰ The EGA may result, however, in an overall increase in the adaptation of environmentally beneficial technology in the United States. Controlling and reducing air pollution can have significant positive public health, environmental and economic benefits.

Research over many decades has established links between air quality and health.⁴¹ A recent

³⁹ U.S. International Trade Commission (USITC) Interactive Tariff and Trade DataWeb (DataWeb)/U.S. Department of Commerce (USDOC), <http://dataweb.usitc.gov>.

⁴⁰ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁴¹ See, for example, Pope, C. Arden. 1989. Respiratory disease associated with community air pollution and a steel mill, Utah Valley. *American Journal of Public Health* 79(5): 623-628; Chay, Kenneth Y., and Michael Greenstone. 2003. The impact of air pollution on infant mortality: evidence from geographic variation in pollution shocks induced by a recession. *Quarterly Journal of Economics* 118(3): 1121-1167; and Currie, Janet, and Matthew Neidell. 2005. Air pollution and infant health: what can we learn from California's recent experience? *Quarterly Journal of Economics* 120(3): 1003-1030.

study concluded that reductions in particulate matter 2.5 (PM 2.5) in the southwest United States correlated with children having significantly fewer respiratory symptoms and thus fewer health issues.⁴² In another example, controlling power plant emissions in other states was shown to result in improved downwind air quality in Maryland.⁴³ A 2011 study by the U.S. Environmental Protection Agency (EPA) found that improved air quality, particularly of PM 2.5 particles and ozone, yielded significantly lower risks of premature death and other serious health effects, as well as reduced damage to the natural environment. This included less damage to forests, water resources, and agricultural crops and timber, as well as improved air quality at Federal and state parks.⁴⁴ When air quality improves, the resulting health and other environmental benefits translate to significant economic benefits. For example, the EPA estimates that the economic value of air quality improvements associated with the 1990 Clean Air Act Amendments will reach almost \$2 trillion just for the year 2020.⁴⁵

U.S. exports of APC products are expected to increase under the EGA, due to anticipated increased access to key markets. Adverse environmental impacts associated with increased U.S. exports of APC products would principally result from increased manufacturing and transportation emissions. However, any such environmental effects would likely be more than offset through improved air pollution control worldwide and the reduction of cross border pollution in the United States from foreign economies.

Increased U.S. exports of APC products may help in reducing premature deaths due to air pollution. A recent study by the World Bank estimates that 5.5 million lives were lost in 2013 to diseases associated with outdoor and household air pollution, costing the global economy more than \$5 trillion in welfare losses.⁴⁶ Air pollution in other countries can cause such damages in the United States; one recent study suggests that transport of ozone pollution (also known as smog) and its precursors have hampered the ability of western U.S. cities to achieve ozone reductions required by federal, state and local air quality policies.⁴⁷ Thus, U.S. exports of APC technologies that improve air quality outside of the United States may even improve U.S. domestic air quality.

APC products may also be used to reduce air pollution resulting from maritime pollution, either from ships' engines or from port activities. According to one estimate, maritime emissions may

⁴² Science Daily, "Southern California's Reduction in Smog Linked to Major Improvement in Children's Health," April 12, 2016. <https://www.sciencedaily.com/releases/2016/04/160412160352.htm>.

⁴³ Science Daily, "Air Pollutions Control Policies Effective in Improving Downwind Air Quality," December 9, 2015, <https://www.sciencedaily.com/releases/2015/12/151209090515.htm>.

⁴⁴ U.S. Environmental Protection Agency, "Progress Cleaning the Air and Improving People's Health," undated, <https://www.epa.gov/clean-air-act-overview/progress-cleaning-air-and-improving-peoples-health#enviro>.

⁴⁵ U.S. Environmental Protection Agency. 2011. The Benefits and Costs of the Clean Air Act from 1990 to 2020. Washington, DC. https://www.epa.gov/sites/production/files/2015-07/documents/fullreport_rev_a.pdf.

⁴⁶ "World Bank; Institute for Health Metrics and Evaluation. 2016. *The Cost of Air Pollution: Strengthening the Economic Case for Action*. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/25013> License: CC BY 3.0 IGO."

⁴⁷ Verstrateten, Willem W., Jessica L. Neu, Jason E. Williams, Kevin W. Bowman, John R. Worden, and K. Folkert Boersma. 2015. Rapid increases in tropospheric ozone production and export from China. *Nature Geoscience* 8: 690-695.

account for 17 percent of total greenhouse gases (GHGs) by 2050.⁴⁸ APC products such as sulfur scrubbing systems used on ships will greatly reduce sulfur oxide emissions from ships' engines.

U.S. imports of APC products totaled almost \$22.8 billion in 2015, almost 64 percent of which entered duty free. In 2015, EGA participants accounted for \$16.8 billion (74 percent) of total U.S. imports of APC products, of which 46 percent were dutiable imports with a trade-weighted average tariff rate of 2.1 percent. The European Union was the largest EGA supplier of APC products to the United States, followed by China, Japan, and Canada.

U.S. exports of APC products totaled \$19.8 billion in 2015, of which \$11.5 billion (58 percent) went to EGA participants. The two largest export markets with which the United States does not currently have a free trade agreement are the EU and China.⁴⁹ Global exports of APC products were \$132.5 billion in 2015.

Cleaner and Renewable Energy

Cleaner and renewable energy products (CRE) are those used in the production of zero-carbon or low-carbon energy. These include a wide range of technologies, including wind turbines, solar panels, biogas engines, and steam turbines for biomass and geothermal energy.

U.S. tariffs on CRE products are already low or zero, but can be as high as 20% among major environmental goods traders.⁵⁰ Eliminating tariffs on cleaner and renewable energy technologies is expected to have a positive impact on environmental quality. Renewable energy plays a crucial role in reducing emissions from electricity generation. Removing tariffs on these technologies will help reduce their cost, increase their deployment, drive economies of scale and spur innovation in the clean and renewable energy sector. Growth in global markets is expected to help spread the research and development risk for cutting-edge energy technologies.

Wind turbines and solar modules, for example, can reduce air pollution as compared to other energy sources and have lower lifecycle greenhouse gas emissions than the products that they would replace.⁵¹ One study found that tariff elimination on renewable energy products could

⁴⁸ European Parliament, Directorate General For Internal Policies Policy Department A: Economic And Scientific Policy, *Emission Reduction Targets for International Aviation and Shipping*, IP/A/ENVI/2015-11, November 2015, 9. [http://www.europarl.europa.eu/RegData/etudes/STUD/2015/569964/IPOL_STU\(2015\)569964_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2015/569964/IPOL_STU(2015)569964_EN.pdf).

⁴⁹ The EU tariff rates are from 2015 and the China tariff rates are from 2014. WTO Tariff Download Facility, <http://tariffdata.wto.org/>.

⁵⁰ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁵¹ Jacobson, D. and C. High, *Wind Energy and Air Emission Reduction Benefits: A Primer*, National Renewable Energy Lab, NREL/SR-500-42616, February 2008, 4–5, http://apps2.eere.energy.gov/wind/windexchange/pdfs/policy/wind_air_emissions.pdf; Nugent, Daniel and Benjamin K. Sovacool, "Assessing the Lifecycle Greenhouse Gas Emissions from Solar PV and Wind Energy: A Critical Meta-survey," *Energy Policy* 65 (2014), 241; Skone, Timothy J., "Life Cycle Greenhouse Gas Emissions: Natural Gas and Power Production," 2015 EIA Energy Conference, Washington, D.C., June 15, 2015, 17, <https://www.eia.gov/conference/2015/pdf/presentations/skone.pdf>.

lead to carbon emissions reductions in countries of up to 2.4 percent.⁵²

The increased trade of these products might lead to some adverse environmental impacts from increased manufacturing, installation and transportation. Transportation, for example, accounts for about 12 percent (based on the average estimate) of lifecycle wind turbine greenhouse gas emissions.⁵³ However, any increase in trade would be small compared to the size of overall U.S. and global trade, and therefore is not likely to result in a significant adverse impact on the environment.⁵⁴

U.S. exports of CRE products totaled \$38.5 billion in 2015, of which 24 percent went to EGA participants with which the United States does not currently have a free trade agreement in force.⁵⁵ The two largest export markets with which the United States does not currently have a free trade agreement are China and Chinese Taipei.⁵⁶ One study found that the impact of eliminating tariffs on U.S. exports of renewable energy equipment could result in an increase of such exports as high as 6.2 percent, depending on the product.⁵⁷

U.S. imports of CRE products totaled \$42.3 billion in 2015, 65 percent of which entered duty free. The impact of tariff elimination on U.S. imports of CRE products would likely be limited due to low U.S. tariffs and prior tariff elimination under existing free trade agreements. One study found that eliminating tariffs on renewable energy equipment would lead to an increase in imports of four percent or less, depending on the type of equipment.⁵⁸

⁵² Jha, Veena, *Removing Trade Barriers on Selected Renewable Energy Products in the Context of Energy Sector Reforms: Modeling the Environmental and Economic Impacts in a General Equilibrium Framework*, International Centre for Trade and Sustainable Development, October 2013, 20, <http://www.ictsd.org/downloads/2013/12/removing-trade-barriers-on-selected-renewable-energy-products-in-the-context-of-energy-sector-reforms.pdf>.

⁵³ Nugent, Daniel and Benjamin K. Sovacool, "Assessing the Lifecycle Greenhouse Gas Emissions from Solar PV and Wind Energy: A Critical Meta-survey," *Energy Policy* 65 (2014), 237.

⁵⁴ For example, the predicted increase in U.S. imports of CRE products in the study by Jha would be a small value in comparison to all U.S. imports. Jha, Veena, *Removing Trade Barriers on Selected Renewable Energy Products in the Context of Energy Sector Reforms: Modeling the Environmental and Economic Impacts in a General Equilibrium Framework*, International Centre for Trade and Sustainable Development, October 2013, 19, <http://www.ictsd.org/downloads/2013/12/removing-trade-barriers-on-selected-renewable-energy-products-in-the-context-of-energy-sector-reforms.pdf>.

⁵⁵ Includes Japan and New Zealand, which are participants in the Trans-Pacific Partnership (TPP) Agreement. U.S. International Trade Commission (USITC) Interactive Tariff and Trade DataWeb (DataWeb)/U.S. Department of Commerce (USDOC), <http://dataweb.usitc.gov>.

⁵⁶ WTO Tariff Download Facility, <http://tariffdata.wto.org>.

⁵⁷ Based on the categories used above by Jha, the analysis indicated that U.S. exports in the first category would decrease by less than 1 percent, exports in the second category would increase by 6 percent, and exports in the third category would increase by 4 percent. Jha, Veena, *Removing Trade Barriers on Selected Renewable Energy Products in the Context of Energy Sector Reforms: Modeling the Environmental and Economic Impacts in a General Equilibrium Framework*, International Centre for Trade and Sustainable Development, October 2013, 2, 19, <http://www.ictsd.org/downloads/2013/12/removing-trade-barriers-on-selected-renewable-energy-products-in-the-context-of-energy-sector-reforms.pdf>.

⁵⁸ The study looked at three categories of goods, some of which are not included in the list of goods analyzed here. The first category included solar and hydroelectric equipment and ethanol, the second category included wind turbines, and the third category parts of wind turbines. The analysis indicated that U.S. imports in the first category

Trade in CRE products would likely increase under the EGA. One study, for example, found that tariff elimination would lead to a seven percent (\$5.7 billion) increase in Chinese exports of CRE products.⁵⁹ Other studies have similarly pointed to increases in trade due to the elimination of tariffs on CRE products.⁶⁰

Energy Efficiency

Energy efficient (EE) products are those that perform existing processes, including the full range of industrial or household processes, while consuming less energy than current standards or enable reduced energy consumption. These include items like light emitting diodes (LED) lamps, auto-regulating thermostats, and controlling instruments.

U.S. tariffs on EE products are already low or zero, but can be as high as 30% among major environmental goods traders.⁶¹ Eliminating tariffs on EE products is expected to have a positive impact on environmental quality. EE products contribute to energy efficiency and environmental benefits in sectors ranging from electricity generation, transmission and distribution; construction of residential and commercial buildings; and manufacturing.⁶² A landmark McKinsey report noted that deploying energy efficiency technology and practices could curb global electricity demand growth by up to 50 percent, as well as eliminate the need to build costly new capacity, which would reduce carbon emissions growth.⁶³

In 2015, total U.S. imports of EE products were \$89.9 billion. Only \$27.4 billion (30 percent) of those imports were subject to import tariffs. Any increase in U.S. imports as a result of EGA tariff elimination would likely be limited because of these relatively low tariffs and high levels of

would increase by less than 1 percent, imports in the second category would increase by 4 percent, and imports in the third category would increase by 2 percent. Jha, Veena, *Removing Trade Barriers on Selected Renewable Energy Products in the Context of Energy Sector Reforms: Modeling the Environmental and Economic Impacts in a General Equilibrium Framework*, International Centre for Trade and Sustainable Development, October 2013, 4, 19, <http://www.ictsd.org/downloads/2013/12/removing-trade-barriers-on-selected-renewable-energy-products-in-the-context-of-energy-sector-reforms.pdf>.

⁵⁹ The list of CRE products used by this study varies from the list used here. Trade Partnership Worldwide LLC, *Value of the Environmental Goods Agreement*, 2016, 17, [https://www.uschina.org/sites/default/files/Value%20of%20the%20Environmental%20Goods%20Agreement%20on%20China%20\(English\).pdf](https://www.uschina.org/sites/default/files/Value%20of%20the%20Environmental%20Goods%20Agreement%20on%20China%20(English).pdf).

⁶⁰ Yong Zhao, Lili Wang, and Yihua Yu, "Trade Liberalization and China's Exports of Renewable Energy Products: Evidence from Product Level Data," *Emerging Markets Finance & Trade*, 2016 (52), 1281, 1287.; IBRD, *The World Bank, International Trade and Climate Change*, 2008, 52–53, <http://unstats.un.org/unsd/tradekb/Attachment69.aspx?AttachmentType=1>; Jha, Veena, *Removing Trade Barriers on Selected Renewable Energy Products in the Context of Energy Sector Reforms: Modeling the Environmental and Economic Impacts in a General Equilibrium Framework*, International Centre for Trade and Sustainable Development, October 2013, 19, <http://www.ictsd.org/downloads/2013/12/removing-trade-barriers-on-selected-renewable-energy-products-in-the-context-of-energy-sector-reforms.pdf>.

⁶¹ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁶² Sugathan, "Addressing Energy Efficiency Products in the Environmental Goods Agreement," x.

⁶³ See <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/curbing-global-energy-demand-growth>.

duty free imports.

U.S. exports of EE products totaled \$29.2 billion in 2015. Of those EGA participants with which the United States does not have a free trade agreement, China, New Zealand, and Chinese Taipei had the highest average tariff rates on EE products.⁶⁴ Therefore, U.S. exports of EE goods would be expected to increase primarily to those markets as a result of the EGA. Conversely, EGA participants with free trade agreements with the United States, or participating economies that do not have tariffs on EE products, would likely not experience increased imports from the United States as a result of the EGA.⁶⁵

EGA participants comprised the majority of global trade in EE products in 2015, accounting for 79 percent of imports and 87 percent of exports. Trade in EE products would likely increase under the EGA. For example, one study estimated that China would increase exports of EE products by 9 percent (\$7.3 billion) as a result of EGA tariff elimination.⁶⁶

Environmental Monitoring, Analysis, and Assessment

Environmental monitoring, analysis, and assessment (EMAA) products include all technologies used in pollutant monitoring and analysis, including in the air, water, and soil, as well as the act of measuring associated pollutants. These include certain surveying instruments and appliances, thermometers, and certain other instruments associated with gathering meteorological data.

U.S. tariffs on EMAA products are already low or zero, but can be as high as 18% among major environmental goods traders.⁶⁷ Eliminating tariffs on EMAA products is expected to have positive environmental impacts. EMAA products contribute significantly to data regarding temperature, weather patterns, and oceans, for example.⁶⁸ Monitoring and analyzing the environment allows businesses and communities to benchmark current environmental quality levels, and set and meet quantifiable environmental goals. Thus, the proliferation of environmental monitoring, analysis and assessment equipment through tariff elimination is expected to improve environmental quality, by facilitating the elimination of harmful emissions and the implementation of efficient processes and technologies.

The elimination of tariffs on EMAA products is not likely to lead to significant increases in U.S. imports since tariffs on these goods already are low. Duty elimination in the United States and other EGA participants is likely to lead to greater production and hence transportation of these goods in the United States and abroad. This increased production and transportation could have some adverse environmental impacts, but on balance the benefits of lower costs for and greater access to these goods would likely outweigh any such effects.

⁶⁴ WTO, Integrated Database (IDB), <http://tariffdata.wto.org/>.

⁶⁵ Hong Kong, China; Japan, Norway, and Switzerland apply 0 percent average ad valorem tariffs on EE goods.

⁶⁶ Trade Partnership Worldwide, "Value of the Environmental Goods Agreement," 17

[https://www.uschina.org/sites/default/files/Value%20of%20the%20Environmental%20Goods%20Agreement%20on%20China%20\(English\).pdf](https://www.uschina.org/sites/default/files/Value%20of%20the%20Environmental%20Goods%20Agreement%20on%20China%20(English).pdf).

⁶⁷ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁶⁸ Studies indicating the value of EMAA products to society are not readily available.

Tariff elimination on EMAA products would also mean a cost savings to laboratories conducting research related to environmental science, including small labs. Many such labs, especially in academia, have constrained budgets and receive most of their funding through grants, so cost savings on equipment may be an important factor for their research.⁶⁹

U.S. imports of EMAA products totaled almost \$3.9 billion in 2015, 42 percent of which entered duty free. In 2015, EGA participants accounted for \$3.2 billion (83 percent) of total U.S. imports of EMAA products and 60 percent of dutiable imports. The European Union was the largest EGA supplier of EMAA products to the United States, followed by Canada, China, and Japan.

U.S. exports of EMAA products totaled \$5.3 billion in 2015, of which \$3.7 billion (68 percent) went to EGA participants. The two largest exports markets with which the United States does not currently have a free trade agreement are the European Union and China.⁷⁰

Environmental Remediation and Clean-Up

Environmental remediation and cleanup (ERC) products are used for mitigating existing environmental pollution, including the removal or containment of harmful substances. These include substances in the soil, surface water, and ground water. Examples include soil reclamation systems, thermal desorbers and oil skimmers.

U.S. tariffs on ERC products are already low or zero, but can be as high as 14% among major environmental goods traders.⁷¹ Eliminating tariffs on ERC technologies is expected to have direct, positive benefits on environmental quality. These technologies substantially impact environmental health, and are designed to reduce or remove a wide range of pollutants, from hydrocarbons to heavy metals and other toxic chemicals.

Imports of ERC products by EGA participants would likely increase if tariffs on these goods are eliminated, leading to greater use of these products. For example, sales of containment booms and oil skimmers, which prevent oil spills from expanding in open waters by localizing oil and other debris to a confined space for removal, could expand with the elimination of boom tariffs for EGA participants with significant offshore oil extraction.

Another type of ERC product is whale detection buoys. Increased use of these buoys could reduce collisions between marine vessels and whales. Between 2008 and 2010, there were at least 30 reported accidental collisions between various types of vessels and whales.⁷² As a result

⁶⁹ Ozel, Chad. "What Does It Cost to Run a Small College Lab?," Uncertain Principles blog, August 16, 2011. <http://scienceblogs.com/principles/2011/08/16/what-does-it-cost-to-run-a-sma/>.

⁷⁰ The EU tariff rates are from 2015 and the China tariff rates are from 2014. WTO Tariff Download Facility, <http://tariffdata.wto.org/>.

⁷¹ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁷² International Whaling Convention. Summary of Reported Whale Collisions 1877-2010, <https://iwc.int/index.php?cID=872&cType=document>.

of collisions like these, whale detection buoys have been used in the port of Boston to prevent shipping vessels from colliding with critically endangered North Atlantic right whales and their use has been expanded to Florida and Georgia. British Columbia, a so-called “bottleneck” that experiences both significant whale migratory patterns and shipping traffic, is a potential future location for whale detection buoys.⁷³ The expansion of whale detection buoys in bottlenecks in the Atlantic and Pacific Oceans (and increasingly the Arctic as the area emerges as a future shipping route⁷⁴) could reduce the economic cost and loss of marine biodiversity from accidental vessel collisions.

The United States imported \$433.2 million of ERC products in 2015, and approximately 87 percent of U.S. ERC imports (\$378.3 million) originated from EGA participants. The majority of U.S. ERC imports come from the European Union.

The United States exported \$427.1 million of ERC products in 2015. Of this total, 69 percent were exported to EGA participants, particularly Canada, the European Union, and Korea. Several EGA economies maintain tariffs on ERC products, some of which run as high as 10%.

Environmentally Preferable Products

Environmentally preferable products (EPPs) are those that are widely recognized to have lower environmental impacts than like products with a similar function. These include a wide range of technologies and consumer goods with environmentally beneficial attributes, such as clean cook stoves (which reduce indoor air pollution), wind-powered pumps, circle hooks, and turtle excluder devices (which help to prevent sea turtle bycatch in the fishing industry), among others.

U.S. tariffs on EPP products are already low or zero, but can be as high as 35% among major environmental goods traders.⁷⁵ Eliminating tariffs on EPPs is expected to have environmental benefits in a range of areas, as EPPs are designed to replace and improve upon less environmentally-beneficial products. The elimination of EPP tariffs should lead to increased exports of EPPs by the United States and other economies, even as low domestic tariffs make it less likely that significant U.S. imports shifts will occur. For example, increased trade in EPP items, such as solar cooking stoves and solar water heaters, could reduce emissions by shifting energy consumption from petroleum products and other non-renewable energy sources to solar energy.

The United States imported \$2.4 billion of EPPs in 2015. Approximately 70 percent of U.S. imports of EPP products originated in EGA participants, the majority of which came from China. The United States maintains low or no tariffs on most EPP items.⁷⁶

⁷³ Williams, Rob and Patrick O’Hara. “Modelling Ship Strike Risk to Fin, Humpback and Killer Whales in British Columbia, Canada,” Marine Mammal Research Unit, University of British Columbia, 2009, 1.

⁷⁴ Hartsig, Andrew, Ivy Fredrickson, Carmen Yeung, and Stan Senner. “Arctic Bottleneck: Protecting the Bering Strait Region from Increased Vessel Traffic,” *Ocean and Coastal Law Journal*, Vol. 18:1, 2012, 35-37.

⁷⁵ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁷⁶ Other EPP products subject to U.S. duties are fish hooks (4-4.8 percent) and some luggage frames (2.5 percent).

The United States exported \$1.3 billion of EPPs in 2015, with 60 percent of EPP exports destined for EGA participants and 26 percent exported to EGA participants with which the United States does not have a free trade agreement. Canada and the European Union represented the largest export markets for U.S. EPP goods.

Noise and Vibration Abatement

Noise and vibration abatement (NVA) products reduce or eliminate noise in commercial, household, or transportation settings, and mitigate or eliminate potentially harmful vibrations in industrial applications. These technologies include sound insulation materials, industrial mufflers and vibrometers.

U.S. tariffs on NVA products are already low or zero, but can be as high as 14% among major environmental goods traders.⁷⁷ The potential increased use of NVA products due to the elimination of tariffs is likely to have positive environmental impacts. Excess noise is a factor in adverse health and quality of life issues. A recent report estimated that in 2013, 104 million individuals in the United States annually experienced a continuous average exposure level of greater than 70 decibels over a 24 hour period and were thus at risk of noise-induced hearing loss.⁷⁸ Noise exposure may result in a variety of negative health issues, which may be acute, chronic, and/or long-term effects and risks.⁷⁹ In 2014, the most recent year for which data are available, the United States had 20.9 million cases of hearing loss, with 13.7 million cases in goods-producing manufacturing industries.⁸⁰ Reduced noise levels from the increased use of NVA noise abatement products, such as industrial mufflers and silencers for industrial machinery, are expected to have benefits that outweigh any potential negative environmental impacts resulting from increased production and transportation of these products.⁸¹

Increased trade in vibration abatement products also is likely to lead to more efficient use of energy and less unscheduled machine maintenance and downtime. Major vibration abatement products include mechanical balancing machines that balance loads on rotating shafts and motor

⁷⁷ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁷⁸ The Environmental Protection Agency recommends a level of 55 A-weighted decibels to protect in residential areas and another exposure limit of 70 decibels to prevent hearing loss. Hammer, Monica S.; Swinburn, Tracy K.; and Neitzel, Richard L., "Environmental Noise Pollution in the United States: Developing an Effective Public Health Response," *Environmental Health Perspectives*, Vol. 122, No. 2, February 2014, 115–119, <http://ehp.niehs.nih.gov/>.

⁷⁹ Noise exposure generates in people acute adverse effects such as decreased sleep quality and quantity; increased annoyance, stress, and distraction; and temporary change in hearing. Chronic adverse effects included hypertension; reduced learning and productivity; and endocrine disruption. Other research indicates a connection of noise with diabetes and possibly individual's weight gain. Long term risks include heart disease and permanent hearing loss and tinnitus. Hammer, Monica S.; Swinburn, Tracy K.; and Neitzel, Richard L., "Environmental Noise Pollution in the United States: Developing an Effective Public Health Response," *Environmental Health Perspectives*, Vol. 122, No. 2, February 2014, 115–119. <http://ehp.niehs.nih.gov/>. Nicole, Wendee, "Noise and Body Fat Uncovering New Connections," *Environmental Health Perspectives*, Vol. 124, No. 3, March 2016, A 57. <http://ehp.niehs.nih.gov/>.

⁸⁰ Bureau of Labor Statistics, U.S. Department of Labor, "Employer-Reported Workplace Injuries and Illnesses – 2014," News Release USDL-15-2086, table 6b. <http://www.bls.gov/iif/oshsum.htm>.

⁸¹ Data on the economic costs of noise, including hearing loss, are not readily available.

vehicle wheels. Increased use of vibration abatement products would generate environmental benefits by detecting aberrant vibrations and noise in machinery using rotary shafts, leading to increased maintenance such that machine failure is averted and costly repairs are minimized.⁸² Further, machines that function properly use less energy. Vibration detection and balancing is used on machines with rotary shafts such as turbines, wind turbines, motors, compressors, pumps, and turbochargers in a variety of industries. For trucks, wheel balancing leads to improved operation that results in decreased fuel consumption, generating positive environmental effects. In the U.S. trucking industry, balancing tires results in estimated fuel savings of 2 to 3 percent.⁸³

U.S. imports of NVA products totaled almost \$1.9 billion in 2015, 24 percent of which entered duty free. The European Union was the largest EGA supplier of NVA products to the United States, followed by Canada, China, and Japan.

U.S. exports of NVA products totaled \$1.9 billion in 2015, of which \$1.4 billion (72 percent) went to EGA participants. Exports of these products to EGA participants with which the United States currently does not have a free trade agreement in force totaled \$1 billion.⁸⁴ The leading U.S. export markets for these products include the European Union, China, Japan, and Chinese Taipei.⁸⁵

Solid and Hazardous Waste Management

Solid and hazardous waste management (SHWM) products are designed to handle waste in an environmentally responsible manner and/or support sustainable materials management (e.g., recycling, composting, and waste-to-energy). Examples of these technologies include waste sorting machinery, composting equipment, and waste-to-energy systems.

U.S. tariffs on SHWM products are already low or zero, but can be as high as 16% among major environmental goods traders.⁸⁶ Eliminating tariffs on SWHM products is expected to have direct benefits for environmental protection. These technologies are designed to prevent waste from harming the environment by enabling its reuse, through compost, or by extracting value through combustion (i.e., waste-to-energy). With solid waste generation increasing at an alarming rate (by one estimate, the world will be generating 11 million tons of waste each day by 2100,⁸⁷)

⁸² National Instruments, Inc., “Machine Condition Monitoring Technical Library,” March 29, 2016.

<http://www.ni.com/white-paper/6511/en/>.

⁸³ Park, Jim, “Improve Fuel Efficiency by Maximizing Tire Life,” Truckinginfo.com, June 2016.

<http://www.truckinginfo.com/channel/fuel-smarts/article/story/2016/06/improve-fuel-efficiency-by-maximizing-tire-life.aspx>.

⁸⁴ Includes Japan and New Zealand, which are participants in the Trans-Pacific Partnership (TPP) Agreement.

⁸⁵ Chinese Taipei, EU, and Japan tariff rates are from 2015 and China tariff rates are from 2014. WTO Tariff Download Facility, <http://tariffdata.wto.org/>.

⁸⁶ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁸⁷ Hoornweg, D., P. Bhada-Tata, & C. Kennedy (2013), “Environment: Waste Production Must Peak This Century,” *Nature*, 502, 615–617, <http://www.nature.com/news/environment-waste-production-must-peak-this-century-1.14032>.

better access to these technologies will help address this urgent environmental issue.

The two primary methods to manage waste in an environmentally friendly way are recycling and waste-to-energy processes. Recycling is useful in reducing the environmental impact of waste by reusing the raw materials that otherwise would be discarded. If new products can be created by reusing existing products, natural resources are conserved, pollution tied to collecting additional resources is limited, and energy is saved.⁸⁸ Under the EGA, certain products which make recycling efficient are grouped within the SHWM category and include machinery designed for “mixing, kneading, crushing, grinding, screening, sifting, homogenizing, emulsifying, and stirring.”⁸⁹ Removal of tariffs on these products under EGA would not likely impact U.S. imports because U.S. tariffs are already zero, but should facilitate access to these goods in other markets.

In addition to recycling, waste can be repurposed into energy using three primary techniques: pyrolysis and gasification, incineration, or sanitary landfills. Within the EGA, SHWM environmental products are crucial to these methods and include goods such as pyrolysis waste disposal systems, waste incinerators and melting furnaces, and fluidized bed combustors.⁹⁰

Eliminating tariffs on SHWM goods is likely to increase access for users in additional economies to newer, more environmentally-friendly solid waste management alternatives, such as recycling and gasification, for dealing with solid waste and hazardous materials, leading to significant environmental benefits.

In 2015, total U.S. imports for consumption of SHWM products were \$4.9 billion, of which \$1.2 billion (27 percent) were subject to tariffs. The average weighted tariff in the United States of dutiable items was 3 percent.⁹¹ As tariffs are relatively low, EGA liberalization would likely have only a modest effect on U.S. imports.

U.S. exports of SHWM products totaled \$4.2 billion in 2015. Of total exports, 60 percent (\$2.5 billion) went to EGA participants. Canada, the European Union, and China were the largest EGA participating markets for U.S. exports of SHWM products.⁹²

Wastewater Management and Water Treatment

Wastewater management and water treatment (WMWT) technologies are used to reduce or remove pollutants or other hazardous materials from wastewater, as well as treat water to return it to a usable or potable state. These include reverse osmosis systems, UV disinfection equipment, sludge dryers, and many other products.

⁸⁸ U.S. Environmental Protection Agency, “Recycling Basics,” <https://www.epa.gov/recycle/recycling-basics>.

⁸⁹ HS847982, Harmonized Tariff Schedule of the United States (2016) – Supplement 1, XVI, 24-99; European Commission, “Trade Sustainability Impact Assessment on the Environmental Goods Agreement,” Development Solutions, March 2016, 154.

⁹⁰ HS841989, Harmonized Tariff Schedule of the United States (2016) – Supplement 1, XVI, 84-32.

⁹¹ U.S. International Trade Commission (USITC) Interactive Tariff and Trade DataWeb (DataWeb)/U.S. Department of Commerce (USDOC), <http://dataweb.usitc.gov>.

⁹² GTIS, Global Trade Access (GTA) database.

WMWT equipment enables the delivery of safe drinking water and the treatment of wastewater before its release into the environment. Factors such as population growth, urbanization, and industrialization are resulting in higher demand for clean drinking water, greater strain on limited freshwater resources, and more potential pollution from wastewater discharges. WMWT products address a number of these challenges by enabling the more efficient use of water, treatment of water for consumption, desalination of seawater, and treatment of wastewater for reuse or prior to release into the environment.⁹³

U.S. tariffs on WMWT products are already low or zero, but can be as high as 20% among major environmental goods traders.⁹⁴ Eliminating tariffs is expected to make these technologies more widely available, and thereby help address these environmental issues. Access to potable water remains a critical issue worldwide, with one in ten people lacking access to safe water. Greater access to wastewater management and water treatment technologies will enable wider adoption of these products, as well as more sophisticated management of water in EGA participating economies.

The increased trade of these products could potentially lead to some adverse environmental impacts, primarily from increased transportation. However, such impacts, if any, would be substantially outweighed by the benefits of increased deployment of these products. Further, the WMWT sector includes ballast water treatment technologies, which help reduce the negative environmental impacts of ballast water discharge.⁹⁵

U.S. imports of WMWT equipment totaled \$34.4 billion in 2015 and 70 percent of imports entered duty free.⁹⁶ Due to the large share of products that currently enter the United States duty free and the low tariff rates on dutiable items, the impact on U.S. trade from eliminating tariffs would likely be small.

U.S. exports of WMWT equipment totaled \$29 billion in 2015, of which 35 percent went to EGA partners with which the United States does not have a free trade agreement. The European Union was the largest export destination overall, while China was the fourth largest overall and

⁹³ David, Andrew and Mihir Torsekar, *U.S. Exports of Water Filtration and Purification Equipment Show Significant Growth*, USITC Executive Briefings on Trade, September 2012, https://www.usitc.gov/publications/332/WaterFiltration9_17_12.pdf.

⁹⁴ WTO (<http://tariffdata.wto.org/Default.aspx?culture=en-US>)

⁹⁵ Ballast water in ships often contains biological organisms. Unless properly treated, ballast water discharged at ports can introduce invasive species that cause environmental damage. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Ballast Water – A Pathway for Aquatic Invasive Species*, undated, http://www.habitat.noaa.gov/pdf/best_management_practices/fact_sheets/Ballast%20Water%20Factsheet.pdf; U.S. Department of the Interior, U.S. Geological Survey Website, “USGS Targets Tiny Stowaways in Ships’ Ballast Water,” https://www2.usgs.gov/blogs/features/usgs_top_story/usgs-targets-tiny-stowaways-in-ships-ballast-water/.

⁹⁶ U.S. International Trade Commission (USITC) Interactive Tariff and Trade DataWeb (DataWeb)/U.S. Department of Commerce (USDOC), <http://dataweb.usitc.gov>.

second largest non-free trade agreement partner.⁹⁷

Trade in WMWT equipment would likely increase under the EGA. One study found that free trade agreements, WTO participation by both trade partners, and lower tariffs by exporters all resulted in greater trade of WMWT products, though lower tariffs by importers were not correlated with higher imports.⁹⁸

C. Transboundary and Global Issues

As noted above, the focus of this interim environmental review is on the potential environmental impacts of expected economic changes in the United States that are attributable to the EGA. However, the Administration is also considering the potential environmental impacts of the EGA in other EGA participating economies as part of this review.

As also noted, while the final list of environmental goods remains to be negotiated, the EGA is expected to encompass a range of products across ten broad environmental categories. As discussed in Section B above, it is anticipated that the elimination of tariffs on these products will reduce their cost, thereby facilitating greater access to, and the deployment and use of, these environmentally-beneficial products, which, in turn, is expected to have positive impacts on the environment. As noted in the prior section, while there may be some adverse impacts as a result of increased production and trade in these goods, it is anticipated that any such impacts would be relatively minor and outweighed by the benefits resulting from greater use of environmental technologies.

Additionally, as discussed in Section III.C below, the authority of regulatory agencies in other EGA participants to regulate potential environmental impacts associated with these goods would not be limited or adversely affected under the EGA. Indeed, as noted by the OECD, trade liberalization and the resulting increase in international trade flows may also encourage and facilitate efforts by some economies to improve their environmental rules to meet international standards.⁹⁹

Also as noted in Section B, Canada and the European Union are assessing the potential environmental impacts of the EGA and have preliminarily concluded that the EGA is not likely to result in significant adverse environmental impacts. Canada's interim assessment anticipates that the EGA would have an overall positive effect for the environment. The European Commission's Trade Sustainability Impact Assessment on the Environmental Goods Agreement concludes that the EGA will contribute to environmental protection, green growth, and sustainable development.

⁹⁷ U.S. International Trade Commission (USITC) Interactive Tariff and Trade DataWeb (DataWeb)/U.S. Department of Commerce (USDOC), <http://dataweb.usitc.gov>.

⁹⁸ Qi He, Hong Fang, Miao Wang and Bo Peng, "Trade Liberalization and Trade Performance of Environmental Goods: Evidence from Asia-Pacific Economic Cooperation Members," *Applied Economics*, 47:29 (2015), 3030–3032.

⁹⁹ Potier, M. and C. Tébar Less (2008), "Trade and Environment at the OECD: Key Issues since 1991", *OECD Trade and Environment Working Papers*, 2008/01, OECD Publishing, at 13, <http://dx.doi.org/10.1787/235751371440>.

Accordingly, for these reasons, the Administration does not anticipate that the EGA will result in significant adverse global and transboundary impacts.

The Administration welcomes comments on these preliminary findings.

D. Potential Regulatory Impacts

Since the scope of the EGA is limited to the elimination of import tariffs on specified products, the EGA will not require or impact regulatory changes, nor will it mandate the use of certain environmental technologies over others. The EGA seeks to cover a broad range of environmental technology solutions, and to liberalize trade across these technologies, in order to increase technology options for consumers, environmental regulators and businesses in the United States and abroad.

Consistent with Executive Order 13141 and its Guidelines, this review includes consideration of the extent to which the EGA might affect U.S. environmental laws, regulations, policies, and international commitments. U.S. negotiators are committed to preserving the U.S. government's ability to maintain strong environmental laws and regulations, and an effective process for enforcing them.

Accordingly, the Administration does not expect that the EGA would have a negative impact on the ability of U.S. government authorities, including state, local and tribal authorities, to maintain or enforce U.S. environmental laws and regulations, or to meet U.S. international commitments.

The Administration welcomes comments on this preliminary finding.

Annex I

Organizations and Individuals Providing Comments

- People with Bikes
- Sierra Club
- Kermit Kubitz
- Susan Zipser

Annex II

Data Tables

Table 1: U.S. domestic exports and imports for consumption by product category, 2012–2015 (million dollars)

Product category	2012	2013	2014	2015	Change. 2012–2015	
					Absolute	Percent
U.S. domestic exports:						
Air pollution control	18,487	19,584	20,748	19,846	1,360	7.4
Cleaner and renewable energy	35,883	35,753	39,324	38,474	2,590	7.2
Energy efficiency	28,048	28,303	28,950	29,224	1,176	4.2
Environmental monitoring, analysis and assessment	6,647	6,449	6,058	5,348	-1,299	-19.5
Environmental remediation and clean-up	413	434	483	427	14	3.4
Environmentally-preferable products	1,156	1,281	1,328	1,332	175	15.1
Noise and vibration abatement	1,916	1,944	2,197	1,941	25	1.3
Solid and hazardous waste management	4,757	4,628	4,489	4,227	-530	-11.1
Wastewater management and water treatment	28,653	30,192	31,692	29,008	355	1.2
Total	125,961	128,568	135,268	129,826	3,866	3.1
U.S. imports for consumption:						
Air pollution control	19,921	20,558	22,668	22,807	2,886	14.5
Cleaner and renewable energy	42,073	35,617	40,963	42,277	204	0.5
Energy efficiency	67,918	73,146	81,451	89,903	21,985	32.4
Environmental monitoring, analysis and assessment	3,840	3,803	3,971	3,853	13	0.3
Environmental remediation and clean-up	179	418	160	433	254	141.7
Environmentally-preferable products	2,311	2,415	2,479	2,439	128	5.5
Noise and vibration abatement	1,645	1,671	1,807	1,875	230	14.0
Solid and hazardous waste management	4,173	4,199	4,540	4,889	715	17.1
Wastewater management and water treatment	32,292	32,612	35,642	34,357	2,065	6.4
Total	174,352	174,439	193,681	202,832	28,480	16.3

Source: Compiled from official statistics of the U.S. Department of Commerce. Trade data reflects Census Bureau updates issued on June 3, 2016.

Note: Calculations based on unrounded data. Import data do not include U.S. Virgin Island imports. Import figures are based on customs value. Export figures are based on f.a.s. value, U.S. port of export.

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Table 2: U.S. imports for consumption by product category, 2015 (thousand dollars)

Product category	U.S. imports for consumption	Dutiable imports	Calculated duties collected	Dutiable import share	Weighted average duty
Air pollution control	22,806,960	8,295,235	200,568	36.4	2.4
Cleaner and renewable energy	42,276,539	14,857,812	434,302	35.1	2.9
Energy efficiency	89,903,195	27,365,349	793,799	30.4	2.9
Environmental monitoring, analysis and assessment	3,852,726	2,218,747	45,774	57.6	2.1
Environmental remediation and clean-up	433,164	0	0	0	0
Environmentally-preferable products	2,438,975	1,041,123	27,312	42.7	2.6
Noise and vibration abatement	1,875,057	1,242,148	34,798	66.2	2.8
Solid and hazardous waste management	4,888,603	1,245,695	41,444	25.5	3.3
Wastewater management and water treatment	34,357,084	10,212,920	296,447	29.7	2.9
Total	202,832,303	66,479,029	1,874,444	32.8	2.8

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Calculations based on unrounded data. Import data do not include U.S. Virgin Island imports. Import figures are based on customs value. Dutiable import share is dutiable imports divided by imports for consumption. Weighted average duty is calculated duties collected divided by dutiable imports. Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 3: Exports of environmental goods, all countries (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
Air pollution control	125,416,201,173	132,224,698,767	138,889,202,428	132,529,819,409	7,113,618,236	0.06
Cleaner and renewable energy	357,979,366,642	349,208,088,642	357,335,186,237	332,318,909,216	(25,660,457,426)	-0.07
Energy efficiency	308,352,856,893	330,493,773,255	347,823,759,641	345,753,597,241	37,400,740,348	0.12
Environmental monitoring, analysis and assessment	31,915,482,093	31,198,067,434	31,103,030,294	27,662,083,898	(4,253,398,195)	-0.13
Environmentally-preferable products	11,966,285,805	12,681,168,911	13,476,070,501	12,751,250,883	784,965,078	0.07
Environmental remediation and clean-up	1,573,774,591	2,022,259,921	1,961,437,943	2,022,617,495	448,842,904	0.29
Noise and vibration abatement	15,383,988,088	15,475,247,879	16,531,492,980	15,867,061,518	483,073,430	0.03
Solid and hazardous waste management	41,290,005,528	40,785,997,435	40,623,443,320	36,242,887,673	(5,047,117,855)	-0.12
Wastewater management and water treatment	173,938,533,732	180,249,849,777	188,311,852,833	168,699,949,856	(5,238,583,876)	-0.03
Total	1,067,816,494,545	1,094,339,152,021	1,136,055,476,177	1,073,848,177,189	6,031,682,644	0.01

Source: IHS, Inc., Global Trade Atlas.

Table 4: Imports of environmental goods, all countries (dollars) Change from 2012–2015

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
Air pollution control	127,977,403,118	136,083,621,433	141,091,130,077	129,836,758,171	1,859,355,053	0.01
Cleaner and renewable energy	329,583,811,383	324,033,674,369	329,759,481,745	306,463,590,904	(23,120,220,479)	(0.07)
Energy efficiency	318,557,095,819	337,822,211,705	347,709,147,158	343,540,331,917	24,983,236,098	0.08
Environmental monitoring, analysis and assessment	28,545,758,885	28,377,416,742	28,593,669,883	26,393,171,212	(2,152,587,673)	(0.08)
Environmentally-preferable products	11,247,286,226	11,693,501,672	12,279,424,557	11,112,634,619	(134,651,607)	(0.01)
Environmental remediation and clean-up	1,679,826,110	1,814,031,509	1,709,895,884	1,627,447,720	(52,378,390)	(0.03)
Noise and vibration abatement	15,126,716,092	14,849,319,639	16,555,337,478	15,982,296,944	855,580,852	0.06
Solid and hazardous waste management	41,310,144,853	40,708,029,427	39,810,942,710	33,572,994,499	(7,737,150,354)	(0.19)
Wastewater management and water treatment	173,049,881,378	180,364,747,634	182,032,297,318	161,275,983,001	(11,773,898,377)	(0.07)
Total	1,047,077,923,864	1,075,746,554,130	1,099,541,326,810	1,029,805,208,987	(17,272,714,877)	(0.02)

Source: IHS, Inc., Global Trade Atlas.

Table 5: Exports of environmental goods, EGA participants (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	108,076,268,935	114,063,843,048	119,590,578,610	114,165,643,033	6,089,374,098	0.06
Cleaner and renewable energy	330,194,832,475	319,839,306,954	327,048,090,980	304,229,315,531	(25,965,516,944)	-0.08
Energy efficiency	268,152,728,659	287,026,959,234	301,412,270,840	301,100,864,939	32,948,136,280	0.12
Environmental monitoring, analysis and assessment	27,522,464,911	27,123,720,331	26,956,563,855	24,369,108,505	(3,153,356,406)	-0.11
Environmentally-preferable products	9,781,460,476	10,304,286,027	10,905,853,663	10,469,983,103	688,522,627	0.07
Environmental remediation and clean-up	1,351,396,745	1,669,216,230	1,641,440,087	1,880,005,079	528,608,334	0.39
Noise and vibration abatement	13,454,845,002	13,903,335,489	15,284,594,289	14,838,282,120	1,383,437,118	0.10
Solid and hazardous waste management	36,989,410,400	36,604,397,813	36,281,713,814	32,815,724,901	(4,173,685,499)	-0.11
Wastewater management and water treatment	155,357,205,540	160,255,406,435	167,641,859,539	151,680,006,399	(3,677,199,141)	-0.02
Total	950,880,613,143	970,790,471,561	1,006,762,965,677	955,548,933,610	4,668,320,467	0.00

Source: IHS, Inc., Global Trade Atlas.

Table 6: Imports of environmental goods, EGA participants (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	85,860,884,593	90,273,189,797	97,529,180,923	92,265,231,995	6,404,347,402	0.07
Cleaner and renewable energy	255,972,188,058	246,860,613,834	254,248,054,125	242,958,398,386	(13,013,789,672)	-0.05
Energy efficiency	241,463,662,525	254,704,622,141	266,465,275,017	270,255,175,713	28,791,513,188	0.12
Environmental monitoring, analysis and assessment	20,879,776,862	20,316,682,428	21,215,332,540	20,662,329,561	(217,447,301)	-0.01
Environmentally-preferable products	7,595,155,492	7,864,926,060	8,245,219,144	7,874,375,110	279,219,618	0.04
Environmental remediation and clean-up	991,391,619	1,001,291,692	1,050,925,071	1,035,190,898	43,799,279	0.04
Noise and vibration abatement	11,447,230,528	11,459,022,299	13,331,179,490	13,264,592,173	1,817,361,645	0.16
Solid and hazardous waste management	21,226,940,248	20,855,995,287	21,207,620,607	19,753,473,165	(1,473,467,083)	-0.07
Wastewater management and water treatment	115,978,612,858	119,278,760,773	126,037,723,426	117,290,847,903	1,312,235,045	0.01
Total	761,415,842,783	772,615,104,311	809,330,510,343	785,359,614,904	23,943,772,121	0.03

Source: IHS, Inc., Global Trade Atlas.

Table 7: EGA share of world exports of environmental goods (percent)

	2012	2013	2014	2015
Air pollution control	0.86	0.86	0.86	0.86
Cleaner and renewable energy	0.92	0.92	0.92	0.92
Energy efficiency	0.87	0.87	0.87	0.87
Environmental monitoring, analysis and assessment	0.86	0.87	0.87	0.88
Environmentally-preferable products	0.82	0.81	0.81	0.82
Environmental remediation and clean-up	0.86	0.83	0.84	0.93
Noise and vibration abatement	0.87	0.90	0.92	0.94
Solid and hazardous waste management	0.90	0.90	0.89	0.91
Wastewater management and water treatment	0.89	0.89	0.89	0.90
Total	0.89	0.89	0.89	0.89

Source: IHS, Inc., Global Trade Atlas.

Table 8: EGA share of world imports of environmental goods (percent)

	2012	2013	2014	2015
Air pollution control	0.67	0.66	0.69	0.71
Cleaner and renewable energy	0.78	0.76	0.77	0.79
Energy efficiency	0.76	0.75	0.77	0.79
Environmental monitoring, analysis and assessment	0.73	0.72	0.74	0.78
Environmentally-preferable products	0.68	0.67	0.67	0.71
Environmental remediation and clean-up	0.59	0.55	0.61	0.64
Noise and vibration abatement	0.76	0.77	0.81	0.83
Solid and hazardous waste management	0.51	0.51	0.53	0.59
Wastewater management and water treatment	0.67	0.66	0.69	0.73
Total	0.73	0.72	0.74	0.76

Source: IHS, Inc., Global Trade Atlas.

Table 9: Australia: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	538,263,230	444,830,256	425,913,814	368,472,893	(169,790,337)	-0.32
Cleaner and renewable energy	621,037,376	709,303,944	729,153,645	581,923,673	(39,113,703)	-0.06
Energy efficiency	884,916,779	818,697,536	864,207,536	771,946,280	(112,970,499)	-0.13
Environmental monitoring, analysis and assessment	220,712,327	201,769,687	251,630,630	209,932,280	(10,780,047)	-0.05
Environmentally-preferable products	42,570,486	47,137,061	47,296,212	40,753,721	(1,816,765)	-0.04
Environmental remediation and clean-up	83,856,738	86,007,799	118,432,887	85,678,657	1,821,919	0.02
Noise and vibration abatement	59,338,923	45,135,846	53,640,756	50,545,886	(8,793,037)	-0.15
Solid and hazardous waste management	497,529,531	405,136,737	309,233,223	250,036,989	(247,492,542)	-0.50
Wastewater management and water treatment	902,000,933	808,283,244	748,629,329	667,713,498	(234,287,435)	-0.26
Total	3,850,226,323	3,566,302,110	3,548,138,032	3,027,003,877	(823,222,446)	-0.21

Source: IHS, Inc., Global Trade Atlas.

Table 10: Australia: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012-2015	
					Absolute	Percent
Air pollution control	2,340,122,277	3,147,470,184	3,673,333,281	2,726,470,793	386,348,516	0.17
Cleaner and renewable energy	5,096,597,978	4,351,201,443	4,293,448,189	3,894,940,397	(1,201,657,581)	(0.24)
Energy efficiency	6,548,448,983	6,844,075,243	7,187,454,415	7,270,905,353	722,456,370	0.11
Environmental monitoring, analysis and assessment	558,498,022	485,697,882	520,979,480	418,280,646	(140,217,376)	(0.25)
Environmentally-preferable products	268,642,994	264,366,659	273,200,789	255,128,845	(13,514,149)	(0.05)
Environmental remediation and clean-up	43,960,019	57,835,119	35,771,291	117,468,074	73,508,055	1.67
Noise and vibration abatement	132,184,952	119,290,663	125,474,037	118,475,630	(13,709,322)	(0.10)
Solid and hazardous waste management	1,114,943,259	1,109,190,620	1,419,367,500	941,586,650	(173,356,609)	(0.16)
Wastewater management and water treatment	4,358,358,342	4,255,350,164	4,098,521,949	3,711,970,111	(646,388,231)	(0.15)
Total	20,461,756,826	20,634,477,977	21,627,550,931	19,455,226,499	(1,006,530,327)	(0.05)

Source: IHS, Inc., Global Trade Atlas.

Table 11: Australia: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	381,799,114	373,156,923	418,763,085	369,373,842	(12,425,272)	-3.3
Cleaner and renewable energy	1,077,870,573	747,110,398	610,463,251	577,090,897	(500,779,676)	-46.5
Energy efficiency	723,200,615	706,790,915	697,376,245	704,499,410	(18,701,205)	-2.6
Environmental monitoring, analysis and assessment	168,030,048	145,535,035	129,678,210	104,086,424	(63,943,624)	-38.1
Environmental remediation and clean-up	7,226,290	8,922,639	7,033,979	9,271,220	2,044,930	28.3
Environmentally-preferable products	11,636,022	11,597,163	12,292,487	13,415,260	1,779,238	15.3
Noise and vibration abatement	36,212,731	29,219,735	38,626,659	37,874,373	1,661,642	4.6
Solid and hazardous waste management	136,206,249	140,655,236	126,984,198	116,504,859	(19,701,390)	-14.5
Wastewater management and water treatment	784,886,386	833,380,606	673,266,853	575,476,516	(209,409,870)	-26.7
U.S. imports for consumption						
Air pollution control	52,145,507	52,757,071	50,376,909	54,703,945	2,558,438	4.9
Cleaner and renewable energy	68,886,788	75,970,167	75,604,735	72,408,211	3,521,423	5.1
Energy efficiency	95,647,017	83,835,033	68,221,474	91,702,471	(3,944,546)	-4.1
Environmental monitoring, analysis and assessment	21,719,613	24,632,081	20,819,326	15,087,981	(6,631,632)	-30.5
Environmental remediation and clean-up	21,188,946	3,425,376	10,576,027	2,665,994	(18,522,952)	-87.4
Environmentally-preferable products	3,398,336	2,563,222	3,444,526	3,333,981	(64,355)	-1.9
Noise and vibration abatement	2,972,847	5,523,115	5,776,876	3,772,455	799,608	26.9
Solid and hazardous waste management	13,735,116	14,769,371	18,680,130	27,787,489	14,052,373	102.3
Wastewater management and water treatment	174,445,131	163,870,009	165,251,456	153,656,228	(20,788,903)	-11.9

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 12: Canada: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	2,861,945,023	2,826,651,632	2,824,631,567	2,671,640,240	(190,304,783)	-0.07
Cleaner and renewable energy	5,927,692,018	5,656,569,946	5,762,963,850	5,683,548,517	(244,143,501)	-0.04
Energy efficiency	5,200,209,262	5,145,806,152	5,334,557,363	5,373,601,116	173,391,854	0.03
Environmental monitoring, analysis and assessment	870,661,848	888,604,313	901,659,432	814,778,803	(55,883,045)	-0.06
Environmentally-preferable products	229,456,209	214,862,581	205,893,637	216,831,267	(12,624,942)	-0.06
Environmental remediation and clean-up	40,749,856	42,766,461	38,325,872	55,984,684	15,234,828	0.37
Noise and vibration abatement	407,664,602	405,003,314	436,297,016	447,382,547	39,717,945	0.10
Solid and hazardous waste management	1,189,713,303	1,119,621,523	1,068,987,171	1,011,984,965	(177,728,338)	-0.15
Wastewater management and water treatment	4,505,957,132	4,312,935,493	4,569,367,392	3,987,744,790	(518,212,342)	-0.12
Total	21,234,049,253	20,612,821,415	21,142,683,300	20,263,496,929	(970,552,324)	-0.05

Source: IHS, Inc., Global Trade Atlas.

Table 13: Canada: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012-2015	
					Absolute	Percent
Air pollution control	4,857,094,801	5,065,221,068	5,261,459,093	5,050,163,930	193,069,129	0.04
Cleaner and renewable energy	8,530,684,954	8,178,530,012	9,143,454,148	8,965,588,086	434,903,132	0.05
Energy efficiency	11,678,657,459	11,897,284,717	12,555,543,322	12,265,281,281	586,623,822	0.05
Environmental monitoring, analysis and assessment	1,020,497,754	905,812,022	915,506,978	686,842,393	(333,655,361)	(0.33)
Environmentally-preferable products	502,070,366	541,187,357	581,501,137	614,844,402	112,774,036	0.22
Environmental remediation and clean-up	139,204,816	108,479,045	168,833,806	124,928,489	(14,276,327)	(0.10)
Noise and vibration abatement	252,135,704	277,677,685	310,964,752	277,722,826	25,587,122	0.10
Solid and hazardous waste management	1,603,150,888	1,585,947,255	1,508,280,942	1,429,052,028	(174,098,860)	(0.11)
Wastewater management and water treatment	9,558,068,399	9,143,873,438	9,530,830,356	8,244,395,959	(1,313,672,440)	(0.14)
Total	38,141,565,141	37,704,012,599	39,976,374,534	37,658,819,394	(482,745,747)	(0.01)

Source: IHS, Inc., Global Trade Atlas.

Table 14: Canada: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012-2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	3,211,877,643	3,294,601,540	3,488,836,288	3,173,366,002	(38,511,641)	-1.2
Cleaner and renewable energy	4,545,722,887	4,466,063,970	4,799,394,650	4,638,689,827	92,966,940	2.0
Energy efficiency	5,496,988,289	5,381,717,061	5,403,747,899	5,038,932,939	(458,055,350)	-8.3
Environmental monitoring, analysis and assessment	582,867,779	497,237,982	469,222,690	349,580,101	(233,287,678)	-40.0
Environmental remediation and clean-up	123,876,683	80,912,041	106,890,117	102,665,145	(21,211,538)	-17.1
Environmentally-preferable products	307,328,082	322,105,282	352,001,712	371,681,879	64,353,797	20.9
Noise and vibration abatement	138,386,340	137,011,791	151,832,909	141,349,305	2,962,965	2.1
Solid and hazardous waste management	998,787,625	971,737,619	914,770,462	816,706,129	(182,081,496)	-18.2
Wastewater management and water treatment	5,873,011,141	5,649,616,659	5,851,669,649	4,969,995,170	(903,015,971)	-15.4
U.S. imports for consumption						
Air pollution control	1,730,923,853	1,747,706,506	1,732,941,004	1,617,125,296	(113,798,557)	-6.6
Cleaner and renewable energy	3,966,320,608	3,799,275,239	3,708,147,935	3,745,825,028	(220,495,580)	-5.6
Energy efficiency	3,098,261,165	3,213,201,047	3,427,094,865	3,540,286,673	442,025,508	14.3
Environmental monitoring, analysis and assessment	350,432,587	362,895,701	384,048,347	370,702,881	20,270,294	5.8
Environmental remediation and clean-up	15,566,017	22,628,874	15,625,018	23,809,411	8,243,394	53.0
Environmentally-preferable products	167,827,114	150,681,366	151,119,440	164,623,287	(3,203,827)	-1.9
Noise and vibration abatement	205,893,872	196,245,778	202,865,071	216,832,115	10,938,243	5.3
Solid and hazardous waste management	699,019,908	645,331,478	657,476,914	646,998,323	(52,021,585)	-7.4
Wastewater management and water treatment	2,842,529,239	2,682,381,199	2,955,172,540	2,431,375,516	(411,153,723)	-14.5

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 15: China: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	17,275,497,676	19,280,815,835	21,514,157,690	22,238,513,831	4,963,016,155	0.29
Cleaner and renewable energy	78,347,105,064	77,317,876,816	79,788,410,813	81,289,946,896	2,942,841,832	0.04
Energy efficiency	77,064,299,893	88,245,874,785	99,451,755,094	106,176,756,329	29,112,456,436	0.38
Environmental monitoring, analysis and assessment	2,561,680,239	2,682,590,808	2,934,375,748	2,859,429,964	297,749,725	0.12
Environmentally-preferable products	3,780,560,081	4,152,962,489	4,556,336,769	4,618,859,718	838,299,637	0.22
Environmental remediation and clean-up	133,884,340	188,520,887	159,777,783	236,394,010	102,509,670	0.77
Noise and vibration abatement	1,095,461,734	1,142,787,703	1,422,478,320	1,904,973,435	809,511,701	0.74
Solid and hazardous waste management	5,925,321,952	6,178,115,353	6,826,468,216	6,872,500,802	947,178,850	0.16
Wastewater management and water treatment	26,151,703,532	27,820,948,030	31,060,630,062	29,691,732,681	3,540,029,149	0.14
Total	212,335,514,511	227,010,492,706	247,714,390,495	255,889,107,666	43,553,593,155	0.21

Source: IHS, Inc., Global Trade Atlas.

Table 16: China: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	15,147,153,461	16,472,194,740	17,925,472,592	16,311,943,680	1,164,790,219	0.08
Cleaner and renewable energy	87,641,412,304	86,336,679,584	85,452,733,507	78,885,869,852	(8,755,542,452)	(0.10)
Energy efficiency	32,711,954,990	36,005,609,036	36,174,045,156	33,107,875,136	395,920,146	0.01
Environmental monitoring, analysis and assessment	4,050,117,050	3,657,225,591	3,994,831,887	3,614,610,475	(435,506,575)	(0.11)
Environmentally-preferable products	460,675,783	517,806,150	568,165,584	522,964,188	62,288,405	0.14
Environmental remediation and clean-up	181,964,178	188,136,818	205,539,666	175,298,889	(6,665,289)	(0.04)
Noise and vibration abatement	3,043,155,544	3,124,623,962	4,106,260,892	4,297,155,211	1,253,999,667	0.41
Solid and hazardous waste management	4,659,891,254	4,462,162,529	4,283,425,953	3,572,989,962	(1,086,901,292)	(0.23)
Wastewater management and water treatment	18,541,525,308	20,210,058,929	20,402,016,761	18,476,261,086	(65,264,222)	(0.00)
Total	166,437,849,872	170,974,497,339	173,112,491,998	158,964,968,479	(7,472,881,393)	(0.04)

Source: IHS, Inc., Global Trade Atlas.

Table 17: China: U.S. domestic exports and imports for consumption by product category and country, 2012-2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012-2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	1,500,703,226	1,660,160,163	1,756,202,349	1,611,217,460	110,514,234	7.4
Cleaner and renewable energy	1,904,873,856	2,333,977,895	2,825,447,267	2,732,087,305	827,213,449	43.4
Energy efficiency	1,496,299,835	1,644,030,580	1,533,877,873	1,583,420,687	87,120,852	5.8
Environmental monitoring, analysis and assessment	665,166,441	635,498,212	638,773,563	687,022,361	21,855,920	3.3
Environmental remediation and clean-up	13,267,889	17,135,860	12,581,108	11,141,700	(2,126,189)	(16.0)
Environmentally-preferable products	49,487,954	51,110,918	52,068,154	45,547,356	(3,940,598)	(8.0)
Noise and vibration abatement	203,964,848	228,914,517	268,097,628	292,134,562	88,169,714	43.2
Solid and hazardous waste management	458,230,917	400,930,895	465,410,758	385,181,275	(73,049,642)	(15.9)
Wastewater management and water treatment	2,337,296,600	2,714,878,108	2,813,235,168	2,808,776,379	471,479,779	20.2
U.S. imports for consumption						
Air pollution control	3,704,453,769	3,848,140,396	4,352,474,241	4,438,257,207	733,803,438	19.8
Cleaner and renewable energy	6,930,872,430	5,714,354,520	7,313,848,185	8,001,069,085	1,070,196,655	15.4
Energy efficiency	23,778,373,242	25,909,819,231	29,196,182,057	33,732,893,043	9,954,519,801	41.9
Environmental monitoring, analysis and assessment	624,504,199	672,182,451	722,701,294	759,232,598	134,728,399	21.6
Environmental remediation and clean-up	29,654,592	20,576,215	23,261,272	20,578,593	(9,075,999)	(30.6)
Environmentally-preferable products	1,027,926,816	1,156,395,773	1,055,907,006	1,034,833,917	6,907,101	0.7
Noise and vibration abatement	134,742,074	160,066,424	170,055,922	187,677,023	52,934,949	39.3
Solid and hazardous waste management	565,585,320	601,263,895	694,370,475	718,991,877	153,406,557	27.1
Wastewater management and water treatment	7,025,680,326	7,116,124,782	8,093,282,181	7,704,159,829	678,479,503	10

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 18: Chinese Taipei: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	2,267,599,582	2,281,949,151	2,419,605,537	2,386,269,622	118,670,040	0.05
Cleaner and renewable energy	24,318,652,984	23,544,846,136	22,137,432,631	18,271,311,028	(6,047,341,956)	-0.25
Energy efficiency	6,792,076,947	7,803,883,540	7,746,443,272	7,031,635,563	239,558,616	0.04
Environmental monitoring, analysis and assessment	422,146,326	409,378,004	446,006,210	466,192,984	44,046,658	0.10
Environmentally-preferable products	591,121,113	585,187,825	607,826,951	617,103,024	25,981,911	0.04
Environmental remediation and clean-up	21,060,358	25,118,731	23,255,279	18,090,692	(2,969,666)	-0.14
Noise and vibration abatement	539,144,037	511,862,372	605,843,049	610,615,469	71,471,432	0.13
Solid and hazardous waste management	791,694,887	756,696,690	672,852,015	566,614,953	(225,079,934)	-0.28
Wastewater management and water treatment	2,311,663,808	2,343,549,901	2,517,083,178	2,266,445,306	(45,218,502)	-0.02
Total	38,055,160,042	38,262,472,350	37,176,348,122	32,234,278,641	(5,820,881,401)	-0.15

Source: IHS, Inc., Global Trade Atlas.

Table 19: Chinese Taipei: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	1,747,258,904	1,738,982,831	1,994,611,170	1,867,960,237	120,701,333	0.07
Cleaner and renewable energy	12,259,500,224	13,673,118,411	11,972,896,781	11,956,842,972	(302,657,252)	(0.02)
Energy efficiency	5,022,919,470	4,592,260,708	4,303,355,920	3,964,487,302	(1,058,432,168)	(0.21)
Environmental monitoring, analysis and assessment	977,987,968	1,015,508,107	1,158,299,805	1,322,952,600	344,964,632	0.35
Environmentally-preferable products	213,551,889	186,026,046	192,400,000	188,607,834	(24,944,055)	(0.12)
Environmental remediation and clean-up	10,098,050	9,869,253	11,022,124	8,706,783	(1,391,267)	(0.14)
Noise and vibration abatement	642,461,810	731,350,735	788,193,781	756,150,567	113,688,757	0.18
Solid and hazardous waste management	676,176,309	630,948,025	571,199,255	649,498,760	(26,677,549)	(0.04)
Wastewater management and water treatment	1,952,683,563	1,993,886,829	2,128,441,287	2,034,677,063	81,993,500	0.04
Total	23,502,638,187	24,571,950,945	23,120,420,123	22,749,884,118	(752,754,069)	(0.03)

Source: IHS, Inc., Global Trade Atlas.

Table 20: Chinese Taipei: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	230,904,811	243,589,391	272,716,367	272,156,964	41,252,153	17.9
Cleaner and renewable energy	2,149,434,317	2,593,614,699	2,392,479,044	2,752,665,114	603,230,797	28.1
Energy efficiency	445,920,259	425,652,690	427,892,691	400,829,851	(45,090,408)	-10.1
Environmental monitoring, analysis and assessment	176,498,837	199,175,004	228,941,327	220,584,951	44,086,114	25.0
Environmental remediation and clean-up	26,687,526	15,682,997	13,911,739	14,207,253	(12,480,273)	-46.8
Environmentally-preferable products	6,912,102	9,170,081	8,157,995	9,913,611	3,001,509	43.4
Noise and vibration abatement	110,151,894	78,277,564	101,220,736	111,569,179	1,417,285	1.3
Solid and hazardous waste management	78,321,275	57,899,682	52,194,045	81,974,515	3,653,240	4.7
Wastewater management and water treatment	310,465,236	320,142,983	321,867,945	316,349,683	5,884,447	1.9
U.S. imports for consumption						
Air pollution control	372,400,694	406,248,823	561,925,765	570,960,540	198,559,846	53.3
Cleaner and renewable energy	960,600,559	1,149,586,320	1,342,387,520	920,111,718	(40,488,841)	-4.2
Energy efficiency	1,464,457,162	1,544,989,490	1,949,623,865	2,202,416,509	737,959,347	50.4
Environmental monitoring, analysis and assessment	70,041,266	75,872,090	78,612,607	74,564,680	4,523,414	6.5
Environmental remediation and clean-up	700,604	472,368	585,997	656,494	(44,110)	-6.3
Environmentally-preferable products	154,326,982	144,883,125	138,177,763	132,612,869	(21,714,113)	-14.1
Noise and vibration abatement	23,262,187	23,712,414	29,214,944	29,565,092	6,302,905	27.1
Solid and hazardous waste management	73,954,760	55,849,604	59,089,244	52,388,185	(21,566,575)	-29.2
Wastewater management and water treatment	965,620,651	927,752,654	989,417,381	1,006,950,289	41,329,638	4.3

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 21: Costa Rica: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	38,927,154	27,919,098	30,408,139	27,701,517	(11,225,637)	-0.29
Cleaner and renewable energy	44,973,114	41,704,302	38,894,448	34,875,756	(10,097,358)	-0.22
Energy efficiency	89,415,930	89,968,974	88,765,724	66,585,861	(22,830,069)	-0.26
Environmental monitoring, analysis and assessment	29,516,253	30,332,717	23,482,204	27,972,026	(1,544,227)	-0.05
Environmentally-preferable products	6,825,942	6,337,203	5,637,179	8,761,149	1,935,207	0.28
Environmental remediation and clean-up	55,723	47,986	39,768	89,043	33,320	0.60
Noise and vibration abatement	489,847	350,590	362,733	137,947	(351,900)	-0.72
Solid and hazardous waste management	5,431,737	5,355,349	15,572,856	4,013,254	(1,418,483)	-0.26
Wastewater management and water treatment	31,584,763	21,742,264	16,867,225	21,550,282	(10,034,481)	-0.32
Total	247,220,463	223,758,483	220,030,276	191,686,835	(55,533,628)	-0.22

Source: IHS, Inc., Global Trade Atlas.

Table 22: Costa Rica: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	164,590,559	183,909,839	153,411,841	152,352,413	(12,238,146)	(0.07)
Cleaner and renewable energy	147,089,225	205,848,544	268,620,352	185,320,201	38,230,976	0.26
Energy efficiency	253,635,903	259,734,719	290,841,183	381,318,283	127,682,380	0.50
Environmental monitoring, analysis and assessment	94,745,014	57,522,251	49,586,879	60,925,787	(33,819,227)	(0.36)
Environmentally-preferable products	17,379,519	20,244,892	19,748,977	19,258,148	1,878,629	0.11
Environmental remediation and clean-up	1,285,434	1,417,831	1,314,922	1,319,324	33,890	0.03
Noise and vibration abatement	6,561,759	5,347,622	5,508,304	5,478,071	(1,083,688)	(0.17)
Solid and hazardous waste management	30,024,837	37,312,413	32,957,145	31,827,953	1,803,116	0.06
Wastewater management and water treatment	159,037,378	181,001,615	203,115,805	174,754,503	15,717,125	0.10
Total	874,349,628	952,339,726	1,025,105,408	1,012,554,683	138,205,055	0.16

Source: IHS, Inc., Global Trade Atlas.

Table 23: Costa Rica: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	37,518,733	39,444,905	42,204,242	33,394,417	(4,124,316)	-11.0
Cleaner and renewable energy	58,399,466	52,842,872	85,996,704	55,548,411	(2,851,055)	-4.9
Energy efficiency	114,700,346	96,780,704	100,394,333	109,072,068	(5,628,278)	-4.9
Environmental monitoring, analysis and assessment	37,855,576	29,234,621	27,251,097	32,790,478	(5,065,098)	-13.4
Environmental remediation and clean-up	587,575	776,504	1,107,800	686,793	99,218	16.9
Environmentally-preferable products	7,120,495	5,550,404	5,367,651	7,595,711	475,216	6.7
Noise and vibration abatement	6,239,247	5,502,603	4,538,304	5,412,335	(826,912)	-13.3
Solid and hazardous waste management	16,188,487	15,056,318	18,006,879	21,962,460	5,773,973	35.7
Wastewater management and water treatment	43,351,544	46,640,772	41,440,337	44,853,846	1,502,302	3.5
U.S. imports for consumption						
Air pollution control	12,707,542	11,004,037	12,686,199	12,665,618	(41,924)	-0.3
Cleaner and renewable energy	16,887,268	14,696,087	13,273,840	10,318,914	(6,568,354)	-38.9
Energy efficiency	41,628,096	35,058,995	24,331,337	26,352,281	(15,275,815)	-36.7
Environmental monitoring, analysis and assessment	5,990,132	7,525,453	11,527,833	9,999,588	4,009,456	66.9
Environmental remediation and clean-up	-	-	-	3,767	-	0.0
Environmentally-preferable products	19,706,577	16,358,515	21,548,123	18,263,254	(1,443,323)	-7.3
Noise and vibration abatement	353,656	141,123	210,224	56,539	(297,117)	-84.0
Solid and hazardous waste management	367,414	393,388	240,912	72,681	(294,733)	-80.2
Wastewater management and water treatment	6,273,054	10,530,498	12,510,441	6,836,323	563,269	9.0

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 24: EU-28 (external trade): Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	32,498,400,058	34,813,720,947	37,076,787,110	32,295,920,186	(202,479,872)	-0.01
Cleaner and renewable energy	60,572,755,691	61,390,964,792	63,249,498,664	54,310,238,900	(6,262,516,791)	-0.10
Energy efficiency	51,586,185,400	55,813,964,671	58,850,820,241	52,463,043,359	876,857,959	0.02
Environmental monitoring, analysis and assessment	7,918,931,626	7,939,231,791	7,771,636,946	6,472,592,638	(1,446,338,988)	-0.18
Environmentally-preferable products	2,140,042,357	2,259,564,520	2,329,941,827	1,952,529,484	(187,512,873)	-0.09
Environmental remediation and clean-up	486,971,280	635,759,889	584,687,412	519,116,029	32,144,749	0.07
Noise and vibration abatement	4,162,475,960	4,699,358,865	4,989,226,786	4,561,455,697	398,979,737	0.10
Solid and hazardous waste management	15,590,152,154	15,756,987,358	15,003,950,165	12,449,128,840	(3,141,023,314)	-0.20
Wastewater management and water treatment	53,572,361,557	56,223,308,790	56,987,046,171	48,580,069,782	(4,992,291,775)	-0.09
Total	228,528,276,083	239,532,861,623	246,843,595,322	213,604,094,915	(14,924,181,168)	-0.07

Source: IHS, Inc., Global Trade Atlas.

Table 25: EU-28 (external trade): Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	19,177,020,644	19,652,519,937	21,063,593,985	19,725,900,085	548,879,441	0.03
Cleaner and renewable energy	39,294,856,473	31,701,497,556	34,319,121,307	33,190,615,852	(6,104,240,621)	(0.16)
Energy efficiency	45,788,904,198	49,073,240,301	53,551,052,070	53,556,029,924	7,767,125,726	0.17
Environmental monitoring, analysis and assessment	3,665,063,922	3,651,864,449	3,885,128,460	3,687,506,676	22,442,754	0.01
Environmentally-preferable products	1,919,907,841	1,979,368,865	2,176,911,568	2,009,391,126	89,483,285	0.05
Environmental remediation and clean-up	99,311,968	110,242,246	123,527,609	102,689,056	3,377,088	0.03
Noise and vibration abatement	1,719,497,639	1,827,553,520	1,998,687,435	1,953,608,469	234,110,830	0.14
Solid and hazardous waste management	3,091,720,438	3,227,917,402	3,402,350,105	3,223,233,821	131,513,383	0.04
Wastewater management and water treatment	21,998,838,069	22,388,100,362	23,905,784,729	22,466,996,511	468,158,442	0.02
Total	136,755,121,192	133,612,304,638	144,426,157,268	139,915,971,520	3,160,850,328	0.02

Source: IHS, Inc., Global Trade Atlas.

Table 26: EU-28: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	3,285,825,301	3,460,687,902	3,724,127,467	3,601,053,597	315,228,296	9.6
Cleaner and renewable energy	5,713,933,017	5,463,306,465	6,108,789,451	6,032,457,623	318,524,606	5.6
Energy efficiency	4,550,501,275	4,603,044,036	4,844,156,509	4,984,256,966	433,755,691	9.5
Environmental monitoring, analysis and assessment	1,239,481,861	1,202,603,040	1,253,161,383	1,118,811,042	(120,670,819)	-9.7
Environmental remediation and clean-up	57,493,313	86,494,903	108,245,985	83,378,785	25,885,472	45.0
Environmentally-preferable products	208,993,298	236,578,717	244,232,455	218,719,010	9,725,712	4.7
Noise and vibration abatement	443,419,482	440,990,763	453,172,496	397,701,959	(45,717,523)	-10.3
Solid and hazardous waste management	489,602,408	514,243,220	524,782,573	626,766,958	137,164,550	28.0
Wastewater management and water treatment	4,746,758,020	4,870,967,516	5,430,020,328	5,219,762,402	473,004,382	10.0
U.S. imports for consumption						
Air pollution control	5,194,777,832	5,302,200,322	5,981,095,516	5,975,948,411	781,170,579	15.0
Cleaner and renewable energy	10,326,976,486	7,913,049,721	10,606,079,928	9,988,455,403	(338,521,083)	-3.3
Energy efficiency	8,471,978,157	8,643,897,263	9,600,251,471	9,809,438,422	1,337,460,265	15.8
Environmental monitoring, analysis and assessment	1,609,167,581	1,505,305,597	1,565,336,510	1,398,420,368	(210,747,213)	-13.1
Environmental remediation and clean-up	94,452,325	351,607,547	92,711,860	320,192,924	225,740,599	239.0
Environmentally-preferable products	217,450,588	221,800,260	246,681,790	245,167,061	27,716,473	12.7
Noise and vibration abatement	678,654,002	677,275,626	755,801,435	756,001,031	77,347,029	11.4
Solid and hazardous waste management	1,685,871,129	1,691,684,075	1,881,200,760	2,022,060,107	336,188,978	19.9
Wastewater management and water treatment	8,758,072,719	9,052,878,530	9,907,962,722	9,515,849,334	757,776,615	8.7

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 27: Hong Kong: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012-15	
					Absolute	Percent
Air pollution control	3,198,881,133	3,108,746,905	3,179,740,958	3,144,391,372	(54,489,761)	-0.02
Cleaner and renewable energy	10,328,740,676	11,326,700,167	10,661,213,192	9,140,608,041	(1,188,132,635)	-0.12
Energy efficiency	28,158,825,881	29,303,566,218	29,115,826,875	30,574,080,928	2,415,255,047	0.09
Environmental monitoring, analysis and assessment	935,856,012	1,091,474,448	1,164,264,386	1,051,516,936	115,660,924	0.12
Environmentally-preferable products	208,905,331	184,216,704	166,600,323	177,035,058	(31,870,273)	-0.15
Environmental remediation and clean-up	8,585,359	9,967,036	5,402,099	7,379,774	(1,205,585)	-0.14
Noise and vibration abatement	609,209,694	529,934,029	696,848,251	717,815,691	108,605,997	0.18
Solid and hazardous waste management	600,930,423	464,516,748	546,899,330	503,153,424	(97,776,999)	-0.16
Wastewater management and water treatment	1,817,951,451	1,902,871,569	1,914,158,891	1,876,186,144	58,234,693	0.03
Total	45,867,885,960	47,921,993,824	47,450,954,305	47,192,167,368	1,324,281,408	0.03

Source: IHS, Inc., Global Trade Atlas.

Table 28: Hong Kong: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012-15	
					Absolute	Percent
Air pollution control	2,763,686,778	2,837,978,550	2,885,450,869	3,081,216,521	317,529,743	0.11
Cleaner and renewable energy	12,703,218,169	14,264,151,178	13,026,722,944	11,644,287,390	(1,058,930,779)	(0.08)
Energy efficiency	20,010,213,902	20,188,802,661	20,689,585,429	20,815,293,690	805,079,788	0.04
Environmental monitoring, analysis and assessment	826,599,664	919,651,224	971,369,300	1,038,858,288	212,258,624	0.26
Environmentally-preferable products	155,455,381	168,148,650	147,465,130	158,266,909	2,811,528	0.02
Environmental remediation and clean-up	7,666,863	8,737,019	7,333,284	7,525,668	(141,195)	(0.02)
Noise and vibration abatement	623,803,906	491,069,401	707,032,695	651,270,765	27,466,859	0.04
Solid and hazardous waste management	413,575,876	362,894,116	426,982,854	383,582,930	(29,992,946)	(0.07)
Wastewater management and water treatment	2,017,323,453	2,173,826,696	2,209,063,318	2,032,826,095	15,502,642	0.01
Total	39,521,543,992	41,415,259,495	41,071,005,823	39,813,128,256	291,584,264	0.01

Source: IHS, Inc., Global Trade Atlas.

Table 29: Iceland: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012-15	
					Absolute	Percent
Air pollution control	1,621,214	2,868,598	3,774,819	2,379,819	758,605	0.47
Cleaner and renewable energy	846,314	1,894,569	1,172,340	3,603,569	2,757,255	3.26
Energy efficiency	3,437,899	2,347,034	6,510,839	9,677,226	6,239,327	1.81
Environmental monitoring, analysis and assessment	20,102,800	19,954,467	13,524,853	3,552,993	(16,549,807)	-0.82
Environmentally-preferable products	4,581,102	3,350,306	2,521,948	2,096,902	(2,484,200)	-0.54
Environmental remediation and clean-up	64,591	15,190	614,647	184,027	119,436	1.85
Noise and vibration abatement	524,259	31,384	96,961	2,352,325	1,828,066	3.49
Solid and hazardous waste management	1,072,541	3,319,612	6,256,034	15,458,190	14,385,649	13.41
Wastewater management and water treatment	1,496,815	922,975	1,361,772	946,561	(550,254)	-0.37
Total	33,747,535	34,704,135	35,834,213	40,251,612	6,504,077	0.19

Source: IHS, Inc., Global Trade Atlas.

Table 30: Iceland: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012-15	
					Absolute	Percent
Air pollution control	25,498,912	31,497,990	43,691,282	45,420,299	19,921,387	0.78
Cleaner and renewable energy	34,087,677	47,644,464	37,512,794	37,892,323	3,804,646	0.11
Energy efficiency	63,445,411	72,353,144	76,630,720	80,646,197	17,200,786	0.27
Environmental monitoring, analysis and assessment	11,752,378	10,646,889	11,906,685	9,275,093	(2,477,285)	(0.21)
Environmentally-preferable products	5,552,821	5,775,350	8,192,584	10,261,172	4,708,351	0.85
Environmental remediation and clean-up	631,153	1,201,574	1,021,174	841,841	210,688	0.33
Noise and vibration abatement	2,118,112	2,127,069	2,690,375	2,626,969	508,857	0.24
Solid and hazardous waste management	12,598,397	20,662,788	8,776,336	25,198,762	12,600,365	1.00
Wastewater management and water treatment	35,650,926	40,057,479	45,450,693	50,413,862	14,762,936	0.41
Total	191,335,787	231,966,747	235,872,643	262,576,518	71,240,731	0.37

Source: IHS, Inc., Global Trade Atlas.

Table 31: Iceland: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	1,259,383	4,310,825	7,944,600	720,349	(539,034)	-42.8
Cleaner and renewable energy	1,236,797	1,808,594	1,324,948	3,277,971	2,041,174	165.0
Energy efficiency	2,161,143	3,484,891	2,618,393	4,537,692	2,376,549	110.0
Environmental monitoring, analysis and assessment	2,025,656	1,935,790	1,725,253	2,132,738	107,082	5.3
Environmental remediation and clean-up	5,379	47,671	25,055	74,700	69,321	1288.7
Environmentally-preferable products	678,378	741,426	686,046	433,968	(244,410)	-36.0
Noise and vibration abatement	110,398	44,640	66,939	125,279	14,881	13.5
Solid and hazardous waste management	1,144,284	229,366	608,703	625,123	(519,161)	-45.4
Wastewater management and water treatment	3,019,598	1,984,424	2,730,699	2,780,175	(239,423)	-7.9
U.S. imports for consumption						
Air pollution control	460,918	51,373	258,398	190,508	(270,410)	-58.7
Cleaner and renewable energy	1,316,125	412,364	81,829	1,809,005	492,880	37.4
Energy efficiency	1,189,718	1,170,353	1,411,331	3,048,749	1,859,031	156.3
Environmental monitoring, analysis and assessment	3,227,667	808,931	1,823,431	913,041	(2,314,626)	-71.7
Environmental remediation and clean-up	-	-	-	-	-	0.0
Environmentally-preferable products	14,310	-	31,807	39,816	25,506	178.2
Noise and vibration abatement	304,461	311,999	317,134	338,331	33,870	11.1
Solid and hazardous waste management	239,736	232,307	1,472,979	1,743,294	1,503,558	627.2
Wastewater management and water treatment	393,364	666,911	214,716	316,615	(76,749)	-19.5

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 32: Israel: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	763,951,000	696,511,000	700,171,000	844,108,000	80,157,000	0.10
Cleaner and renewable energy	1,009,212,000	1,049,485,000	927,821,000	1,009,217,000	5,000	0.00
Energy efficiency	1,246,936,000	1,248,051,000	1,302,346,000	1,293,241,000	46,305,000	0.04
Environmental monitoring, analysis and assessment	159,071,000	146,774,000	148,204,000	185,651,000	26,580,000	0.17
Environmentally-preferable products	41,713,000	39,392,000	39,711,000	43,228,000	1,515,000	0.04
Environmental remediation and clean-up	3,823,000	1,269,000	2,283,000	2,223,000	(1,600,000)	-0.42
Noise and vibration abatement	542,185,000	483,832,000	553,941,000	408,562,000	(133,623,000)	-0.25
Solid and hazardous waste management	49,850,000	42,027,000	78,732,000	68,622,000	18,772,000	0.38
Wastewater management and water treatment	485,625,000	496,334,000	565,700,000	528,703,000	43,078,000	0.09
Total	4,302,366,000	4,203,675,000	4,318,909,000	4,383,555,000	81,189,000	0.02

Source: IHS, Inc., Global Trade Atlas.

Table 33: Israel: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	911,766,000	511,286,000	519,281,000	515,753,000	(396,013,000)	(0.43)
Cleaner and renewable energy	2,018,709,000	1,136,390,000	1,067,484,000	974,429,000	(1,044,280,000)	(0.52)
Energy efficiency	1,427,887,000	1,484,743,000	1,637,440,000	1,595,620,000	167,733,000	0.12
Environmental monitoring, analysis and assessment	194,613,000	155,812,000	148,323,000	155,568,000	(39,045,000)	(0.20)
Environmentally-preferable products	32,304,000	37,515,000	42,231,000	39,201,000	6,897,000	0.21
Environmental remediation and clean-up	29,692,000	9,541,000	4,288,000	4,637,000	(25,055,000)	(0.84)
Noise and vibration abatement	93,792,000	97,384,000	91,658,000	96,454,000	2,662,000	0.03
Solid and hazardous waste management	153,929,000	143,587,000	159,760,000	145,496,000	(8,433,000)	(0.05)
Wastewater management and water treatment	818,282,000	789,465,000	770,341,000	706,656,000	(111,626,000)	(0.14)
Total	5,680,974,000	4,365,723,000	4,440,806,000	4,233,814,000	(1,447,160,000)	(0.25)

Source: IHS, Inc., Global Trade Atlas.

Table 34: Israel: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	127,274,305	102,453,354	89,017,140	98,890,801	(28,383,504)	-22.3
Cleaner and renewable energy	214,256,023	135,443,495	157,631,651	194,861,867	(19,394,156)	-9.1
Energy efficiency	220,120,763	198,723,000	215,607,135	267,760,942	47,640,179	21.6
Environmental monitoring, analysis and assessment	41,564,755	43,579,223	39,714,394	46,925,207	5,360,452	12.9
Environmental remediation and clean-up	3,015,588	4,850,568	3,193,133	3,953,636	938,048	31.1
Environmentally-preferable products	2,934,244	8,532,655	8,891,887	9,790,306	6,856,062	233.7
Noise and vibration abatement	15,278,495	14,061,407	14,286,197	13,433,840	(1,844,655)	-12.1
Solid and hazardous waste management	23,833,389	25,157,531	19,569,237	18,097,487	(5,735,902)	-24.1
Wastewater management and water treatment	132,748,917	112,100,446	114,395,607	122,823,241	(9,925,676)	-7.5
U.S. imports for consumption						
Air pollution control	175,560,003	176,706,886	226,946,252	244,281,617	68,721,614	39.1
Cleaner and renewable energy	391,535,146	399,806,213	374,284,194	313,250,309	(78,284,837)	-20.0
Energy efficiency	626,200,638	600,516,096	567,680,997	575,402,960	(50,797,678)	-8.1
Environmental monitoring, analysis and assessment	31,699,278	31,153,973	28,410,985	30,113,558	(1,585,720)	-5.0
Environmental remediation and clean-up	853,658	2,334,527	185,344	67,030	(786,628)	-92.1
Environmentally-preferable products	6,757,627	6,030,097	11,131,502	10,941,268	4,183,641	61.9
Noise and vibration abatement	50,626,735	52,453,497	45,971,893	54,896,421	4,269,686	8.4
Solid and hazardous waste management	10,192,377	11,897,812	8,234,013	9,080,092	(1,112,285)	-10.9
Wastewater management and water treatment	116,155,467	145,880,656	114,024,805	104,317,401	(11,838,066)	-10.2

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 35: Japan: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	11,325,346,730	10,135,139,761	9,999,181,233	8,988,449,005	(2,336,897,725)	-0.21
Cleaner and renewable energy	48,515,279,739	41,223,486,298	41,380,348,587	36,117,085,460	(12,398,194,279)	-0.26
Energy efficiency	22,572,500,226	20,720,101,198	20,153,491,424	17,981,314,236	(4,591,185,990)	-0.20
Environmental monitoring, analysis and assessment	3,462,743,786	2,567,595,949	2,462,114,443	2,252,831,010	(1,209,912,776)	-0.35
Environmentally-preferable products	357,649,259	336,566,834	314,351,176	293,333,203	(64,316,056)	-0.18
Environmental remediation and clean-up	24,073,501	26,524,286	15,796,605	23,724,833	(348,668)	-0.01
Noise and vibration abatement	1,619,063,925	1,443,396,846	1,705,079,578	1,518,037,457	(101,026,468)	-0.06
Solid and hazardous waste management	2,539,711,516	2,295,858,626	2,309,917,321	2,026,707,169	(513,004,347)	-0.20
Wastewater management and water treatment	15,505,711,488	13,845,393,918	13,774,680,020	12,434,626,708	(3,071,084,780)	-0.20
Total	105,922,080,170	92,594,063,716	92,114,960,387	81,636,109,081	(24,285,971,089)	-0.23

Source: IHS, Inc., Global Trade Atlas.

Table 36: Japan: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	5,635,018,702	5,443,992,572	5,554,721,841	4,994,768,433	(640,250,269)	(0.11)
Cleaner and renewable energy	11,168,728,424	14,892,050,906	17,463,476,536	15,816,154,838	4,647,426,414	0.42
Energy efficiency	16,587,167,482	15,136,921,669	15,961,108,415	15,278,400,057	(1,308,767,425)	(0.08)
Environmental monitoring, analysis and assessment	1,334,102,159	1,249,675,833	1,201,960,711	1,288,841,528	(45,260,631)	(0.03)
Environmentally-preferable products	404,009,471	399,231,181	417,968,829	359,890,494	(44,118,977)	(0.11)
Environmental remediation and clean-up	49,516,470	63,052,392	44,371,485	39,548,957	(9,967,513)	(0.20)
Noise and vibration abatement	1,019,942,099	933,652,443	1,097,353,771	1,039,298,871	19,356,772	0.02
Solid and hazardous waste management	1,356,001,708	1,237,011,380	1,265,273,774	1,097,644,030	(258,357,678)	(0.19)
Wastewater management and water treatment	6,172,554,423	5,962,038,468	6,497,495,609	6,186,220,485	13,666,062	0.00
Total	43,727,040,938	45,317,626,844	49,503,730,971	46,100,767,693	2,373,726,755	0.05

Source: IHS, Inc., Global Trade Atlas.

Table 37: Japan: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	768,072,964	713,084,642	676,297,147	739,917,037	(28,155,927)	-3.7
Cleaner and renewable energy	1,490,356,987	2,191,076,611	2,155,994,615	2,662,904,988	1,172,548,001	78.7
Energy efficiency	1,078,086,363	993,081,671	1,027,958,020	1,071,154,395	(6,931,968)	-0.6
Environmental monitoring, analysis and assessment	366,764,786	366,661,497	291,008,746	302,179,805	(64,584,981)	-17.6
Environmental remediation and clean-up	9,982,910	7,291,906	7,894,819	6,899,683	(3,083,227)	-30.9
Environmentally-preferable products	23,590,517	30,738,946	38,166,041	39,230,389	15,639,872	66.3
Noise and vibration abatement	97,788,368	91,257,581	127,684,124	118,377,578	20,589,210	21.1
Solid and hazardous waste management	96,163,406	95,247,642	114,016,491	98,003,606	1,840,200	1.9
Wastewater management and water treatment	862,526,174	817,484,654	914,884,531	944,344,014	81,817,840	9.5
U.S. imports for consumption						
Air pollution control	2,479,247,523	2,455,703,788	2,466,922,470	2,348,065,700	(131,181,823)	-5.3
Cleaner and renewable energy	7,077,014,728	6,107,489,805	5,994,785,091	5,456,259,293	(1,620,755,435)	-22.9
Energy efficiency	4,053,883,508	3,979,313,220	3,998,266,025	3,711,721,212	(342,162,296)	-8.4
Environmental monitoring, analysis and assessment	330,247,345	278,296,918	260,720,894	256,477,514	(73,769,831)	-22.3
Environmental remediation and clean-up	2,745,962	1,769,342	3,104,644	5,851,392	3,105,430	113.1
Environmentally-preferable products	40,730,321	34,770,440	28,346,931	34,781,878	(5,948,443)	-14.6
Noise and vibration abatement	162,982,980	172,983,946	192,551,428	185,611,283	22,628,303	13.9
Solid and hazardous waste management	314,267,174	387,541,249	313,069,543	311,634,114	(2,633,060)	-0.8
Wastewater management and water treatment	3,161,776,383	3,168,080,199	3,054,247,401	3,071,573,778	(90,202,605)	-2.9

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 38: New Zealand: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	85,153,231	81,529,220	107,830,388	97,109,259	11,956,028	0.14
Cleaner and renewable energy	156,675,019	122,402,897	133,097,705	92,909,967	(63,765,052)	-0.41
Energy efficiency	303,482,657	337,840,650	304,802,915	292,126,663	(11,355,994)	-0.04
Environmental monitoring, analysis and assessment	38,286,531	28,010,442	31,467,302	27,033,635	(11,252,896)	-0.29
Environmentally-preferable products	23,146,740	20,092,391	21,011,324	18,385,326	(4,761,414)	-0.21
Environmental remediation and clean-up	4,105,888	2,998,659	2,970,672	3,063,216	(1,042,672)	-0.25
Noise and vibration abatement	2,880,146	3,270,787	6,649,801	3,880,355	1,000,209	0.35
Solid and hazardous waste management	121,038,209	117,802,445	84,071,379	113,145,251	(7,892,958)	-0.07
Wastewater management and water treatment	127,528,277	118,742,701	130,941,756	105,160,077	(22,368,200)	-0.18
Total	862,296,698	832,690,192	822,843,242	752,813,749	(109,482,949)	-0.13

Source: IHS, Inc., Global Trade Atlas.

Table 39: New Zealand: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	296,921,120	307,538,655	316,106,459	339,208,286	42,287,166	0.14
Cleaner and renewable energy	470,717,811	452,099,386	477,038,219	420,188,447	(50,529,364)	(0.11)
Energy efficiency	741,772,425	813,356,233	894,942,151	889,076,440	147,304,015	0.20
Environmental monitoring, analysis and assessment	63,228,354	62,315,794	63,569,687	57,621,894	(5,606,460)	(0.09)
Environmentally-preferable products	41,035,566	43,757,352	43,651,776	43,515,236	2,479,670	0.06
Environmental remediation and clean-up	3,893,732	5,894,836	4,741,523	4,959,130	1,065,398	0.27
Noise and vibration abatement	16,141,738	17,141,468	14,685,088	15,246,880	(894,858)	(0.06)
Solid and hazardous waste management	111,761,759	75,321,471	100,020,988	95,691,234	(16,070,525)	(0.14)
Wastewater management and water treatment	442,482,948	431,571,895	468,031,922	422,100,414	(20,382,534)	(0.05)
Total	2,187,955,453	2,208,997,090	2,382,787,813	2,287,607,961	99,652,508	0.05

Source: IHS, Inc., Global Trade Atlas.

Table 40: New Zealand: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	32,044,902	28,297,845	34,405,271	28,381,408	(3,663,494)	-11.4
Cleaner and renewable energy	88,637,771	56,512,116	66,033,883	70,557,791	(18,079,980)	-20.4
Energy efficiency	49,083,251	50,419,448	56,240,784	49,482,352	399,101	0.8
Environmental monitoring, analysis and assessment	13,472,127	14,827,139	18,657,043	16,606,605	3,134,478	23.3
Environmental remediation and clean-up	592,509	757,063	325,512	443,425	(149,084)	-25.2
Environmentally-preferable products	1,311,878	1,634,846	1,708,663	1,389,575	77,697	5.9
Noise and vibration abatement	3,640,073	3,547,558	3,379,149	3,406,783	(233,290)	-6.4
Solid and hazardous waste management	13,034,205	10,286,799	11,599,026	12,435,703	(598,502)	-4.6
Wastewater management and water treatment	48,827,954	51,205,062	48,231,106	42,903,907	(5,924,047)	-12.1
U.S. imports for consumption						
Air pollution control	14,975,785	14,470,037	19,746,475	22,703,294	7,727,509	51.6
Cleaner and renewable energy	18,504,903	22,798,748	16,494,258	18,510,614	5,711	0.0
Energy efficiency	36,942,848	34,823,597	39,525,095	47,051,271	10,108,423	27.4
Environmental monitoring, analysis and assessment	2,430,227	2,623,248	2,711,426	3,039,434	609,207	25.1
Environmental remediation and clean-up	241,310	681,068	198,698	12,750	(228,560)	-94.7
Environmentally-preferable products	1,315,759	1,199,907	1,395,787	743,728	(572,031)	-43.5
Noise and vibration abatement	223,357	1,252,927	697,792	263,687	40,330	18.1
Solid and hazardous waste management	34,797,926	20,599,258	21,873,436	29,559,591	(5,238,335)	-15.1
Wastewater management and water treatment	14,529,941	15,862,889	22,131,572	26,615,424	12,085,483	83.2

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 41: Norway: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	487,534,713	590,043,875	653,755,504	697,808,676	210,273,963	0.43
Cleaner and renewable energy	1,405,156,772	1,320,968,547	1,275,535,072	1,132,989,250	(272,167,522)	-0.19
Energy efficiency	1,281,607,093	1,366,977,017	1,549,798,219	1,147,095,885	(134,511,208)	-0.10
Environmental monitoring, analysis and assessment	404,199,501	462,554,191	430,331,481	525,489,657	121,290,156	0.30
Environmentally-preferable products	52,710,809	55,030,454	65,261,828	53,263,995	553,186	0.01
Environmental remediation and clean-up	15,594,643	65,501,014	91,389,887	115,543,200	99,948,557	6.41
Noise and vibration abatement	201,614,160	280,726,191	288,477,778	220,953,963	19,339,803	0.10
Solid and hazardous waste management	188,305,387	215,537,382	191,322,752	182,577,084	(5,728,303)	-0.03
Wastewater management and water treatment	1,512,355,733	1,634,498,525	1,885,571,723	1,789,871,559	277,515,826	0.18
Total	5,549,078,811	5,991,837,196	6,431,444,244	5,865,593,269	316,514,458	0.06

Source: IHS, Inc., Global Trade Atlas.

Table 42: Norway: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	1,139,950,742	1,200,955,713	1,240,339,347	1,073,284,601	(66,666,141)	(0.06)
Cleaner and renewable energy	1,689,015,517	1,585,574,834	1,591,798,087	1,517,049,303	(171,966,214)	(0.10)
Energy efficiency	1,966,592,985	2,201,102,050	2,372,794,114	2,023,759,456	57,166,471	0.03
Environmental monitoring, analysis and assessment	339,585,202	396,844,077	453,218,341	679,842,670	340,257,468	1.00
Environmentally-preferable products	164,404,789	175,590,330	175,675,446	156,594,316	(7,810,473)	(0.05)
Environmental remediation and clean-up	40,355,492	45,634,145	39,315,704	30,941,215	(9,414,277)	(0.23)
Noise and vibration abatement	120,710,104	182,915,749	195,188,016	153,109,588	32,399,484	0.27
Solid and hazardous waste management	310,379,285	332,422,180	347,898,584	270,040,801	(40,338,484)	(0.13)
Wastewater management and water treatment	2,026,984,922	2,112,825,128	2,372,470,494	1,833,997,355	(192,987,567)	(0.10)
Total	7,797,979,038	8,233,864,206	8,788,698,133	7,738,619,305	(59,359,733)	(0.01)

Source: IHS, Inc., Global Trade Atlas.

Table 43: Norway: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	52,068,470	61,078,342	53,831,031	54,473,718	2,405,248	4.6
Cleaner and renewable energy	115,021,966	168,867,913	222,755,239	137,533,916	22,511,950	19.6
Energy efficiency	68,326,739	65,180,386	89,025,229	80,512,195	12,185,456	17.8
Environmental monitoring, analysis and assessment	205,024,221	174,774,327	187,373,932	53,372,101	(151,652,120)	-74.0
Environmental remediation and clean-up	5,542,527	1,519,062	1,373,366	2,964,937	(2,577,590)	-46.5
Environmentally-preferable products	1,315,484	1,963,151	2,531,293	3,181,737	1,866,253	141.9
Noise and vibration abatement	6,922,075	11,066,896	20,544,775	9,961,761	3,039,686	43.9
Solid and hazardous waste management	8,041,764	8,710,041	6,171,939	8,485,024	443,260	5.5
Wastewater management and water treatment	174,469,922	187,180,217	205,657,442	178,515,159	4,045,237	2.3
U.S. imports for consumption						
Air pollution control	23,647,082	30,161,557	29,904,811	34,337,466	10,690,384	45.2
Cleaner and renewable energy	96,279,735	114,915,416	107,397,914	71,801,844	(24,477,891)	-25.4
Energy efficiency	144,746,373	120,916,666	90,264,622	56,023,843	(88,722,530)	-61.3
Environmental monitoring, analysis and assessment	49,219,132	53,399,205	62,774,991	45,376,189	(3,842,943)	-7.8
Environmental remediation and clean-up	3,428,045	5,022,481	4,075,820	1,958,186	(1,469,859)	-42.9
Environmentally-preferable products	5,647,158	5,506,120	5,124,596	6,444,076	796,918	14.1
Noise and vibration abatement	7,178,331	7,076,113	7,900,420	7,027,546	(150,785)	-2.1
Solid and hazardous waste management	7,737,224	8,967,064	7,854,759	9,321,744	1,584,520	20.5
Wastewater management and water treatment	53,697,227	81,814,877	95,721,105	149,325,214	95,627,987	178.1

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 44: Singapore: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	2,659,443,170	2,937,044,919	3,109,592,230	2,953,196,249	293,753,079	0.11
Cleaner and renewable energy	8,263,311,862	7,796,168,548	9,264,191,208	9,165,816,439	902,504,577	0.11
Energy efficiency	11,909,485,951	10,517,420,445	10,386,235,198	11,115,364,034	(794,121,917)	-0.07
Environmental monitoring, analysis and assessment	1,624,133,260	1,953,806,272	1,946,893,196	1,723,244,631	99,111,371	0.06
Environmentally-preferable products	182,596,304	141,079,810	180,488,943	181,460,096	(1,136,208)	-0.01
Environmental remediation and clean-up	69,101,742	68,340,891	50,684,472	75,574,161	6,472,419	0.09
Noise and vibration abatement	964,072,554	805,999,730	661,907,263	589,830,354	(374,242,200)	-0.39
Solid and hazardous waste management	556,267,934	545,810,274	586,253,132	555,714,395	(553,539)	0.00
Wastewater management and water treatment	3,873,974,452	4,307,242,234	4,860,795,996	4,775,069,466	901,095,014	0.23
Total	30,102,387,229	29,072,913,123	31,047,041,638	31,135,269,825	1,032,882,596	0.03

Source: IHS, Inc., Global Trade Atlas.

Table 45: Singapore: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	2,001,730,793	2,238,393,968	3,062,235,090	2,554,946,125	553,215,332	0.28
Cleaner and renewable energy	6,678,590,598	6,699,370,993	6,664,949,949	6,349,262,675	(329,327,923)	(0.05)
Energy efficiency	8,285,755,705	8,425,148,234	8,022,879,893	8,033,450,239	(252,305,466)	(0.03)
Environmental monitoring, analysis and assessment	1,731,799,388	1,843,289,889	1,707,667,970	1,647,020,573	(84,778,815)	(0.05)
Environmentally-preferable products	404,472,278	394,561,805	369,142,633	328,332,413	(76,139,865)	(0.19)
Environmental remediation and clean-up	138,098,977	68,521,097	72,677,945	118,629,889	(19,469,088)	(0.14)
Noise and vibration abatement	784,754,113	687,903,903	652,026,394	632,204,390	(152,549,723)	(0.19)
Solid and hazardous waste management	776,027,894	655,043,404	618,776,922	589,254,695	(186,773,199)	(0.24)
Wastewater management and water treatment	4,116,774,737	4,421,575,419	4,563,778,741	4,351,530,847	234,756,110	0.06
Total	24,918,004,483	25,433,808,712	25,734,135,537	24,604,631,846	(313,372,637)	(0.01)

Source: IHS, Inc., Global Trade Atlas.

Table 46: Singapore: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	392586182	391086421	409656838	407036505	14450323	3.7
Cleaner and renewable energy	1,250,822,098	1,055,202,671	1,185,671,669	1,258,575,591	7,753,493	0.6
Energy efficiency	845,813,960	837,058,927	781,595,689	710,451,397	(135,362,563)	-16.0
Environmental monitoring, analysis and assessment	331,272,425	400,158,965	311,604,804	314,186,705	(17,085,720)	-5.2
Environmental remediation and clean-up	22,696,255	12,186,459	28,287,484	14,565,545	(8,130,710)	-35.8
Environmentally-preferable products	23,142,444	25,201,780	26,380,154	24,513,865	1,371,421	5.9
Noise and vibration abatement	111,302,170	99,148,238	94,178,774	91,800,826	(19,501,344)	-17.5
Solid and hazardous waste management	112,426,822	90,202,699	78,404,758	84,993,262	(27,433,560)	-24.4
Wastewater management and water treatment	1,016,207,865	1,206,105,821	1,088,661,317	936,668,390	(79,539,475)	-7.8
U.S. imports for consumption						
Air pollution control	323,876,891	369,155,217	391,927,502	372,920,960	49,044,069	15.1
Cleaner and renewable energy	681,163,693	505,975,115	719,852,981	1,008,691,716	327,528,023	48.1
Energy efficiency	631,167,114	659,599,199	608,630,967	589,585,695	(41,581,419)	-6.6
Environmental monitoring, analysis and assessment	86,986,855	102,972,849	97,815,006	92,438,210	5,451,355	6.3
Environmental remediation and clean-up	28,876	165,275	157,205	68,878	40,002	138.5
Environmentally-preferable products	2,278,880	2,339,939	2,600,289	2,925,216	646,336	28.4
Noise and vibration abatement	80,527,377	72,829,421	63,911,373	56,871,059	(23,656,318)	-29.4
Solid and hazardous waste management	66,904,669	52,842,681	58,241,241	67,480,739	576,070	0.9
Wastewater management and water treatment	538,812,148	479,281,107	532,424,114	551,557,947	12,745,799	2.4

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 47: South Korea: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	9,434,980,039	10,653,342,963	10,033,864,863	11,262,484,204	1,827,504,165	0.19
Cleaner and renewable energy	44,043,206,406	41,368,409,536	40,969,892,475	38,204,012,380	(5,839,194,026)	-0.13
Energy efficiency	13,345,264,749	16,313,518,823	14,521,250,954	13,686,519,516	341,254,767	0.03
Environmental monitoring, analysis and assessment	560,221,098	629,696,324	678,053,212	644,204,404	83,983,306	0.15
Environmentally-preferable products	362,138,175	341,375,281	351,245,512	316,720,701	(45,417,474)	-0.13
Environmental remediation and clean-up	8,116,003	18,595,499	13,536,234	263,778,062	255,662,059	31.50
Noise and vibration abatement	548,682,657	739,402,136	753,634,983	964,061,886	415,379,229	0.76
Solid and hazardous waste management	2,367,975,782	2,210,275,781	2,166,239,731	2,190,860,462	(177,115,320)	-0.07
Wastewater management and water treatment	5,515,286,428	5,237,730,382	5,190,506,974	5,373,018,517	(142,267,911)	-0.03
Total	76,185,871,337	77,512,346,725	74,678,224,938	72,905,660,132	(3,280,211,205)	-0.04

Source: IHS, Inc., Global Trade Atlas.

Table 48: South Korea: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	5,655,022,641	6,459,636,994	6,721,620,357	6,848,864,329	1,193,841,688	0.21
Cleaner and renewable energy	18,281,266,281	18,536,411,784	19,379,675,360	18,762,436,541	481,170,260	0.03
Energy efficiency	12,384,480,334	14,362,599,790	11,459,852,626	10,695,829,712	(1,688,650,622)	(0.14)
Environmental monitoring, analysis and assessment	1,518,459,524	1,395,526,432	1,426,490,335	1,421,005,647	(97,453,877)	(0.06)
Environmentally-preferable products	238,996,302	246,370,765	253,899,788	280,510,536	41,514,234	0.17
Environmental remediation and clean-up	50,263,950	114,975,013	154,244,003	58,852,036	8,588,086	0.17
Noise and vibration abatement	900,362,565	804,091,548	876,006,776	886,537,980	(13,824,585)	(0.02)
Solid and hazardous waste management	1,447,813,197	1,324,532,670	1,269,594,373	1,175,094,310	(272,718,887)	(0.19)
Wastewater management and water treatment	6,246,881,484	6,824,435,760	7,294,430,101	6,842,233,285	595,351,801	0.10
Total	46,723,546,278	50,068,580,756	48,835,813,719	46,971,364,376	247,818,098	0.01

Source: IHS, Inc., Global Trade Atlas.

Table 49: South Korea: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	554,072,867	738,298,295	680,119,177	721,761,707	167,688,840	30.3
Cleaner and renewable energy	2,651,143,876	2,376,026,339	3,086,152,827	3,059,204,016	408,060,140	15.4
Energy efficiency	785,448,360	866,558,731	796,943,529	819,590,448	34,142,088	4.3
Environmental monitoring, analysis and assessment	218,482,079	214,823,987	260,312,855	231,744,337	13,262,258	6.1
Environmental remediation and clean-up	35,430,640	34,907,941	38,155,386	39,190,653	3,760,013	10.6
Environmentally-preferable products	20,352,107	25,779,437	27,447,886	32,815,395	12,463,288	61.2
Noise and vibration abatement	114,495,563	112,026,543	212,028,094	100,884,276	(13,611,287)	-11.9
Solid and hazardous waste management	155,456,979	169,565,653	153,530,916	127,351,191	(28,105,788)	-18.1
Wastewater management and water treatment	1,095,966,940	1,394,897,890	1,502,200,505	1,150,808,088	54,841,148	5.0
U.S. imports for consumption						
Air pollution control	634,148,436	753,354,477	803,029,683	729,492,204	95,343,768	15.0
Cleaner and renewable energy	1,665,727,277	1,549,872,690	2,008,008,024	2,460,961,594	795,234,317	47.7
Energy efficiency	1,398,537,781	1,746,894,328	2,065,615,232	1,476,378,743	77,840,962	5.6
Environmental monitoring, analysis and assessment	44,314,147	53,131,890	58,781,935	63,655,246	19,341,099	43.6
Environmental remediation and clean-up	413,103	553,531	331,609	2,147,660	1,734,557	419.9
Environmentally-preferable products	21,350,987	23,744,040	30,149,282	28,895,764	7,544,777	35.3
Noise and vibration abatement	19,984,074	20,916,834	35,027,338	48,125,811	28,141,737	140.8
Solid and hazardous waste management	79,660,616	82,618,054	124,268,012	216,756,682	137,096,066	172.1
Wastewater management and water treatment	796,700,509	802,860,728	890,129,696	959,907,253	163,206,744	20.5

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 50: Switzerland: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	2,753,545,305	2,855,349,192	2,736,304,608	2,319,147,625	(434,397,680)	-0.16
Cleaner and renewable energy	4,901,166,702	4,964,691,672	5,026,576,777	4,416,136,601	(485,030,101)	-0.10
Energy efficiency	4,181,590,808	4,202,450,346	3,986,791,932	3,477,705,056	(703,885,752)	-0.17
Environmental monitoring, analysis and assessment	630,963,579	630,450,299	632,510,454	541,283,002	(89,680,577)	-0.14
Environmentally-preferable products	273,581,617	236,834,931	261,370,068	186,286,822	(87,294,795)	-0.32
Environmental remediation and clean-up	2,390,047	2,505,512	4,076,510	4,098,189	1,708,142	0.71
Noise and vibration abatement	472,748,292	528,206,720	558,333,036	514,825,026	42,076,734	0.09
Solid and hazardous waste management	1,024,082,953	1,065,257,789	1,065,720,878	971,350,485	(52,732,468)	-0.05
Wastewater management and water treatment	4,889,018,416	5,152,607,050	5,295,659,412	4,781,321,280	(107,697,136)	-0.02
Total	19,129,087,719	19,638,353,511	19,567,343,675	17,212,154,086	(1,916,933,633)	-0.10

Source: IHS, Inc., Global Trade Atlas.

Table 51: Switzerland: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	1,769,660,760	1,914,618,092	2,041,136,257	1,799,775,441	30,114,681	0.02
Cleaner and renewable energy	2,938,626,257	3,188,831,197	3,053,511,064	2,719,080,580	(219,545,677)	(0.07)
Energy efficiency	4,338,688,940	4,656,838,132	4,753,135,269	4,405,069,180	66,380,240	0.02
Environmental monitoring, analysis and assessment	370,066,448	382,573,081	386,531,703	363,753,519	(6,312,929)	(0.02)
Environmentally-preferable products	346,138,227	362,272,226	375,037,071	318,453,748	(27,684,479)	(0.08)
Environmental remediation and clean-up	6,386,389	7,512,001	9,380,824	7,629,999	1,243,610	0.19
Noise and vibration abatement	326,478,225	355,379,404	395,113,474	365,435,548	38,957,323	0.12
Solid and hazardous waste management	538,323,479	583,522,992	585,564,629	542,865,599	4,542,120	0.01
Wastewater management and water treatment	2,573,486,406	2,626,966,429	2,729,192,308	2,368,863,297	(204,623,109)	(0.08)
Total	13,207,855,131	14,078,513,554	14,328,602,599	12,890,926,911	(316,928,220)	(0.02)

Source: IHS, Inc., Global Trade Atlas.

Table 52: Switzerland: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	66,363,168	66,725,276	65,202,705	59,372,721	(6,990,447)	-10.5
Cleaner and renewable energy	175,638,245	132,919,487	98,633,735	104,734,440	(70,903,805)	-40.4
Energy efficiency	80,692,613	103,385,113	105,272,332	113,715,774	33,023,161	40.9
Environmental monitoring, analysis and assessment	32,693,864	28,647,894	31,615,783	31,104,948	(1,588,916)	-4.9
Environmental remediation and clean-up	2,535,066	2,261,195	2,121,746	1,308,474	(1,226,592)	-48.4
Environmentally-preferable products	2,831,608	4,577,096	2,924,354	3,428,654	597,046	21.1
Noise and vibration abatement	27,070,302	23,296,304	41,778,468	30,011,618	2,941,316	10.9
Solid and hazardous waste management	10,168,400	9,391,127	7,684,750	7,121,538	(3,046,862)	-30.0
Wastewater management and water treatment	151,578,977	127,084,986	140,856,454	141,593,296	(9,985,681)	-6.6
U.S. imports for consumption						
Air pollution control	266,265,847	303,674,992	314,990,687	281,200,935	14,935,088	5.6
Cleaner and renewable energy	499,369,993	421,934,137	437,374,941	478,277,547	(21,092,446)	-4.2
Energy efficiency	287,565,872	285,283,152	332,017,287	318,185,586	30,619,714	10.6
Environmental monitoring, analysis and assessment	72,242,420	86,731,795	87,966,239	83,346,418	11,103,998	15.4
Environmental remediation and clean-up	416,129	465,757	405,216	204,658	(211,471)	-50.8
Environmentally-preferable products	7,998,214	7,506,548	5,798,821	4,457,516	(3,540,698)	-44.3
Noise and vibration abatement	46,394,272	50,862,982	53,573,934	58,700,584	12,306,312	26.5
Solid and hazardous waste management	134,035,664	144,164,620	168,600,495	175,711,875	41,676,211	31.1
Wastewater management and water treatment	638,441,120	600,443,059	715,143,630	664,005,309	25,564,189	4.0

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.

Table 53: Turkey: Exports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	916,764,939	987,877,914	1,058,484,549	952,762,229	35,997,290	0.04
Cleaner and renewable energy	1,966,674,859	2,214,668,852	2,126,874,070	1,953,986,370	(12,688,489)	-0.01
Energy efficiency	1,288,334,231	1,341,967,294	1,446,474,494	1,242,708,827	(45,625,404)	-0.04
Environmental monitoring, analysis and assessment	45,672,510	39,972,743	49,862,253	48,288,240	2,615,730	0.06
Environmentally-preferable products	222,247,032	264,764,877	281,405,115	273,932,453	51,685,421	0.23
Environmental remediation and clean-up	10,038,055	18,322,266	10,796,714	19,931,527	9,893,472	0.99
Noise and vibration abatement	43,200,509	43,354,318	43,676,672	31,407,664	(11,792,845)	-0.27
Solid and hazardous waste management	383,412,344	398,498,376	421,002,014	361,308,497	(22,103,847)	-0.06
Wastewater management and water treatment	1,742,431,802	1,931,419,724	2,099,943,008	1,695,576,967	(46,854,835)	-0.03
Total	6,618,776,281	7,240,846,364	7,538,518,889	6,579,902,774	(38,873,507)	-0.01

Source: IHS, Inc., Global Trade Atlas.

Table 54: Turkey: Imports of environmental goods (dollars)

	2012	2013	2014	2015	Change from 2012–2015	
					Absolute	Percent
Air pollution control	2,173,909,077	2,528,355,435	2,348,467,770	2,314,094,959	140,185,882	0.06
Cleaner and renewable energy	4,053,861,912	4,840,475,535	3,755,917,040	3,895,635,698	(158,226,214)	(0.04)
Energy efficiency	4,678,330,168	4,513,373,928	4,575,542,162	4,521,902,474	(156,427,694)	(0.03)
Environmental monitoring, analysis and assessment	257,464,156	289,483,630	305,385,451	320,254,231	62,790,075	0.24
Environmentally-preferable products	89,510,849	91,478,124	104,514,644	104,522,118	15,011,269	0.17
Environmental remediation and clean-up	10,719,425	4,360,193	7,370,403	7,938,132	(2,781,293)	(0.26)
Noise and vibration abatement	99,334,577	102,302,417	126,711,366	119,389,985	20,055,408	0.20
Solid and hazardous waste management	713,840,785	867,251,035	634,138,990	640,957,473	(72,883,312)	(0.10)
Wastewater management and water treatment	2,335,510,852	2,772,004,581	2,611,264,218	2,468,177,756	132,666,904	0.06
Total	14,412,481,801	16,009,084,878	14,469,312,044	14,392,872,826	(19,608,975)	(0.00)

Source: IHS, Inc., Global Trade Atlas.

Table 55: Turkey: U.S. domestic exports and imports for consumption by product category and country, 2012–2015 (dollars)

Product category	2012	2013	2014	2015	Change, 2012–2015	
					Absolute	Percentage
U.S. domestic exports						
Air pollution control	69,209,037	90,769,463	78,870,924	67,833,790	(1,375,247)	-2.0
Cleaner and renewable energy	212,838,828	271,833,746	248,227,787	139,599,892	(73,238,936)	-34.4
Energy efficiency	109,060,318	131,639,482	116,152,401	106,977,512	(2,082,806)	-1.9
Environmental monitoring, analysis and assessment	25,989,136	26,181,353	37,903,501	22,722,271	(3,266,865)	-12.6
Environmental remediation and clean-up	686,459	2,710,294	892,428	981,227	294,768	42.9
Environmentally-preferable products	6,651,094	9,144,290	8,234,168	8,824,443	2,173,349	32.7
Noise and vibration abatement	9,599,122	11,569,152	11,064,604	10,008,553	409,431	4.3
Solid and hazardous waste management	33,270,247	37,982,666	25,372,693	26,275,364	(6,994,883)	-21.0
Wastewater management and water treatment	102,905,694	146,665,738	108,092,380	105,662,450	2,756,756	2.7
U.S. imports for consumption						
Air pollution control	30,231,177	30,374,725	38,991,983	35,053,668	4,822,491	16.0
Cleaner and renewable energy	51,364,941	54,926,842	62,315,614	115,681,433	64,316,492	125.2
Energy efficiency	12,706,424	8,947,686	17,929,331	13,920,001	1,213,577	9.6
Environmental monitoring, analysis and assessment	781,756	1,712,171	1,680,791	1,148,013	366,257	46.9
Environmental remediation and clean-up	25,067	59,690	43,100	21,271	(3,796)	-15.1
Environmentally-preferable products	7,964,882	5,420,838	2,476,936	2,982,178	(4,982,704)	-62.6
Noise and vibration abatement	1,164,657	3,002,481	1,273,426	3,131,670	1,967,013	168.9
Solid and hazardous waste management	18,274,678	21,599,555	24,048,966	19,854,006	1,579,328	8.6
Wastewater management and water treatment	191,399,352	164,187,412	221,023,940	221,470,932	30,071,580	15.7

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note: Trade data reflects Census Bureau updates issued on June 3, 2016.