Top International Markets for Environmental Management Companies

Taking your green industry to the next level in the global market
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Introduction

**Making the World a more Sustainable Place with Green Innovations Creates Promising Export Business Opportunities**

In the last few years ‘Green Industries’ has taken a boom in the global market. Countries are becoming more aware and concerned about sustainability, and alternative means of living. These industries are developing a profitable market that is full of opportunities for U.S. products and services. Environmental concerns have pushed themselves to the surface and have grabbed the public’s attention as well. These concerns are then put on both government and private sector agendas. The prospects for export sales are becoming promising for renewable energy, environmental management, and green building services.

Both the private sectors and governments look to recent innovations to create a sustainable environment and less polluting energy sources to transform a polluted, industrialized world. This is why American companies must take this market by storm, and immerse themselves in this fast-growing and highly competitive industry.

This publication lists the top ten foreign country destinations of U. S products and services in the Environmental Management field, in the time frame included in the charts. It also lists other opportunities in emerging, fast growing countries that are rapidly developing infrastructure in a sustainable way. Of course, it is never certain that today’s market destinations will be certain in tomorrow’s top destinations. This is the reason why both the current and emerging markets are included.

The Environmental Management Guide has categorized the top ten countries for selling U.S. products and services in 2011. The subcategories included in the data are: water analysis, water filtering, waste treatment/disposal/recycling, air pollution, and air purification. The major source of the information is from export.gov and the others that are noted. The following list is of HS codes that were used to collect data according to industry:

1. Water Analysis: 9025
2. Water Filtering: 8421
4. Air Pollution Measurement: 9026
5. Air Purification: 8421

For each of the countries presented, this guide provides an insight to the country’s green consciousness, a chart of the market size sum for these subcategories, best prospects and opportunities, and a summary of how to get into this country’s market. This information is what U.S. firms need when evaluating foreign market opportunities for their products and services.
Research data have been obtained from government sources, trade association publications, business journals, and company literature.

Industry Analysis

The Environmental Business International-EBI uses environmental management and environmental technologies (ET) interchangeably, it is defined as all goods and services that generate revenue associated with environmental protection, assessment, compliance with environmental regulations, pollution control and prevention, waste management, renewable energy, remediation of contaminated property, design and operation of environmental infrastructure, and the provision and delivery of environmental resources.¹

The EBI creates their report around these key subsectors for products and services of the ET industry: air, water, and soil pollution control; solid and toxic waste management; recycling; renewable energy; pollution prevention and resource recovery; site remediation; environmental monitoring; and water treatment for industrial and municipal water use. The sector of environmental technologies is very broad and has a wide variety of products and services that cut across many different industry sectors.

Suggested Certifications for Small Businesses and their products

The following information was acquired from government websites: export.gov, epa.gov,

The United States Small Business Administration lists several certifications that can help you create a competitive advantage by labeling your product as environmentally sound on an international level.

International Certification

- The [European Union Eco-Label](#) Program is a voluntary scheme designed to encourage businesses to market products and services that are kinder to the environment and for European consumers
- Canada's [EcoLogo Label](#) program certifies products from the United States and Canada in over 120 categories
- Germany's [Blue Angel](#) program provides ecolabeling for a wide variety products
- Scandinavia's [Nordic Swan](#) allows companies to apply for an ecolabel in over 66 product categories
- Japan's [EcoMark Program](#) provides product certification and ecolabeling for several product types, also [CASBEE](#) is a labeling tool based on the Building Environmental Efficiency (BEE).
- Taiwan's [Green Mark](#) and [Energy Label](#) programs provide certification and ecolabeling for green and energy efficient products

• **The French Conformite Europeene, CE**: is a program certifies that a product has met EU health, safety, and environmental requirements, which ensure consumer safety. Manufacturers in the European Union (EU) and abroad must meet CE marking requirements where applicable in order to market their products in Europe. CE provides a list of the countries that requires the seal, and many industries are affected. Consult with CITRA at Duquesne University for more information. ([www.sbdc.duq.edu](http://www.sbdc.duq.edu))

• **The Waste Electrical and Electronic Equipment Directive (WEEE)**, which sets out the financial and other responsibilities of EEE producers with regard to the collection and recycling of waste from a broad range of EEE at their end of life.

• **The Restriction of Hazardous Substances Directive (RoHS)**, which bans the use of certain hazardous substances (such as lead, mercury, cadmium, hexavalent chromium and some polybrominated flame-retardants) in EEE.

• **REACH (Registration, Evaluation, Authorization and Restrictions of chemicals)**: is a major reform of EU chemicals policy, affecting all global supply chains that produce and use chemicals.

• **EuP: Eco-Design and Energy Efficiency**: Products which use sources of energy, such as televisions, computers, fans, lighting, will be subject to new EU energy efficiency requirements in the near future. The goal is to minimize the use of energy at the design stage and throughout production, transport, packaging, etc. Products in compliance with EuP implementing measures can be easily recognized because they will carry a CE marking.

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**Overview of Environmental Management Industry**

*This information was acquired from a government website: epa.gov*

What is Environmental Management? The International Organization for Standardization (ISO) defines it as environmental management systems (EMS), and that it is "part of the overall practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy." EMS focuses on environmental management practices rather than the activities themselves. It provides the structure by which certain activities can be carried out; it ensures operator training and that proper procedures are in place but doesn't specify methods or frequency of sampling. The EMS allows Federal agencies and facilities flexibility to adapt the system to their needs and priorities.

**Environmental Management in the US**

According to Environmental Business International (EBI), employment for the U.S. Environmental Technology (ET) industry is approximately 1.6 million for all segments, producing revenues of $290 billion. The U.S. ET industry revenue is broken down into the various industry segments as follows: services (47%), equipment (21%), and resources (32%). The industry evolved from the increasing concern of the risks and costs that were coming from pollution. In particular, this response grew in the United States in regards to pollution control legislation and

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<http://web.ita.doc.gov/ete/eteinfo.nsf/068f3801d047f26e85256883006ffa54/4878b7e2fc08ac6d85256883006c452c/$FILE/Full%20Environmental%20Industries%20Assessment%202010.pdf>.
regulations that were enacted, and equally done around the world. Today the movement is fueled by sustainability concerns. There are always challenges in industries that are flourishing and expanding. There are no current North American Industry Classification System (NAICS) or any other system that defines specific industries of which are under the domain of environmental industries. The International Trade Administration’s (ITA) Office of Energy and Environmental Industries (OEEI) has developed the most comprehensive and representative list of products for the ET industry, based on the Harmonized Tariff System.3

According to EBI, the global market for the ET sector in 2008 was estimated at $782 billion. In the United States, the world’s largest producer and consumer of ET goods and services, approximately 119,000 ET firms generate $300 billion in revenues and $43.8 billion in exports, supporting close to 1.7 million jobs.4

While 99 percent of U.S. ET private sector companies fall under the small and medium-sized enterprises (SMEs) category, they generate only 20 percent of the total U.S. ET revenue. Large ET companies, which represent only one percent of all private sector activity, account for 49 percent of total U.S. ET revenue. Public-sector municipalities and similar entities account the remaining 31 percent of revenue and dominate water utilities, wastewater treatment works, and solid waste management.5 The following chart shows the U.S environment export between the years 2004-2008, to the global market.

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Market</td>
<td>638.6</td>
<td>671.2</td>
<td>711.9</td>
<td>757.9</td>
<td>782.4</td>
</tr>
<tr>
<td>US Market</td>
<td>245.2</td>
<td>256.3</td>
<td>271.4</td>
<td>289.6</td>
<td>299.5</td>
</tr>
<tr>
<td>Non-US Market</td>
<td>393.4</td>
<td>414.8</td>
<td>440.5</td>
<td>468.4</td>
<td>493.8</td>
</tr>
<tr>
<td>% Exports</td>
<td>11.4%</td>
<td>12.0%</td>
<td>13.1%</td>
<td>14.2%</td>
<td>14.6%</td>
</tr>
<tr>
<td>US Exports</td>
<td>28.7</td>
<td>31.8</td>
<td>36.9</td>
<td>43.1</td>
<td>43.8</td>
</tr>
<tr>
<td>% Growth in U.S. Envl Exports</td>
<td>10%</td>
<td>11%</td>
<td>16%</td>
<td>17%</td>
<td>2%</td>
</tr>
<tr>
<td>US Share of Non-US Market</td>
<td>7.3%</td>
<td>7.7%</td>
<td>8.4%</td>
<td>9.2%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Trade Surplus</td>
<td>5.9</td>
<td>8.2</td>
<td>10.7</td>
<td>12.8</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Source: Environmental Business International, San Diego, CA

The chart below is of subsectors that environmental technologies goods and services can easily fall under. The largest segments in the global ET market are: solid waste, water utilities, and water treatment works, renewable energy, and water equipment and chemicals. The water/wastewater treatment sector and the renewable energy sectors have the greatest opportunities in the international market; the global water market has grown rapidly over the last decade and alone accounts for over 35 percent of the total global environmental market.6

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3 FY2010 INDUSTRY ASSESSMENT
5 FY2010 INDUSTRY ASSESSMENT
6 FY2010 INDUSTRY ASSESSMENT
Subsectors of Environmental Technologies goods and services

<table>
<thead>
<tr>
<th>Equipment</th>
<th>US in 2008 ($billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Equipment &amp; Chemicals</td>
<td>28.5</td>
</tr>
<tr>
<td>Air Pollution Control</td>
<td>18.0</td>
</tr>
<tr>
<td>Instruments &amp; Info. Systems</td>
<td>5.9</td>
</tr>
<tr>
<td>Waste Mgmt Equipment</td>
<td>11.4</td>
</tr>
<tr>
<td>Process &amp; Prevention Tech.</td>
<td>1.9</td>
</tr>
<tr>
<td>Services</td>
<td>0.0</td>
</tr>
<tr>
<td>Solid Waste Management</td>
<td>53.1</td>
</tr>
<tr>
<td>Hazardous Waste Mgmt</td>
<td>9.2</td>
</tr>
<tr>
<td>Consulting &amp; Engineering</td>
<td>27.1</td>
</tr>
<tr>
<td>Remediation/Industrial Services</td>
<td>12.5</td>
</tr>
<tr>
<td>Analytical Services</td>
<td>1.9</td>
</tr>
<tr>
<td>Water Treatment Works</td>
<td>40.7</td>
</tr>
</tbody>
</table>

Resources

| Water Utilities                               | 39.2 |
| Resource Recovery                             | 28.5 |
| Clean Energy Systems & Power                  | 21.5 |

| Total                                         | 299.5 |

Source: Environmental Business International, Inc. (San Diego, CA)

* Data on the ET industry and markets vary significantly because of inexact definitions of the sector. Key sources of ET data are: EBJ, Environmental Business International, Inc. (EBI), (San Diego, CA). USDOC data was used for detailed trade flows based on the expanded HTS-based list of ET products. For ET services area, OEEI relies on EBI only since there are no reliable service-related codes to track trade flows.

The United States is regarded as a world leader in many ET categories, including: engineering, design, construction, and consulting services; pollution prevention and resource recovery; water and wastewater handling and treatment equipment; stationary and mobile source air pollution monitoring and control equipment; solid and hazardous waste management; contaminated site remediation; automation for treatment systems and monitoring equipment; and, information systems/software for environmental management and analysis.7

In terms of exports as a percentage of total U.S. ET production, the leading subsectors are: resource recovery (58%), instruments and information systems (46%), waste equipment and chemicals (36%), waste management equipment (25%), and air pollution control (16%). According to the U.S Department of Commerce trade statistics, U.S. ET product exports totaled approximately $39 billion in 2007. While developed nations are the largest markets for U.S. ET, the highest growth rates and export opportunities are in major developing markets like China, India, and other selected markets in Asia and South America.8

8 FY2010 INDUSTRY ASSESSMENT
Global View
This information was acquired from a government website: www.its.gov/exportamerica

In the international market the most promising opportunities lay in water and wastewater treatment. The global water market has grown rapidly, accounting for 40 percent of the world’s total environmental market. U.S has become a major exporter in these sectors, and produce specialty equipment that are not available from other suppliers. Companies in the United States have become very competitive in environmental monitoring, instrumentation, information system equipment, engineering design, and consulting services for both water and wastewater treatment sectors. In the global market environmental instrumentation has been estimated by ITA at about $7.1 billion (USD), and U.S firms hold an astounding 33 percent share of the international market. More than 90 percent of the U.S environmental instrumentation exports to Canada, Japan, and the European Union.

According to World’s Richest Countries website, U.S finished in third in 2008 in exporting to the world market. Several products that were being exported were Environmental technologically related, such as Semiconductors at $50.6 million ranked at second of the top ten items, holding 3.9% of the U.S exporting market. Industrial machine products at $38.1 million ranked at sixth place, and holding 3% of the market; which was followed by organic chemicals at $33.4 million and ranking at seventh holding 2.6% of the market. Ranking at tenth place plastic materials at $31.6 million and holding 2.5% of the export market.⁹

Export Opportunities for U.S Environmental Management Firms

Throughout the research in Environmental Management, there were a few sub categories, such as: water analysis, water filtering, waste treatment/disposal/recycling, air pollution, and air purification. The following chart depicts the ranking for the top ten countries in the total market size of U.S exports to these countries for 2011.

<table>
<thead>
<tr>
<th></th>
<th>Market Size Total 11'</th>
<th>2009-2011 % growth</th>
<th>2006-2011 % growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Canada</td>
<td>$10,129,819,556</td>
<td>61%</td>
<td>58%</td>
</tr>
<tr>
<td>#2 Mexico</td>
<td>$3,216,583,778</td>
<td>34%</td>
<td>43%</td>
</tr>
<tr>
<td>#3 China</td>
<td>$1,811,044,984</td>
<td>24%</td>
<td>23%</td>
</tr>
<tr>
<td>#4 Australia</td>
<td>$1,091,833,909</td>
<td>59%</td>
<td>69%</td>
</tr>
<tr>
<td>#5 Japan</td>
<td>$973,997,646</td>
<td>27%</td>
<td>-91%</td>
</tr>
<tr>
<td>#6 Germany</td>
<td>$966,718,092</td>
<td>28%</td>
<td>-3%</td>
</tr>
<tr>
<td>#7 S. Korea</td>
<td>$850,787,803</td>
<td>44%</td>
<td>28%</td>
</tr>
<tr>
<td>#8 UK</td>
<td>$818,783,217</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>#9 Brazil</td>
<td>$692,945,354</td>
<td>18%</td>
<td>59%</td>
</tr>
<tr>
<td>#10 Singapore</td>
<td>$692,114,443</td>
<td>63%</td>
<td>63%</td>
</tr>
</tbody>
</table>
#1 Canada

**Green Consciousness Overview**
*This information was acquired from the government website: export.gov*

- Canada has over 3700 water and wastewater treatment facilities. 400 plants have been deemed high-risk and need to be brought to code by 2020.
- Canadian governments have allocated $6 billion for upgrades. Canada’s wastewater equipment market is expected to increase to $1.17 billion by the end of 2010.
- The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>Canada 2001</th>
<th>Canada 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>In USD: Thousands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$287,194,940</td>
<td>$507,148,699.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$1,184,444,904</td>
<td>$1,520,697,404.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$772,509,799</td>
<td>$945,782,190.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$51,518,877</td>
<td>$449,128,901.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$1,184,444,904</td>
<td>$6,707,062,362.00</td>
</tr>
<tr>
<td>Market Sales Sum</td>
<td>$3,480,113,424</td>
<td>$10,129,819,556</td>
</tr>
</tbody>
</table>

*Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes*

**Best Prospects & Opportunities**
*This information was acquired from the government website: export.gov*

The following technologies and equipment will be required to upgrade from primary to secondary and from secondary to tertiary wastewater treatment facilities:

- New Tertiary Membrane Treatment Plants
- Chlorine Tanks
- Upgrades to Secondary and Tertiary Treatment Facilities
- UV Disinfection systems
- Wastewater treatment facilities in Saint John, Victoria, Halifax, and Moncton fall under the high-risk plants and must be upgraded by 2020.
- First Nation Communities 18 water projects - $165 million in federal funding allocated
- Capital Region District Wastewater treatment plant ($782 million) Victoria, BC

**Getting into the market**
*This information was acquired from the government website: export.gov*

- For many companies (particularly in the manufacturing and construction sectors), frequent visits and establishing a local presence will be crucial to long-term market success. For
many U.S. companies, joining in a U.S. delegation to a Canadian trade show can be the best first step.

- For U.S. companies with limited budgets and marketing staff, we recommend:
  - a pilot program called Client Finder which uses advanced database tools to help identify potential Canadian clients and partners, and working with the Commercial Service to seek potential sales to Canadian government entities.
- U.S. companies new to the Canadian market should contact a CS Canada Commercial Service Officer to obtain information about resources and value added assistance.
- Canada and the U.S have a NAFTA-North American Trade Agreement, an agreement which facilitates the trade of products.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
#2 Mexico

**Green Consciousness Overview**  
This information was acquired from the government website: export.gov

The total market for the environmental sector is estimated to grow by 2.8% in 2011 and U.S. exports to Mexico are expected to increase by 2.9% during the same period. Investment in water supply, wastewater treatment, solid and industrial, including hazardous waste management, and soil remediation will drive this increase. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>Mexico 2001</th>
<th>Mexico 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In USD: Thousands</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$126,792,376</td>
<td>$266,559,715.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$618,775,849</td>
<td>$693,914,466.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$742,455,990</td>
<td>$631,300,441.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$38,055,871</td>
<td>$104,111,752.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$618,775,849</td>
<td>$1,520,697,404.00</td>
</tr>
<tr>
<td><strong>Market Sales Sum</strong></td>
<td>$2,144,855,935</td>
<td>$3,216,583,778</td>
</tr>
</tbody>
</table>

Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes

**Wastewater:**
- Mexico continues to build wastewater treatment plants with a view to meeting its goal of 100% water treatment by 2012 (current wastewater treatment level nationwide is about 50% and 10% in Mexico City). The National Water Commission, together with state and municipal environmental authorities, have announced multiple plans to implement water supply and wastewater projects that have been postponed during the last two years due to adverse effects of economic crisis.

**Solid Waste:**
- Mexico generates annually over 35 million tons of solid municipal waste and 5 million tons of hazardous waste. Of the total solid waste generated daily, 87 percent is collected and 13 percent is dumped illegally. Of the 87 percent collected, 64 percent goes to landfills and controlled areas and 33 percent is sent to open air landfills with no control. The Secretariat of the Environment of Mexico published in 2010 a solid waste management report indicating that more concessions to the private sector will continue during 2011 to 2012.
**Environmental Sector**

The following chart depicts the market in the Environmental Management Sector in Mexico for the estimated years.

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011**</th>
<th>2012 (estimated)</th>
<th>2013 (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>5,892.0</td>
<td>6,091.5</td>
<td>6,284.8</td>
<td>6,452.5</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>2,520.0</td>
<td>2,595.6</td>
<td>2,653.7</td>
<td>2,713.2</td>
</tr>
<tr>
<td>Total Exports</td>
<td>1,178.0</td>
<td>1,213.4</td>
<td>1,237.7</td>
<td>1,262.5</td>
</tr>
<tr>
<td>Total Imports</td>
<td>4,550.0</td>
<td>4,709.3</td>
<td>4,837.6</td>
<td>4,970.1</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>3,524.0</td>
<td>3,629.7</td>
<td>3,723.0</td>
<td>3,819.0</td>
</tr>
<tr>
<td>Exchange Rate: 1 USD*</td>
<td>12.34</td>
<td>13.86</td>
<td>13.90</td>
<td>14.00</td>
</tr>
</tbody>
</table>

**Figures Listed in USD Millions**

**Water Technologies**

The following chart depicts the market in the Water Technologies in Mexico for the estimated years.

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011**</th>
<th>2012 (estimated)</th>
<th>2013 (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>3,820.0</td>
<td>3,915.3</td>
<td>4,065.1</td>
<td>4,188.5</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>1,225.0</td>
<td>1,255.6</td>
<td>1,286.9</td>
<td>1,319.0</td>
</tr>
<tr>
<td>Total Exports</td>
<td>765.0</td>
<td>787.9</td>
<td>803.7</td>
<td>819.8</td>
</tr>
<tr>
<td>Total Imports</td>
<td>3,360.0</td>
<td>3,477.6</td>
<td>3,581.9</td>
<td>3,689.3</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>2,010.0</td>
<td>2,086.6</td>
<td>2,149.1</td>
<td>2,213.6</td>
</tr>
<tr>
<td>Exchange Rate: 1 USD*</td>
<td>12.34</td>
<td>13.86</td>
<td>13.90</td>
<td>14.00</td>
</tr>
</tbody>
</table>

**Figures Listed in USD Millions**

- The total market for the water and wastewater subsectors is estimated to grow by 3.8% from 2011 to 2012 and U.S. exports to Mexico are expected to increase by 2.9% during the same period.
- The 2012 total budget from the Federal government to CONAGUA (National Water Commission) will reach over US$2.1 billion for new investment in water supply and wastewater treatment for the municipal and industrial sector. As a result of the new Public and Private Partnership Law approved by the Mexican Congress, investment from private sector contractors in CONAGUA concessions is estimated to reach US$700 million in 2012.
Environmental Equipment and Supplies

The following chart depicts the market in Environmental Equipment and Supplies in Mexico for the estimated years of 2010 & 2011.

<table>
<thead>
<tr>
<th></th>
<th>2010**</th>
<th>2011 (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>5,892.0</td>
<td>6,091.5</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>2,520.0</td>
<td>2,595.6</td>
</tr>
<tr>
<td>Total Exports</td>
<td>1,178.0</td>
<td>1,213.4</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>3,524.0</td>
<td>3,629.7</td>
</tr>
</tbody>
</table>

Figures listed in USD Millions

Environmental Technologies

The following chart depicts the market in the Environmental Technologies in Mexico for the estimated year.

<table>
<thead>
<tr>
<th>Figures Listed in USD Millions</th>
<th>2010</th>
<th>2011**</th>
<th>2012 (estimated)</th>
<th>2013 (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>2,072.0</td>
<td>2,176.2</td>
<td>2,219.7</td>
<td>2,264.0</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>1,295.0</td>
<td>1,340.0</td>
<td>1,366.8</td>
<td>1,394.2</td>
</tr>
<tr>
<td>Total Exports</td>
<td>413.0</td>
<td>425.5</td>
<td>434.0</td>
<td>442.7</td>
</tr>
<tr>
<td>Total Imports</td>
<td>1,190.0</td>
<td>1,231.7</td>
<td>1,255.7</td>
<td>1,280.8</td>
</tr>
<tr>
<td>Exchange Rate: 1 USD*</td>
<td>12.34</td>
<td>13.86</td>
<td>13.90</td>
<td>14.00</td>
</tr>
</tbody>
</table>
Best Prospects & Opportunities for Mexico
This information was acquired from the government website: export.gov

- The best prospects for US companies are in the sub-sectors of pollution control equipment (POL) and water resources equipment and services (WRE).
- The best opportunities for US companies are in the sub-sectors of water resources equipment and services (WRE), Air Monitoring, and Solid Waste. The following list of projects will drive the investment in this sector:

**Water Purification Plants**
CONAGUA will invite companies to bid in the upgrading of 100 of the existing 631 plants. The estimated budget is US$35.5 million for plants in the states of Guerrero, Coahuila, Sinaloa, Tamaulipas, Zacatecas and Veracruz. CONAGUA plans to increase public access to water sanitations services from 49% coverage to 60% in 2012.

**Desalination Plants:**
CONAGUA is planning to invite private companies to bid on desalination plants for the cities of Hermosillo and Puerto Penasco in the State of Sonora as well as Los Mochis and Mazatlan in the State of Sinaloa. CONAGUA has indicated that the new desalination plants will be built using the new Public and Private Partnership Law as a framework.

**Wastewater Treatment:**
CONAGUA will invite companies to bid on the upgrading of 140, of the existing 2,029, municipal wastewater treatment plants mainly in the states of Aguascalientes, Chihuahua, Guanajuato, Jalisco, Nuevo Leon, Oaxaca, and Puebla, among others. The estimated budget is US$70 million. New plants will be built in the states of Puebla, Colima, Yucatan, Quintana Roo, State of Mexico, Nayarit, Guerrero, Colima, and others. CONAGUA has a budget of US$ 200 million for new plant construction.

In particular, CONAGUA plans to build a Atotonilco wastewater treatment plant in the State of Hidalgo. The private sector will finance 54% of the US$ 771 million price tag for what would be the largest wastewater treatment plant in Latin America.

Private companies in the cities of Tijuana, Mexicali, Cd. Juarez, Reynosa, Matamoros, Villahermosa, Leon, Irapuato, Queretaro, Toluca, Morelia, and Jalapa, among others, will invest US$80 million in upgrading their wastewater treatment plants to meet the wastewater discharge environmental standard. This will increase public access to water sanitation services from 49% in 2011 to 60% in 2012.

**Waste Management**
Approximately 40 million tons of solid waste is generated every year in Mexico, from which approximately 88% corresponds to urban solid waste, and 12% corresponds to hazardous waste. In 2011, the federal government supported the construction of 113 landfills. Municipal, state, and federal authorities, with the support of the private sector, will continue to invest in solid waste management, particularly in projects to increase the capacity of sanitary fields and to construct new sanitary fields, to increase the capacity of
recycling, to increase the use of organic waste, to transform PET, and to recover construction materials, among others.

**Air Monitoring**
Mexico and the United States announced the Clean Air and Climate Change Coalition, with the objective of reducing emissions and contributing to the efforts against climate change. This initiative will allow improving air quality and protecting public health. Mexico has been monitoring the air in 70% of the national territory; the priority is to develop specific projects from all the states and their respective 1600 municipalities by 2013.

**Getting into the market**
*This information was acquired from the government website: export.gov*

- To do business in Mexico it is key to develop and maintain close relationships with clients and partners. Mexicans prefer direct communication such as telephone calls or face-to-face meetings. However, e-mail is widely used.

- Mexican companies are extremely price conscious, seek financing options, tend to desire exclusive agreements, and value outstanding service and flexibility.

- U.S. firms wishing to export to Mexico will find a variety of market entry strategies. Many factors help determine the best strategy, such as the product/service, logistics & customs, distribution, marketing, direct or indirect sales, exporting experience, and language proficiency, among others.

- Mexico and the U.S have a NAFTA-North American Trade Agreement, an agreement which facilitates the trade of products.

- For further information: work with Duquesne University SBDC Global Business Program([www.duq.edu/SBDC](http://www.duq.edu/SBDC)), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office ([export.gov/pa/Pittsburgh](http://export.gov/pa/Pittsburgh))
#3 China

**Green Consciousness Overview**

*This information was acquired from the government website: export.gov*

Air pollution is one of the biggest environmental challenges to public health facing China today. The major source of air pollutants in Chinese cities has gradually shifted from conventional coal combustion to a mixture of coal combustion and motor vehicle emissions.

Common waste gas emissions are primarily composed of four main pollutants- SO2, soot, industrial dust and Nitrogen Oxide (NOx). Although emission trends have shown improvement in recent years, in 2010 the total SO2 discharge in China was still 21.85 million tons and total NOx emissions, monitored since 2006, had risen by 9.4 percent over the previous year.

In response to these trends, the Chinese Government has focused some policy and regulatory attention on measures aimed at mitigating the emissions of dangerous nitrous oxides, with one such example being the Ministry of Environmental Protection’s —Notice of Fossil-Fuel Fired Power Plant Nitrogen Oxide Emission Prevention and Treatment Policy, issued on January 27, 2010. This official government policy has established the framework by which NOx emissions reduction actions will be taken under the 12th five year plan, which took effect on January 1, 2011. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories: In USD: Thousands</th>
<th>China 2001</th>
<th>China 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Pollution Measurement</td>
<td>$42,526,492</td>
<td>$264,367,420.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$112,342,841</td>
<td>$487,302,313.00</td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$322,723,275</td>
<td>$341,808,485.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$2,190,457</td>
<td>$23,652,300.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$112,342,841</td>
<td>$693,914,466.00</td>
</tr>
<tr>
<td>Market Sales Sum</td>
<td>$592,125,906</td>
<td>$1,811,044,984</td>
</tr>
</tbody>
</table>

*Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes*

The policy applies to all coal-fired power plants and co-generation units, 200 MW or larger, except in designated —Focus Areas, where it applies to all units regardless of size. In addition, it is mandatory that all new, rebuilt, or retrofitted units that have undergone expansion install Low- NOx Combustion Technologies. All units currently in operation, within their scheduled operating life cycles, that do not meet stipulated NOx emission standards are required to install flue gas de-NOx technology.

Another notable measure put forth by the Chinese Government in 2011 is the revision of China’s Ambient Air Quality Standards. In late 2011, China released a revised version of the standards for public opinion soliciting, which for the first time includes the monitoring of ambient air quality. These standards are scheduled to be released in early 2012, with compulsory enforcement beginning in 2016. These new standards have triggered a tremendous round of
equipment purchases throughout China, bringing about huge market opportunities for producers of PM2.5 monitoring equipment.

China’s 12th 5YP (2011-2015) is further strengthening the monitoring market. In his speech at the 2009 Conference on China Environmental Monitoring Work, Vice Minister Wu Xiaoqing outlined the top priorities of environmental monitoring work for the 12th 5YP. Given these priorities, U.S. air monitoring equipment suppliers should focus on the following market opportunities in China from 2011-2015:

- Expand existing monitoring networks to rural areas.
- Increase monitoring capacity to achieve total volume monitoring of pollutants.
- Establish an environmental monitoring information platform for publishing and releasing relevant information.

The various plans and regulations mentioned above will invariably trigger commercial opportunities in the air pollution market. U.S. firms are facing both domestic and international competition, including government-subsidized Japanese and European competitors. Though experiencing rapid growth, the domestic industry is still in a nascent stage of development, due to its short development history, decentralized management, inadequate financing and poor enforcement. U.S. air quality monitoring equipment is well received, and is often considered high-quality in terms of data accuracy, timeliness and product lifecycle. In order to seize these emerging opportunities, U.S. companies should develop suitable market entry and pricing strategies.

**Best Prospects & Opportunities**

This information was acquired from the government website: export.gov

The demand for modern environmental monitoring instruments in China remains high. In particular, there is an urgent need for advanced NOx emission reduction equipment, automatic monitoring systems and on-line continuous monitoring systems. The solid and hazardous waste management sector represents an excellent opportunity for U.S. NOx emission reduction equipment

- Viable De-NOx Technologies
- Combustion Modification
- SNCR (Selective Non-Catalytic Reduction)
- SCR ((Selective Catalytic Reduction))
- Combination Methods

Rising concerns about China’s environment have led to a surge in demand for the following environmental monitoring instruments:

1. Automatic air monitoring systems on the ground: high value-added equipment which is automatic, multi-functional, instant, systematic, and intelligent is considered the most promising in China. Typical products are:
   - On-line and/or automatic continuous emission monitoring systems for key pollution sources: Carbon Monoxide (CO), Sulfur Dioxide (SO\textsubscript{2}), Nitrogen Oxides (NO-NO\textsubscript{2}-NO\textsubscript{x}), Ozone (O\textsubscript{3}), Particulate Matter (PM\textsubscript{10/2.5})
- Automatic and continuous monitoring systems for organic pollutants
- Volatile Organic Compounds (VOCs)
- On-line dust monitors
- On-site portable emergency gas monitoring equipment
- Portable and personal particulate monitors

2. Remote monitoring systems: Investments will also increase for satellite ground systems and satellite image analysis systems to analyze the quality of the environment and changing long-term trends. China's emphasis on the protection of the ecological environment has created a great demand base for remote sensing satellites and monitoring equipment. Potential segments include:
  - Vehicle-borne equipment, such as mobile monitoring vans
  - Ship-borne equipment
  - Satellite-borne equipment and instruments, such as lesser radar monitors for pollution
  - GSM/GPRS modem technology (allowing remote control and data retrieval from air quality monitoring stations located almost anywhere)

3. Quality Assurance (QA) and Quality Control (QC) laboratory equipment, which is needed in all monitoring stations and laboratories. Instruments include:
  - SO$_2$ analyzers, NO$_x$ analyzers, PM$_{10}$ samplers, PM$_{2.5}$ samplers
  - Dynamic gas dilution/mixing/calibration systems
  - High precision flow meters

U.S. air pollution control product exports to China have been rising steadily at about 10-15% with a sharp increase in 2008, registering a 24.8% rise over the previous year. While the amount of products imported in 2009 was down 7.08% from 2008, longer term trends still indicate potential for growth in the industry. This trend is expected to continue in the next couple of years as China maintains its effort to improve the air quality. Below is a list of major prospective buyers in China:
  - Ministry of Environmental Protection (MEP):
    MEP mandates rules, regulations, and emission standards for polluting enterprises and is responsible for establishing environmental monitoring networks all over the country and managing national environmental monitoring.
  - China National Environmental Monitoring Center (CNEMC):
    Is directly affiliated with the MEP and is in charge of analysis and research of national environmental quality, management techniques, and monitoring data. It also provides scientific and technical support for the MEP.
  - National key pollution sources – 3715 enterprises (air)
  - Major parameters measured include dust, soot, smoke, and SO2, NOx, CO and flue gases. Among the 3715, power plants account for a major share, followed by some other heavily polluting enterprises listed below:
    - Power plants
    - Petrochemicals
    - Refineries
    - Building materials (cement especially) and
    - Metallurgy
Other prospective buyers:
- Heavily polluting enterprises in the above industries other than the 3715 enterprises listed
- Laboratories, research institutes (environment academies), and universities
- Enterprises/organizations that need high-level industry hygiene and health standards:
  - Center for Disease Control (CDC)
  - Hazardous gas leakage monitoring in industries like petrochemicals and other chemicals

Getting into the market
This information was acquired from the government website: export.gov

- Two of the primary objectives of U.S. policy with regard to China are (a) creating jobs and growing the American economy by increasing exports, and (b) ensuring our companies' ability to compete on a level playing field. A company should visit China in order to gain a better perspective and understanding of its potential as a market.
- Chinese company representatives respect—face-to-face meetings, which can demonstrate a U.S. company’s commitment to working in China. Prospective exporters should note that China has many different regions and that each province has unique economic and social characteristics. U.S. companies commonly use agents in China to initially create these relationships. Localized agents possess the knowledge and contacts to better promote U.S. products and break down institutional, language, and cultural barriers.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
Green Consciousness Overview

According to the Australian Government Environmental and Sustainability website; demands for water will increase as the population grows in the country. The withdrawing water changes in the inland water ecosystems, provides and demand for more efficient methods of attaining and reusing water supplies. They state that reducing water use and wastewater recycling play a part in the issue at hand. From 2005 to 2009 Australia’s water consumption fell about 25%, but the climate changes still pose the largest future threat to the inland water systems.

The national-health based standards have shown evidence that poor urban air quality impact adversely on human health. About 3000 deaths were attributable to this and the cause of bush fires and dust storms in 2003, which is nearly twice the national road toll. Even though Australia’s population is smaller than the United States, it still according U.S ITA government website, ranks as the 13th largest market for U.S goods. In 2008, the Environment Ministers prepared a national report a resource recovery and waste management of the country. In a previous report done by the Senate, Management of Australia’s waste streams, had concluded that Australia lacked information on most aspects of waste generation and management. They realized that there was a need to find a way to process information of physical, financial, economic and social aspects. In 2009 the environment ministers, with the Environment Protection and Heritage Council (EPHC), released a report of National Waste Policy: Less waste, more resources. This policy set an agenda that the nation could co-ordinate action on waste, which marked a shift in the approach of waste management and resource recovery. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>Australia 2001</th>
<th>Australia 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$18,691,757</td>
<td>$571,888,721.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$68,873,495</td>
<td>$211,139,824.00</td>
</tr>
<tr>
<td>WASTE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$69,424,976</td>
<td>$114,804,805.00</td>
</tr>
<tr>
<td>WATER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$3,768,076</td>
<td>$12,494,504.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$68,873,495</td>
<td>$181,506,055.00</td>
</tr>
<tr>
<td>Market Sales Sum</td>
<td>$229,631,799</td>
<td>$1,091,833,909</td>
</tr>
</tbody>
</table>

Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes

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10 [http://www.ita.doc.gov/exportamerica/NewOpportunities/no_Aus_0403.pdf](http://www.ita.doc.gov/exportamerica/NewOpportunities/no_Aus_0403.pdf)
Best Prospects & Opportunities

- In 2007, Australian government released the ‘Green Job Act’ that would invest $125 million in green-collar jobs, including: training programs, energy efficiency programs, and increasing renewable energy programs.\(^{12}\)
- Local communities are given grants to help improve their energy efficiency and increasing different was of renewable energy, U.S companies may find opportunities in providing innovations or technologies for these communities in these fields. With colleges and universities joining the green movement, many opportunities lay with helping campuses and universities find better methods of recycling, waste management programs.

Getting into the market
This information was acquired from the government website: export.gov

- Successful market entry strategies for Australia have three common elements: understanding the market, selecting the optimal partner, and providing ongoing support to that partner in the market.
- Often requires establishing a local sales presence, to many American exporter this means appointing an agent or distributor. American companies should visit Australia both to meet prospective partners and demonstrate ongoing support, as this is the common practice of their competitors.
- Australia and the U.S have a FTA-Free Trade Agreement, an agreement which facilitates the trade of products internationally.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)

#5 Japan

**Green Consciousness Overview**  
*This information was acquired from the government website: export.gov*

For the Government of Japan (GOJ) and for industries engaged in the soil and groundwater remediation business, 2010 was an important year. In April 2010 the GOJ enacted the Amended Soil Contamination Countermeasures Act (SCCA), with the aim of expanding the system for discovering soil contamination, clarifying the different types of land classifications and the required/acceptable measures for treatment for each, and establishing regulations for ensuring the appropriate treatment of contaminated soil. The revision is expected to encourage on-site soil and groundwater purification technology.

The Geo-Environmental Protection Center (GEPC), Japan’s largest soil remediation-related industry association reported that total sales and orders in the soil remediation business decreased in 2009 compared to the previous year. The decrease was primarily due to the stagnation of land-transfer transactions, which remain the primary catalyst for remediation in Japan. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>Japan 2001</th>
<th>Japan 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution</td>
<td>$94,334,763</td>
<td>$118,820,918.00</td>
</tr>
<tr>
<td>Measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Purification</td>
<td>$284,145,577</td>
<td>$348,975,733.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$1,021,304,117</td>
<td>$135,473,663.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$10,420,792</td>
<td>$21,751,599.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$284,145,577</td>
<td>$348,975,733.00</td>
</tr>
<tr>
<td>Market Sales Sum</td>
<td>$1,694,350,826</td>
<td>$973,997,646</td>
</tr>
</tbody>
</table>

*Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes*

However, due to the April 2010 enactment of the Amended SCCA the soil remediation market recovered in the second half of 2010 both in terms of the number of projects and total sales. As Japan’s GDP is expected to grow 1 to 3 percent in 2011, the industry expects that this growth will also reanimate land-transfer transactions, especially in the private sector, thus further spurring the soil remediation business. The industry is also watching closely for opportunities related to the GOJ’s pledge to create $540 billion in green innovation business, which may also spur growth in on-site remediation as well as land-transfer business.
The following chart depicts the market of Environmental Management in Japan for the estimated years of 2010 & 2011.

**Soil Remediation/Engineering Services**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>1,765</td>
<td>1,818</td>
<td>1,955</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>1,726</td>
<td>1,778</td>
<td>1,911</td>
</tr>
<tr>
<td>Total Imports</td>
<td>39</td>
<td>40</td>
<td>44</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>24</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>Exchange Rate: 1 USD</td>
<td>87.78</td>
<td>87.78</td>
<td>79.70</td>
</tr>
</tbody>
</table>

*Note: Official information on total imports and imports from U.S. firms is unavailable*

**Best Prospects & Opportunities**

This information was acquired from the government website: export.gov

The following two sub-sectors provide good prospects for U.S. firms with high-quality products or technologies and a long-term approach to the Japanese market:

1. **Cleanup of radioactive materials**

   The GOJ is in the process of certifying how best to remediate soil contaminated by radioactive materials. To verify methodologies, the Japan Atomic Energy Agency, an independent governmental body, is now conducting cleanup-model demonstration projects in 12 cities, towns and villages in Fukushima Prefecture. To contribute to these efforts U.S. firms offering unique products/technologies should consider forming partnerships with Japanese firms (such as contractors and engineering firms) with experience in the soil remediation industry.

2. **On-site soil remediation technologies**

   The Soil Contamination Countermeasures Act was amended in April 2010. The industry views that this amendment would encourage on-site soil purification technology in Japan where, until recently, conducting on-site (in-situ) methodology had been restricted. The industry believes that U.S. firms excel in this segment, and those with high-end, cost-effective products/services may have strong prospects in the market.

   Business opportunities can exist for U.S. firms in the field of on-site soil remediation technologies. Under the Amended SCCA, the merits of on-site purification technologies can be summarized as follows:

   1) **Risk Avoidance:** On-site technology can avoid risks of contaminated soil being dispersed by transportation, and/or of illegal dumping of contaminated soil.
   2) **Cost:** On-site purification is considerably less expensive than land excavation.
   3) **Accounting:** Companies do not need to post Asset Retirement Obligations in their balance sheets if land purification is completed during the period of running the business.
4) **Reduction of Greenhouse Gas:** With on-site technology, GHG (CO2) can be reduced considerably, compared to removal of contaminated soil by excavation

**Getting into the market**

*This information was acquired from the government website: export.gov*

- U.S. companies wishing to enter the Japanese market should consider hiring a reputable, well-connected agent or distributor, and cultivating business contacts through frequent personal visits. Japan's business culture attaches a high degree of importance to personal relationships, and these take time to establish and nurture.
- The customs and pace of deal-making in Japan are quite different from the United States. U.S. business executives are advised to retain a professional interpreter, as many Japanese executives and decision-makers do not speak English, or prefer to speak Japanese.
- For further information: work with Duquesne University SBDC Global Business Program([www.duq.edu/SBDC](http://www.duq.edu/SBDC)), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
#6 Germany

**Green Consciousness Overview**
This information was acquired from the government website: export.gov

The German water supply and wastewater disposal industry has to adhere to stringent standards in terms of efficiency, security, quality of supply and disposal, and sustainability. While water supply and wastewater disposal are considered to be of general interest and as such are at the core of municipalities’ public services, Germany has a pluralistic supply and disposal structure with public and private companies active in this sector. In total, there are approximately 6,400 water supply utilities in Germany. However, more than half of the drinking water is supplied by only about 100 large corporations (about 1.6% of the total number of companies) mainly serving major metropolitan areas. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>Germany 2001</th>
<th>Germany 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$109,298,549</td>
<td>$228,869,966.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$113,437,963</td>
<td>$241,390,839.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$567,295,901</td>
<td>$230,833,152.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$10,722,495</td>
<td>$24,233,296.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$113,437,963</td>
<td>$241,390,839.00</td>
</tr>
<tr>
<td><strong>Market Sales Sum</strong></td>
<td><strong>$914,192,871</strong></td>
<td><strong>$966,718,092</strong></td>
</tr>
</tbody>
</table>

Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes

In contrast to drinking water supply, wastewater disposal is dominated by public enterprises: wastewater disposal is seen as an obligation of municipalities. In total, there are more than 6,900 wastewater disposal enterprises in Germany. 90 percent of the population is connected to sewage treatment plants meeting highest EU standards (biological wastewater treatment with nutrient elimination,”3rd purification stage“.) The length of the German public sewage network totals approximately 515,000 km. In addition, there are about 63,000 storm water drainage systems. The volume of sewage sludge amounts to about 2 million tons. Stagnating or slightly decreasing volumes are expected for the future.
**Best Prospects & Opportunities**  
*This information was acquired from the government website: export.gov*

Excellent future prospects for Germany exist in the market for membrane technologies. Especially in the field of water purification and drinking water production there is a wide range of possible applications for filtration membranes. The world market for sustainable water management is currently estimated at approximately EUR 190 billion. By 2020, it is expected to grow to EUR 480 billion. The World Water Council sees a need for capital investment of USD 180 billion per year in water infrastructure in developing countries.

Within the EU, capital of between EUR 170 and EUR 230 billion will be needed to comply with the wastewater directives already in force. By 2020, growth is expected to be fastest in the field of decentralized water management, followed by wastewater treatment and products for efficient use of water. At present, the growing sales markets are primarily the EU Central and East European member states, which still have to bring their dilapidated wastewater infrastructures into line with the stringent EU standards.

Germany currently has a five percent share of the world market for sustainable water management. In decentralized water management, German companies are world leaders. When it comes to patent applications in the field of sustainable water management, Germany takes second place behind the United States. Domestic demand for innovative solutions is relatively slack in the field of wastewater disposal. Most of the wastewater disposal operations of municipal authorities focus primarily on safety and reliability when buying their plant. It is expected, however, that purchasing decisions in future will also be based on measures of cost effectiveness and innovation.

**Getting into the market**  
*This information was acquired from the government website: export.gov*

- The most successful market entrants are those that offer innovative products featuring high quality and modern styling. Germans are responsive to the innovation and high technology evident in U.S. products, such as computers, computer software, electronic components, health care and medical devices, synthetic materials, and automotive technology.
- The German market is decentralized and diverse, with interests and tastes differing dramatically from one German state to another. Successful market strategies take into account regional differences as part of a strong national market presence. Experienced representation is a major asset to any market strategy, given that the primary competitors for most American products are domestic firms with established presences. U.S. firms can overcome such stiff competition by offering high-quality products, services at competitive prices, and locally based after-sales support.
- The EU and the U.S are negotiating bilateral and multilateral Transatlantic Free Trade Agreement- FTA, an agreement which facilitates the trade of products across the European Union.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
#7 South Korea

Green Consciousness Overview
This information was acquired from the government website: export.gov

In 2009, the South Korean Government announced its “Green Deal”, which was intended to develop environmental projects and spur economic growth. They have demonstrated that environmental projects and development of green technologies will become a key asset in job creation and growth in their current downturn in economy. According to industry experts, imports account for about 10 percent of the total market. Japan has been the principal foreign supplier with about a 50 percent market share, followed by the US with about 30 percent market share, Germany and France. The following chart depicts U.S exports in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>S.Korea 2001</th>
<th>S.Korea 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In USD: Thousands</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$38,488,724</td>
<td>$110,427,751.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$190,336,602</td>
<td>$209,910,461.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$934,288,345</td>
<td>$272,397,529.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$2,283,559</td>
<td>$48,141,601.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$190,336,602</td>
<td>$209,910,461.00</td>
</tr>
<tr>
<td><strong>Market Sales Sum</strong></td>
<td>$1,355,733,832</td>
<td>$850,787,803</td>
</tr>
</tbody>
</table>

Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes

Local environmental equipment manufacturers in Korea have supplied a major portion of environmental projects with medium-level technology and medium-cost products. While they have significantly improved their technical levels, there is a continuous search for more advanced imported products and technologies to be able to meet the government’s stringent requirements. Because most Korean manufacturers target larger volume and export markets, highly customized solutions for specific applications like in-house recycling and ultra-pure water treatment offer potential for US exporters.

The following chart depicts the market of pollution control equipment in South Korea in the estimated years of 2010-2012.

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011 (est.)</th>
<th>2012 (est.)</th>
<th>2013 (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>7,419</td>
<td>8,001</td>
<td>8,629</td>
<td>9,035</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>9,325</td>
<td>10,286</td>
<td>11,359</td>
<td>12,561</td>
</tr>
<tr>
<td>Total Exports</td>
<td>2,643</td>
<td>3,085</td>
<td>3,594</td>
<td>4,186</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>223</td>
<td>240</td>
<td>259</td>
<td>279</td>
</tr>
<tr>
<td>Exchange Rate:</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
</tr>
</tbody>
</table>

Note: The above statistics are unofficial estimates by Commercial Service Korea based on the information published by the Ministry of Environment. Unit: USD million.
Best Prospects & Opportunities
This information was acquired from the government website: export.gov

- Volatile organic compounds (VOCs) control in oil refineries and petrochemical plants
- Dioxin abatement in municipal and industrial incinerators
- Advanced sulfur oxides/nitrogen oxides abatement in power plants and steel mills
- Energy saving and waste-to-energy in steel mills and municipal landfills
- Pollution-free and low-emission vehicles in engineering technology, engine components and parts for CNG; pollution abatement technologies for automobile, oil refinery industries.
- Advanced water pollution control technology.
- Environmentally friendly construction material
- Based on Bank of Korea Environmental Institute’s statistics, Korean government plays a key role in the pollution control equipment. They are estimated to have a yearly expenditure of about USD 15 billion and USD 13 billion from each Korean industry and Korean government on environmental protection.

- It’s recommended that US suppliers partner with qualified and capable Korean companies, to make a transition into the pollution control equipment market. By doing so suppliers are able to use their existing sales network to serve end-users, and are benefitted from the company’s awareness of regulation changes that drive the market.

For government projects, of Korean government procurements (PPS), readers should visit the website for more detailed information on projects. The information is available at: http://www.pps.go.uk.kr/english

Getting into the market
This information was acquired from the government website: export.gov

To compete in South Korea companies are recommended to have a capable local distributor, licensee or franchise partner who has an established network in the market and extensive market knowledge. A long-term perspective and a reliable partnership between supplier and their local partner is one of the key factors in achieving success.

- S. Korea and the U.S have a FTA-Free Trade Agreement, an agreement which facilitates the trade of products internationally.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
#8 United Kingdom

**Green Consciousness Overview**

*This information was acquired from the government website: export.gov*

U.S. exporters that can supply equipment that addresses EU and UK regulations, such as the EU Landfill Directive, will continue to find opportunities within the UK environmental technologies market. The UK government forecasts a 33% growth in demand for products and services for water/wastewater management from 2010 to 2025. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>UK 2001</th>
<th>UK 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$96,175,561</td>
<td>$131,554,653.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$146,000,469</td>
<td>$236,544,403.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$332,560,537</td>
<td>$197,341,463.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$10,194,002</td>
<td>$16,798,295.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$146,000,469</td>
<td>$236,544,403.00</td>
</tr>
<tr>
<td><strong>Market Sales Sum</strong></td>
<td>$730,931,038</td>
<td>$818,783,217</td>
</tr>
</tbody>
</table>

*Source: data was calculated from the acquired information given on the government website: ise.export.gov, by using HS codes*

UK utility companies currently invest approximately $5.5 billion each year to improve water supplies and sewage services. The UK has more than 335,000 km of water mains and millions of joints that are vulnerable to ground conditions and pressure. Maintenance and renovation of the UK water and sewerage infrastructure is, therefore, a top priority, and water companies are working diligently to reduce leakage across the UK.

Landfill remains the most common means of waste management in the UK. About 100 million tons of waste is produced in the UK each year by households, commerce and industry, and another 300 million tons are produced by the construction, demolition, agriculture, mining and quarrying industries.

In 2010 the government launched a review of the UK’s waste strategy with a view to creating a zero waste society, which would save money and create green jobs and industry. The government wants to increase recycling and reuse, cut down on wasteful product packaging, and reward people for throwing less away. The eventual aim is sending no waste to landfill sites at all. The government is also examining ways of producing more energy from household waste, such as increasing the UK's anaerobic digestion capacity.
The following chart depicts the market of Environmental Management in the United Kingdom for the estimated years of 2010-2012.

<table>
<thead>
<tr>
<th>USD thousands</th>
<th>2010</th>
<th>2011 (est.)</th>
<th>2012 (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>39,000,000</td>
<td>40,000,000</td>
<td>41,500,000</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>27,500,000</td>
<td>28,100,000</td>
<td>28,700,000</td>
</tr>
<tr>
<td>Total Imports</td>
<td>17,500,000</td>
<td>18,500,000</td>
<td>19,600,000</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>2,500,000</td>
<td>3,000,000</td>
<td>3,600,000</td>
</tr>
<tr>
<td>Exchange Rate: 1 USD</td>
<td>£0.60</td>
<td>£0.60</td>
<td>£0.60</td>
</tr>
</tbody>
</table>

*Data Sources: Unofficial estimates based on industry figures for environmental technologies equipment*

**Best Prospects & Opportunities**

This information was acquired from the government website: export.gov

Best prospects for U.S. companies include recovery and recycling of materials, including collection and the engineering services, and equipment needed to process these materials; waste management; fresh and waste water treatment and distribution systems; and engineering and environmental consulting services.

The London Tideway Tunnels project is one of the largest environmental projects in the UK. The project features two tunnels, the Lee Tunnel and the Thames Tunnel, to reduce substantially the level of untreated sewage overflowing from London's Victorian sewers into the River Thames and its tributary, the River Lee. CH2M HILL, in association with Halcrow Company, is working with Thames Water, the UK's largest water company, to develop the London Tideway Tunnels. The tunnels will capture the most polluting sewer overflows and transfer them to the Beckton Sewage Treatment Works in east London for treatment. The tunnels are required to ensure UK compliance with the European Urban Waste Water Treatment Directive. Work has already started on the $1 billion, four-mile long Lee Tunnel project, which is due for completion in 2014. Initial construction of the Thames Tunnel is provisionally scheduled to start in 2013 and finish in 2020. This is the largest water infrastructure project in the UK since privatization of the water industry in 1989.13

**Getting into the market**

This information was acquired from the government website: export.gov

- Demonstrate a clear competitive advantage (i.e., price, quality, branding).
- Pay close attention to both the obvious and subtle cultural differences between the United States and the United Kingdom and adjust marketing strategies accordingly.
- Evaluate prospective partners carefully and choose an experienced, well-established local distributor.

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13 [http://www.thameswater.co.uk/cps/rde/xchg/corp/hs.xsl/2833.htm](http://www.thameswater.co.uk/cps/rde/xchg/corp/hs.xsl/2833.htm)
• The EU and the U.S are negotiating bilateral and multilateral Transatlantic Free Trade Agreement- FTA, an agreement which facilitates the trade of products across the European Union.

• For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
#9 Brazil

**Green Consciousness Overview**

*This information was acquired from a government website: export.gov*

Investments in solid waste treatment technologies and waste to energy projects in sanitary and hazardous landfills are expanding significantly. The demand for air pollution control products is also rising in Brazil. In addition to the industrial demand, the increased number of Clean Development Mechanism CDM projects in sanitary landfills and the vehicle emission inspection program, mandatory in some of Brazil’s largest municipalities generate a demand for gas emission monitoring technologies and gas analyzers, as well as the demand for industrial filters. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>Brazil 2001</th>
<th>Brazil 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In USD: Thousands</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$34,761,788</td>
<td>$81,630,580.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$65,868,391</td>
<td>$198,065,314.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$66,188,404</td>
<td>$189,837,070.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$2,298,729</td>
<td>$13,501,929.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$65,868,391</td>
<td>$209,910,461.00</td>
</tr>
<tr>
<td><strong>Market Sales Sum</strong></td>
<td>$234,985,703</td>
<td>$692,945,354</td>
</tr>
</tbody>
</table>

*Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes*

**Best Prospects & Opportunities**

*This information was acquired from the government website: export.gov*

There is currently in Brazil an increasing demand for effluent treatment and energy/water saving technologies, as well as for specialized consulting services. Such technologies include:

- advanced water treatment (filtration)
- water loss prevention solutions
- “intelligent valves”
- efficient water
- distribution and reuse projects
- water saving devices
- rain water systems

**Membrane filtration is a technology that has become more common in Brazil as a consequence of cost reduction. Membranes used in ultra, micro, nano-filtration and reverse osmosis are imported into Brazil.**
Environmental experts estimate that Brazil’s environmental technologies market (including equipment, engineering / consulting services, instrumentation, construction and clean up services) is roughly estimated at US$ 10 billion, of which US$ 5.5 billion is related to the water and wastewater subsector; solid waste management at US$ 3.5 billion and air pollution control at US$ 1 billion. The following chart depicts the market in Environmental Management for Brazil in the estimates years’ of 2010-2011.

<table>
<thead>
<tr>
<th>US$ millions</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>10.00</td>
<td>10.50</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>8.00</td>
<td>8.40</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>0.60</td>
<td>0.63</td>
</tr>
</tbody>
</table>

Source: Do to the lack of statistics in this market, all figures were estimated by market analysts

The Brazilian Government plans to invest US$870 million in solid waste treatment projects, replacement of garbage dumps, and introduction of selective waste collection services and financing of cooperatives of waste collectors. The Brazilian government expects that recycling activities income increases from current US$ 1.1 billion to US$ 4.5 billion.

In 2010, the Government of Brazil passed the National Solid Waste Policy (Law 12,305) to stimulate recycling and manage waste with high contamination potential. The law determines that households in municipalities that offer “selective collection services”, sort their domestic waste. In order to receive any Government funding for urban cleaning and waste management activities, the municipalities will need to have a waste management plan in place. Suppliers of water treatment stations incorporate specific imported equipment; laboratory and analytical equipment are also usually imported, and in an increasing demand. Opportunities include:

- solutions related to water distribution systems
- Including services and equipment, since the water loss rate in Brazil corresponds to about 40% of the potable water produced in the urban areas.
- Water reuse is becoming increasingly important in Brazil, especially in the large centers where water scarcity represents high operational costs for water impounding.

Major elements of the National Solid Waste Policy:

1- New garbage dumps cannot be created;

2- All municipalities have to build sanitary landfills that will only allow products that are not appropriate for reuse or composting;

3- Imports of waste are prohibited;

4- Using “reverse logistics” manufacturers, distributors and retailers are obliged to collect certain used products, including agricultural chemicals, batteries, tires, lubricant oils, all types of lamps and electronic products such a cell phones and computers;

5- Should manufacturers, importers, distributors and retailers not fulfill their reverse logistics responsibility under the law, the government will fulfill them or contract to have them fulfilled and charge companies accordingly;
6- Recycling industries will have priority in government financing;

7- Encouraged activities are non-generation, reduction, reuse, recycling, treatment and adequate final disposal;

8- Non-recycled waste must be used for energy generation, once technical and environmental feasibility studies indicate the appropriateness. The emission of toxic gases has to be monitored;

9- Companies that manage, transport, store or process hazardous waste must register in the “National Registry of Hazardous Waste Operators” and prove their technical capability.

**Water/Waste Water Sector:**

The Brazilian government’s goal is to provide sanitation coverage to all Brazilian population. The amount of investments required to reach this objective is US$ 100.5 billion. The table below shows the investments needed by geographic region:

<table>
<thead>
<tr>
<th>Region</th>
<th>Investments (USD: millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>US$ 9.15</td>
</tr>
<tr>
<td>Northeast</td>
<td>US$ 21.01</td>
</tr>
<tr>
<td>Southeast</td>
<td>US$ 41.92</td>
</tr>
<tr>
<td>South</td>
<td>US$ 18.64</td>
</tr>
<tr>
<td>Center /West</td>
<td>US$ 9.83</td>
</tr>
<tr>
<td>Total Brazil</td>
<td>US$ 100</td>
</tr>
</tbody>
</table>

*About 30% of the above total represents replacement of equipment, pumps, and asbestos and cement pipes. The sector’s major challenge is the expansion of sewage collection and treatment, which is expected to attract most of the investments.*

**Private Sector Investments**

As a result of the Public Consortium Law of 2007 (Law 11455, which creates public-private partnerships as part of the “Sanitation for All” program), the private sector is increasing its direct participation in the sanitation business by operating water and wastewater utilities, which in turn is increasing the demand for higher technology equipment used by the water and wastewater utilities. This legislation discourages local water and wastewater product manufacturers and exporters from offering sophisticated technologies.

In 2008, Sabesp, the state of Sao Paulo’s water utility, established its first Public-Private-Partnership (PPP) with CAB-Galvao Consortium. They are now considering five additional PPPs which are currently being analyzed. Estimates by the Brazilian Association of Water and Sewage Public Services Concessionaires (ABCON) indicate the private sector will invest about US$ 8.3 billion in basic sanitation works by 2017 and will manage concessions that will cover 30% of the Brazilian population, compared to the current level of 9.6%.

The Odebrecht group has recently created its own sanitation company – Odebrecht Engenharia Ambiental (OEA), which already has seven concession contracts in the sector.
According to the company’s source, OEA has about US$ 690 million to invest in new concessions in the next three years.

**Getting into the market**

- Brazil’s business culture is largely based upon personal relationships. Companies will need a strong presence and must invest time in developing relationships in Brazil. The U.S. Commercial Service encourages U.S. companies to visit Brazil to meet one-on-one with potential partners. One of the best ways to enter the Brazilian market is by attending a local trade show or using the U.S. Commercial Service’s Gold Key Service (GKS).
- U.S. companies have found it essential to work through a qualified agent or distributor when entering the Brazilian market. It is extremely difficult for U.S. companies to get involved in public sector procurement without a local Brazilian partner.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
Singapore has greatly advanced from its early days following independence when water challenges such as water shortages, pollution and flooding were common. Over the past 40 years, the city-state has successfully turned this vulnerability into its strength by investing in research and technology to develop water management and treatment capabilities. With the growing global emphasis on water and the environment, in 2006, the Singapore Government committed US$219 million over five years to promote R&D to sustain the Republic’s competitive edge in the global market, and to position Singapore as an R&D base for environment and water solutions. The following chart depicts U.S export sales in these subcategories.

<table>
<thead>
<tr>
<th>Products by Categories:</th>
<th>Singapore 2001</th>
<th>Singapore 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pollution Measurement</td>
<td>$56,274,867</td>
<td>$109,271,458.00</td>
</tr>
<tr>
<td>Air Purification</td>
<td>$73,731,122</td>
<td>$191,046,040.00</td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$445,233,038</td>
<td>$184,809,052.00</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water analysis</td>
<td>$2,954,210</td>
<td>$15,941,853.00</td>
</tr>
<tr>
<td>Filtering</td>
<td>$73,731,122</td>
<td>$191,046,040.00</td>
</tr>
<tr>
<td>Market Sales Sum</td>
<td>$651,924,359</td>
<td>$692,114,443</td>
</tr>
</tbody>
</table>

Source: data was calculated from the acquired information given on the government website: tse.export.gov, by using HS codes.

Beyond opportunities for R&D collaborations, Singapore’s attractive location in the heart of Asia allows major global water and environment players to use the city-state as a test-bedding and piloting base for new environment and water technologies, and as a launch-pad to expand into the region. The aim of the Singapore Government is to increase value-added contribution from the water sector from US$0.3 billion (0.3% of GDP) in 2003 to US$1.1 billion (0.6% of GDP) by 2015.

The water conservation and recycling equipment market is growing in tandem with the flourishing water sector. The current size of the market for water conservation and recycling systems is estimated at US$950 million. The size of the market for water conservation and recycling systems is projected to expand by 10%-15% annually over the next three years. This growth will emanate from a strong demand for government projects including the construction of new desalination plants and new water facilities. Market prospects for industrial users are also good and future demand could be greater as Singapore’s economy is expected to continue with its new phase of growth once the economy fully rebounds.
Pollution Control Equipment (POL)

This information was acquired from the government website: export.gov

The following chart depicts the estimates of POL market in Singapore for the years 2010-2012.

<table>
<thead>
<tr>
<th>Unit: USD millions</th>
<th>2010</th>
<th>2011 (estimated)</th>
<th>2012 (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>6199</td>
<td>7130</td>
<td>8238</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>6872</td>
<td>7903</td>
<td>9088</td>
</tr>
<tr>
<td>Total Imports</td>
<td>8560</td>
<td>9844</td>
<td>10828</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>2241</td>
<td>2554</td>
<td>2783</td>
</tr>
<tr>
<td>Exchange Rate: 1 USD</td>
<td>1.36</td>
<td>1.25</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Total Market Size = (Total Local Production + Total Imports) – (Total Exports)

Data Sources: Singapore Government Trade Statistics

As Singapore’s population and economy grow, the Government is not only diversifying its water supplies but also planning ahead for wastewater management. This led to ongoing programs to develop various wastewater reclamation and desalination projects.

There have been 27 projects identified to be carried out over the next 5 years to transform the water systems into cleaner and environmental system. January 2011, tenders for 16 projects were called. The works include construction of infrastructures, water features, landscaping and other amenities.

Under the Singapore Green Plan 2012 (SGP 2012), the country’s environmental policy, Singapore has put in place a holistic blueprint to grow the Cleantech industry. The SGP 2012 also incorporates plans for reduction of waste volumes through waste minimization and recycling; reduction of the amount of land for sewage treatment; strict emission standards; and tougher vehicular emission controls.

Best Prospects & Opportunities

This information was acquired from the government website: export.gov

The measures taken to tighten air emission will give rise to opportunities to supply new air pollution control equipment to Singapore. American products will have good market prospects given that imports of environmental products from the U.S. account for about 26% of total environmental imports.

Among the American products imported by Singapore are:
- air filters
- water purifiers
- gas and smoke analysis apparatus
- Ozone oxygen & herosol therapeutic respiration apparatus.

Other areas of environmental interest include waste management solutions to overcome Singapore limited land space. Singapore has been tapping into foreign expertise for technologies such as hazardous and solid waste disposal, landfill space, and the building of incinerators.

The national water agency, The Public Utilities Board (PUB), has opened its doors to private companies that want to test-bed projects using its infrastructure. PUB also tenders
contracts to private companies to build, design and operate water plants. U.S. companies are encouraged to participate in future contracts offered by the PUB. American equipment manufacturers could also supply their equipment to successful prime contractors of PUB projects.

**Getting into the market**
*This information was acquired from the government website: export.gov*

- Singapore is a major trading hub; importing and exporting all kinds of products from consumer goods to high technology and industrial goods for re-export to third countries. U.S. companies will find attractive market opportunities in the following best prospects sectors: electronics, oil and gas equipment, aircraft and parts, pollution control equipment, medical devices, laboratory and scientific instruments, computer hardware and software, telecommunication equipment, university education services and franchises.
- Singapore firms are aggressive when it comes to representing new products and usually respond enthusiastically to new opportunities. In addition, most Singaporean companies are open to joint venture proposals, and many are interested in manufacturing under license.
- Price, quality and service are the main selling factors in Singapore. Prospective exporters to Singapore should be aware that competition is strong and that buyers expect good after-sales service. Selling techniques vary according to the industry and product but are comparable to the techniques used in any other sophisticated market.
- Singapore and the U.S have a FTA-Free Trade Agreement, an agreement which facilitates the trade of products internationally.
- For further information: work with Duquesne University SBDC Global Business Program([www.duq.edu/SBDC](http://www.duq.edu/SBDC)), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office ([export.gov/pa/Pittsburgh](http://export.gov/pa/Pittsburgh)).

**Additional Countries**

The following countries were included in some of the data of HS codes for the top ten countries’ subcategories for Environmental Management. For further information on these countries, please visit: [export.gov](http://export.gov).

- Netherlands
- Taiwan
- Dominican Republic
Additional Markets for Environmental Management

The following countries are countries that have also jumped on the green innovations market, and are growing to be a competitors among the top countries in this market.

Belgium

Green Consciousness Overview

This information was acquired from the government website: export.gov

The Belgian environmental market (public and private sectors) is estimated at approximately 5 billion dollars divided among wastewater treatment, waste management, soil remediation, air pollution control and environmental consultancy. The market has not grown significantly since the last market report for this sector was published in 2005.

The ecological footprint of the average Belgian is 4.9 global hectares, 2.7 times the available space per person (1.8 ha). Of this amount, 0.95 ha comes from food production, 1.25 ha comes from accommodation, 0.95 ha comes from transportation and 1.75 ha comes from various waste streams—e.g., goods and services, health care, consumer consumption.

Best Prospects & Opportunities

This information was acquired from the government website: export.gov

Water and Waste Water

The Belgian water treatment market is comprised of industrial and residential wastewater and drinking water treatment, and includes both equipment and services. While the Belgian water treatment market is very developed with limited opportunities expansion, water and wastewater treatment equipment and supplies dominated the nearly $500 million of U.S. environmental exports to Belgium in 2007. The best prospects for American companies are in equipment and supplies. It is recommended to approach the Belgian market through partnerships, strategic alliances and joint ventures with local firms.

The EU implemented the European Water Framework Directive in December of 2000 to protect public health and water sources. The general objective of the directive is to have surface and groundwater in a “good state” by the end of 2015. All member countries must comply with this directive.

Waste & Recycling

The Belgium environmental market is primarily engineering and service-oriented. Most companies provide environmental services in waste integrated management, wastewater treatment and soil remediation. The Belgian environmental market is undergoing much change currently, with the reorganization of the public waste sector, newcomers from Asia, industrial operators restructuring their operations, and a new government since June 2004. Household waste is managed by the public sector through regional and municipal authorities. The industrial
waste market is managed by the private sector. However, pressures are now in play to privatize
the household waste sector.

**Indoor & Outdoor Air Pollution**

Two air quality areas are receiving significant attention in Belgium:

1) Particulates
2) Indoor air quality

The largest improvement with this category will come from attacking the largest source—diesel automobile engines. Technologies that can burn diesel more thoroughly, efficiently and effectively should see improving market opportunities in Belgium with the passage of the new EU Ambient Air Quality Directive. As the EU is heavily committed to biodiesel and biofuels, they have begun to address this issue. However, these alternate fuels are not without their own set of unique implications, such as increased NOX emissions from corn and rapeseed derived biofuels.

Indoor Air Quality. To date, the EU has not developed any specific directives for indoor air quality, but issues related to indoor health are now receiving much attention. Like most Europeans, Belgium citizens spend a significant amount of time indoors. Safety from typical indoor pollutants—benzene, radon, formaldehyde, household cleaning solvents, etc—will need attention. As the U.S. has been a leader in indoor air quality, U.S. products should see an advantage in serving this segment. Sensing devices, monitoring devices, and ventilation and filter systems should see opportunity in the area of indoor air quality. This is true for all indoor activity—from the home to workplace.

The following are Best Prospects for U.S. exports to Belgium

- Gas analyzers, gas separation equipment and gas meters
- Dust collection and purification devices
- Air emission monitors and analytical devices
- Alarm and emission warning devices
- Filtering and purification devices
- Gas sample preparation equipment
- Effective diesel fuel strategies, equipment, and technologies

**Getting into the market**

*This information was acquired from the government website: export.gov*

- U.S. exporters can penetrate the Belgian market through importers/distributors, wholesalers or specialized retailers, depending on their products and their company size. Interested U.S. exporters will have to focus on innovation, quality and competitive pricing to successfully penetrate the market.
- In support of U.S. commercial interests in Belgium, the U.S. Embassy in Brussels uses the combined resources of the various U.S. Government agencies to promote exports of U.S. goods and services. It also supplies information on trade and investment opportunities and serves as an advocate for U.S. firms.
For further information: work with Duquesne University SBDC Global Business Program (www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
Spain

**Green Consciousness Overview**
*This information was acquired from a government website: export.gov*

Two major global challenges - the financial crisis and climate change - make it urgent to rally the world behind the idea of a “green new deal” or a “global green recovery.” There is the increased use of renewable energy or the amount of water saved. Current environmental issues in Spain include pollution of the Mediterranean Sea from raw sewage and effluents from the offshore production of oil and gas, water quality and quantity nationwide, air pollution, deforestation and desertification.

The latest available data states that the environmental sector is at 10.82 billion Euros (USD 14.35 billion) in Spain, equivalent to a 3.2 percent share of the worldwide market and 8.9 percent of the EU market. It also represents 1.6 percent of Spanish GDP. It is estimated that employment in the green tech and environmental sector in Spain increased from 158,500 jobs in 2008 to 531,000 in 2009. “Green” employment has increased 235 percent in the last decade in Spain.

The environmental sector is highly regulated in the EU. Spain has mandated that public and private companies follow environmental regulations while resulting in a strong development of the environment market. Spain has adopted environmental plans and developed ecological laws and regulations in line with EU environmental directives since 1993. In addition to the central government, 17 Spanish autonomous or regional governments issue environmental laws and regulations that are mandatory for their territories. The following chart depicts the Environmental Market in Spain for the estimated years of 2010-2012.

<table>
<thead>
<tr>
<th>Green Technologies &amp; Services USD millions</th>
<th>2010(e.)</th>
<th>2011 (e.)</th>
<th>2012(e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Market Size</strong></td>
<td>28,806</td>
<td>30,625</td>
<td>31,543</td>
</tr>
<tr>
<td><strong>Total Local Production</strong></td>
<td>24,565</td>
<td>26,130</td>
<td>26,914</td>
</tr>
<tr>
<td><strong>Total Imports</strong></td>
<td>7,369</td>
<td>7,811</td>
<td>8,045</td>
</tr>
<tr>
<td><strong>Imports from the U.S.</strong></td>
<td>2,236</td>
<td>2,304</td>
<td>2,350</td>
</tr>
<tr>
<td><strong>Exchange Rate: 1 USD</strong></td>
<td>0.754</td>
<td>0.754</td>
<td>0.754</td>
</tr>
</tbody>
</table>

*Data source: Total Local Production: unofficial estimates, Total Exports: unofficial estimates, Total Imports: unofficial estimates, Imports from U.S.: unofficial estimates*

**Best Prospects & Opportunities**
*This information was acquired from the government website: export.gov*

Demand for green equipment, technology and services have decreased due to the economic crisis. Nevertheless, environmental concern is still high and implementation of environmental regulations and resources allocated during recent years underscore Spain’s commitment to this sector.

The 2007-2015 Integrated National Waste Plan’s objective is to meet judicial obligations. It also states a number of measures to assure proper waste management while initiating programs and projects with real objectives that can be reached during that period of time. The areas
covered by the Plan include: urban solid waste, hazardous waste; end of life vehicles, end of life tires, waste water sludge, construction and demolition waste, PCB/PCT, used battery and storage battery waste, electrical and electronic appliance waste, mining waste, agricultural plastic waste, non-hazardous industrial waste, and, soil treatment.

Products and services that could be in demand, identified in the 2007-2015 Integrated National Waste Plan, include:

- Increase of industrial treatment plants for municipal solid and hazardous waste.
- New technology to reduce the amount of waste produced as a side effect of current treatment methods.
- Alternatives to landfill.
- Selective collection, especially introduction of selective collection at source for urban solid organic waste to improve compost quality.
- Contaminated soil treatment.
- New treatment centers and plants for end of life vehicles treatment and tires.
- Sludge treatment plants and recovery deposits.
- Waste water treatment plants/facilities.

Spain market conditions are challenging due to the economic crisis. On the other hand, Spain’s growth over previous years placed even greater pressure on the environment and the use of natural resources. Foreign technology and services can play a significant role in some niche business areas where there is still scope for action especially if ongoing technological and process innovation is essential.

Fines are imposed on contaminating industries through central, regional and local governments. These penalties force Spanish industries to look for environmentally safer technologies and pollution-control equipment to treat emissions and industrial waste. As a result, opportunities exist for U.S. environmental companies in this market.

Areas of opportunity could include advanced technology for treating certain elements of end-of-life such as glass, plastic, wood, textiles, foam, catalyzes, oils and brake fluid; new ideas for end-of-life tires; plastics treatment, especially agricultural plastics; hazardous waste treatment including hospital waste; soil remediation; small, modular waste water treatment plants for small residential areas or those in protected rural or green belt zones; among others.

**Getting into the market**

This information was acquired from the government website: export.gov

- The Spanish market is made up of a number of regional markets joined by the two hubs of Madrid and Barcelona.
- The key to a foreign firm's sales success is to either appoint a competent agent or distributor, or to establish an effective subsidiary in the Madrid or Barcelona areas.
- Spanish commercial procedures are in line with the rest of Western Europe, where price and value remain paramount. However, credit terms, marketing assistance and after sales service are also important factors in local purchase decisions. The use of credit to purchase consumer goods is widely accepted in Spain, particularly in the cities, with banks competing to offer coverage.
- The approach to doing business is similar to that of Italy or France. Professional attire is recommended. There is no substitute for face-to-face meetings with Spanish business representatives to break into this market. Spaniards expect a personal relationship with
It can be challenging to elicit a response to initial communication by phone or e-mail. Direct mail campaigns generally yield meager results. Less than 30 percent of local managers are fluent in English.

- For further information: work with Duquesne University SBDC Global Business Program (www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
South Africa

Green Consciousness Overview
This information was acquired from the government website: export.gov

As an economy dependent on coal for its energy input, South Africa has a relatively large carbon “footprint.” Although it was a signatory to the Copenhagen Accord, the South African Government framework for a concerted Green Technology policy is a long way off. However, with pressure on government, consumers and industry to address the mandate of Copenhagen, a variety of measures can be expected in the foreseeable future.

- These will all revolve around mandating energy efficiency that will add a new variable to the business equation. The early stages of a formal Green Technology policy are evidenced by voluntary energy efficiency programs that are being driven by industry; these will presumably be adapted by the South African Government as a mandatory standard in due course.
- A variety of South African Government Green Technology measures can be expected in the foreseeable future, including:
  - Increased focus on recycling, water efficiencies and treatment and waste management;
  - A sharply increasing electricity tariff regime (recently announced by the South African regulator to be 25 percent on average over the next three years).
- Industry sector developments in this field overlap with these headings:
  - Pollution Control Equipment
  - Renewable Energy
  - Green Build Technology

Pollution Control Equipment Overview
This information was acquired from the government website: export.gov

South African businesses are coming under increasing pressure to treat sustainability as a business imperative - prompted by a mix of fiscal interventions, tighter pollution laws and inspections, higher energy prices, a new corporate governance code and a global focus on climate change. Three major issues dominate the South African Government’s environmental efforts:

- The implementation of the updated and stricter South African Air Quality Act,
- Regulation of the use of leaded gasoline, low sulfur diesel oil,
- Enforcement of regulations on management of hazardous waste materials (particularly asbestos).
- Municipalities are being given responsibility for monitoring ambient air quality and source emissions while emissions producers will have to apply for new permits, based on a set of standards established with input from business.
• Hazardous waste management is also very typical, and the South African Government proposed far-reaching legislation on the banning of asbestos products and by-products. Active consultations were also being held on rehabilitation of asbestos and other hazardous waste dumping sites, including gold mine dumps and hydrocarbon waste cleanup. A process is under way to set standards for producer responsibility in terms of the Waste Management Act, which was published in March of 2009. It will result in standards for classifying and dealing with waste, and remediating contaminated land, among other things. In 2009 waste tire regulations also came into effect.

• Clean water supply is also a large concern. Significant demographic pressure on water resources has led to increased attention being paid to water management systems. Efforts by municipalities to address these matters are a cornerstone of meeting the basic needs of rural and peri-urban dwellers. At the same time, industrial water users are looking at the sustainable management of water. A cornerstone of the approach of authorities has been supply-side management, with reportedly a lack of demand-side management.

The following chart depicts the market in Environmental Management for the estimated 2009 & 2010 years.

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010 (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>88</td>
<td>89</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>51</td>
<td>52</td>
</tr>
<tr>
<td>Total Exports</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>Total Imports</td>
<td>71</td>
<td>76</td>
</tr>
<tr>
<td>Imports from the U.S.</td>
<td>41</td>
<td>43</td>
</tr>
</tbody>
</table>

*Note: All figures in US$ millions
Above figures are unofficial estimates obtained from industry sources.
2008 Rand/Dollar exchange rate: US$1 = R 8.00
2009 Rand/Dollar exchange rate: US$1 = R 8.45

**Best Prospects & Opportunities**

This information was acquired from the government website: export.gov

The key sub-sectors that are featured in this report and offer the most opportunities for U.S. companies are:

- Air Pollution Control and Monitoring,
- Waste Water Recycling and Treatment Plants,
- Hazardous Material Containment and Management, and
- Solid Waste Management Technology

- **Air Pollution Control and Monitoring**
  - The Air Quality Act mandates large, South African industrial groups to implement emission management and monitoring equipment. There is a definite opportunity for extensive implementation of emission filters and cleaner production technology to assist the large air-polluting industries in South Africa to reach their emission limitation targets as set by the South African Government.

  - There is demand for monitoring technology to measure emission levels in different industrial zones, as well as technologies and equipment to control and reduce emissions.
Hazardous Waste Management

- Opportunities for U.S. companies exist in treatment of hazardous waste sites, containing chemical and hydrocarbon spills and cleaning and rehabilitating asbestos and gold mine dumping sites.
- The South African Government has proposed far-reaching legislation on the banning of asbestos products and by-products. Active consultations are currently being held on the rehabilitation of asbestos and other hazardous waste dumping sites.
- Assessment, management and remediation of contaminated land will also play an important role as a result of new waste legislation that is being considered.
- The South African Government is also looking at a road freight management system that will monitor hazardous material shipments and end-use compliance.

Solid Waste Management

- The implementation of so-called integrated waste management plans and policies by municipalities will create opportunities for U.S. suppliers of relevant products and services.
- In the short- and medium-term, areas of opportunity exist in the provision of residential solid waste technologies and rehabilitation equipment to assist local municipalities to manage their solid residential waste, including transformation into reusable by-products, such as fertilizer.

Water Management

- Mine acid drainage is possibly the most pressing industrial remedial water management issue facing South Africa. Because of the peculiarities of the problem, many home-grown solutions are offered, but a lack of effective regulatory pressure seems to be militating against an immediate solution.
- With regards to potable retail water management, the biggest issue facing the big urban centers is the underground loss of bulk water due to failing infrastructure (25% of all water supplied). In most cases the reported drop in quality of potable water is due to lack of technical capacity of the local water authorities to budget and operate water purification systems.

Getting into the market

This information was acquired from the government website: export.gov

Because the South African market is sophisticated, entry should be well planned and should take into consideration the following factors:

- The skewed demographic income distribution pattern, where ten percent of the population earns 45 percent of national income;
- The price-sensitive nature of the majority of consumer demand;
- Distribution issues given that the large retail centers are spread over only five metropolitan regions;
- A judicious selection of one of three low-risk entry strategies: representation, agency or distributorship
- The entrenched bias of a conservative market that sticks to known suppliers and therefore requires sustained market development; and
- South Africa’s position as the pre-eminent stepping stone for developing most sectors in sub-Saharan Africa: the marketing mix should anticipate this medium-term option.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
France

Green Consciousness Overview
This information was acquired from the government website: export.gov

The total French market for water treatment equipment and related services is estimated to be USD 23 billion. It is the most dominant growing market in France; with greater interest in complying with environmental regulations by national and local governments officials have stimulated this market. Despite current financial and economic challenges, the water sector is still expected to grow at a stable rate and provide continued market opportunities in a number of areas.

(Figures in USD millions; * Estimated figures)
Source: French Ministry of Environment

<table>
<thead>
<tr>
<th></th>
<th>2009*</th>
<th>2010*</th>
<th>2011*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Market Size</td>
<td>23,514</td>
<td>23,600</td>
<td>23,650</td>
</tr>
<tr>
<td>Total Local Production</td>
<td>22,100</td>
<td>22,250</td>
<td>22,500</td>
</tr>
<tr>
<td>Total Imports from U.S.</td>
<td>1,445</td>
<td>1,475</td>
<td>1,750</td>
</tr>
<tr>
<td>Exchange Rate: USD 1.00</td>
<td>Euro 0.72</td>
<td>Euro 0.75</td>
<td>Euro 0.75</td>
</tr>
</tbody>
</table>

Best Prospects & Opportunities
This information was acquired from the government website: export.gov

- Wastewater sludge treatment
- Installation and maintenance of stand-alone sewage treatment tanks
- Remote monitoring technology, membranes and water filters
- Non point source pollution management and water conservation

Storm water Management

- Progressive storm water management policies have created the environmental impact on urban development. The main focus is place in treating and disposing of rainwater for environmental reasons
- This is driving the market for rainwater capture, storage and reutilization technologies and includes green house watering, commercial and industrial water cooling, water jet cutting, car washing and other ultra-pure, low mineral content water applications.
  Further, there are currently 8000 storm water management installations in France while there are approximately 100,000 systems in the Germany.

Wastewater Sludge Treatment

- This treatment continues to be a hot topic in France; currently innovative technologies have aimed to reduce volume and conditioning.
- The French government recommends recycling and fertilizing as a primary source of disposal for wastewater sludge.
These practices have been met with resistance from the general public due to the increasing health and safety concerns. The government and industry are moving forward to achieve ‘zero sludge discharge and zero waste generation”. This makes bioreactors very high in demand, and sludge treatment technologies will continue to be in high demand in the present and future.

**Stand-alone Sewage Treatment Systems**

- Currently there are 5.3 million non-municipal sewage treatment systems in France.
- According to the French authorities, over 90 percent of these systems do not conform to the French Water Agencies’ Directives.
- Managing, Maintaining, even replacing and revamping will be necessary. Especially since approximately 200,000 septic tanks units are installed per year. Even though suppliers and competition are increasing in the market, the demand still outpaces the supply, which will provide growing market opportunities in this sector.

**Remote Monitoring Technology**

- It is a continuously restructuring to maintain leverage with new and evolving technological capabilities
- Market players will be looking for water/ wastewater operators and equipment that will maximize efficiency and lower cost of ownership.
- This technology may offer solutions to the increasing costs that are implied with evolving storm water management policies
- Sharing remote storm water management systems with several water districts has become cost effective and an improvement in complying with regulations and higher quality for water management.

**Analytical Instrumentation**

- European Directive adopted in 2000 requires for all natural bodies of water to attain a satisfactory ecological state by 2015. It is expected to drive the biological and toxic substances analytical instrumentation market.
- There will be many measures that will be required by the Directive, the primary market application would include: monitoring aquatic environment, flood control, prevention of overflowing sewers, reduction of chemical reagents, and energy for the water treatment.
Filters, Membranes and Water Reclamation

- It is an emerging market, with growing interest and acceptance in reclaiming wastewater treatment.
- The market has been driven to find disinfection technologies, such as: UV, ozone, and chlorination. Also membrane technologies have been rising in the market, such as: nano-filtration, microfiltration, ultra filtration and reverse osmosis.
- Membranes capable of treating wastewater discharged into sensitive ecological systems are also in high demand. This offers an important opportunity for U.S. companies, which are generally market leaders in this sector.

Getting into the market

This information was acquired from the government website: export.gov

- In general, the commercial environment in France is favorable for sales of U.S. goods and services. Marketing products and services in France is similar to the approach in the U.S., notwithstanding some significant differences in cultural factors and certain legal and regulatory restrictions. Competition can be fierce, but local partners are readily available in most sectors and product lines.
- In support of U.S. commercial interests in France, the U.S. Embassy in Paris uses the combined resources of various U.S. Government agencies to promote the export of U.S. goods and services. It also supplies information on trade and investment opportunities, and serves as an advocate for U.S. firms.
- For further information: work with Duquesne University SBDC Global Business Program(www.duq.edu/SBDC), Pennsylvania DCED’s Center for trade Development, and the U.S Department of Commerce, Pittsburgh office (export.gov/pa/Pittsburgh)
Resources and Contact Information

This data was acquired from the government website: export.gov

#1 Canada

Web Resources:

#2 Mexico

Resources
- Secretariat of the Environment & Natural Resources: http://www.semarnat.gob.mx/
- Attorney General for Environmental Protection: http://www.profepa.gob.mx/
- Mexican Institute for Water Technology: http://www.imta.gob.mx/
- National Council of Environmental Executives: http://www.conieco.org/

For more information on the environmental sector, please contact:
Mr. Francisco Ceron
Commercial Service, U.S. Embassy in Mexico City
E-mail: Francisco.ceron@trade.gov

Contact Information of Trade Specialist by Industry

Environmental Technologies: Mexico City
- Claudia Salgado: (52) 5140-2639
- Dennis Simmons: (52) 5140-2631

#3 China

Environmental Management
- Chinese Association of Environmental Protection Administration Industry
  www.chinaenvironment.com
- China National Environmental Monitoring Center http://www.cnemc.cn/
- Beijing Environmental Monitoring Center
- Guangdong Environmental Monitoring Center http://gdemc.gov.cn/
- Guangzhou Environmental Monitoring Center http://www.gemc.gov.cn/
- Ministry of Environmental Protection Environmental Monitoring Department
  http://www.mep.gov.cn/
- Tianjin Environmental Monitoring Center http://www.tjemc.org.cn/lxwm/lxwm.asp
- Shanghai Environmental Monitoring Center http://www.semc.com.cn
- U.S. International Trade Administration-China Environment Market
  www.environment.ita.doc.gov
- World Bank China Pollution Intensities www.worldbank.org/nipr/data/china

Important Contacts:
- Ministry of Housing and Urban-Rural Development
http://www.mohurd.gov.cn/
See also: http://www.uschina.org/public/china/govstructure/govstructure_part5/

- **China Building Materials Industries Association**
  http://www.cbminfo.com/

- **China Energy Conservation Program**

- **Ministry of Environmental Protection of China**
  http://www.mep.gov.cn/

- **US China Build (a program of Evergreen Building Products Assoc)**
  http://www.uschinabuild.org

- **CS China Energy Webpage and Newsletter**
  http://www.buyusa.gov/china/enenergy.html

- **CS China Design Construction Webpage**
  http://www.buyusa.gov/china/endesignconstruction.html

- **China Greentech Initiative**

- **U.S.-China Energy Cooperation Program**
  http://www.uschinaecp.org

### U.S. Commercial Services Contact Information in China

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Shujuan.Cao@trade.gov
Elizabeth Shieh, Commercial Officer  
  ○ [Elizabeth.Shieh@trade.gov](mailto:Elizabeth.Shieh@trade.gov)

#### #4 Australia

*Any further information can be found on the government website: export.gov*

#### #5 Japan

**Commercial Services Contacts:**

- Aaron Held, Tokyo  
  Commercial Officer  
  Phone: 81-3-3224-5080  
  [Aaron.Held@trade.gov](mailto:Aaron.Held@trade.gov)

- Kevin Haley, Trade Event Programs  
  Senior International Trade Specialist  
  Phone: 202-482-6434  
  [Kevin.Haley@trade.gov](mailto:Kevin.Haley@trade.gov)

**Environmental Management**

- CS Japan Contact: Takahiko Suzuki takahiko.suzuki@trade.gov
- Geo-Environmental Protection Center http://www.gepc.or.jp/english/eindex.html
For a full list of the 6969 enterprises, please see the below link, with pages 135-261 focusing on air polluting enterprises:

#6 Germany
Government:

#7 S.Korea
Commercial Services Contacts:
- Mr. Young Wan Park
  Commercial Specialist
  US Commercial Service Korea
  US Embassy Seoul
  32 Sejong-no Jongno-gu
  Seoul 110-710 Korea
  Tel: 82-2-397-4164
  Fax: 82-2-739-1628
  Email: youngwan.park@trade.gov
  Website: http://www.buyusa.gov/korea
- Mr. Chris Ahn
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Environmental Management
- Ministry of Environment
  http://eng.me.go.kr/main.do
Public Procurement Service (PPS)
  http://www.pps.go.kr/english/

#8 United Kingdom
Commercial Service Contacts:
For further information about the UK environment, please contact:
- Sara Jones, Commercial Assistant
  U.S. Commercial Service, American Embassy
  24 Grosvenor Square, London W1A 1AE
  Tel: 011 44 20 7894 0451

Email: sara.jones@trade.gov
**#9 Brazil**

**Environmental Management**
- Ibama – Brazilian Environmental Institute – www.ibama.gov.br
- Cetesb – Environmental Authority of the State of Sao Paulo - www.cetesb.sp.gov.br/
- Abrelpe - Brazilian Association of City Cleaning and Waste Treatment Companies – www.abrelpe.org.br
- Abetre - Brazilian Association of Solid Waste Treatment Companies – www.abetre.org.br
- For more market research reports please visit:
- U.S. Commercial Service Brazil: [www.buyusa.gov/brazil](http://www.buyusa.gov/brazil)

**#10 Singapore**

**Commercial Services Contacts:**
- Kevin Haley, Trade Event Programs  
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  Kevin.Haley@trade.gov
- Yiu Kei Chan, Singapore Commercial Specialist  
  Phone: (65) 6476-9029  
  YiuKei.Chan@trade.gov

**Environmental Management**
- Singapore Government Offices  
  Ministry of The Environment & Water Resources  
- National Environment Agency  
- Public Utilities Board  
- U.S. Commercial Service, Singapore Contact  
  Ng Haw Cheng, Commercial Specialist  
  Email: Hawcheng.Ng@trade.gov

**Additional Markets for Environmental Management**

**Belgium**

**Environmental Management**
- Ministry of Social Affairs, Public Health and Environment  
  Avenue des Arts 7  
  B-1210 Brussels  
  Tel: (32) (2) 220.20.11  
  Fax: (32) (2) 220.20.67  
  Website: FPS Health
Belgian federal government’s Ministry of the Environment.

- **OVAM – Flanders Regional Waste Management Agency**
  Stationstraat 110
  B-2800 Mechelen
  Tel: 32 (0)1/528.42.84
  Fax: 32 (0)1/520.32.75
  Email: info@ovam.be
  Website: EFBWW
  Contact: Mr. Frank Parent, Director

- ** Ministère de la Région Wallonne - D.G.R.N.E. – OWD**
  (Wallonia Ministry of Environment, Waste Management Agency)
  Avenue Prince de Liège 15
  B-5100 Namur
  Tel: 32 (0)8/133.50.50 Fax: 32 (0)8/133.51.22
  Website: environnement.wallonie.be
  Contact: Mr. Roger Fontaine, Waste Division (Office Wallon des Déchets)
  Tel: 32 (0)8/133.65.27 E-mail: r.fontaine@mrw.wallonie.be

- **Institut Bruxellois pour la Gestion de l’Environnement - I.B.G.E.-B.I.M.**
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  Tel.: +32-2-775 75 11 & 775 75 61 Fax: +32-2-775 76 11 & 775 77 21 E-mail: mgr@ibgebim.be or info@ibgebim.be

**Spain**

**Environmental Management**

- Center for Hydrographic Studies: [http://www.cedex.es/ingles/home.html](http://www.cedex.es/ingles/home.html)
- Environmental Sector Specialist: Carmen Adrada, Tel: +34 91 3081542, Fax: + 34 91563 0859, e-mail: carmen.adrada@mail.doc.gov
South Africa

**Key Contacts**

- Department of Environmental Affairs and Tourism  
  Website: www.environment.gov.za
- Department of Trade and Industry  
  Website: www.dti.gov.za
- Department of Water Affairs and Forestry  
  Website: www.dwaf.gov.za
- Water Research Commission  
  Website: www.wrc.org.za

France

**Environmental Management & Green Building**

- *Union des Entreprises et Industries de l’Eau et de l’Environnement*  
  The French Federation for the Water and Environmental Industries  
  http://www.french-water.com
- *Canalisateurs de France*  
  French Waterline Construction Association  
  http://www.canalisateurs.com
- *SNITER (Syndicat National des Industries du Traitement des Eaux)*  
  National Association for the Water Treatment Industry  
  IFEP (*Industriels français de l'Eau de pluie*)  
  The French Institute for Storm Water  
  www.ifep.info
- U.S. Commercial Service Commercial Specialist:  
  olivier.collette@trade.gov – Phone: 33-1 43 12 71 97  
  http://www.buyusa.gov/france/en
Bibliography

*The greater part of this guide had it’s information acquired from the government’s website: export.gov. Other section that were not were duly cited their proper acquirement of information.*

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- [http://www.sba.gov/content/export-loan-programs#International%20Trade%20Loan%20Program](http://www.sba.gov/content/export-loan-programs#International%20Trade%20Loan%20Program)
- [http://www.sba.gov/content/export-loan-programs#International%20Trade%20Loan%20Program](http://www.sba.gov/content/export-loan-programs#International%20Trade%20Loan%20Program)

**Images:**
