



Vietnam Market for Environmental and Pollution Control Equipment and Services

By U.S. Commercial Service – Vietnam
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Overview

	2011	2012	2013 (estimated)
Total Market Size	790	825	860
Total Local Production	435	455	475
Total Exports	0	0	0
Total Imports	355	370	385
Imports from the U.S.	29.5	31	32.5

The above statistics are in \$ millions and are unofficial estimates, based on total ODA funding of environmental projects underway and in the pipeline, as well as projects undertaken by urban and industrial entities including water resources funds.

Vietnam is facing an increasing number of environmental pollution challenges including air, water, and solid waste pollution. Major factors contributing to these problems include high population growth rate, rapid urbanization, accelerating industrialization, and weak enforcement of the Law on Environmental Protection and Development.

Sub-Sector Best Prospects

Water Supply

The lack of clean water is one of Vietnam's most pressing environmental concerns. At present, it is estimated that only about 70 percent of the Vietnamese population has access to potable water. A high rate of water loss, averaging 30 percent, further aggravates the problem. In order to improve upon this situation, the Prime Minister issued Decision 1929/QD-TTg on approval of the "Orientation for Development of Water Supply in Vietnam's Urban Centers and Industrial Parks Leading to 2025, and Vision for 2050". The Decision sets a target of supplying clean water to all urban cities, towns, and limiting the rate of water loss in these cities to be less than 15 percent by 2025. By 2050, all urban cities, towns, and industrial parks will be supplied in a stable manner with high quality of services.

To this end, the GVN is using Official Development Assistance (ODA) funding to develop water distribution networks. The ODA funds are used for three major water supply programs: (i) World Bank water supply projects for small and medium cities, (ii) Finnish water supply projects for the northern mountainous areas, and (iii) Agence Francaise de Development (AFD) water supply projects for Mekong Delta provinces. However, it is estimated that ODA will be gradually reduced, since Vietnam GDP per capita reached \$1,400 as of 2011. In that context and in view of the enormous demand, the GVN strongly encourages private participation in the development of

water supply facilities and has created policies to encourage investments including Decrees No. 117/2007 and No. 124/2011 on Water Supply and Environmental Sanitation; Decree No. 88 on Drainage System Management; and Decree No. 59 on Solid Waste Management.

Currently the over 240 water treatment plants in Vietnam produce 5.8 million cubic meters per day for urban consumption, but only meet about 77 percent of demand.

Waste Water

In addition to water supply, one of the most pressing environmental concerns and a top government priority is drainage and sewage. Due to rapid and ongoing urbanization and industrialization, improved municipal and industrial wastewater treatment has emerged as a critical need. The total investment required to meet sewage and drainage system needs throughout the country is estimated to be two to three times the total investment for water supply projects.

Currently, there are 17 centralized wastewater treatment plants in six cities in Vietnam with total capacity of 565,000 cubic meters per day. Thirty-one wastewater treatment plants with total designed capacity of over 1.5 million cubic meters per day are under design or construction in urban areas. Both storm water and household wastewater are commonly discharged through combined and outdated drainage systems into canals and rivers without treatment. The development of wastewater treatment facilities in industrial parks has also become a pressing need.

According to the “Orientation for Development of Water Sewage and Drainage Systems in Vietnam’s Urban Centers and Industrial Parks Leading to 2025, and Vision for 2050”, by 2025 all urban cities class IV and above will have centralized municipal wastewater treatment and collection systems; 70-80 percent of municipal wastewater will be collected and treated properly. All traditional handicraft villages will have centralized or decentralized wastewater treatment facilities. By 2050, all urban cities class IV and above will have storm water discharging systems as well as wastewater treatment systems. The Government will give priority in using ODA funds to develop urban water drainage systems, especially in major cities and in areas that are prone to natural calamity. The Government also encourages funding from both domestic and foreign individuals and institutions in developing water drainage and wastewater treatment systems.

Class I cities: population > 3 million.

Class II cities: populations between 1 million - 3 million

Class III cities: population < 1 million

Class IV & V cities: considered as small provinces, cities, and towns

Municipal Waste Water

According to the Hanoi Drainage Company, the city discharges about 600,000 cubic meters of wastewater per day into lakes and rivers. Over 90 percent of the city's wastewater is discharged directly into lakes and rivers without treatment, making these watercourses seriously polluted. Currently, Hanoi has only one wastewater treatment plant (Bac Thang Long - Van Tri) and two small wastewater treatment units (Kim Lien and Truc Bach). The Yen So wastewater treatment plant, the largest one in Vietnam with total designed capacity of 200,000 cubic meters per day, is expected to commence its operations in 2013. Additionally, there are an ongoing Bay Mau wastewater treatment plant project and two other Phu Do and Yen Xa projects in the pipeline, with fund from Japan.

Ho Chi Minh City discharges 1.2 million cubic meter of wastewater per day. Similar to Hanoi, the city's wastewater is mainly discharged into rivers. Ho Chi Minh City authority is launching three big projects in order to solve the waste water problem of the city under the management of Steering Center of the Urban Flood Control Program of Ho Chi Minh City:

- The interception and Cat Lai Centralized Waste Water Treatment plan. This plant is used to treat the whole city. The project will be implemented in 2015-2019 with a total investment of \$470 million to complete the collection and treatment of wastewater for the Nhieu Loc-Thi Nghe Canal Basin and District 2. It comprises of an eight- kilometer drainage component connecting the Nhieu Loc-Thi Nghe Canal with the treatment factory with a daily capacity of 480,000 cubic meters of water in District 2's Thanh My Loi Ward.
- The collection system and the waste water treatment plant for Western area of the city and Binh Tan District. Scope of project consists of the interceptor and wastewater transmission, 1 wastewater treatment plant with daily capacity at 180,000 cubic meters. The investment value is \$250 – 300 million. This project is looking to start a feasibility study and for financial support.
- The interception and Tan Hoa Lo Gom waste water treatment plant. The daily capacity is 300,000 cubic meters per day Total estimated value is \$350 – 400 million.

According to HCMC's 2020 master plan for wastewater drainage, which was approved by the Prime Minister, the City will need to develop 12 centralized wastewater treatment systems for nine regions; only two of which already operated with a total operating capacity of less than 200,000 cubic meters per day with a total investment of up to \$4 billion to resolve its wastewater drainage problem. The remaining are still in the process of feasibility study, design, or seeking investors. These projects are under the management of the HCMC Steering Center for Urban Flood Control. (<http://ttn.hochiminhcity.gov.vn/web/guest/gioi-thieu1>)

In the Prime Minister's Decision No. 1336 on the development of the drainage system and wastewater treatment for economic development zones, total investment requirement for implementation, excluding resettlement cost, was estimated at \$3.4 billion. In the decision, the Prime Minister made it mandatory for new urban residential areas and industrial parks to plan and construct separate drainage systems for storm water and wastewater. Municipal and industrial wastewaters are further required to be pre-treated to ensure compliance with environmental standards before being discharged into the city's drainage systems. As a result, the Government encourages cost-effective and environmental friendly wastewater treatment technologies.

Industrial Waste Water

Vietnam is going through an industrialization and modernization process aimed at developing Vietnam into an industrial country with a modern technological and physical infrastructure. The country's industrial production grows at around 14-15 percent per year during the last decade. Statistics show that as of June 2012 there are 334 industrial parks and export processing zones. Industrial wastewater treatment has emerged as a critical need because 75 percent of wastewater is being discharged into lakes and rivers without treatment.

Pollution violations by industrial manufacturers have drawn much media, government and public attention in recent years. Public interest groups have begun to highlight the impact of polluting manufacturers on the environment and economy. Violating manufacturers are beginning to feel the negative impacts of boycotts by their associates and customers. Polluting companies have also had some difficulty in accessing bank funding, as more banks are adjusting their policies to avoid lending to clients on the environment black list. Highly visible cases have been discussed at National Assembly meetings since Q4 2008. These recent developments have triggered an intensification of monitoring and inspection of industrial environmental pollution.

Industrial parks (IPs) represent an attractive market for wastewater treatment plants since the government is pushing industries harder on environmental compliance.

Solid Waste

According to the recently released "2011 National Environment Report" of Vietnam Ministry of Natural Resources and Environment (MONRE), around 28 million tons of solid wastes are discharged nationwide each year. The annual solid waste volume would rise to 44 million tons in 2015. According to the report, 46 percent of this solid waste is being discharged from urban areas, 17 percent from industrial production zones and the remaining from rural areas, trade villages and the medical sector.

Solid waste material from industrial zones, urban and rural areas in Vietnam is increasing by 10 percent each year, with its components becoming more unidentifiable. In particular, solid waste discharged in urban areas is forecasted to increase in volume by up to 51 percent by 2015 with toxic waste accounting for 18-25 percent of the solid waste discharged from each respective area. Similarly, industrial solid waste would increase by 22 percent in 2015.

Another concern is waste separation and collection. Most of solid waste produced in urban areas is not classified at its source. Organic and inorganic wastes are often times mixed together. Waste collection in urban areas, industrial parks and processing zone are only at 80-82 percent and only 40-55 percent in rural area. Additionally, there is very little recyclable material left once wastes reach treatment plants because scavengers and garbage collectors had already pulled all recyclable material including the vast majority of cans, PET bottles, scrap metal, wiring, plastic bags, paper and others.

Recycling only accounted for only 20-25 percent of the collected waste, according to Mr. Nguyen Hong Tien, Director of the Ministry of Construction's Department of Infrastructure and Urban Technology. Treatment and recycling of solid and toxic waste has yet to meet standard requirements. The report also puts forward some proposals to improve collection and treatment of both solid and toxic waste. One suggestion is that an authorized organization builds solid waste treatment plants in every locality.

The government strongly encourages private sector participation in solid waste collection, separation, transportation, and treatment. Polluters Pay is compulsory by regulation. Entities generating solid waste are responsible for waste collection, transportation and treatment fees. Regulation also requires that waste be separated at the sources of generation. In order to minimize burying waste, the government recommends new technologies to treat less degradable waste.

Over the past decade, commendable efforts have been made to develop a policy and legal framework for environmental protection, particularly for the management and disposal of waste streams, specifically the Strategy for the Management of Solid Waste (SWM) in Vietnam Cities and Industrial Parks (1999), the National Strategy for Environmental Protection (2003), the government's Decree 59/2007/ND-CP on Solid Waste Management (2007), the approved by Prime Minister 'National Strategy for solid waste management until 2025, with a vision toward 2050, and the Decision No. 798/QĐ-TTg to approve the national solid waste treatment program for the period of 2011 to 2020. According to that, 85 percent of urban and 40-50 percent of rural solid waste is set to be processed by the end of 2025. Reducing landfill level to below 10 percent by 2015 is also another important target of the program.

Opportunities

Funding for water supply and wastewater projects comes mainly from Official Development Assistance (ODA) sources with major donors being the World Bank and Asian Development Bank with billions of dollars committed to Vietnam water projects. In 2012, the total World Bank (WB)'s commitment for Vietnam is \$2.6 billion while Asian Development Bank's (ADB) is approximately \$1.4 billion. Foreign donors pledged \$6.45 billion in official development assistance for Vietnam in 2013.

In April 2013, the World Bank Board of Directors approved a \$ 202.5 million credit to support the sustainable development of Da Nang City, Vietnam. Provided under the Da Nang Sustainable City Development Project, the credit will help expand access of city residents to improved drainage, wastewater collection and treatment services, the arterial road network, and public transport in selected areas of Da Nang City, the fourth largest city in Vietnam.

In October 2012, World Bank funded \$50 million to support the enforcement of wastewater treatment regulations for industrial zones in the four most industrialized provinces including Nam Dinh, Ha Nam, Dong Nai, and Ba Ria Vung Tau.

In 2011, ADB has approved a Multi-tranche Financing Facility (MFF) in water supply and sanitation sector with total amount of one billion USD within the next ten years. This investment

program will help water supply companies in Vietnam improve their performance. It will support capital investment in water companies and co-finance the National Nonrevenue Water (NRW) Program. The program will utilize an MFF to provide longer-term support for institutional reform in the Vietnam water sector until 2020. The MFF will be used as seed money to leverage parallel co-financing and, importantly, gain access to commercial finance and increased private sector participation. Four pilot cities—Da Nang, Hai Phong, Ho Chi Minh City (HCMC), and Hue—were identified for project preparation in 2008. The first periodic financing request (PFR) will cover HCMC. Subsequent tranches will finance part of the National NRW Program and investment subprograms consisting of water supply infrastructure for provincial water companies, duplicating the model established with HCMC in PFR1. Several cities have initiated discussions with the government to finance future tranches totaling over \$300 million for water production plants, transmission and distribution networks.

The Vietnamese government plan on investing \$2.78 billion in the Vietnam water sector by 2020. It has requested an MFF of up to \$1 billion from ADB’s ordinary capital resources to help finance the investment. The MFF will have several tranches, subject to the government's submission of PFRs; execution of loan and project agreements; and fulfillment of terms, conditions, and undertakings set forth in the framework financing agreement. The indicative investment plan for the MFF is in following table:

Indicative Investment Program (MFF: 2011–2020)

(\$ million)

Cities	PFR1 2011	PFR2 2011	PFR3 2013	PFR4 2015	Total
Hochiminh City	138				138
Da Nang		47	30		77
Hue		40	20	20	80
Hai Phong		63	0	0	63
Nonrevenue water		0	100	150	250
Future cities		50	150	192	392
Total	138	200	300	362	1,000

MFF = multitranche financing facility; PFR = periodic financing request.

Note: The schedule and amounts are indicative, to be confirmed year to year by the country programming mission. PFR1 is using 2010 country ordinary capital resources allocation.

Source: Asian Development Bank

There are also ADB’s ongoing Technical Assistancess (TA) including \$2 million Capacity Development Technical Assistance (CDTA) support to Central and Local Governments to Implement Urban Environment Programs, which is approved in 2011; \$1.1 million CDTA Improving Operational Performance for the Water Supply Sector, which is approved in April 2013; and a number of pipeline TA including \$1.5 million Project Preparatory Technical Assistance (PPTA) Industrial Wastewater Treatment; and \$1.5 million PPTA Provincial Water Supply and Sanitation, which are expected to be approved during 2013 – 2015 period.

Whether funded multilaterally or bilaterally, projects funded by ODA offer numerous opportunities for foreign equipment suppliers, and engineering and consulting firms.

Local production of environmental equipment does not meet market demand, especially the requirements of ODA-funded projects. Technical conditions/requirements governing many ODA projects dictate that many materials must be imported. For instance, equipment for water supply (water meters, valves, pumps, motors, water treatment chemicals, water filtration systems, water control and monitoring equipment, etc.) and most wastewater treatment equipment must be imported. Equipment packages over \$500,000 are typically procured through international competitive bidding. Amongst imports, U.S. products and technologies are highly regarded for their high quality.

In addition to municipal and donor-funded projects, market demand is also being driven by certain industrial users. Industrial parks represent an attractive market for wastewater treatment systems, because Vietnam has to import nearly all of the key components of these systems.

The market for water and wastewater treatment services centers on consultant contracts for ODA funded projects.

Web Resources

Information relating to environmental projects can be found on the following sites:

World Bank
www.worldbank.org

Asian Development Bank
www.adb.org

Ministry of Natural Resources and Environment (MONRE)
www.monre.gov.vn

Vietnam Environment Administration
www.nea.gov.vn

Further information can be obtained from the U.S. Commercial Service in Ho Chi Minh City and Hanoi via the following addresses and website:

Ms. Ngo Anh, Commercial Specialist
U.S. Commercial Service, U.S. Embassy in Hanoi
Email: ngo.anh@mail.doc.gov

Ms. Doan Van, Commercial Specialist
U.S. Commercial Service, U.S. Consulate General
Email: van.doan@trade.gov