



Vietnam: Water and Wastewater Treatment

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Summary

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

The 2006 -2010 Socio-Economic Development Plan, approved by the National Assembly in June 2006, identifies environmental protection as one of the pillars of social and economic development. Water quality and wastewater treatment are stated priorities of the Vietnamese government. Municipal and industrial wastewater is the main cause of water pollution in the cities. In recent years, the government has spent an amount equivalent to 0.5% of the country's GDP each year for environmental protection activities, with plans to increase this budget to 1% of GDP by 2010, according to the National Strategy of Environmental Protection.

This report provides a market overview and trends of water supply and wastewater treatment in Vietnam, recommendations for market entry and best sales prospects for U.S. suppliers.

Market Demand

Water Supply

The lack of clean water is one of Vietnam's most pressing environmental concerns. At present, it is estimated that only about 60% of the Vietnamese population has access to potable water. A high rate of water loss, averaging 32%, further aggravates the problem. In order to improve upon this situation, the government has devised a water supply development plan with the objective of providing clean water for 80% of the population by the year of 2010. The government's top priority in water supply management is to control and reduce water loss (the water loss rate is expected to be 20% by 2025) and to effectively manage water distribution networks and water fee collections.

To this end, the Government uses 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) Finland water supply projects for the northern mountainous areas, and (iii) AFD (Agence Francaise de Developpement) water supply projects for Mekong Delta provinces. However, it is estimated that ODA will be gradually reduced, since the GDP per capita is projected to reach \$1,000 by 2010. In that context and in view of the enormous required demand, the Government strongly encourages private participation in the development of water supply facilities and has created favorable policies to entice business.

Currently there are about 240 water treatment plants in Vietnam, producing over 4.2 million cubic meters per day for urban consumption.

In Ho Chi Minh City, the water supply offers about 1.2 million cubic meters per day. The city's two biggest water plants are Thu Duc (using surface water from Dong Nai River) and Tan Hiep (using Saigon River water) , which have capacities of 750,000 cubic meters and 300,000 cubic meters per day respectively.

The majority of existing water plants uses underground water sources. In Hanoi, all 12 water plants rely on underground water sources, offering a total capacity of about 580,000 cubic meters per day. The actual demand through 2010 is expected to be about 1.05 million cubic meters per day, however. Major water treatment facilities in Hanoi include Mai Dich, Luong Yen, Ngo Si Lien, and Da River water plants with capacities of 60,000 cubic meters, 60,000 cubic meters, 80,000 cubic meters, and 300,000 cubic meters per day respectively.

The outlook for new construction of water treatment facilities includes the following major projects:

In the southern part of the country:

- Sai Gon River 2 Water Plant: capacity of 300,000 cubic meters per day
- Thu Duc 2 Water Plant: capacity of 300,000 cubic meters per day
- Canh Dong Water Plant: capacity of 240,000 cubic meters per day
- Ho Da Den Water Plant: capacity of 100,000 cubic meters per day

In the northern part of the country:

- Da River Water Plant (2nd stage): capacity of 300,000 cubic meters per day (to be started in 2010)
- Red River Water Plant: capacity of 300,000 cubic meters per day. (This project has not yet been approved.)

Waste Water Treatment

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.

Most of the cities and provinces have no centralized wastewater treatment plants. 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. Currently, only about ten

percent of industrial parks have centralized wastewater treatment plants (including Tan Thuan, Linh Trung, Le Minh Xuan, Tan Tao, Bien Hoa 2 and Thang Long).

Industrial Waste Water

Recent pollution violations by industrial manufacturers have drawn much media, government and public attention in recent past. 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 partners and customers. Polluting companies have also had some difficulty in accessing bank funds, as more banks are adjusting their policies to reject lending to clients on the environment black list. Highly visible cases were discussed at the recent National Assembly meetings in Q4 2008. These recent developments have triggered an intensification of monitoring and inspection of industrial environmental pollution.

In September 2008, the environmental police caught the MSG producer Vedan Vietnam red-handed discharging untreated wastewater into Thi Vai River in Dong Nai province through a hidden pipeline. The total amount of wastewater discharged was reported to be 5,000 cubic meters a day. According to Vietnam Environmental Protection Agency (VEPA), they are taking the strongest measures against this violation to set an example for other companies. Vedan Vietnam will have to pay more than VND127 billion (equal to approximately \$7.5 million) in administrative fines and environmental fees for payments not made over the past 14 years. In addition, Vedan is required to temporarily cease its production at its factory in Dong Nai province until its wastewater treatment systems meet Vietnam's environmental protection standards.

In similar fashion, Hao Duong leather processing factory, located in Hiep Phuoc Industrial Park, was recently found to be discharging roughly 1,000 cubic meters of untreated wastewater per day into a nearby canal. As a result, the Ho Chi Minh City Department of Natural Resources and Environment instructed Hiep Phuoc Electricity to temporarily cut power supply to Hao Duong Tannery Company. The company has been forced to close its manufacturing plant until it installs a wastewater treatment system with a capacity of 2,500 cubic meters per day.

In addition to the Vedan and Hao Duong cases, the environmental police have also recently uncovered dozens of similar cases nationwide, such as JRD Vietnam in Phu Yen Province, Viet Tri Paper and Miwon Vietnam in Phu Tho Province.

A major reason for environmental pollution is lax enforcement due to the inadequately trained staff and facilities for effective monitoring, as well as the low penalties (maximum penalties is 70 million VND, equivalent to approx. \$4,100). In the context of the above-mentioned pollution cases, however, the situation is changing. The government is re-examining environmental policy and is making plans to implement more stringent monitoring measures. MONRE will likely impose

a higher fines, probably a maximum fine of VND500 million (equal to approx. USD 30,000) for environmental protection law violations though many argue this is still inadequate.

Industrial parks (IPs) represent an attractive market for wastewater treatment plants since the government is pushing harder on environmental compliance by industry. There are many centralized wastewater treatment facilities projects under design or construction in industrial parks including Vinh Loc, Tan Binh, High-Tech, Tan Phu Trung IPs in the south, Pho Noi IP in the north. A wastewater treatment plant with a capacity of 4,000 cubic meters per day in Tan Phu Trung Industrial Park will start its operation by the end of 2008.

Municipal Waste Water

According to the Hanoi Drainage Company, the city discharges 450,000 to 510,000 cubic meters of wastewater per day into lakes and rivers. Over 90% 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).

In Prime Minister's decision No. 1336 dated on September 2008 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 develop a 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. In this regard, the Government encourages cost-effective and environmental friendly wastewater treatment technologies.

In Hanoi, there are currently two on-going large-scale wastewater treatment projects- the Ho Ba Mau and Yen So projects. The \$233 million Yen So wastewater treatment facility (with a capacity of 200,000 cubic meters per day in the first phase), is being funded by Gamuda Berhad Corporation of Malaysia under the Built- Transfer modality. Construction is expected to begin by the end of 2008 and be completed within 33 months. Two more wastewater treatment plant projects- Yen Xa and Phu Do- are also in the pipeline for construction in 2012.

In Ho Chi Minh City, the Nhieu Loc- Thi Nghe wastewater treatment project, with a capacity of 76,000 cubic meters per day, is on-going. Two other plants are undergoing upgrading, namely Tham Luong-Ben Cat and Suoi Nhum.

Market Data

Vietnam's market for environmental and pollution control equipment and services was estimated to be over \$600 million in 2008, with an estimated annual growth rate of 10% - 15% in the next five years. Out of this total, the market for water and wastewater equipment/services is expected to be approximately \$500 million.

Market for Water & Wastewater Equipment and Services (in \$ millions):

Water & Wastewater Equipment/Services	2006	2007	2008 (estimated)
Total Market Size	430	470	500
Total Local Production	230	255	275
Total Exports	0	0	0
Total Imports	200	215	225
Imports from the U.S.	18	19	20

(Note: The above statistics are in US\$ 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 resource funds.)

Best Prospects

Funding for water supply and wastewater projects comes from various sources within the state budget, as well as ODA (Official Development Assistance) loans and grants. ODA financing plays a key role, with major donors being the World Bank, the Asia Development Bank and bilateral contributors such as Japan, France, Denmark, the Netherlands, Finland, Germany, and Australia. The Asian Development Bank (ADB) leads the group of multilateral donors with a commitment of US\$1.35 billion for Vietnam in 2008. The ADB is followed by the World Bank (WB) which has committed US\$1.1 billion in 2008. Whether funded multilaterally or bilaterally, projects funded by ODA offer numerous opportunities for foreign equipment suppliers, 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 imported for ODA non-lending programs is duty-free. Equipment packages over \$500,000 are typically procured through international competitive bidding. Among 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.

Key Suppliers

Over the past 20 years, Japan, Denmark, Finland, Holland, Australia, Germany and France have been the most active countries in financing projects in the water sector. Government grants from these countries have been used to finance feasibility studies and master plans for environmental

improvements and pollution prevention in Vietnam. Companies from these countries are often well positioned to win the design contracts and subsequent engineering and equipment contracts. As is the case in numerous industries in Vietnam, U.S. companies are playing “catch-up” in the environmental technologies and services market in Vietnam.

Products from the U.S., Europe, Japan and Australia are preferred over imports from other Asian countries because they are perceived to be of higher quality and durability. In general, products from the United States are highly regarded for their quality. The major hurdle to overcome in this market, however, is the initial cost of the product and service support.

Prospective Buyers

End users of water and wastewater treatment equipment and services are typically foreign-owned enterprises, joint ventures, state-owned or private companies. To date, Vietnamese state-owned enterprises that receive ODA assistance to finance projects are the largest customers for water supply equipment.

Market Entry Strategies

Financing for environmental projects in general, and the water and wastewater subsector in particular, will continue to come mainly from the Official Development Assistance (ODA) sources. Therefore, it is important to maintain contact with ODA sources and also Vietnam’s Ministry of Planning and Investment (MPI) as an overall planner of investment projects and coordinator of ODA assistance. Tracking ODA projects includes establishing relationships with implementing agencies, ministries, and project management units at the local level.

The main ministry responsible for the environment in Vietnam is the Ministry of Natural Resources and Environment (MONRE). MONRE takes responsibility for environment management throughout the whole country. MONRE promulgates legal documents, standards, procedures, instructions, and economic and technical norms in the fields of water and environment. Under MONRE, the Vietnam Environmental Protection Agency (VEPA) is established to implement the administrative and regulatory functions. The Departments of Natural Resources and Environment (DONRE) at city and provincial levels are responsible for the management of environmental protection activities in the local areas.

The Environmental Protection Law was initially launched in 1993. It was amended and approved by the Vietnamese National Assembly in late 2005, and became effective in July 2006. The law contains new measures related to economic, administrative, and criminal responsibility to facilitate a higher level of law enforcement. Under the amended law, the system of “polluter pays” fees has been imposed on seriously polluting industries. Fees for industrial waste water, as well as fines on the worst polluters, have been introduced at the local level.

Market Access Issues & Obstacles

Many U.S. companies set up representative offices and/or distributors/agents to penetrate the Vietnamese market. Local agents and distributors can be invaluable for their existing distribution

networks, technical and sales staff, contacts, and relationships with provincial, municipal, and other governmental officials. It is important to provide local agents/distributors with adequate training so that they are able to provide quality after-sales services to buyers.

Representative offices initiate marketing strategies and conduct various marketing activities including advertising, business promotion, product knowledge training, and technical seminars and demonstrations. However, representative offices are not allowed to sell goods directly or sign contracts with customers. Representative offices can only identify potential buyers, and negotiate preliminary terms and conditions of sales contracts.

State-owned and private companies are allowed to import environmental equipment directly. Import license quotas are applied to some equipment imports in Vietnam. In general, imported environmental equipment is subject to an import tariff and value added tax (VAT).

The U.S. waiver of the Jackson-Vanik Amendment to Vietnam in 1998 frees financing support to trade promotion projects, loan guarantees and insurance programs by the U.S. Export-Import Bank (EXIM Bank) and the Overseas Private Investment Corporation (OPIC) for American firms doing business in Vietnam. In addition, the Trade and Development Agency (TDA) has been very active in Vietnam in providing technical assistance, grants for feasibility studies, and orientation visits for projects being pursued by U.S. firms to facilitate market access.

Trade Events

National Environment Friendly Products and Technologies Exhibition and Conference (EFProtech 2009) organized from March 17 – 20, 2009 in Hanoi by the Ministry of Industry and Trade's Institute of Industry Policy and Strategy (IPS), Science and Technology Department and Department for Industrial Safety Techniques and the C.I.S Vietnam Advertising & Exhibition JSC. Please visit the website <http://cisvietnam.com.vn/TLWEB/efprotech09/?go=thumoi> for further information.

References & Key Contacts

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