

electronics company Nedap N.V. developed prototypes and the final design, and bought the intellectual property rights in 2003. The Naiade is now marketed both by Nedap N.V. and by Clean Water Now! B.V

The product

The Naiade is a water purification device based on filtration and UV disinfection. It has a holding tank of 100 liters and a maximum purification capacity of 5 l/min. The water is delivered by pressing a button that activates an electronic valve, which is automatically disabled if the UV lamp is defective or if the filter bags are missing. Electric power comes from a photovoltaic panel (solar cell) with a connected battery. The filter bags can be cleaned easily and the UV lamp and battery must be replaced occasionally, depending on the usage pattern and intensity. The annual cost of spare parts is around €50. The initial sales price of the entire unit will be € 3,500 (FOB warehouse), depending on production quantities and locations. Modules have been developed to absorb arsenic and fluoride and the initial cost price of this additional component is €500. The Naiade equipment has a technical life span of 10 years; the arsenic filter has to be refilled after 6 years.



Exhibit 16:
The Naiade

Current status of the business

When the toolkit project started, the CWN! organization and team was ready to scale up, focusing on the Indian market. Survey and tests had been carried out in Gujarat and Andhra Pradesh by Nedap and CWN!. The purpose of the program was to field test five units, monitored by a state approved laboratory, leading to cooperation with an Indian launching customer.

The outcome of the test report was very positive, indicating that rural people in Gujarat were willing to pay for safe drinking water (Rs 2 per family per day). The total cost of ownership per amount of disinfected water was and still is very low: the production cost for 20 liters of clean water is Rs 1.14 or Rs 1.15 including an arsenic-removing filter (€1 = Rs 62). However, the initial sales price is *perceived* by NGOs and others to be high, making the product less attractive, although most organizations are aware of the huge positive economical impact when people have access to safe drinking water.

A business plan was drawn up using the formats and guidelines in this toolkit. A strategy was developed to bridge the initial sales price of the Naiade by lowering import duties and providing a financing deal (e.g. lease facility) to help customers to buy the product. The business plan contains a marketing strategy that focuses on a few specific client groups and on developing business models to stimulate local entrepreneurs to operate the Naiade purification system and sell clean water at a reasonable price.

So far, 40 Naiades are operating according to expectation in the Indian market. CWN! will look for potential partners to improve the implementation of the business plan.

Lessons learned and the way forward

CWN! has a good and proven product for disinfecting water that has been tested by several well known institutes (such as Unesco-IHE). The Indian market is a good choice for three reasons:

- ❖ It offers plenty of market potential, with over 1 billion people with rising incomes.
- ❖ Expertise on maintaining the equipment and spare parts is available locally.
- ❖ Operating costs are very low, leading to an affordable price per unit of clean water, which is important as the Indian market is very price sensitive.

Potential customers tend to look at the initial purchasing price. Local production is the best way of lowering the cost price but this is currently not an option. The challenge for CWN! is to

investigate potential options for this, while continuing to build solid partnerships with organizations that can facilitate access to specific client groups. CWN! strongly believes that offering customers assistance with the financing of the initial purchase will increase sales volumes, but the concept must prove itself in practice.

This case shows the challenges entrepreneurs face when launching a product with a relatively high initial sales price in a price sensitive market. Financial incentives are needed to make the initial purchasing costs affordable, but the way forward is focusing on the low Total Cost of Ownership per liter of clean water.

Another approach to bridge the initial sales price is to finance local entrepreneurs operating the Naïade. Therefore, convincing local entrepreneurs or communities to invest in operating the Naïade as an attractive business opportunity is an effective marketing strategy. These entrepreneurs or communities understand the local market, sell the water per unit at an affordable price, and take the business risk of financing the initial purchase.

Aqua-Aero WaterSystems B.V. / Dutch Water Solutions

Company and product history

Aqua-Aero WaterSystems B.V. ("AAWS") has developed the WaterPyramid concept for use in tropical rural areas. The WaterPyramid combines state-of-the-art technology, capacity building and local entrepreneurship to achieve a long-lasting (financial) sustainable situation. AAWS is owned by Martijn Nitzsche, a technical engineer and successful entrepreneur, is based in the Netherlands and works closely with national and international partners.

(www.aaws.nl).



Exhibit 17: WaterPyramid

The product

The WaterPyramid is a uniquely designed foil structure, utilizing energy from the sun to evaporate dirty or polluted source water and condense high-quality drinking water. The concept uses solar-still principle and rainwater harvesting.

- ❖ The WaterPyramid is the first, stable large-scale solar-still application optimized for large ground areas, with a ground area of 650 m². By covering such large areas, the WaterPyramid can capture large amounts of solar energy and produce substantial quantities of drinking water. The WaterPyramid can provide communities of hundreds of inhabitants with enough drinking water to meet their basic water needs.
- ❖ The WaterPyramid can also be used for *rainwater harvesting*. The outside of the WaterPyramid and its slightly tilted guttering system captures rainwater in large quantities.

Status of the business

Since the workforce is locally recruited and direct energy costs are low, operating costs are low. The investment costs of the WaterPyramid are comparable to the cost of purchasing a state-of-the-art reverse osmosis system in combination with appropriate power supplies and other necessities. Due to the low operational cost, the WaterPyramid can easily compete with other desalination technologies.

As mentioned above, the WaterPyramid is designed primarily for small communities and villages in rural areas in tropical countries. In order to make the WaterPyramid financially sustainable, a mix of grants, (soft) loans, and micro financing tools are combined to enable

customers to purchase the product. Private (local) banks, NGOs and communities play a vital role in the financing of the package.

Local entrepreneurs play an important role in creating a financially sustainable business model. Entrepreneurs distribute and sell the treated water, have the knowledge of local habits and customs, and understand the behavior of customers. Different applications for the treated water (e.g. ice cubes, lemonades) are being developed to increase revenues and build a strong and sustainable business model.

When the Toolkit project was in its initial stages, AAWS was about to launch the WaterPyramid on the Indian market. From earlier experience, AAWS understood the importance of local reliable partnerships, but knew how hard it can be to find partners you can trust. Because other water and sanitation entrepreneurs have the same experience, AAWS decided to create a bridgehead in India, which can help other Dutch entrepreneurs to set up their local business, too.

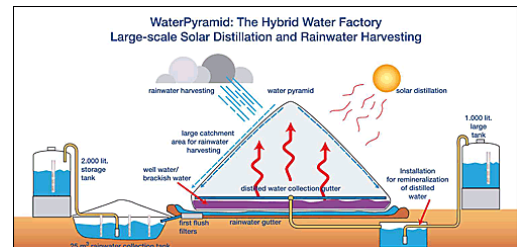


Exhibit 18: The WaterPyramid - large-scale solar distillation and rainwater harvesting

Together with a Dutch and an Indian partner, Martijn Nitzsche established Dutch Water Solutions (DWS) to operate as a bridgehead to water entrepreneurs who want to enter the Indian market. DWS supports Dutch entrepreneurs in setting up their water business in India by helping them to reduce production costs and by providing a sales channel for introducing their water products onto the market. DWS is located in Ahmadabad, Gujarat. Its launching customers are AAWS and Genap B.V., one of its present Dutch production partners.

A business plan was drawn up using the formats and guidelines presented in this toolkit and DWS is now up and running. It is currently (September 2008) assisting AAWS with market research and finding the right partners to set up shop locally. DWS is building an assembly facility to service the assembly needs of its customers. Meanwhile, AAWS is piloting two WaterPyramid projects in India and has investigated opportunities to produce part of the WaterPyramid locally.

Lessons learned and the way forward

DWS is investigating the possibility of establishing additional bridgeheads in other parts of India. The challenge is to find the right local partners to work with. DWS' ambition is to build up a portfolio of different water products and solutions to market to Indian clients. The challenge is to source sufficient Dutch entrepreneurs to fill this portfolio. DWS is currently (September 2008) talking to several Dutch organizations that have expressed interest in the concept.

This case illustrates the importance of working with professional and reliable local partners. The commitment of Indian business partners strongly depends on the financial benefits they expect to receive. Value is shared between all the partners through the creation of DWS, in which current partners have an equity stake. On the other hand, personal relations must be good as well; mutual respect and trust are the foundations of Indian partnerships. By building a bridgehead, DWS will provide a shared distribution network for potential clients. The experience of AAWS highlights the importance of using partners to help you distribute your product and create a distribution network

Basic Water Needs B.V.

Company and product history

Basic Water Needs B.V. ("BWN") was founded by the Basic Water Needs Foundation (BWNF) and entrepreneur Klaas van der Ven. BWNF started to develop products in 2002. Assembly and production is organized in India through Basic Water Needs India Pty Ltd in Auroville, Tamil Nadu.

The product

BWN has developed the Purator, an innovative small-scale device with a ceramic filter cartridge that effectively removes all pathogens from the source water. The Purator operates with a suction device and uses static hydraulic height to create a small pressure system that gives it a significantly greater capacity than traditional ceramic filtration units. The Purator HD filter is able to treat water sources with high turbidity.



Exhibit 19: The Purator

Status of the business

BWN was at a crucial moment in its history when the toolkit project started and it joined this project as one of the innovators. At the time, the first orders had been received and financing the startup and successful production and sales had to be realized within 6–12 months.

A business plan was drawn up within the framework of the toolkit project and successful talks were held with potential investors. BWN obtained a bank credit line sufficient to finance the first production series. The focus then moved to India, where successful production of the first series was established and scaled up: 40,000 filters will be produced and delivered before the end of 2008. One filter is able to support a household of up to ten people.

Lessons learned and the way forward

BWN has a potentially very successful product in the Purator. The product is very cost effective, affordable for most people at the BOP and is easy to use. The key to further growth of BWN is going to be financing and scaling up of production in India. Finding good local management for its Indian organization will be crucial. Within the framework of the toolkit project, a solid business plan has been put together and financing has been secured. Now the company will enter a new phase of growth, in which it will continue to face the twin challenges of sound management and additional financing.

The case of BWN should teach you how time-consuming the process of setting up a local company in India can be. It has shown in practice that entrepreneurs wishing to set up a local company should plan well ahead and make sure they are properly informed and supported by someone with experience in the local market.

Furthermore, the case highlights the challenge of finding good local management and capable and reliable staff. As you will often not be around and will have to delegate many daily duties to your local manager, it is important there is sufficient trust.



Further reading:

Info Sheet 8: Experience with setting up a business in India

Ecosan Ltd.

Company and product history

Ecosan Ltd. was set up to market urine diversion toilets by three NGOs, FODRA, Scope and Mythri. All three have been actively promoting Ecosan for several years.

FODRA is an ideologically, politically and religiously independent civil society organization undertaking development initiatives. Its immediate focus is to positively impact the lives of urban poor people. Registered as a foundation in 1997, it has been working to minimize the dangerous imbalance in which the most pressing socioeconomic needs of poor people are being neglected and where their immense potential is not being utilized. FODRA works to promote consciousness about the inherent capacity of poor people by encouraging and enabling their participation in the processes of governance (www.fodra.org).

Scope's main aim is to empower women by raising their awareness of basic sanitation and hygiene. It organizes them into groups to improve their capacity and skills for livelihood options. Scope also constructs toilets for individuals and in schools, etc. In close association with governments, national and international funding agencies and NGOs, Scope has built over 15,000 pit latrines. It also works closely with communities to promote watershed and wasteland development projects, micro-enterprises and diary farming. (www.scopetrichy.com).

Mythri Sarva Seva Samithi, which means "friendliness and service to all", is a registered non-profit organization. Mythri started in 1987 in Bangalore, India, where it was mainly concerned with issues related to shelter and welfare of street children involved in waste collection activities. Over time, this concern has diversified into various programs aimed at addressing issues related to the urban poor and the environment. (www.ecosanindia.org).

The product

What is Ecosan? Ecological sanitation is an ecosystem approach to waste disposal based on three key principles: sanitation should be safe from a health perspective, it should be non-polluting, and it should be based on the principles of reuse and recycling of the valuable nutrients in human excreta. In other words, ecological sanitation is an approach to human excreta disposal that aims to recycle nutrients back into the environment and into productive systems. Reuse of human excreta was the norm in most cultures and societies until recently, and is still common in rural communities in China and Vietnam and in urban areas in Yemen.

Conventional sewage systems, based on flush toilets, have failed to solve the sanitation needs of developing countries. Over 95% of sewage in developing countries is discharged untreated, polluting rivers, lakes, and coastal areas. Water-based sewage systems were designed and built on the premises that human excreta are a waste and suitable only for disposal, and that the environment is capable of assimilating this waste. The other conventional sanitation solution for poor people in developing countries, the pit latrine, also has shortcomings, especially in densely populated areas where space is limited. Groundwater is almost inevitably polluted, putting the drinking water supply at risk.

There are two basic techniques in ecological sanitation. One is urine diversion, in which urine and feces are kept separate. The second technique is composting; urine and feces are mixed and transformed into humus through a composting process. In each type of ecological sanitation it is possible to manage the system with little or no water, and it is also possible to keep the end products out of ground and surface waters.

Status of the business

When it joined the toolkit project as an innovator case, Ecosan was no more than an idea. They started to formulate a business plan in which all aspects had to be covered, and after

several months of work the first draft was formulated. However, it needed verification with market data and it also needed improved financial planning and marketing sections before it could be presented to potential investors, partners and grant providers.

Two workshops in India were held and much work was done by the local partners. A first market assessment was made, but the experience revealed just how difficult this can be if you do not know where to start. A solid business plan was finally drawn up and now investors and partners need to be found, based on this plan. Meanwhile, a field demonstration site has been set up and is demonstrating the value of the system in practice.

Lessons learned and the way forward

What Ecosan has taught us is that it is important to realize what your driving force is in deciding to enter into a commercial venture. Sometimes outside forces push the entrepreneurs forward, although they may lack the proper skill set and/or drive to run the business. Going back to Step I in the business development process and asking yourself whether you “have what it takes” and if you really want to run the venture as a business, you may find yourself realizing that it is not for you, or that you would rather take a different approach.

The Ecosan business case also shows that sanitation presents opportunities for developing businesses with solid potential for financial returns.

The rural water supply sector in India

India has substantial surface water and groundwater resources, and for centuries rural users have used wells, ponds, tanks, streams and rivers for their drinking water needs. This is the case even today in many parts of rural India, despite substantial Government investments in water infrastructure over the last two centuries to supplement these private sources. But with the growth of urban water demand, irrigated agriculture and industrial production, water is becoming increasingly scarce, particularly the groundwater that supplies wells. The conclusions of a comprehensive six-volume assessment of India’s water resources in the late 1990s by a joint team from the World Bank and other donors and the Government of India (World Bank 1999, Executive Summary) are particularly worrying, as they are relevant even today:

“Water is becoming an increasingly scarce resource in India, yet it continues to be used inefficiently on a daily basis in all sectors, while sector demands (such as in drinking water, industry, agriculture and others) are growing rapidly in line with urbanization, population increases, rising incomes and industrial growth ... There is, furthermore, insufficient water available in most basins to address environmental and ecological considerations.”

Main players

The state and central Governments are the main players in rural water supply. Water is a “state subject” according to the Indian Constitution, and so the 28 State Governments and 6 Union Territories have the task of providing and managing rural drinking water through hand pumps and piped water systems. At the central level, rural water supply is the responsibility of the Department of Drinking Water Supply (DDWS), previously known as the Rajiv Gandhi National Drinking Water Mission (RGNDWM) within the Ministry of Rural Development. In the States, either the Public Health Engineering Department (PHED) or the Department of Rural Water Supply (RWS) is responsible for water supply. Despite the Constitutional mandate, State Governments do not have the funds to create the necessary infrastructure and so the central Government provides the bulk of the funds.

International agencies (such as the World Bank, Asian Development Bank, Unicef and UNDP), bilateral donors (like the Netherlands Department for International Development, the UK and Swedish International Development Agencies and KfW and GTZ of Germany) and international NGOs (such as Water Aid, Plan International, Oxfam and Care) are present in India, but they are not major players as in some other developing countries. Such agencies design and provide water supply schemes through various projects (e.g., the World Bank's Rural Water Supply Projects, the EU's Water Resources Projects) but these are only in selected states and on a relatively small scale (see Exhibit 20: Major international organizations working on rural water supply in India).

Major international organizations working on rural water supply in India

- ❖ United Nations International Children's Education Fund (www.unicef.org) has an active water and sanitation program in India.
- ❖ The World Bank's Water and Sanitation Program (www.wsp.org) is an international partnership to help the poor gain sustained access to improved water supply and sanitation services.
- ❖ The United Nations Development Program (www.undp.org) supports water-related projects in their efforts towards empowerment of communities through a process of social mobilization and people-centered development.
- ❖ AusAid (www.ausaid.gov.au) supports projects for improvement in water supply services.
- ❖ WaterAid (www.wateraid.org.uk) is dedicated exclusively to the provision of safe domestic water, sanitation and hygiene education.

Exhibit 20: Major international organizations working on rural water supply in India

Programs

The Government of India has made significant investments in rural drinking water supply. Allocations for rural drinking water and sanitation have risen from €90 million in 1969–74 (India's Fifth Five Year Plan) to €7.5 billion for the period 2002–2007 (the Tenth Five Year Plan). The three main centrally-sponsored programs that provide the bulk of finances to the state Governments for water supply provision are the following:

- ❖ Accelerated Rural Water Supply Programme (ARWSP)
- ❖ Swajaldhara Programme
- ❖ Bharat Nirman Programme.

The ARWSP directly funds state efforts to increase water supply coverage, but states have to provide matching funds. In 2006–2007, the national Government spent around €444 million on this program nationally. Swajaldhara is the national community-based water supply program, where funds are channeled directly to communities to construct their own water supply systems. Started in 2002, the annual allocation in 2006–07 was €74 million. The Bharat Nirman Program provides additional funds for rural drinking water, but only for a fixed period, from 2005 to 2009. As in the case of the ARWSP, state Governments have to put up an equal amount of funds. The national outlay under Bharat Nirman for 2005–06 was €723 million.

Performance

The basic unit of water supply coverage in rural India is the "habitation", which can be a single village or a part of a "revenue village" that includes several habitations. There are a total of 1.6 million habitations in India. The Department of Drinking Water Supply of the Government of India has defined drinking water supply norms (see Exhibit 21: Government norms for rural drinking water supply) for rural India.

Government norms for rural drinking water supply

- ❖ Human Consumption: 40 liters per capita per day (lpcd) all over India. This is to meet the following requirements: drinking (3 lpcd), cooking (5 lpcd); bathing (15 lpcd), washing utensils and the house (7 lpcd) and ablution (10 lpcd). For a family of 5 this works out at 200 liters per household per day.
- ❖ Animal consumption: 30 lpcd in hot and cold desert ecosystems (in 36 districts in the States of Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka and Rajasthan).
- ❖ Water source availability: With a normal output of 12 liters per minute, one hand pump or stand post is estimated to be required for every 250 persons.
- ❖ Coverage: There are three types of situations:
 - *Not covered* (NC): A habitation with no safe private or public drinking water source (i.e. without quality problems such as excess salinity, iron, fluoride, arsenic or other toxic elements or biological contamination), adequate (i.e. 40 lpcd for 250 persons or less), accessible to all, and within 1.6 km of the habitation (or 100 m elevation in hilly areas);
 - *Partially covered* (PC): Habitations with a private or public drinking water source that is safe, accessible to all and within 1.6 km in plains (and 100 m in hilly areas) but with a capacity of only 10 to 40 lpcd;
 - *Fully covered* (FC): Habitations with a private or public drinking water source that is safe, adequate and accessible to all, providing 40 lpcd for all residents, and within 1.6 km of the habitation (or 100 meter elevation in hilly areas) (Ministry of Rural Development, Government of India, Annual Report 2002 (p. 144), www.ddws.nic.in).

Exhibit 21: Government norms for rural drinking water supply

Coverage statistics in India are quite confusing. Until 2005, official statistics reported that more than 95% of these 1.6 million rural habitations were fully covered or partially covered. But a detailed Habitation Survey in 2003 estimated a figure of only 83% (57% fully covered and 26% partially covered), and this is now considered the most reliable figure.² The main official reasons given for the lower estimate are “slippage” due to lack of maintenance (i.e. habitations once considered fully or partially covered are now in the “not covered” category), and worsening water quality. The Bharat Nirman Program (2005–2009) focuses on “slipped” habitations and those with water quality problems, and estimates that there are 275,000 such habitations (17% of the total number of habitations).

Priorities

The two main priorities of the programs are to sustainably extend coverage to all habitations, and to address problems of water quality. The main threats to sustainability are a lack of maintenance of water infrastructure created by Government investment and decreasing availability of good quality groundwater. While the quantity of available groundwater is affected by extensive withdrawal for irrigated agriculture, water quality problems of fluoride, iron and arsenic increase due to such over-withdrawal.

Sustainable water use

The current methods of water use in rural India are clearly unsustainable. The 2001–2002 Annual Report of the Ministry of Rural Development identifies the following key problems:

- ❖ Fast depletion of the ground water level, which increases water quality problems like arsenic and fluoride.
- ❖ Existing water sources running dry.
- ❖ Poor attention to maintenance of existing infrastructure and an emphasis on new construction.
- ❖ Low community involvement in operating and maintaining water supply systems.

² The Approach Paper to the XI Five Year Plan published in December 2006 by the Indian Planning Commission states that there are only 1.44 million habitations: <http://planningcommission.nic.in>

- ❖ Neglect of traditional water management practices and systems.

Water quality

The number and type of habitations suffering from water quality problems appears to be decreasing (see Exhibit 22: Water quality problems identified in rural India (2000 and 2008)), but the data are not very reliable.³

Water quality problems	Number of habitations		
	2000 estimates	2008 estimates	% change
Excess fluoride	31,306	25,572	-18%
Excess arsenic	5,029	6,095	+21%
Excess salinity	23,495	18,217	-22%
Excess iron	118,088	61,349	-48%
Excess nitrate	13,958	10,368	-26%
Multiple quality problems	25,092	13,438	-46%
Total	216,968	146,708	-32%

Exhibit 22: Water quality problems identified in rural India (2000 and 2008)⁴

Almost every state in India has some quality-affected habitations. The ten states with the highest number of such habitations are Rajasthan, Assam, West Bengal, Orissa, Karnataka, Maharashtra, Tripura, Chattisgarh, Madhya Pradesh, and Gujarat (see Exhibit 23: Indian states with the highest number of habitations whose drinking water is affected by various contaminations).

State	Region	Number of habitations whose water is affected by ...							Total
		Iron	Arsenic	Nitrate	Fluoride	Salinity	Multiple	Others	
Rajasthan	West	40	2	5,650	9,618	14,621	5,391		35,520
Assam	North-east	26,396	472	1	223	0	789	48	27,929
West Bengal	East	10,837	5,489	0	1,374	2	594	0	18,296
Orissa	East	9,217	0	0	286	450	37	100	10,090
Karnataka	South	1,470	10	2,114	2,135	343	1,852	1,564	9,488
Maharashtra	West-central	1,149	21	1,690	1,545	374	1,947	702	7,428
Tripura	North-east	2,759	1	0	0	0	1,984	1,611	6,355
Chattisgarh	Central	4,932	11	0	17	61	0	0	5,021
Madhya Pradesh	Central	307	5	63	4,060	411	38	49	4,933
Gujarat	West	1	1	688	2,473	997	112	87	4,359

Exhibit 23: Indian states with the highest number of habitations whose drinking water is affected by various contaminations⁵

Assam, West Bengal, Orissa and Tripura are in eastern India, where surface water availability is high, but arsenic, iron and fluoride occurs in the rock strata. Rajasthan and Gujarat are in western India, Maharashtra, Madhya Pradesh and Chattisgarh are in central India, and Karnataka is in south India. In these states, rainfall is low and groundwater is overexploited. These problems are detailed below.

In March 2006, the Government of India set up a National Rural Water Quality Advisory Committee, which is mandated, among other things, “to identify innovative approaches, best practices and possible R&D gaps for improving the quality of the programme”

³ For instance, the findings of the 2003 National Habitation Survey, given on the website of the Department of Drinking Water Supply (<http://ddws.gov.in/>) reports that only around 118,000 habitations suffer from water quality problems, which is lower than the 2008 estimate!

⁴ Sources: Department of Drinking Water Supply, Ministry of Rural Development. Estimates of the 2000 survey are quoted in the webpage on Bharat Nirman (www.bharatnirman.gov.in), while the 2008 estimates are from the webpage on the Integrated Management Information System (www.ddws.nic.in).

⁵ Source: Department of Drinking Water Supply, Ministry of Rural Development, www.ddws.nic.in

(www.ddws.nic.in). This may be a useful niche for the AT entrepreneur working on water quality improvements. AT entrepreneurs can get in touch with either Unicef India or the Department of Drinking Water Supply to engage with this initiative.

In addition to the chemical contamination described above, contamination by fecal bacteria is widespread in the country, linked to poor sanitation practices like open defecation.

The rural sanitation sector in India

Sanitation has been a long-neglected sector in India and coverage levels are extremely low. The International Decade of Water Supply and Sanitation (1980–1990) and the recent UN International Year of Sanitation in 2008 have provided some stimulus to sanitation coverage. India's Total Sanitation Campaign has been massively scaled up from 266 districts in 2003 to 587 districts today, with a total funding today of more than \$3.2 billion, making it one of the largest rural sanitation programs in the world. The current annual budget allocation of \$250 million is almost nine times more than the allocation in 2001. A total of forty million households and half a million schools have been provided with sanitation facilities (www.unicef.org/india).

The two main issues faced by Government efforts to decrease open defecation and increase the use of toilets are: (1) the cost of construction of toilets, and (2) the attitude and behavior of rural communities. The Government provides subsidies for toilet construction, but traditional attitudes have hampered their use. Information, education and communication (IEC), capacity building and hygiene education are the new thrust areas of the Government rural sanitation program. Agencies like UNICEF have been promoting EcoSan toilets in India, but local attitudes towards human waste disposal and use have hampered their effective spread.

Main players

The state and central Governments are the main players, although there are several NGOs that are active in this area (see Exhibit 24: Major NGOs working in rural sanitation in India).

Major NGOs working in rural sanitation in India

- ❖ Gram Vikas (www.gramvikas.org), an NGO in rural Orissa with an impressive record of rural sanitation coverage outside the Government system
- ❖ Swayam Shikshan Prayog (www.ssp.org), an NGO in rural Maharashtra working in Osmanabad and Latur districts, facilitating women's self-help groups to work on a range of water supply, sanitation and hygiene issues
- ❖ WaterAid India (www.wateraid.org), works through partner NGOs in rural and urban India in selected states all over the country; it is dedicated exclusively to the provision of safe domestic water, sanitation and hygiene education
- ❖ SPARC (www.sparcindia.org), an NGO working to provide sanitation facilities in urban slums in Mumbai and Pune in Maharashtra state
- ❖ Sulabh International Social Service Organization (www.sulabhinternational.org), an NGO that has developed low cost sanitation systems for urban areas, and has been contracted to set up and run pay-and-use toilets in several Indian cities

Exhibit 24: Major NGOs working in rural sanitation in India

Programs

There are two sanitation programs in India that are worth mentioning: the Total Sanitation Campaign and the Clean Village Campaign.

The Total Sanitation Campaign

The Total Sanitation Campaign (TSC) is the main program of the Government of India (GOI) to tackle rural sanitation in the country (www.ddws.nic.in). Started in 1999, it is a people-centered and demand-driven program with the broader goal to eradicate the practice of open defecation by 2010. The implementation unit of the TSC is a district, which size varies from state to state. The key intervention areas of the TSC are the following:

- ❖ Individual household latrines (IHHL): provides a partial subsidy to construct toilets in houses.
- ❖ School Sanitation and Hygiene Education (SSHE): provided through rural schools.
- ❖ Community Sanitary Complex: constructed for the community when space is not available to construct individual toilets.
- ❖ Rural Sanitary Marts (RSMs): stocks and sells material like pipes, pans and rings, which are needed to construct toilets.
- ❖ Production Centers (PCs): where sanitary material is produced and sold.

In support of the TSC, GOI has also launched the Nirmal Gram Puraskar, a system of cash awards to recognize the efforts of individuals and institutions towards full sanitation coverage in their area of operation (www.ddws.nic.in).

Clean Village Campaign

In addition to this central Government effort, the Government of Maharashtra has been running an impressive sanitation program called Clean Village Campaign ("CVC") since 2001. The CVC is not a program or scheme and is, instead, a campaign to educate and motivate rural communities. It offers annual prizes for clean villages, which are named after Rashtrasant Tukdojee Maharaj, who spread the message of sanitation through *Gramgeeta* (village songs) in all corners of Maharashtra in the early 19th century. Each year villages are evaluated by a team of experts using a set of criteria and awarded cash prizes. Villages interested in participating in the competition register and undertake to implement various specified work, using their own resources, that leads to an environmentally clean village. A village that wins at the state level would receive around €7,000 as prize money.

Performance

Currently, rural sanitation coverage is officially reported to be 50%. India is committed to increasing this to 100% by 2012, four years from now, in line with the MDGs. The performance so far is not very encouraging for individual household latrines, despite the TSC offering subsidies for toilet construction (see

Exhibit 25: Progress in sanitation coverage, as in June 2008).

	Target	Achieved	% achieved
Individual household latrines	118.811.048	44.835.196	38%
Sanitation Complex	27.562	13.318	48%
School toilets	1.177.193	622.389	53%
Toilets for balwadis	423.056	203.744	48%
Rural Sanitary Marts	4.136	5.186	125%
Production Centers	139	2.759	1985%

Exhibit 25: Progress in sanitation coverage, as in June 2008⁶

The construction of sanitation complexes in villages, toilets in schools and for child care centers (*balwadi*) is nearly 50% of the target. The two areas where targets have been exceeded by a significant margin are Rural Sanitary Marts (selling pans, fittings and items for

⁶ Department of Drinking Water Supply, Ministry of Rural Development.

toilet superstructure) and Production Centers (producing toilet accessories). These rural sanitary marts could be a useful marketing outlet for the AT entrepreneur working on rural sanitation. They can be accessed through the officials of the state Government's Public Health Engineering or Rural Water Supply Departments.

If you are interested in detailed descriptions of the water and sanitation situation in three Indian states - Tamil Nadu, Gujarat and Delhi – we direct you to the attachments 7 and 8. The three states described in more detail are the states where the four entrepreneurs are setting up their business. The descriptions will help you plan your strategy and approach to best suit local conditions.



Further reading:

[Attachment 7: Rural Water Supply and Sanitation Sector in Selected States](#)

[Attachment 8: India Water Market Scan](#)

http://en.wikipedia.org/wiki/Water_supply_and_sanitation_in_India

Starting a business in India

Starting a business in the Netherlands is quite different from starting a business in India. That is why specific information on the business situation in India is included.

The Dutch Government has produced a useful and practical guide for Dutch investors and entrepreneurs, which covers all the points included in Step II and Step III in Chapter 2 on business development. In our opinion, this guide is useful to other organizations in other countries as well. We recommend that you read the information in the following links:

www.hollandinindia.org

www.rnebizguideindia.org

The cheapest and easiest way to start a business in India, especially during the demonstration phase, is to set up a liaison office, representative office, project office or branch office (the differences are being explained on the above mentioned web sites). You can set up such an office once you have the approval of the Reserve Bank of India. It is a simple application procedure, no startup capital is needed and the fees are very low. However, you do need to have an address, so you will have to either rent office space or move into an existing address. You have to appoint a representative as well.

Evert Groeneveld, director of CWN!, explains the way his company is entering the Indian market: *"We have decided to start operating through a representative office. Setting up is quite easy and does not involve too much paperwork or large investments. Our local contact can represent us, scan the market on possible deals and do market research. When we expect business will increase we can always decide to establish an Indian Limited. Meanwhile, we run our operations through our Dutch limited."*

Further reading:

www.rnebizguideindia.org

www.nicct.nl



We recommend Dutch entrepreneurs starting to export to India to read Info Sheet 13: Questions for a starting Dutch entrepreneur

To start up a business, the most common legal entity to use is the Indian Private Limited Company (Pvt Ltd). Although some local certified accountants have informed us that it is not difficult to set this up, the experience of one of the entrepreneurs involved in developing this

Toolkit was different. It took much more time than expected. Filling in the memorandum of associations is the most important step. This has to be signed by a notary or certified accountant. Officially, this process will take 30 to 60 days. The estimated costs (2008 prices) of incorporation are an advisory fee for incorporation of around Rs 30,000 and registration fees of around Rs 10,000.



Further reading:
Info Sheet 7: Steps to form an Indian company

We have attached a presentation by an Indian certified accountant which describes in detail the steps involved in setting up a private limited company.



[Attachment 9: Formation of a company](#)

We have collected some interesting examples of water and sanitation businesses in India, and have compiled them in an attachment.



[Attachment 10: Water and Sanitation as a business: Best Practices from India](#)

Building networks with NGOs in India

Networks can be a useful means for the AT entrepreneur to reach potential markets and also to get feedback and advice on products and services. Networks are formal or informal structures that bring together diverse social actors to pursue common goals.⁷ A well-organized network can influence economic, political and cultural structures and relations in ways that are impossible for individual actors. In these networks, the members are autonomous organizations – usually NGOs or community based organizations – and sometimes individuals.

Network functions

Although network functions vary, these may be broadly categorized as follows:

- ❖ Advisory: providing a service that responds to information requests through top quality professional advice.
- ❖ Advocacy: organizing seminars, workshops, conferences, campaigns, lobbying on specific issues, etc.
- ❖ Capacity building: organizing training programs and exchange visits for members.
- ❖ Coordination: facilitating partnerships, avoiding duplication, working to change policy.
- ❖ Information dissemination and communication: acting as an information broker, providing a digital library, news, monitoring reports of conferences and workshops, publishing newsletters, fact sheets, etc.
- ❖ Public relations: promoting and disseminating promotional materials (leaflets, posters) on various organizational and sector issues.
- ❖ Research: organizing working groups on thematic issues, identifying knowledge gaps and commissioning studies to fill these gaps.

Network membership

Networks usually have a wide membership base, drawn from national and international NGOs (e.g. WaterAid, Plan International), academic institutions, donors and financial institutions (e.g. UNICEF, Water and Sanitation Program) as well as individuals. AT entrepreneurs can register as individual members with these networks since corporate participation is still not welcomed by many networks. Membership is either free or subject to a nominal payment of one-time or annual fees.

⁷ Castells, M.(1998)

Membership benefits

Membership provides access to a larger pool of resources and provides opportunities to interact with experienced sector professionals. Membership also allows the use of network services such as the network newsletter, workshops and conferences, demonstrations and joint applications for social funding, all of which can be of immense use to the AT entrepreneur. Some of the membership benefits are as:

- ❖ Use of the network newsletter: Almost every network has a regular printed newsletter or an e-newsletter to communicate with members. This could be a good opportunity for an AT entrepreneur to share information about his/her product, advertise for staff, announce demonstrations, and ask for advice.
- ❖ Advertising in workshops and conferences: Many networks organize conferences and workshops to invite different stakeholders to share their experiences. As network members, AT entrepreneurs can display promotional material in the conference display areas and thus reach out to large number of people at a minimal cost.
- ❖ Demonstrations for network members: NGO and institutional members of a water and sanitation network usually have access to a large number of villages and urban communities where Government-funded and donor-funded water supply and sanitation projects are being implemented. Many of these projects purchase, promote, and install water and sanitation infrastructure like water filters and sanitary pans. AT entrepreneurs can therefore demonstrate their products and services to NGOs members in networks during annual network meetings.
- ❖ Access to projects: Since most NGO network members and donor agencies partner in several donor-funded water and sanitation projects, AT entrepreneurs can enter into arrangements to supply their products to such projects and thus gain access to a large number of villages (typical projects involve 1,000 villages).

Useful networks

Some major water and sanitation networks that can be useful to AT entrepreneurs at the national, regional and global level are listed in

Exhibit 26: Useful networks for water and *sanitation*.

Name of network	Coverage	Service	Website
Water and Environmental Sanitation Network of India (WES-Net India)	India	Website and email-based information exchange	www.wesnetindia.org
UN Solution Exchange	India	Email-based query and answer system	www.solutionexchange-un.net.in
Community Led Environment Action Network (CLEAN India)	India	Urban environmental assessment, awareness, advocacy, and action spearheaded by school students	www.cleanindia.org
Innovative Ecological Sanitation Network India (IESNI)	India	Promotes innovative ecological sanitation in India	
The Honeybee Network	India	Identifies and supports small innovators	http://knownetgrin.honeybee.org
Consortium for Dissemination of DEWATS (CDD Network) ⁸	Tamil Nadu and Karnataka	Promotes decentralized wastewater disposal system in urban areas	www.borda-sa.org
Pravah Water Supply and Sanitation Network	Gujarat	Coordinates civil society movements to improve water and sanitation services	www.pravah-gujarat.org
Women and Water Partnership	Global	Promotes sustainable development; with a focus on water & sanitation and poverty eradication	www.womenforwater.org
Gender and Water Alliance	Global	Information exchange on gender and	www.genderandwater

⁸ DEWATS stands for the Decentralized Wastewater Disposal System, and CDD is a 12-organization network set up to promote DEWATS.

Name of network	Coverage	Service	Website
		water issues	.org
Sustainable Sanitation Alliance (SuSANa) Network	Global	Promotes sustainable sanitation systems	www.sustainable-sanitation-alliance.org
SWITCH Consortium	Global	Promotes sustainable integrated urban water management	www.switchurbanwater.eu
Global Water Network		Raises awareness about water issues and funds to help build water and sanitation projects where they are needed most	globalwaternet.org

Exhibit 26: Useful networks for water and sanitation

Three key networks in India are described in more detail in Exhibit 27: Three Indian networks.

Three Indian networks

WES-Net India was set up in 2005 as a learning alliance of stakeholders in the Water and Environmental Sanitation sector, including NGOs, UN agencies, private sector, consultants, Government departments and donors. WES-Net's objective is to improve knowledge sharing and coordination within the water and sanitation sector, focused on achieving the Millennium Development Goals. The network aims to enhance horizontal and vertical exchange of information and experiences through continuous feedback from people who use the network. WES-Net is also the Water and Sanitation Community of the UN's Knowledge Management Partnership Initiative. The solution exchange platform (e-discussions) enables WES-Net members to participate by raising and addressing issues which are shaping the water and sanitation sector in India. As WES-Net develops, it will link up with other networks to strengthen knowledge sharing and advocacy.

PRAVAH emerged as an initiative in 1994 as a result of collective concerns raised and interest expressed by a group of individuals and institutions on addressing drinking water and related developmental issues. The overall goal of PRAVAH is to initiate a movement in Gujarat for ensuring safe, adequate, sustainable and self-reliant water supply for drinking and other domestic purposes for everyone, all year round. The broad objectives are also to build a common perspective amongst all the partners about the need for decentralization of water systems, through this effort of building a platform to evolve and act on a common action plan. PRAVAH has been instrumental in creating *Jal Disha 2010*, a collective vision and framework for action on drinking water, sanitation and hygiene for the state of Gujarat (see www.pravah-gujarat.org; www.wecaretoo.com).

The Honeybee Network is a knowledge network that supports and brings together creative and innovative individuals – farmers, artisans, mechanics, fishermen, women, and laborers – who have solved a problem on their own without any outside help from the state, market, or even NGOs. The network searches for and identifies such technological or institutional innovations nationally and even globally. It then provides support to develop and market the innovations created by individuals, even in remote urban and rural communities. It also aims to bring together venture capitalists, potential investors and entrepreneurs, create a registry of innovations and secure intellectual property rights for small innovators. The network originally worked through a printed newsletter, but given the long time taken to exchange information through printed material, the network has recently launched an electronic knowledge network known as KnowNet-Grin.

Exhibit 27: Three Indian networks

Scaling up through Government structures

While the commercial marketing channel is the conventional avenue for an entrepreneur to reach the target market, there is another channel with huge potential: the Government. The Government is mandated to provide access to safe water and sanitation services to all citizens in the country, and it therefore regularly installs piped water supply schemes, and

community toilets, or provides subsidies for individuals to install individual toilets on a large scale, right across the country. Concerning water supply, the Government of India has a nationwide community-based water supply program called *Swajaldhara*. The Total Sanitation Campaign (TSC) is similarly a central Government scheme for sanitation, which also depends largely on community groups such as women's self help groups (SHGs) for production of sanitary wares and implements.



Further reading:
[Attachment 11: Structure of Indian Government](#)

Advantages of working with Government

The biggest advantage of working through the Government system is the size of the market that can be accessed. There are around 720 million rural Indians in 550,000 villages in 610 districts spread across 28 states and 6 union territories. Assuming a 40% poverty rate, this is around 300 million in rural India.

The next advantage is that instead of approaching a number of small organizations, approaching a single official at the state or district level can give access to a large number of customers. At the district level, for instance, a District Collector in charge of administering the district can call a meeting of the heads of Government and non-Governmental organizations, or direct his administrative staff to facilitate a pilot program with the innovation. There are around 22 districts per state on average (ranging from 70 in Uttar Pradesh and 50 in Madhya Pradesh to 2 in Goa) and each district has around half a million people on average (although most are around 2 million or so).

If AT entrepreneurs can convince Governments to install or procure their products (e.g. in areas with water quality or access problems) in the regular course of setting up water supply and sanitation systems, they will have reached a much larger market more quickly

Understanding how Government works

Water being a state Government subject in India, the central Government largely passes on funds through "centrally sponsored schemes" to the state Governments, which usually implement schemes on the ground. Therefore, while it is good to meet officials in central Government institutions such as the Department of Drinking Water Supplies (DDWS)⁹ of the Ministry of Rural Development, the people you really must focus on are the state Government officials.

Each state Government has slightly different administrative structures, but drinking water is usually the responsibility of either the Public Health Engineering Department (PHED) or the Department of Rural Development (DORD). These Departments are headed by bureaucrats (called Secretaries or Principal Secretaries, depending on their seniority) and Commissioners who take policy decisions. Actual operations on the ground are usually handled by a senior engineer (called an Engineer-in-Chief) with a large staff (of Superintending Engineers and Chief Engineers), in the Rural Water Supply Department. It is good to meet both sides, as the bureaucrat will not take a decision on technical issues (such as procurement) unless technical "approval" is granted by the engineer (and later, the community groups!).

Community groups (such as Self Help Groups ("SHGs")) are now major stakeholders in water supply and sanitation provision, especially in rural areas. If they are convinced of the value of the product, they will promote the product within their villages. In some states, SHGs have formed district-level federations, but there are no state-level federations yet. While these are state-level decisions, the real action is in the districts, where engineers actually design the scheme, procure materials and set it up. If they are convinced of the product, they can take

⁹ This is also called the Rajiv Gandhi National Drinking Water Mission (RGNDWM)

operational decisions to include these into their regular procurement and implementation plans. Although this could mean quite a lot of travel, as there are around 25 districts on average in most states, it is far better than having to travel to convince individual traders or villages.

Convincing Governments

This is usually a three-step process:

1. Meet and make presentations to senior bureaucrats, engineers and through them, the community groups, at state and/or district levels.
2. If they find the presentation and subsequent discussions useful, they may ask for a demonstration of the product in a small sample of 10–30 villages over a year or two, with a small amount of Government funds.
3. If the demonstration yields good results, state or district Governments may take it forward and include the innovative product in the water and sanitation systems they set up.

A foreign entrepreneur would be well-advised to find a local Indian partner, preferably one who has worked in the area for some time and knows the local officials and other NGOs. This local partner can then arrange meetings with the district Government officials. Finding the local partner may be best done by contacting a local network (see Building Networks with NGOs).

Uncertainties and risks

One definite risk is that the concerned Government officials may be replaced in the middle of the whole process, and you will have to repeat step (1) above. But if the product shows benefits and the demonstration is going well, even the new officials will be convinced. Another risk is that a “commission” (bribe) may have to be paid to local officials to issue a contract for the supply of the product to the Government agency. Today, in many parts of India, this is not considered corrupt, but a “service charge”, just as a bank charges a fee for issuing a demand draft. There is always the choice of accepting or not accepting the contract with the attached commission. But complaining to the bureaucrats may not be a good idea as these “commissions” usually go all the way up to the top of the chain.

The biggest risk in the process is that the community groups may not be convinced of the product, given the alternatives available or their limited understanding of the health risks of contaminated water or open defecation. And if these groups do not accept the product, the Government will not take any further steps. AT entrepreneurs should therefore consider organizing demonstrations and awareness generation visits to these SHGs and community groups. These could be organized either through the state or district-level federations of SHGs or through local NGOs.

While the size of market is a definite advantage over working through Government, a significant amount of time and effort has to go into “networking” with Government officials to ensure a contract. And there are also uncertainties and risks. But most large and well-known local NGOs that have worked in the area for a considerable period of time have good relations with the local Government officials and will be able to arrange first meetings with senior Government officials. After that, it is the quality of the product and its selling points that will guide the next steps.

Overall, it will not be wise to concentrate only on the Government channel. This may be a good second move after establishing a profile in the commercial market, or it could be done simultaneously with commercial marketing.

Funding options for an AT entrepreneur

There are a range of funding options for an AT entrepreneur working in India, ranging from equity funds, pure business loans to venture capital to grants of various types. Some of these can be accessed directly by the AT entrepreneur, others can be accessed through NGOs or research institutions as partnerships.



Further reading:

[Attachment 12: Funding options in India for AT in water and sanitation](#)