A Unique Tripartite Partnership To Deliver Safe Drinking Water To The Rural Poor

"A social innovation to provide affordable, potable water to rural communities in India"

BACKGROUND

India has 4% of the world's water availability and 15% of world's population to sustain. Of the limited water resources available for human consumption, 70% is not potable. Almost 80 % of the diseases in India are water related: cholera, diarrhoea, typhoid, hepatitis A, malaria and filaria. It is primarily the poor who are most affected. About half of all villages in India do not have any source of protected drinking water. Around 600,000 children under age five die due to diarrhoeal diseases every year according to a WHO 1996 report.

Death and disease-causing contaminants in drinking water can be broadly divided into two categories. The first includes **pathogens** (bacteria and viruses), and the second includes **dissolved solids**– mineral content such as fluorides, arsenic and lead. Bacterial contamination presents the highest and the most immediate health risk, accounting for 65% of total contamination in many parts of the country. As a result, expenses on treatment for preventable water-borne diseases constitute a large percentage of healthcare expenditure of the rural poor.

Measures to tackle the situation have relied overwhelmingly on centralized government solutions pushed down to the local level. There has been very little emphasis on community involvement and programs are not driven by education or combined with sanitation. Hence, preventable pathogen induced-water borne diseases continue to exist.

AN INNOVATIVE SOLUTION

Naandi Foundation, in association with Waterhealth International U.S.A, has developed a unique model to combat water-borne diseases by making water potable for the rural poor at an affordable cost. The highlights of this model:

Community Ownership-The model adopts an inclusive approach. The community participates through the contribution of land, labour and capital.

Affordable, Low-maintenance Technology- WaterhHealth International U.S.A. supplies 'U.V. Waterworks' technology to eliminate pathogens and ensure potability. Depending on the quality of water in each village, this global technology has been customized to meet local needs at an affordable cost. U.V. Waterworks, developed by Dr. Ashok Gadgil at the Lawrence Berkeley National Laboratory is the winner of several international awards including the Tech Museum of Innovation's 2004 Tech Laureate Award (Health Category), San Jose, CA, USA. This low-maintenance technology can be operated in remote villages by trained youth where qualified technicians are not always available.

Emphasis on Behavioural Change- Provision of potable drinking water at affordable rates cannot on its own result in a reduction in exposure to environmental risks that lead to water borne diseases. Naandi works through campaigns on health and personal hygiene to educate rural communities on the need to store water carefully adopt hygienic sanitation practices and avoid contaminating water resources.

Sustainability- The model relies on the recovery of capital expenditure and operations and maintenance costs through the levy of user charges. Behavioural changes brought in through the community's acceptance of user charges increase community ownership and ensures sustainability.

The **Community Safe Water Systems** (CSWS) Model is a unique tripartite model with the three parties having uniquely defined, yet complementary roles, so critical for the success of this partnership and for that matter for all such partnerships in such demanding settings.

Partner	Partner I	Partner II	Partner III
	Panchayat	**Naandi Foundation***	**Water Health International**
Partner Status / Profile	It is the democratically elected local body that governs a village. It controls the use of the community water sources and all community owned properties including common lands.	Naandi A not-for-profit organization Implementing the safe water project in India with WHI as its technology partner. Naandi works with governments and communities to bring innovations and appropriate technologies to underserved populations to give them better access and control over health, education and livelihood opportunities.	A US-based organiz waterhealth ation that provides affordable, safe water technologies to developing nations. It is the sole distributor of the 'UV waterworks™' which is the patented, key component of the water purification plant being set-up in AP, India
Major Role	Owns the site and raw water source, Permits use of land for setting-up the plant, Collective Social-Administrative Motivation for Adoption of Safe Drinking Water Practices	Community Interface, Behavioural Change Communication for adopting Safe Drinking Water Practices, IEC Activities and Advocacy activities at Local and State Level, Up scaling /Diversification of the Model; Complete Local Programme Management	Providers of Technology Long Term Commitment through a Trained Technical Team for Maintenance, Arranges for partial Project Finance for the Model
Short-term Objectives / Benefits	Immediate Access to Safe Drinking Water, Reduced Incidence of Infected Water related Diseases	Meeting the Social Commitment of Improved Health, Equity in Resource Access, Employment to atleast Two Youth/Women per village	Making the Benefits of the Low Cost Patented UV Technology available to the Masses in the Developing Countries
Long Term Objectives/ Benefits	Increased Productivity, Reduced Disease Burden/Improved Epidemiological Profile, Income from the CWS beyond the Payback Period, Asset with the Village	Sustained Community Behavior in Seeking Safe Drinking Water, Reduced Disease Burden, Increased Productivity, Improved School Attendance especially for Girls, Improved Social Dynamics Contributing to the Millennium Development Goals (MDGs)	Contributing to the Evolution of the Unique Community-Partnerships Models and Replicate Model in other Developing Countries Adoption of this Model to result in Lowering the Cost of Technology Benefits for the Communities

* Naandi Foundation is Chaired by Dr K Anji Reddy, the Chairman of Dr Reddy's laboratories Ltd. (a NYSE listed pharma company), and governed by eminent captains of Indian industry, Naandi is creating templates of change by channelizing resources – human, technical and financial – into critical social sector investments in the country.

The way forward: Helping people attain healthier lives in coastal AP

In order to widen the effective coverage through this model, Naandi endeavours to set up at least 150 CSWS in select villages of Krishna, West Godavari, East Godavari, Vishakapatnam, Prakasam and Guntur Districts of coastal Andhra Pradesh (during 2006-07) where an estimated 17 million people are exposed to water (with high pathogen levels). These villages represent typical Indian agrarian rural setting dotted with paddy fields, irrigation canals and tanks. There is an abundance of water but **an equal abundance of contamination** given the low degree of improved sanitation.

The scaled up operations are expected to bring in a revolution wherein water-borne diseases are prevented through the provision of safe drinking water and an intensive health and hygiene campaign to promote better sanitation.

Currently, the CSWS Project caters to villages with populations ranging between 5,000 to 20,000 people. A set of criteria common to all project villages includes

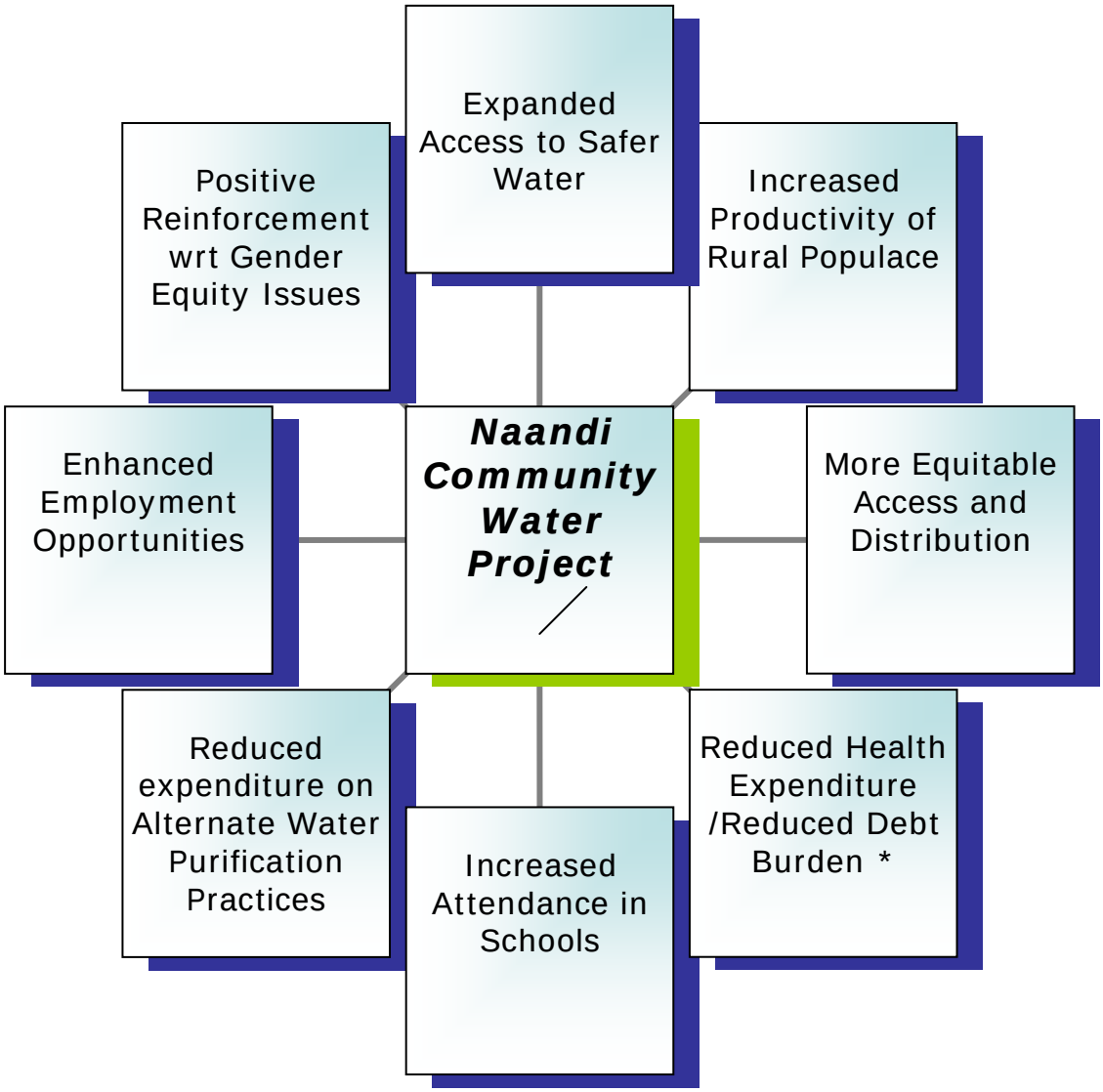
a) The existence of a community owned pond/well that can cater to the village's drinking water requirements all year round
b) Willingness on the part of the community represented by the Panchayat to dedicate a raw water source and a suitable plot of land (of approx 400sqft) to the project for a minimum of 8 years
c) Evidence that village inhabitants would be able and willing to purchase water at a nominal charge of Re 1 for 12 litres
d) Willingness of the community to contribute to 2% of the initial investment required to set up a purification plant in the village to ensure their buy-in
e) Existence of a donor[1] who will contribute 25-35% of the initial investment required for the plant on behalf of the community thereby 'adopting the village' and ensuring the provision of safe water to the community for a minimum of 8 years

Social Return On Investment-Direct Identifiable Benefits Accruing through the CSWS

The Donor support goes a Long way in Contributing to Sustainable Positive Socio-Economic benefits for the Community viz Improved Health Indicators-Reduction in Burden of diseases, Increased Productivity , Increased School Attendance , Enhanced Gender Equity , thereby providing **Social Returns on Investment .**

[1] Main donor categories include:

- Individual Philanthropists based in India and abroad
- Democratically elected representatives who have constituency development funds at their disposal
- Local and Global Corporations (as part of their Corporate Social Responsibility initiatives)
- Indian and International Donor Agencies
- Local Branches of International/National Charitable Organizations
- Local Industries



* Among the Top Three Reasons for Rural Indebtedness in India

Acknowledgements of the Donor Support and Contribution

In addition to a name plaque installed at the Plant site at each sponsored CSWS, donors will receive period detailed updates by email regarding the level of community adoption of Safe Water in each of the villages where they have supported a CSWS. Donors and their representatives will also be invited to visit /attend various events/conferences being organized with respect to the Sites adopted/supported by them.

HOW YOU CAN MAKE SAFE WATER A REALITY FOR THOUSANDS

How to contribute towards the set-up costs for a plant in a village / town of your choice

Naandi currently has two models of purification plants to service the safe water needs of villages of varying sizes

Purification Plant Type	Population Serviced	Capacity (in terms of purified water output)	Contribution Required from Community / Donor
Community Safe Water System **(CSWS)**	8000 to 15000	60000 liters per day	$10,000
Modified Community Safe Water System **(MCSWS)**	3000 to 8000	40000 liters per day	$ 8000-$9000

Notes:

- Contribution entitles the donor to tax exemption
- Naandi accepts contributions by way of Cheque or Demand Draft in favour of ***Naandi Foundation payable at Hyderabad, India***.
- The contribution amount indicated is for donors interested in sponsoring between 1 to 10 plants. Donors interested in supporting more than 10 plants are requested to contact Ms Anjalli, Sr Programme Officer , Naandi Foundation for more details (anjalli@naandi.net , 09948297703)

10 MOST FREQUENTLY ASKED QUESTIONS

1. Can a plant be set up in any village anywhere in the country?

Naandi's current operations are focused on the coastal districts of Andhra Pradesh i.e. **East Godavari, West Godavari, Guntur, Prakasam ,Vishakhapatnam and Krishna**. Therefore, if your village or town falls within these districts we will have the capacity to take up your request immediately. However, if your village or town falls outside of these districts, anywhere else in A.P. or India, we would need a short while to examine the feasibility of setting up a plant. We could take up the first step in the process (Technical Feasibility Survey) sooner if you could send us the exact details regarding the village including - village name, population, panchayat name, mandal/taluk name, district name, state, distance from the nearest town, route map, directions on how to reach, contact persons at the village/town etc. These details may be transmitted to Naandi Foundation thru email or phone

2. What are the minimum requirements for a plant to be set up in a village?

The 7 minimum requirements to set up a plant in a village/town are as follows:

(i) Minimum population of 3000 people. There is no maximum population limit.

(ii) Existence of a perennial source of raw water to serve the community i.e. the village should have a community pond or bore well that can meet atleast the drinking water needs of the community the whole year round

(iii) Existence of a suitable plot of land (of approx 4 cents or 100-150 sq metres) near the raw water source

(iv) Willingness of the Panchayat to pledge the land and raw water source to the project for a period of 8 years by way of a Panchayat Resolution/Willingness of an Individual Donor to contribute the land and transfer/pledge it for use for Safe Drinking Water Project for the Community

(v) Ability of U.V. technology to completely solve the current water quality problems. A **Water Quality Test** conducted by a reputed laboratory is necessary to verify this. Please note that currently, our purification process does not treat the contamination of fluoride, arsenic, iron, high degree of hardness and other chemical contamination in water. U.V. technology (provided by WaterHealth International) effectively purifies water suffering from bacteriological contamination.

(vi) Ability and Willingness of the community to pay for purified water @ Re 1 for 12 liters and Rs 1.5 for 20 liters.

(vii) Contribution received from the community or donor on behalf of the community towards plant set up costs $ 10,000

3. a) Does Naandi accept contribution less than $ 10,000 for a CSWS plant to be set up?
   b) Does the amount received from the community cover the entire cost of the project?

a) No, the minimum contribution for each type of plant is fixed. However, Naandi's team members can assist interested donors in making the contribution reach the threshold level required by speaking with key persons who have a stake in the village including Local philanthropists, local democratically elected representatives, charitable organizations , corporate organizations as part of the CSR activities etc. In several projects we have had more than one donor contribute towards the set up costs. In many villages individual households have come forward to support up to 5% of the initial project cost.

Thus, the contribution required for a plant to be set up may come from a variety of sources (individual donors, organizations, households, elected representatives, companies etc) in order to reach the minimum required amount of $10,000

b) The amount received from the community covers only 20 to 25 percent of the total project cost. The remaining amount is raised through a loan from a reputed Indian private sector bank at a reasonable rate of interest. The loan amount and interest are repaid from the user fees collected (over a period of 8 years)from the beneficiaries availing purified water.

4. How is purified water distributed among the households in a village and at what price is it sold?

Water purified by the plant is sold in food-grade branded jerry cans of 12 liters and 20 liters for nominal user fees of Rs 1.5 for 20 liters and Re 1 for 12 liters. These are the prices at which water is sold to those households who collect the water directly from the plant. For those who prefer to get the water delivered to their doorstep, Naandi ties up local autorikshaw and cycle rickshaw operators for delivery. Households pay additional price of between Rs 1-2 per can for delivery.

Purified water is only sold to those households who are registered members of the plant. The registration process includes payment of a one-time can fee of Rs 50 per can for a house within the same village and Rs 80 per can for a house outside the village.

5. Can the plant cater to the drinking water needs of poultry farms, canteens, temples schools and colleges in the same village or town?

Yes, the plant can cater to the need of a variety of small enterprises and educational institutions in the same village or town provided the Panchayat gives permission for the same. Schools are generally provided water at a concessional rate

6. How many plants are operational and how are they performing?

Naandi has currently 25 plants operational across the districts of West Godavari, Guntur and Krishna in Andhra Pradesh with 50 more expected to be complete by December 31st 2006. The plants have been well received by the communities and donors. Between 50 to 80% of households in each village have registered and are buying water everyday.

7. How long does it take to set up a purification plant in a village/town?

A purification plant is normally set up within **80 to 120 days** of receiving the contribution from the community or donor on half of the community. The entire process is represented in the diagram below)

TECHNICAL FEASIBILITY SURVEY (1-2 WEEKS)

- Village/Town visit where the Project is to be set-up
- Meeting with Panchayat and key persons for details on population, water and land availability etc. If the necessary conditions are met, the Panchayat passes a Resolution allocating the land and water to the project for a period of 8 years. The Ownership of Land is not transferred to Naandi but remains with the Panchayat/Community
- Collection of water samples for testing water quality and levels of contamination thereof
- Household Survey to assess ability and willingness to pay

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COMMUNITY CONTRIBUTION

If all technical requirements are met for the project, Naandi requests the community or donor on behalf of the community to draw up a cheque or demand draft in favour of Naandi Foundation and the amount is ascertained on the basis of the size of the plant as per the table on Page 1.

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PLANT CONSTRUCTION & EQUIPMENT INSTALLATION, TESTING AND COMMISSIONING (12 TO 15 WEEKS)

The key milestones during this phase are

a) Ground Breaking Ceremony at the start of construction
b) First slab completion
c) Second slab completion
d) Trial Runs and Purified Water Quality Testing
e) Recruitment and Training of local youth to operate and maintain the plant. Naandi also engages a Safe Water Promoter(SWP), generally a lady, in each village to explain the benefits of safe water consumption among villagers and to promote paid access to safe water. Also, promotes Sanitation and Personal Hygiene practices.
f) Inauguration Ceremony and Registration of customers as members of the plant

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PROMOTION OF SAFE WATER CONSUMPTION THROUGH EDUCATION

CAMPAIGNS ON HEALTH & HYGIENE

8. What is the life of the plant and who will look after its operation and maintenance?

The plant has a life of 15 –20 years. During the loan repayment period i.e. the first 8 years of water sales, Naandi and WaterHealth International will be responsible for plant operation and maintenance through locally trained persons. After this period, the Panchayat will have the freedom to decide how the plant should be managed. They may choose to continue with Naandi and Waterhealth International or

may choose run it themselves or handover to another agency for maintenance. Throughout the life of the plant, ownership of the asset rests with the Panchayat.

9. How is U.V. technology used in the purification process superior to other available purification technologies for bacteriological contamination?

UV WaterWorks, the patented U.V> based water purification technology utilized by Naandi in the plants effectively eliminates 99.99% of bacteria and viruses found in water. The main advantage of this technology is the fact that it is **low maintenance** and can be operated by local ITI diploma holders from the community. There is no addition of chemicals in the purification process reducing the risk of an overdose or leakages. Most other purification processes require highly qualified engineers to undertake operations and maintenance because of their delicate design and parts that require frequent changing. The Naandi – WaterHealth Community Safe Water System is ideal for rural areas where highly qualified personnel are hard to come by at short notice (for operations and maintenance tasks that are critical to the purification process.)

An additional advantage of UV technology over others is **low energy usage**. The plant can run on single-phase electricity and is made to run for an average of 8 to 9 hours per day to meet the needs of the community. Other processes such as Reverse Osmosis require 3-phase electricity connections and consume a lot of electricity over longer period of operation.

Both points- low maintenance requirements and low energy usage make the project **suitable for rural areas and contribute to lowering** the cost at which water is provisioned to communities.

10. How are donors acknowledged and kept informed on the developments relating to the plant they have supported?

Donors are acknowledged through plaques erected at the plant site. Their names are also carried in quarterly newsletters circulated among other donors, government officials, panchayats and elected representatives. Donors are provided with updates on water consumption trends, adoption and case studies from their respective plant sites on a regular basis via surface mail/email.

For other queries please contact

- Mr Amit Jain – 91-9948455055 amit@naandi.net
- Ms Anjalli Ravikumar- 91-9948297703/anjalli@naandi.net

PROJECT TIMELINES, OUTPUTS AND OUTCOMES

Phase and Activity		Outputs
Pre-Installation 1 Week	i) Village Evaluation Survey	• Locating an appropriate community water source for the project • Locating an appropriate site for the project • Water quality testing to ascertain the need for the project and the suitability of the purification process employed by the project • Understanding the broad demographic, cultural and socio-economic make-up of the village • Assessing the community's general attitude towards drinking water, current sources and affordability
4-5 Weeks	ii) Discussions with Key Opinion Leaders in the villages including members of the local governing council (Panchayat) towards signing a • Panchayat Resolution • Tripartite Agreement	• Village Panchayat Resolution granting Naandi and WHIN permission to utilize the identified community water and land resources for a period of 10 years for the purpose of providing purified drinking water to the inhabitants • Signing of Tripartite-Agreement between the Panchayat, Naandi and WHIN to formalize the technical and financial terms and conditions for plant installation, operations and maintenance • Mobilization of the community contribution comprising 20-33% of the plant set up cost from one or a combination of the following sources: a) Individual households b) Corporate and Individual Philanthropists (especially in poorer villages) c) Democratically elected representatives, community based charitable organizations
1 Week	iii) Identification, recruitment and training of a 'Safe Water and Sanitation Promoter' in every village	Equipping a local, well-respected human resource (preferably a woman) with adequate knowledge and skills required to promote the adoption of safe water and hygiene practices and handle queries regarding the project/water purification process/customer grievances etc
4-8 Weeks	iv) Household Socio-Economic and Health Status Survey	• Understanding the baseline socio-economic and health status of the villages inhabitants including knowledge, attitudes and practices pertaining to drinking water and sanitation • To make households aware of the project and the potential benefits of safe water consumption

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Phase	Outputs	Outcomes
Construction, Installation and Testing of the Water Purification Plant 12- 16 weeks	Water source and land preparation including flushing, de-silting, compacting and bunding (wherever necessary) Special structure designed to house the purification equipment and necessary storage tanks and facilitate smooth sales Processed Water Quality Testing	Flow of 100% pathogen-free safe drinking water to the community
Start of Plant Operations	Identification, recruitment and training of 1-2 technical operators	Equipping local educated youth (2 per unit) with the knowledge and skills to carry out all the operations and maintenance functions to facilitate the unhindered supply of purified water to village inhabitants
	Plant Inauguration including member registration and start of coupon sales	• Registering households and village based institutions (tea shops, restaurants, schools etc) as members of the plant – providing each customer with a uniquely coded food-grade water can of capacity 12 or 20 liters (as per their requirement) to facilitate adoption and consumption tracking • Households from adjacent villages are also encouraged to register and provided with a unique code • Sale of pre-paid water coupons priced at Rs 1 for 12 liters and Rs 1.50 for 20 liters
Regular Water Sales and Continued Health and Hygiene Promotion	Regular interactive multi-media campaigns on the linkages between water, sanitation, hygiene and health. Key target groups include: • Womens' groups • School children • Local youth groups Period impact assessment surveys Period training programmes for the local project staff to help the project attain it's goals of improving the health status of village inhabitants	Consumption of safe water by rural households leads to • Reduction in medical expenses on account of water-borne diseases • Reduction in household debt on account of medical expenses • Improved productivity and financial gains on account of fewer working days lost due to water-related illnesses • Time saved on account of convenience of the plant location and home-delivery arrangements vis-à-vis fetching water from a free source of contaminated well water • Financial savings due to reduction in the price of purchased water (in villages where people are already paying a significantly higher price- 100-400% more- for treated water) • Reduction in Infant Morbidity and Mortality (Diarrhea alone kills 60,000 infants in Andhra Pradesh every year) • Promotion of gender equity as the plant encourages men to take

		on the task of fetching water relieving women of this time-consuming chore

Note: Certain phases run concurrently. On average a CSWS is ready to dispense Safe Water in **120 days** from receipt of donor contribution