Complete Microirrigation package with the Ecoflo foot operated Treadle Pump.

India
NAREN BHINGE

- Income generation
- Rural development
- Sustainable development
- Rural
- Sustainable agriculture
- Water Supply

Project Summary

Elevator Pitch

Concise Summary: Help us pitch this solution! Provide an explanation within 3-4 short sentences.

Treadle pumps are in use from a very long time, but only in improvised versions. The Basic Treadle Pump consists of two metal cylinders with pistons that are operated by a natural walking motion on two treadles. The pump's low cost makes it accessible to even very poor farmers who can use it to grow dry-season vegetables for home consumption and for sale. Since 1985, when some NGOs first began promoting the treadle pump in Bangladesh, about two million treadle pumps have been installed worldwide. These are suited for manually irrigating small land holdings of one hectare or less. Treadle pumps have significant advantages over motorized pumps for irrigation of agricultural land of less than one hectare. This is less expensive than motorized pumps. Costs much less to
operate, having no fuel and practically no maintenance. Most importantly it can be used in inaccessible and remote places with no electricity, near any water source. With the user's body weight and leg muscles in a comfortable walking motion, the use of the pump can be sustained for extended periods of time without excessive fatigue. The treadle pump is much less tiring than other manual pumps that utilize the upper body and relatively weak arm muscles with much lower discharge.

**THE ECOFLO PUMP**
The Ecoflo pump developed and Patented by Nasik (INDIA) based Bhinge Brothers, follows the same basic principle of the reciprocating suction pump. However the pump manifold and fittings, cylinders and pistons are all made from injection molded engineering durable thermoplastic with close tolerances and with every component designed with ribs and reinforced sections to meet the most stringent conditions of wear and tear. The whole unit including the fabricated structure is portably designed in such a way that it weighs just 12kgs so a person weighing 60 kg should easily carry the unit, then should be able to suck water from upto 7mtrs depth and pump it to a level upto 15mtr. a pressure enough to run a drip /sprinkler irrigation system or to transfer water to long distances upto 500mtrs. The pump has a metal frame structure to support the thermoplastic “Cylinder-Piston manifold block assembly” in the firm position. The hollow steel powder coated frame structure is designed in such a manner that the plastic molded assembly doesn't require to be bolted or fixed. It is secured perfectly in place protected from mechanical strains. The piston design and the mounting of the rubber gaskets is aimed to get minimum frictional losses.

Bhinge Brothers is into manufacturing of the Ecoflo Treadle pump and also complete range of microirrigation systems with a special thrust into microirrigation drip kits from 20 to 1000sq mtrs area and micro and minisprinkler kits of 300 sq mtrs area. The minisprinkler kits can be directly run on the ecoflo treadle pump and an area of upto one acre can be irrigated by it on a shiftable basis.

*Agriculture without irrigation or water is not possible and such complete microirrigation package with the Ecoflo treadle pump can be boon to the marginal farmers across the Globe.*

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**About You**

- **Location**
  - Project Street Address
    - W-62 MIDC SATPUR
  - Project City
    - NASIK
  - Project Province/State
    - MAHARASHTRA
  - Project Postal/Zip Code
    - 422007
  - Project Country

- **Your idea**
  - Country your work focuses on:
    - INDIA
    - MALAWI
    - Ethiopia
    - Zambia
    - Zimbabwe
  - Website URL
    - [http://www.ecofloindia.com](http://www.ecofloindia.com)
  - YouTube Upload
    - [object width="640" height="505"]<param name="movie" value="http://www.youtube.com/v/vmKiLhoUQCk&hl=en&fs=1"></param><param name="allowFullScreen" value="true"></param><param name="allowscriptaccess" value="always"></param><embed src="http://www.youtube.com/v/vmKiLhoUQCk&hl=en&fs=1" type="application/x-shockwave-flash" allowscriptaccess="always" allowfullscreen="true" width="640" height="505"></embed></object>

- **What stage is your project in?**
  - Operating for 1-5 years

- **What is the average monthly household income in your target community, in US Dollars?**
  - <$50

- **Innovation**
  - Describe your idea in fewer than 50 words.
    - A foot operated treadle pump weighing just about 12 kgs with suction 25ft and delivery head 45ft and capacity of upto 5000ltrs per hr pressure enough to transfer water through pipes to upto 500mtrs and directly operate a drip or mini sprinkler irrigation system.
What makes your idea unique?
This is the only Foot operated treadle pump of its kind that
- Weighs almost half of any other such type. The piston cylinder and the manifold assembly all components are made in tough engg. plastic material.
- Very smooth and efficient in operation. Even priming is not required.
- The frictional resistance is minimal because of closer concentricities/tolerance and the use of special smooth grades of plastic material.
- So easy to operate that even children can operate it playfully and help the family.
- No harmful grease – only coconut oil can be used for lubrication if reqd in extreme conditions. Hence can be used for drinking water too.
- Very easy to maintain. Every component can be replaced very easily whenever required.
- Since the main pump unit is made from thermoplastic, corrosion or rusting or even scaling is ruled out
- Changeable inlet and outlet nipple connectors.
- Special footvalve that will reduce the intake of bottom sludge as well as large suspended matter.
- Directly can run a drip irrigation system of upto 1250sq mtrs or a mini sprinkler system of 300sq mtr. Specially developed Mini sprinkler system as a standard accessory.
- The Piston cylinder and manifold unit can be bulk supplied to local fabricators for mass production of the Treadle pumps in every country to cater huge demands.

What is your area of work? (Please check as many as apply.)
Development & Prosperity, Food security, Poverty alleviation, Rural development, Sustainable development, Sustainable agriculture, Water.

What impact have you had?
Honorable Ex- President, Govt of India Dr. Abdul Kalam visiting a remote village Vaitagwadi (renamed by him to Ashakiran wadi), Igatpuri, Maharashtra in the year 2005. specially to see the innovative use of complete package consisting of the Ecoflo Treadle Pump for transferring water from a nearby source to the village and then collecting it in a simple pond lined with plastic sheet and then using this water to run a small irrigation system for microirrigate the plantation. 16 months later the same villagers come directly to the factory to purchase the set.
Last year 1500 farmers saved their rice/ paddy fields from drying with the use of 150 Treadle pumps in Chandrapur Dist. of Maharashtra, India. Last month over 450 units have been distributed in the same area.

Describe the primary problem(s) that your project is addressing.
Agriculture is the backbone or perhaps the only source of livelihood for the rural people. Mostly the people do farming with the primitive methods depending on the natural and seasonal rainfall. They can only grow seasonal crops during the rains for some part of the year. Rest of the year they are helpless and idle which pushes them towards further poverty. Irrigation is the only solution for the upliftment of these marginal farmers so that they can do farming for the maximum period in a year. Rain water can easily be collected and stored in simple reservoirs with specially developed pond liners. This works out at very low cost. Water from nearby natural sources like rivers, lakes, ponds etc can be brought and stored for irrigation by means of the Ecoflo Treadle pump. Microirrigation kits in different types as per the requirements are then used for irrigating the small farms.

Describe the steps that your organization is taking to make your project successful.
The cost of the Ecoflo treadle pump with its accessories though very reasonable priced but still is not within the reach of the marginal farmer. The marginal farmer who is struggling for livelihood and who does not have any savings cannot afford to buy the set outright.
Bhinge Brothers, has strived to be associated with as many NGOs as possible by means of the Ecoflo Treadle pump. Microirrigation pond liners. This works out at very low cost. Water from nearby natural sources like rivers, lakes, ponds etc can be brought and stored for irrigation by means of the Ecoflo Treadle pump. Microirrigation kits in different types as per the requirements are then used for irrigating the small farms.

Impact

**What will it take for your project to be successful over the next three years? Success in Year 1:**

Getting approvals for Govt subsidy/ assistance in 2 states in India.
Publicity and Recognition thru Awards and association with big organizations like Bill and Milinda gates foundation and Chagemakers.
Increase acceptance by the end users by actual and quantified gains and results.
Distribution of small quantities but in maximum areas across the world directly to local users or NGOs or Govt bodies.
Creation of success models in every area of operation.

**Success in Year 2:**

Getting approvals for Govt subsidy/ assistance in another 2 states in India.
Setting up of network of distributors and dealers in all the approved states in India and educating then for repairs and maintenance of the systems.
Setting up of network of associates for stocking and distribution in atleast 3 new countries.

**Success in Year 3:**

Getting approvals for Govt subsidy/ assistance in further states in India.
Promotion of new fabrication. Coating and assembly plants by local entrepreneurs in countries where the demands seen.
Expanding manufacturing capacities in the existing factories in India to cope with the increase demands across India and the World.
Do you have a business plan or strategic plan? (yes/no)

The product is proven and the challenge is to find ways and the means to make it reach the farmer.

What are the three most important actions needed to grow your initiative or organization? STEP 1:

Proper implementation of the concept and the use of the product at the grassroots level with the help of local self help groups and NGOs working closely with the marginal farmers. Show the transformations to the world.

What are the three most important actions needed to grow your initiative or organization? STEP 2:

Creation of funding mechanism for the implementation of the same at the local govt. level or thru International and National level funding Organisations or foundations.

What are the three most important actions needed to grow your initiative or organization? STEP 3:

Ensuring optimum use by the farmers from all areas large or small, near or remote for sustainable results anywhere in the world wherever the project has been implemented. Service camps for scheduled maintenance and proper education will be provided with necessary spares for trouble free service and confidence in the initiative.

Describe the expected results of these actions.

The results in terms of demand generation from all areas will be exponential. It will uplift the users immensely.

What was the defining moment that led you to this innovation?

Bhinge Brothers has been actively working in the developmental sector for the upliftment of the poor farmers for last 10 years not only in India but across the world in many poor countries. Realising the necessity of the providing simple and low cost ideas for irrigation for poor and marginal farmers, the company was the first to develop a range of small microirrigation kits suitable for irrigating farms from 20sq mtrs to 2000 sq mtrs. The irrigation was done by means of 12/16mm lateral pipes with microtubes fitted into microtees and holding pegs or by means of micro or mini sprinklers. But all through the initial years of working with the kits for the small farmers it was realized that the simple low cost transportation, storage and pumping the water without the use of electricity was very much necessary for the effective utilization of the microirrigation kits. In operating all these kits the farmer had to put water into the bucket or the drum manually or could use only where gravitational head was available.

The idea of developing such a simple manual pump that would help not only in transportation but also for using the irrigation systems very effectively thus emanated. At the same time we had to ensure that the manual foot operated pump should be light in weight so that the person should be able to carry it anywhere very easily and also should be very efficient and very easy to operate.

Tell us about the social innovator behind this idea.

Naren Bhinge, age 48 years, a mechanical engineer and sole proprietor of Bhinge Brothers his first start up manufacturing unit in 1988 with a small tool room and plastic molding machine for developing and manufacturing plastic components. The first break through was in 1991 when he became the sole supplier of all drip irrigation components -drippers, fittings for a large corporation. From 1996 onwards came the association was with IDE (International Development Enterprises. Denver) for development and supply of various types of microirrigation kits for marginal farmers all over the world. Today Bhinge Brothers is manufacturing a complete range of micro irrigation components and systems with adequate capacities. But the thrust has been for the upliftment of the marginal farmer. The development of the Ecoflo treadle pump took two years and another 2-3 years went in its refinement with the feedbacks from actual users and finally with the grant of patent registration – no 210928 dt 3-12-07. The use of the injection molded plastic for the piston, cylinder and the manifold assembly made the Treadle pump unique with all distinct advantages over the existing ones. His company today can boast of being the only such one to have a full fledged tool room for continuous development with a range of plastic injection molding and pipe extrusion machines and a setup for mass production of treadle pumps and micro irrigation systems.

How did you first hear about Changemakers?

From the internet.

Sustainability

What would prevent your project from being a success?

1. If any financial support even by soft loans is not available to the marginal farmers.
2. If there is no promotion by way of demonstrations publicity at the grass root level.
3. If there is no proper education for maintenance and handling. Also no after sales service.
4. If there is insufficient manufacturing capacity to cater to the generated demands.

Financing source

No

If yes, provide organization name.

Yes. Bhinge Brothers is an established organization- manufacturing unit.

How long has this organization been operating? (i.e. less than a year; 1-5 years; more than 5 years)

More Than 20 years
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your organization have a Board of Directors or an Advisory Board?</td>
<td>It is proprietary company with Mr. Naren Bhinge as its sole proprietor</td>
</tr>
<tr>
<td>Does your organization have any non-monetary partnerships with NGOs? (yes/no)</td>
<td>No</td>
</tr>
<tr>
<td>Does your organization have any non-monetary partnerships with businesses? (yes/no)</td>
<td>No</td>
</tr>
<tr>
<td>Does your organization have any non-monetary partnerships with government? (yes/no)</td>
<td>No</td>
</tr>
<tr>
<td>Please tell us more about how these partnerships are critical to the success of your innovation.</td>
<td>No idea</td>
</tr>
<tr>
<td>How many people will your project serve annually?</td>
<td>More than 10,000 this is a minimum target.</td>
</tr>
<tr>
<td>What is your organization’s business classification?</td>
<td>For-profit</td>
</tr>
<tr>
<td>What is the total number of employees and total number of volunteers at your organization?</td>
<td>About 50 direct employees.</td>
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<td>Have you received funding from any of the following groups? (Please check as many as apply.)</td>
<td>None of the above.</td>
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</tbody>
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