

BARSHA PUMP TO IRRIGATE FIELDS WITHOUT USING ANY FUEL OR ELECTRICITY

One of the innovative solutions awarded in 2016 by the Siemens Stiftung Foundation is the *Barsha Pump* to irrigate fields without using any fuel or electricity. The pump works on an optimized spiral principle and is designed as a sustainable, low-maintenance, low-cost irrigation pump to enable rural communities to increase crop yield.

The *Barsha Pum* has been designed and built by the [aQysta Company](#) based in Netherlands. So far, more than 40 pumps are running in countries such as Nepal, Indonesia, Spain, Turkey and Zambia.

Although the Barsha pump is a new product, it's based on a very old design. The pump itself is essentially a water wheel on a floating platform, that's moored in a nearby flowing river. The moving water rotates the wheel that in turn utilizes a spiral mechanism to compress air. That air drives water through an attached hose and up to the fields.

This hydro-powered pump can easily be implemented anywhere where there is flowing water nearby and requires very little maintenance. The pumps can be used as a stand-alone unit to pump water to the field or can be combined with other complementary technologies like drip or sprinkler irrigation systems.

The patented modular structure allows water to be scooped up and pumped towards a location up to 2 km inland, making it an ideal solution for small- and mid-sized farms situated near rivers and canals that require continuous access to water for irrigation. The current version with 1.5m in diameter is able to lift up to 20 meters vertical head and 2 km inland in flat lands, while reaching up to 40,000 liters of water per day, depending on the flow velocity of the water.

The *Barsha Pump* can save over 70% of watering costs for farmers, compared to conventionally-used fossil-fuel based pumps. It also creates no emissions. According to its designers, it has zero operating costs, only one moving part, can be built from locally-available materials.



The Watermelon Impact

1 Watermelon = 5 kg average
 Yield per hectare = 35 tons
 1 Barsha pump can irrigate 2 hectares
 Yield per season = 70 tons
 At 5 cents per kg = \$3,500 income per season

The Barsha Pump is the more sustainable and economical alternative to other irrigation solutions such as diesel- and solar-powered pumping. While the initial investment of diesel powered pumps is low, it induces operating and maintenance costs in the form of constant repairs and re-fueling. According to its designers the Barsha pumps are up to 70 percent cheaper than the conventional diesel/gasoline pumps and should provide a return on investment in less than one year compared with the 10 years of the diesel-powered pumps.

Solar pumps, on the other hand, require a large initial investment and access to trained personnel if repairs are needed. The simple design of the Barsha Pump induces virtually no operating or maintenance costs.

The Barsha pump has been designed by the aQysta start-up Company founded by three engineers from the Delft University of Technology, Netherlands. Pratap Thapa from Nepal co-founded aQysta in 2013 together with Fred Henny from Netherlands and Lennart Budelmann from Germany. The Company's goals are to develop technologies that provide economic benefits without hampering the environment and empowering the society.

In 2012 the first prototype of the Barsha Pump won the [Philips Innovation Award](#). In 2014 the [Climate-KIC's Venture Competition](#) has announced that aQysta has been named Europe's most innovative clean-tech venture by a jury of esteemed entrepreneurs, financiers and business people in Europe.

After installing the first Barsha Pump in Spain, the [Innovagri initiative](#), which associates a Community of Innovative Farmers, values the ecological characteristics of this hydro-powered pump.

To know more

[aQuista website](#)

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