

# NATURAL INNOVATION FOUNDATION

Technology in service of the planet and its  
peoples

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## NATURAL INNOVATION FOUNDATION

- ✦ Background in commercialisation
  - + CleanTech and previously Internet
- ✦ Advising both companies and investors
- ✦ Best ideas were not investable

My name is Mitra Ardron,

I came to this project with a background in commercialisation, initially in the Internet and for about the last ten years in cleantech, including working with green materials, solar Photovoltaics and urban agriculture.

In the last year, while advising both companies and investors, I realized that many of the best ideas, with the highest social and environmental impact. were not investable.



Typically this was because the Intellectual Property was public domain or for some other reason un-protectable, or because the inventor was based in a developing country or marketing to people who earned a few dollars a day, and so couldn't charge the high margins that would be required to achieve Venture Capital (10x) returns.

The Natural Innovation Foundation was formed to create a support mechanism for early stage inventors with a high impact who cannot, or choose not to, go down the traditional Venture Capital route. We'll bring the financial, and as importantly non-financial resources to de-risk and then scale the ideas in much the same way as I used to work with commercial innovations.

Lets look at a few examples of innovations we are currently working with.

## SOLUTION - WEAVING A TAPESTRY



## POTENTIAL TECHNOLOGIES

- × Low-head Hydro
- × Small-scale wind
- × Solar greenhouses
- × Solar pumping
- × Solar lighting
- × Water filtration
- × Aquaponics
- × Water treatment
- × Natural Building
- × Solar Fridge

## EXAMPLE – LOW HEAD HYDRO

- ✦ Usable power from low head (1-1.5m)
  - + 40m
- ✦ Easily constructed from concrete and rebar (problem + advantage)
- ✦ Power conversion using existing alternators
- ✦ Needs ~\$50k to build 40kw demonstration system
  - + 1m \* 8000 litres/s
- ✦ 3 year payback at current electric prices





Small scale hydro is an effective source of reliable energy in many places, however it usually requires at least 2 meters of head (the difference between the source of water, and where it is returned to the river),

The innovators we are working with have developed a system that requires just 1m of head enabling an order of magnitude more potential sites.

Its ideally suited to rural villages with a typical system being about 40kw, or 400 houses at a targeted cost of around \$60m in a low labor cost environment, and paying back its cost in about 3 years.

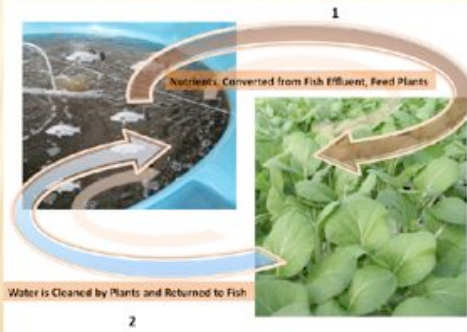
Its major weakness, and its major advantage is that its easy to copy, requiring mostly concrete and rebar.

There are no bearings, or seals or electrics in the water, and power can be extracted with cheaply available alternators or synchronous motors.

They've raised about \$60k for the first commercial system, and we are trying to raise about another \$100k to enable the development of appropriate training and documentation to allow it to be widely replicated.

## EXAMPLE: AQUAPONICS

- ✘ Integrates Aquaculture & Horticulture
  - ✘ Organically certifiable
  - ✘ Commercially viable at 3000m<sup>2</sup>
  - ✘ Will integrate Solar Thermal & Power Generation
  - ✘ Will integrate sustainable fish feed
- ✘ Company committed but needs support to scale down to village scale





## EXAMPLE – SOLAR THERMAL PUMP

- ✦ Concentrate solar
- ✦ Low speed Stirling engine using air
- ✦ 80,000 litres/day to 10meters
- ✦ Field maintainable
- ✦ INR1.2/m<sup>3</sup>
- ✦ Compare to INR3.78 for PV & more for diesel



## POSSIBLE DEPLOYMENT FINANCING

Cash flows in typical deployment scenario

