

Solar Bicycle Rickshaw India/USA

A Proposal

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Supported by: People To Support People Foundation
(PTSPF- A non profitable Organization MI USA)

Our need is \$50,000 for 100 cycles,
checks can be written in the name of “PTSPFondation” and
send to address given on page 4.



Author with a solar cycle at University of Michigan At Dearborn MI USA during 2001. The cycle discussed in this proposal is different from that in the picture.

Summary:

We wish to popularize solar cycles/cycle rickshaws throughout India (specially in rural areas) so that

- 1) Entrepreneurs can establish profitable businesses renting solar cycles to villagers.
- 2) Villagers will have access to an economical and ecological mode of transportation that will improve their productivity and quality of life, time thus saved can be used for extra income.
- 3) All Indians seeking to purchase an automobile might see that there are alternative forms of transportation that can offer uniquely better value in the Indian context and help avoid deepening the problems of air pollution, traffic congestion, and dependence on foreign oil.
- 4) Seniors, ladies, Students can use this, to save environment and dependence on foreign oil.

Opportunity Scenario:

Today approximately 750 million people live in what is considered rural India. While the quality of life is improving for some, still others are fleeing rural India for hopes of a better life in already overcrowded cities. With improving economic and educational opportunities in rural India, we believe that there is ample opportunity for more people to be gainfully employed and thriving in rural India.

The solar cycle program addresses several of these dimensions.

A rural household in India today has many of the same appointments as any household in the urban or developed world. Kids need to get to school, heads of households need to get to work, market, to the bank, and to the doctor. Because these communities are still under-served, these necessary trips can take up a significant part of the day and thereby effect the overall productivity of the household.

Often, if a villager needs to go somewhere beyond walking range, they wait at the side of the road until a trucker comes by willing to give them a ride for a fee that they can afford. This method of transportation is time consuming, unreliable, and sometimes dangerous. What is needed is a reliable, cost effective method of transportation that gives rural households the freedom to travel quickly and safely and at the times and to the destinations they choose.

Another primary benefit of the solar cycle program is that it creates a network of job opportunities that is self generating and sustainable in rural India. One could consider the network of automobile manufacture, distribution, and service in the U.S. with dealerships, service stations, retailers of accessories, registrars and government regulators and imagine a parallel could emerge under a different model in rural India. If the solar cycle replaced the automobile in rural India's development model, some of the major differences would be that an infrastructure of gasoline distribution and delivery would not be required and the negative sprawl and environmental effects of the automobile would be avoided. In a matter of a decade, China has become the leading producer and exporter of light electric vehicles such as electric bicycles and scooters due in part to the fact that light electric vehicles meet the needs of rural and lower income urban Chinese better than automobiles could. If India does not develop an indigenous solution to serve the needs of it's upwardly mobilizing rural population, that population will adopt an imported solution and Chinese manufacturers are currently well positioned to meet that need and capture this opportunity with the intention of adding as little as possible to the local Indian economy.

Program objectives:

To have 1000 solar cycles in operation within the few years of the program, 100 in first phase. We seek to involve ten states in the program with ten centers in each state and ten cycles per center.

Provide sustainable skills and jobs

Experts in the field of solar energy and mechanical engineers will provide training to entrepreneurs in the areas of solar energy and cycle fabrication and maintenance. The training will be given to them at research centers and at their place of residence. The entrepreneurs will assemble these cycles themselves to gain familiarity with the product and to keep product acquisition costs low. The training and experience they gain could enable the entrepreneurs to expand their businesses to solar lanterns, solar streetlights for rural use or other solar energy based solutions.

It will be self-generating later on as people will mentor others and bank will help.

It is anticipated that the program will provide investors with a 10% profit on components that will be purchased by the program and resold to entrepreneurs who will need to secure loans to cover these and other start-up costs. After the program period of five years, established businesses will be encouraged to spin-off and mentor new centers that will in turn attract job seekers, private investment, competition, and innovation thereby eliminating the need for the program to channel components and training to individual entrepreneurs.

Technical details: (Subject to change as R&D is ongoing)

450watt motor high-speed high torque (5500rpm, DC powered)

(2-12volts /8.5Ah18Ah/33Ah Batteries)

cycle – details and configurations unique to Indian market TBD, Wires

70x130cm solar panel (stationary, not mounted to cycle)

Why Two Batteries :One battery to charge at home and second mounted on cycles.

Summary of Advantages:

80km range with peddling.

40km range without peddling.

Time is saved as compared to cycle, which can be used elsewhere to generate more income

Inverters can be driven by solar cells to provide household or community AC power

Employment generation

Ecologically friendly

Zero Emission

Freedom of mobility – can travel safely at anytime to any destination

Reduced gasoline consumption

Reduced particulate and greenhouse emissions

No need of Petrol pumps in villages. Even postmen can use these for mail delivery in villages.

No recurring fuel expenses (Sun power is free for all, Pay for itself in fuel saving within three years)

Introduction of solar power, as an alternative to grid power in rural and urban areas.

Reduced growth in roadway and reduce burden on it.

No electricity needed for charging the batteries

Allow an indigenous USA/ Indian solution to meet a need that would be otherwise met by an imported foreign product. **As all product mentioned above are made in USA/India.**

Non-profit organizations worker can use these instead of motor operated Vehicles run by Petrol, to save money and environment.

Physically challenged persons can use solar powered vehicle to increase independence.

Financial summary:

Program Financial Requirements (First 5 years for Indian market)

16,500per cycle x 200 cycles----Rs. 3,300,000(this does not include cycle cost)

Overhead for NGO-----Rs. 250,000

Counsultants-----Rs.450,000

Total 1st year outlay-----Rs. 4,000.000

Grand total for five years is Rs 20,000,000(Twenty Millions Rupees). Outlay could be reduced by approximately 25% considering that the GOI may provide a subsidy of 10,000 Rs./cycle.

Solar cycle component cost breakdown:

<i>Component</i>	<i>Cost in Rs.(available in India)</i>	<i>Cost in \$(available in USA)</i>
Base cycle	1900	100
Solar Panel	12,000 (40 watts)	256 (64 watts)
Motor D.C.	2,800	49
Wires, hardware, etc	300	15
2 battery packs	1,400(battery life is three years)	130(Battery life is ten years-2 #)
Negotiations are in progress for prices of all components	Battery need Maintenance	Maintenance free
Total cost (w/o cycle's)	16,500	450

Total part cost for parts only is 16,500 Rs /per cycle excluding cycle's cost. (450\$ in US dollars)

At a relatively affordable rental rate of \$25/month, a prosperous villager (income > \$200/month) could have exclusive use of a solar cycle and the owner would enjoy a payback period of less than 18 months on an asset that should generate income for approximately 60 months. Other schemes such as cycle sharing and solar cycle rickshaws are possible and could provide faster payback for the entrepreneur or more affordable rates for less prosperous villagers (average income \$45/month).

Reliability is a key factor in the success of the program, so ample budget for quality components and maintenance has been allocated and these will be central themes in training entrepreneurs.

Growth and exit strategy:

After the first year, it is expected that the entrepreneurs will be generating quite a bit of profit while being able to repay their loans. They will be encouraged to start mentoring new entrepreneurs after another two years of stable operation. Established owners can provide start-up capital to new ventures as an investment in exchange for a portion of the profits from the new ventures. In this way, the program is expected to be self-generating within the next five years and eventually will cover a large portion of rural India.

Indirect saving

In term of environment and Fossil fuel is enormous and we need not have a Petrol pump in every village but we can certainly have a solar cycles in each and every home of all 650,000 villages of India.

We are expecting a subsidy from the Government of India of up to 1 Million Rupees one time grant for one hundred proto-types. The balance can be raised against a loan guarantee from the GOI and a loan from World Bank. These will be supported by Local Non Governmental Organizations (NGO'S) working in local area and will be paid up to 5% overhead cost of entire project in time bound manner.

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