

**1. Name of the Organization:**

Save Bombay Committee (SBC)/Vigyan Ashram

**2. Contact Person:**

Harshad Kamdar/Dilip Sankarreddy/Yogesh Kulkarni

**4. Phone Number:**

Harshad Kamdar: +91 9821999401

Dilip Sankarreddy: +91 9886247159

Yogesh Kulkarni: +91 9822792078

**6. Email:**

Harshad Kamdar: kanukamdar@gmail.com

Dilip Sankarreddy: dilips\_10@yahoo.com

Yogesh Kulkarni: vapabal@gmail.com

**7. Address:**

Save Bombay Committee  
102, MAUSAM Co-op Housing Society,  
Plot No.285, Sector-28,  
Vashi, Navi Mumbai-400705

Vigyan Ashram  
Indian Institute of Education,  
128/2,J.P.Naik Path, Karve Road  
Pune-411038

**9. Type of the organization:**

Non-Governmental Organization

**10. Describe your organization (In not more than 50 words):**

Save Bombay Committee (SBC) is a society registered under Indian Societies Act in 1973. SBC works for the protection of the environment and conservation of natural resources. It also strives for the empowerment of the most deprived like slum dwellers, marginal farmers, landless labourers, women, child labour in the urban and rural regions by giving them the opportunity to learn and acquire knowledge to face fast developing world. Link: [www.savebombaycommittee.org](http://www.savebombaycommittee.org)

**11. Title of your project idea:**

Human power based lighting solution for nomadic and tribal people.

**12. Implementation Region (Please specify the name of the village/s, district and state you wish to pilot your project. Clearly mention the number of beneficiaries that will benefit from this initiative. Not more than 30 words):**

Locations of beneficiaries for nomadic camps (12 units):

\* Medhangji Jogi (Nandi bail wale): Lok Nagari, Ambernath - 25 houses – 5 units.

\* Gopal (Dombari): Anasarwada, Latur - 25 houses – 5 units.

\* Construction workers: Rajgurunagar Road in Pabal - 10 houses – 2 units.

Locations of beneficiaries for Ashram Shalas who will be provided the equipment free of cost (5 units):

- \* Village Karav, Taluka Ambarnath Dist Thane Ullhas Parisar Pratishthan
- \* Village Vankuva, Tal Vaghodia Dist Vadodara (Muni Seva Ashram)
- \* Village Ratanpur (Khadir) Tal Bhachau, Dist Kutch (Sushil Trust)
- \* Village Sendrana, Taluka Siddhapur, Dist Patan (Mangal Jeevan Trust)
- \* Leper's Colony at Shram Mandir, Sindhrot Dist Vadodara

Locations of beneficiaries for Ashram Shalas who will be provided the equipment at 50% subsidy (36 units):

\* Based on initial success of the project, other Ashram Shalas will be contacted in Maharashtra and Gujarat. Whoever interested from other places can also contact us.

### **13. Theme:**

Generation and use of renewable energy, including solar power, wind power, biomass based fuels and converting waste to energy

### **14. Is your organization partnering with another organization?**

Yes

**15. If you answered yes to the question above, list the name and contact details of the partner organization. If your proposal is chosen for the grant award you will need to submit a letter by the partner on their letterhead confirming the contribution amount and timeline of this contribution**

Vigyan ashram is a center of Indian Institute Of Education, Pune established in 1983. It is based in village Pabal. Over the year it has developed a program “Rural Development Education System”. So far 40 schools adopted this program. It also has a FAB LAB established by MIT, USA. Link: [www.vigyanashram.com](http://www.vigyanashram.com)

**16. Objective: What is/are the specific problem (s) that you’re trying to address and why it is important (include estimated number of people currently affected by the problem in the project area) (In not more than 200 words):**

a. Electrical power at Adivasi Ashram Shalas (AAS) is largely unreliable and education of students is affected as 50 to 70% of evenings are powerless.

Affected numbers: Thousands of rural schools all across India

b. Nomadic tribal population stays in temporary structures that are rarely fit for human habitation. They camp just outside the cities or move in caravans from one place to another. They are still using kerosene lamp for lighting. Providing grid/solar/wind power to them is not feasible.

Affected numbers: Over 7% of India’s population is nomadic.

c. Thousands of villages in tribal belts of rural India are yet to connect to the power grid and spend nights in dark or use kerosene lamp.

Solar power as an alternative has limitation in terms of cost of the panel. Difficulty in transportation from one place to other is also faced when solar power solution is attempted for nomadic communities. Further there is hardly any sunlight in rainy days in

tribal areas. So we are trying to develop a more realistic/simple/cost-effective solution for rural/tribal lighting.

Previous experience in similar project: We have the expertise in successfully building and implementing mono-wheel generator in Adivasi Ashram Shalas. Our simple solution has received tremendous response because uninterrupted light generated is positively contributing to facilitate the tribal students to study in the nights who otherwise were not able to study during nights due to frequent prolonged power cuts. We now have improved the efficiency of the cycle by developing 70W per hour of peddling instead of earlier 30W per hour of peddling. Pictures related to our previous similar project can be seen at the following link:

[http://www.savebombaycommittee.org/gallery/ashram\\_cycle/](http://www.savebombaycommittee.org/gallery/ashram_cycle/)

**17. Idea: What is your idea for addressing the problem (s) described above? (Not more than 200 words.)**

Development of Mono Wheel Gensets or an attachment to a mobility-bicycle which generates power through a generator/alternator when pedaled daily. This power is stored in a battery and can be used in the evenings for illumination using LED lamps.



**18. Implementation: How will you implement your idea? Describe the activities/process your project will undertake to realize its objective (s). List step-by-step how you will implement the programme in Phase I (first tranche of the award money) and Phase II (the final installment of the award money). Not more than 200 words.**

Phase I:

\* 5 identified ashram shalas will be given the unit free of cost and will be testing ground for the innovation.

\* Padas are cluster of homes on the outskirts of the village. Normally they are 15 to 20 families living in the same vadi (hamlet). Providing 3 lights each to 5 families, the same solution as above can be used. But a co-operative effort from different families on peddling is required. So we will give 12 units to 60 identified families in padas in first stage.

Phase II:

\* Success in this implementation will be used to convince 36 other Ashram shalas to provide for 50% of the cost of the unit.

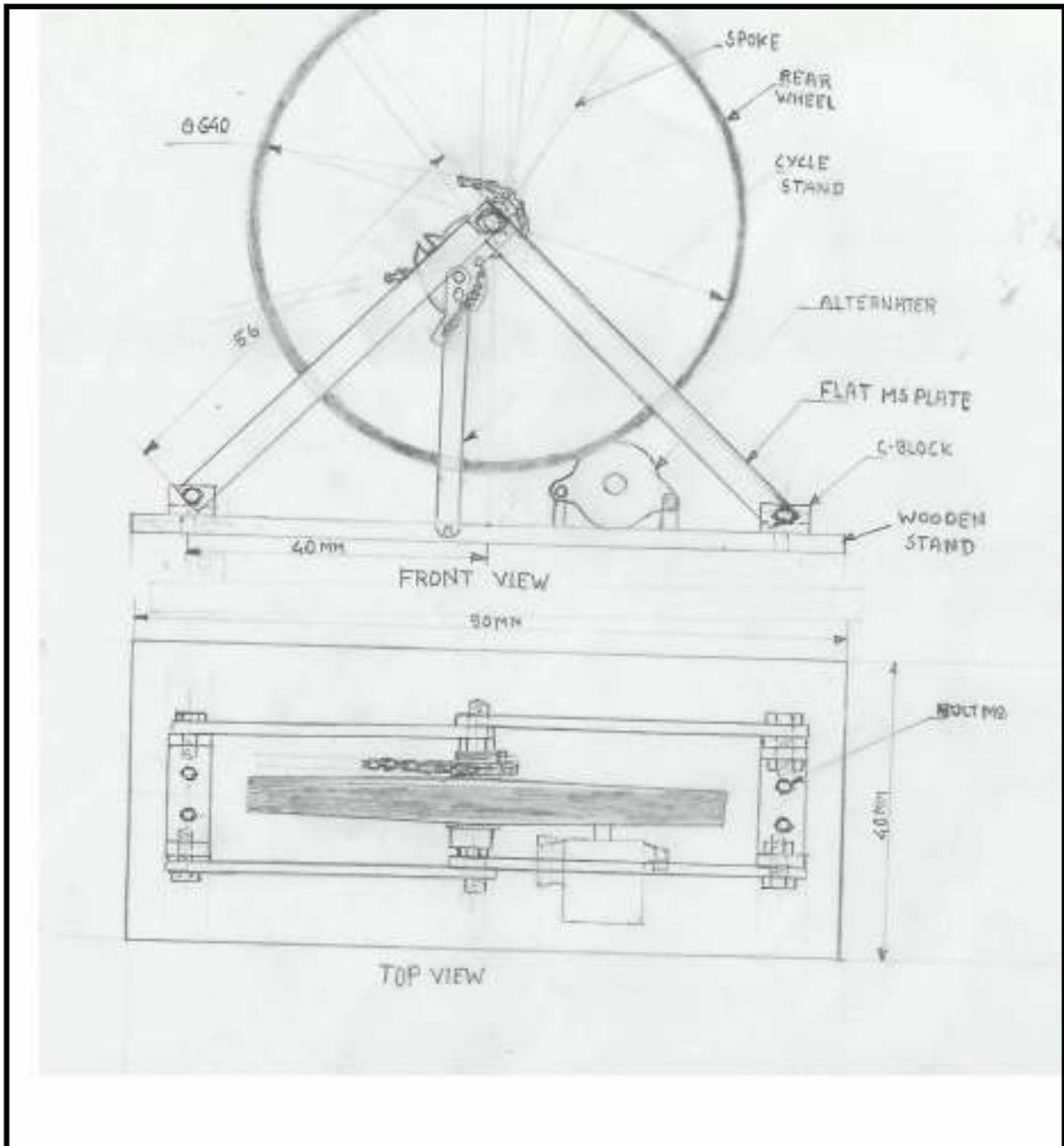
\* 6 more remaining units will be given to 30 other identified padas.

\* Continuous research is being made to further improve the product.

Further research:

\* We are trying to design an attachment for ordinary bicycle which will be extremely useful for nomadic population as they can use it with their existing bicycles. Whenever we can perfect the model, we will introduce it too to those who are interested.





**19. Innovation: How is your idea truly innovative or unique? Describe the extent to which it uses a novel approach and different from others in this sector. Not more than 200 words.**

\* Our innovation is in deploying the idea in remote locations and on nomadic camps. No one till now has thought for the lighting solution for the nomadic population. This is very useful for the people who do not have grid supply and cannot afford solar power.

\* To reduce production costs, we have given stress on usage of existing standardized parts available in the market.

\* We have reduced the difficulty in pedaling by using flywheel of ferro-cement.

We have used energy-efficient LED lamps.

\* A manual in local language detailing maintenance issues and 'make-it-yourself' guidelines can be prepared to also facilitate "local fabrication". It describes all drawing, dimensions and specification of our product

\* The hired technician will train beneficiary to assemble the unit. LEDs can be purchased in bulk and assembled by the students. The technician can teach the Shalas on how to assemble the LEDs. This is expected to spawn a new type of cottage industry.

\* For implementation in padas, we are willing to ensure community participation.

\* We are trying to use existing bicycle for providing rotating motion. This will further reduce the cost and the utility will be much better.

**20. Outcomes/Results: What are the expected outcomes/results of this project? Whom will it benefit? How you measure/ascertain the impact of these outcomes/results? Not more than 200 words.**

Results in terms of number of hours the LED lamps can be utilized for the number of hours of pedaling is as mentioned:

Peddling time required in Adivasi Ashram Shala:

\* Unit will generate 70W per hour of pedaling.

\* 32 children peddle for 15 minutes each, a total of 8 hours per day.

\* Power generated is 70Wh at 12V per hour of peddling or 560Wh in 1 day.

\* Usable power is 80% or 448Wh or 30 lamps (3W each) for 4.97 hours for each lamp.

Peddling time required in Adivasi Pada:

\* Unit will generate 70W per hour of pedaling.

\* One member from each house peddles for 30min, generating 35Wh at 12V. Effort from 5 houses generates 175Wh in 1 day.

\* Usable power is 80% or 140Wh or 15 lamps (3W each) for 3.11 hours for each lamp.

**21. Financial Viability: If relevant provide an estimate of when you expect to cover your operational costs through revenues beyond the phase funded by the Development Marketplace? Not more than 200 words.**

\* 5 identified ashram shalas will be given the unit free of cost. Success in this implementation will be used to convince 36 other shalas to provide for 50% of the cost of the unit. Further maintenance beyond 2 years will be done by these shalas themselves. If further assistance desired, then it will be on basis of incurred cost.

\* For the units given to Padas, we will give the units to the identified groups of families with the condition that we have the right to take back the equipment in first year if the unit is not utilized properly. To create a stake and naturally responsibility among the families, a mechanism of charging Rs.2 per day from each family is set up. It will be cheaper than the kerosene. One person in each camp will be trained and he is given responsibility of maintenance of the equipment. He will be collecting Rs.60 per month per house. Out of this he should deposit Rs.50 in the bank account. This will be enough to take care of the maintenance of battery and future replacement/servicing/repair expenses of the unit. He can keep the remaining Rs.10 per month as service charge.

**22. Sustainability. Describe how you will overcome major challenges that your project/ organization faces and how you will overcome. Describe the extent to which your project addresses environment problems or generates environmental benefits. Not more than 200 words.**

\* This project empowers rural and underprivileged who are the first victims of power shortages and who do not enjoy electricity-connectivity. It is immensely useful for students. The energy needed is produced by human-power and energy-efficient LED lamps are utilized. This results in minimal burden on environment.

**23: Replicable and scaling up. What is the possibility of implementing your idea/ project elsewhere (in different regions)? What is the potential for this idea to be scaled-up or applied on a large scale? Not more than 200 words.**

\* 7% of Indian population is nomadic, in addition tribal and rural people and also people who do not afford grid power. There will be huge market for the same.

\* If the planned implementation is successful, many interested rural outfits throughout India will come forward to purchase the same, willing to bear all expenses. For others, micro-finance can be arranged.

**24. Project Costs. Please provide an estimate of the budget for project activities. If your budget exceeds approximately Rs. 8 lakhs, please specify other sources of funding and identify activities that will be undertaken with the IDM money and those activities that will be undertaken with the additional sources. Please note that wherein necessary, the administration costs must not exceed 15 per cent of the total award grant. Not more than 200 words.**

Cost of the unit for Adivasi Ashram Shala:

Cost of Cycle attachment	2000
Cost of alternator/generator	2800
Cost of battery (about 80 ampere-hour)	3500
Miscellaneous items like volt-meter and labour	1200
Cost of 30 lamps (1 lamp costs Rs.150) (Each lamp is of 2.3 to 3W at 12V and contains 10 LEDs)	4500
Cost of wiring, switches etc.	1000
Transportation expenses to place of deployment	<u>1000</u>
Total cost of solution	<b>16000 INR</b>

Cost of the unit for Adivasi Pada:

Cost of Cycle attachment	2000
Cost of alternator/generator	2800
Cost of battery (About 45 ampere-hour)	2100
Miscellaneous items like volt-meter and labour	1200
Cost of 15 lamps (1 lamp costs Rs.150) (3 lamps per house and for 5 houses in each Pada) (Each lamp is of 2.3 to 3W at 12V and contains 10 LEDs)	2250
Cost of wiring, switches etc.	1000
Transportation expenses to place of deployment	<u>1000</u>
Total cost of solution	<b>12350 INR</b>

Grant Amount = 20,000 USD \* 42 = 8,40,000 INR.

Estimated cost of 5 units for the Adivasi Ashram Shalas: 100% of 16000 \* 5 = 80,000 INR

Estimated cost of 36 units for the Adivasi Ashram Shalas: 50% of 16000 \* 36 = 2,88,000 INR

Estimated cost of 12 units for the nomads/Adivasi Padas: 12350 \* 12 = 1,48,200 INR

Component replacement/repair margin = 35,800 INR

Salary for 1 technician for a period of 2 year = 6000 per month = 1,44,000 INR

Traveling expenses for technician for trouble-shooting, training, implementation for a period of 2 year, project management overhead like communication, etc = 6000 per month = 1,44,000 INR

Total = 8,40,000 INR

Other sources of funding:

\* Estimated cost of 36 units for the Adivasi Ashram Shalas: 50% of 16000 \* 36 = 2,88,000 INR – To be funded by the Ashram Shalas themselves

\* During the third year we are confident to sell a projected 50 units to ashram shalas in different parts of the country. The total cost of units will be borne by them. On our part we will assist them to find micro-finance.

\* Upon success at IDM2007 we are approaching The Ministry of Non-conventional Energy Sources (MNES), New Delhi, Government of India, for an examination of our project and further subsidy of the cost for ashram shalas, nomads and rural reading rooms. We are also in touch with the Shri. Balkrishna Renke, Chairperson National Commission for Nomadic Tribes (NT), de-notified NT and Semi NT, whose support we will get while approaching MNES.