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Project Supported by: Canara HSBC OBC Life Insurance

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PROJECT JAL JEEVAN-AAROHAN PHASE-II

Village Pachala, Phagi Block, Jaipur Dist., Rajasthan

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01. Project background

Project Jal Jeevan, was initiated in the year 2015 under the Canara HSBC OBC Life Insurance Company Ltd. CSR programme, along with Advit Foundation, as the implementation partner. The objective of the project was to ensure availability of water for drinking, sanitation, livestock and agriculture for the rural communities residing in water impoverished areas. Village Pachala in Phagi Block, Jaipur district was identified as the target location. One water conservation structure of the water storage capacity 10,000 cu m was set up in the project village – village Pachala. During the first rain itself, more than 50,000 cu m water accumulated in the storage area. Over the years the water accumulated has increased soil moisture and recharged wells, thereby ensuring supply of drinking water; reducing salinity and fluoride level in the groundwater and improving cropping pattern.

Those who owned land were benefitted more from Project Jal Jeevan since the agriculture produce increased. However, those who did not own agricultural land too were looking forward to initiatives that would improve their living conditions including income. Thereby, Project Jal Jeevan-Aarohan was initiated in the year 2016. Under this project, a skill centre (project Jal Jeevan-Aarohan) was initiated in village Pachala. The primary purpose of the project Jal Jeevan-Aarohan was to mitigate the unemployment and underemployment problems among the rural youth in the country. The trainings and skill upgradation programmes were geared towards entrepreneurship development. Demonstration on renewable energy and income enhancement skills were setup at Aarohan. The demonstrations included a solar mobile charging station, biogas plant, parabolic solar cooker, nursery and spice grinding.

With an aim to further strengthen the efforts of Project Jal Jeevan-Aarohan, Phase II was initiated in 2017; where there is adaptation of practices by communities that were initiated in last year's project. Also, more trainings and education programmes have been introduced to encourage communities to participate in the initiative and adopt the technologies. The main purpose of Project Jal Jeevan Aarohan, Phase II, is to ensure that new skills are introduced and existing ones strengthened, leading to improvement of livelihood and enhancement of income. The trainings to community representatives are to build the capacity of local communities to understand the project dynamics and maintain the project assets on day to day basis. The communities were encouraged to make time and physically help contributions (Shramdan).

Target Area:

The training centre is located in village Pachala in Phagi block. Village Pachala has a population of about 1500 including the tribal settlements. This project encourages communities from all 4 neighbouring villages. More than 2,000 individuals have been reached through the training and outreach programmes.

Basis for Intervention:

This semi-arid area faces severe water shortage. Project Jal Jeevan had focused on improving water availability and as a result, there has been a positive impact on water availability for drinking, sanitation, agriculture and livestock. However, there are a number of landless who have no source of livelihood. Project Jal Jeevan-Aarohan was initiated with an objective of introducing new technology and skills in the rural communities and imparting livelihood skill trainings that would enhance income of the communities. The project activities benefitted more than 1,000 community members. There was large participation from the village women, both young and old. The trainings and skill upgradation programmes were geared towards entrepreneurship development through demonstration and capacity building for income enhancement.

Project Jal Jeevan – Aarohan Phase II took forward technologies at community level and facilitated adoption of entrepreneur models.

02. Project achievement

This project aimed at environment conservation and socio-economic enhancement of the rural community through skill training and entrepreneurship development in Phagi block of Jaipur district in Rajasthan. There have been more than 2,000 beneficiaries including women, youth and tribal communities.

The following have been the achievements of the year:

1. Set up 4 biogas plants in 4 village households in village Pachala and village Kiratpura.
   - Demonstrating energy efficiency.
   - Improved health due to no emissions during cooking.
   - The sludge is a good manure.

2. Set up 6 fixed type solar cookers in 6 households in village Pachala.
   - Leading to skill development and energy efficiency by adapting to the technology.
   - Reduction in firewood usage and improvement in working environment for women.

3. Set up 1 Solar mobile charging unit in village Pachala.
   - Promoting entrepreneurship.
   - Energy access in the village.

4. Set up demonstration unit of a Solar dryer at Aarohan, village Pachala.
   - Reducing drying time for agricultural produce to promote entrepreneurship.
   - Providing more shelf life and reduce wastage.

5. Set up a herb packaging unit at Aarohan, village Pachala.
   - Facilitating packaging of locally grown, dry agricultural produce to enhance income.

6. Expanded trainings on solar mobile charging station, biogas technology, solar cooking in Pachala and 2 neighbouring villages – Kiratpura and Chandawas.

7. Additional training on organic farming has also been imparted to the farmers at village Pachala to encourage chemical free farming. This is done in order to encourage the production of organic food which has a higher market value.

03. Project activities

More than 2000 beneficiaries have been reached through various trainings, awareness programs and outreach activities of this initiative. Market linkages are being developed to enhance income of the community members.

Renewable energy promotion through biogas:

Biogas systems have been set up in four households in village Pachala, Phagi. Cooking gas is generated through available organic waste and cow dung. Communities have been trained on the technology and usability. The systems are functional and are being utilized by the beneficiaries.

Glimpses of installation of biogas systems: Training to the community




Glimpses of installed biogas systems

Promoting solar cooking:

Fixed type solar cookers have been set up in 6 households in village Pachala. The initiative uses solar energy to improve cooking methods in rural households. The project involved construction and skill training to impart technology of making a fixed type solar cooker in each of the rural households.

By undertaking village mapping, the right location (south facing) of the solar cooker in each of the households was selected. Trainings were organised in making of the cookers. The trainees in turn could facilitate each member of the household to make their own solar cooker and take care of troubleshooting. The exact amount of raw material for construction of the solar cooker were provided - bricks, cement, mirror, glass. This initiative, besides environment benefit (saving of wood as fuel, air pollution, decreasing deforestation) will also have health benefit, enhance money saving, skill empowerment and develop entrepreneurship (trained people can help set up more solar cookers in other villages as well). The initiative is self sustainable and can easily be replicated over time.

The advantages of solar cooking to poor communities are evident: reduced use of fuel wood; reduced spending on fuels; decreased exposure to smoke, ash, and flames; and less time and energy spent collecting fuel to name a few.

Glimpses of installation of fixed type solar cookers: Training of youth and local masons


Glimpse of installed solar cookers




Solar based mobile charging station:

A fully functional solar mobile charging station has been installed within the village. The charging station has been indigenously designed and fabricated by Advit Foundation. It has the capacity to charge 5 mobiles simultaneously and charge up to 50 mobiles in a day. The community members had participated in the installation of the system and have been trained on the usage and maintenance.

Glimpses of installation of solar mobile charging station and training of youth

Glimpses of installed solar mobile charging station

Set up of solar dryers:

Solar dryers have been set up at Aarohan centre in village Pachala. The community has been trained in the usage and maintenance of these systems. Trials conducted using potato, green chilli and spinach have yielded good results. Linkages are being developed to reach out to the city markets with farm fresh, dried agricultural products from the villages.

Glimpses of installed solar dryers

Glimpses of trials being conducted on drying various agricultural produce


Dried Spinach


Dried Chilli


Dried Potato

Setting up of herb packaging unit:

A herb packaging unit has been set up at Aarohan. The aim is to facilitate packaging of locally grown herbs that are dried in the solar dryer and produce a saleable product. Market linkages are being developed to enhance the income of the communities. In order to further increase the value of the packaged products, session on organic farming was conducted to educate the people about the importance and market value of organic produce, and how to go about it.

Session on organic farming:

A few sessions with representatives from organic brands like Morarka India were organized in village Pachala. Farmers were trained towards using natural products to grow agriculture produce and discouraged from using chemicals.

Glimpses of sessions on organic farming

Glimpses of plant nursery

04. Project impact

The Project Jal Jeevan-Aarohan has directly impacted more than 2000 residents of village Pachala and the neighbouring villages.

1. **Social impact**
   - Availability of an improved fuel for cooking (biogas) has resulted in improving health and general well-being (usage of firewood has come down significantly in the four households).
   - The project has educated the community towards environment sensitivity. Through the training and outreach activity, they are better aware of the benefits of alternative fuels and the hazards faced by open burning of biomass.
2. **Economic impact**
   - By use of biogas and solar cookers, the use of kerosene in stoves has come down. This has led to reduction in expenses.
   - Communities have been trained to run and operate the solar dryers, thereby giving them an opportunity to work at Aarohan, and increase their income by drying and packaging of agricultural produce that will be bought and marketed by Aarohan.
3. **Environment impact**
   - Adaptation to solar cooking and biogas has resulted in:
     a. Reduction in inhalation of fumes, leading to better health.
     b. Reduction in the burning of wood.
     c. Reduction in cutting of green belt.
   - Through this initiative, various uses of solar energy and alternative energy has been demonstrated to the community and they have been encouraged to adopt it.

Impact case studies

Biogas systems:

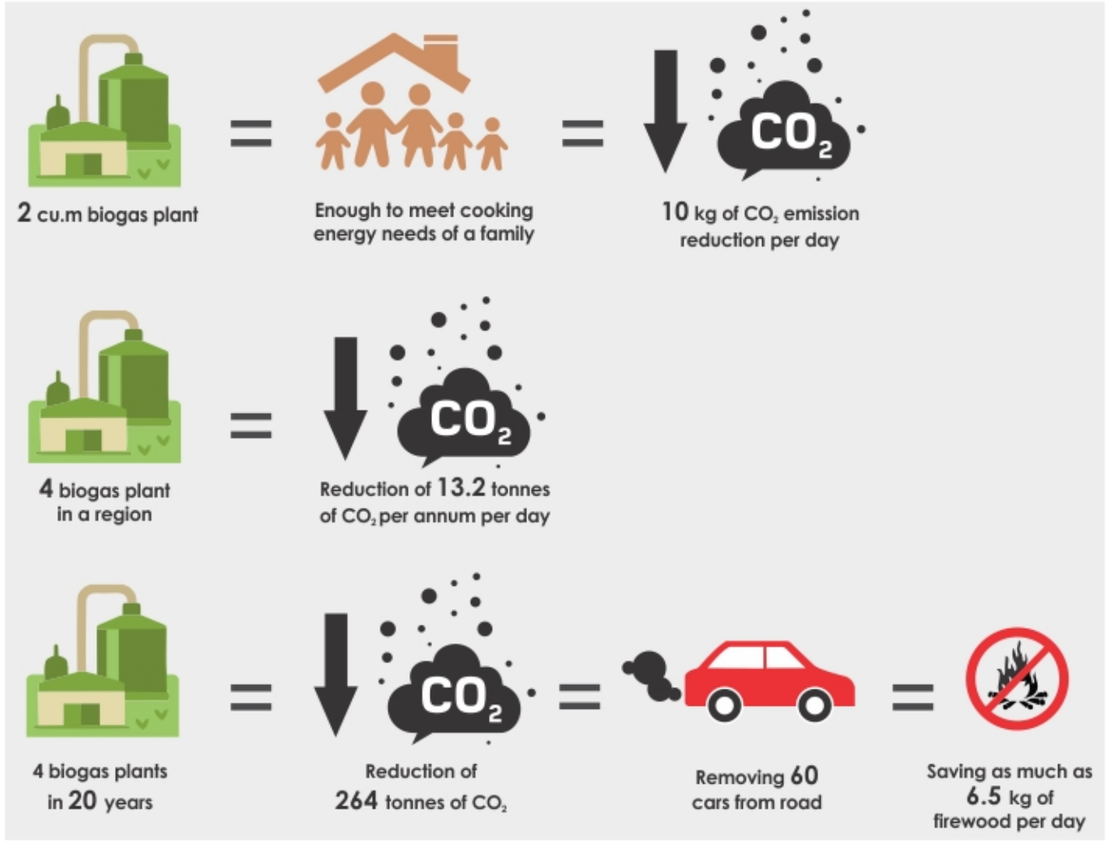
The households in Pachala and nearby villages primarily depend on firewood and cow dung cakes for their heating needs (cooking and hot water requirement). These biomass base fuels are burnt in chulhas /mud stoves to generate the required heat. However, such fuels, while doing the job for the user, would also lead to a lot of smoke and soot that affects the indoor air quality, leads to atmospheric pollution and severely affects the health of the people, particularly women. Moreover, due to the practice of using firewood, deforestation is notoriously dominant in these areas leading to significant loss of green cover every year. While some families buy LPG

cylinders, it ends up being a major expense for them as these communities primarily survive by rain fed agriculture and the rainfall has been poor in the past few years leading to financial discomfort.

Introduction of biogas in four households in these villages was aimed at sensitizing the community towards the potential of a rich fuel source that is available locally in large quantities. Every family in these villages has 7-10 cattle (cows and buffalos) on an average which produces a large quantity of dung. The old practice has been to collect and store the cow dung in the open and either use it as manure in their fields or make cow dung cakes out of it to be burnt in the chulhas. This process is very inefficient and polluting. The open piles of cow dung release a lot of Methane directly into the atmosphere which is a green-house gas, 23 times more powerful than carbon dioxide in depleting the ozone layer. This is a significant contributor to climate change.

A biogas plant is an efficient way of handling the massive amount of cow dung. By feeding the dung into the plant and subjecting it to anaerobic decomposition, the biogas generated is harvested in the tank and used as a cooking fuel that can substitute firewood, cow dung cakes and even LPG. The combustion of biogas is cleaner as compared to open burning of biomass fuels and it also prevents the open emission of methane into the atmosphere. Moreover, the reject from the biogas plant can be used as manure. By using a biogas plant, the rural communities can utilize the cow dung just like before for the same two tasks i.e. manure and fuel, however it is cleaner and more efficient.

The four households that have been set up with 2 cu m biogas systems have benefitted from it. They now regularly use the gas for their cooking and hot water requirements. Mohan Singh of Kiratpura has close to 10 cattle. His family has stopped buying LPG as they now know that the dung from the cattle can produce enough gas to meet their requirements. The direct beneficiaries have been the four families with a total of 25-30 individuals. The indirect beneficiaries are approximately 2000 individuals of Pachala and nearby villages who have been sensitized towards the setup, usage and maintenance of the biogas systems.



Fixed type solar cookers:

The usage of firewood and biomass base fuels is significant in Pachala and the nearby villages of Phagi block, Jaipur district. This age-old practice is inefficient and polluting and leads to deforestation which further affects the rainfall pattern, putting these communities into a vicious circle of financial and nutritional poverty. While biogas is a great way forward in these communities, fixed type solar cookers provide an economical alternative that can support them in their cooking requirements. The emissions from burning biomass also have an adverse effect on the indoor air quality thereby affecting the health. Studies estimate that on an average, a rural woman inhales smoke equivalent to that of a 100 cigarettes per day through the burning of these fuels. An average village household consisting of 4-6 individuals burns fuel worth approximately Rs. 1,00,000 per annum.

To take control of this, this project set up a sustainable cooking method i.e fixed type solar cookers in 6 households. A fixed type solar cooker is basically a box type cooker made out of brick, mud and mortar. It is a slow cooker that utilizes the sun's energy to cook food or cattle feed. Rajasthan being a hot and sunny state, the fixed type solar cooker works well in such locations.

The construction was done by local masons and the community members themselves under supervision of Advit Foundation. The community has been trained on the usage and maintenance. Locally available materials were used to ensure easy replication. This also makes the fixed type solar cooker a very economical alternative.

The fixed type solar cookers would ensure elimination of harmful emissions, conserve resources and prevent deforestation. The envisaged impacts would be as follows:

S.No.	Social Impact	Economic Impact	Environmental Impact
1.	Availability of a renewable fuel	Savings of approx. Rs. 25,000 annually	Reduced deforestation
2.	Meet fuel needs for at least one meal for one family for 300 days	Income enhancement	Elimination of smoke and fumes during cooking
3.	Time saved in collection of firewood	Skill training	Increase in green belt
4.	Improved health due to less exposure to fumes, smoke etc.	Entrepreneurship development	Promoting renewable energy
Overall improvement in living conditions			

Solar mobile charging station:

In India, mobile connectivity has reached every corner, however, the same cannot be said about electricity. This is particularly true in case of the rural parts of the country. The villages in Phagi block have an electricity connection but the availability is poor. Frequent power cuts make matters very difficult for the communities. With mobile phones playing a critical role today in personal life and work, lack of electricity to charge these phones affects the day to day life of the people in these villages. Many of them also travel to the nearest town, where they can charge their phone batteries at shops in exchange for money. This results in considerable amount of time and money wasted on a task that doesn't need to be so difficult.

In order to address this, Advit Foundation has designed a solar mobile charging station.

This system utilizes the sun's energy to produce electricity that can be used to charge around 5 mobile phones simultaneously and charges up to 50 phones in a day. A battery back up also ensures that the electricity is available at night. An LED light is also installed that illuminates the vicinity after dark.

This system was installed as a demonstration at Aarohan centre during the Jal Jeevan-Aarohan project in 2016-17. In 2017-18 a similar system has been installed at a central location inside village Pachala. Community has been trained in the installation, usage and maintenance of the system. Now the individuals in these villages do not have to travel far to charge their mobile phones. Community members are encouraged to take this up in an entrepreneurship model and set it up in their shops.

Direct beneficiaries have been more than 100 households of village Pachala

Chauhan is a local fabricator from Sawa ka bas, Pachala panchayat. He has become an expert in assembling simple solar photovoltaic systems by the training imparted by Advit Foundation. With some technical help from Advit Foundation, he put together a team and has installed 5 solar street lights for the sarpanch of the nearby Rothwara panchayat in village Kiratpura.

05. Sustainability

- The project initiatives have been a combination of technology demonstration and skill development. All the activities are self-driven and a self-replicating.
- Initiatives like solar mobile chargers is to encourage local shops to set up these units to encourage more people to come to his shop and he could also earn from charging phones as the village has short supply of electricity in the houses.
- Trainings on solar cookers and biogas plants are to encourage communities to replace the traditional chulhas/stoves in their home which give out a lot of emission and cause health problems.
- Trainings on solar mobile charging station has already resulted in a few local fabricators taking up simpler tasks such as solar street lighting in the nearby villages.
- Solar drying in conjunction with the spice grinding and nursery techniques from the previous phase, encourages the community to start their own work and thereby enhance their income by packaging dried local agricultural produce.

06. Words from the beneficiaries

Mohan Singh
Ever since the biogas system has been installed at my house, the women and children are no longer subjected to the smoke caused by burning firewood in the chulha. Our women spend a lot of time gathering firewood for the chulha. That doesn't happen anymore. It is also easy to clean the vessels after cooking using less water since the biogas stove doesn't blacken our vessels.

Raju Singh
The solar mobile charging station has been installed in front of my house near the centre of the village. I take care of it. I wipe the panels every morning. Around 25-30 people get their phones charged every day. Almost all my neighbours use this system to charge their phones as the electricity is free. The light that works during the night is very useful since it illuminates a good portion of the main intersection of the village.

Jitender
I am pursuing a graduate degree form Jaipur and I had learnt how to make the solar cooker at AAROHAN centre. I made one system at my house too with the help of my father. It is very simple to make and is very cheap. It is a slow cooker but it doesn't need any firewood and doesn't produce any smoke. It is very useful in keeping the food warm.

Chintu
I have passed 12th grade living in village Pachala. I have taken training on biogas installation and maintenance. I have helped Advit install biogas in 2 villages. I have learnt this work and I can now earn by installing in other houses.

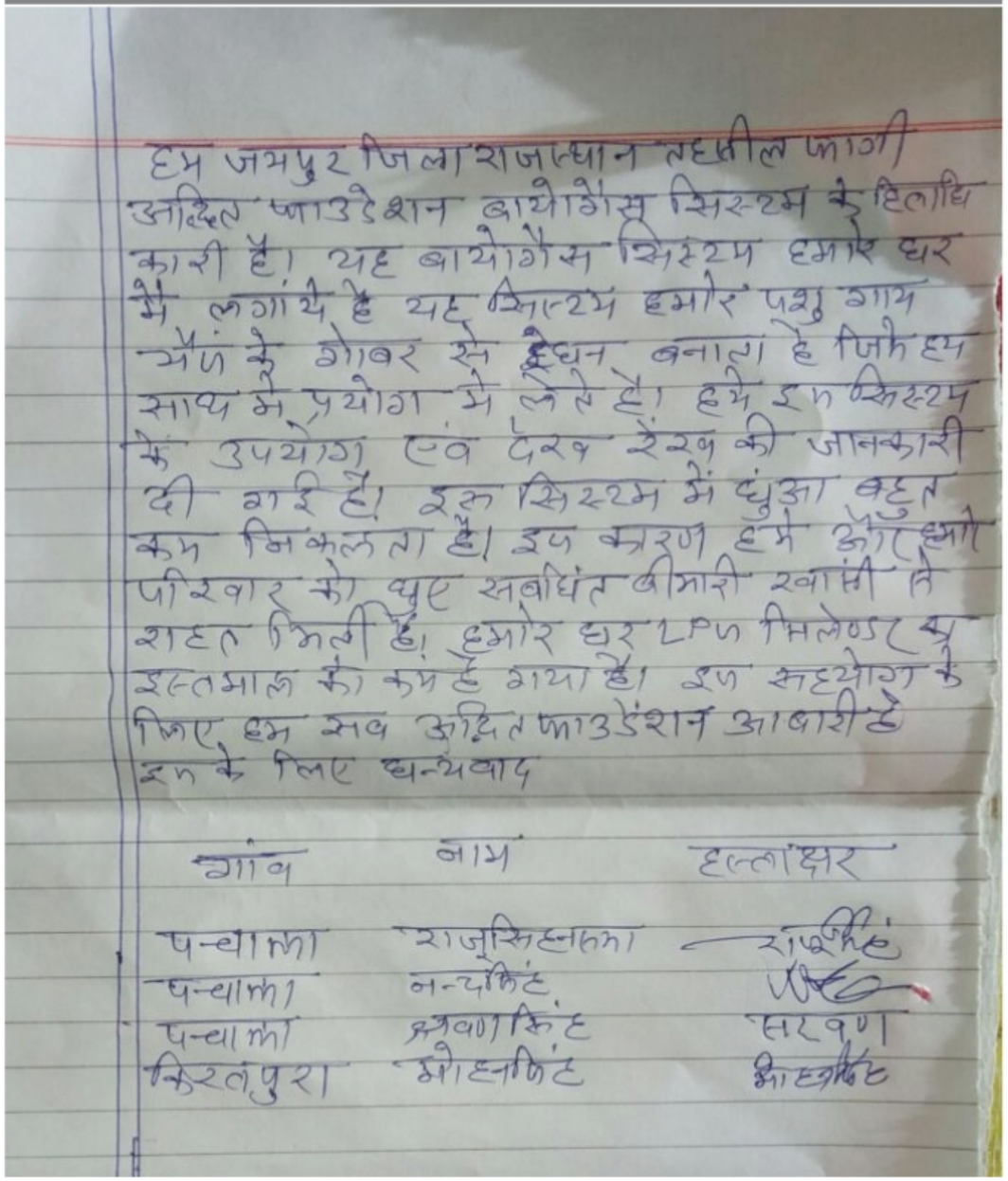
07. Financial report

The project Jal Jeevan-Aarohan Phase II was sanctioned a total grant of Rs. 18,00,000. The grant has been utilized as per the sanctioned amounts under the project.

S.No.	Cost head	Expenses (INR)	Period I 16 May 2017 to 30 Sept. 2017	Period II 1 Oct. 2017 to 1 April 2018
1.	**Infrastructure**			
	Upgradation of the space (for setting up 4 biogas plants at identified sites, land leveling and sloping for 4-6 fixed type solar cookers, cement work and pole set up for installing 1 solar mobile charging unit)	3,00,000	2,00,000	1,00,000
	Maintenance	1,08,000	54,000	54,000
	Water, electricity, security	84,000	42,000	42,000
	SUB TOTAL (A)	**4,92,000**	**2,96,000**	**1,96,000**
2.	**Equipment cost**			
	Solar mobile charger unit in the village (1), Fixed type solar cookers (6 houses/ sites), domestic biogas plants (4 sites)	6,00,000	4,00,000	2,00,000
	Solar dryer	1,50,000	1,50,000	
	Herb packaging unit	50,000	50,000	
	SUB TOTAL (B)	**8,00,000**	**6,00,000**	**2,00,000**
1.	Field staff professionals cost including local travel	84,000	42,000	42,000
2.	Documentation, reporting and display boards	40,000	20,000	20,000
3.	Training and material cost1	80,000		1,80,000
	SUB TOTAL (C)	**3,04,000**	**62,000**	**2,42,000**
	TOTAL (A + B+ C)	**15,96,000**	**9,58,000**	**6,38,000**
1.	Implementation cost (10% of the total including travel)	1,59,600	79,800	79,800
2.	Transportation and tea/snack cost for the communities to bring them to the project site from the adjoining villages to undertake capacity building	50,000	25,000	25,000
	GRAND TOTAL	**18,05,600**	**10,62,800**	**7,42,800**
	REQUESTED AMOUNT	**18,00,000**	**9,00,000 (Disbursed in May 2017)**	**9,00,000 (Disbursed in Oct. 2017)**

Annexure - I

Appreciation letter from beneficiaries



Annexure - II

Advit Foundation – brief profile

Advit Foundation (www.advit.org) is a not for profit development organization, registered in India working for Conservation of Environment Resources and Livelihood Enhancement. Advit has sought to conserve environment and empower communities through viable options of environment conservation and sustainable development.

Advit is the managing partner for the Solar Information Centre at The National Institute of Solar Energy Gwal Pahari under Ministry of New and Renewable Energy, GoI. Advit is a training partner with the Electronics Sector Skills Council of India (ESSCI) for Solar Electronics. Advit runs a solar training centre with HARTRON. Advit was the state nodal partner managing the Rajiv Gandhi Renewable Energy Park in Gurugram for Haryana Government from 2009 - 2015.

With a vision of promoting approaches to sustainable development, Advit's work focuses on improving living/working conditions through improved environment conditions, promoting environment education and conservation practices. This is undertaken using information and communication systems tools and providing environment education and conservation services. Forward linkages are sought through outreach programmes, capacity building and entrepreneurship development.

Advit operates through the following project areas:

AWARENESS

Advit strives to generate awareness on the need to educate, provide a platform for learning to all and impart the importance of conserving environment and conserving resources in our everyday life. Activities focus on all section of the society.

EDUCATION

The vision is to create and nurture a learning culture that believes in and breathes change through education. Advit Foundation's rural training centre, Aarohan, has been set up to mitigate the unemployment and underemployment problems among the rural youth in the country. The trainings and skill up-gradation programmes are geared towards skill upgradation and entrepreneurship development.

Advit designs and implements environmental training programmes pertinent to:

- Holistic village development and skill trainings that help in livelihood enhancement.
- Environment awareness and resource conservation in schools and other educational institutions.
- Facilitating environment compliance in industries - trainings on occupational health and safety, safe chemical handling and disposal, water conservation, energy audits, industry production process efficiency and resource conservation in production processes.
- Information dissemination and implementation of programmes on energy efficiency, solar, biogas and waste management.

CONSERVATION

The programme highlights and suggests alternatives that can help address the challenges of resource conservation. The need for intervention and the alternatives that would improve resource management and development activities are sought. These include implementation of projects in water conservation, waste management and energy efficiency.

- Overall development of the village and people living in the watershed.
- Conservation, regeneration and judicious use of resources – natural and human.

A few glimpses of organisation's work:

- Design and construction of micro watersheds. Have undertaken more than 18 water conservation structures in villages in Phagi, Mandore, Rothwara, Dudu blocks in Rajasthan and Amravati, Maharashtra.
- Undertaking solar electrical training with certification from NSDC and HARTRON. Trained more than 2000 candidates since 2013. Supporting partners have been Ministry of New and Renewable Energy, GoI, RECL, Applied Materials Pvt Ltd.
- B.Voc. Training partner with TISS for undertaking Solar Electrical Training.
- Set up Aarohan – rural self employment training centre, at village Pachala in Phagi, Rajasthan.
- Electrified more than 2500 households in the rural parts of Rajasthan and Haryana using solar home lighting systems.
- Undertaking safe chemical handling trainings for workers of apparel, metal, leather and accessories industries all over India.
- Implemented occupational health and safety trainings for 25 carpet weaving industries in Panipat, Haryana.
- Runs an environment education and school upgradation programme - Prakriti Eco School programme.
- Undertaken solar electrification of forest guard cabins at Pench and Bandhavgarh forest reserves in Madhya Pradesh.
- Distribution of 100 energy efficient cooking stoves in Phagi.
- Facilitated setting up of community toilets in 5 villages in Phagi.
- Facilitated setting up of large scale drinking water systems in Behror.
- Facilitated industries to comply with environment standards and undertake energy efficiency trainings, audits and other resource conservation methods for various industrial processes.
- Implemented roof top rain water harvesting for buildings. Designed and constructed 3 large models for institutions in Gurugram.
- Prepared guide book on energy efficiency and carbon responsibility for apparel industries – Knowledge Book. Supported by GIZ.
- Implemented a Village Development Programme for NABARD at village Meoka, Haryana.

Our programme centres

Energy Centre

- Solar & biogas promotion
- Resource efficiency in industries
- Solar electrical vocational training

Water Centre

- Watershed development
- Sustainable village development
- Skill upgradation & income enhancement
- Roof top water harvesting

Aarohan: Advit's Rural Self Employment Training Centre

- Skill training and entrepreneurship development
- Women empowerment
- Rural tourism

Eco Initiatives

- Environmental education
- Tree plantation and green space development
- Under-privilleged school upgradation
- Community development initiatives in peri-urban areas

Centre for Learning

- Occupational health & safety training
- Safe chemical handling training
- Project baseline and impact assessment studies
- Awareness sessions on workplace harassment

Touching lives

13+ years	2,50,000+ rural lives transformed	25,000+ industrial workers trained	2500+ tribal households electrified on solar	3 lac+ cu. m. water storage capacity created	4 states Haryana Rajasthan Maharashtra Telangana

Awards & Empanelment

- Empaneled with TISS CSR Hub.
- Empaneled with the National CSR Hub of the Indian Institute of Corporate Affairs, MCA.
- Awarded the first CII beyond the Fence Project award for an industry in Rajasthan in 2009.
- Awarded the Impact Award for Skill Development at the Impact Conclave by Sambodhi in partnership with Bill and Melinda Gates Foundation, SIDBI, YES Bank in 2016.
- Managing Partner - Haryana Renewable Energy Development Agency (HAREDA) from 2009-2015.
- Managing Partner - Centre of Excellence on Solar Electronics at National Institute of Solar Energy, MNRE, Govt. of India.
- Training Partner - Electronics Sector Skills Council of India (ESSCI) for Solar Electronics.
- TISS-SVE training-hub partner on solar.