

CLEAN ENERGY TECHNOLOGY BASED SKILL TRAINING & ENTREPRENEURSHIP PROJECT FOR WOMEN DEVELOPMENT

Skill up-gradation and demonstration-based entrepreneurship training on renewable energy and energy efficiency in Chennai, Tamil Nadu



Project Initiation Report, January 2020

Submitted to:
Oil and Natural Gas Corporation CSR
New Delhi

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Sustainability Partner


advit foundation
www.advit.org

Project Implementation at Tamil Nadu Corporation for Development of Women Ltd., Chennai, Tamil Nadu

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Project Site



TAMILNADU CORPORATION FOR DEVELOPMENT OF WOMEN LTD.,

(A GOVERNMENT OF TAMILNADU UNDERTAKING)

Annai Teresa Mahalir Valagam, 1st Floor, Valluvarkottam High Road,
Nungambakkam, Chennai - 600 034.

22.8.2019.

TO WHOM IT MAY CONCERN

In reference to the follow-up visit of ONGC official, we are ready to install the grid-independent cold storage for horticulture produce and 24x7 constant temperature dryer for drying fruits, spices and vegetables in TNCDW head office Chennai of Tamil Nadu in the support of Advit Foundation.

These equipment's are based on innovative thermal energy storage technologies with minimal maintenance. The installation of cold storage will be done on ground and dryer at the rooftop of the main building within the office campus.

We are ready to extend all help to Advit Foundation for installation and subsequent maintenance of these systems.

Thank you.

Addl. Chief Executive Officer (LP) TNSRLM

Tamil Nadu Corporation Development of Women

Tamilnadu Corporation For
Development of Women Ltd.
Nungambakkam, Chennai-600 034.

Phone : 91-44-2817 3412 / 13 / 14 Fax : 91-44-2817 3409
E-mail : tncdwho@yahoo.co.in Web : <http://www.tamilnaduwomen.org>

1. BACKGROUND

The program is a strategic intervention to address some of the key issues in India's development plans which stresses upon promotion of renewable energy and development of associated service delivery mechanisms in the country.

This programme highlights a few development ways for encouraging entrepreneurship with specific focus on women and youth. It would provide adequate training programs, vocational training and establish special target groups for women entrepreneurs. Women entrepreneurs contribute in growth of a country by two ways. Firstly, they contribute in economic growth like capital formation, improvement in per capita income, generation of employment. Secondly, they also play a major role in social contribution like balanced regional growth, improvement in living standard.

In this initiative Food drying technology has been set up to increase revenue from farm produce, thereby also reducing harvest loss. In a country like India where poverty, lack of nutrients in a lean season, post-harvest losses, and gender inequality still prevails in the agricultural sector, it is important to address the issues with a promising approach and technology. Hence, there is a requirement of electricity-free technology that can easily convert food surplus into processed food creating an economically aligned community.

The project is located at the Tamil Nadu Corporation for Development of Women office which is under the Tamil Nadu State Rural Livelihood Mission (TNSRLM) located in Chennai. The installations have been made on their green terrace that is like an incubation centre in the building.

2. PROJECT UPDATE

The program offers a demonstration setup and training for 100 women community members on Energy efficient systems that are thermal energy storage based 24*7 dryer and cold storage room. This project emphasizes on entrepreneurship development among women with trainings on new energy efficient technology.

State of Tamil Nadu has a high relevance for this project as the education level is high with a significant agrarian population and high number of SHGs among community.

The equipment has been installed at the Tamil Nadu Corporation for Development of Women (A government of Tamil nadu Undertaking) under the guidance of the Addl. Chief Executive Officer (LP) TNSRLM. The project involves demonstration set up and entrepreneurship-oriented training of 100 women community members on the solar energy technologies for food processing which are such as thermal energy storage (PCM) based 24*7 Aagun dryer and cold room system.

The following equipment have been installed and training will be imparted on the same:

1. Integration, Setup and usage of 24*7 Aagun dryer
2. Setup and usage of grid independent cold storage system

Glimpses of cold room during installation:





Glimpses of Aagun dryer during installation:





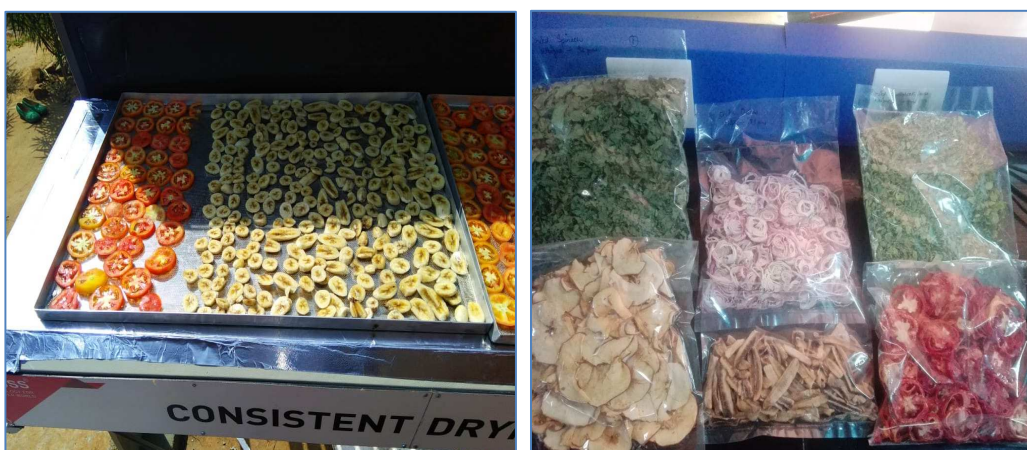
3. PROJECT IMPACT

A total of 73 women SHGs have been trained (Annexure II) on use and maintenance of 24x7 Aagun dryer and the Cold room. Value Chains of different products that could be dried and have high market value were set up like apple, banana, basil, moringa. Sessions on packaging were undertaken. All class room sessions were followed by hands-on sessions.

The sessions were very interactive. Feedback was also taken from all the participants. There was active involvement of the staff from the State Rural Livelihood Mission. They proposed to take forward the training to the district level too.



Each participant was also given a certificate for having undergone the training at the State Livelihood Mission.



Drying in progress; Cut dried Apple, Banana, tomato etc. packaged

Risks and risk management

Risk Type	Risk	Risk Management
System design	Solar collector breakdown	In built electric heaters will be used for drying
Material properties	Inconsistent temperature control	TES system will be a modular design. Panels can be replaced
Hygienic setup	Dust and mold growth	Vents and fans will be installed for post drying cleanup
Climate change	Low GHI during cloudy and foggy days	In built electric heaters will be used for drying
Material Disposal	Waste generated every 5 years	Biodegradable material will be used

Glimpses of training in progress:









4. PROJECT INNOVATION & SUSTAINABILITY

To ensure sustainability, the project has been implemented in partnership with the State Rural Livelihood Mission (TNSRLM), A Government of India Undertaking. The project is housed in their office building where trainings for Self Help Groups (SHGs) are regularly undertaken. This project will serve for demonstration and training for the Mission and they will be able to reach out to many more SHGs even at the district level to undertake the trainings. The project has been handed over to TNSRLM, Chennai.

This is an innovative technology that can be looked at as a backyard business model in households.

Technical benefits

- The novel part of the solution is the solar energy powered 24 hours continuous operation with use of PCM (Phase Change Material).
- The hybrid PCM solution eliminates the crop wastage possibilities because of weather uncertainties after heater integration with the system.

Environmental Benefits

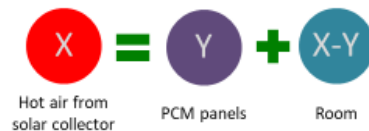
- Reduced GHG emissions owing to use of clean energy.
- Large tracts of lands, otherwise used for growing firewood can be saved. This corresponds to **0.2 hectares of forest** land being saved/year per system.

Social Benefits

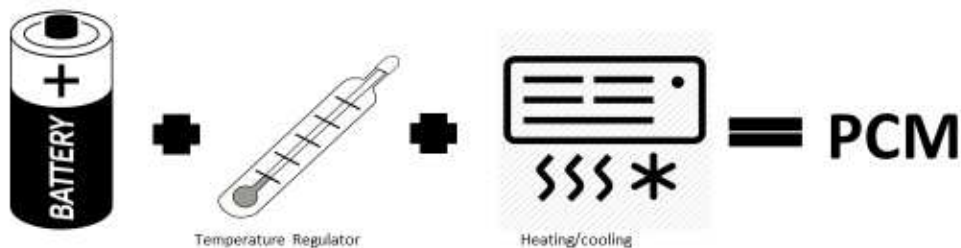
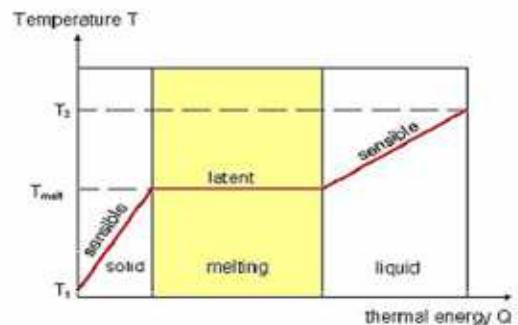
- Ensures better cleaner workspace. No open drying. The product retains its fresh look and nutrition as it dries in controlled condition for 24 hrs.
- Doubling Farmers Income
- Employment opportunity for trained individuals
- Entrepreneurship opportunities

Description of solution

- Phase change material(PCM) integrated hybrid drying system will provide the constant temperature range of 40-55°C for 24x7 consistently with lesser electricity consumption.
- The proposed solution will provide the bulk drying in range of 1-1.5 tons of food product.
- The hybrid system is powered by solar energy and electrical heaters combined.
- ETC collector will charge the PCM contained inside the heat exchanger with air as heat transfer fluid. Remaining energy in air will be released to the room.



- PCMs are chemical in the form of solid or liquid can store large amount of heat energy in the form of latent heat.
- Phase change materials release/absorb heat at constant temperature.
- Heat absorption / release process is repeatable over a substantial number of cycles (~3000 or more).
- Green technology – environment friendly



List of Women SHGs Participants

SOLAR DRYER TRAINING

21/01/2020

S.No	Name	Father's name	Organisation/SHG	Contact details	Signature
1	P. Maheswari	Trusan	Elumalai	9176071613	P. Mah
2	S. VARITHA	A. Muthugan	Raja	6382431220	S. Varitha
3	C. Vijaya Lakshmi	nardarajan	Fl. nardarajan	9791518780	C. Vijaya Lakshmi
4	S. KASI	Sabapathi	Sakthi Vinayaga		S. Kasi
5	M. Vijaya	K. Natarajan	SRBH	9855978509	M. Vijaya
6			Bhavelthi SHG	9445155127	
7	R. Neela	N. Govindasamy	Sabamathi SHG	9150154539	R. Neela
8	S. Santhi Kumari	J. M. Muthugan	Indira Gandhi	9884392439	S. Santhi Kumari
9	V. SATHYANARAYAN	S. S.	ML	8939719965	V. Sathy
10	K. S. S.	R. S. S.	Manaremyida	9884392439	K. S. S.
11	C. Ramesh	R. Chandran	MKS. Y. P.	8838057154	C. Ramesh
12	S. GOMATHI	V. Subbiah	Barathi magaliam	9884054940	S. GOMATHI
13	R. VADIVU	R. varatharajan	"	9962901219	R. Vadivu
14	P. V. MERRY	Parthiban	"	9176565811	P. V. Merry
15	R. LINDA	C. BOOPATHY	Vettai magaliam	8939203563	R. Linda
16	M. Thiruvengadam	S. Subramaniam	Koma Vajala	9884434090	M. Thiruvengadam
17	S. Padmavathi	N. Viswanathan	Om Shakthi magaliam	7338786957	S. Padmavathi
18	A. DEEPA	T. ANAND	SSRSHG	7598679119	A. Deepa
19	V. Samadham	V. S. S.	SRSHG	9976454240	V. Samadham
20	S. SHANMUGA	A. SURESH	Varalakshmi SHG	9787979461	S. Shanmuga
21	M. VASUMATHI	M. Gendran	Cheliamman SHG	782602901	M. Vasumathi
22	ANGU	Saleman	Akaliya SHG		ANGU
23	R. DEVI	Raja	Raja SHG	9788280163	R. Devi
24	J. FAMIYHA	J. S. S.		7973507075	J. Famiyha
25	M. Vasanthi	M. S. S.	Meenag-SHG	8754262567	M. Vasanthi
26	V. Subashini	G. Mohan	Avanar SHG	7867966710	V. Subashini
27	G. S. S.	S. S. S.	10th Street SHG	9500934621	G. S. S.
28	S. S. S.	D. S. S.	SRBH	9150389760	S. S. S.
29	V. S. S.	T. S. S.	10th Street SHG	9841800441	V. S. S.
30	G. S. S.	S. S. S.	SRBH	8870424257	G. S. S.

CLEAN ENERGY TECHNOLOGY SKILL TRAINING FOR WOMEN

22/01/2020

S.No	Name	Father's name	Organisation/SHG	Contact details	Signature
1	S. MYTHILI	NARAYANASWAMI	Zhagaram SHG	9445674078	S. Mythili
2	P. Nirmala Mary	Arumugam. M.	Abdullahala SHG	9845055122	P. Nirmala Mary
3	B. SHAKTHI	P. SOKKI	Mallikar SHG	9940618961	B. Shanthi
4	S. RATHIKA	K. Kasi	Mallikar SHG	9499919802	S. Rathika
5	E. TAMILSELVI	Porlva Swamy	2/0 Teyyampet	7010218093	E. T. Selvi
6	M. REVATHY	P. Pashalingam	Sangamam SHG	9442425879	M. Revathy
7	S. Thiruseli	K. Laxmanan	Pensingam	9600114600	S. Thiruseli
8	T. Dhanalakshmi	M. Singaram	16/12/2002 SHG	9962329129	T. Dhanalakshmi
9	S. Shamsath Begum	A. Salaudain	Parmugam SHG	8248311320	S. Shamsath Begum
10	P. Farzana Begum	Rizwanullah	poonjalai SHG	9677290287	P. Farzana Begum
11	S. Geetha	P. Puniyakoid	ADITHIDHAM	4551780714	S. Geetha
12	S. Kalavari	R. Palani	vermalayee (C.P)	9840858586	S. Kalavari
13	K. Poornima	N. Kalunamathi	Indumathi SHG	9551076306	K. Poornima
14	P. Saranya	Chathirasekaran	Indumathi SHG	9677238325	P. Saranya
15	P. Thamarai	SELVAM	Indumathi SHG	9551888351	P. Thamarai
16	B. Uma	Baleswaman	Pasuman Sabai SHG	9840999632	B. Uma
17	K. Poornima	M. Babu	Dhanalakshmi SHG	9962840304	K. Poornima
18	C. Kalavari	Karagandhan	Vethai Veluvasar SHG	9943797121	C. Kalavari
19	S. Kala	Selvaraj	(Co) Kurinjimalai SHG	6369174183	S. Kala
20	D. Saraswati	Baatharachalan	SHG Azhikalakshmi	996249407	D. Saraswati
21	C. Santanam	Siddhugasuppi	Jayam SHG	9840872529	C. Santanam
22	V. Mythili Mary	Velu Samy	Rajumani SHG	7358664148	V. Mythili Mary
23	Swathi Devi	P. Ravi Kumar	Jayam SHG	9003218287	Swathi Devi
24	M. Senthil Kumari Selvi	Pushpanathan	Azhikalakshmi SHG	9003537991	M. Senthil Kumari Selvi
25	P. Amala	Sampathkumar	Azhikalakshmi SHG	7010953903	P. Amala
26	R. Annesa Begum	Pannugam Rizwan	Parmugam	9677290287	R. Annesa Begum
27	V. Sumathi	Ramaathan	women's SHG	9384629339	V. Sumathi
28	M. Logambal	M. Gopalakrishnan	Sri Balaji SHG	8939229546	M. Logambal
29	P. Rajamani	A. Thendavarayan	SSS Madhav SHG	9840491369	P. Rajamani
30	P.S. Rajalakshmi	R. Srinivasan	Durai SHG	9444534375	P.S. Rajalakshmi

- 31. A. Amitha, Aliaipan, Indumathi (C.O), 9110115703, A. Amitha
- 32. R. Vijayalakshmi, Parthasarani, " " " 984173323F, R. Vijayalakshmi
- 33. R. Egaravalli, J. Kasinathan, " " " 9710113670, R. Egaravalli

- 34. S. SABARISHA, MOHAMED RAZOO, VETTAI MALARGAL, 9894786454, S. Sabarish
- 35. G. Jayanthi C, Durai Raj, Raja poornima SHG, 984096878, G. Jayanthi
- 36. R. Jayalakshmi, Vengadesani, Natchargal, 8124301747, R. Jayalakshmi
- 37. R. Annesa Begum, Ramu, Natchargal, 8939689211, Annesa Begum
- 38. R. Geetha Lakshmi, Krishnan, " " " 6369466160, R. Geetha Lakshmi
- 39. T. SOMA LATHA, Ponnappan, Kurinji SHG, 8124606153, T. Soma Latha
- 40. J. Shanthi, M. Jayaraman, (C.O), 8778096118, J. Shanthi
- 41. I. Kannaki, P. Durai Raj, Div-9 Zone-1 CRP, 9384652791, I. Kannaki
- 42. F. Janani Priya, G. Ezhumalai, Zone-1 CRP, 9840696757, F. Janani Priya
- 43. S. Ezhumalai, M. Senthil Kumar, Zone-6 Div 77, 97890257738, S. Ezhumalai
- 44. D. Hemavathi, A. Devendran, 9940039601, D. Hemavathi



Participant Group 1



Participant Group 2

ADVIT FOUNDATION – Brief Profile

Advit Foundation (www.advit.org) is a not for profit development organization, working on Conservation of Environment Resources and Livelihood Enhancement. Advit has sought to conserve environment and empower communities on how one can manage behaviour and ecosystems to live sustainably.

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, Gol. Is a training partner with the Skill Council for Green Jobs and NSDC, Gol for Solar Electronics and runs a solar training centre with HARTRON. Advit was the state nodal partner managing the Rajiv Gandhi Renewable Energy Park in Gurgaon for Haryana Government from 2009 - 2015. With a vision of promoting approaches to sustainability, Advit's work focuses on water conservation, renewable energy promotion, skill upgradation, and entrepreneurial trainings. This is achieved using study of traditional practices, identification of new technology and improved communication tools to undertake environment education and conservation initiatives. The programmes are made replicable through outreach programmes and information sharing.

Advit operates through the following programme areas.

CONSERVATION

The water conservation initiative ensures water availability for drinking, sanitation, agriculture and livestock. As the water scenario improves in the region, the scope and the need for other development activities emerge. The success indicators measured are developed degraded lands, overall socio-economic development of the poor, mitigating drought conditions, employment generation and poverty alleviation.

ENVIRONMENT

The programme is a strategic intervention to address some of the key issues in India's renewable energy development plans which stress upon promotion of the use of renewable energy/ clean energy and development of associated service delivery mechanisms in the country. The program will enable a strong, diverse, and well trained *solar* workforce. This program ensures that solar instructors are well connected to solar employers, and vocational and engineering students are trained to help increase solar adoption and improve solar installation.

LIVELIHOOD

New skills are introduced and existing ones are upgraded among the community. Advit team closely works on skill upgradation for climate change adaptation with communities as well as farm-based livelihood organisations. In a country like India where poverty, lack of nutrients, post-harvest losses, and gender inequality still prevails in the agricultural

sector, it is important to address the issues with a promising approach and technology to create an economically aligned community.

EMPOWERMENT

The initiative undertakes Environment Awareness, Action and Occupational safety programmes among school children, community members and industrial shop floor workers. The efforts are to enhance knowledge on how natural environments function, and particularly, how human beings can manage behavior and ecosystems to live sustainably. The programme also designs and undertakes planning and impact assessment of development projects.

A FEW GLIMPSES OF ORGANIZATION'S WORK

- Design and construction of micro watersheds/ water conservation models. Have undertaken more than 18 water conservation structures in more than 25 villages in Phagi, Mandore, Rothwara, Dudu blocks in Rajasthan and Amravati (Maharashtra), Medak (Telengana), Kolar (Karnataka).
- Undertaking Solar Electrical Training with certification from NSDC and Green Council for Skill Jobs. Trained more than 2000 candidates since 2013.
- 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.
- Designed and implemented water neutrality of Collectorate office in Alwar
- Undertaking Holistic village development in Phagi
- 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
- Undertook revival of handloom clusters in Kerala post Floods in 2018
- Distribution of 100 energy efficient cooking stoves in Phagi, Rajasthan
- Facilitated set up of community toilets in 5 villages in Phagi, Rajasthan
- Facilitated set up of largescale drinking water system in Behror. Haryana
- Facilitate industries to comply with environment standards - 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 Gurgaon.
- 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.
- Undertaking training for SHGs under Rural Livelihood Mission for food processing through drying

AWARDS

- Advit Foundation is empaneled with TISS CSR Hub
- Advit Foundation is empaneled with NGO darpan and the National CSR Hub of the Indian Institute of Corporate Affairs, MCA.
- Empaneled with Skill Council for Green Jobs
- 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 – Green Skill Sector Council and NSDC, Gol for Solar Electronics.
- Training Partner - HARTRON (Haryana State Electronics Development Corporation Ltd.) for Solar.
- Training Partner – TISS Mumbai B.Voc on Solar Electrical

