



Impact Report of **Training on** **BASIC SOLAR PUMP** **OPERATION & MAINTENANCE**

ODISHA

Prepared By **SWITCHON FOUNDATION**
(ENVIRONMENT CONSERVATION SOCIETY)





CELEBRATING
15
years

हदिरा गांधी क
कषि विज्ञान
आपका हार्दिक



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EXECUTIVE SUMMARY

Usage of solar energy is very important to achieve clean energy in the future. Everyday the sun gives enough energy to power everything we need on this planet. Solar can be considered the way of the future due to its versatility. This means that wherever people choose to live their lives, solar energy will always be there to help. For example, for those who are living in a place with no form of electricity, such as in rural communities, using solar panels can bring renewable energy to them without hassle. Both the Central Government as well as State Nodal Agencies (SNAs) offer multiple subsidy schemes to the people for installing rooftop PV systems. The customer can also sell the excess solar power back to the grid, for which the customer would get a predetermined fare as decided by the local DISCOM. Subsidies and other schemes offered by the government enable us to exploit renewable energy. Though the upfront cost of installation of a rooftop solar system is high, it is inexpensive in the long run. There are loans available at lower interest rates that overcome the problem of high upfront payment associated with solar projects.

Recently SwitchON Foundation launched its flagship programme known as 'Urjmitra Training Programme.' The Urja Mitra Programme has taken on the task to add more skilled workers to the **Nation's labour force under GOI flagship of Skilling India Mission Programme.** Under the programme, SwitchON Foundation has developed special employment linked short term and long term tailor made courses and modules, much suited to meet the needs of the current generation. Solar machines are here to stay and thus it will be very useful for the farmers if they gain the basic knowledge on operation and maintenance of the solar pumps. The training also aims to develop the skills of youth, considering the opportunities for employment in the growing Solar Energy Power Project installation, operation & maintenance in India and abroad. The course is designed to prepare the candidates to become new entrepreneurs in the Solar Energy sector. This report is constructed to highlight our skill training programmes and major achievements made in Odisha with some glimpse from the ground as well as classrooms.

TITLE OF THE TRAINING

Basic training on maintenance and operation of solar pumps

TRAINING FACILITATED BY

Environment Conservation Society (SwitchON Foundation)

TRAINING PLACE

Balangir, Angul, Sonepur, Dhenkanal & Kalahandi districts of Odisha

PERIOD OF TRAINING

01 day of training

TOTAL NUMBER OF PARTICIPANTS

478

OBJECTIVE

- To train the farmers on basic operation and maintenance of solar pumps
- To train unskilled youth on Grid based solar power plant operation and maintenance.
- To improve employability of students undergoing training on solar engineering by imparting hands-on practical training on upcoming technologies like grid based solar power plants & offgrid solar appliances.



BACKGROUND

The Indian government launched its mega solar pump scheme PM Kusum Yojana, also popularly known as PM Kusum, in 2019. The scheme aims to improve farmers' income by installing grid-connected solar pumps up to 2 MW and transform existing diesel pumps into solar. While the larger goal was to develop decentralized solar energy systems, it also focuses on reducing power transmission and distribution losses. As of 2021, a total of 24,688 stand-alone solar pumps were running in India. The core objective of renewable energy deployment in India is to promote economic growth, enhance energy security, increase energy access, and reduce climate change. Sustainable development is possible by the use of clean energy and by ensuring access to affordable and reliable energy for every citizen. In Solar energy, the most abundant natural resource, is easily capable of providing many times the total current energy demand. India is endowed with vast solar energy potential of about-of about - 5,000 trillion kWh per year, with most parts receiving 3-5 kWh per sq.m per day. Solar power is the conversion of sunlight into electricity. Two main commercial ways of conversion of sunlight into electricity are **Photovoltaic Plants (PV)** and Concentrating **Solar Power system (CSP)**. The **Ministry of New Renewable Energy**, Government of India has taken an **initiative to install 100 GW solar projects by 2022** in coordination with State Nodal Agencies.

The largest focus on power generation for the next 4-5 years is on solar PV generation systems. To match the ambitious target, a **large workforce of skilled and trained manpower** is needed to achieve that target and sustain the pace of development Under the skill development initiatives of the MNRE, NISE is mandated as the nodal agency for implementation of Suryamitra Skill Development Programme. Six years since the inception of this training programme, it has trained 78,000 people across the country to install solar panels, connect them to grids and maintain batteries. However, there are gaps in the capacity and quality of training infrastructure as well as outputs, insufficient focus on workforce aspirations, lack of certification and common standards and a pointed lack of focus on the unorganized sector. In order to achieve this mission more than 50,000 skilled manpower are required for installation, commissioning, operation and maintenance in the field of solar technology.

INTRODUCTION

Youth contributes to around **35% of Gross National Income (GNI)**. This can be further improved by adding more skilled workers to the labor force. The best way to do so is employment linked to free short term custom programs, Recognition of prior learning workshops and residential programs which are all part of Skilling India Mission and programmes run under them. **SwitchON foundation** is dedicated to promote Skill development leading to gainful employment and sustainable livelihood. We have a Mission to Skill **1 lakh youths in the next 5 years**. **SwitchON Foundation** shall be actively participating in Central Government, State government run skill training programs as well as CSR programs on Education and **Skill development**. We as an organization are also connecting up with Vocational Schools, ITI colleges and Universities to deliver the best of skill development programs to the most diversified youth groups across geographies.

ABOUT URJAMITRA TRAINING PROGRAMME

Our newly launched training programme is Urjamitra Training Programme aims to make the farmers aware about green energy particularly solar energy and why it is important to shift to green energy in coming days. They are also taught basic operation and maintenance of solar pumps. The training also aims to develop the skills of youth, considering the opportunities for employment in the growing solar energy sector such as: installation, operation & maintenance in India and abroad. The Training Programs are further bifurcated in the following six subthemes – solar farmers workshop, solar youth workshop, solar introductory training, solar advance training, solar entrepreneurship training and solar financing training.

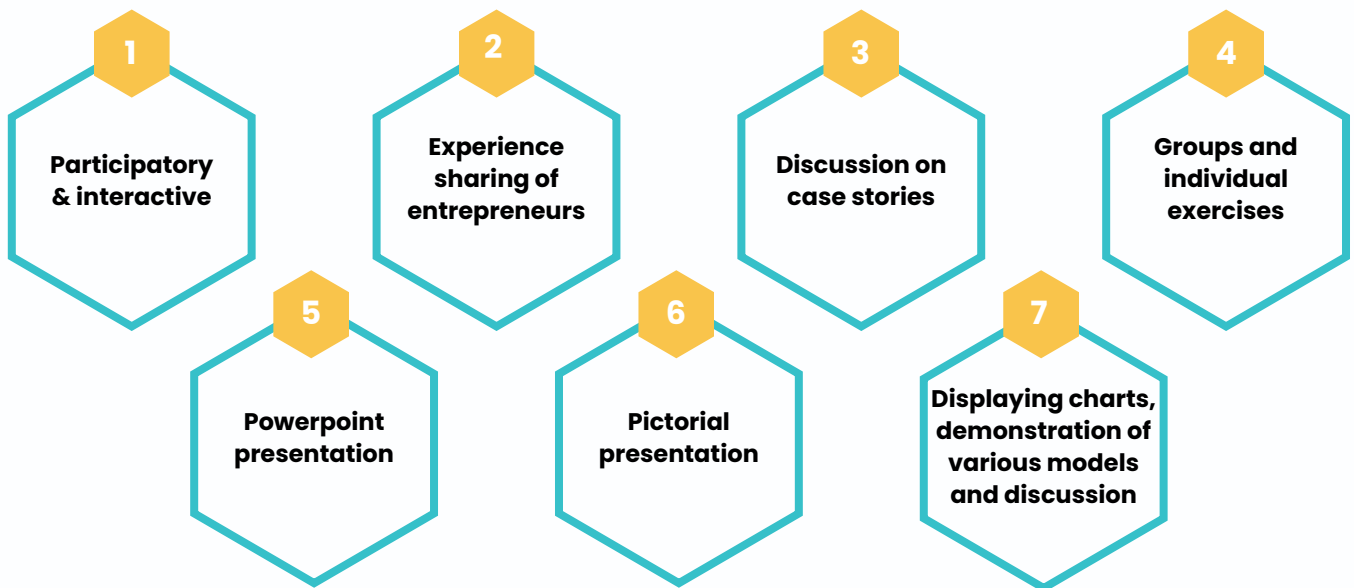
WHY IS THIS TRAINING IMPORTANT?

- In recent years, the application of solar energy is consistently increasing as an ideal renewable and green source of energy. It has become the need of the hour due to diminishing availability of expensive fossil fuels and environmental problems.
- Solar powered pumping systems are an affordable alternative to replace conventional diesel or electric pump sets. The solar water pump is reliable and environmentally sustainable.
- MNRE (Ministry of New & Renewable Energy) under PM KUSUM Project decided to meet the target of 1.75 million solar pumps along with 1 million solar systems for 1 million grid connected pumps.
- The indigenous nature of clean sources gives local economies an advantage and brings meaning to the term “energy independence”. Dependence on fossil fuel imports results in subordination to the economic and political short-term goals of the supplier country, which can compromise the security of energy supply.

METHODOLOGY



METHODOLOGIES ADOPTED IN TRAINING SESSION



TRAINING FACILITATORS

Qualified and experienced staff of Environment Conservation Society (SwitchON), successful entrepreneur & practical experienced staff on Solar appliances implemented by SwitchON.

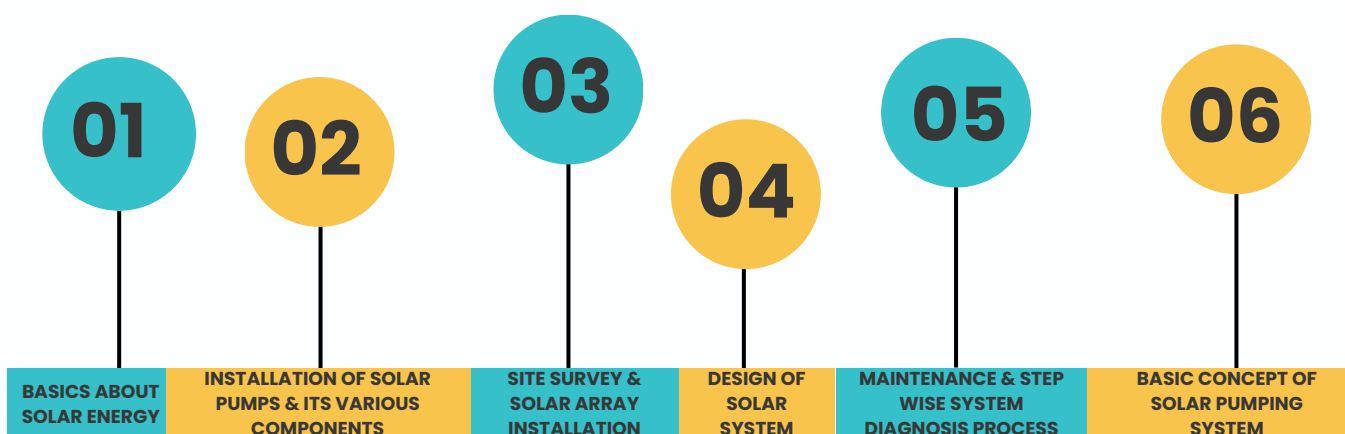
TRAINING PARTNERS

Seba Jagat, Sanjoga

TRAINING MATERIALS

A complete color printed book in local languages with all description of contents provided to each participant, models and other reading materials also be provided to participants.

Key Points covered in the Training Session





DETAILS OF THE TRAINING

Urjmitra Training Programme aims to make the farmers aware about green energy particularly solar energy and why it is important to shift to green energy in coming days. They are also taught basic operation and maintenance of solar pumps. The training also aims to develop the skills of youth, considering the opportunities for employment in the growing solar energy sector such as: installation, operation & maintenance in India and abroad. The training will help the participants to become aware about environment and climate change and why it is important to shift to clean energy access. The solar energy utilization is here to stay for a long time now. Hence, there will be loads of opportunities for a trained person to find jobs. He can join a concern that works in this sector and once equipped with the technology, he can also become an independent installer opening up huge earning potential for himself. The training was held in **Angul, Balangir, Kalahandi, Dhenkanal and Bhubanehwar of Odisha**. The government had helped us to mobilize farmers from that area to attend the training programme. There were a total of 478 participants including all 4 sessions. The trainer had sound technical knowledge and he tried to impart his knowledge to the students. The participants were given training manuals in their vernacular language where everything taught in the session was written in brief.

The participants got to know about all the basics of solar energy, basic concept of solar pumping system, Site survey & solar array installation, Design of solar system, Installation of Solar pumps and its various components, maintenance of the pumps, and lastly if any problem occurs in the pump they were also trained stepwise diagnosis report. The trainers also conducted pre-assessment tests and post-assessment tests to get some idea how much they learned from the training session. After every learning session there was a role play activity organized where the participants had to showcase what they learned, thus providing them first hand experience in operating solar machines. Those who had still not installed solar pumps were told about the subsidy scheme the government is offering to install solar pumps. During the training programme, participants were also made aware about various governmental schemes like PM-KUSUM, Jawaharlal Nehru National Solar Mission and , Suryamitra Programme etc.



OVERALL IMPACT OF THE TRAINING

AWARENESS

After participating in the training, farmers get a clear idea about climate change and clean energy. They understand why it is important to use solar energy in their daily lives instead of diesel machines.

BASIC KNOWLEDGE ON OPERATION & MAINTENANCE

The farmers through this training learnt the basic working of solar pumps, how to use and maintain them.

GENERAL TROUBLESHOOTING

After the training farmers have learnt to troubleshoot their solar pumps if any problem arises. Now they don't have to look for technicians if any minor problem occurs in their machines.

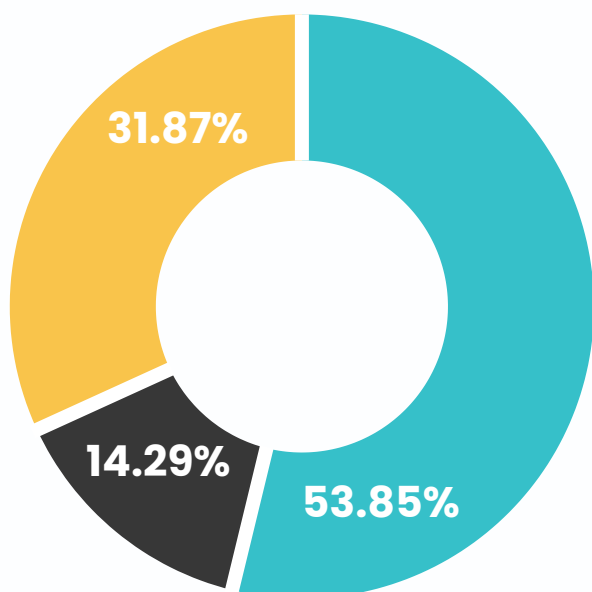
USAGE OF THE AGRO-VOLT AREA

There is some space under the solar panel which is called Agro-volt area, and they can use that space for farming.

SCHEME LINKAGES

Once they get the basic training of solar pumps they become eligible for various government schemes like FSSM & PM Kusum.

FEEDBACK ASSESSMENT



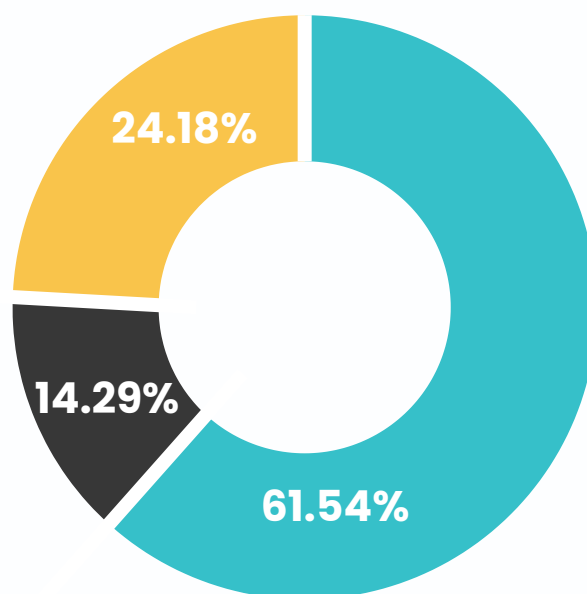
Did you like the Trainer?

From the feedback assessment we come to see that most of the trainers 53% of the students liked the trainer and his training skills

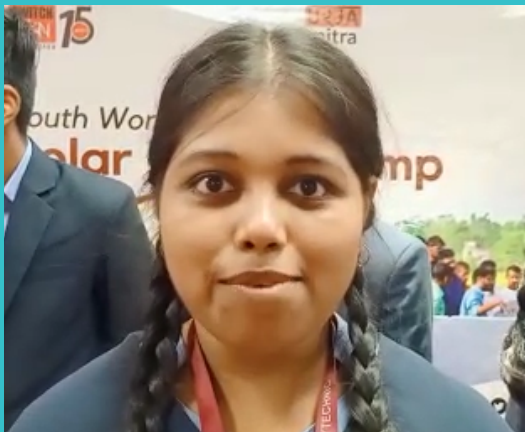


Is this training useful for enhancing your present / future knowledge and skills?

Majority of the students 81% found the training useful for enhancing their knowledge and skills



STORIES OF VOCATIONAL CLASSES & STUDENTS



PAYEL GAYER (Neelachal Polytechnic College)

I am a second year student and I am glad to be a part of this training. We learnt how by using solar pumps we can shift to clean energy. Using and maintaining this machine is quite simple and anyone can use it with ease. Thanks SwitchON for organizing this workshop.



JITENDRA MAHANANDI (Panchayat Samitee Degree College)

My family background is related to farming and I know the importance of irrigation. Solar pump is used for irrigation and it is much better than the conventional diesel pumps as solar pumps are cost effective and last long.

WAY FORWARD

India's shift to a green economy could add 3 million jobs in the renewable energy sector alone by 2030, estimated the **International Labor Organization**. Green jobs are in the spotlight. Green jobs contribute towards the environment, in traditional sectors such as manufacturing and construction, or in emerging green sectors like renewable energy. As more sectors are transitioning to low-carbon models, every job can be green. As there is still a void in the experienced technicians of solar panels and appliances, this kind of training will be very useful for the rural youths who are looking out for jobs. In the coming days **SwitchON Foundation** is planning to conduct these training workshops in Odisha at a large scale with improved learning material and modern teaching techniques.



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SwitchON Foundation, established in 2008, is a leading non-profit organisation focusing on Environment Sustainability and Equal Opportunities. Operating in 10 Indian states. It leads initiatives in Clean Energy Access, Sustainable Agriculture, Skilling, Clean Air and Sustainable Cities. Key strengths encompass innovative project implementation, capacity building, field support, awareness and advocacy.

