Jal Urja Mitra Skill Development Programme

Ministry of New and Renewable Energy
Government of India

Sponsored by:

Ministry of New and Renewable Energy (MNRE)
Government of India

Coordinated by:

Department of Hydro and Renewable Energy
Indian Institute of Technology Roorkee, Roorkee

Jal Urja Mitra programme
Introduction

Small-scale hydropower is a proven and reliable option for rural electrification. It is a complete make in India atam-nirbhar and has long life (50-80 years is quite common) renewable technology. Small Hydro Power is the technology where 30 to 40% of project cost goes into the local economy, thus benefiting not only the locals but also the whole chain of the activities and helps in arresting migration from remote hilly areas. In India the potential of small hydro power projects (< 25 MW) is estimated at about 21,000 MW.

There are several initial activities required for hydropower development which not undertaken timely and correctly and delay the implementation of the project. These activities are preliminary surveys like discharge measurements, power assessments, geological investigations and power evacuation investigations etc.

One of the main challenges of the small hydro (SHP) is the deployment of manpower. A small hydro project requires full time deployment of the team for a span of close to 1-4 years for execution and thereafter 40 years for operation and maintenance. The Engineering, Procurement and Commissioning phase of a small hydro project takes place for a period of two or more years which includes planning, clearances, designing, erection and commissioning. The operation phase takes place throughout the year and is a very specialised job.

There is an urge to create skilled manpower in the field of small hydro power particularly in view of high demand of trained persons to operate and maintain the SHP system in remote and hilly areas having relatively lesser infrastructure and development.

In order to create skilled manpower in the sector, the required skill and training needs to be provided to the local unemployed ITI trained or 12th science passed youths to generate employment in the area of operation and maintenance.

Jal Urja Mitra Skill Development

Jal Urja Mitra Skill Development Programme for Small Hydro Power Projects sponsored by Ministry of New and Renewable Energy, Government of India is offered to develop 1,680 Jal Urja Mitras by FY 2025-26 for the country. The programme is coordinated by Department of Hydro and Renewable Energy (HRED) (formerly AHEC), IIT Roorkee, established in the year 1982 and is a SCGJ centre of excellence of skilling in small hydropower domain. The programme shall follow the Ministry of Skill Development & Entrepreneurship norms with additional support of strengthening the training institutions in remote areas.

Objectives

The Jal Urja Mitra Skill Development Programme is designed with the objective to develop skilled and employable workforce (Jal Urja Mitras) catering to the needs of Small hydro projects as below:

- The Jal Urja Mitras should be able to perform the jobs related to Operation and Maintenance of a Small hydro project of all types (run of river, canal fall based and dam toe).
- The Jal Urja Mitras should be capable to take positions as SHP Technicians as well as other supervisory and managerial posts at later stage.
- Jal Urja Mitras should also be capable of taking assignments as entrepreneurs for self-employment with small units.

Brief Job Description of the Jal Urja Mitra

Small Hydro Technician (Jal Urja Mitra) is specialized to operate, test and maintain different electrical, mechanical and civil components of Small Hydro Power plants of all types to meet the performance and reliability needs by incorporating quality workmanship and complying with all applicable codes, standards and safety requirements.

Personal Attributes of the Jal Urja Mitra

This job requires the individual to concentrate on the job and complete it without any accidents. Diligence, careful and hardworking is desired attributes for individuals performing this role. They must also demonstrate strong work ethics, ability to communicate courteously with co-workers and must be good with following instructions of the supervisor.

Duration of the programme:

The duration of the Jal Urja Mitra Skill Development Programme is three months consisting of 600 hours/90 days including classroom training, lab practical, SHP plant exposure, On the Job Training (OJT), soft skills and entrepreneurship skills.

Selection of participants

The essential and preferable qualifications is prescribed as following:

- **Essential Qualification**: Class 12th with science with 1 year relevant work experience or ITI after Class 10th (in Electrical/ Mechanical/ Civil/ Instrumentation and related trades) with 1 year of relevant work experience or Government recognised 3 years Diploma.
- **Preferable Qualification:** Candidates with Mechanical/electrician certificate and experience shall be preferred. Special emphasis to be given to the persons coming from rural background, unemployed youth, women, SC/ST candidates.

Training Programme Batch size:

Each batch of the training program shall contain around 30 seats.

Selection of Training Institute: Basic infrastructure requirement

An expression of interest shall be advertised / published to seek the interest as per following details:

a. The training institute shall be an existing polytechnic or industrial training institute (ITI) or engineering college, having suitable laboratory and an agreement / arrangement with an existing operating small hydropower station that is willing to allow the Jal Urja Mitra (trainees) for the training at that station. The preference shall be given for the states where maximum unexploited SHP potential exists i.e. J&K, Ladakh, HP, Uttarakhand, Sikkim, Arunachal Pradesh, Kerala, Meghalaya, Jharkhand, Karnataka, Andhra Pradesh, Orissa.
b. The trainer should be certified with Skill Council of Green Jobs and having undergone training of trainers programme under this proposal. The institute shall ensure the availability of the trainers within the institute and or by making arrangements with trainers having industrial experience.
c. Adhaar Enabled Biometric Attendance System
d. IP based camera system
e. A classroom to accommodate up to 30 participants with audio / video facility.
f. Basic Electrical and mechanical lab
g. Residential Facility with three time food availability (in-house/arranged)

Trainers should have the ability to make lesson plans and deliver classroom and practical training. Also, understands training delivery plan and curriculum for the relevant job role:

a. Communicate the learning objectives, session's topic, and relevance to participants at the beginning of the session & summarize the sessions with energy.
b. Assesses learner's progression and the effectiveness of learning materials, and adjust their teaching accordingly through written records of internal/ formative assessment
c. Have the ability to engage trainees in learning activities which include a mix of different methodologies such as project based work, team work, and practical workplace simulations
d. Have the ability to organize skills demonstrations, site visits and presentations for trainees in cooperation with enterprises and other workplaces
e. Have processes to identify the level of learners in the class and provide assistance to weaker trainees where needed
f. Conducts baseline/diagnostic assessments to understand the gaps in trainees learning abilities.
g. Cater to different learning styles and to candidates with different level of ability
h. Provide learners with support they need to assess their own learning needs and goals
I Ensure required support to learners to develop the skills needed to make them ready for the workplace/industry

Admission of the Jal Urja Mitra

a) The training partner institute shall advertise the schedule of the programme including dates and the venue of the training in the local print and electronic media.

b) The selection criteria shall be based on the marks obtained in qualifying examination and all norms of Government of India for reservation shall be followed. Women shall be given the priority.

c) The final selection of the trainees for the programme shall be done by training partner institutes as per the guidelines and the details of the participants and are communicated to HRED one week before the commencement of the programme.

d) During the selection of trainees, special emphasis shall be given to the trainees coming from rural background, unemployed youth, women candidates, SC/ST candidates etc.

Teaching and practical work:

a) Qualification Pack (Code no. SGJ/Q0604) prepared by Skill Council of Green Jobs (SCGJ) in cooperation with Department of Hydro and Renewable Energy, IIT Roorkee shall be followed as course structure.

b) The training programme shall be residential with a clear daily time table which also includes early morning physical exercise such as Yoga/PT etc.

c) The first hour of the day shall be utilized for class-room lectures.

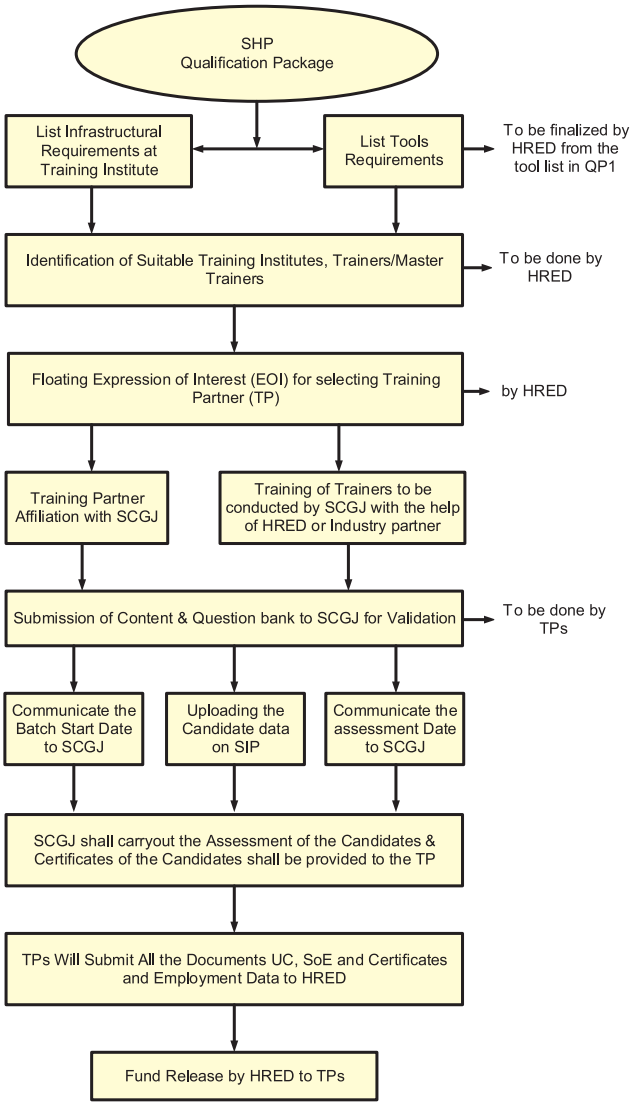
d) The practical hours shall be utilized for hands on exercise in the lab sites, experiments, class room exercises, software simulations, quizzes/class test and industrial visits etc.

e) For experiments/field visits, the batch shall be divided into multiple groups for focussed attention.

f) Motivational sessions (1 hr. duration each) shall be conducted once every two weeks.

g) The training partner institute shall distribute safety helmets and boots, as required, to all the Jal Urja Mitra participants.

h) Each participant shall be given an access to proper toolkits for working in the lab/site.



Assessment & Certification of trainees:

Assessment shall be done by the assessors from Skill Council of Green Jobs (SCGJ). The certificate is issued by SCGJ to the trainees. The individual must have expertise in the technical/vocational domain in which assessment is taking place. They must have strong communication, organizational and interpersonal skills. They must have sharp observation skills, be quality focused and well-organized at work. Additionally, they should remain abreast with the latest trends in their domain and upgrade their assessment related skills.

Employment aspects:

At the end of the Jal Urja Mitra Skill Development Programme, the trainees shall acquire skills to operate and maintain a Small Hydro Power Station and will be able to get jobs in small hydro industries, EPC companies, and large contractors working with Hydro/water supply/lift irrigation Industry etc. The host Training Centre shall facilitate the trainees for placement.

Financial Support to Training Centres (TCs)

a) The boarding and lodging charges is Rs. 315 per day (based on city categories as per MSDE guidlines) per trainee for 90 days as per MSDE norms.
b) The course fees is Rs 49/- per hour x 30 participants x 600 hours as per MSDE norms. The 50% candidates may be from the special status states.
c) Special Support for Special area / BPL (20% persons @1000 per person per month)

S. No.	Particulars	Description	Amount (in Lakh)
1	Course fee to the institute*	Rs 49/- per hour X 600 hours X30 participants Rs. 53.9 / participants / hr x 600 x upto 30 candidates	9.20
2	Assessment Charges	Rs 800 per participant X 30 participants	0.24
3	Boarding and Lodging** (**as per Classification 'X'/'Y'/'Z')	Rs 315 X 30 X 90 days ('Y' cities) Rs 250 X 30 X 90 days ('Z' cities)	8.505 6.750
4	Transportation Charges to study SHP station Rs. 5000/- per day		2.25
5	Support to the special group (women and BPL)	Rs 3,000 per participant @ Rs. 1,000 per month X 6 participants	0.18

* The Financial Support to the Training Centres (TCs) for conducting Jal Urja Mitra training for a batch of 30 trainees comes around 17-18 lakhs.

Target of Training of Participants (TOP)

Target for conducting the training

Year	2023-24	2024-25	2025-26	Total
No. of Programmes	10	22	24	**56**

Training of Trainers (TOT)

The Training of trainers (TOT) shall be of 10 days duration for 20 trainees from training institutes and shall be conducted at Department of Hydro and Renewable Energy, IIT Roorkee, the specialized department and having required infrastructure. Following target for conducting the TOT is as under.

Target for conducting the training of trainers

Year	2023-24	2024-25	2025-26	Total
No. of Programmes	2	2	1	**5**

The trainer shall have bachelor degree in Engineering and two years of relevant academic / industry experience or Diploma in engineering with five-year relevant industry / academic experience. The trainers shall be from the selected training institute who have handled the courses related to energy as well as from small hydropower industry.

For each programme a sum of Rs. 8.00 Lakhs including an assessment charges, the expenditure on boarding, lodging and course fee is included in the cost. GST is considered to be waived off being the Government of India sponsor. However, to maintain the seriousness and partnership, a minimum of 10% of the TOT cost shall be borne by the partner training institution / trainees.

The course shall cover following:

a) Role and Responsibilities of a Small Hydropower Plant O&M Technician (Jal Urja Mitra)
b) Components and Layout of Small Hydro Power (SHP) Plant
c) SHP Plant Components Inspection
d) Start and shut down SHP plant
e) Workplace Safety and Hygiene
f) Effective and Efficient Working Practices
g) Operate the Electro-Mechanical System in a Small Hydro Plant
h) Maintain the Electro-Mechanical System
i) Operate the Hydro-mechanical and Civil Systems in a Small Hydro Plant
j) Maintain the Hydro-mechanical and Civil Systems

Jal Urja Mitra Portal: A portal has been developed and is being maintained to provide the details of the Jal Urja Mitra programme. The website address is https://jalurjamitra.iitr.ac.in/ The web portal contains details of Empaneled Training Centres (TCs), a Database of trained Jal Urja Mitras, Placement Details, Ongoing and Completed batches of Jal Urja Mitras.

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