

Model Syllabus for Biogas Trainings under MNRE Biogas Programme

(I) Users' One Day Training Courses on Biogas

1. **Objective:** To raise awareness and publicity about the benefits of biogas, operation and maintenance of plants amongst the potential biogas users
2. **Venue/ Nos. of Participants:** Villages having biogas plants in operation condition or newly commissioned biogas plants will be selected as venue and 50-60 households of the selected village(s) will be contacted and invited for participating in the User's Course.
 3. Topics to be covered:
 - i. Benefits, operational and Maintenance activities including use of Biogas Plants
 - ii. Financial and Other Assistance and cost-economics of Biogas Plants of various sizes and Models.
 - iii. How to access biogas web portal and application for Biogas Plants and loan applications.
 - iv. Field visits and practical demonstrations on how to connect biogas pipe line to biogas burner/Biogas engines for operating Biogas Water Pump Sets/ Biogas Electricity Generators.

(II) Staff Training Course (for PIA/ Bank Officers / Field Officers / Field Functionaries etc.)

1. **Purpose** To give exposure to Officials of Rural Development Departments and KVIC and other stakeholders such as Supervisors / Functionaries of Panchayati Raj Institutions / Bank Officials & Staff to various aspects of biogas technology and to familiarize them with the importance of Biogas Technology and biogas as a fuel for many applications and present status of biogas programme, inter-alia details about how Biogas Plants are constructed and operated.
2. **Participants** The course is intended for field supervisory functionaries involved in the implementation of biogas extension programme. Persons of following categories may be selected / nominated for such training courses-
 - i. Block and District level Supervisory Functionaries involved in the promotion and execution of New National Biogas and Organic Manure Programme (NNBOMP). These functionaries include Block Development Officers, Agriculture Development Officers, Agriculture Extension Officers, Assistant Engineers, Junior Engineers, Assistant Agricultural Engineers, Agricultural Inspectors / Assistant Directors and Development Officers of Khadi and Village Industries Commission and Khadi and Village Industries Board, Field Supervisors and Staff of Agro Industries Corporation Ltd., Dairy Development Board / Corporations, Entrepreneurs of Agro-services Centres, Field Supervisory Staff of recognized Voluntary Organizations / Self Help Groups / Registered Societies. Women-functionaries of all above mentioned organizations should be also nominated.
 - ii. Instructors / Teachers from ITIs, selected Farmers Training Centres / Extension Centres / Gram Sevaks Training Centres etc. Such Training Centres should be selected as the venue for organization of subsequent Training Courses for local masons in the

construction of biogas plants.

Medium of Instruction	Hindi/ English / Regional Language
Duration	Four Days
Numbers of Participants	10
Syllabus / Curriculum	
Day	SUBJECT
1 st	Introduction to the Biogas Technology & Introduction to National Biogas and Organic Manure Programme (NNBOMP)
2 nd	<ul style="list-style-type: none"> i. Design of different approved models of biogas plants, capacity determination, selection of building materials and accessories. Type of different approved models of Biogas plants based on material and accessories, appliances etc. ii. Motivation / selection of biogas models and selection of biogas potential beneficiaries, Socio-Economic Aspects, Environmental Aspects of having biogas plants installed in houses iii. Rates of Financial Assistance / disbursement of subsidy /utilization of funds, maintenance of Accounts iv. Institutional support for implementation of the NNBOMP Programme
3 rd	<ul style="list-style-type: none"> i. Construction methodologies for biogas models popular in the region. ii. Details of biogas stoves / burners / appliances and spares for O &M of biogas plant iii. Identification of faults and their rectifications. iv. Connecting a cattle dung based biogas plant with sanitary toilet and its operation v. Installation and Commissioning of prefabricated approved Biogas Plants
4 th	<ul style="list-style-type: none"> i. Field / Site Visit to: ii. Operational Biogas Plants, Biogas plants under construction, Biogas plants under commissioning for biogas generation, Connection of biogas plant to biogas burner for use of Gas by the new user, Handling and application of biogas plant effluent iii. Operation and Maintenance of biogas plant and; Valedictory and concluding

(III) 10 DAYS CONSTRUCTION-CUM-MAINTENANCE COURSE (CMC) / REFRESHER COURSE

1. **Purpose** :To create a cadre of biogas masons and technicians skilled in the construction, installation commissioning and maintenance of approved models of biogas plants i.e. Deenbandhu fixed dome model, KVIC floating metal Gas holder with brick masonry digester models, digester made of ferro-cement, gas holder model of FRP and Pragati models as approved models by MNRE. Also imparting training for new and innovative models of plants as and when approved by MNRE for inclusion in the NNBOMP.
2. **Selection of Trainees:** Construction-cum-maintenance training course are intended for professional masons having experience of working independently on civil construction works and fabricators/technicians having the facilities of workshop, welding lit, etc. The trainees should have knowledge to understand construction and fabrication, methodology of approved design and specifications of Biogas Plants.
3. **Number of Participants:** At least ten trainees can be recruited for each course
4. **Medium of Instruction:** Hindi or Regional Language
5. **Duration of Training** : 10 Days

6. **Syllabus:** The training is of practical in nature. However, a few classroom lectures should be arranged completely tied up with the construction of approved Biogas plants in the field. The suggested curriculum and schedule is given below: -

1. **Theory**

- i. Importance & benefits of biogas programme.
- ii. Appropriate site selection for installation of BGP and Pre-requisite for setting up of a biogas plant such as availability of cattle dung and verify for water need and end usage of biogas.
- iii. Description of different approved models of biogas plants,
- iv. Selection of beneficiaries and selection of site.
- v. Material requirements for biogas plants of different capacities/models.
- vi. Quality of construction materials.
- vii. Construction methodologies for various approved models and designs of plants.
- viii. Plumbing aids and fitting of pipeline, water removal device, gas appliances.
- ix. Installation of system for testing for gas and water leakages.
- x. Commissioning and operational procedure
- xi. The importance of required quantity and quality of materials for construction, commissioning of Biogas Plants.

2. **Practical:** A minimum of two biogas plant needs to be constructed and installed during the training course by the trainees under the full supervision and guidance of experts from the BDTCs. Emphasis should be mainly on proper practical training and not on construction of a large number of biogas plants to achieve targets. The practical training may be also arranged wherever possible for standard MNRE approved prefabricated design biogas plants.

Work may be organized as follows:

Approximate value of days	Field work
1	selection of site , marking of layout, Digging of pit
1	Laying of foundation
4	Digester construction; Construction of outlet chamber in Deenbandhu Model Fixation of guide frame in case of floating drum KVIC or Pragati model
2	Plastering
5	Curing of civil work
	Laying of gas distribution pipeline, fixing accessories etc.
2	Slurry making filling of digester
1	Testing for gas leakages

4. **Financial Provisions:** Estimated cost per course is as under:-

Sl. No.	Item of Expenditure	Estimated cost
1.	Stipend up to a maximum of Rs. 450/- trainees/day or 10 trainees for a maximum period of 10 days (pro-rata basis) to meet boarding and lodging expenditure	45,000
2.	To and fro transport charges to 10 trainees as per actual but no exceeding of Rs. 300/- per trainee on pro-rata basis.	3000
3.	Contingency for transportation/POL, Stationery, books, honorarium to guest speakers etc.	2000
	Total	50,000/-

PLANNING The State/Agency should fix location, tentative date for organizing course in the beginning of the year as per the target allocated to them.

1. The faculty for training should include a master mason trained in one of the Regional Biogas Development & Training Centre and who have constructed plants no less than ten.
2. The Nodal Officer at Block level should ensure the quality of training for the purpose of monitoring the district nodal officer should ensure participation in the course. The State level officials should also visit at least 10% of the course organized.
3. Preference should be given for organizing course in such areas where less number of persons have been trained so far and also construction of biogas plants has yet to pick up.
4. At the closing of the course a test has to be conducted for ensuring the skill of trainees. Certificates may be issued to qualified trainees and a notification should be issued containing there in their names & address.
5. **A user training course should be also organized, the day following the closing of course**

(IV) TURN-KEY WORKERS TRAINING (TKWT)

Objective: To create a cadre of Biogas Turn-Key Workers / Biogas entrepreneurs in rural areas for setting up of biogas plants on Turn-Key basis and providing post-installation servicing of plants as a self-employed vocation.

Participants: The programme is meant for unemployed rural youths having inclination to take up biogas as a self-vocation. He/she may be functionary in voluntary organization. A minimum educational qualification may be kept as 12th Standard pass **or 10th pass with ITI certificate**. If they have already some relevant experience certificate in biogas work, they should also be given chance.

Numbers of participants	10 (Ten)
Medium of instruction	Hindi/ English/ Regional language [depending upon the facility available at the Biogas Development and Training
Centre	BDTC
Duration of training	15 Days
Venue	Biogas Development & Training Centre

Syllabus: The programme should cover the following: -

- I. **Technical Aspects:** Importance and benefits of biogas programme, Economic viability of biogas plants, an over-view of Indian Biogas Programme, present level of achievement and estimated potential for future exploitation; and Technological advances in biogas technology and barriers removal.

B Management aspects:

- i. **Marketing Management:** Technique of motivation, project formulation, filling up and process of applications for arrangements of subsidy.
- ii. **Personal Management:** Training of masons, placement of masons in different village to be covered, identification of plumber and his training liaison with beneficiary, masons and plumbers, supervision of the persons engaged in plants construction

- iii. **Material Management:** Types of the material required for biogas plant construction, testing of quality of material, procurement of the materials.
- iv. **Financial Management:** Estimation of Unit cost of biogas plants arrangement of bank loans and subsidy special motivation support from social organizations, principle of accounting.
- v. **Office Management:** Record keeping of individual beneficiaries and other records on financial and physical programmes, methods of maintaining the accounts, payment made to the beneficiary and masons etc.
- vi. **Break-down Management:** Feed-back, monitoring and evaluation of plants repair and maintenance of sick plant.

C. Project Reports: A project for turn-key operation for their respective areas may be prepared by the trainees during the duration of the training.

D. Field Visit: Field visits should be organized to banks, to villages having large number of Biogas plants and interactions with the Biogas plant beneficiaries.

E. Financial Provision Turn-key Workers Training Course: Estimated cost per course is as under: -

SN	Item of Expenditure	cost (in Rs.)
1.	Stipend up to a maximum of Rs.300/- trainees/day or 10 trainees	45,000/-
2.	To and fro fare charges/ cost up to a maximum of Rs.700/- per trainee, subject to actual.	7,000/-
3.	Contingency, POL for field visit, honorarium to guest speakers @ Rs.300/- per lecture, project reports, books, stationery, blue prints, technical literature, manuals, etc.	23,000/-
Total		75,000/-

F. Suggested Planning: (i) The programme high lights should be widely circulated; (ii) Nomination may be asked from State Nodal Departments/Agencies, Voluntary Organizations in advance; and (iii) The faculty for training should include technical and management experts.

(V) **BIOGAS SKILL DEVELOPMENT TRAINING PROGRAMME(BSDTP)**

Objective: The core objective of the Biogas Skill Development Training Programme Training is to empower the individuals, by enabling them to realize their full potential through a process of Skill Development and Entrepreneurship for the purpose of developing competencies/skills in the domain of Biogas Technology sector of Renewable Energy.

1. Make quality vocational training for Biogas sector aspiration for productivity linked to skilled workforce to supplement Skill India Mission. Focus on an outcome-based approach towards quality skilling that on one hand it results in increased biogas production and development and dissemination of Biogas as Renewable Energy source for individuals/societies/communities and on the other increase the capacity and quality of biogas based training infrastructures and trainers to ensure easy access to the potential targeted potential beneficiaries and stakeholders.

2. Promote national standards in the biogas skilling space through active involvement of the Biogas Development and Training Centres/ Institutions and industry in setting occupational standards, helping develop curriculum, providing apprenticeship opportunities, participating in assessments, and create opportunities for gainful employment/ Self Employment to skilled workforce.

Biogas Skill and entrepreneurship development course will cover:

- a) Educate and equip potential and skilful entrepreneurs for BIOGAS across India. The existing 8 Biogas Development and Training Centres would get their affiliations and empanelment as Skill development Centres for Biogas with the Skill Council for Green Jobs under the Ministry of Skill Development & Entrepreneurs , GoI, for the development of standards qualification pack for Biogas Plants and Biogas Plant produced slurry for Level 4/5. This curriculum will be delivered at no cost or as per the guidelines of SCGI.
- b) Promoting Biogas Entrepreneurship amongst Women and Farmers Producers Group: Focus will also be placed on encouraging women entrepreneurs and Farmers Groups through appropriate incentives for women owned Biogas businesses. Priority will be given for mentorship, support system for women entrepreneurs and farmers/farmers recognized groups in existing Biogas Development and Training Centres. This would hold in developing Entrepreneurship specially supporting Biogas Sector.

Numbers of participants	Twenty five per course
Medium of instruction	Hindi/ English/ Regional language
Duration of training	10 Days
Venue	Biogas Development & Training Centre of MNRE as empanelled for by SCGI

Financial Provision for Biogas Skill Development Training Programme: Estimated cost per course is as under: -

Sl. No.	Item of Expenditure	Estimated cost (in Rs.)
1.	Stipend up to a maximum of Rs.250/- Per trainee/day for 25 trainees	62,500/-
2.	Contingency, POL for field visit, honorarium to guest speakers project reports, books, stationery, blue prints, technical literature, manuals, etc.	12,500/-
Total		75,000/-

The course curriculum and inter-component expenditure may be adjusted finally in line with the Surya Mitra Scheme of MNRE including total numbers of training hours to 200 hours and limiting the expenditure per course to a maximum of Rs.75,000/- per course.