NON-CONVENTIONAL SOURCE OF ENERGY

This department is implementing a research-oriented scheme for generation of power from solar pond. The Pondicherry Experimental Solar Pond power project is a joint venture of Pondicherry Engineering College and Electricity department of Government of Puducherry, funded by the Government of India, under National solar pond development programme. The aim of the project is to install a power station to generate electric power of the order of 360 KW per day using organic Rankin cycle coupled with salt Gradient solar pond.

OUTLAY AT A GLANCE

Sector : NON-CONVENTIONAL SOURCE OF ENERGY No. of Scheme : 1

Department : ELECTRICITY

(Rs. in lakh)

Tenth Plan 2002-07 Approved Outlay	:	60.00
Annual Plan 2002-05 Actual Expenditure	:	34.43
Annual Plan 2005-06 Actual Expenditure	:	14.99
Annual Plan 2006-07 Approved Outlay	:	15.00
Annual Plan 2006-07 Revised Outlay	:	15.00
Eleventh Five Year Plan 2007-12 Proposed Outlay	:	788.00
Annual Plan 2007-08 Proposed Outlay	:	175.00

(Rs. in lakh)

Sl. No.	Name of Scheme	Annual Plan 2005-06	Annual Plan 2006-07		Eleventh Plan 2007-12	Annual Plan 2007-08
		Actual Expdr.	Approved Outlay	Revised Outlay	Proposed Outlay	Proposed Outlay
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Development of non-conventional sources of energy	14.99	15.00	15.00	788.00	175.00

Scheme No. 1

Sector : NON-CONVENTIONAL SOURCE OF ENERGY

Implementing Department : ELECTRICITY

1. Name of the Scheme : Development of Non-Conventional Sources of Energy

2. Objective of the Scheme :

The objective of the scheme is to promote the use of new and renewable sources of energy and to conduct research and development on renewable sources of energy. Setting up of solar pond for production of thermal and electrical energy.

(Rs. in lakh)

3. Tenth Plan 2002-07

(a)	**2002-05 (Actual Expenditure)**	**:**	34.43
(b)	**2005-06 (Actual Expenditure)**	**:**	14.99
(c)	**2006-07 (Approved Outlay)**	**:**	15.00
(d)	**2006-07 (Revised Outlay)**	**:**	15.00

(e) Actual Physical Achievement (2002-05) :

The trial run of the Power Plant was conducted and an output of 12.5 kWe was successfully demonstrated. Number of test trial runs was conducted by the National Aerospace Laboratories authorities to study the performance of the ORC package. After making some modifications in the pipe lines and in the ORC engine the output of 12.5 kWe was obtained steadily by manual loading. The pond performance analysis was made and collection efficiency of the pond and heat extraction efficiency was calculated as 19.49 and 27.92 % respectively which is almost equal to the International standards.

(f) Actual Physical Achievement (2005-06) :

In the month of march 2005, an auto loading system, a Data logger along with IMP card designed by NAL were installed in the ORC engine circuit for the smooth operation /performance. With the clearance of the NAL authorities, the ORC engine coupled with 500 sqm pilot solar pond was continuously operated for a period of one month at the rate of one hour/day. The various parameters recorded during the performance were logged in and compiled. These results have been sent to NAL for analysis. After analyzing the parameters, the NAL team had visited the project site in the month of July 2005 for fine-tuning of the machines and recalibrations of transducer and thermocouples. Due to unprecedented heavy rainfall during the monsoon i.e September 2005 to January 2006, the profiles of the pond could not be obtained properly due to over flowing. As per the suggestion of Dr. C.L. Gupta and Dr. S. Arumugam, the pilot pond has been taken up for maintenance works. The pond bed floor and side slope walls were coated with heat resistance epoxy coating and the re-establishment has been made in the month of May 2006. After the re-establishment of the pilot pond, trial runs have been performed in the presence of Dr. J.J. Is sac and his team.

(g) Anticipated Physical Achievement (2006-07) :

The re-establishment of the pond was completed. The engine was coupled with the pond and the trial runs were repeated by NAL team in the month of August 2006. The output

was increased to 13.17 KW by iterating the level of methylene Chloride in the vaporizer and suitably balancing the electricity circuit. Mean While, Revised project Report has been prepared and submitted to Planning Commission, New Delhi with the approval of Chairman, PESPPPS. The planning Commission has conveyed its approval in principle for the Revised Project Report and also recommended for continuance of experimental works by constructing 3 X 2000 sqm ponds in XI plan period. The NAL team is expected shortly after which the continuous trial run is proposed to be taken up. The NAL team is proposed to take up the initial works for the execution of phase III Programme.

(Rs. in lakh)

4. Proposed Outlay for the Eleventh Plan (2007-12) : 788.00

Proposed Outlay for the Annual Plan (2007-08) : 175.00

5. Programme envisaged for the Eleventh Plan (2007-12) :

i) Preliminary works and construction of 1st 2000 sqm pond.
ii) Maintenance of existing 500 sqm pilot solar pond.
iii) Provision of R & D facilities to be laboratory.
iv) Sinking of new bore well for 2000 sqm ponds.
v) Design and installation of control panel distribution system.
vi) Modification of the ORC control panel.
vii) Construction of 1st 2000 sqm pond – completion of remaining works.
viii) Construction of condenser water storage tank.
ix) Erection of truss bridge-completion of remaining works for the 1st pond.
x) Advance payment to NAL for phase – III work of plant.
xi) Purchase of pond machineries and T & P.
xii) Preliminary works and Construction of 2nd 2000 sqm pond.
xiii) Operation of 1st 2000 sqm.pond
xiv) Design and installation of Auto synchronizing module
xv) Construction of staff quarters.
xvi) Construction of 3rd 2000 sqm pond – completion of remaining works.
xvii) Control panel distribution system
xviii) Sinking of new bore well
xix) 1st and 2nd pond operation
xx) Construction of approach road for staff quarters.
xxi) Instrumentation.
xxii) Completion of 3rd pond works.
xxiii) Interlinking of 1st, 2nd and ponds.
xxiv) Power generation from 3 ponds.
xxv) Pond R & D activities and other related works.

6. Programme envisaged for the Annual Plan (2007-08) :

i) Preliminary works and construction of 1st 2000 sqm pond.
ii) Maintenance of existing 500 sqm pilot solar pond.
iii) Provision of R & D facilities to the laboratory.
iv) Sinking of new bore well for 2000 sqm ponds.
v) Design and installation of control panel distribution system.
vi) Modification of the ORC control panel.

7. Remarks : Continuing Scheme