

ANNUAL REPORT 2004-05
Agency for Non-conventional Energy and Rural Technology
(ANERT, Kerala)



**ANERT, PB No 1094, Kesavadasapuram, Pattom PO,
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INTRODUCTION

ANERT – the Agency for Non-Conventional Energy and Rural Technology, that has been functioning under the Science, Technology and Environment Committee (STEC) for about two decades was transferred and attached under the Department of Power, Government of Kerala during the last half of the year 2003. Thus the 2004-2005 was the first financial year for the reconstituted ANERT. Naturally owing to the lethargy of the change over phase, a general slow down of activities was visible in the organization during this period. However ANERT was able to continue with the focussed programmes for the dissemination of the message of Renewable Energy and Energy Conservation during the year.

The programmes for popularising utilisation of Bio Energy as well as propagation of fuel saving improved wood burning chulhas were taken up during 2004-05. Two new wind-monitoring stations were established. Rajiv Gandhi Akshay Urja Diwas 2004 was celebrated all along the State with colourful programmes targeted to spread our message to the general public. ANERT was also able to organise a few training programmes by its own and provided support for a few other energy related trainings/seminars. Another area of focus during the period was encouraging the educational institutions to take up studies and research in the field of renewable energy and energy conservation.

On the whole the achievements of the year are not meager, yet there is much to be done for the effective utilisation of the abundant renewable energy sources of the State, especially in the area of research and programme implementation. There is still a long way to go for the fulfilment of the goal to achieve energy self-reliance by 2020.



Activities and achievements of 2004-05

1. Project Implementation Programmes

Wind Energy Programme

Under the National Programme for Wind Resource Assessment of MNES, ANERT had obtained sanction for establishing two wind monitoring stations within the State. These were established at Pasavadikumbe in Kasaragod District and Kalyanathandu area in Idukki District aimed for studying the feasibility of establishing Wind Generation Stations. The programme is being implemented jointly by ANERT and Centre for Wind Energy Technology (C-WET), Chennai with 80% assistance from MNES.

However the efforts made to establish Wind Farm by private investment in the revenue land at Ramakkalmedu, Idukki District through competitive bidding failed to materialise due to lack of interest from the private investors.

Bio Energy Programme

A subsidy scheme for promoting the installation of biogas plants having individual capacity not less than 15 cu.m was announced during the year 2004-05. A subsidy @ Rs.3000/ per cu.m was made available for Biogas plants for thermal application and subsidy @ Rs.4000/ per cu.m was made available for Biogas plants for electricity generation. An empanelled list of implementation service providers were also prepared for the speedy implementation of the scheme. Accordingly 14 biogas plants for thermal application with a total capacity of 300 cum and 6 biogas plants for electricity generation with a total capacity of 100 cum was sanctioned during the year. Actual installations of these plants are on going. (District wise list of allotment is given as Annexure 1.)

Programme for Dissemination of Improved Chulhas

A scheme for providing subsidy for the popularisation of improved firewood chulhas was carried out during 2004-05 with a target to install 6000 numbers of domestic (2+1 model) chulhas in SC/ST households and 560 numbers of community chulhas (as 280 each) in Anganwadies and schools. Subsidy at a rate of Rs.150/- per domestic chulha, Rs.2000/- per pair of community chulhas for Anganwadies and Rs.2500/- per pair of community chulhas for schools was announced. However the achievement in this sector is only 2185 domestic (2+1 model) chulhas in SC/ST households (36.4%) and 359 community chulhas as 152 numbers in Anganwadies (54.3%) and 207 numbers in schools (73.9%). (District wise list of current year's chulha installations is given as Annexure 2)

Integrated Rural Energy Programme (IREP)

Under the scheme Integrated Rural Energy Programme ANERT maintains one district level office in each of the districts of the State. These offices are functioning as the extended arms of ANERT, reaching out to the masses with the message of Renewable Energy and Energy Conservation as well as gathers real grass root level data on the energy needs and problems of the community. All the major activities of ANERT, ranging from the implementation of programmes on Bio energy and improved chulha to the organization of publicity programmes, were carried out through these offices.

The major programme undertaken by the IREP Project Offices during the year 2004-05 was the "**Survey to Identify Remote Unelectrified Colonies in Kerala**". All the census villages in Kerala are considered as electrified as per the norms fixed by the Government. However there are a number of remote locations or hamlets especially in Western Ghat areas that are yet to receive the benefits of electrical energy and the other modern amenities related to it, like the Tele Vision. During 2000- 2002 under the MNES sponsored scheme for solar remote village electrification, ANERT had already electrified 302 remote villages/hamlets utilizing PV Home Lighting Systems. Recently Government of India had fixed a target of 100% electrification of remote colonies/hamlets by 2007 and 100% household

electrification by 2012. Consequently Government of Kerala, Power Department has envisaged a programme to achieve this target with the potential of ANERT and KSEB by 2007. ANERT was thus instructed to carryout a survey to identify the remote un-electrified colonies and gather other relevant details in this regard.

The fieldwork for the “Survey to Identify Un-electrified Remote Colonies in Kerala” was carried out through out the State during the months July to October 2004 under the leadership and co-ordination of District IREP Offices in association with the Local Self Government Institutions. The survey teams had to brave a number of practical difficulties like, lack of official maps of the colonies, lack of proper road access, scattered and far off location of individual houses even within the defined colonies, rains and flooding hilly streams etc. However a total of 1521 remote colonies were surveyed within the time limit.

A colony was defined as “Unelectrified” if the grid electrifies none of the houses in that colony; and if grid has reached to a colony and some of the houses are electrified, irrespective of the percentage of electrification, the colony was defined as “Partially Electrified”. Thus out of the total colonies surveyed, 1114 colonies were identified as Unelectrified and another 407 colonies were identified as Partially Electrified. A total of 1,63,897 houses were located as unelectrified, of which 99,563 are located in the un-electrified colonies and 64,334 are in the partially electrified colonies.

Of the total colonies surveyed, 1066 are located within one kilometre distance from the existing power grid and so the extension of the existing grid for a distance of one kilometre in these regions could provide electricity to about 1,14,926 houses. About 46,006 houses that are spread in 408 colonies are located at more than 1 km distance from the grid. Similarly 21,043 houses (spread in 233 colonies) are located more than 2kms away from the grid and 12,987 houses (spread in 158 colonies) are located more than 3kms away from the grid.

Based on these data it is also estimated that about Rs.136 crores would be required to provide solar lights to all the 99,563 unelectrified houses in the 1114 unelectrified colonies of the State and Rs.88 crores

would be required to provide solar lights to all the 64,334 unelectrified houses in the 407 partially electrified colonies. District wise details of the survey results are given as Annexure 3.

District Advisory Committees for Renewable Energy

Constitution of District Advisory Committees (DACs) in every district was another activity initiated by MNES during 2004-05. The DACs are envisaged to ensure effective participation of the district level functionaries in the popularisation of Renewable Energy Systems and Devices. Major activities to be performed by DACs are visualised as

- To help SNAs and related departments to identify project sites and implement renewable energy programmes
- To identify beneficiaries under various programmes
- To identify beneficiaries in setting up Adithya Solar Shops and to monitor the functioning of these outlets
- To monitor projects under implementation
- To liaise with district authorities for the utilisation of funds available under other renewable energy schemes /programmes.
- To suggest ways and means for the utilisation of MP & MLA funds for Local Area Development, to boost Renewable Energy programmes in the district.
- To visit renewable energy projects and systems and provide feedback on their performance.
- To suggest measures for the popularisation of renewable energy in the district.
- To conduct activities to publicize and promote renewable energy in the district
- To undertake any other activity suggested by the MNES and SNA

MNES would be providing financial assistance from time to time for the functioning of the DACs. In Kerala DACs are functioning in close association with our district IREP Offices.

2. Publicity and Awareness Creation Programmes

Rajiv Gandhi Akshay Urja Diwas Celebrations

This year MNES had declared 20th August, the birthday of late Prime Minister Sri Rajiv Gandhi, as “Rajiv Gandhi Akshay Urja Diwas”. The day was demarcated for organizing various programmes for creation of awareness on renewable energy sources and devices. MNES had also sanctioned financial assistance amounting to Rs.2.5 lakhs for the state level celebrations through ANERT and Rs.1.5 lakhs for each district for district level programmes organised jointly by District Collectors Office/ DRDA and district level offices of ANERT. Even though the scheme was announced in a very short notice, a wide range of public awareness programmes were organised through out the State, which were colourful as well as informative. (District wise list of programmes organised in connection with the Rajiv Gandhi Akshay Urja Diwas celebrations 2004 is given as Annexure 4)

Exhibitions

Participation in various exhibitions is one of the major publicity programmes taken up by ANERT every year. Thus during 2004-05 also ANERT participated in various exhibitions and organised Renewable Energy Demonstration programmes at various locations. This includes organisation of Demonstration programmes at 40 locations (altogether 110 days of demonstration) using the Mobile Renewable Energy Demonstration Unit (MREDU) and one small exhibition stall operated in the Onam Metro Fair 2004 exclusively for Solar Cooker demonstration. More than 10 lakhs of spectators attended these programmes.

Apart from these ANERT also participated in a big way in the Palode Agricultural Fair on behalf of MNES with their financial support. Approximate number of spectators of this exhibition may be about 2 lakhs.

Advertisements

Advertisements are viewed as another public interaction channel, which reaches out to the common people and ANERT released 28 advertisements during the year (costing Rs.1,97,152/-) with the target of popularising messages on Renewable Energy and Energy Conservation.

Adithya Solar Shop

The Adithya Solar Shop established as an activity complementary to the task of popularising renewable energy and energy conservation technologies, by making the various renewable energy/ energy conservation devices available to those who are interested to buy and use them. This year ANERT's Adithya Solar Shop sold out 16 solar cookers and 39 CFLs. Total turn over on this amounts to Rs.31,725/-. However considering the past activities of the shop, this could be counted as a much trivial achievement only. Serious interventions are required to revive the Adithya Solar Shop of ANERT.

Renewable Energy Parks

The scheme for establishing Renewable Energy Parks in every district was formulated by MNES, with the objective to provide facility to students, teachers and public, who are interested in a deeper study on renewable energy systems and devises than possible in a short duration demonstration programme. The two district level RE parks (Thiruvananthapuram & Palakkad) sanctioned to ANERT last year are now nearing completion and ANERT had submitted proposals to MNES for RE parks in two more districts (Idukki & Ernakulam).

3.Promotional & Human Resource Development Programmes

Business Meet

In our capacity as one of the Business Development Associates (BDA) of Indian Renewable Energy Development Agency (IREDA), ANERT organised a Business Meet on “Energy Efficiency and Solar Thermal Sector” on 14th Feb 2005 at Kochi. This brought together the various manufacturers, potential beneficiaries and officials in the field of solar thermal energy utilisation and energy conservation sectors of Kerala, in a single platform for an active interaction. The meet covered various technologies and other aspects of the Solar Thermal Energy utilisation. Experts from organizations like IREDA, Planters Energy Network, Gadhia Solar Energy Systems, Energy Management Centre and Central Power Research Institute guided the discussions. Indian Renewable Energy Development Agency (IREDA) provided a financial assistance of 60% of the total expenditure of the programme.

Seminars

During 2004-05 ANERT co-sponsored and technically supported the conduct of a few major seminars. They are –

- National Seminar on “Trends, Possibilities & Challenges: Renewable Energy Technologies” organised by the Department of Mechanical Engineering, Calicut University Institute of Engineering and Technology (CUIET) in April 2004.
- 6th National Seminar on “Modern Trends in Power Engineering and Development” organised by KSEB Post Graduate Engineers’ Association in December 2004.
- Bio Energy Session of the National Symposium “BIOGENICS 05” organised by Sree Buddha College of Engineering, Alappuzha in March 2005.

Training Programmes

As part of the human resource development /skill up gradation programme ANERT had organised a Training Programme on “SPV Lighting Systems” at Thiruvananthapuram on the 15th to the 17th of July 2004 under the sponsorship of MNES.

Apart from the training programme directly organised, ANERT had deputed some of the technical personnel for various training programmes organised by other agencies also. Accordingly,

- Project Engineers Sri Joseph George, and Sri Jayachandran P were deputed to the two days National Training Programme on “Wind Farm Development and Related Issues” organised by C-WET at Chennai.
- Project Engineer Sri Madhu S was deputed to the three days training programme on “Remote Village Electrification” organised by MNES at Bangalore.
- Technical Assistant Sri Janardanan U was deputed to the two days National Seminar on “Recent Trends and issues in the Evolution of Appropriate Technologies for Integrated Rural Development” organised by the Gandhigram Rural Institute – Deemed University, Dindigal, Tamilnadu

Sponsoring Student Projects

A scheme for providing financial support to the projects works in the area of Renewable Energy or Energy Conservation taken up by students, as a part of their curriculum towards their degree / diploma and higher degree / diploma courses was another major programme launched by ANERT during the year 2004-05. Under this scheme, applications were invited through newspaper advertisement. Final selection of project works to be supported was done through a two level evaluation- first level evaluation of the merit of the proposed project work as per the technical proposal submitted and second level evaluation by direct oral presentation by the project team to assess their commitment and clarity. The selected project works are provided a financial assistance of Rs. 10,000/- or the actual

project cost which ever is lower. Though it was envisaged to provide financial support to 20 projects, only 19 teams were qualified in the evaluation process and three of them were dropped later on due to administrative limitations. The other 16 projects are now on going with the financial support from ANERT. All these projects will be finished this year. (List of Student Projects being supported under this scheme is given as Annexure 5)



FINANCIAL REPORT

Annexures

Annexure 1	District wise list of Biogas plants sanctioned in the year 2004-05
Annexure 2	District wise list of chulha installations of the year 2004-05
Annexure 3	District wise results of the Survey to Identify Remote Unelectrified Colonies in Kerala
Annexure 4	District wise list of programmes organised in connection with the Rajiv Gandhi Akshay Urja Diwas 2004
Annexure 5	List of Student Projects supported under ANERT scheme for the year 2004-05

Annexure 1:

District wise list of Biogas plants sanctioned in the year 2004-05

A: Biogas plants for Thermal application

District	Number of Biogas Plants sanctioned	Total Capacity in cu.m.
Kollam	1	35
Alappuzha	1	20
Idukki	1	25
Ernakulam	1	40
Thrissur	1	15
Palakkad	1	15
Kozhikode	3	55
Malappuram	3	60
Kannur	2	35
TOTAL	14	300 m³

B: Biogas plants for Electricity generation

District	Number of Biogas Plants sanctioned	Total Capacity in cu.m.
Thrissur	3	50
Kozhikode	1	15
Kannur	2	35
TOTAL	6	100 m³

Annexure 2

District wise list of chulha installations of the year 2004-05

District	Number of Chulhas installed		
	Domestic Chulha (2+1 model)	Community Chulha for Anganavadi	Community Chulha for Schools
Thiruvananthapuram	28	20	14
Kollam	317	20	3
Pathanamthitta	63	18	20
Alappuzha	480	2	4
Kottayam	2	0	2
Idukki	0	25	40
Ernakulam	434	5	7
Thrissur	229	2	13
Palakkad	120	6	20
Malappuram	220	12	10
Kozhikode	44	2	20
Wayanad	120	4	14
Kannur	128	16	20
Kasaragod	0	20	20
TOTAL	2185	152	207

Annexure 3

District wise results of the Survey to Identify Remote Unelectrified Colonies in Kerala

Sl no	District	Total No.of Colonies surveyed	Total No.of Houses surveyed	Total No.of UE Colonies	Total No.of Houses in UE colonies	Total No. of PE Colonies	Total No.of UE Houses in PE colonies
1	Thiruvananthapuram	127	3793	109	2933	18	860
2	Kollam	38	2595	38	2595	0	0
3	Pathanamthitta	79	3295	66	3082	13	213
4	Alappuzha	65	52206	9	209	56	51997
5	Kottayam	9	215	9	215	0	0
6	Idukki	197	19483	197	19483	0	0
7	Ernakulam	52	2588	39	1942	13	646
8	Thrissur	305	4884	91	1872	214	3012
9	Malappuram	49	1280	49	1280	0	0
10	Palakkad	39	2135	22	1361	17	774
11	Kozhikode	158	4439	144	4140	14	299
12	Wayanad	160	58226	125	52597	35	5629
13	Kannur	57	1695	55	1656	2	39
14	Kasaragod	186	7063	161	6198	25	865
TOTAL		1521	163897	1114	99563	407	64334

UE – Un-Electrified
PE– Partially Electrified

Annexure 4

District wise list of programmes organised in connection with the Rajiv Gandhi Akshay Urja Diwas 2004

Sl no	District	Programmes organised in connection with RGAUD 04
1	Thiruvananthapuram	<ul style="list-style-type: none"> • Public meeting, NRSE Exhibition and Video Show at VJT Hall • RE pledge in Schools • Video Spot prepared and telecasted through 3 major TV Channels • Advertisements released in 6 major dailies • Press Meeting on NRSE held • Banners and Posters printed and displayed in Govt Offices • Brochures printed and distributed to Public and Students.
2	Kollam	<ul style="list-style-type: none"> • Painting, Essay writing and Elocution Competitions on RE & EC held in all Block Panchayats and final round at District HQ. • Winners were given certificates and cash awards • Renewable Energy Runs and Human Chains were held in all Block Panchayats • Banners printed and displayed in various Offices
3	Pathanamthitta	<ul style="list-style-type: none"> • 3 days long vehicle rally and demonstration of NRSE devises covering whole district (50 locations) • Quiz Programme on RE for Students on 20th at various schools • District level Seminar on RE & EC at Dist HQ for winners of quiz competition and public on 25th • 6 days long RE exhibition at Thiruvalla (with IRDP Mela)
4	Alappuzha	<ul style="list-style-type: none"> • Vehicle Rally & Kalajadha from Arur to Ochira • RE pledge in Schools • Public meeting, NRSE Exhibition and RE seminar at Govt GHS, Alappuzha.
5	Idukki	<ul style="list-style-type: none"> • District level inauguration & Seminar on RE for Public on 20th at Collectorate • Seminar on RE for Public on subsequent days in all 8 blocks • Brochures printed and distributed • Name slips with messages of RE & EC printed and distributed to students through School Energy Conservation Clubs • Display Boards prepared and exhibited in Govt Offices
6	Kottayam	<ul style="list-style-type: none"> • Banners on RE printed and displayed in all major junctions and public places • Stickers on RE & EC printed and distributed for display at houses, institutions and vehicles • RE pledge in Schools • RE run in town by Sports Stars, Students and Youth • Public meeting at Baker Memorial School • Two day long NRSE exhibition at SB College Chenganassery • Seminar & Quiz competitions held at various places
7	Ernakulam	<ul style="list-style-type: none"> • Seminar on RE at Rajagiri College • RE pledge in Schools

8	Thrissur	<ul style="list-style-type: none"> • NRSE Exhibition at Town Hall, Thrissur • Rallies & Public Meeting
9	Palakkad	<ul style="list-style-type: none"> • Essay writing competition for School and College level students (separately) • Rally held in the town • Seminar on RE at District Co-operative Bank Hall • Essay writing competitions, Rallies and Seminars were also held in all 13 Block Panchayats
10	Malappuram	<ul style="list-style-type: none"> • RE Seminar for students held at Areacode Block Panchayat Office
11	Kozhikode	<ul style="list-style-type: none"> • Quiz, Essay writing, Elocution and Painting competitions on RE held for students at Dist. HQ • NRSE Exhibition held at Tagore Hall • RE Run by Scouts & Guides • Rally held in the town
12	Wayanad	<ul style="list-style-type: none"> • RE awareness programmes held in 6 schools (2 in each of the 3 blocks) • Public meeting and NRSE exhibition at SKMJ HSS, Kalpetta • News coverage in local dailies and Local TV channel
13	Kannur	<ul style="list-style-type: none"> • Panel Discussion on RE & EC held on 19th; widely covered by All India Radio and Local Cable TV network • Quiz, Essay writing and painting competitions on RE for School Students held on 20th at Jawahar Lal Library Hall • Rally of about 2000 students held in the town; T Shirts with RE messages distributed to participants of the rally • One day workshop on RE held on 24th at Chamber of Commerce Hall for Panchayat level elected representatives and officials from Rural Development Dept, Forest Dept and KSEB • NRSE Exhibition held on 24th for general public
14	Kasaragod	<ul style="list-style-type: none"> • Essay writing competition for High School and Higher Secondary School Students (separately); cash awards given to winners • Solar Lanterns distributed in a public function to top mark scoring students from SC&ST categories with un-electrified houses • NRSE Exhibition held at Collectorate • Seminar & Video Show on RE & EC for public held at District Panchayat Conference Hall

Annexure 5

List of Student Projects supported under ANERT scheme for the year 2004-05

Sl no	Project Title	Institution
1	Design, Fabrication and Testing of Biomass Gasifier	Govt Engg College, Thrissur 9
2	Solar Cooker- Revisited: Redesigning of Solar Box Cooker.	Pazhassi Raja NSS College, Mattanur, Kannur 670702
3	Design and Installation of Micro Hydrel Project	Amal Jyothi College of Engg, Koovappaally, Kottayam
4	Development of the Prototype of a Plastic Solar Cell using CIS 1 4Polyisoprene	Sree Narayana College, Kollam
5	Solar Tracker	College of Engineering, Chengannur
6	A Study about the socioeconomic aspect of the rural energy usage and the role of CBO's in promoting the appropriate technology for conservation and sustainable usage of energy	Loyola College of Social Sciences, Thiruvananthapuram
7	Energy Management Solutions using Wireless Network	NSS College of Engg, Akathethara, Engg College PO, Palakkad-8
8	Fuel blend in Diesel Engine	MES College of Engg, Kuttippuram, Thrikkanapuram PO, Malappuram
9	Bioenergy from Non-conventional Sources	Sahrdaya College of Engineering and Technology, Kodakara, Thrissur
10	Biofuel (ethanol) production from Biomass - Designing of distillation unit and improvement of fuel quality	St. Berchmans College Changanacherry 686101
11	Biodiesel from Rubber Seed Oil	St. Berchmans College Changanacherry 686101
12	Design and Fabrication of a PC interfaced Spin Coating Unit for Preparing Anti-reflection thin films	St. Berchmans College Changanacherry 686101
13	Design and Study of Solar Pond	St. Berchmans College, Changanacherry 686101
14	Biogas from Fish and Poultry Wastes	Sree Buddha College of Engg, Pattoor, Nooranadu, Alappuzha
15	Production of Methane Gas from Water Hyacinth	Sree Buddha College of Engg, Pattoor, Nooranadu, Alappuzha
16	Bioethanol Production from Straw	Sree Buddha College of Engg, Pattoor, Nooranadu, Alappuzha