



GOVERNMENT OF KERALA

Abstract

Power Department - 'Annual Plan 2024 25 Plan schemes of ANERT Renewable Energy Public Engagement Outreach ANERT as Knowledge Hub Technology development or demonstration and training and Green Energy Hub' Administrative Sanction Accorded Orders issued

POWER PS DEPARTMENT

G.O.(Rt)161/2024/POWER

Dated,03/09/2024

Read:-

1 Letter No. ANERT - RD/9/2024-T7 dated 22/05/2024 from the Chief Executive Officer, ANERT.

2 Minutes of the Departmental Working Group Meeting for Plan Schemes held on 06/07/2024.

3 Letter No. ANERT - RD/9/2024-T7 dated 17/07/2024 from the Chief Executive Officer, ANERT.

4 GO (P) No.57/2024/Fin dated 17/07/2024.

ORDER

As per the letter read above the Chief Executive Officer, ANERT has furnished the following proposals for Administrative Sanction after placing in the Departmental Working Group. for the implementation of above scheme at total estimate cost of Rs. 3,80,00,000 **(Three Crore Eighty Lakh)** , 6,95,40,000 **(Six Crore Ninety Five Lakh Forty Thousand)** and 80,00,000 **(Eighty Lakh)** by meeting the expenditure from the provision under the head of account 2810-00-800-90-07-35-0-P-V , 2810-00-800-90-08-35-0-P-V and 2810-00-800-78-00-00-0-P-V .

2) As per the minutes read as 2nd paper above, the Departmental Working Group met on 06/07/2024 recommended to accord Administrative Sanction for the above 2 schemes. The scheme at Sl.No.2 has been recommended to accord Administrative Sanction subject to the following conditions.

(i) ANERT shall take action to include 'Green Hydrogen Economy' as elective subject in the courses of Polytechnic Colleges & Engineering Colleges.

(ii) For purchase of IT Equipment, above 10 Lakhs remarks of IT Department shall be obtained.

- (iii) ANERT shall take steps to fill up vacancies through Public Enterprises Board.
- (iv) Man power shall be met with subject to approval of Finance Department.
- (v) Man power for new building may be considered later. For the existing Lab operation the cost for purchase and manpower may be agreed.
- (vi) Estimate shall be prepared in Price software.
- (vii) Before issuing of Administrative Sanction order sub component breakup shall be given by ANERT to Government.

3) Accordingly, the Chief Executive Officer, ANERT, as per the letter read as 3rd paper above, furnished the revised proposal with sub component level estimate for the scheme ‘‘ANERT as Knowledge Hub - Technology development/ demonstration and training’’ amounting to Rs. 695. 40 lakhs.

4) Government have considered the recommendation of the Departmental Working Group and examined the above plan project proposals submitted by the Chief Executive Officer, ANERT in detail and are pleased to accord administrative sanction for the schemes as detailed in the table below, subject to the conditions mentioned in the minutes of the Working Group and availability of funds

Head Of Accounts

Sl No	Head	Amount (in Rs)	AS Number	Valid Upto
1	2810-00-800-90-07-35-0-P-V	3,80,00,000	AS/PRD/24/38011	2025-03-31
2	2810-00-800-90-08-35-0-P-V	6,95,40,000	AS/PRD/24/38015	2025-03-31
3	2810-00-800-78-00-00-0-P-V	80,00,000	AS/PRD/24/38017	2025-03-31

Works Under Head Sl No 1 - 2810-00-800-90-07-35-0-P-V

Sl No	Requirements	Estimate Amount (in Rs)
1	Renewable Energy Public Engagement, Outreach	3,80,00,000
Total(Three Crore Eighty Lakh)		3,80,00,000

Works Under Head Sl No 2 - 2810-00-800-90-08-35-0-P-V

Sl No	Requirements	Estimate Amount (in Rs)
1	ANERT as Knowledge Hub Technology development demonstration and training	6,95,40,000
Total(Six Crore Ninety Five Lakh Forty Thousand)		6,95,40,000

Works Under Head Sl No 3 - 2810-00-800-78-00-00-0-P-V

Sl No	Requirements	Estimate Amount (in Rs)
1	Green Energy Hub	80,00,000
Total(Eighty Lakh)		80,00,000

All purchases will be made subject to strict observance of Stores Purchase Rules

5) The following general conditions should be followed wherever applicable.

I. The expenditure would be met from the provision available under the appropriate head of account.

II. The fund released will be based on actual requirement and the fund released should not be parked in banks.

III. Store Purchase Rules shall be strictly adhered to.

IV. For hiring of project staff / man power as part of project implementation, instructions issued in G.O (P) No. 76/2019/Fin dated 02/07/2019 and G.O (P) No. 81/2019/Fin dated 09.07.2019 shall be followed.

6) Approval for the prioritization of components / activities for the above project sought for by the CEO, ANERT vide letter read as 3 rd paper above is also sanctioned.

7) The work and other details of the above schemes are also appended to this order.

Annexure

Work&Details

1. RE Public Engagement, Outreach, Studies and Development

1.i) Promotional and Outreach Programmes

This includes three main sub-components/ activities:

- Promotion and outreach including renewable energy awards
- Publicity/ Exhibitions
- Supporting system for implementing renewable energy programmes in district level

The proposed State share of the component is ₹244 lakh plus project overhead expenses (maximum of 15 % including manpower) to the tune of ₹36 lakh. The total requirement of funds is ₹280 lakh. Brief details of the activities under each of the 3 sub-components are given below:

a) Promotion and outreach including renewable energy awards

The cost of power from Renewable sources has come down and is almost equal or in certain special cases less than the cost of conventional power. The share of Renewable Energy in the State is around 10%. So by making the people aware of the relevance of Renewable Energy Sources, a significant change in the energy use pattern and vetting their interest to become prosumers is possible. The public needs to be made aware of the benefits of using Renewable Energy devices if the goal of sustainable development is to be propagated. To create awareness on Renewable Energy, many promotional and outreach programmes are carried out by ANERT. The programmes include Awareness Classes, Advertisements,

partnering with media schools, etc. Renewable Energy Awards are also granted in various categories based on their performance in the previous year, as decided by a committee constituted by Government. Newsletters are also published and distributed periodically.

b) Publicity/ exhibitions

ANERT participates in various exhibitions and also conducts exhibitions to extend the benefits of renewable energy to the public. ANERT also involves as faculty for many training programmes of other academic institutions and research institutions.

c) Supporting system for implementing RE Projects in all districts

This includes helpdesk facility and technical manpower support to District offices for preparation of Feasibility Reports, Supervisions and Inspection of RE Projects including the use of services of Urjamithra Centres

1.ii) Accreditation, electronic marketplace, insurance

This includes two main sub-components/ activities:

- eGovernance
- Infrastructure upgradation

The proposed State share of the component is ₹87 lakh plus project overhead expenses (maximum 15% including manpower) to the tune of ₹13 lakh. The total requirement of funds is ₹100 lakh. Brief details of activities under each sub-components are given below:

a) eGovernance

ANERT has most of its activities online and adheres mostly to paperless workflow with eOffice, eTender and other software applications. ANERT had established the e-Marketplace portal for anyone in Kerala to get the details and order a renewable energy system online. The portal with extensive integration with other portals like Aadhaar, MNRE, KSEBL, NGO Darpan, payment gateway, NPCI (for DBT through SBI), etc. and mobile apps has greatly streamlined the installation of renewable energy devices, including those with subsidy. Updating the e-Marketplace as per upcoming requirements is essential. Activities for 2024-25 include meeting the expenses related to update and maintenance of eMarketplace platform, mobile apps, PMS updates, updating dashboards etc. Accreditation of agencies to be listed on the portal will also be carried out.

b) Infrastructure upgrade

Some of the infrastructure of ANERT such as IT and smart building needs to be upgraded to meet the changing technology and the new requirements of project implementation. The activities planned during the year include upgradation/replacement of server/ desktop/ laptop computers and peripherals, maintaining data centre, IT expense for smart building, etc.

The Proposed state share of “Renewable Energy Public Engagement, Outreach, Studies and Development” is ₹331 lakh plus project overhead expenses (maximum 15% including

manpower) to the tune of ₹49 lakh. The total requirement of funds is ₹380 lakh.

2. ANERT - a Knowledge Hub for Renewable Energy

Development and evaluation of new and upcoming technologies in renewable energy is an important activity of ANERT. As part of its action research development and improvement of renewable energy technologies are carried out on its own and in partnership with various institutions. Pilots and demonstration of new technologies and its evaluation studies are also carried out. Capacity building is also part of the scheme. The specific components under this scheme are:

- i) Laboratory and other facilities; and
- ii) Capacity building
- iii) New technology development, demonstration, pilots, studies

Brief details of the components are given below:

2.i) Laboratory and other facilities

The main activity under this component is the development of Renewable Energy Technology Hub at Kuzhalmannam. The continued support and expansion of the Solar Test Facility set up by ANERT at STIC-CUSAT is also part of this component.

It is proposed that state share of this component in the current year be ₹299.6 lakh with project over-head expenses including manpower to the tune of ₹44.4 lakh. The total requirement of funds is thus ₹344 lakh.

Brief details of projects/activities under this component is given below:

a) Kuzhalmannam Technology Hub including lab and training facilities

It is proposed to develop an Integrated Renewable Energy Knowledge Hub in the ANERT's land at Kuzhalmannam, Palakkad. The knowledge hub will include an industrial facilitation centre with lab facilities to promote startups in the renewable energy sector, facilities for testing and certification of renewable energy equipment and facilities for product development and training. A building of about one lakh and fifty thousand square feet will be set up for this purpose. The design for the facility has been finalised by M/s. MayaPraxis, Bangalore, who was selected through a tender process. Discussions have also been held with IIT Palakkad to associate in the programme. Now the work has to be entrusted to an agency for construction in phases, preferably an accredited civil construction agency like ULCCS or Nirmithi Kendra under PMC mode.

2.ii) Capacity building

With the increased use of renewable energy, requirement for skilled manpower for its design, installation and maintenance activities is increasing. Capacity building of ANERT personnel is also required. The main activities under this component are as follows:

- ANERT Research Fellowship Programme & Internship Programme
- Training programmes on renewable energy

The proposed State share of the component is ₹86 lakh plus project over-head expenses including manpower to the tune of ₹12 lakh during the current year. The total requirement of funds is ₹98 lakh.

Brief details of each activity/project under this component is given below:

a) ANERT Research Fellowship Programme & Internship Programme

Currently there is a dearth of trained manpower in the field of Renewable Energy especially, in Research. To overcome this issue, ANERT offers Research Internship and Research fellowship for eligible fresh post graduates. This is expected to give the students an exposure to the research in the field of RE.

In the year 2024-25, three Research Fellowship/Research Internship have been proposed. It is proposed to invite applications by ANERT from fresh post graduates Science/Engineering through newspaper advertisement. To encourage the students to take up the internship, a small stipend of ₹15,000/- per month may be offered. In the case of Research fellowship, the amount offered will be in line with the similar scheme of KSCSTE.

b) Training Programmes

Training is necessary to all stakeholders and ANERT's officers in Renewable Energy sector, to have exposure on new developments in the renewable energy field. Also advanced trainings needed for ANERT's officers in the Renewable Energy sector to have exposure on new developments happening in the renewable energy field.

The trainings topics include Solar Photovoltaic Systems, Wind Energy, Hydrogen Energy, Circular Economy, Sustainability, AI & ML in Renewable Energy, Data analytics and Block Chain in Renewable Energy, etc. In 2024, ANERT is planning to impart training to various stakeholders connected with renewable energy projects along with capacity building programme for ANERT employees. Also, ANERT is planning to host an International Training in Renewable Energy field expecting international participants from various countries.

There is also increased demand for skill manpower for design, installation and maintenance of RE systems. Seminars, business meet and training programmes would be organised for various target groups like students, local body institutions, educational and other non-governmental institutions, residence associations, builders and architects, electrical and electronics technicians, Urja Mithra Entrepreneurs and Technicians. To ensure quality products and good installation practices, support of technical experts and skilled persons are required.

Since the availability of certified inspectors is limited, ANERT will initiate training/capacity building programmes through technical institutes approved by the "Skill Council for Green Jobs" to generate more technical hands in the field. ANERT is planning to organise high end short-term training programmes for academics, senior officials of renewable agencies and other institutions. Training for engineering students with stress on hands-on experience is also planned to be initiated. Upgrade of necessary infrastructure for the trainings is also proposed.

ANERT is planning to organise Faculty Development Programmes on Renewable Energy for the teachers of Engineering Colleges.

Also, special short term training courses will be arranged for Government officials in the industry and other related institutions. The training is targeted towards the stakeholder institutions like KSEBL, Electrical Inspectorate, EMC and various Government Departments.

Collaborations and Associations:

ANERT is planning collaborations with International Consultancy organisations like GIZ Germany, Swedish International Development Corporation Agency (SIDA) etc. for the above trainings planned by ANERT. ANERT is seeking expertise from these International Institutions on curriculum, training manual, trainer's training courses, practical trainings on photovoltaic systems, wind energy, hydrogen, circular economy, sustainability, E-mobility, Artificial Intelligence (AI) and Machine Learning (ML) skill upgradation connected with renewable energy.

ANERT is also planning to associate with IEEE, IEEE Power & Energy Society and Institution of Engineers for conducting these trainings for mobilising the student manpower.

2.iii) New technology development, demonstration, pilots, studies

Development, customisation and enhancement of renewable energy technologies is an important part of the action research carried out by ANERT. The main activities under this component are as follows:

- Evaluation of new technologies in Renewable Energy and in-house Research & Development projects
- Renewable Energy Park, Ramakkalmedu (Phase II)
- Remote monitoring of PV power plants
- Supporting R&D and Innovation

The project proposed is for ₹220.4 lakh with overhead expenses including manpower to the tune of ₹33 lakh during the current year. The total requirement of funds is ₹253.4 lakh. Brief details of each activity/project under the component given below:

a) Pilot project on vehicle to grid and other EV technologies

Pilot/demonstration projects on advanced electric vehicle (EV) technologies are proposed to be taken up to study its impact and usefulness. Technologies such as vehicle to grid (V2G), wireless charging, direct DC charging from solar, etc are proposed to be set up as pilot/demonstration projects.

b) Evaluation of new technologies in RE and in-house R&D projects

Pilot/demonstration plants of new/ upcoming renewable energy technology and storage systems in the areas of solar, floating solar, small wind, bio energy, wave energy, building and vehicle integrated PV will be set up for study, evaluation and performance analysis. Pilot micro-grid projects including DC microgrid and next phase of the Ponmudi project with integration of medium capacity wind turbines would also be taken up. With the proliferation of electric vehicles new modes of charging including wireless charging would be explored. A pilot of vehicle to grid is also envisaged. The production of hydrogen from renewable sources, storage, generation of electricity using green hydrogen are also considered. Battery energy storage systems and their benefits and impact on grid would be studied. These projects would facilitate technology adaptation and developing commercial models. Policy inputs could also be provided through these projects. Resource assessment of renewable energy sources would also be taken up based on requirement.

c) Renewable Energy Park, Ramakkalmedu - phase 2

As part of the Renewable Energy Park at Ramakkalmedu, a Solar-Wind hybrid power plant with storage was proposed to experiment the effectiveness of integration of different sources of power with massive utility-scale storage to despatch quality power to the grid. The development of indigenous power conditioning unit for large solar power plants was also envisaged. The work of establishing one megawatt solar plant with indigenously developed PCU as first phase of the park was completed. During the next phase of the RE Park addition of storage facility and integration of wind generators are to be taken up. IPP wind farm 1.5 MW in 2 phases: Ramakkalmedu is the site having highest wind speed recorded in Kerala around 30 kmph with a Wind Power Density of 534 W/m² at 50 m height during ANERT's initial studies. As a requirement this project ANERT has already conducted Wind Resource Assessment at 50 m Hub Height at Amappara area of Ramakkalmedu with the help of National Institute of Wind Energy (NIWE). A 1500 kW capacity wind farm positioning ANERT as an IPP at the suitable location in the land owned by ANERT near Amappara, Ramakkalmedu based on the Wind Resource Assessment conducted there. The project will be implemented in Phases with Phase 1 in 2024-26 (750 kW) and Phase 2 in 2026-27 (750 kW). The projects will be implemented by tendering with the Technical Consultancy help from NIWE. Micrositing will be conducted with the technical help from NIWE and the suitable Wind Energy Generators (WEG) in the range of 250 kW to 750 kW will be selected based on the technical potential and logistical possibility at the site. The initial expense during current year would be related Project Management Consultancy with NIWE, Land & Road Development, Infrastructure for Power Evacuation and mobilising a 250 kW wind generator.

d) Remote Monitoring of PV Power Plants

It is proposed to establish a Centralised facility for remote monitoring of the SPV power plants installed in various Government buildings. A project initiated with KDISC on a pilot basis has just about to commence and now, and it would completed during this year, and if found successful this would be extended or else alternate modes implemented.

e) Supporting R&D and Innovation

ANERT has been implementing this programme to promote R&D and innovative ideas and to pilot new models in RE sector since 2018-19. Financial assistance is provided for conducting technical studies/technology appraisal, prototype development etc. In the field of Renewable Energy. Many of the already sanctioned projects are in progress and further instalments are due for release. Apart from the ongoing projects, new projects will be supported based on recommendations by a Technical Committee. The current year proposals include funding the projects selected in 2024-25; payment of further instalments of previous years' programmes and overhead expenses.

Indicative figures for sub-components have also been estimated. But the allocation of fund shall be based on the component-level estimates, which is as per the plan write-up in budget document.

The proposed state share of "ANERT as Knowledge Hub for Renewable Energy" is ₹611.30

lakh plus project overhead expenses (max 15% including manpower) to the tune of ₹84.10 lakh. The total requirement of funds is ₹695.40 lakh.

3. Green Energy Hub

Brief details of the scheme components proposed based on allocated funds are as follows (additional funding will have to be requested through supplementary demands, for meaningful implementation):

i. Pilot projects on Green Hydrogen

Establishing pilot projects in green hydrogen production, compression, storage, refuelling facilities for hydrogen vehicles, etc. are planned in this programme.

This would include collaborative pilot projects with other reputed institutions in areas such as:

- Projects proposed by IIT Madras for green hydrogen production from peat gas, brine, etc.
- green hydrogen production from waste like water hyacinth, rubber waste and other agricultural/forest biomass
- using green hydrogen for long distance vehicles, water transport

An amount of ₹20.00 lakh is proposed for the scheme for initiating the above activities, including the overhead charges at maximum of 15%.

ii. Centre of Excellence in Green Hydrogen

With the increased importance in Green Hydrogen and national and state intentions to build expertise, capability and technology for green hydrogen, a centre of excellence is proposed to be set up in ANERT. This will be done in collaboration with other reputed institutes such as IITs, CSIR labs and other agencies. An amount of ₹10 lakh is proposed to initiate the activities for this in the current year, which includes the overhead charges at maximum of 15%.

iii. Consultancy services including preparation of DPR and PMU

Availing of consultancy services in green hydrogen would be required in the initial stages (and considering the manpower situation in ANERT) for project vetting, DPR preparation, etc. The PMU set up for projects in this scheme would continue to function. An amount of ₹30 lakh is proposed for this including the overhead charges at maximum of 15% during the current year.

iv. Publicity and Outreach including Workshops

Publicity and outreach on green hydrogen and the opportunities in Kerala needs to be taken for consultation with stakeholders, awareness creation among the public, investors, industry and academic institutions. An amount of ₹20 lakh is proposed for this including the overhead charges at maximum of 15%.

The proposed State share of the “Green Energy Hub” is ₹68 lakh plus project overhead expenses including man power to the tune of ₹12 lakh. Total requirement of funds is ₹80 lakh only.

Prioritization

ANERT has been allotted an amount of ₹5020 lakh in the State Plan Budget 2024 under 4 account heads. An amount of ₹1047.6 was posted in eLAMS. AS has to be granted for the remaining amount of ₹3892.4 lakh. Proposals for AS were submitted for approval vide letters cited 2nd. The summary of the proposals is as follows:

#	Programme/ Scheme	Head of account	State Budget Amount (₹ lakh)	Posted in eLAMS (₹ lakh)	Amount proposed for AS (₹ lakh)	Remarks / proposal reference
1.	Programmes on Renewable Energy	2810-00-800-90-06-35-00	3730	913	2817	Continuing scheme
2.	Renewable Energy Public Engagement, Outreach	2810-00-800-90-07-35-00	410	30	380	Continuing scheme
3.	ANERT as Knowledge Hub - Technology development/ demonstration and training	2810-00-800-90-08-35-00	800	104.60	695.40	Continuing scheme
4.	Green Energy Hub	2810-00-800-78	80	-	80	Continuing scheme
	TOTAL		5020	1047.60	3972.40	

The project against Sl no. 1 is to be placed in the Special Working Group.

For the remaining three programmes, the following are the activities/components that are prioritised

1. Renewable Energy Public Engagement, Outreach (2810-00-800-90-07-35-00) (Total proposed for AS: ₹380 lakh)

1.	Promotion and outreach programmes (proposed ₹280 lakh)	₹110 lakh	Mainly for ongoing activities
2.	Accreditation, egovernance (proposed ₹100 lakh)	₹90 lakh	Mainly for ongoing activities

2. ANERT as Knowledge Hub (2810-00-800-90-08-35-00)

(Total proposed for AS: ₹695.40 lakh)

1.	New technology development... (proposed ₹253.4 lakh)	₹190 lakh	Pilots and innovative programmes
2.	Laboratory and other facilities (proposed ₹344 lakh)	₹100 lakh	Initiation activities
3.	Capacity building (proposed ₹98 lakh)	₹60 lakh	Essential programmes

3. Green Energy Hub (2810-00-800-78)

(Total proposed for AS: ₹80 lakh)

1.	Green energy hub (proposed ₹80 lakh) Additional funding would be required to match the Government of India programmes that are expected to be sanctioned soon	₹80 lakh	High priority activity - would also require additional funding
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By Order of the Governor,
Joint Secretary to Government
Power Department

To

The Chief Executive Officer, ANERT
The Chief I&I Division, State Planning Board, Pattom, Thiruvananthapuram
The Principal Accountant General (Audit/A&E), Kerala, Thiruvananthapuram
The Finance Department
The I & PR (Web & New Media) Department
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