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SUPPORTING R&D AND INNOVATION (SRI) 2020-21

CALL FOR PROPOSALS

ANERT invites applications seeking financial support for carrying out research in various fields of Renewable Energy under the programme "Supporting R&D and Innovation (SRI) 2020-21". Application alongwith concrete proposal in the prescribed format for carrying out research on the problems/topics identified by ANERT according to the guidelines of the programme shall be received in ANERT from eligible applicants within the prescribed time

1. Programme

Government of Kerala have accorded Administrative Sanction for implementation of the programme on "Supporting R&D and Innovation" during the financial year 2020-21 vide G.O.(Rt)No.102/2020/POWER dt. 08/09/2020. The objective of the programme is to promote innovation among institutions in Kerala and to demonstrate new models in RE sector. Component 'b' (SRI-2020-21) of this programme envisages short term and long term R&D work with reputed institutions on areas of RE identified by ANERT.

2. Thrust Areas:

In line with the broad objectives of the programme, following have been identified as the thrust areas:

- 1) Development of new RE technology/systems/processes
- 2) Up-gradation/improvement of present RE technology/systems/processes
- 3) Cost optimisation of various RE technology/systems/processes
- 4) Innovative use of RE technology to solve problems of day to day life
- 5) Triggering breakthroughs that will entirely change the way RE is used and
- 6) Development, up-gradation or Retrofitting in the field of storage and e mobility.

3. Strategy:

To facilitate achievement of the objectives, it is planned to financially support R&D efforts in the above thrust areas. Selection of proposals for receiving financial support under the component "SRI 2020-21" is planned though 'Call for Proposals'. During this Call, eligible institutions can submit proposals to carry out research on the specific problems/topics in the fields of Renewable Energy identified by ANERT listed in Annexure 1. The proposals thus received will be evaluated by ANERT and the eligibility for funding will be decided. Proposals received after the period

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specified in the 'Call for Proposals' will be considered on a case to case basis only if funds are available after finalisation of financial support for the proposals received against this Call.

4. Categories:

The problems/topics identified by ANERT have been classified into two categories-

- 1) For Sponsored Research
- 2) For Collaborative Research.

The proposal for Sponsored Research from an eligible applicant shall be to carry out research on their own on a problem/topic listed under the category "For Sponsored Research". ANERT will evaluate the proposal to decide on sponsoring the research partially or fully.

The proposal for Collaborative Research from an eligible applicant shall be to carry out joint research with ANERT on a problem/topic identified under this category. The role of ANERT shall be specifically and clearly mentioned in the proposal. ANERT will evaluate the proposal and decide on conducting collaborative research and providing financial support after discussions with the applicant, if necessary.

5. Eligible Applicants

Academic Institutions (including private institutions approved by the relevant government body), R&D Institutions in the public sector & Registered NGOs and University Departments engaged in R&D in the field of Renewable Energy in Kerala are eligible to receive the financial support. Consortia involving not more than three such institutions can also apply for financial support. The application for financial support shall be forwarded by the Head of Institution (HoI) of eligible institutions or HoDs of University Departments. In the case of Consortia, one of the institutions (or Departments) shall function as the Lead Institution (LI) and the HoI/HoD of the Lead Institution shall submit the application on behalf of the consortium.

6. How to Apply?

1. Application for financial support in the prescribed format alongwith the Research Proposal and a duly signed copy of the General Guidelines of SRI-2020-21 shall be forwarded to The Director, ANERT, PMG-Law College Road, Vikas Bhavan PO, Thiruvananthapuram-695033. The complete set of application in original alongwith a photocopy of the same shall be received in ANERT within the prescribed time. A soft copy of the complete set of application (in pdf format) also to be sent by e-mail to info@anert.in with a subject line "Supporting R&D and Innovation 2020-21".
2. Research Proposal shall be submitted in the prescribed format containing the Profile, Technical Information and the below documents
 - a) Endorsement from the HoI/HoD (on letter head)
 - b) Copy of Registration Certificate in the case of NGOs
 - c) Certificate from the Principal Investigator (PI)
 - d) Consent from the Co-Principal Investigator (Co-PI)
 - e) Consent from the Co-Investigator(s)-(Co-I)
 - f) Certificate regarding pending UC/SoE and
 - g) Detailed bio data of the PI, Co-PI and Co-I(s)
3. Applications received without the required documents/information will

rejected.

4. Documents submitted shall be in the prescribed formats, wherever applicable. Documents in other formats will not be accepted.

7. Last Date for submission of Applications

The applications complete in all respect shall reach ANERT before 5 pm on 15th February 2021.

General Guidelines of SRI-2020-21

Following Guidelines are prescribed for smooth implementation of the programme. ANERT reserves the right to review these guidelines and modify them according to requirements.

General:

1. The application shall be submitted in the prescribed format with all the necessary enclosures within the prescribed time.
 2. The application for financial support could be submitted by any of the eligible applicants or a consortium involving not more than three such institutions. NGOs should enclose a copy of their Registration Certificate in the proposal.
 3. The applicant should have adequate infrastructure, equipment and software facilities to carry out the proposed research work in his institution/consortium.
 4. In the case of a consortium, the roles and responsibilities of each institution forming part of the consortium shall be clearly defined in the research proposal. The Lead Institution should enter into a formal agreement with consortium members regarding the roles & responsibilities and sharing of overhead expenses.
 5. Research proposals from Central institutions can be supported only if the proposal is on behalf of a consortium involving a State institution. The support for infrastructure equipment/software provided under the scheme shall invariably be given to the State institution.
 6. The financial support will be provided only for the specific proposals selected by ANERT and the institution from which each of such selected proposal was received will be considered as the Recipient Institution (RI). Financial support will be released by ANERT only to the Recipient Institution which will be responsible for the performance of the project and settlement of accounts.
 7. An endorsement from the Applicant in the prescribed format shall be submitted as part of the proposal.
 8. The financial support received can be spent by the Recipient Institution only for the project that too within the allotted time duration.
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9. Re-appropriation of funds among different heads is normally not allowed. If any reallocation/ re-appropriation of the sanctioned amount under different heads becomes inevitable, it should be done only with prior approval from ANERT.
 - 10.The Recipient Institution shall maintain a separate bank account exclusively for implementation & management of the project and details of the bank account shall be reported to ANERT. The interest accrued will be treated as a credit to the recipient institution to be adjusted towards future installments of the financial support and should be reflected in the Statement of Expenditure.
 - 11.The Recipient Institution should maintain a separate audited accounts for the project.
 - 12.ANERT reserves the right to order verification/audit of accounts by any Officer authorised by ANERT.
 - 13.Financial Support under SRI 2020-21 will be limited for one proposal per Principal Investigator in the case of Academic Institutions, University Departments and R&D institutions and one proposal per NGO (independently or as part of the consortium).
 - 14.The Applicant should submit all pending Utilisation Certificate (UC)/Statement of Expenditure (SoE) concerning any of the earlier programmes of ANERT before applying for financial support under SRI 2020-21. Certificate regarding pending UC/SoE in the prescribed format shall be submitted as part of the proposal.
The Proposal:
 - 15.The proposal submitted shall be on any of the topics/problems identified by ANERT listed in Annexure 1 under the applied category.
 - 16.The applicant shall nominate one each of the Faculty/Scientists/Engineers/Technologists of his institute as the Principal Investigator (PI) and Co-Principal Investigator (Co-PI) of the Research Project. In the case of consortia, each of the other members of the consortia shall nominate one of their Faculty/Scientists/Engineers/Technologists as Co-Investigator of the Research Project. The PI should have field knowledge and relevant experience in the chosen area/topic. The Co-PI and Co-Investigators should have adequate expertise and experience to carry out the roles and responsibilities entrusted with each of them. Necessary Certificates/Consent from the investigators and detailed bio data of all the investigators shall be submitted as part of the proposal.
 - 17.The PI, Co-PI and Co-Investigators should have more than three years of service period at the time of submission of the project.
 - 18.The Co-Principal Investigator appointed by the applicant shall be capable of taking up the responsibility of fruitful completion of the project in the unforeseen event of discontinuation by the Principal Investigator.
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- 19.If the Principal Investigator wishes to leave his institution, the applicant has to evolve steps to ensure successful completion of the project in consultation with ANERT and get it approved by ANERT before relieving the Principal Investigator. The Principal Investigator should submit two copies of complete and detailed report of the work done so far including financial progress before leaving the institution.
- 20.The maximum duration for implementation of the proposal shall be 3 years.
- 21.The proposal shall clearly specify the objectives, head-wise budget with yearly break up and detailed schedule for implementation as required in the prescribed format. All the details sought in the format shall be provided completely and to the point.
- 22.Total estimated project cost alongwith item wise financial estimates under each head of design, fabrication & installation, project manpower, software, equipment, instrumentation, consumables, testing, travel and contingencies should be mentioned clearly in the proposal submitted, showing rates, quantity and total for each item.

Financial Support:

- 23.The applicant's institution/consortium is expected to have all the essential general software, equipment and infrastructure facilities required to carry out the proposed research work. Therefore, financial support under Software and Equipment head will be limited for specialised software/equipment specifically required for the proposed work if the same is not available in the applicant's institution, consortium members or nearby institutions.
- 24.In the case of private institutes, NGOs and consortia involving private institutes/NGOs the financial support from ANERT under software and equipment heads (if any sanctioned) will be upto 50% of the cost of software/equipment and the balance need to be borne by the private institute/NGO/consortium as the case may be.
- 25.The Recipient Institution is not permitted to seek or utilise funds from any other external source for the research project. On sanction of the proposal, an undertaking in this regard will have to be submitted by the applicant.
- 26.The emoluments of personnel on the regular roles of the institutes would not be borne in the project.
- 27.International travel is normally not permissible under the project.
- 28.The financial support shall not be utilized for purchase of vehicle or construction of any building unless specific provision is made for this purpose in the sanction order.
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29.An amount upto 5% of the total project cost as decided by ANERT shall be sanctioned as overhead expenses to the Recipient Institution. In the case of consortia, this amount shall be shared among the members as agreed among them.

Evaluation of Proposals:

30.Receipt of Application will be acknowledged with a reference number and other instructions, if any. Further correspondence with ANERT regarding the project should invariably quote the reference number and date.

31.Opportunity will be given to present the short-listed Research Proposals before the corresponding Proposal Evaluation Committee (PEC) of ANERT. The PEC will evaluate and ascertain the relevance of the projects in line with the guidelines. Only those projects recommended by the PEC will be considered for Financial Support depending on funds availability.

32.In case, the proposal is not found relevant or deficient in critical information, the applicant will be informed accordingly.

33.If the project is approved, an intimation will be issued to the applicant. The total cost of the project is finalised based on the latest quotation(s) of fabrication & installation, equipment, software, testing etc. approved under the project and other relevant documents related to manpower, contingencies etc. submitted by the PI.

34.The PI has to submit willingness to undertake the project with the sanctioned budget & objectives and an undertaking regarding non-receipt of fund from other external sources.

35.A formal sanction order will be released on receipt of the willingness and undertaking from the PI.

Release of Funds:

36.The financial support will be released in instalments. The first instalment will be 25% of the financial support. This will be released after issue of the sanction order on fulfilling the conditions therein. Based on a specific request, release of higher amount as first instalment could be considered on a case to case basis for purchase of equipment and software which are necessary in the initial phase of research itself.

37.The date of the order releasing first instalment of the financial support shall be considered as the start date for implementation of the proposal. The work shall be started only after the date of that order.

38.Further installments will be released as decided by ANERT only after receiving the Progress Report.

39.Any portion of the financial support, which is not ultimately required/used for the project, shall be duly surrendered to ANERT.

40.The amount sanctioned as overhead expenses would be released only after successful completion of the project and acceptance of the Project

Completion Report and other related documents by ANERT.

Implementation:

- 41.The Recipient Institution and all the consortium members should provide full infrastructural facilities such as accommodation, water, electricity, library, communication facilities etc. required for smooth implementation of the project.
- 42.The Recipient Institution shall not entrust implementation of the research project for which the financial support has been sanctioned to another institution (or an institution not part of the consortium as the case may be) nor shall it divert the amount to other institutes as assistance. In case the institution is not able to implement the project, it should refund the entire amount received as financial support (alongwith the interest) to ANERT.
- 43.The Investigator(s) should not enter into collaboration with a foreign party (individual/ institution) for the project being supported by ANERT without prior approval of ANERT.
- 44.For permanent, semi-permanent or infrastructural assets acquired from the financial support, an audited record in the form of a register in the prescribed format shall be maintained by the Recipient Institution. The term "Assets" include (a) the immovable property acquired out of the financial support and (b) movable property of capital nature if its value exceeds Rs 10,000/-. The Recipient Institution is required to send to ANERT the details of assets acquired using the financial support.
- 45.All the assets acquired in the project shall be the property of ANERT (or shall be shared proportionally with ANERT in accordance with the cost sharing pattern if the project is not fully funded) and such assets should not be disposed of, encumbered or utilized for purposes other than those for which the financial support had been sanctioned, without the prior sanction of ANERT.
- 46.ANERT reserves the right to terminate the project at any stage if it is convinced that the sanctioned amount has not been properly utilised or sufficient progress has not been reported under the project or sufficient efforts have not been devoted.
- 47.After completion/ termination of the project, ANERT will be free to sell or otherwise dispose of the assets, which are the property of ANERT. The Recipient Institution shall render to ANERT necessary facilities for arranging the sale of these assets. ANERT also has the discretion to gift the assets to the Recipient Institution for research purpose or transfer them to any other Institute if it is considered appropriate and justified.

Monitoring the Progress:

- 48.The Recipient Institution/ PI shall furnish half yearly Progress Reports of the project in the prescribed format. Apart from these periodic Progress Reports,
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financial and physical progress shall be reported at the end of every financial year.

49. Officer(s)/Scientists of ANERT or an Expert Committee deputed by ANERT may visit the Recipient Institution (or member institutions of the consortium) to review the progress of the work being carried out and to suggest suitable measures to ensure realisation of the objectives of the project. The concerned institution shall facilitate such visits.

Project Staff:

50. **No personnel appointed under the project, are to be treated as employee of ANERT and ANERT will have no liability, whatsoever, in this regard.**
51. Emoluments of manpower recruited for the project shall be in accordance with the Guidelines issued by Government of India and Government of Kerala in this regard applicable to the Recipient Institute.

Publication of Results and Patenting:

52. The Recipient Institution/PI is encouraged to publish technical/scientific papers based on the research work done under the project. Due acknowledgment should be given to the support received from ANERT. However, if the results of research are to be legally protected, they should not be published without action being taken to secure legal protection for the research results.
53. Filing of patents and transfer of technology generated shall be done only with concurrence of ANERT. The financial benefits from transfer of technology will have to be shared equally with ANERT.
54. The Principal Investigator/Recipient Institution shall prepare all the documents/information that would be required for filing patents & transfer of technology and submit them to ANERT as and when required.

Completion of the Project

55. On completion of the research, a presentation on the implementation of the project and major achievements shall be done.
56. The following details/documents shall be sent to ANERT to enable settlement of the account:
1. A copy of Final Project Report in the prescribed format.
 2. One page abstract highlighting the outcome.
 3. Soft copy of the Final Project Report and abstract.
 4. Statement of Expenditure (SoE) (Audited by a Chartered Accountant) and Utilization Certificate (UC) from HoI alongwith original vouchers/bills.
 5. Reprints/copies of papers/patents/articles etc.
 6. Details of electronic transfer of unspent amount/DD for any unspent amount drawn in favour of DIRECTOR, ANERT payable at Thiruvananthapuram. (On acceptance of the Audited SoE
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and UC.

We agree to the Guidelines stated above.

Name and Signature of
Principal Investigator

Name and Signature of
Head of Institution

(Office Stamp)

Annexure 1

Topics for Research

For Sponsored Research	
1. Bio Energy	
1	Assessment of different organic feed materials for producing biogas or hydrogen.
2	Development, testing and yield analysis of accelerated methods for methanation of organic waste
2. Solar PV	
1	Improvement of efficiency of solar cells such as bi-facial cells.
2	Design of a retrofit unit to convert off-grid inverters to grid tied inverter/hybrid inverter
3	Indigenous Solar Inverters with Intentional Islanding
4	Building integrated PV.
5	PV roofing sheets/tiles for homes (replacement for the existing trend of Al/GI roofing) and Agro-photovoltaics
6	Utilisation of PV for cooking
7	Low cost floating fixtures for deploying solar panels in water bodies

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8	Dedicated PV Power Packs for Fishermen Community Needs
3. Solar Thermal	
1	CSP: An experimental analysis.
2	Hybrid Solar Thermal Drying System with Biomass Gasifier
4. Wind Energy	
1	Kerala/South India-specific studies on Wind Forecasting
2	Small Wind Turbines (SWT) suiting to the lower Wind Regime
5. Storage and Electric Vehicles	
1	New Technology/Improvement techniques for storage batteries considering Energy density, power density, size, operating temperature, weight, cost, life cycle, charging and discharging characteristics, durability, thermal and chemical stability, internal resistance etc.
2	Grid storage for tail-end support/ EV for grid support
6. Miscellaneous	
1	A dedicated Mobile Renewable Energy Resource Station for Disaster Management applications
2	Development of a cold storage facility functioning on the principle of thermo electric effect to be powered by SPV
For Collaborative Research	
1. Bio Energy	
1	Performance Analysis of biogas plants installed by ANERT - Identification and analysis of reasons for failure, if any and suggestions for long term success
2. Solar PV	
1	A centralised data collection and analytics centre for performance monitoring of solar power plants

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2	Performance Analysis of installations under 10,000 rooftop Programme
3	Performance Analysis of grid tied power plants installed through ANERT
4	Performance Analysis of SPV street lights installed by ANERT
3. Storage and Electric Vehicles	
1	Cost reduction and commercialisation of fuel cells
2	Fuel Cell powered water transport facilities and house boats
4. Wave Energy	
1	Wave Resource Assessment and preparation of a wave energy atlas of coastal Kerala
5. Miscellaneous	
1	Performance optimisation of hybrid power plants

Amit Meena I A S
Director