

MINUTES OF THE TENTH MEETING OF STEERING COMMITTEE ON R&D SCHEME FOR CONSERVATION & DEVELOPMENT HELD ON 07TH DECEMBER, 2021 AT MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, INDIRA PARYAVARAN BHAWAN, NEW DELHI

The Tenth meeting of the Steering Committee on R&D Scheme for Conservation and Development was held on **07th December, 2021** under the chairmanship of AS(RA) to consider 8 projects (recommended by 19th TFAC) received online under the R&D Scheme for Conservation & Development. The list of participants is at **Annexure-1**.

2. Confirmation of Minutes of 9th Meeting of the Steering Committee

The minutes of the Ninth Meeting of Steering Committee held on 19th January, 2021 were circulated to the Committee members and were confirmed.

3. Consideration of Proposals

Ms. Rita Khanna, Advisor and Dr. S. K. Shoor, Scientist- 'C' welcomed Shri Ravi Agrawal, Additional Secretary, MoEFCC, Chairman and the members of the Steering Committee for consideration of the 8 projects listed at **Annexure-2**. It was informed that these projects were received online on the MIS-Portal under the R&D Scheme for Conservation and Development. The projects were first considered and recommended in the Technical and Financial Appraisal Committee (TFAC) meeting held during 1-3 September, 2021.

The projects were taken up for consideration.

1.0 PROJECT DETAILS:20/2021/RE - "An exploration of the mangroves of the Eco-Sensitive Zone of Bhadrak wildlife division (Odisha) for their fungal endophyte diversityt" Submitted by Dr. T.S. SURYANARAYANAN, Vivekananda Institute of Tropical Mycology, Ramakrishna Mission Vidyapith, 45A, Oliver Road.

PROJECT DETAILS

Co-PI:Dr. M.B. GovindaRajulu, Assistant Director, Vivekananda Institute of Tropical Mycology (VINSTROM), Ramakrishna Mission Vidyapith, 45A, Oliver Road, Mylapore, Chennai 600 004, Tamil Nadu, INDIA.

Duration of Study: 3 Year

Location of Study: ODISHA

Objectives:

- I. Isolation and identification of fungal endophytes associated with the endobiome of roots and leaves of Bhadrak mangroves
- II. Determination of the species diversity, host specificity, tissue specificity, core and satellite endophyte species in the population
- III. Identification of salt tolerant endophytes for future use of them in bio prospecting for production of salt tolerant industrially important enzymes
- IV. Preservation of the isolated endophyte cultures by following the relatively easier and simple methods used successfully by VINSTROM for preserving such fungi
- V. Submission of the endophyte cultures to a national Culture Collection Centre for enhancing the bio economy of the country as they could be used by other national labs for their technological potential

Expected Outputs:

- I. One JRF would be trained in isolating, culturing, identifying endophytes and preserving them in culture.
- II. VINSTROM would deposit the cultures in a Nation facility for future use by other labs.
- III. Presentation of the results in National symposium (2-4) and publication (3-5) in peer reviewed journal.

Cost of project: Rs31.63/- (Rs. in Lakh)

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)
3 years	15.01	8.01	8.61	31.63

The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	4.61	4.61	5.21	14.43
Equipment	7.00	0.00	0.00	7.00
Consumables	1.00	1.00	1.00	3.00
Travel Cost	1.00	1.00	1.00	3.00
Contingency	0.50	0.50	0.50	1.50
Institutional Charges	0.50	0.50	0.50	1.50
Any Other	0.40	0.40	0.40	1.20

Total Budget	15.01	8.01	8.61	31.63
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Manpower Requirement:

- I. Research Fellows (JRF/SRF): 1

Additional equipment required (not available with Institution):

S.No.	Equipment	No of Units
1.	Thermal Cycler (PCR Machine)	1

The PI made the presentation and stated that the project would help to determine the fungal endophyte diversity of Bhadrak mangroves, identify host generalists, core and satellite species. Molecular ID of endophytes, determine salt tolerance in them, culture collection, deposition.

Expected Outcome:

- I. For the first time, the endophyte diversity of the eastern coast mangroves of India would be known.
- II. It might be possible to discover a novel fungal species.
- III. Salt resistant endophyte cultures would be available for trying their ability to improving crop resilience to Climate Change.
- IV. A unique genetic resource in the form of endophytes probably housing novel genes would be added to the culture collection of the country.

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed that the Investigators have the requisite expertise on endophytes. The endophytes are known to yield products that are useful in health care system. The budget is modest. The Committee recommended the project for funding subject to the verification that the institution is eligible under the scheme.

Subsequently, the project was taken up for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation and elaborated the recommendations given by the TFAC.

The aforesaid committee recommended the project with following observations:

- i. ***Removal of equipment cost from the proposal.***
- ii. ***Expansion of the worksite/ locations of the project to 10 wildlife division/area instead of one wildlife division/area and increase its travel budget from Rs 3 lakh to Rs 5 lakh.***

- iii. ***PI should collect sample from different locations like Eastern Ghat, Western Ghat and Southern States for comparison to provide a better visibility and attributes of fungal endophytic diversity.***
- iv. ***PI should revise the budget to around Rs. 25.98 Lakhs accordingly.***

2.0 PROJECT DETAILS: No. 1/2020/RE – “**Identification of Drivers, Barriers, and study of Innovative Circular Economy (CE) business models - a case of Construction Industry**”. Prof.VidyadharGedam, Assistant Professor, National Institute of Industrial Engineering Mumbai 440087

PROJECT DETAILS

Co-PI: ShirishSangle and Rakesh Raut, Professor and Assistant Professor, National Institute of Industrial Engineering, Vihar Lake, Mumbai- 400087

Location of Project: MAHARASHTRA, Mumbai

Duration of Project: 1 years 3 Month

Objectives of Project:

- I. To select specific clusters of CI situated in and around Mumbai and studying there As-Is environment and sustainability approaches/practices.
- II. Delineation of factors fostering the adoption of circular business models and barriers to such adoption. Further, prioritizing the factors using Multi-Criterial Decision Making (MCDM) tools along with the cause-effect relationship
- III. Strategies to deals with enabling and deterrent factors.
- IV. Study and comparison of various circular business models, i.e., such as 7-P, IMSA s, Accenture, Business Model Canvas, ReSOLVE etc., and identifying one which is the most appropriate for the CI in India.
- V. Identification of new capabilities to be developed by the construction sector to adopt a circular business model.
- VI. Making the business case for a circular business model in the CI, and develop an approach paper for smooth adoption of the above suitable circular model.
- VII. To consolidated and integrate available information on different components related to Circular Economy (CE) via GRIHA, LEEDS, C D Waste Management Rules of the MoEFCC, Treatment of Wastewater, Energy Efficiency through BEE rating, integration of the concept of 4Rs- Reuse, Recycle, Reduce and Recover in use of water, electricity, choice of materials and products leading to resource efficiency, and prepare a status-quo report in the form of white paper and manual on policy and technical specification.
- VIII. To organize national level dissemination workshops for policymakers, decision-makers, and CI stakeholders for providing input to policymakers, decision-makers, and industry personals.

Expected Outputs:

- I. The policy document/white paper document for decision makers/policy makers/stakeholders to make the appropriate decision and to extrapolate the work in other sectors and regions.
- II. White paper and manual on policy and technical specification for CE business framework and feasible practices in CI not only for Mumbai region but also for the smart cities program.
- III. A consolidate information in the form of guideline/manual will be developed for the best practices for resource efficiency on a Circular Economy Business Model for Construction industry.
- IV. Mutual exchange of research ideas with faculty members of the institute as well as with other institutes, ministries in India and abroad.

Cost of Project: Rs. 11,79,244.50/-

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)
3 years	9,39,509.50	2,39,735	0	11,79,244.50

The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	4,61,280	1,15,320	0	5,76,600
Equipment	0	0.00	0	0
Consumables	1,50,000	50,000	0	2,00,000
Travel Cost	1,50,000	50,000	0	2,00,000
Contingency	24,415	24,415	0	48,830
Institutional Charges	1,53,814.50	0	0	1,53,814.50
Any Other	0	0	0	0
Total Budget	9,39,509.50	2,39,735	0	11,79,244.50

Manpower Requirement:

- Research Fellows (JRF/SRF): 01

Additional equipment required (not available with Institution): NIL

The project was earlier placed in the 13th TFAC. The committee, after deliberations, was of the view that the expected outcome could be used as a White paper and manual on policy and technical specification for CE business framework and feasible practices in CI not only for Mumbai region but also for the Smart Cities Programme. The committee also noted that the proposed budget of Rs. 34,77,408 is very high as much of the project work is desk based and needs to be pruned to about Rs. 10-12 lakhs as the PI has stated the Industry based work is situated close by. The committee also desired that the project duration is reduced to about 15 months from award of work. The Committee after discussion recommended that the PI should revise the project in light of the above suggestions and submit the revised project application online for funding under the scheme.

Expected Outcome of the project:

- I. Drivers and barriers for Circular Economy and Development of Circular economy model exclusively for construction industry for construction demolition waste and resource circularity.
- II. Circular economy business model exclusively for the construction industry.
- III. Manual for best sustainable practices in the handling and recycling of construction and demolition waste as well as raw materials.
- IV. Consolidating all the available information related to resource efficiency via GRIHA, LEEDS, C D waste management rules of the MoEFCC, treatment of wastewater, energy efficiency through BEE rating, integration of the concept of 4Rs in use of water, electricity, choice of materials and products, work of IL FS, TERI.
- V. Integrating all the available information in the form of a status quo report with a guideline/manual for the best practices for resource efficiency on a Circular Economy Business Model.
- VI. Dissemination of the Key findings through half day workshop with the important stakeholders.

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed, the PI has revised the proposal as per the suggestion of the TFAC & he has reduced the duration of the project and also reduce the budget of the project significantly as suggested by the committee. The committee recommended the project for grant-in-aid.

Subsequently, the project was taken up for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation and elaborated the recommendations given by the TFAC. The Steering Committee observed the following:

- i. ***The project could be completed within 9 months.***

- ii. ***The output of the project was just a policy document but the outcomes were not being tangible enough.***
- iii. ***The proposal did not reflect an implementable circular economic model.***
- iv. ***The existing guidelines, rules, framework of NITI Aayog and MoHUA for suitable incorporation in the project ought to be also considered.***

Accordingly, the committee did not approve the project.

3.0 PROJECT DETAILS: No. 458/2018/RE- "Phytosociological survey on economically important plants in a dry deciduous forest Meghamalai hills, Western Ghats, Tamil Nadu" submitted by PI: Prof. Dr. G. RENUGA, SRI ADI CHUNCHANAGIRI WOMENS COLLEGE

PROJECT DETAILS

Co-PI:

Dr. C. Murugan, Scientist E, Botanical Survey of India (SRC), TNAU Campus, Coimbatore 641003, Tamil Nadu

Location of Project: TAMIL NADU, THENI, Uthamapalayam

Duration of Project: 3 years

Objectives of Project:

- I. To survey and identify medicinal flora distribution in Meghamalai forest.
- II. To collect the plants samples for taxonomic identification.
- III. To emphasize the efficiency of therapeutic impacts of the plants to the local society.
- IV. To educate and involve the women for propagation and conservations practices.
- V. To design and develop database of medicinal plants in Meghamalai hills

Expected Outputs:

The present work is the outcome of intensive field studies undertaken in Meghamalai inhabited by Tribal community. Explorative field trips will regularly follow once in a week in the study area about all habitants to elicit information on medicinal plant used to treat various ailments. Fieldwork is the most significant.

Cost of Project: Rs. 25,95,900/-

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)

3 years	8,69,300	6,77,300	10,49,300	25,95,900
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The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	3,12,000	3,12,000	3,84,000	10,08,000
Equipment	1,92,000	0.00	0.00	1,92,000
Consumables	1,25,000	1,25,000	1,70,000	4,20,000
Travel Cost	1,10,000	1,10,000	2,75,000	4,95,000
Contingency	60,000	60,000	1,50,000	2,70,000
Institutional Charges	70,300	70,300	70,300	2,10,900
Any Other	0	0	0	0
Total Budget	8,69,300	6,77,300	10,49,300	25,95,900

Manpower Requirement:

- Research Assistant: 01

Additional equipment required (not available with Institution):

S.N.	Name of Equipment	No of Unit
1.	temperature controlled plant growth chamber	1

The project was earlier placed in the 14th TFAC. The committee noted that details of Co-PI has not been provided and suggested a taxonomist of the Botanical Survey of India, Southern Regional Centre, Coimbatore could be co-opted as PI or be made part of the Team for identification of important plants in the Forest of Meghamalai hills, Western Ghats. The project should bring out a valuable Handbook on the plants of Meghamalai Hills and their economic importance. The committee suggested that the study may incorporate the role of these plants in the livelihood of the local communities and awareness programme for their conservation in their natural habitats. The committee noted that the present proposal deals with Vascular plants where as MoEF&CC earlier study No. 23/28/2012-RE of Dr. A.E. Dulip Daniels, Scott Christian College, Tamil Nadu titled " Studies on the bryoflora of Megamalai hills in the Western Ghats" funded

in 2014 was restricted to bryophyte flora (non vascular plants) and as such the present proposal is different from the study carried out earlier. The Committee was of the view that this proposed study would require three years for completion of survey, identification and in the preparation of the Handbook.

The Committee after discussion sought a revised proposal incorporating the suggestions as made above for further consideration of the TFAC.

Expected Outcome of the project:

The entire Western Ghats is known for its biodiversity, richness and endemism of different species. In the present investigation, a total of species of medicinal plants distributed among various genera belonging to different families will be identified at study area. The collected specimen plants will be identified with the.

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed that PI has revised the proposal as per the recommendation of TFAC. The Committee recommended the project for grant-in-aid with the condition duplicate herbarium specimens should be submitted to Herbarium of Regional Circle of BSI, Coimbatore and Central National Herbarium, BSI, Kolkata.

Subsequently, the project was taken up for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation and elaborated on the recommendations given by the TFAC. The committee did not approve the proposal with the following observations:

- i. ***The study area is limited.***
- ii. ***The integration/ coordination with the State Biodiversity Board, Biodiversity Management, Committees, Tribal people and BSI to collect specimens was missing.***
- iii. ***The number of species were limited.***

4.0 PROJECT DETAILS: No. 59/2020/RE- "Recycling of plastic and micro-plastic waste for preparation of value added product and its various application in energy, environment". submitted by PI: Prof.Papita Das, Jadavpur University, Jadavpur, Kolkata

PROJECT DETAILS

Co-PI: Dr. Suvendu Manna, Assistant Professor, Department of Health Safety and Environment University of Petroleum and Energy Studies Energy Acres, Block IX, Bidholi, Via Premnagar Dehradun – 248007

Location of Project: WEST BENGAL, KOLKATA

Duration of Project: 3 years

Objectives of Project:

- I. Production of carbonaceous materials and nano-composite materials from plastic and micro-plastic waste
- II. Bio oil i.e value added recycle product from plastic/micro-plastic waste
- III. Production of nano-sheet using microplastics
- IV. Production of aerogels for application in water treatment and thermal insulation
- V. Optimization using RSM, ANN and mathematical modeling of the application in the wastewater treatment

Expected Outputs:

- I. Production of carbonaceous materials and nano-composite materials from plastic and micro-plastic waste
- II. Bio oil i.e value added recycle product from plastic/micro-plastic waste
- III. Production of nano-sheet using microplastics
- IV. Production of aerogels for application in water treatment and thermal insulation
- V. Optimization using RSM, ANN and mathematical modeling of the application in the wastewater treatment

Cost of Project: Rs 42,65,000/-

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)
3 years	23,37,000	9,96,000	9,32,000	42,65,000

The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	516000	516000	552000	1584000
Equipment	1441000	100000	0	1541000
Consumables	200000	200000	200000	600000
Travel Cost	50000	50000	50000	150000

Contingency	70000	70000	70000	210000
Institutional Charges	60000	60000	60000	180000
Any Other	0	0	0	0
Total Budget	23,37,000	9,96,000	9,32,000	42,65,000

Manpower Requirement:

- Research Assistant: 01
- Research Fellows (JRF/SRF): 01

Additional equipment required (not available with Institution):

S.N.	Name of Equipment	No of Unit
1.	Integral Sphere (attachment of Spectrophotometer)	1
2.	Microscope	1
3.	Polymer library of FTIR	1
4.	Pyrolysis fabrication unit	1

The project was earlier placed in the 13th TFAC. The committee recommended that the PI should consult NCCR and NCCSCM experts and reformulate a project focussing on the development of technology for the production of value added products from plastic waste and submit it for further consideration. The details of the Co-PI also needs to be given in the application.

Expected Outcome of the project:

- I. The assessment of microplastics and plastics in coastal, riverbed has been proposed for minimizing the water pollution as well as the marine plastic pollution. There have been some evidences that microplastics mainly polyethylene (PE) and polystyrene (PS) in the marine environment pose a risk and life-threatening issues to flora and

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed that the PI has incorporated all the suggestions made by the TFAC. The proposal was revised as per the recommendation of TFAC. Hence the committee recommended the project for grant-in-aid.

Subsequently, the project was taken up for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation and elaborated on the recommendations given by the TFAC. The committee did not approve the proposal with the following observations:

- i. **The cost of the project in entirety was on higher side.**

It was also observed by the committee that similar projects of this kind are being taken up G.B. Pant National Institute of Himalayan Environment and Kumaon University. Accordingly, committee advised the RE Division, to avoid the duplicity of work for further consideration.

5.0 PROJECT DETAILS: No. 498/2018/RE- "Understanding the Relationship between Forest and Water in the context of Changing Climate Variables of Narmada Catchment". submitted by PI: Dr. Bhaskar Sinha, Indian Institute of Forest Management, Nehru Nagar, Bhopal

PROJECT DETAILS

Co-PI:

- I. Dr. Jigyasa Bisaria, Asst. Professor IIFM Nehru Nagar Bhopal 462003
- II. Dr Pankaj Srivastava, Director, IIFM Nehru Nagar Bhopal 462003
- III. Dr Adavit Edgaonkar, Asst. Professor, IIFM Nehru Nagar Bhopal 462003

Location of Project: MADHYA PRADESH, BARWANI, DINDORI

Duration of Project: 2 years

Objectives of Project:

- I. To understand and quantify the relationship between different forest types and water ecosystems in two districts of Narmada catchment
- II. To assess the dynamic relationship of forest and water in context to changing climate variables
- III. To compute the water budget for sustainable management of water and land use practices, and
- IV. To recommend strategies for sustaining forest and water ecosystems

Expected Outputs:

- I. A holistic perspective on interactions between forest, water and climate.
- II. Trend analysis of water availability in and around proximity of different forest types in the Narmada catchment

- III. Analysis of spatio-temporal associates of forest, water and climate in the study area.
- IV. Computation of water budget along with strategies for land use and water

Cost of Project: Rs 45,06,900 /-

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)
3 years	23,98,450	21,08,450	0	45,06,900

The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	15,18,000	14,28,000	0	29,46,000
Equipment	0	0	0	0
Consumables	5,00,000	0	0	5,00,000
Travel Cost	2,00,000	5,00,000	0	7,00,000
Contingency	55,450	55,450	0	1,10,900
Institutional Charges	0.00	0.00	0	0
Any Other	1,25,000	1,25,000	0	2,50,000
Total Budget	23,98,450	21,08,450	0	45,06,900

Manpower Requirement:

- Research Assistant: 01
- Research Fellows (JRF/SRF): 02
- Specialist: 01

Additional equipment required (not available with Institution): NIL

The project was earlier placed in the 14th TFAC. The Committee after discussions decided that the project proposal can be supported for funding under the Scheme subject to the conditions that the study area consists of two different sites differing in forest cover, and density located in similar ecological/ climatic zones and qualification of the Water Budget of the two sites is carried out. The revised proposal will be further considered by the TFAC.

Expected Outcome of the project:

- I. Project outputs will lead to policies and strategies for conservation of forest and water resources. It will lead to science and technology driven quantification of interrelations of forest, water and climate. It will also create a road map for conservation driven attainment of sustainable development goals.

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed that the PI has revised the proposal as per the suggestion of the TFAC. The PI clarified the issues on the selection of the study area and the budget proposed. The committee recommended the project for grant-in-aid.

Subsequently, the project was placed for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation and elaborated on the recommendations given by the TFAC. The committee recommended the project with following observations:

- i. ***The travel cost should be revised from Rs. 7 Lakh to 5 Lakh.***
- ii. ***Provision of engaging a Research Assistant and expert consultation should be done away with.***
- iii. ***The PI should focus on the output outcome of the project and make it more inclusive. The project should break up in two components one is pilot study and the other being its extension.***

Accordingly, PI should revise and resubmit the project for approval of the Ministry within 10 days. The RE Division was advised that the approval for project should be conveyed only after receiving revised proposal.

6.0 PROJECT DETAILS:299/2020/RE- "Nutri smart living" - Enhancing nutritional security and livelihood of tribal women using indigenous foods resources." Submitted by Dr. Aneena ER, College of Horticulture, KAU P.O. Thrissur Kerala

PROJECT DETAILS

Co-PI:

- I. Dr. SeejaThomachanPanjikkaran, Assistant Professor and Head, Department of Community Science, College of Horticulture, KAU
- II. Dr. Shaji M., Assistant Professor, Assistant Professor, College of Forestry, Kerala Agricultural University
- III. Dr. Sharon C.L, Assistant Professor, Dept. of Community Science, college of Horticulture, KAU
- IV. Dr. Lakshmy P.S, Assistant Professor, Dept. of Community Science, college of Horticulture, KAU

- V. Dr. Sreeram V, Assistant Professor (Agrl. Extension), RARS
Ambalawayl

Duration of Study: 2 Years

Location of Study: KERALA, PALAKKAD, Mannarkad, Mananthavady

Objectives:

- I. Documentation of the indigenous knowledge on forest based foods and food preparations of tribes
- II. To identify the most potential forest crops for nutritional qualities
- III. Assessment of the extent of forest dependency
- IV. To assess the nutritional security and food habits of tribal women and children
- V. To improve food and nutrition sufficiency through promoting nutritionally rich traditional crops, augmentation of conservation of nutritionally rich forest crops through its processing and value addition.
- VI. To give nutrition education and to create awareness on forest conservation, strategies to reduce forest dependency, nutritional qualities of indigenous crops and its conservation, safe food practices, health, nutrition and hygiene among women and children
- VII. To set up a "Nutri Smart Living Centre" for women self help groups for promoting forest conservation, knowledge on nutritious forest crops, income generation and entrepreneurship development through production and commercialization of nutritious food products by tribal women

Expected Outputs of the project:

- I. A nutri smart centre at tribal colonies of both district with a production capacity of 100kg per month.
- II. the present scenario of indogenous food and endangered food crops
- III. nutritional status and food and nutrition security issues of the selected tribes.
- IV. food processing technologies feasible for tribals of these

Cost of project: Rs 25,30,000/-

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)
3 Year	7,95,000	6,75,000	10,60,000	25,30,000

The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	440000	440000	440000	1320000
Equipment	85000	15000	0	100000
Consumables	100000	50000	50000	200000
Travel Cost	100000	100000	100000	300000
Contingency	50000	50000	50000	150000
Institutional Charges	0	0	400000	400000
Any Other	20000	20000	20000	60000
Total Budget	7,95,000	6,75,000	10,60,000	25,30,000

Manpower Requirement:

S.No.	Position	No of Manpower
1.	Project Assistant	1
2.	Field Assistant	1
3.	Any other	1

Additional equipment required (not available with Institution):

Sl. No.	Equipment	No of Units
1.	Lap top, tablets for data entry, printer, Digital camera	1
2.	Mixer grinders Mini flour mill Packing machines Gas burners Utencils and vessels	1

The project was earlier placed in the 18th TFAC. The Committee observed that the proposed project does not clearly spell out how it would ensure protection to forests and how the tribal communities would extend help in forest protection. Tribal communities can be motivated to protect and conserve the environment, and this should be chief objective of the project. The proposal should be revised and the revised project should be placed for further consideration in the next meeting of TFAC.

Expected Outcome of the project: -

- I. revival of aboriginal nutritious food products with existing crops
- II. Awareness regarding health and nutrition among tribals
- III. Skill development for enhancing livelihood
- IV. Adoption of technologies for improvement in household food and nutrition security

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed that the PI has revised the proposal in the light of suggestions given by earlier TFAC. The committee recommended the project for grant-in-aid.

Afterward, the project was placed for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation on the recommendations given by the TFAC. The committee did not approve the project with the following observation that:

- i.
 - i. ***Co-ordination with the State Biodiversity Board and with the Biodiversity Management Committees which may be existent there was missing.***

7.0 PROJECT DETAILS:232/2020/RE- "Exploration and Conservation of edible and medicinal mushroom diversity and documentation of ethno mycological knowledge from forests of Coimbatore district of Western Ghats" Submitted by Dr. Dr.G.Thiribhuvanamala, Tamil Nadu Agricultural University, Lawley Road,Coimbatore 641003

PROJECT DETAILS

Co-PI:

1. Dr. K.T. Parthiban, Dean(Forestry), Forest Collee and Research Institute, Mettupalayam
2. Dr. K. Angappan, Professor (Pathology), Department of Plant Pathology

Duration of Study: 3 Years

Objectives:

- I. Assessing the seasonal distribution of edible and medicinal mushroom diversity from forest areas adjoining the tribal villages/local communities of Coimbatore district
- II. Identification and preservation of documented edible and medicinal mushroom specimens
- III. Documentation of ethno mycological knowledge from tribal villages/ local communities (inside and outside RF)of forest regions of Coimbatore district

- IV. Selection of elite edible mushrooms for the region and developing simple low cost agrotechnology package for cultivation of elite mushrooms
- V. Capacity building and skill development to tribals (inside and outside RF) on agrotechnology, value addition and augmenting supply chain of elite mushrooms

Expected Outputs of the project:

- I. About minimum of 25 edible/medicinal mushroom types (species/strains) collected and documented from Anaikatti, Palamalai, Marudhamalai, Karamadai, Siruvani, vellingiri and Mettupalayam forest areas adjoining the tribals/ local communities
- II. Characterization of edible/ medicinal mushroom collections for exploring their edibility and phytochemistry
- III. Identification and selection of elite mushroom species
- IV. Study on ethnomycological / indigenous knowledge.
- V. Development of technologies like agrotechnology and value addition of elite mushrooms
- VI. Popularization of agrotechnology technology through decentralized capacity building
- VII. Formation of mushroom based tribal clusters
- VIII. Linking tribal community to the consuming industries
- IX. Creation of tribal start-ups for commercial mushroom production through agribusiness incubator

Cost of project: Rs 34,63,800/-

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)
3 Year	1476600	964850	1022350	3463800

The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	564000	564000	564000	1692000
Equipment	340000	0.00	0.00	340000
Consumables	300000	200000	250000	750000
Travel Cost	50000	50000	50000	150000
Contingency	30000	25000	25000	80000
Institutional Charges	192600	125850	133350	451800

Any Other	0	0	0	0
Total Budget	1476600	964850	1022350	3463800

Manpower Requirement:

S.No.	Position	No of Manpower
1.	Research Fellows (JRF/SRF)	1
2.	Research Assistant	1

Additional equipment required (not available with Institution):

Sl. No.	Equipment	No of Units
1.	Laminar air flow chamber	1
2.	Air conditioner 2tonne	1
3.	Refrigerator (big around 400 to 450 litres capacity)	1
4.	vertical autoclave (medium)	1

The project was earlier placed in the 18th TFAC. The committee observed that title of the project is somewhat confusing and should delete the following: "for restoration of nutritional security through recycling of agro forest wastes" from the title. The committee also suggested to modify the objectives and select the best elite mushroom species of the region for developing agro technology package for elite mushroom. The project should also include the demonstration of agrotechnology developed for selected elite mushroom cultivation and recycling of agrowastes. The PI should revise the proposal in light of above comments and resubmit it for further consideration by TFAC.

Expected Outcome of the project:-

i. Year 1

Documentation of the seasonal occurrence of edible and medicinal mushroom fungal diversity of Anaikatti, Palamalai, MettupalayamMarudhamalai,

- Climate change on distribution of mushroom diversity
- New and different strains of edible and medicinal mushrooms identified
- Conservation of mushroom cultures of edible medicinal importance
- Creation of data base • Documentation of ethnomycological

Year 2

Documentation of the seasonal occurrence of edible and medicinal mushroom fungal diversity of SiruvaniVellingiri, Anaimalai

- Climate change on distribution of mushroom diversity
- New and different strains of edible and medicinal mushrooms identified
- Conservation of mushroom cultures of edible medicinal importance
- Creation of data base
- Documentation of ethnomycological knowledge

Year3

- Conversion of locally available agroforest residues to protein rich mushroom food
- Conversion of spent mushroom substrate in to biomanure
- Prevention of environmental pollution
- Soil health improvement
- Additional income to tribals and local communities
- About 350 people belonging to tribal and local communities/ forest people trained on collection of edible/ medicinal mushrooms

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed that the PI has revised the proposal as per the suggestions of the TFAC. The committee recommended the project for grant-in-aid.

Subsequently, the project was placed for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation on the recommendations given by the TFAC. The aforesaid committee recommended the project with following observations:

- The output and outcome of the first year and the second years of the project is same and hence PI was asked to complete its project within 18 months.***
- The cost of equipment such as AC and refrigerator shall not be borne by the Ministry.***
- PI was also asked to reduce the manpower.***
- Committee also requested the PI to create a sustainable and replicative model of mushroom cultivation which can be repeated across the country.***
- It was also advised to increase the number of species so that more species can be harnessed as per their potential.***

The approval of the project shall be conveyed to the project proposals only after receiving the revised proposal based on above.

8.0 PROJECT DETAILS: No. 99/2018/RE- "Habitat distribution modelling and reinforcement of two threatened trees in the Kerala region of the Western Ghats for the improvement of their conservation status" submitted by PI: Dr Radha RK, Jawaharlal Nehru Tropical Botanic Garden & Research Institute

PROJECT DETAILS

Co-PI: Dr Jothish PS, Scientist, Conservation Biology Division, Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram 695562, Kerala, India

Location of Project: Kerala, THIRUVANANTHAPURAM, Nedumangad

Duration of Project: 3 years

Objectives of Project:

- I. Survey of the enlisted tree species and population status
- II. Ecological niche modelling for recognizing the suitable habitats for reintroduction/reinforcement (Assessment of species occurrence data, validation of model strength, Population status/model thresholds)
- III. Zygotic embryo cryopreservation of the enlisted species for long time ex situ conservation and raising plantlets from embryos for reinforcement
- IV. Reinforcement of plantlets of two tree species with the involvement of respective Biodiversity Management Committees (BMCs) of Kerala State Biodiversity Board (KSBB), Government of Kerala

Expected Outputs:

- I. Distribution map of the trees will be developed, population status can be analyzed/published
- II. Suitable sites/ forest patches through ENM will be predicated for reinforcement of tree species
- III. Preservation of the full representation of germplasm (zygotic embryos) at -196°C for indefinite time
- IV. 100- 500 established saplings will be restored in the suitable forest habitats

Cost of Project: Rs 31,18,000/-

Tenure	1st Year (in Rs.)	2nd Year (in Rs.)	3rd Year (in Rs.)	Total Budget (in Rs.)
3 years	1160000	950000	1008000	3118000

The component-wise break-up of cost of the project is given below (in Rs.):

COMPONENT	Year 1 (In Rs.)	Year 2 (In Rs.)	3rd Year (in Rs.)	Total Cost (In Rs.)
Salary	600000	600000	648000	1848000
Equipment	160000	0	0	160000

Consumables	50000	50000	60000	160000
Travel Cost	100000	100000	100000	300000
Contingency	100000	100000	100000	300000
Institutional Charges	50000	50000	50000	150000
Any Other	100000	50000	50000	200000
Total Budget	1160000	950000	1008000	3118000

Manpower Requirement:

- Lab Assistant: 01

Additional equipment required (not available with Institution):

- Water Distillation Unit RO Pack: 01

The project was earlier placed in the 14th TFAC. The Committee after discussions decided that the PI should be sharply focussed identify the gaps in the studies carried out earlier on the 4 species of plants selected by PI and focus to fill the gaps of select 4-5 little known species grown in their Botanical garden for studies proposed in the project. PI may revise the project and resubmit keeping in view of the above suggestions for further consideration of TFAC.

Expected Outcome of the project:

- I. Analysis of the distribution and population status, predication of suitable sites through ENM, standardization of zygotic embryo cryopreservation methods and reinforcement/reintroduction into the suitable wild habitat will improve the conservation status of high risk tree species.
- II. Application of very competent protocols of both embryo rescue and cryopreservation facilitates rescuing the target species from the brink of extinction through back up collections in the in vitro repository/cryo bank and establishment of viable populations in conducive sites (translocation) in nature contributing to eventual removal of them from the

The project was placed in the 19th TFAC: After detailed deliberation, the committee observed that the PI has revised the proposal as per the recommendation of TFAC. The committee recommended the project for grant-in-aid without any equipment grant.

Subsequently, the project was taken up for consideration by Steering Committee in its 10th meeting held on 07th December, 2021 wherein PI gave the presentation on the recommendations given by the TFAC. The committee recommended the project with the following observations:

- i. ***PI should re-examine the salary and travel component of the project which is on a higher side.***
- ii. ***Committee opined that there is no need of hiring a full time JRF/Lab Assistant for the project.***

The approval for the project shall be conveyed only after receiving the revised proposal.

The meeting ended with a Vote of Thanks to the Chairman and all the committee members.

ANNEXURE-1

LIST OF PARTICIPANTS OF TENTH MEETING OF STEERING COMMITTEE (SC) OF R&D SCHEME HELD ON 07.12.2021 IN MoEF&CC

S.No	Name of the Chairman/ Members	Chairperson/ Members
1.	Shri Ravi Agrawal, Additional Secretary, MoEF&CC	Chairperson
2.	Director (IFD) Nominated by AS&FA	Member
3.	Dr. V.P. Yadav, representing Chairman, Central Pollution Control Board	Member
4.	Dr. Dhriti Banerjee, Director, Zoological Survey of India	Member
5.	Dr. C. Murgan, representing Director, Botanical Survey of India	Member
6.	Sh. V.P. Uniyal, representing Wildlife Institute of India	Member
7.	Prof.Govinda Swami Umapathy, Centre for Cellular and Molecular Biology (CSIR-CCMB)	Member
8.	Dr. Ritesh Kumar, Director-in-Charge, Wetlands International-South Asia	Member
9.	Dr. S.K Shoora, Scientist-'C', MoEF&CC	Member Secretary

10.	Ms. Rita Khanna, Advisor (RE Division), MoEF&CC	(Divisional Head of RE Division)
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Annexure-II

List of PROJECT INVESTIGATORS (PIs)/Co-PIs OF TENTH MEETING OF STEERING COMMITTEE (SC) OF R&D SCHEME HELD ON 07.12.2021 IN MoEF&CC

S. No.	Project ID No.	Thematic Area	Title of the Project	Principal Investigator
1.	20/2021/RE	Biodiversity Conservation including Issues of Alien and invasive species and Human-wildlife Interface	An exploration of the mangroves of the Eco-Sensitive Zone of Bhadrak wildlife division (Odisha) for their fungal endophyte diversity Total Cost:- Rs. 31,63,000	Dr. T.S. Suryanarayanan, Vivekananda Institute of Tropical Mycology, Ramakrishna Mission Vidyapith, 45A, Oliver Road,
2.	1/2020/RE	Sustainable Management Of Natural Resour	Identification Of Drivers, Barriers, And Study Of Innovative	Prof. Vidyadhar Gedam, National Institute Of Industrial Engineering Mumbai

		ces	Circular Economy (CE) Business Models - A Case Of Construction Industry Total cost:- Rs. 11,79,244.50	
3.	458/2018/RE	Ecosystems Conservation & Management (Mountain, Forest, Coastal, Wetlands, Pastoral, Etc) And Evaluation Of Ecosystem Services	Phytosociological Survey On Economically Important Plants In A Dry Deciduous Forest Meghamalai Hills, Western Ghats, Tamil Nadu Total cost:-Rs. 25,95,900	Prof. Dr. G. Renuga, Sri AdiChunchanagiri Womens College
4.	59/2020/RE	Pollution Prevention - Clean Technologies And Processes, Cleaner Production, 3Rs, Resource Efficiency, Waste Minimisation And Management, Etc	Recycling Of Plastic And Micro-Plastic Waste For Preparation Of Value Added Product And Its Various Application In Energy, Environment Total Cost:- Rs 42,65,000	Prof.Papita Das, Jadavpur University, Kolkata
5.	498/2018/RE	Climate Change: Vulnerability & Risk Assessment, Process, Mitigation And Adaptation	Understanding The Relationship Between Forest And Water In The Context Of Changing Climate Variables Of Narmada Catchment	Dr.Bhaskar Sinha, Indian Institute Of Forest Management, Bhopal

			Total Cost:- Rs 45,06,900	
6.	299/2020/ RE	Socio-economic issues of environment and Sustainable Development	"Nutri Smart Living" – Enhancing Nutritional Security And Livelihood Of Tribal Women Using Indigenous Foods Resources" Total Cost:- Rs 25,30,000	Dr.Aneena ER, Assistant Professor, Department Of Community Science College Of Horticulture, KAU P.O, 680656
7.	232/2020/ RE	Ecosystems Conservation & Management (Mountain, Forest, Coastal, Wetlands, Pastoral, etc) and Evaluation of Ecosystem Services	"Exploration And Conservation Of Edible And Medicinal Mushroom Diversity And Documentation Of Ethno Mycological Knowledge From Forests Of Coimbatore District Of Western Ghats For Restoration Of Nutritional Security Through Recycling Of Agro Forest Wastes." Total Cost:- Rs 34,63,800	Dr. G. Thiribhuvanamala, Associate Professor (Plant Pathology), Department Of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore 641003
8.	99/2018/R E	Sustainable Management of Natural Resources	Habitat distribution modelling and reinforcement of two threatened trees in the Kerala region of the Western Ghats for the improvement of	Dr Radha RK, Jawaharlal Nehru Tropical Botanic Garden & Research Institute

			their conservation status Total cost:- 29,58,000	
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