

MINUTES OF TENTH MEETING OF TECHNICAL AND FINANCIAL APPRAISAL COMMITTEE (TFAC) OF THE R&D SCHEME FOR CONSERVATION & DEVELOPMENT OF THE MoEF&CC HELD ON 11th DECEMBER, 2019 AT INDIRA PARYAVARAN BHAWAN, MoEFCC, NEW DELHI.

The 10th meeting of the Technical and Financial Appraisal Committee (TFAC) of the Scheme on R&D for Conservation & Development of the MoEFCC was held under the chairmanship of Prof C.R. Babu on **11th December, 2019** at MoEFCC, Indus Conference Hall, Ground Floor, Jal Wing, Indira Paryavaran Bhawan, New Delhi. Advisor (RE), MoEF&CC and Member-Secretary of the TFAC welcomed the Chairperson and members of the TFAC for the meeting. List of participants is at **Annexure-1**. A total of **2 proposals** of on-going/completed projects under the old R&D Scheme were considered, and these are listed at **Annexure-2**.

1.0 Confirmation of Minutes of the ninth Meeting of TFAC held on 18th November, 2019

The minutes of the ninth meeting of TFAC held on 18.11.2019 were confirmed.

1. F.No. 19-72/2014-RE- Project titled **“Dairy Wastewater treatment using pilot –scale hybrid sub-surface Constructed Wetland systems operating under different recirculation rates”** by Dr.Pradeep Sharma, Graphic Era University, Dehradun 248002

The project was considered in the 4th meeting of Steering Committee held on 28.09.2018.

Project Details: This ongoing project was started on 27th May, 2016 for a period of 3 years with a total cost of Rs. 42,39,680/-. The tenure of the project will be over in 21st May, 2019. A total of Rs 31,24,596/- has been released so far out of approved project cost of Rs 42,39,680/-. PI has submitted Annual progress Reports (APR) for 2017-18 and stated that Audited Utilisation Certificate, Expenditure Statement, GFR 12, photographs of equipment etc for the FY 2017-18 by post has been sent by post . PI submitted the 2nd year’s APR and other requisite documents vide letter dated 20.09.2018. PI has also submitted the FTR along with all relevant documents dated 20.10.2019 along with other documents.

Objectives:

- To investigate the nutrient purification and removal potential of hybrid sub-surface flow constructed wetland systems for the treatment of dairy wastewater.
- To investigate the optimal recycling rate for achieving maximum removal of nitrogen, phosphorus and suspended solids from dairy wastewater.
- To investigate the effects of seasonal variations on nutrient purification and removal potential of hybrid sub-surface flow constructed wetland (HCW) system operated for treatment of dairy wastewater.
- To investigate the nutrient uptake capacity of *Phragmites australis* grown on vertical sub-surface beds of hybrid constructed wetland system.

- To grow seasonal vegetables (*Hibiscus esculentus* and *Solanum melonjena*) on the horizontal sub-surface beds of hybrid CW systems and assess the potential of treated wastewater for use as ferti-irrigation.
- The effect of removal/reduction in BOD, COD, TSS and TDs, and other parameters such as Total N, NH₄-N, NO₃-N, NO₂-N, Total P, etc were also studied as these are high in the effluents/wastewater from cattle-dairy farming.
- The plant species *Phragmites australis* was chosen as it is highly efficient in absorbing P from beds.

PI made a presentation on the progress of the study. The major findings of the study are:

- The Hybrid Constructed wetland (HCW) system constructed for the study was studied with no recirculation of wastewater, 50% recirculation and 75% recirculation. The system was installed in a dairy farm with 70 cattle heads. A total of 6000L of wastewater from the cattle farm is being treated through this system in a 40 sqm area.
- The HCWs removed 95-96% BOD, 92-95% of COD, 74-79% of Total N and 77-81% of Total P during dairy waste water treatment. TSS removal was 91%. TDS was the lowest and removed to 29-39% but was within limits.
- After recirculation of treated water to influent, wastewater removal rates were further increased & maximum increase in removal rates were observed as:
 - An increase of 30% (from 64-94%) in total P removal rate with 75% recirculation arrangement.
 - An increase of 8% (from 68-76%) in Total N removal rate with 50% recirculation arrangement.
- Hybrid CW systems do not show fluctuations in removal efficiencies due to seasonal variations i.e., these systems can tolerate seasonal variations.
- The partially treated wastewater in hybrid CW system is a reliable technology for treatment of dairy wastewater and may be used as a liquid fertilizer for growing vegetable crops. This will help generating an extra income source to the dairy farmers. The system can be operated for 10years.
- Treated wastewater meets discharge standards w.r.t parameters of N, P and TSS. Treated water can be reused in dairy operations i.e., cattle bath, floor washings etc.

The PI had requested for approval for engaging a Research Associate and a SRF for 2nd year of study. The SC requested for a formal letter with justification for balance scope of work consideration of the Ministry.

The PI made a presentation. The major findings of the study are:

- The Hybrid Constructed wetland systems provided removal of:
 - 95-96% **BOD**, 92-95% of **COD**, 75-81% of **Total N** and 74-80.2% of **Total P** during dairy waste water treatment.
- After recirculation of treated water to influent wastewater removal rates were further increased & maximum increase in removal rates were observed as:

- An increase of **21%** (from 74.3-95.3%) in **Total P** removal rate with **75% Recirculation of treated water.**
- An increase of **5%** (from 78.8-83.8%) in **Total N** removal rate with **50% Recirculation of treated water.**
- Hybrid CW systems do not show fluctuations in removal efficiencies due to seasonal variations i.e. These systems can tolerate seasonal variations.
- The partially treated wastewater in Hybrid CW system may be used as a liquid fertilizer for growing vegetable crops. This will help generating an extra income to the dairy farmers.
- Treated water can be reused in dairy operations i.e., cattle bath, floor washings etc.

The PI informed that workshops have been organised to engage small farmers in and around Dehradun for dissemination and adoption of the technology developed.

The TFAC noted that the outcome of the study should be circulated to Ministry of Agriculture and ICAR for effective adoption of this technology in small farms and farm houses as an integral farming system. The PI requested for release of balance amount for settlement of funds/dues, which was agreed to.

2. F.No.14/87/2014-RE - Project titled **“Fish community structure and patterns of diversity along impacted and unimpacted streams of Vindhya and Satpura hill ranges, Central India”** by Dr.Anuradha Bhat , Indian Institute of Science Education and Research- Kolkata, Mohapur Campus, Viswavidyalaya, Mohanpur 741252, Nadia, West Bengal

The project was deferred as the PI did not attend nor any intimation for not attending was received.

3. F.No. 14/8/2014-RE - Project titled **“Exploration of Biodiversity and Conservation issues of Talley Valley Wildlife Sanctuary, Arunachal Pradesh with reference to wildlife species distribution along climate and topographical gradients”** by Dr.Ashalata Devi, Assistant Professor, Dept. of Environment Science, Tezpur University, Napaam, Tezpur, 784028 Assam

The project as considered in the 4th Steering Committee meeting held on 28.09.2019.

Project Details: This on-going project was started on 1st January, 2017 for a period of 3 years with a total cost of Rs. 38,96,640/-. The tenure of the project will be over on 31st January, 2020. A total of Rs 15,13,200/- has been released so far out of approved project cost of Rs 38,96,640/-. PI has attended the meeting. The PI has submitted audited UC, ES, GFR 12, Proforma for maintaining assets, bills/ invoices & photographs of equipment, undertaking for completion of project, copies of APR and Executive summary for FY 2018-19. GFR 19 has been provided. Balance amount to be released is Rs 23,83,440/- for completion of project. However, PI has some balance work to be done and has sought the release of next instalment.

Objectives of the study:

- To explore the distribution, status, and diversity of animal communities along climatic and topographical gradient.
- To study the distribution of plant communities along climatic, edaphic and topographical gradient in wildlife surveyed areas as well as other parts of sanctuary.
- To identify the species specific conservation and management issues of keystone species in the study area.
- To quantify the local community pressure on biodiversity of sanctuary due to their day to day household needs and find out solution to manage it on sustainable basis.

PI made a presentation on the progress of the study. Objectives undertaken so far:

- For the first objective, exploration of animal communities at different altitudinal gradients have almost completed in Pange area of the sanctuary. Some of the findings of the study conducted in the Pange area have been given in this report.
- Vegetation sampling for studying distribution of plant communities and their quantitative characters have done in the Pange area of the sanctuary at different altitudinal gradients. The data analysis is undergoing and will be reported in the next annual progress report.
- During the study period 2017-2018, 4 species of felidae, of which the Clouded leopard (*Neofelis nebulosa*) is one to be the first photographic presence in the sanctuary. *N. nebulosa* is a scheduled I species under the Wildlife Protection Act, 1972 of India and categorized as a vulnerable species by International Union for Conservation Nature (IUCN, 2017). We are communicating with the forest department of Arunachal Pradesh for the study and species specific conservation of clouded leopard in the sanctuary.
- From the beginning of the project study we are collecting the data of local community pressure on biodiversity of the sanctuary in different parameters, like hunting, logging, collections of NTFPs, livestock grazing, etc.

Outcome:

- Mammals: A total of 18 mammalian species belonging to 17 families were recorded during the survey, highest numbers of species were recorded from the Sciuridae family.
- 4 species of felidae found in the sanctuary, of which two species were camera trapped.
- A total of 55 birds recorded (39 identified), of that highest bird species were recorded from the Muscicapidae family.
- 30 species of butterflies were recorded belonging to 8 families, out of which only 18 species were identified systematically.
- A total of 6 reptiles belonging to 4 families and 9 amphibian species belonging to 9 families were recorded during the study period.
- A total of 60 quadrates were laid in the Pange area of Talley valley wildlife sanctuary (altitude range of >1800 m msl-2200 m msl).

- A total of 40 tree species (28 identified) of 20 genera belonging to 22 families, 21 shrub species from 18 genera of belonging to 14 family and 24 herb species belonging to 18 genera and 20 families were recorded.

Present status of the project along with the final phase of the project for completion:

- Exploration of wildlife species distribution pattern, species diversity, population status, habitat structure along climatic and topographical gradients is continuing and completed in Pange area. A total of 11 field studies had been conducted (Feb., 2017-June, 2018).
- Study on plant species diversity, distribution and community structure along the along climatic, edaphic and topographical gradients in wildlife surveyed area were conducted in Pange area and undergoing in Talley area.
- Identification of species and community quantitative data are being analyzed.
- Soil samples are being collected seasonally to determine physiochemical characteristics of the soil.
- Identification of the conservation and management issues of wildlife species in the study area is undergoing by collecting data from local people. Community pressure on biodiversity of sanctuary is being identified during field survey and informal conversation with the forest staffs and selected local people.
- Detail of ecological study of some selected keystone species observed in the sanctuary for its better conservation planning is to be established based on the recorded data.
- Data compilation and analysis, preparation of database and formulation of suitable conservation recommendation and preparation of final technical report will be the final phase of the project etc.

The Steering Committee had observed that the scope of work taken up under the project is very large and difficult to undertake. The Steering Committee had recommended further release of funds for its completion.

PI has furnished documents along with APR vide letter dated 17.10.2019.

The PI made a presentation.

The PI stated that Talley Valley Wildlife Sanctuary is located in district Lower Subasari and covers an area of 337 sq. kms area with an altitudinal range of 1700m-4000m and is one of the very few examples of undisturbed pristine climax vegetation and unique ecologically and floristically. The sanctuary's ecological diversity and climatic conditions provide scope of wildlife enthusiasts to sight some of the endangered species, including four major varieties of the big cats - tiger, leopard, clouded leopard and snow leopard as well as several prey species such as barking deer, hog deer, jungle fowl, Himalayan black bear etc.. The area of their project work was confined in Pange and Talle within the Talley Valley WLS.

Work already completed so far (as in November 2019):

- Objectives 1, 2 and 4 were undertaken.
- Camera trap and transect survey for mammalian diversity completed.
- Transect survey and photographic documentation of avifauna of the sanctuary completed. We are working on the identification and complete checklist preparation.

- Butterfly and moth diversity study has done. Presently, we are working on identification of species
- Amphibian and reptiles survey completed
- Study on anthropogenic pressure on biodiversity of the sanctuary in different parameters, like hunting, logging, collections of NTFPs, livestock grazing, etc. has been done based on the presence and absence of threat and encounter rate of disturbance during survey days.

Survey of flora and fauna:

- A total of 185 bird species were recorded in the survey (2018-2019), which belongs to the 110 genera from 46 families. The highest number of species was recorded from the genera of *Garulax* (6) and *Muscicapidae* family (34).
- A total 65 species were recorded in the moth survey, of those 14 genera were identified.
- A total of 13 species (2 unidentified) of amphibians were recorded in the survey, which belongs to the 8 genera from 5 families. The highest number of species were recorded from genera of *Rhacophorus* (3) and from the family of *Rhacophoridae* (5).
- Five (5) lizard species were recorded in the survey that belongs to 4 genera and 3 families. *Japalura andersoniana* was recorded in the survey, which might be the first report from the Tale wildlife sanctuary. Furthermore, present survey recorded seven (7) species of snake (1 unidentified) that belongs to the 5 genera from 2 families.
- Cattle's grazing and hunting activities are found as disturbance factor inside the sanctuary.
- Did not found any logging activities inside the sanctuary.

Details of On-going work and work to be completed:

1. Study on plant species diversity, distribution and community structure along the along climatic, edaphic and topographical gradients in wildlife surveyed area were conducted in Pange area and undergoing in Talley area.
2. Identification of species and community quantitative data are being analyzed.
3. Soil samples are being collected seasonally and determine physiochemical characteristics.
4. Identification of the conservation and management issues of wildlife species in the study area is undergoing by collecting data from local people. Community pressure on biodiversity of sanctuary is being identified during field survey and informal conversation with the forest staffs and selected local people.
5. Detail of ecological study of some selected keystone species observed in the sanctuary for its better conservation planning is to be established based on the recorded data.
6. Data compilation and analysis, preparation of database and formulation of suitable conservation recommendation and preparation of final technical report will be the final phase of the project.

7. Finding of the work done will be utilized in database preparation, biodiversity conservation, management and policy making of the protected areas, particularly in the Talle Valley Wildlife Sanctuary.

The PI informed that the expenditure during both 1st and 2nd year has been higher than anticipated due to the following factors:

- i) Hiring of vehicles as no passenger vehicles are permitted to the area of study.
- ii) Daily entry fee for project staff to carry out the study which is a Protected Area. No special concession/permission was provided although this is a MoEFCC funded study.
- iii) Other expenses incurred under Contingency and expendables

Travel Head

Installments	Amount Sanctioned (Rs.)	Amount received/ Carry forward	Financial Year	Amount Spent (Rs.)	Balance (Rs.)	Deficit (Rs.)	Requested Amount in next installment (Rs.)	Justification/Remarks
1 st Installment	1,20,000	1,20,000	1 st April 2016 to 31 st March 2017	22330	97670			Expenditure incurred is much higher than the estimated and sanctioned amount. No direct bus/van service from Tezpur to study site. Project staff have to go from Tezpur to Itanagar/Nirjuli; from Itanagar/Nirjuli to Ziro; then from Ziro to Talley WLS, Pange. Hire reserved vehicle have to use to reach the study site. Since no passenger vehicle are plying there.
		97670	1 st April 2017 to 31 st March 2018	139869	Nil	- 42199	—	
		Nil	1 st April 2018 to 31 st March 2019	42540	Nil	- 42540		
2 nd Installment	100000	Nil			Yet to received		1,00,000 + 50,000*+ 84,739** = 2,34,739	
3 rd Installment	80000	Nil		—	Yet to received	—	80000+50000* =130000	

* Additional requisition of travel fund

** Deficit amount of the previous instalment.

Expendables Head

Installments	Amount Sanctioned (Rs.)	Amount received / Carry forward	Financial Year	Amount Spent (Rs.)	Balance (Rs.)	Deficit (Rs.)	Requested Amount next installment (Rs.)	Justification/Remarks
1 st Installment	85,000	85,000	1 st April 2016 to 31 st March 2017	24,204	60,796			Expenditure incurred is much higher than the estimated and sanctioned amount. 'Entry fee' per day @ Rs.50 for each project staffs. 'Logistic fee' @ Rs. 300 per head per day to Forest Guard accompanying with the project staffs. Project staffs halt in field for about 25-30 days in every field trip, depending on weather conditions, field trip conducted every after two months for seasonal sampling.
		60,796	1 st April 2017 to 31 st March 2018	60,928	Nil	- 132	—	
		Nil	1 st April 2018 to 31 st March 2019	Nil	Nil	-132		
2 nd Installment	60,000	Nil			Yet to received		60,000 + 40,000* = 1,00,000	
3 rd Installment	55,000	Nil		—	Yet to received	—	55,000+ 45,000* = 1,00,000	

* Additional requisition of Expendables fund

Contingency Head

Installments	Amount Sanctioned (Rs.)	Amount received/ Carry forward	Financial Year	Amount Spent (Rs.)	Balance (Rs.)	Deficit (Rs.)	Requested Amount next installment (Rs.)	Justification/Remarks
1 st Installment	63,050	63,050	1 st April 2016 to 31 st March 2017	65,665	Nil	- 2615		Expenditure incurred is much higher than the estimated and sanctioned amount. Fees for 'Chartered Accountant' Stationary, printing, Xerox, postal, reading material, species identification fee, etc.
		Nil	1 st April 2017 to 31 st March 2018	Nil	Nil	- 2615	—	
		Nil	1 st April 2018 to 31 st March 2019	Nil	Nil	- 2615		
2 nd Installment	45,800	Nil			Yet to received		45,800 + 40,000* = 85,800	
3 rd Installment	53,510	Nil		—	Yet to received	—	53,510+ 45,000* = 1,03,510	

* Additional requisition of Contingency fund

The TFAC appreciated the effort and hard work of the PI. The Committee recommended release of next instalment. Further, the Committee also recommended payment of extra costs incurred in both 1st and 2nd year and requested the PI to provide in a covering letter the full details under the various Head of Travel, Contingency and Expendables where the extra cost has been incurred for reimbursement of the same. This has been received from PI. The TFAC agreed for reimbursing recommending additional costs incurred under Travel and Expendables. In regard to expenses under Contingency indicated by PI, the TFAC decided to refer it to Ministry to examine as per Rules.

4. F.No.19-183/2013-RE - **Project titled “Nanno-bioremediation of Textile Industrial Effluents in Tiruppur District, Tamil Nadu”** by PI - Dr.P.Jegathambal, Prof., Water Institute, Karunya University, Coimbatore, Tamil Nadu

The PI vide emails dated 9th and 10th Dec 2019 informed of inability to attend and had requested for consideration in the next TFAC meeting. The consideration of the project was therefore deferred.

II PROJECT OF NEW R&D SCHEME FOR RECONSIDERATION

5. Reg No. 404/2018/RE – Project Titled **“Impact of Gold Mine Tailings on Agriculture, Environment and household Health in Kolar District”**. PI- Dr. V Suresh Babu, National Institute of Rural Development and Panchayati Raj, Ministry of Rural Development, Government of India, Rajendranagar, Hyderabad.

Consideration of the project was deferred.

III INTERNAL CONSIDERATION OF R&D PROJECTS OF OLD R&D SCHEME:

6. F.No.19-99/2009-RE – Project titled “Assessment of Air Pollutants and its impact on Tropical Forest of Northern Chhattisgarh”. PI: Dr S.S Singh, Project at Dept of Forestry, Wildlife & Environment Sciences, G.G.V., Bilaspur

Consideration of the project was deferred.

IV Internal Discussion on Applications of R&D Projects Received under New R&D Scheme

Consideration of this item was deferred to next meeting

3.0 Any Other Matter with the Permission of the Chair

F.No. 14-246/2015-RE – **“Monitoring Structure, Functioning and Ecosystem Services of Dry Tropical Forest Ecosystem and Management of Ecosystem, prey Populations and predators”**. PI: Dr. Jamal A Khan, Aligarh Muslim University, Aligarh

The proposal was considered in the 3rd meeting of Steering Committee held on 30th August 2018 and in the 3rd TFAC meeting held on 17.05.2019. The project’s tenure has been extended until 31st March 2020. The PI had, during the meetings, sought engagement of a

Field Assistant whose assistance is absolutely essential for continuing the project. The TFAC and the MoEFCC had requested the PI to furnish details of his requirement. However details of this were not received for release of funds for engaging a field assistant.

MS, TFAC stated that a letter dated 28th November 2019 has been now received from the PI stating that a second field assistant has been engaged since September 2018 to assist the team in field work. The first field assistant is being paid Rs 8000/month. The total salary implication of engaging a field assistant is Rs 1,52,000/- (Rs 8000 x 19 months) since September 2018 till 31.03.2020. This can be provided form Salary Head and the funds are available there under.

The TFAC agreed for the PI to utilize the funds available in Salary Head of the project funds.

The meeting ended with a Vote of Thanks to the Chair.

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ANNEXURE-1**LIST OF PARTICIPANTS OF TENTH MEETING OF TECHNICAL & FINANCIAL APPRAISAL COMMITTEE (TFAC) OF R&D SCHEME HELD ON 11.12.2019 IN MoEFCC**

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| 1. | Prof. C. R. Babu (Retd.), Prof Emeritus
Chairperson
and former Pro-VC, University of Delhi | ... | | |
| 2. | Dr.T.Chandini, Advisor, MoEFCC &
Member-Secretary | ... | | Member |
| 3. | Dr.Rubab Jaffer, Joint Director, MoEFCC | | | |

MOEFCC

1. Shri NareshJaiswal US(RE)
2. Shri Pankaj Ahlawat, ASO
3. Shri Rabindra Sah, CoE, (EE Div)

LIST OF PROJECT INVESTIGATORS (PIs) PARTICIPATED IN THE 8th TFAC MEETING

1. Dr.Pradeep Sharma, Graphic Era University, Dehradun 248002
 2. Dr.Ashalata Devi, Assistant Professor, Dept. of Environment Science, Tezpur University, Napaam, Tezpur, 784028 Assam
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ANNEXURE-2**Projects to be considered:****I RECONSIDERATION OF R&D PROJECTS OF OLD R&D SCHEME:**

S. N.	File No.	Thematic Area	Title of project	Details of P.I.
1.	F.No.19-72/2014-RE	Water Pollution	“Dairy Wastewater treatment using pilot –scale hybrid sub-surface Constructed Wetland systems operating under different recirculation rates”	Dr.Pradeep Sharma, Graphic Era University, Dehradun 248002
2.	F.No.14/87/2014-RE	Biodiversity Conservation	“Fish community structure and patterns of diversity along impacted and unimpacted streams of Vindhya and Satpura hill ranges, Central India”	Dr.Anuradha Bhat Indian Institute of Science Education and Research-Kolkata, Mohapur Campus, Viswavidyalaya, Mohanpur 741252, Nadia, West Bengal
3.	F.No.14/8/2014-RE	Ecosystem & Landscape Conservation	“Exploration of Biodiversity and Conservation issues of Talley Valley Wildlife Sanctuary, Arunachal Pradesh with reference to wildlife species distribution along climate and topographical gradients”	Dr.Ashalata Devi, Assistant Professor, Dept. of Environment Science, Tezpur University, Napaam, Tezpur, 784028 Assam
4.	F.No.19-183/2013-RE	Water Pollution	Nanno-bioremediation of Textile Industrial Effluents in Tiruppur District, Tamil Nadu.	Dr.P.Jegathambal, Prof., Water Institute, Karunya University, Coimbatore, Tamil Nadu

II PROJECT OF NEW R&D SCHEME FOR RECONSIDERATION

5.	404/2018/RE	Pollution and Waste Minimisation	“Impact of Gold Mine Tailings on Agriculture, Environment and household Health in Kolar District”	PI: Dr. V Suresh Babu, National Institute of Rural Development and Panchayati Raj, Ministry of Rural Development, Government of India, Rajendranagar, Hyderabad.
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III INTERNAL CONSIDERATION OF R&D PROJECTS OF OLD R&D SCHEME:

6.	19-99/2009-RE	Pollution	Assessment of Air Pollutants and its impact on Tropical Forest of Northern Chhattisgarh	Dr S.S Singh, Project at Dept of Forestry, Wildlife & Environment Sciences, G.G.V., Bilaspur
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IV Internal Discussion on Applications of R&D Projects Received under New R&D Scheme**3.0 Any Other Matter with the Permission of the Chair**
