

**PROCEEDINGS OF THE 26<sup>th</sup> RESEARCH & TRAINING ADVISORY  
COMMITTEE (RTAC) MEETING OF EMPRI CONVENED ON 25 JULY 2023**

**Present:**

- |  |              |          |
|--|--------------|----------|
| 1. Dr. Jagmohan Sharma, IFS<br>Director General, EMPRI   |              | Chairman |
| 2. Sri Srinivaslu, IFS<br>APCCF (Research & Utilisation)   |              | Member   |
| 3. Sri R. Gokul, IFS<br>Chief Conservator of Forests &<br>Commissioner (Tech. Cell)<br>Ecology & Environment Dept. | (Through VC) | Member   |
| 4. Dr. M.P. Singh, IFS<br>Director, IWST   | (Through VC) | Member   |
| 5. Dr. Chethan Kumar<br>Represented Chairman CiSTUP, IISc  | (Through VC) | Member   |
| 6. Prof. M.K. Ramesh (Retd)<br>National Law School of India University   | (Through VC) | Member   |
| 7. Sri. J. ChanDr.a Babu<br>Regional Director, Central Pollution Control Board                                     | (Through VC) | Member   |
| 8. Ms Saltanat Kazi<br>Fellow – TERI, Domlur, Bangalore  | (Through VC) | Member   |

**Project Investigators / Invitees**

7. Sri. T. Balachandra, IFS (Retd), Project Coordinator, JSW Project
8. Dr. Tejeswani, EMPRI Fellow Climate Change
9. Dr. B. Saritha, Sr. Consultant, Climate Change
10. Dr. A.K. Chakravarthy, Research Scientist, CLC
11. Dr.. Vinaya Chaitanya, Programme Officer
12. Dr. Surya N R Addoor, Project Scientist
13. Dr. Shruthi BV Rajesh, Research Scientist, Climate Change
14. Dr. Chandra Prabha.M.N., Prof & HoD, MSRIT, B'lore
15. Dr. Narayan Kayet, Climate Change (SLCP)
16. Dr. Deepa MPM, Research Scientist, Climate Change
17. Dr. Veerabaswant Reddy, TERI
18. Sri. Sreenivas, Research Scientist
19. Sri. S.B. Sharma, Research Associate
20. Ms. Vrinda B.K. Research Associate
21. Ms. Sanakausur A Sindgi, Project Associate
22. Ms. Priyankari, Project Associate, EST, CFEW
23. Ms. Latha. M.H. Training Head
24. Ms. Ravina Telanga, Research Associate
25. Ms. Nethravathi, EIA Consultant
26. Ms. Renita Mathias, CDIO

Leave of absence was granted to:

- |   |        |
|---|--------|
| 1. Member Secretary, KSPCB                        | Member |
| 2. The Director, ISEC                             | Member |
| 3. Shri. R M N Sahai, IFS (Retd) former DG, EMPRI | Member |

The Director General, EMPRI and chairman, RTAC extended a warm welcome to all the members and invitees attending in physical mode and through video conferencing to the meeting. After ascertaining the quorum, the meeting proceeded as per the agenda as follows.

**Agenda 1: Confirmation of the Proceedings of the 25<sup>th</sup> RTAC meeting**

The proceedings of the 25<sup>nd</sup> RTAC meeting of EMPRI held on 17.02.2023 was read and confirmed.

**Agenda 2: Action taken on the proceedings of the 25<sup>th</sup> RTAC meeting**

Action taken on the proceedings of the 25<sup>th</sup> RTAC meeting as reported in Annexure 2 of the Agenda was noted. However, in respect of *Agenda 3 of the 25<sup>th</sup> RTAC - title Ongoing projects/ works (C)*, the Director IWST discussed and suggested that initiating a Diploma course on Waste-Water Treatment Process for 12<sup>th</sup> pass or degree holders, will enhance the employability of the trainees.

**Agenda 3: Ongoing Projects**

**A. Department for Climate Change**

**a. Effects of Urbanization on bee communities and Evaluation of ecosystem services in urban areas (Sep 2021 – Aug 2023)**

Dr. Pavithra Nayak, Research Scientist presented the progress of the project, which was noted by the Committee.

**b. Phonological studies on select tree species in Thalewood House and Bugarikallu Forest localities of Bannerghatta National Park to assess the impact of Climate Change (Jul 2019 to Jun 2024)**

Mr. Balasubramanya Sharma, Research Associate, presented the details of the ongoing project. He informed the members about the project budget as well as the progress of monthly phenology observations undertaken until June 2023 and the remaining work to be undertaken until July 2024. The Committee noted the progress of the project.

**c. Inventorisation of Short-Lived Climate Pollutants (SLCP) in Karnataka (Jan 2023 to Dec 2024)**

Dr. Tejaswini M E, EMPRI Fellow, climate change presented the progress on sector-wise emission inventory and satellite-based emission mapping of SLCP and that the next target would be scenario-based projection and modelling. The Committee noted the progress.

**d. Emission reduction and energy economy by electric vehicle on Indian roads Driving Cycle-based study**

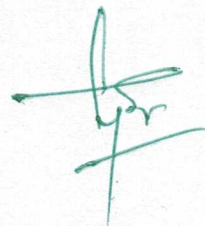
Dr. Tejaswini M E presented the progress of the project. Dr. Chetan Kumar, Research Scientist, CiSTUP made the following remarks:

- i. Modify the 'Indian roads' part of the title since the study involves only 2 cities.
- ii. Consider multiple Driving cycles
- iii. Consider EV battery manufacturing for emission comparison between internal combustion engines and EVs.

**B. Department for Sustainable Development and Public Policy Climate Change**

**e) Development of a comprehensive co-management plan for mining, forest conservation, and wildlife Development, including the implementation of green mining infrastructure in mineralized zones in the Bellary area (Apr 2023 – Mar 2024)**

The aim, scope, and status of the work were presented. The first report on the conceptual and operational framework of the study is submitted. The Committee members suggested clearly linking objective-wise tasks, completed tasks, ongoing activities, and pending works for better project management.



f) **Development of Green index Portal for evaluation of environmental compatibility of public spending**

The proposed Green Index Web Portal aims to upgrade the web-platform to assess the environmental compatibility of schemes of various departments of the state government. The project involves the restructuring of the existing Green Index Web Portal to enable additional analysis and report generation. The need for modifying the architecture and revamping of the existing Green Index Web Portal was discussed. The Web Portal, as is at present, was explained. Upgradation of the portal was approved.

**C. Department for Capacity Building**

- g) The Committee noted the list of training programs conducted by Department for Capacity Building and expressed their appreciation for conducting Lifestyle for Environment (LiFE) training programs. Shri M K Ramesh suggested including sustainable consumption practices, and awareness of green-rated products with practical demonstrations in Lifestyle for environment training programs as it is crucial for promoting environmental consciousness and responsible consumer behaviour among students and civil society.

**D. Department for Environmental Information and Geoinformatics**

h) **Environmental Information, Awareness, Capacity Building and Livelihood Program (EIACP) (Feb 2023-May 2023)**

The Committee noted the progress as placed on the agenda.

i) **Environment Education Program (EEP)**

The Committee noted the progress as placed on the agenda.

**E. Department of Environment Impact Assessment**

j) **Impact Assessment of Downhill Pipe Conveyor on Ambient Environment (Jan 2021 – Dec 2025).**

The Principal Investigator (PI), Mr. Balachandra, presented the status of the study undertaken and informed the committee that the two Annual Reports (First year: January 2021 - March 2022 & second year: April 2022 - March 2023) have been submitted to Karnataka Forest Department (KFD), CCF and DCF, Ballari, and M/s. JSW Steel Limited, Ballari. Regarding inference Drawn to date, the PI replied that the construction phase/baseline study has been completed and the operation phase study of the Devadari Downhill Pipe Conveyor is in progress.

k) **Identification and assessment of successful agroforestry models in Karnataka (July- Dec 2022)**

The PI informed that the study is completed, and the final Draft report is under preparation. The same would be submitted within a month.

l) **Valuation of grazing ecosystem services from forests of Karnataka (May 2022 – May 2023)**

The PI informed that the final Draft is ready and needs to be presented to the Karnataka Forest Department (KFD). Once the presentation is done, any inputs received during the presentation, if any, will be incorporated into the report, and the final Draft will be printed and submitted.

m) **Rejuvenation of Chitravathi River: A study of the river catchment in Karnataka (April 2023 – June 2023)**

The PI informed that the baseline study of the Chitravathi River rejuvenation has been completed and the report is ready for printing. The committee member, Dr. M.K. Ramesh, suggested consulting Dr. Lingaraju Yale, National Director, River rejuvenation projects, Art of Living, Bengaluru, as the concerned has carried out similar work on the Kumudvathi River rejuvenation project. The PI replied that the presentation of the said project was given at

Chikkaballapura Patrakarthara Bhavan, where Dr. Lingaraju Yale and other eminent subject experts were present. The inputs received are incorporated in the final report.

n) **Identification and Bioecology of Fireflies (*Coleoptera: Lampyridae*) in Seven Districts of Karnataka** (Jan 2022 – Jan 2025) Budget Rs.29,39,099/-

The PI presented the progress of work. Prof. Ramesh suggested the firefly team collaborate with CES, IISc, to which the PI agreed. Additionally, Dr. Singh pointed out that the Firefly team should also consider working with the biodiversity committees of the Karnataka Biodiversity Board. The scope of the project can be broadened, and the work can be extended to the entire Karnataka State. He suggested the PI to seek the support of the Karnataka Biodiversity Board for funding and involve the entomologist at IWST in the project for technical contributions. The PI noted the suggestions for appropriately implementing as per the scope of the project.

o) **Impact of Climate Change on Agriculture and Horticulture crops production and Livelihoods in Karnataka** (Oct 2021 – Oct 2024) Budget Rs. 32,00,000/-

The Committee noted the progress of work and appreciated the efforts to involve several stakeholders including academia and farmers.

p) **EST-SSR Marker development based on RNA-Seq Data and its applications for Genetic Diversity on Indian Sandalwood** (Oct 2021 – Oct 2023)

The acting PI, Ms. Priyankari presented the status of the project. During the discussion, a Committee member asked about the conclusion of the work and if the project needed an extension. To which the PI assured the timely completion of the project. The Committee later asked if there was any requirement to be procured for the project any further. To which the PI replied: there are no further requirements. We have completed the first two objectives, including field data collection and molecular laboratory work at ICAR-IIHR. The final objective is bioinformatics analysis, which is in progress and nearing completion. The PI (acting PI) requested hands-on training or workshops for project staff to improve the outcome and efficiency of the results. It was mentioned that Dr. K.V. Ravishankar, a consultant from ICAR-IIHR, has accepted the request to review and complete the project. A request was made concerning the budget allocation for the remuneration of project staff to align with current DST norms, which may be appropriately considered for all projects.

q) **Strategies for Conservation of Estuaries in Coastal Karnataka in the Context of Climate Change** (Oct 2021 – Jun 2023)

The PI, Dr. Surya Adoor, presented the findings and the status of the project to the Committee. The Committee suggested getting expert assistance by contacting Dr. Sujat Dongre, CEE, Goa, who is working on the conservation of species and coastal ecosystems in Goa, and Dr. Pradeep, Biodiversity Secretary, Goa. The project should be completed and the report submitted by September end.

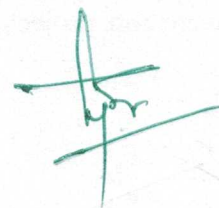
#### **Agenda 4: Extension of time on the ongoing projects**

a) **Assessment of pace of recovery after a single incident forest fire**

The PI, Ms. Vrinda presented the status of the study undertaken. After considering the reasons for seeking an extension, the Committee agreed to extend the project duration by one month (up to 31st August 2023).

b) **Assessment of Waterbodies in Tumakuru and Kolar City/Municipal Corporation Area (Urban and Semi-urban) of Karnataka** (Sep 2021 – Jun 2023)

The PI, Mr. Srinivas, presented the status of the study. After considering the reasons for seeking an extension of the project, the committee approved the extension up to 31st August 2023.



## Agenda 5: Status of the reports for the completed projects

- a) **Assessment of regeneration status of woody species in the moist deciduous forest of Western Ghats, Karnataka** (Dec 2021 Dec 2022)  
The PI, Mr. Savinaya, presented the status of the study undertaken. The Chairman suggested to expand the discussion and conclusion sections, and rewriting the methodology section providing the methodological steps as bullet points. The PI committed to submit the report within 15 days.
- b) **Understanding the anthropogenic impact on bee pollinators: A study under different cultivation practices and changing land use pattern** (Nov 2020 – Dec 2022)  
Drafting of the Report is in progress and will be submitted by mid of September 2023.
- c) **Exploring terrestrial indoor plants for photosynthetic and carbon sequestration potential urban areas** (Nov 2020 – Sep 2022)  
The Report Drafting is completed and will be submitted by end of August 2023.
- d) **Rapid Identification Manual for Highly Traded Wild Flora of Karnataka** (Dec 2022 – Feb 2023)  
Mr. Balasubramanya Sharma, Research Associate informed the members that the pilot-scale project undertaken was completed within the time frame of 3 months. The manual on the 15 highly traded plant species is submitted to the Karnataka Forest Department.

## Agenda 6: New Projects initiated

### A. Department for Climate Change

- a) **Identifying emission hot spots and developing high-resolution emission inventory of major air pollutants using Dr.one technology in Bengaluru** (Jun 2023 – May 2024)  
The presentation on project objective, the status of data collection and outcomes by Dr.. Tejaswini. M.E. was followed by a discussion and the Committee suggested inclusion of industrial clusters among emission hotspots.
- b) **Strengthening the State Climate Centre in the State of Karnataka – DST 2<sup>nd</sup> phase** (Apr 2023 – Mar 2028)  
Dr. Shruthi B Rajesh presented an overview of Phase 2 of the DST project along with the objectives and present status of implementation. Dr.. M.P. Singh, Director, IWST suggested consulting Dr. Manoharan from IWST while locating PPPs in Karnataka and understanding the framework developed for phenological study.

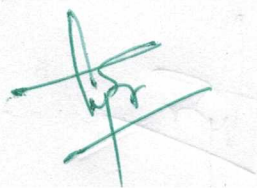
### B. Department for Sustainability Development and Public Policy

The PI explained the concept of **sustainable management of surplus food** was explained through the 'Food Rescue Application' developed by the start-up 'Bee the Change'. MoU is signed between the Department for Sustainable Development and Public Policy, EMPRI and the 'Bee the Change' start-up to collaborate on new initiatives. During the discussion, the Committee suggested undertaking a pilot study in a limited area of the city to understand the viability and performance of the application developed.

## Agenda 7: New Project Proposed

### A. Department of Environmental Impact Assessment

- a) **Environmental Impact Assessment of the forest land diversion at Doresanipalya Reserve Forest**  
The PI, Ms.Nethravathi, presented the new proposal. Director IWST wanted to understand the background of the study. A brief background was provided by the PI. While approving the project for implementation, following suggestions were given by the Committee members:



1. Aspire to undertake EIA of government projects.
  2. Use of technological tools for EIA, if there are any or otherwise develop such tools for a good high-level outcome, which could add to the institution's credentials in the field of EIA
  3. Use of GIS and IT applications for improved analysis
- b) **Physical barriers erected in the man-animal conflict areas in Karnataka – An assessment of avoided losses and other social-economic implications**
- The PI, Mr. Balachandra, explained the new proposal to the Committee including the objectives, expected outcome, funding, collaborations, and budget. Director IWST suggested having collaboration or tie-up with a socio-economic institution since the assessment of social consequences and community perspective regarding the implementation of physical barriers was one of the objectives of the project. The PI informed that scientists from the reputed institution are being consulted to provide the required help in designing the format of the study. Also, Shri. Ajay Mishra, former PCCF (Wildlife) and Chief Wildlife Warden, Government of Karnataka, has been requested to provide necessary inputs during the period of the study. The Committee approved the proposal for implementation.
- c) **Inventory and Ecology of invertebrates in Doresanipalya Forest Campus (DFC)**
- Dr. Chakravarthy, the PI, proposed the project with details. After the presentation, Director IWST suggested concentrating on the documentation of invertebrates and not taking up ecology. After discussion, the Committee approved the preparation of a checklist of invertebrates found in DFC over all seasons. Accordingly, the scope and cost of the study will be revised and the time duration limited to one year.
- d) **Ecological studies of perennial and seasonal estuaries of Coastal Karnataka in the context of climate change**
- The Committee suggested Dr. Surya Adoor to finish and submit the report for phase 1 (i.e., Strategies for Conservation of Estuaries in Coastal Karnataka in the context of climate change) of the project and parallelly initiate the work on the remaining estuaries as the second phase project. The duration of the second phase project will be 9 months from 1 August 2023. The project may be revised accordingly and implemented.

## B. Department for Sustainability Development and Public Policy

- e) **Urban Karnataka Sustainability Monitoring Project Phase-I – Development of a framework and approach for sustainability monitoring report**
- The proposed project aims at producing a sustainability monitoring report in a cycle of 2 years. To enable this during the current year, as a preparatory phase to such a report preparation, it is proposed to establish a Sustainability Monitoring Cell (SMC) in EMPRI. The SMC will undertake a literature survey for identifying the sectors, protocol for collecting the information on identified parameters, develop proformas, and an online portal for collecting and analyzing data/information. The Committee appreciated the need for producing such a report at the state level in a biennial cycle and approved the proposal for implementation.
- f) **Cost-Effective and sustainable Approach for Converting Plastic Waste into Carbon Dots: A Lab- Scale Studies**
- The PI Ms. Sana Kousar discussed the plastic waste problem, and a growing need for sustainable solutions including recycling and the option to convert it into Carbon Dots (CDs) using a relatively simple, cost-effective, and environmentally friendly method. For analysis of CD properties, quality and purity characterization by a variety of techniques involved was explained. Also, the comparison of the properties of the synthesized CDs with commercially available CDs was discussed. Overall, the project objective is to address plastic pollution by synthesizing CDs from different types of single-use plastic. The Committee suggested the application of CDs may be kept in view with other products available in the market. The Committee approved the proposal and appreciated the line of thinking.



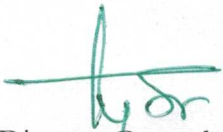
g) **Sustainable green synthesis of TiO<sub>2</sub> nanocatalyst for visible-light-driven degradation of primary microplastics: Lab to scale-up studies**

The proposed project involves the development of an efficient nanocatalyst for the degradation of microplastics in the visible light region. The applicability of the technology to real systems was discussed. The concept of tuning the defect chemistry to make the catalyst viable under visible light was explained by the PI. The Committee appreciated the usefulness of the initiative and approved the project proposal for implementation.

**C. Department for Climate change**

h) **Development of a digital library of local tree species for forest health, diversity and canopy cover estimation at a fine level using Dr.one-based hyperspectral imagery and spectro-radiometric survey data**

Dr. Narayan Kayet presented the objectives, methodology, outcome, and the budget of the project, which was followed by a technical discussion. The PI informed that this project could start from January 2024. After consideration the Committee suggested objective-wise identification of and practically useful outcomes of the study. Thereafter, the project will be considered in the next meeting of the Committee, as the project is also proposed to be initiated in January 2024.

  
Director General, EMPRI &  
Chairman, RTAC