

IPCA Centre for Waste Management and Research



Annual Report

2022-23

FROM THE DIRECTOR'S DESK



I am pleased to present the Annual Report, summarising the achievements and progress made by ICWMR over the past year. The centre has consistently strived to work in niche areas to bring scientific temperament to all aspects of waste management.

Our groundbreaking studies on waste audit for Zomato, socio-economic and environmental impact assessment of plastic recycling for SBI Cards, and water footprint estimation tool for beverage industries have expanded not only the frontiers of

knowledge but also the development of decision-making tools which would help industries to achieve their sustainability goals and the Mission LIFE. The publication of regular blogs by our researchers on contemporary issues is a testament to the calibre of our work. Our projects, explained in this report, showcase our dedication to bridging the gap between academia and industry, ensuring that our research contributes tangibly to society.

The ICWMR has remained committed to nurturing the next generation of scholars. Our capacity-building programmes, workshops and outreach initiatives on social media have empowered aspiring researchers and entrepreneurs. As part of our broader commitment to societal well-being, ICWMR has actively engaged with youths from Indian villages to address the growing menace of solid waste in rural areas in an enterprising way. Collaboration with Tata Steel Foundation, Bisleri International Private Limited, IDS, USA and partnership with Navjyoti India Foundation has helped us make a positive impact on society.

We want to acknowledge support from DLF Foundation, Pyramid Infratech, and Rritam Global Foundation for their generous grants to ICWMR and MCD, Uttarakhand Pollution Control Board, WAMCO, Maldives, to collaborate with us in our endeavours and MoHUA, GoI for recognising us as Swachha Knowledge Partners (SKP) under SBM 2.0. We are deeply grateful to all our partners.

As we continue our journey in 2024, we anticipate both challenges and opportunities; I am confident that our dedicated team will continue efforts for innovation, with a commitment to advancing knowledge with meticulous planning.

Sincerely,

A handwritten signature in black ink that reads "Arun Kansal".

Prof. Arun Kansal
Director, ICWMR & Vice Chancellor
TERI School of Advanced Studies

MESSAGE FROM OUR PATRON



It is a matter of pride to successfully complete first year of IPCA Centre for Waste Management & Research (ICWMR), which is the dream project for me and IPCA. We were doing brainstorming for a long time to explore ways for transforming our grassroot knowledge and experience in the waste management sector to the young entrepreneurs and started working by conceiving the “Certificate Course for Entrepreneurship in Solid Waste Management” in 2022. We are thankful to TERI School of Advanced Studies for becoming our partner and extended its support to establish ICWMR.

The Centre which is a joint collaboration of IPCA and TERI SAS was launched on 20th December 2022. It was launched with crystal clear objective of making waste management sector as one of the most reputed industrial sector and to create a demand for skilled and professional human resources. We are very happy to see the growth of Centre in just one year of its inception and the Centre is working exactly in the envisaged direction. In the short span of time, the Centre has developed collaborations with reputed national and international organizations, developed and delivered skill training programs and assisted youngster and enthusiastic professionals to work in the waste management sector with more skill and ground-reality based knowledge to bring tangible change on the ground.

There are lots of innovative works to be done through the core faculty and members of the Centre for the betterment of our society and Nation and I am very much sure that the competent faculty of the Centre will definitely accomplish and fulfil the objectives of the Centre. I am very confident that ICWMR will continue to scale milestones of excellence for many years.

Sincerely,

A handwritten signature in black ink that reads "Ashish Jain".

Ashish Jain
Founder Director
Indian Pollution Control Association

GLIMPSE OF THE YEAR

15+ Partners & Supporters
11 Projects
1500+ Direct Outreach

Training on Sustainable Waste Management | Waste and Water Audit

DEC 22

Socio- Economic Impact Assessment

JAN 23

Skill Gap Study

FEB 23

Certificate Course on Entrepreneurship in SWM

MAR 23

Water Footprint Study

APR 23

Panel Discussions

JUN 23

Certificate Course on Entrepreneurship in SWM

OCT 23

Webinars on Waste and Wastewater Management

AUG 23

Monitoring of MCD's Work

DEC 23

Empanelment and Membership

NOV 23

Swachhta Knowledge Partner under SBM 2.0

DEC 23

Global Waste Cleaning Network

OUR PARTNERS

International



Government



Corporates



Implementing partners



ABOUT ICWMR

IPCA Centre for Waste Management and Research is a collaborative initiative of Indian Pollution Control Association (IPCA) and TERI School of Advanced Studies (TERI SAS) to offer an autonomous and neutral platform to wide ranging stakeholders to discuss and agree for joint action on waste and environment management; provide evidence-based inputs to Government, Industries; and develop synergies with important actors in the field.

The Centre was inaugurated on 20 December 2022 by Dr Prashant Gargava, Member Secretary, CPCB. The Centre is committed to find appropriate and affordable solutions to some of the most pressing problems in waste management sector and is expected to play a pivotal role in meeting the objectives of Swachh Bharat Abhiyan.



OUR VISION

Drive positive environmental, social, and economic impacts through the advancement of sustainable waste management practices and the promotion of a circular economy.

OUR THRUST AREAS

ASSESS (Assessment & Simulation of Suitable Environment Strategies for Sustainability)

SKILLS (Skilling Learning and Leveraging for Sustainability)

STRIDE (Sustainable Trade and Resilient Industrial Development with Environment)

CAP (Communication, Archiving and Promotion)

Supplementing solutions for cleaner, sustainable and inclusive growth

Alignment with Sustainable Development Goals



Awareness creation for nudging waste management for good health



Emphasis on the research that promotes circular economy



Research and sensitization on Water Resources Management



Undertaking projects that focus on the GHG mitigation



Supporting industries in sustainable and path breaking solutions



Providing solutions from the perspective of Nature based Solutions



Generation of solutions for sustainable cities and communities



Collaborative Partnerships and Goals for sustainable waste management

The knowledge, skill and data gaps that exist in the field of environment, especially in the waste management sector need to be addressed urgently. This calls for dedicated research and innovation, and translating the learnings for wider dissemination.

Garima Kaushik, Head, ICWMR

OUR TEAM



Prof. Arun Kansal
Director



Ms. Garima Kaushik
Head



Dr. Atul Kumar
Scientist B



Dr. Divya Soman
Scientist B



Ms. Anisha Joshi
Manager

AFFILIATED MEMBERS



Dr. Gopal Sarangi
Associate Professor, TERI SAS



Dr. Ranjana Chowdhary.
Assistant Professor and HoD, TERI SAS



OUR WORK 2022-23

RESEARCH AND CONSULTANCY

Waste and Water Audit of Zomato for BRSR reporting

Zomato

Environmental audit with respect to waste generation and water consumption was conducted for select facilities of Zomato in Gurugram and Kolkata. As part of the audit, the waste generation and water consumption patterns were monitored, current practices of waste management and water consumption were studied, compliance were verified and recommendations for improvement were provided.

A Standard Operating Procedure was developed which can help in monitoring the future waste generation and water consumption of Zomato and enable it to adopt sustainable practices. A series of training programmes was conducted to build the capacity of Zomato's team at various facilities to use the SOP.



Gap analysis in Plastic Waste Management

Skill Council for Green Jobs, Govt. of India

The project aimed at identifying the gaps that exist at different levels in the plastic waste management domain. Data was collected from waste collectors and scrap dealers of Delhi/ NCR, and recyclers and MRF owners across the country.



As part of the project, 3 qualifications (job roles) were proposed to be included in the National Skill Qualification Framework. Training modules for these qualifications i.e MRF Entrepreneur, Plastic Recycling Technician and Plastic Recycling Entrepreneur were prepared and were duly approved by National Skill Development Corporation.

Social, Economic, and Environmental Impact Assessment of Plastic Recycling Facility

SBI Cards and Payment Pvt Limited

The project aimed at conducting an assessment of the social, environmental, and economic impact of a CSR project 'Innovative Mechanisms for Managing Plastic Waste'. The CSR project involves sourcing segregated plastic waste and converting it into value-added recycled products (at the recycling facility) for closing the loop from waste generation to consumption.

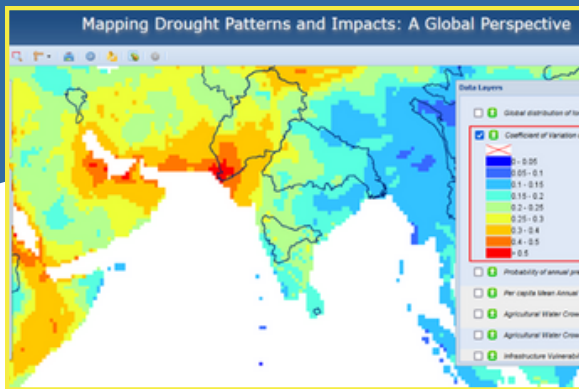
The study assessed the impact of the project, the perception of stakeholders, and appraised the financial components of the project. The derived parameters were evaluated using OECD-DAC framework criteria.

Estimation of impact adjusted virtual water footprint, water trade and credit

Bisleri International Pvt. Ltd.

The project is an industry-academic collaborative research of Bisleri International Pvt. Limited and ICWMR, TERI SAS. It aimed to develop a generic methodological framework for the estimation of impact adjusted water footprint and recommendation of policies and practices for the successful implementation of water credits.

As part of the study, a novel methodological framework was developed for the industries, water footprint assessment was conducted for two production sites of Bisleri, policies will be mapped, and gap analysis was done for water trading regime and water footprint-based product labelling.



TRAINING AND CAPACITY BUILDING

Training Programme on Sustainable Waste Management

WAMCO, Maldives

A 5-days training programme on ‘Sustainable Waste Management’ was organised for delegates of Waste Management Corporation (WAMCO), Maldives from 19-23 December 2022. The training programme aimed at enhancing the learning of participants on best practices in managing waste, exploring opportunities in the sector and honing their skills in business development. This was done through sessions by policy experts, academicians and experts from the field, case studies of best practices of India, interaction with industry practitioners and field visits to waste management facilities.

His Excellency Mr. Ibrahim Shaheeb, High Commissioner of the Republic of Maldives graced the occasion as the chief guest of the felicitation ceremony and presented the training completion certificates to the participants.

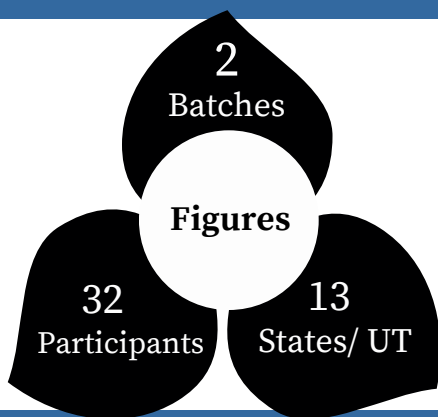


“Being able to understand how waste system works in India has inspired us to do more in Maldives.”
Mariyam Maldha Shareef, WAMCO

Certificate Course on Entrepreneurship in Solid Waste Management

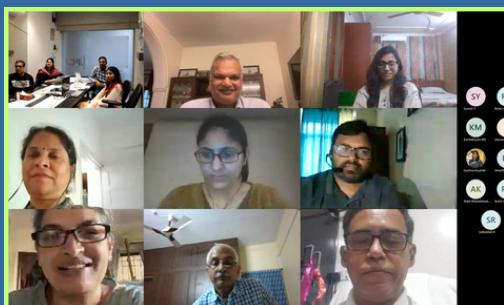
Certificate Course on Entrepreneurship in SWM is a flagship course of the Centre. The 8- week certificate course takes budding entrepreneurs to the journey of entrepreneurship where they acquire knowledge of the solid waste management sector- with sessions on solid waste, solid waste management, and policy frameworks, technologies, business development, project management, marketing and branding. It offers mentoring and handholding support to the participants.

The course was held twice (Mar- May & Oct-Nov) in 2023 and was conducted by senior academicians, industry experts, and entrepreneurs., Field visits to waste management facilities were organised to give exposure to the participants.



The course effectively blended the principles of entrepreneurship with the context of SWM which was highly valuable. This included exploring opportunities for innovation, identifying business models, and understanding the economic aspects of waste management.

Tanuja, Lead, Products and Circular Design, Saahas



Initiative for Social Upliftment of Rural Areas

Bisleri Int. Pvt. Ltd., Tata Steel Foundation & India Development Services

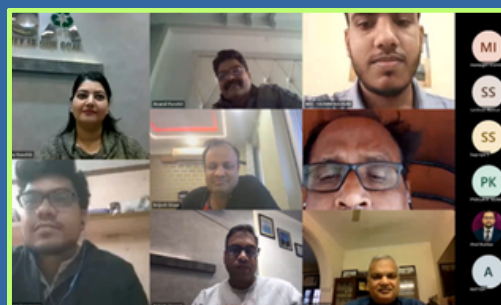
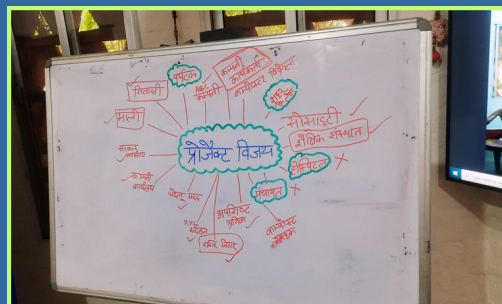
Rural areas are mirroring the consumption and waste generation pattern of urban India. Recognizing the need and urgency to promote responsible waste management in rural areas, training programme on entrepreneurship in solid waste management was launched. As part of the programme, rural participants were trained on waste management and entrepreneurship through online and on-site training at no training fee.

Online training: October-November 2023

Onsite training: 26 November- 2 December 2023

The training taught me how can we solve the problem of waste and how we can make new businesses from waste.”

-Lala Ram



SkiLLS Series 1.0

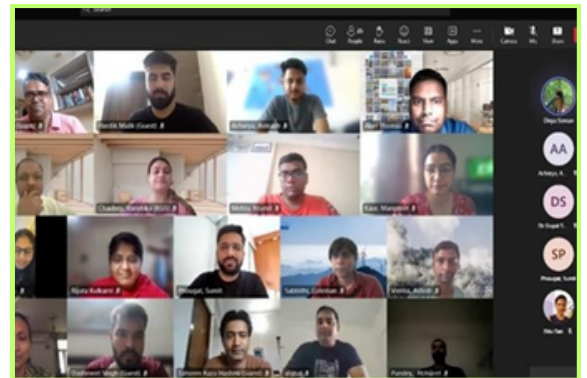
Skilling, Learning and Leveraging on Saturday

SkiLLS is a series of training programmes of 1 or 2-day duration in on valuable skills that can be applied in an individual’s professional life. The training series is carefully designed to include application-based skills which are relevant to today’s changing world that can be transferred through online sessions by experts on Saturday and/or Sunday.

4 training programmes | August- September 2023
85 Participants from corporates, NGOs, academia, consultancy agencies, etc

Training Programmes:

- Anaerobic Digestion of Organic Waste: Market potential, Technology and implementation
- Geospatial data handling and Mapping using Google Earth and QGIS
- Carbon Pricing, Market and Trading: Concepts, Operational Modalities, Analytical Tools and Techniques for Measurement
- Life Cycle Assessment and Estimation of Footprints: A Foundation Course for Beginners



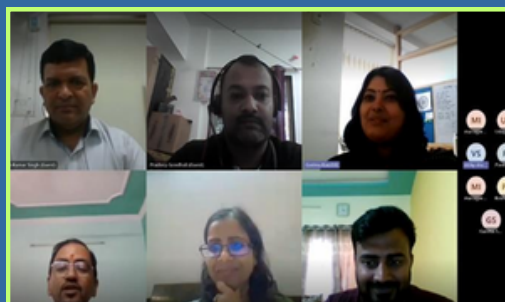
The willingness of Trainer to teach about the software and not only theoretical matter. Very well arranged and inclusive program.

Akahata Bhandarge



It was a great introductory course to GIS. The curriculum was structured adequately keeping in mind the learning time and additional queries that might come up during the training.

Deepanshi, IPCA



MONITORING AND EVALUATION

Monitoring the work of private partnership project in five zones of MCD

Municipal Corporation of Delhi

ICWMR is appointed as the Independent Consultant (IC) to independently monitor the main work of private partnership project for collection, transportation, treatment, and disposal of municipal solid waste in five zones namely Keshavpuram, Rohini, Civil lines, SP City and Narela of Municipal Corporation of Delhi (MCD).

The monitoring work will start from 1st January 2024.

“Waste management related problems can be solved by following the principle ‘Waste isn’t waste until we waste it’ through efficient utilization and circular economy approach.”

Dr. Atul Kumar, Scientist B

“Nature has the solution to all the problems that the human community face, we need to co-exist with nature so as to make the planet habitat for ourselves and our future generations.”

Dr. Divya Soman, Scientist B

OUTREACH

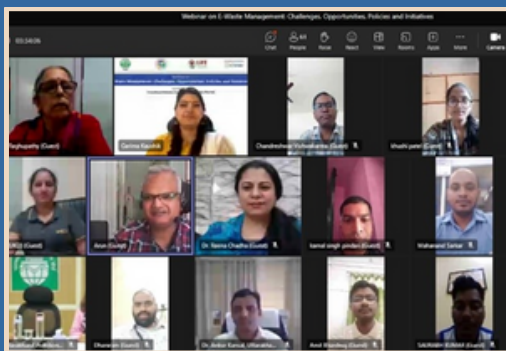
Webinars on Waste and Wastewater Management

Uttarakhand Pollution Control Board, Govt. of India

A series of webinars were conducted on Waste and wastewater Management from September- December 2023 in association with Uttarakhand Pollution Control Board (UKPCB) with the objective to raise awareness amongst stakeholders on the policy frameworks, associated challenges, good practices and opportunities. List of webinars is mentioned below:

- E-waste management: Challenges, opportunities, policies, and initiatives
- Management of bio-medical waste for public health
- Domestic and Industrial Wastewater (Recycling) as the 'New Water' in Urban Development

The webinars were attended by around 300 participants including representatives from UKPCB, Urban Local Bodies, industries, academic institutions, health care facilities, etc.



Panel Discussions

Peoples participation: A powerful tool in tackling the issues of plastic waste

The panel discussion was organized in collaboration with IPCA, Dabur India Limited and Save Mother Earth Mission on 24th June 2023. The panelist included Mr Byas Anand, Head, corporate Communications and CSR, Dabur India Limited; Mr Shyam Tayal, Co-founder, Save Mother Earth Mission; and Ms Monmi Barua, Associate Fellow, TERI. The discussion was moderated by Ms Garima Kaushik, Head, ICWMR, TERI SAS.



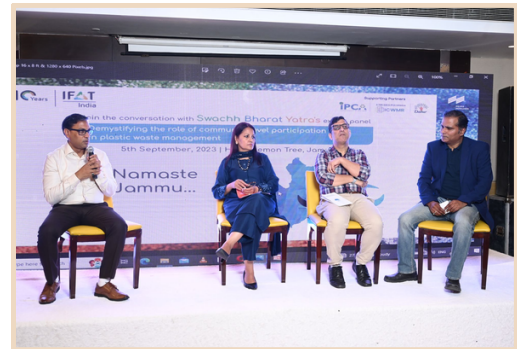
Enablers and Constraints of Plastic Waste Management

The panel discussion on 'Enablers and Constraints of Plastic Waste Management' was organized by IFAT India, IPCA, and Parle Agro on 26th May 2023 at Hotel Hyatt Centric, Chandigarh.

Eminent panelist included Shree J S Majithia, Member Secretary, PPCB; Ms Ishita Wadhawan, Monitoring and evaluation Specialist, PWM and Swachh Bharat Mission, Urban; and others. The discussion was moderated by Mr Ashish Jain, Founder Director, IPCA.

Demystifying the role of community level participation in plastic waste management

The panel discussion was organized in collaboration with IPCA, Dabur India Limited and Save Mother Earth Mission on 24th June 2023. The panelist included Mr Byas Anand, Head, corporate Communications and CSR, Dabur India Limited; Mr Shyam Tayal, Co-founder, Save Mother Earth Mission; and Ms Monmi Barua, Associate Fellow, TERI. The discussion was moderated by Ms Garima Kaushik, Head, ICWMR.



Policy Diagnosis of EPR on Plastic Waste Management

The panel discussion on 'Policy Diagnosis of EPR for Plastic Waste Management' was organized in collaboration with IPCA and IFAT India on 12th May 2023 in New Delhi. The panelists included Mr Rubal Singh, IRS, Additional Commissioner, Shahdara South Zone, MCD; Prof Arun Kansal, Director, ICWMR; Mr Tushar Patnaik, Head, EPR, Dabur; Mr K Ganesh, Senior General Manager, Bisleri International Pvt. Ltd.; and Mr Shailesh Pandey, AVP, Sutlej Textiles. The discussion was moderated by Mr Ashish Jain, Founder Director, IPCA.




Other Activities

- Ms. Garima Kaushik delivered an enlightening session on 'Waste Management and Role of Students' at the Eco Seminar, Hillwoods Academy on 5th August 2023.
- Prof Arun Kansal delivered a session on Circular Economy at the teachers' training workshop in Kalinganagar on 4th-5th September 2023.
- Ms. Garima Kaushik was invited as the Chief Speaker as part of Indian Model UN organised by Ryan International School at Scope Complex on 7th November 2023.
- Dr. Divya Soman delivered an interactive session on the "Fundamentals of Ecosystem services - methodologies and case studies" to the students of M.A. Sustainable Development Practice in the TERI School of Advanced Studies on 5th December 2023.
- Ms. Garima Kaushik delivered an insightful session on 'Solid Waste Management and its Governance' to the students of M.A. Sustainable Development Practice in the TERI School of Advanced Studies on 5th December 2023.
- Ms. Garima Kaushik was invited as the Chief Guest for the Annual Prize Distribution Ceremony of Arunodya Public School on 30th December 2023.





PUBLICATIONS


 D. Soman. 2023. The Paradox of Forest Conservation Amendment Act and Green Credit Programme. Central Mirror. <https://icwmr.terisas.ac.in/index.php/blog/3/the-paradox-of-forest-conservation-amendment-bill-and-green-credit-programme>


 Kansal, A., Jai, A., Kaushik, G. 2023. Diffusion of plastic waste management policy key to far-reaching transformation. Central Mirror. <https://icwmr.terisas.ac.in/index.php/blog/2/diffusion-of-plastic-waste-management-policykey-to-far-reaching-transformation>

 Kansal, A. 2023. Solid Waste Management and Role of Corporates. Central Mirror. <https://icwmr.terisas.ac.in/index.php/blog/1/solid-waste-management-and-role-of-corporates>

 Bhargava, N., Bahadur, N., and Kansal, A. (2023). Techno-economic assessment of integrated photochemical AOPs for sustainable treatment of textile and dyeing wastewater. Jr Water process Engineering. 56, 104302. 11pg. doi.org/10.1016/j.jwpe.2023.104302 . Elsevier. (IF: 7.0).

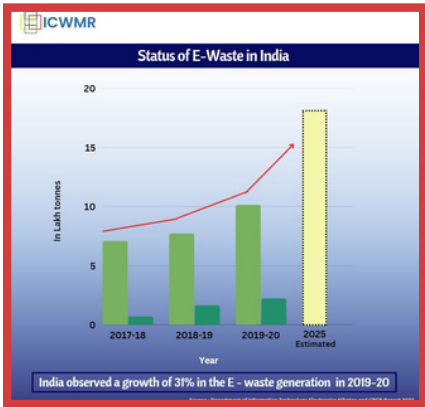
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 Gupta A., Geetanjali, MR., Soman S., Mohan D., Ananthapadmanabhan D., Soman D., Thomas JL., Arun P., Souparna V, Radhakrishnan S., Syamkrishna PA. 2023. Building Resilience: Top 15 Solutions for a Climate Resilient Kerala. Sustera Foundation, Kerala. https://www.sustera.org/_files/ugd/2954ee_02cd0d0e38e842b195e458466c2a81cc.pdf

 Chaudhary S. Chua L.H.C. and Kansal A. (2022). Event mean concentration and first flush from residential catchments in different climate zones. Jr. Water Research. 118594. doi.org/10.1016/j.watres.2022.118594. Elsevier. (IF: 12.8).

SOCIAL MEDIA

Some IEC Posts



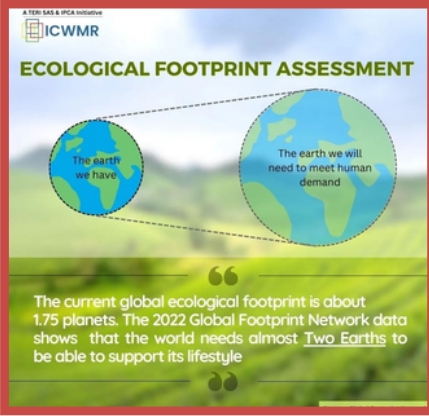
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EMPANELMENT & MEMBERSHIP

Empanelment- Swachh Bharat Mission 2.0

TERI SAS in consortium with IPCA has been empaneled as **Swachhta Knowledge Partners (SKP)** under Swachh Bharat Mission Urban 2.0. The SKPs are expected to support states in building their capacities for the successful implementation of SBM 2.0.



Membership- Global Waste Cleaning Network



A TERI SAS & IPCA Initiative



IPCA Centre for Waste Management and Research

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