One Nation, One Mission – End Plastic Pollution

National Plastic Pollution Reduction Campaign

Hackathon - 2025

Eco-Alternatives to Single Use Plastics

Information Brochure

1.0 Background

Hon'ble Prime Minister of India had announced India's pledge to phase out Single Use Plastic (SUP) by 2022 on World Environment Day June 05, 2018 and also pitched for freedom from SUP while delivering the Independence Day speech on August 15, 2019. In line with the clarion call given by Hon'ble PM, Shri Narendra Modi, to phase out SUP items, Ministry of Environment, Forest and Climate Change, Government of India notified the Plastic Waste Management Amendment Rules, 2021 prohibiting the identified SUP items, which have low utility combined with high environmental impact & littering potential. As per Amendment to Plastic Waste Management (PWM) Rules dated August 12, 2021 – Import, Stocking, Production, Sale & Usage of the following items was banned w.e.f. July 01, 2022:

i. Ear buds with plastic sticks
ii. Plastic sticks for balloons
iii. Plastic flags
iv. Candy sticks
v. Ice- cream sticks
vi. Polystyrene [Thermocol] for decoration
vii. Plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, stirrers
viii. Wrapping or packing films around sweet boxes, invitation cards, and cigarette packets,
ix. Plastic or PVC banners less than 100 microns

It is to be noted that the above provisions are not applicable to commodities made of compostable plastics and biodegradable plastics.

On World Environment Day, 2025, Hon'ble Minister of Environment, Forest and Climate Change, Government of India, Sh. Bhupender Yadav inaugurated the National Plastic Pollution Reduction (NPPR) Campaign. A Hackathon on "Eco-alternatives to Single Use Plastics" was launched by Hon'ble MEF under the NPPR Campaign. This hackathon aims at finding alternative eco-friendly solutions to reduce the usage of petro-based single use plastic items.

2.0 Actions taken for Enforcement of Ban on SUP

Several key measures have been taken by CPCB to enforce the ban on SUP items, including the development of a Comprehensive Action Plan focusing on supply-side control, demand reduction and creating an enabling environment for phasing out SUP. Directions were issued to State Pollution Control Board /Pollution Control Committees (SPCB/PCCs), Urban Local Bodies (ULBs), plastic raw material manufacturers, industries using and producing SUPs etc. for effective implementation of the ban. To strengthen monitoring and enforcement, CPCB launched two web portals—the Monitoring Module for Compliance of SUP and the SUP Public Grievance Portal. Regular joint inspections with SPCBs and ULBs are conducted to break the supply chain of banned SUP items. A series of Workshops were also conducted with Central Institute of Petrochemicals Engineering & Technology (CIPET) for the micro, small & medium enterprises (MSME) to facilitate their transition from manufacturing of Single Use Plastic to their eco-alternatives. A compendium on Eco-alternatives was launched on World Environment Day, 2025 by Hon'ble MEF.

3.0 Objectives

In line with the theme for World Environment Day (WED), 2025 - Ending Plastic Pollution Globally, this hackathon has been launched with the following objectives:

- To provide a platform to showcase the efforts which are being taken across the country to develop eco-alternatives to SUP items.
- To select the best available solutions, which can be adopted as alternatives to the SUP items.

4.0 Eligible Participants

The following entities will be eligible to participate in the hackathon to showcase already developed and scalable solutions that align with the objectives of the hackathon to address plastic waste challenges.

- Start-ups registered under various Government Schemes.
- Science, Research & Educational Institutions
- Industrial Entities

5.0 Registration and Application Submission

Applicants can register through the registration form prepared for the purpose. Link to the registration form can be accessed by i) scanning the QR code in the poster, ii) Registration link provided on the CPCB Hackathon webpage, and iii) **Following Registration Form Link** :

(https://docs.google.com/forms/d/e/1FAIpQLSdHFqBaACX3_cbCErUhEDqrulixmbUXfCY7UPeoIln894FyLA/viewform?usp=sharing&ouid=110077018875699516391)

- Problem statement will be published on the CPCB Hackathon Webpage on 14th July, 2025.
- Participants can submit their developed solutions either individually or as a team, addressing one or more themes of the Hackathon, latest by 10th October, 2025.
- The solution shall be submitted as per the format provided in **Annexure I** via Email to pp.hackathon.cpcb@gmail.com.

6.0 Evaluation of the Applications for Selection of the Best Available Eco-Alternatives to SUP Items

Based on the evaluation, top 10 participants shall be invited to make a presentation, either via video conferencing or in person (with prior intimation only), to the Evaluation Committee. The winning solutions of the hackathon will be recognized and awarded attractive prizes.

7.0 Prizes for Winners

The prizes for winners to be provided by CPCB are given below:

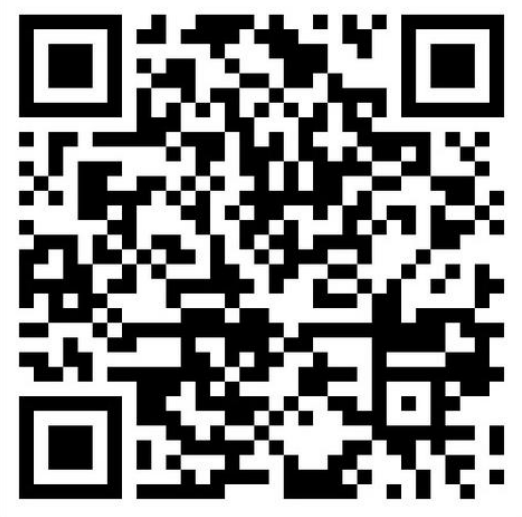
1st Prize	2nd Prize	3rd Prize
₹ 1,00,000	₹ 75,000	₹ 50,000

8.0 Further Information

For any further Information/queries, please contact:

Phone No. 011-43102 460/459

Email ID: pp.hackathon.cpcb@gmail.com



Annexure I - Solution Submission Format for Participants

1.	**Team's Registered Email ID**					
2.	**Problem Statement ID**					
3.	**Title of the Developed Solution**					
4.	**Description of Developed Solution (50 words)**					
5.	**Comparison of Eco-Alternative with Plastic**					
	a	**Functionality**	**Test Conducted (Y/N) (Please upload test reports)**	**Plastic**	**Alternative**	**Remarks**
	i	**Strength**				
	ii	**Permeability**				
	iii	**Leachability**				
	iv	**Shelf life**				
	v	**Any other Parameter**				
	b	**Biodegradability**				
	c	**Cost per Unit (Please specify (₹)**				
	d	**Scalability and feasibility of the solution**				
6.	**Target Market/ End-user (50 words)**					
7.	**What is the novelty of the developed solution? (50 words)**					
8.	**What is the business model or funding requirement for implementation of the solution? (50 words)**					
9.	**Limitations of the developed solution and future improvements required (100 words)**					

One Nation, One Mission - End Plastic Pollution

National Plastic Pollution Reduction Campaign

Problem Statements for Hackathon, 2025 on Eco-Alternatives to Single Use Plastics

On World Environment Day, 2025, the Hon'ble Minister for Environment, Forest and Climate Change, Government of India, Shri Bhupender Yadav, has launched several initiatives including a "National Plastic Pollution Reduction Campaign" with a series of planned initiatives. One such initiative is a National Hackathon titled "Eco-alternatives to Single Use Plastics", which aims to identify and promote country-wide efforts in development of eco-friendly alternatives to petroleum-based single-use plastic (SUP) items.

Many initiatives across India—by start-ups, research institutions, industry, and civil society—are already working on innovative solutions to replace banned SUP items. This hackathon aims to bring visibility to such efforts and further encourage development of viable eco-alternatives.

As per the planned activities of the Hackathon, 2025, CPCB is required to publish problem statements for Hackathon, 2025, for which developed solutions can be submitted by the eligible participants, which include (i) Start-ups registered under various Government Schemes, (ii) Science, Research & Educational Institutions and (iii) Industrial Entities. Participants may choose to apply by submitting their solutions to either one or both the Problem statements.

Problem Statement - 1

Provide an eco-friendly, economically viable, and scalable solution to banned thin plastic carry bags (less than 120µm in thickness), which continue to be a major component of plastic waste.

Problem Description

The thin plastic carry bags are light-weight, possess high littering potential and low collection potential. However, their usage is found in almost every aspect of our lives as they are convenient to use. As a result, they often accumulate in landfills and open environments, contributing to environmental pollution.

In view of above, following provisions were introduced in the PWM Rules, 2016 (as amended) for restricting the usage and manufacturing of thin plastic carry bags:

Clause 4(1)(c): "*Carry bag made of virgin or recycled plastic, shall not be less than seventy-five microns in thickness with effect from the 30th September, 2021 and one hundred and twenty (120) microns in thickness with effect from the 31st December, 2022;*"

Clause 4(1)(h): "*the provision of thickness under clause (c) shall not apply to carry bags or commodities made from compostable plastic or biodegradable plastics. Carry bags and commodities made from compostable plastics shall conform to the Indian Standard: IS/ISO 17088:2021 titled as Specifications for Compostable Plastics*"

Several key measures have been taken to enforce the ban on carry bags which include promotion of alternatives to carry bags which include paper bags, jute and canvas bags, compostable bags. CPCB has certified total of 284 no. of manufacturers of compostable plastics/commodities with a combined capacity of over 8,00,000 Tons Per Annum (TPA). Several States/Union Territories have installed vending machines in their jurisdiction to promote the alternatives.

Despite the several measures taken by the concerned authorities, usage of carry bags is still observed in several section of the economy, specifically the informal sector including street vendors, vegetable & fish markets. Characterization and assessment of plastic packaging waste carried out by CPCB in eight cities revealed that thin plastic carry bags (thickness <120 µm) make up a significant portion of the total plastic waste—ranging from 14% to 54%.

In view of the above, it is imperative to find eco-alternatives to thin plastic carry bags which are commercially scalable and economically viable.

Expected outcome

Participants are expected to showcase already developed eco-alternatives to banned thin carry bags (thickness <120 µm). The alternatives should demonstrate adequate strength, biodegradability, scalability of production, economic viability and novelty.

Solutions should be supported with relevant test reports and highlight their feasibility for large-scale use and potential adoption by end-users.

Problem Statement - 2

Provide an eco-friendly, technically and economically feasible solution to thin plastic packaging

Problem Description

As in the case of thin plastic bags, thin plastic packaging is light-weight, possess high littering and low collection potential. Their usage is found in several sections of the economy including the food packaging, hospitality sector etc.

In view of above, following provisions were introduced in the PWM Rules, 2016 (as amended) for restricting the usage of thin plastic packaging:

Clause 4(1)(d): "*plastic sheet or like, which is not an integral part of multi-layered packaging and cover made of plastic sheet used for packaging, wrapping the commodity shall not be less than fifty microns in thickness except as specified by the Central Government where the thickness of such plastic sheets impair the functionality of the product*"

Further Extended Producer Responsibility (EPR) Guidelines were notified by MoEFCC as Schedule II of PWM Rules as per which the registered Producers, Importers & Brandowners (PIBOs) have to fulfill EPR obligations through procurement of EPR Certificates from Plastic Waste Processors (PWPs). CPCB developed the Centralized EPR Portal for plastic packaging and presently over 50000 PIBOs with EPR target of 70 Lac TPA and around 2900 PWPs with processing capacity of 295 lac TPA are registered on the EPR Portal. Further, Compendium of Manufacturers/Sellers of Alternatives to SUP has been launched by Hon'ble MEF on World Environment Day (WED) 2025.

Despite the several measures taken by the concerned authorities, usage of thin plastic packaging is still observed in several sections of the economy. Recent characterization and assessment of plastic packaging waste carried out by CPCB in eight cities revealed that thin plastic packaging (thickness <50 µm), still constitute upto 10% of the total plastic waste.

In view of the above, eco-alternative solutions to thin plastic packaging are required to fulfil the increasing demands.

Expected outcome

Participants are expected to showcase already developed eco-alternatives to banned thin plastic packaging (thickness <50 µm). The alternatives should demonstrate adequate strength, biodegradability, scalability of production, cost-effectiveness and novelty. Further, the packaging should not affect the quality of the product.

Solutions should be supported with relevant test reports and highlight their feasibility for large-scale use and potential adoption by end-users.

How to Apply

1. **Registration:**

- Applicants can register through the registration form prepared for the purpose. Link to the registration form can be accessed by

i) **Following Registration Form Link** :

(https://docs.google.com/forms/d/e/1FAIpQLSdHFqBaACX3_cbCErUhEDqrulixmbUXfCY7UPeoIln894FyLA/viewform?usp=sharing&ouid=110077018875699516391)

ii) scanning the QR code in the poster,

iii) Registration link provided on the CPCB Hackathon webpage

- Problem statement will be published on the CPCB Hackathon Webpage.
- Participants can submit their developed solutions either individually or as a team, addressing one or more themes of the Hackathon, latest by 15th September, 2025.
- The solution shall be submitted as per the format provided in **S. No. 2 below** via Email to pp.hackathon.cpcb@gmail.com.

2. **Format for Submission of Developed Solution:**

Solution Submission Format for Participants

1.	**Team's Registered Email ID**					
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3. **<u>Further Information:</u>**

For any further Information/queries, please contact:

- Phone No. 011-43102 460/459
- Email ID: pp.hackathon.cpcb@gmail.com

Refer to Information Brochure uploaded on: https://cpcb.nic.in/pp-hackathon-cpcb/