



**ECO**  
ALTERNATIVES  
**EXPO &**  
**START-UP**  
CONFERENCE  
CHENNAI - SEP 26 & 27, 2022

SEPTEMBER

**26** & **27**

• 2 0 2 2 •

CHENNAI TRADE CENTRE

**National Expo on Eco - Alternatives and Start Up Conference 2022**

**26<sup>th</sup> & 27<sup>th</sup> September 2022**



## Table of Contents

1	Introduction.....	1
1.1	The National expo .....	3
1.2	Objectives of the Expo .....	3
2	Details of the expo .....	3
3	Exhibitor Details.....	8
4	Panel Discussions .....	11
4.1	Introduction .....	11
4.2	Session 1: Marine Plastic Litter – Issues, Challenges and Way Forward .....	11
4.3	Session 2: Manufacturers of Eco-Alternatives to Banned Single use Plastic items.....	14
4.4	Session 3: Start-ups in the field of alternatives to Single use plastics .....	15
4.5	Session 4 Startups in the field of air quality management.....	17
4.6	Session 5: Role of Financial institutions in Development of Eco-Alternatives to SUPs and Innovative approaches in Plastic waste and Air Quality Management. ....	19
5	Conclusion & Way Forward .....	20
6	Annexures.....	23
6.1	Notification by the Ministry of Environment, Forest and Climate Change, Government of India, prohibiting production, stocking, distribution, sale and use of Single Use Plastics (SUP) items. ....	24
6.2	Notification by the Environment and Forest Department, Government of Tamil Nadu, prohibiting Single Use Plastics (SUP).....	25

## List of Figures

Figure 1: List of Banned SUPs by Tamil Nadu Government .....	1
Figure 2: Handbook on single use plastic ban released by GoTN .....	2
Figure 3: List of Banned SUPs by Government of India .....	2
Figure 4: Inaugural ceremony of Day 1 of National expo .....	4
Figure 5: Presenting of Manjappai.....	5
Figure 6: Launching of directory of manufacturers of Eco-alternatives to SUPs .....	5
Figure 7: Unveiling of Manjappai vending machine.....	6
Figure 8 : Inauguration of Day 2 of the National expo and Startup Conference.....	7
Figure 9 : Eco-friendly daily use products .....	8
Figure 10 : Display of eco-friendly bags .....	9
Figure 11: Display of eco-friendly tableware .....	9
Figure 12: Display of Eco-friendly Craft Products .....	9
Figure 13:Display of machineries.....	10
Figure 14 : Panel Discussions conducted as a part of the conference .....	11
Figure 15: Session 1 of Panel Discussion .....	12
Figure 16: Session 2 of Panel Discussions .....	14
Figure 17: Session 3 of Panel Discussion .....	16
Figure 18: Session 4 of Panel Discussion .....	17
Figure 19: Session 5 of Panel Discussion .....	20
Figure 20: Promotion of Eco-alternatives Expo and Start-up Conference .....	23
Figure 21: Media coverage of the Expo .....	23

## Abbreviations

TNPCCB	Tamil Nadu Pollution Control Board
CPCB	Central Pollution Control Board
MoEFCC	Ministry of Environment Forest and Climate Change
SUP	Single Use Plastic
SHG	Self Help Group
NGO	Non- Governmental Organisation
MSE	Madras School of Economics
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
NABARD	National Bank for Agriculture and Rural Development
SIDBI	Small Industries Development Bank of India
SBI	State Bank of India
SDMRI	Suganthi Devadasan Marine Research Institute
NCCR	National Centre for Coastal Research
GEAR	Good Earth Astu Research Centre
GST	Goods and Services Tax
CEO	Chief Executive Officer
IIT	Indian Institute of Technology
MSME	Micro Small and Medium Enterprises
PMU	Project Management Unit
GoTN	Government of Tamil Nadu
R&D	Research and Development

## 1 Introduction

The discovery of the Great Pacific Garbage Patch in the north Pacific Ocean and other similar plastic garbage hotspots aroused concerns about the environmental hazards caused due to the non – biodegradable nature of the plastic waste. Ever since, people and the governments globally have become environmentally conscious and have been studying the impacts of plastic waste in detail and has been coining various approaches to curb plastic use.

One of such approaches was to limit use of Single Use Plastics (SUP), a category of commercial plastic with short life span and limited recyclability. These plastics significantly add to the overall plastic waste generated and the limited recyclability led to these ending up as litter or being burned.

Government of Tamil Nadu was one of the first State to roll out a statewide single use plastic ban in 2019 banning manufacture, sales and use of 14 types of single use plastics across the state. Since, then the State has been taking consistent efforts in both enforcement of the ban and in promoting a supporting environment for the ban. Also, the State is one of the few States to ban plastic carry bags.



Figure 1: List of Banned SUPs by Tamil Nadu Government

On the enforcement side, the State has issued notices to manufacturers and distributors of SUPs to stop such operations and further to it, the State has seized 1914 Tons of SUPs stored in commercial establishments and has instructed to close down 180 of SUP manufacturers across the State as on September 30<sup>th</sup>, 2022. As per the understanding, the need for creating conducive environments for banning SUPs, Government of Tamil Nadu had also been equally focusing on creating awareness among general public regarding the environmental hazards caused by SUPs, the various kinds of banned plastics and probable alternatives for the banned plastic. The government also released a detailed handbook on the SUP ban items and its alternatives.

Following this, Government of India notified ban on SUP with effect from 1 July 2022 banning items like ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol] for decoration, plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 micron, stirrers.

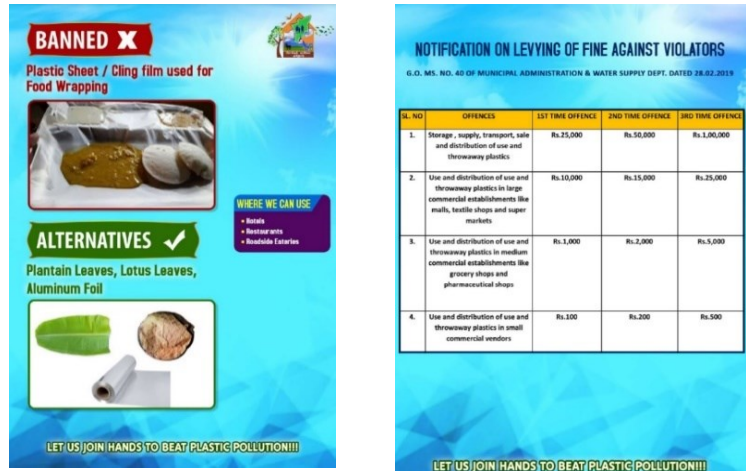


Figure 2: Handbook on single use plastic ban released by GoTN



Figure 3: List of Banned SUPs by Government of India

## 1.1 The National expo

To eliminate the SUPs, and to achieve an effective implementation of Plastic Waste Management Rules, 2016 as amended, a national task force was formed by the Ministry of Environment, Forest & Climate Change (MoEFCC). It was decided that a national level Expo on alternatives to banned SUP to be organized and it was requested that the Tamil Nadu Government in coordination with MoEFCC to conduct the national expo. The same was agreed upon and was decided that the National Expo on Eco-alternatives for banned SUP and Conference for Start-ups 2022 will be conducted on 26.09.2022 and 27.09.2022.

## 1.2 Objectives of the Expo

SUP bans can be successful only in a scenario where alternatives to plastics are accessible, affordable and convenient for the general public to use. Hence, preparedness for the plastic ban is as crucial as enforcement of the ban. Towards creating such enabling environment, National Expo on Eco-alternatives to Banned SUP items and Startup Conference was conducted in Chennai from 26-27 Sep 2022. This was a first of its kind initiative taken in the country so far.

The expo was envisioned to achieve various objectives related to creating a supporting environment for implementing the SUP ban.

- Create awareness about the various alternatives available in the market and hence to gradually eliminate SUP
- Create a platform where manufacturers of eco-alternatives from across the country could exhibit and sell their products
- Bridging financial requirements of the manufacturers by bringing manufacturers, distributors and financial institutions on a single platform

Facilitate interaction among the various manufacturers to share experiences and identify complimenting markets and avenues of funding under various government and non – government schemes.

## 2 Details of the expo

The Government Tamil Nadu has a grand vision to make the State of Tamil Nadu plastic pollution free. The Government of Tamil Nadu has banned 14 types of SUPs with effect from 01.01.2019. The ban is being implemented by Tamil Nadu Pollution Control Board (TNPCB) and local Bodies in co-ordination with the respective line departments. Later in July 2022, Ministry of Environment, Forest and Climate Change (MOEFCC), Government of India has also banned certain SUPs throughout the country which includes plastic cutleries, films for sweet box packaging, ear buds, PVC banners below 100 microns, etc.

Further to the ban, the State has been taking a multifocal approach by emphasizing and working towards creating awareness among the people and promoting alternatives to plastic, alongside enforcement of ban on SUPs. In December 2021, the Hon'ble Chief Minister of Tamil Nadu launched the flagship program "Meendum Manjappai Campaign" to

promote the use of traditional yellow cloth bags by the public and to discourage the use of plastic bags. Some of the key initiatives undertaken under this programme include, creation of a directory of manufacturers and suppliers on eco-alternatives to banned SUPs, preparation for the launch of Manjappai Express train to create awareness on usage of eco alternatives to banned SUPs, efforts to make the Koyambedu market complex as carbon neutral, installation of Manjappai vending machines, public awareness program conducted at the District level in co-ordination with District Administration, NGOs and industries and so on.

With an objective to create conducive environment for manufacture and sales of alternatives to plastic, promote use of such alternatives to banned plastic and to create awareness among the public on the ill effects of disposal of SUPs and the availability of a diverse set of alternatives for SUPs, TNPCB, in coordination with Government of Tamil Nadu and Ministry of Environment, Forest and Climate Change (MOEFCC), Government of India, organized a National Expo on Eco alternatives to SUPs and Start-up Conference 2022 on the 26th& 27th of September 2022 at Chennai Trade Centre, Nandambakkam, Chennai. This national expo is the first of its kind in the country.



*Figure 4: Inaugural ceremony of Day 1 of National expo*

On the first day of the National Expo, Hon'ble Union Minister for Environment, Forest & Climate Change, Govt. of India, Thiru. Bhupender Yadav gave inaugural speech through video conference in the presence of Hon'ble Minister for Environment, Climate Change and Youth Welfare & Sports Development, Govt. of Tamil Nadu, Thiru. Siva. V. Meyyanathan, Shri Naresh Pal Gangwar I.A.S., Additional Secretary for Ministry of Environment, Forest and Climate Change, Govt. of India, Smt. Supriya Sahu I.A.S., Additional Chief Secretary to Govt.,



Environment, Climate Change and Forest Department, Govt. of Tamil Nadu and Dr. Jayanthi M, I.F.S., Chairperson of Tamil Nadu Pollution Control Board. At the inaugural ceremony, the dignitaries addressed the gathering by highlighting the negative impacts of plastic on environment and all living species and called for the need to return to the traditional ways of using cloth bags and natural products and for making Manjappai as the status symbol of Tamil Nadu. The ceremony reminded that the effective implementation of SUP ban does not lie in the hands of Government alone, but in the hands of the people, who have to take decisions for a sustainable future.

The Hon'ble Minister for Environment, Climate Change and Youth Welfare & Sports Development, Thiru. Siva. V. Meyyanathan presented the 'Manjappai' to the representatives of Self- Help Groups (SHGs), Forest department officials, school, and college students in the inaugural function to enhance the use of traditional cloth bags in our day-to-day life. After this, The Hon'ble Minister launched the Directory of 'Manufacturers of Eco Alternative Materials for SUPs in Tamil Nadu' prepared by TNPCB in order to promote the availability of eco-alternatives to SUPs among businesses like hoteliers, caterers, marriage Halls, theatres, malls etc.



*Figure 5: Presenting of Manjappai*



*Figure 6: Launching of directory of manufacturers of Eco-alternatives to SUPs*

Thereafter the Hon'ble Minister for Environment, Climate change and Youth welfare & Sports Development started off the eco alternatives expo stalls, where he inaugurated the national expo and inaugurated a Manjappai vending machine.



Figure 7: Unveiling of Manjappai vending machine

The Start-Up Conference on 27th September 2022 was inaugurated by Hon'ble Union Minister of State for Environment, Forest & Climate Change, Govt. of India, Thiru. Ashwini Kumar Choubey in the presence of Hon'ble Minister for Environment, Climate Change and Youth Welfare & Sports Development, Govt. of Tamil Nadu, Thiru. Siva. V. Meyyanathan and Dignitaries from Ministry of Environment, Forest & Climate Change (MoEFCC), Central Pollution Control Board (CPCB), Smt. Supriya Sahu I.A.S., Additional Chief Secretary to Environment Climate Change and Forests Department, Government of Tamil Nadu, Dr. M. Jayanthi, I.F.S. Chairperson, Tamil Nadu Pollution Control Board (TNPCB), Government of Tamil Nadu and other State Pollution Control Boards/Pollution Control Committees. In both the inaugural functions more than 1500 people participated which includes school and college students, Self Help Groups, Industry people, Non- Governmental Organisations (NGOs) and Government officials.



*Figure 8 : Inauguration of Day 2 of the National expo and Startup Conference*

The Panel discussions were held during the two-day Expo with an active participation of the distinguished panelists and experts from reputable institutions. The members were invited from distinguished institutions like Indian Institute of Technology Madras, Suganthi Devadason Marine Research Institute, Periyar University, Annamalai University, Madras School of Economics (MSE), GIZ, NABARD, financial institutions like SIDBI, SBI, Canara bank etc., and entrepreneurs representing innovative startups in alternatives.

The panel discussions on first day focused on the issues and challenges related to marine plastic litter, the detrimental effects of micro plastic pollution which has been linked to a variety of health problems for both land and marine life. The panel discussion also included focused agenda to discuss and express public opinion for solving the various challenges and hurdles faced by the manufacturers of eco-alternatives. Some of the key issues discussed included the challenges in penetration and expansion in a market that has already got accustomed to the convenience and comfort provided by plastic at an affordable cost.

On the second day of the National Expo, an interactive session was held between start-up business owners and financial institutions, including State Bank of India, Canara Bank, Union Bank of India, etc., and entrepreneurs for start-ups in the fields of alternatives to SUPs and air quality management. The discussion focused on the hurdles faced by startup businesses in competing with well-established sectors that sell their products at considerably lower prices owing to lower production cost of plastic products. Each of the panel discussions were attended by more than 150 participants from startup companies, industries, college students and Government officials.

### 3 Exhibitor Details

The expo provided a platform for around 173 entities who are into research and development, manufacturing, and sale of ecofriendly alternatives to plastics and machineries for making eco-friendly alternatives. The expo unveiled many innovative products in the eco- friendly product spectrum manufactured and sold across the country that covered, carry bags, utility items, apparels, footwear, wellness products, sanitary pads, cutlery and many more. These products are made from varied raw materials such as banana leaf products, fiber/ rice husk/ other agricultural wastes, areca leaf, coir, clay, palm leaf, cloth/jute, etc. by manufacturers, SHGs and many other enterprises from 18 different States of India making the event truly pan Indian.

113 stalls put up at the expo were by startups or companies from Tamil Nadu who displayed a variety of products, including edible spoons, straws, and cutlery made of wheat/ starch-based materials contributing to zero waste generation; eco-friendly sachets made of seaweed; eco-packaging items made from mushrooms; wooden tooth brushes made with bamboo; and tabs for tooth paste, terracotta mud pots, vetiver cushions, eco pillows, Scrapers utilizing vetiver, reusable cloth sanitary napkins, natural fiber based foot care / foot wear products, banana fiber bags, vetiver bags, chettinad wire bags, corn-based bowls & plates, neem comb, bamboo and wooden tooth brush, kaun grass and macramé products, seed paper products, eco-friendly kits and many other interesting eco-friendly alternatives. The other States with substantial participation of eco-alternative manufacturers include Uttar Pradesh, Karnataka, and Maharashtra.

#### Eco Friendly daily use products

Several stalls displayed a range of day-to-day use products made from ecofriendly and environmentally biodegradable materials like toothbrush and comb made of bamboo wood or neem wood, toothbrushes made from bamboo, shaving razors, cotton swabs, combs made of bamboo, vetiver body scrubs, diaries made out of recycled paper, stationery items like pens made out of wood etc., which are mostly made out of plastics these days. The stalls motivated many people towards a climate conscious way of living.



Figure 9 : Eco-friendly daily use products

### Eco-Friendly bags

There were a significant number of exhibitors who showcased the eco-friendly alternatives to environmentally detrimental plastic carry bags. Bags made of used paper, kraft paper, cloth bags, jute bags and other naturally available fibers. The bags were manufactured and designed not only to be eco-friendly but also to be aesthetically appealing to attract the consumers to use more of eco-friendly carry bags.



Figure 10 : Display of eco-friendly bags

### Eco Friendly tableware

Packaging of food, and other use and throw tableware are heavily plastic intensive and there is a huge need to make cutleries and tableware ecofriendly. A variety of products like food containers made from sugarcane bagasse, cornstarch, clay, and paper pulps were showcased. Innovative products like edible cutleries, edible teacups were also displayed.



Figure 11: Display of eco-friendly tableware

### Ecofriendly Craft products

Handbags made out from banana fibers, decorative items made from coconut shells, flower and fruit baskets made from palm leaves, floor mats made from banana leaves and similarly there were a wide range of display of craft products made from naturally available materials.



## Machineries to produce ecofriendly alternatives

In addition to display and sale of products, certain stalls (9 nos.) displayed machineries used for manufacturing various ecofriendly products and demonstrated the making of eco-friendly materials, instilling enthusiasm and awareness among the people who visited the expo.

In addition to alternates, there were several innovative products that help in lowering the levels of contamination and pollution in the environment. While some of such products included those made from waste (plastic/ rubber/ sludge etc.) thereby reducing waste entering landfill, some other products like devices that helped control pollution by stabilizing pollutant particles (particulate matter) present in the environment.

The exhibition was free and open to the public, school students, and college students to impart knowledge and create awareness about eco-alternatives to banned SUPs, facilitate transfer of technology know-how, and provide a venue for ecofriendly product manufacturers to display their products.



Figure 13: Display of machineries

## 4 Panel Discussions

### 4.1 Introduction

TNPCCB along with Government of Tamil Nadu and Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India aimed at creating awareness to the public on detrimental effects of disposal of SUP's and need for promoting the alternative options available for banned SUP's. Aligned towards this purpose, 5 startup conferences were organized to showcase innovation in the field of eco-friendly products, creating a collaboration among various stakeholders and facilitating the required finances from the financial institutions to enable the scaling up of production of Eco alternatives. The panel discussions were structured and designed to ensure that each session concentrated on a particular issue related to the damaging effects of using SUPs and what are the possible alternate to the usage of SUPs and the challenges involved in transitioning from a plastic to eco-friendly alternatives.



Figure 14 : Panel Discussions conducted as a part of the conference

### 4.2 Session 1: Marine Plastic Litter – Issues, Challenges and Way Forward

According to the United Nations, at least 800 species worldwide are affected by marine debris and as much as 80 percent of that litter is composed of plastic. It has been estimated that up to 13 million metric tons of plastic ends up in the ocean every year. The panel discussion on “Marine plastic Litter – Issues, Challenges and Way Forward” was set out to find solutions to some of the major concerns regarding marine plastic pollution.

Dr. J.K. Patterson Edward, Suganthi Devadason Marine Research Institute (SDMRI), Thoothukudi, being an eminent researcher in areas of coastal zone management, coastal eco system rehabilitation, marine environment impact assessment and coastal protection for over three decades, expressed his concerns and views on plastic pollution on the marine eco system and pointed out the need to shift the emphasizes from macro plastics to micro plastics. He narrated the story of how plastic has become a part and parcel of human life and how the global plastic production has increased drastically in the last few decades. He highlighted that about 5-13 million tons of plastic enters the ocean globally and rivers play a vital role in transporting it.

He mainly emphasized on the need for (i) assessing and monitoring marine plastic litter and finding hotspots (ii) evidence-based decision making (iii) creating awareness among the public and (iv) preventing and reducing litter entering the oceans from land and river-based sources.

Dr. Pravakar Mishra, Scientist - F, National Centre for Coastal Research (NCCR)- Ministry of Earth Sciences expressed his views regarding-Marine Litter and Microplastics monitoring along the Indian coast. He began his talk by emphasizing the need of adoption of potential stringent policy governing marine litter and pointed out that this is the right time to update existing policies governing marine plastic litter.



Figure 15: Session 1 of Panel Discussion

He also highlighted the fact that plastic waste forms 75% of all marine litter and presented the results from a study (Jambeck et. al 2015) that indicated the total weight of plastics will outgrow total weight of fishes in the ocean by 2050.

Dr. Mishra elaborated that plastic litter goes beyond just environmental harm, he stated that it also poses adverse effects on biological, social, economic and public safety aspects. He also made a point that with the onset of Covid-19, dependency on SUP's have

increased substantially. He mentioned the need for better management of SUPs and solid waste are pivotal in achieving cleaner oceans and water bodies. He commented that Southeast Asian economies and low-income countries should try to learn from the success stories of Japan and USA in managing SUP's and solid waste in spite of generating a higher per capita plastic waste.

He stressed on the importance of data availability for framing better policies through scientific evidence and recommended the need to adopt marine litter policy at national level to address the existing problems faced by coastal habitat. He pitched a few ideas on adoption of beaches by institutions and corporates and implementing plastic waste collection mechanism and creating eco alternative solutions etc.,



Dr Tune Usha, Scientist - G National Centre for Coastal Research (NCCR)- Ministry of Earth Sciences being an eminent scientist in the field of geospatial tools, techniques and applications related to coastal hazards and management, she elaborated on the need for proper data management on coastal litter and marine plastic so that policies and countermeasures can be data driven.

She explained the audience regarding the functioning of S-sagar a mobile dashboard for field data collection which was used to gather data on 75 beaches along the coastlines of India. She explained how the data was collected using geomatics, survey applications, remote sensing, drone image capturing and geofencing. She presented the beaches with highest waste collection and provided a State wise analysis. She again emphasized on the need for data collection on marine plastic litter to draft suitable policies.

Dr. Harsh Thukral, Dy. Director (ECA group), National Productivity Council who has been part of various consultancies and capacity building services spoke about counter measure to marine plastic litter using a case study of Ganga River basin. His talk mainly focused on identifying hotspots, monitoring plastic wastes and importance of community engagement to solve plastic pollution related issues.

Stating the plastic footprints have been on the rise and globally 415 million tons of plastic is being produced and the energy used for such massive production could be used in other places if diverted.

Finally as a part of policy recommendations, he listed out policy measure under the broadheads of science & Technology and plastic pollution assessment/Investigation-Identifying the scope for drafting a national marine litter policy, Outreach to bridge knowledge gaps and inducing behavioral change to plastic litter, Circular economy to encourage use of recycled plastic in product, examining economics of plastic recycling and finally developing incentives and mechanisms for collection of plastic waste into a value chain.

Dr Rachna Arora, Team Lead, GIZ India, laid emphasis on Circular economy and how to prevent marine litter in ecosystems via a circular economy perspective and she laid out the importance of collaboration amongst stakeholders since these are multi stakeholder approach-based projects which needed public and private sector to come together.

She mentioned the need to track, monitor and report waste generation and leakages occurring and showed examples of various SUP management digital platforms. Using the case studies of Kerala, Tamil Nadu and Uttar Pradesh, she highlighted the systemic interventions across plastic value chain from extraction to end of life. She also stressed on technological solutions like deployment of clean-up technologies, bin-bag capture systems, fishing line recycling bins to prevent marine litter.

Through her talk, she underlined the need for multinational collaborations which can help at grassroot level stakeholders to get on-board through digital connection with knowledge dissemination and sharing, funding start-up's etc.

Dr. P. K. Karuppasamy, Professor, Presidency College, Chennai with numerous publications on topics related to Coastal Oceanography, Coastal Management and Marine Biodiversity, called for community engagement and spreading awareness regarding coastal litter. He elaborated on few beach cleaning activities and awareness building campaigns carried out by his team across various beaches in Chennai. The exercise was mainly aimed at titration of micro plastics found at these survey spots. He emphasized that public engagement and participation is pivotal to the fight against solid waste and plastic dumping along coasts.

#### 4.3 Session 2: Manufacturers of Eco-Alternatives to Banned Single use Plastic items

This session involved discussion with manufacturers of eco-friendly alternatives and the key points were discussed on difficulties associated with the production of eco-friendly alternatives and transition from detrimental yet convenient plastic to eco-friendly alternatives.

Dr. Elangovan, Professor Periyar University made three documentaries on sustainable development and consumption and preserving natural resources. He spoke about global warming induced climate change and how many countries have been announcing numerous measures for tackling climate change but only a few have been actively taking those measures into actions. He thus urged the Government, businesses, and the public to bring in corrective measures. He advised the businesses and people to shift towards a sustainable way of consumption. Finally, he appreciated the eco-friendly product manufacturers for stepping up with plenty of such products and said that now it is left to the people to make their choices. K. Premnath, M/S Green Flexi being a manufacturer of edible plastic as an alternative to the plastic sachets, he admitted that it is very difficult to convince people as they are not ready to make the shift.



Figure 16: Session 2 of Panel Discussions

Ms. Anitha Shankar, Co-founder Astu Eco Pvt. Ltd is skilled in earth friendly product design and development. She is leading the Good Earth Astu Research (GEAR) Centre. She also added that it is easy to find business idea in many places but sustaining it as a business is difficult. She thanked TNPCB for giving a platform for them to be heard. The other major challenge she pointed out was plastic freebies provided by top brands and said that Government should bring in measures to avoid that kind of flipping activity. She said that it is very much essential for everyone to be cautious about the burden they are creating to the earth by using plastic products.

Ms. Bhanumathi, M/S Pirai-Wellbeing, being a manufacturer of reusable cloth pads and spreading awareness on menstrual hygiene said that it is difficult to convince people to

move from plastic sanitary pads despite the detrimental effects on women health and childbirth caused by them. She also added that distribution of free plastic pads at school levels by top brands are making it more difficult for the alternative manufacturers to survive.

Mr. Adithya Srinivas, M/S Roha 369 Biotech Pvt. Ltd insisted the fellow entrepreneurs like him to build an ecosystem to create convenient marketability for sustainable products because plastic products are conveniently available at a very low cost and would make it very tough for the people to leave plastic. Hence the need for creating eco alternatives at affordable prices.

Finally, after hearing the concerns of panel member, Dr. A. Elangovan suggested that marketers should make sure that the definition of sustainable products and development should reach the people without any confusions. He also added that the common myth that sustainable products are only for rich or middle-class people must be addressed.

The attendees had raised a few issues shared their suggestions like awareness programs especially targeting the adults, using famous personalities for promoting eco-friendly products, stringent rules and regulations by Government for banning plastic, making affordable eco-friendly alternatives, having a dedicated certified online marketing platform for sale of eco-friendly products, addressing the knowing-doing gap of the people and improving the transparency of eco-friendly manufacturers to the people.

The panelist responded to the suggestions given by attendees by saying that since the eco-friendly manufacturers are at nascent stage of growth, it would be unfair for their products to cost the same as that of plastic. Emphasis should be given on the life cycle cost, then the cost of producing plastic products from extraction to recycling would be 3 to 4 times more than the organic products. It was also discussed that completely banning plastics is a good but not a simple solution as it will have an adverse effect on livelihoods of a people. The shift has to come from the manufacturers end and they should be willing to disclose all information to avoid issue of green washing.

The additional director of CPCB pointed out the various measure taken by the government for tackling the issue of single use plastics such as ban of 19 SUPs by MoEFCC, directions on not to supply raw materials to SUP manufacturers, collection of fines from violators and the grievance app launched by CPCB.

Finally, the panelist had put forward a few requests to the Government and CPCB to take measures to have some GST incentivization and earning carbon credit to eco-friendly product manufacturers.

#### 4.4 Session 3: Start-ups in the field of alternatives to Single use plastics

As we enter the second day of the expo, the agenda of the third session was startups in the field of alternatives to single use plastics, where it was made clear that sustainable consumption is not an issue confined only to mindful consumerism but also a combination of innovation and policy changes. The session was moderated by Dr. S. Selvan (Chief Environmental Engineer, TNPCB).

Mr. Sreeram Srinivasan, Chief Project director, Tamil Nadu Green Climate Company, opened the session by pointing out the important role played by startups and described them as a social responsibility. He further highlighted the mantras of affordability, sustainability, and scalability and they should not be seen just as business units.

Dr. Balendra Singh, Scientist, Department of Biotechnology, Government of India called for a connection between academia and industry by connecting those faculties to industries where there exists some Center of Excellence in this regard. He further added the need to construct a pipeline to assist the application function of startups and concluded by pointing out the need to put a system in place in which startups can extract maximum benefits from limited resources.

Mr. Sreenivasan Gunabalan, CEO, 2M Biotec LLP is a leading manufacturer and supplier of bio polymers in India said that banning single use plastic is fruitful only if we are able to fill the gap with something that is almost plastic but cleaner and greener. He further discussed that plastics are famous because of their non-reactive nature which can be served by bio plastics as well. He also made a point that banning SUPs will make the manufacturers of plastics run dry and such a situation can be avoided by using bio polymer granules with existing machines and stated that the main challenge in migrating from a plastic to bio plastic industry is the lack of certifications.



*Figure 17: Session 3 of Panel Discussion*

Mr. C. Arunprabhu, Proprietor, Sattva polybags have achieved the feat of recycling over 100 tons of disposed polybags which were converted into export garment poly bags and they are making agricultural pipes using granules instead of plastics.

Mr. E Sakthivel Punarbhava Sustainable Products, the representative in the panel described their main objective is to save mother earth and added that the term eco-friendly should not only be added to the end product but also to the manufacturing process should be made green. They also spoke about the importance of protecting the existing trees rather than planting new ones and how they use cotton waste to manufacture paper.

Mr. Suresh Kumar (GW Impex Private Limited) opened his discussions by citing the need for more raw materials as they have been currently importing cellulose and there is a need for locally sourced materials. He explained about bio polymers which is the end product of the raw material and added that they are into production of bio diesel as well.

Ms. Neha Jain, Zerocircle alternatives uses seaweed to assist companies with their alternative packaging. The common problems she listed was regarding permanence of the product, impact of micro plastics and carbon efficiency. She laid emphasis on the affordability, degradability and aesthetics of the alternative to plastics. They claimed that the packaging made out of seaweed is food grade and does not react with food.

Tejas Zagade, TGP Bioplastics Maharashtra are manufacturers of bio plastic granules using biopolymers. He argued that the consumers are reluctant in paying the prices of existing alternatives such as paper, cloth or jute bags. He added that market viability of an alternative to the plastic poses a big challenge ahead of us.

Mr. Vinay Balakrishnan Thoosan are manufacturers of bio-degradable tableware using wheat bran. They have introduced edible straws made of broken rice and are planning to introduce edible cutleries and takeaway boxes.

Mr. Arpit Dhupar Dharaksha eco solutions are thriving to build an alternative to polystyrene, commonly known as Thermocol. They are using waste left over after paddy cultivation as their raw material and added a point about making the entire process of manufacturing as green and not just the end product.

Prof. Saji Varghese, Christ University, has developed a technology which can make straws out of coconut leaves within 45 seconds. He added that they are planning to introduce pen bodies made of coconut leaves too.

#### 4.5 Session 4 Startups in the field of air quality management



Figure 18: Session 4 of Panel Discussion

The air quality management in India, (National Clean Air Program, Government of India) aims at reducing the Particulate matter concentration by 20 – 30 % in 131 cities. The session concentrated on enhancing the NCAP and its initiatives as well as the micro level action plans and how the startups could contribute to improving the air quality.

Mr. Dhanasekaran, Deputy Director, TNPCB began his talk by stating the need for innovative ideas and techniques from

startups to address the issues around air quality. He further explained about the Continuous Emission Monitoring System which has been the target and achievement of CPCB and MoEFCC and briefed about the online portals like SAMEER, PRANA, SAFAR which are used to study and analyze air quality index and ambient air quality data. He concluded by saying that it's not about finding solutions for existing problems but to what extent we are prepared for tomorrow's problem.

Dr. V. Nehru Kumar, Professor at Annamalai University, gave an introduction of the National Clean Air Program and insisted on why we should have a regular check on air quality levels. He explained how the pollution levels on urban areas are higher than that of industries and how startups will play a key role in enhancing the air quality.

Dr. S.M. Shiva Nagendra, Professor, Department of Civil Engineering, IIT Madras shared his thoughts by stating that the four components of Air Quality Management are Source identification, Monitoring, Control Technology, Policies. He further weighed on the Atmanirbhar Bharat Program and how it has given more local companies to come with innovative ideas. He insisted on the need for having a clean environment and his interest in having more startups and new technologies on source control than use control.

M/s Pi Green Innovations Pvt Ltd represented by Mr. Prasad Borge, CEO, addressed the importance of emission monitoring and the various solutions provided by Pi Green. They are mainly concentrating on DG sets retro fitting and solutions for crematorium. He added that scalability and reachability are the main challenges faced by them.

M/s Chakr Innovations Pvt Ltd. Represented by Shri Tharparan Paneer addressed the issues on particulate matter pollution and how their firm is working on complete combustion of matter and hydrocarbons from Diesel Generators by using catalytic inverters and their further expansion plans of vehicle particulate matter emission. He further highlighted the need for financial needs and the need for research and development for innovative solutions.

Mr. Sathish Swaminathan, Research Scholar, IIT Madras, from Kaatru Foundation explained how their platform simplifies air quality measurement and empowers everyone to contribute data and combat environmental injustice. Kaatru is a foundation that helps to capture air quality with low cost sensors and IoT and their main objective is hyper local air quality and preventing people with specific conditions from exposures.

M/s Devic Earth Pvt Ltd claimed to have invented the world's first air purifying technology and stated that they use IoT-enabled disruptive air pollution control technology which keeps PM2.5 & PM10 under check. They have been working with pulse technology for identifying particulate matter in air and thus making them heavier and preventing people from inhaling it and all their innovations are guided by cardiologists.

Dr. Akash Kumar, IIT Mumbai has developed an ambient air cleaning system that intakes air and filters it and produces better quality of air. Their focus is mainly on construction project sites, where the emissions are substantially high.

Dr. Amit Passi, IIT Madras, Envitran Smart systems Pvt. Ltd provide solutions for vehicular, industrial, indoor, and urban air pollution control. Their aim is to develop an environment

with healthy technology and have been working on projects like dust collector, exhaust control, indoor air pollution and ambient air registration system.

Mr. Aswingiri, Innovator, SENSur Air Pvt Ltd. briefed on the sensors in broader aspect and the main problems faced while using imported sensors for monitoring air quality and the need for developing locally made sensors. SENSur has been mainly working in inventing low cost and efficient sensors.

#### 4.6 Session 5: Role of Financial institutions in Development of Eco-Alternatives to SUPs and Innovative approaches in Plastic waste and Air Quality Management.

Considering the growth of startups and with more and more unicorns being created, financing plays a vital role in development and sustainability of the eco-alternative startups. The last session on panel discussion highlighted the role of financial institutions in developing eco alternatives to SUPs and innovative approaches.

Mr. Shiva Raja, Chief Executive Officer, Tamil Nadu Startup and Innovation Mission, spoke about the technological advancement taking place across sectors and the importance of innovation along with scalability in a business model for creating commercially viable products.

Mr. Sreeram Srinivasan, Chief project director, PMU, Tamil Nadu emphasized on the importance of affordability, sustainability and scalability in the business environment. He emphasized the vital role played by micro financing and the need for establishing a dedicated research institute by central and State government for eco-alternative products.

Mr. V. Ramakrishna, Ministry of MSME listed out the various schemes directed towards the growth of the startup ecosystem like employment generation scheme, where loans with subsidy are being offered for scaling up the business. Other schemes like credit guarantee, incubation research, grants for design and development, assistance for patent registration are also being implemented.

Mr. Binil Mathew, Senior Investment Specialist, InvestIndia spoke about the growth of startups in India and how they are helping in finding solutions to the localized problems. He also highlighted the importance of seed funding and asked for support lending for incubation and expansion.

Venkatakrishna, Chief General Manager, NABARD which is a national implementing agency to support the grants and funds including the green climate fund. He highlighted the incubation services as well as assistance related to finance provided by NABARD

Mr. Anburaj, Deputy General Manager, Small Industries Development Bank of India has been providing assistance in terms of capacity building and marketing for development of startups. He further explained about the direct and indirect financing options provided by SIDBI and the various loan schemes/assistance provided to MSME which do not require collateral security.



Figure 19: Session 5 of Panel Discussion

Mr. Viswesvaran, Union Bank of India briefed about the importance of commercial banks in innovation of products and how critical financing is during the early part of the production.

Shams Tabrez, Deputy General Manager (SMEs) SBI made a point on how banks have transitioned in terms of funding assets to funding ideas. The risk element involved in funding of the ideas could be reduced by strengthening the responsibility of the startups. He highlighted that, 'Finance was a challenge and finance is a challenge'.

Mr. P.D Sharma, Deputy General Manager, Canara Bank stressed about the importance of banks in development of startups and MSME and how registration, innovation and scalability are crucial for funding of startups.

Further during the interactive sessions, questions were raised on how funding could be available without collateral and regarding loan weavers for startups. The panelists addressed that by saying how startups can be benefitted from incubation centres and combination of loans and subsidies available. They also insisted that the entrepreneurs should also understand the importance of cash flow. Emphasis was also made on the point that it is not only important to address the financial needs and assistance of the new eco-alternative manufacturers but also to address the financial constraints of existing banned SUP manufacturers.

## 5 Conclusion & Way Forward

The two-day National Expo on Eco – alternatives recorded participation from 5000 people including school and college students, some of them who were also keen on buying eco-friendly alternatives to avoid use of plastic products. The expo facilitated exchange of ideas, helped in networking with other businesses facilitating business to business opportunities, created awareness among general public about the various innovative eco-alternatives available in the market and helped startups connect with the financial institutions to understand schemes for MSMEs and other funding avenues for establishing or scaling up innovative ideas.

This first of its kind initiative of The Tamil Nadu Pollution Control Board (TNPCB) in coordination with Government of Tamil Nadu (GoTN) and Ministry of Environment, Forest and Climate Change (MoEFCC) was well appreciated by all the participants who opined that such events would help in promoting adoption of eco-alternatives to plastic in the State as well as in the Nation as a whole. The expo is expected to catalyze the transition from plastic to eco alternatives promoting sustainable and responsible consumptions among the people.



The participants were appreciative of the expo and look forward to more such initiatives from the Government. Many of the participant exhibitors expressed their gratitude to TNPCB, Government of Tamil Nadu and MoEFCC for effectively planning and organizing the expo with the TNPCB staff providing round the clock cordial support and services with respect to accommodation, transportation, stall arrangement, accounts and so on. Many of the exhibitors considered the expo as a great opportunity for collaboration of ideas and perspectives and hope to leverage the networks established during the event to work collectively as a team to promote sustainability. Furthermore, the exhibitors were able to understand various schemes for financial assistance when representatives from various financial institutions visited each of the stalls, discussed fund requirements and distributed pamphlets on the available schemes.

The expo provided an opportunity to understand the challenges faced by sustainable or eco-friendly product manufacturers which would aid effective planning for implementation of the ban and promotion of alternatives. Some of such challenges expressed by the exhibitors include stiff competition from the plastic products, higher procurement cost of raw materials which leads to higher price ranges for eco-alternatives, need for efficient marketing strategies to improve sales, lack of preference for sustainable products among citizens, high cost and time for research and development and seasonal variations in availability of raw materials. The exhibitors highlighted the need for continuing and strengthening strict enforcement of bans/restrictions on use of plastics as plastic alternatives tend to pose the greatest challenge in market penetration for sustainable products despite the efforts made on marketing.

In a nutshell, the expo unveiled an opportunity for every kind of participants; exhibitors in R&D stage could benefit from ideas to plan for commercialization; those who had commercialized already benefited through networking to improve sales; the general public benefitted from the knowledge and awareness imparted and; the government benefited from understanding the challenges to work towards addressing the gaps.

# Government of India- List of Banned SUP

## Plastic sticks

Ear buds with plastic sticks



Plastic sticks for balloons



Candy Sticks

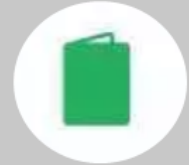


Ice-cream plastic sticks



## Plastic packaging/ wrapping

invitation cards



cigarette packets



sweet boxes



## Plastic cutleries

Cutlery such as spoons



Cutlery such as forks and knives



Plastic tray



Plastic Stirrers



## Others

Polystyrene [Thermocol] for decoration



PVC banners with less than 100 microns



## 6 Annexures

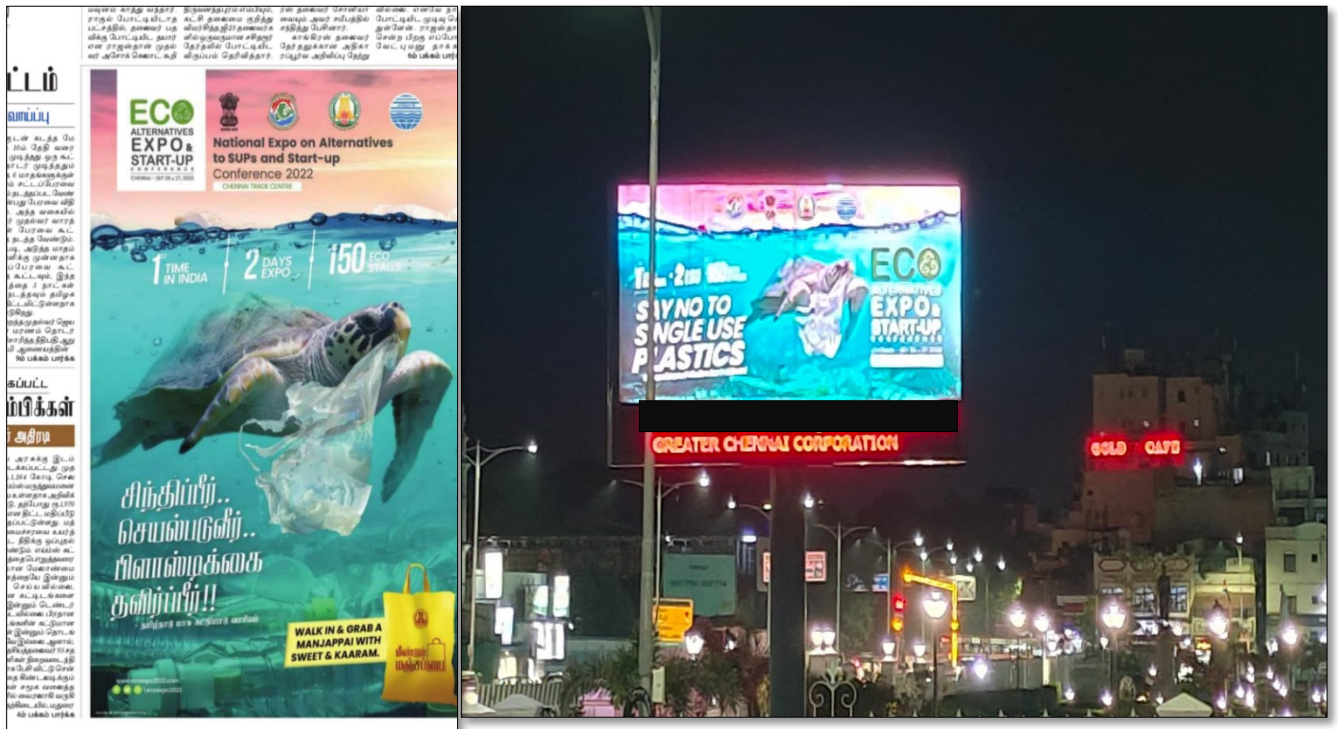


Figure 20: Promotion of Eco-alternatives Expo and Start-up Conference

மாசுக் கட்டுப்பாட்டு வாரிய கருத்தரங்கு

### தூய்மையான தமிழ்நாடே அரசின் இலக்கு

சென்னை நகரம் புகைப்படத்தில் நேற்று நடந்த ஒருமுறை மட்டும் பயன்படுத்தப்படும் பொருள்களை கண்டுபிடிக்க உதவுகிறது. சென்னை நகரம் புகைப்படத்தில் நேற்று நடந்த ஒருமுறை மட்டும் பயன்படுத்தப்படும் பொருள்களை கண்டுபிடிக்க உதவுகிறது.

தினகரன் கதம்பம்

26.9.2022 • Vellore 9

### ஒரு முறை மட்டும் பயன்படுத்தப்படும் பிளாஸ்டிக்களுக்கு மாற்றாக மாற்று பொருட்கள் பற்றிய தேசிய கண்காட்சி மற்றும் தொழில்முனைவோருக்கான கருத்தரங்கம்

சென்னை வர்த்தக மையத்தில் இன்றும், நாளையும் நடக்கிறது

சென்னை, செப்பேடு தமிழக அரசு வெளியிட்டிருக்கிறது. சென்னை வர்த்தக மையத்தில் இன்றும், நாளையும் நடக்கிறது.

6.1 Notification by the Ministry of Environment, Forest and Climate Change, Government of India, prohibiting production, stocking, distribution, sale and use of Single Use Plastics (SUP) items.



No. F. No. B-17011/7/PWM/2022

February 04, 2022

**Notice for Prohibiting Production, Stocking, Distribution, Sale & Use of Single Use Plastic (SUP) Items**

Ministry of Environment, Forest & Climate Change has issued notification No G.S.R. 571(E) dated 12<sup>th</sup> August, 2021 vide which manufacture, import, stocking, distribution, sale and use of identified single use plastic (SUP) items shall be prohibited with effect from the July 01, 2022.

As per Rule 4(2) of PWM Rules, 2016 (as amended), *"The manufacture, import, stocking, distribution, sale and use of following single use plastic (SUP), including polystyrene and expanded polystyrene, commodities shall be prohibited with effect from the 1<sup>st</sup> July, 2022:*

- (a) *Ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol] for decoration;*
- (b) *Plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 micron, stirrers;*

As per Rules 4(1)(c) of PWM Rules, 2016 (as amended) "Carry bag made of virgin or recycled plastic, shall not be less seventy five microns in thickness with effect from the 30th September, 2021 and one hundred and twenty (120) microns in thickness with effect from 31st December, 2022.

This Notice is being issued to inform all Producers, Stockists, Retailers, Shopkeepers, e-commerce Companies, Street Vendors, Commercial Establishments (Malls/ Market place/ Shopping Centres/ Cinema Houses/ Tourist locations/ Schools/ Colleges/ Office Complexes / Hospitals & other Institutions) and general public to stop production, stocking, distribution, sale and usage of identified SUP items as per the timelines specified in the said MoEF&CC Notification. Further, necessary action is to be taken by the concerned entities to ensure zero inventory of the aforementioned SUP items by June 30, 2022.

Action, as deemed fit under Environmental Protection Act, 1986 including seizure of goods, levying of Environmental Compensation, closure of operations of Industries/ Commercial Establishments, shall be taken against the violators of the said Notification.

  
(Prashant Gargava)  
Member Secretary

6.2 Notification by the Environment and Forest Department, Government of Tamil Nadu, prohibiting Single Use Plastics (SUP)



**ABSTRACT**

Environment – 110 Announcement of the Hon'ble Chief Minister on the floor of the Assembly on 05.06.2018 regarding ban on one-time use and throwaway plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986 – Notification – Orders - Issued.

**Environment and Forests (EC.2) Department**

G.O. (Ms) No.84

Dated:25.06.2018

விளம்பரி, ஆணி-11,

திருவள்ளூர் ஆண்டு -2049

**ORDER :**

The Hon'ble Chief Minister on 05.06.2018, on the floor of the Legislative Assembly, with a view to make Tamil Nadu Plastic Free, has announced, ban on 'one time use and throwaway plastics', irrespective of thickness, with effect from 1<sup>st</sup> January, 2019 under the provisions of the Environment (Protection) Act, 1986.

2. Accordingly, the following Notification will be published in the TamilNadu Government Gazette:-

**NOTIFICATION**

WHEREAS, plastic carry bags and other plastic items used in daily life cause short term and long term environmental damage and health hazard;

AND WHEREAS, Article 48-A of the Constitution of India, inter alia, envisages that the State shall endeavour to protect and improve the environment;

AND WHEREAS, it has come to the knowledge of the Government that, the use of 'use and throwaway plastics' such as plastic carry bags, plastic sheets used for food wrapping, spreading on dining table etc., plastic plates, plastic coated tea cups and plastic tumbler, water pouches and packets, plastic straw and plastic flags are causing serious environmental hazards and health problems amongst human beings as well as plants and animals;

AND WHEREAS, it is observed that the plastic wastes are also causing blockage of sewers and drains apart from resulting in pollution of water bodies;

AND WHEREAS, with a view to prevent the recurrence of such problems, the State Government have decided to issue the following directions imposing ban on manufacture, storage, supply, sale and use of 'use and throwaway plastics', such as,

..2..

plastic sheets used for food wrapping, spreading on dining table etc., plastic plates, plastic coated tea cups and plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of thickness.

NOW, THEREFORE, in exercise of the powers conferred under section 5 of the Environment (Protection) Act, 1986 (Central Act 29 of 1986) read with Government of India, Ministry of Environment and Forests Notification No.S.O.152(E), dated: 10<sup>th</sup> February, 1988, the Governor of Tamil Nadu hereby issues the following directions:-

2. This Notification will come into force on the 1<sup>st</sup> January, 2019:

#### THE DIRECTIONS

- 1.(a) No industry or person shall manufacture, store, supply, transport, sale or distribute, 'use and throwaway plastics'.
- (b) No person including shopkeeper, vendor, wholesaler, retailer, trader, hawker or salesmen shall use, 'use and throwaway plastics':

Provided that the plastic used for the following purposes are exempted:-

- (a) The plastic carry bags manufactured exclusively for export purpose against any export order in a plastic industry located in Special Economic Zone (SEZ) and Export Oriented Units (EOU).
  - (b) The plastic bags which constitute or form an integral part of packaging in which goods are sealed prior to use at manufacturing/processing units.
  - (c) The plastic bags and sheets used in Forestry and Horticulture nurseries against the orders from the Government Departments.
  - (d) The plastic used for packing of milk and milk products (dairy products), oil, medicine and medical equipments.
  - (e) Carry bags made from compostable plastics bearing a label "compostable" and conforming to the Indian Standard: IS or ISO 17088:2008 titled as Specifications for "Compostable Plastics".
- 2.(a) The Commissioners, in respect of the Municipal Corporations and the District Collectors, in respect of the local areas other than Municipal Corporations shall ensure prevention of storage, supply, transport, sale, distribution and use of the above said plastic items;
  - (b) District Environmental Engineers shall ensure prevention of manufacturing of the above said plastic items

**Explanation 1** - "Plastic" means material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, Vinyl, low

..3..

density polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, Polybutylene terephthalate.

**Explanation 2 – “use and throwaway plastic”** means items such as plastic carry bags or plastic flags, plastic sheets used for food wrapping, spreading on dining table etc. plastic plates, plastic coated tea cups and plastic tumbler, water pouches and packets, plastic straw irrespective of thickness.

**Explanation 3 – “plastic sheet”** means sheet made of plastic.

**Explanation 4 – “Carry bag”** means bag made from plastic material, used for the purpose of carrying or dispensing commodities which have a self carrying feature but do not include bag that constitute or form an integral part of the packaging in which goods are sealed prior to use.

**Explanation 5 –** The word “compostable plastic” means plastic that undergoes degradation by biological processes during composting to yield Carbon di-oxide, water, inorganic compounds and biomass at a rate consistent with other known compostable materials, excluding conventional petro-based plastics, and does not leave visible, distinguishable or toxic residue.

(BY ORDER OF THE GOVERNOR)

Md. NASIMUDDIN  
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Works Manager, Government Central Press, Chennai-79.

(for publication of the notification in the Extra-ordinary Gazette on 27<sup>th</sup> June 2018 and to send 50 copies to Government),

All Additional Chief Secretaries/Principal Secretaries/  
Secretaries to Government, Secretariat, Chennai-9.

All District Collectors/ All District Judges/ All Chief Judicial Magistrates.

All Departments of Secretariat, Chennai-9.

The Director of Environment, Chennai-15.

✓ The Chairman, Tamil Nadu Pollution Control Board, Chennai-32.

**Copy to:-**

The Hon'ble Chief Minister office, Chennai-600 009.

The Private Secretary to the Principal Secretary to Government,  
Environment and Forests Department, Chennai- 600 009.

The Private Secretary to the Principal Secretary to Government, Law Department,  
Chennai- 600 009.

The Personal Assistant to Hon'ble Minister (Environment), Chennai-600 009.

Stock File/Spare Copy.

// FORWARDED: BY ORDER //

Jayia car...  
25/6/18  
Section Officer.

Gen  
25/6/18

---

**Ministry of Environment, Forest and Climate Change**  
Government of India

Indira Paryavaran Bhawan Jorbagh Road  
New Delhi – 110 003 INDIA.  
Email: amit.lov@nic.in

---

**Environment, Climate Change and Forests Department**  
Government of Tamil Nadu

No.1, Jeenis Road, Panagal Building,  
Ground Floor, Saidapet, Chennai-600 015  
Email: eccfd@tn.gov.in

---

**Tamil Nadu Pollution Control Board**  
Government of Tamil Nadu

76, Mount Salai,  
Guindy, Chennai - 600 032  
Email: chairman@tnpcb.gov.in

---