

2.14 Sustainable Plastic Waste Management Plan: Defending the fragile ecosystem of Himachal Pradesh

The Sustainable Plastic Waste Management Plan was launched by the Government of Himachal Pradesh in 2009 to systematically and aggressively deal with the environmental threat emanating from non-biodegradable waste. The ban on the use of plastic in Himachal Pradesh has proven to be effective and successful in developing a systematic system of disposing off plastic and using it in construction of roads thus making state of Himachal Pradesh free from plastic. The plan has made a big impact in building awareness and securing people's cooperation and has encouraged people to take on the responsibility of cleaning their state and creating a plastic-free world.

Rationale

While indiscriminate use of plastics and plastic littering is harmful for the environment as a whole, its impact can be even more devastating for the fragile ecosystem of the Himalayas. The Government of Himachal Pradesh enacted the Himachal Pradesh Non-Biodegradable Garbage (Control) Act, 1995, to deal with the menace of plastic and other non-biodegradable waste.

This Act embodied a move towards scientific disposal of non-biodegradable waste and also imposed a ban on coloured plastic carry bags produced from recycled plastic. However, the Act only addressed these issues partially, and the use of plastic and plastic littering continued to be a challenge. Environmental problems thus persisted, including pollution of water bodies, lowering of soil quality, choking of drains and rivers and adverse impact on the health of the people.

Aiming for a systematic approach to the issue, the Government of Himachal Pradesh introduced the Sustainable Plastic Waste Management Plan in 2009. The Plan focusses on controlling the use of plastic and developing a systematic disposal mechanism.

In order to achieve the objectives of its Clean Himachal and Healthy Himachal drive, the Government also prohibited the use of plastic cups and plates in 2011; conducted Information, Education and Communication (IEC) activities to generate awareness about the harmful impact of plastic waste, and encouraged citizens to stop using plastic products.

Objectives

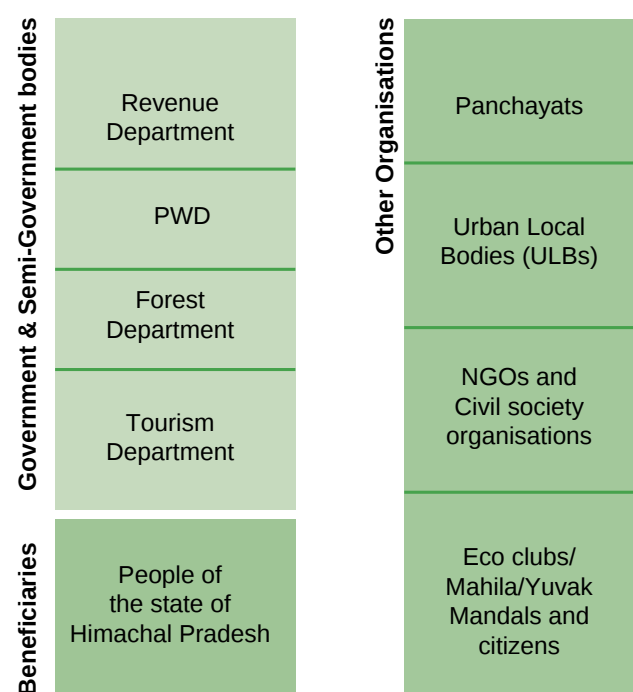
The initiative aims to establish environment-friendly plastic waste disposal solutions. In the process it seeks to ban the use of plastic bags and plastic products,

and reduce plastic littering across the state. Further, in order to ensure sustainability and continued community participation, the initiative seeks to spread environmental awareness among the local population.

Key Stakeholders

The Sustainable Plastic Waste Management Plan has been implemented by the Department of Environment, Science and Technology (DEST), Government of Himachal Pradesh.

Figure 1: Key stakeholders in the sustainable plastic waste management plan



Source: Department of Environment, Science and Technology, Himachal Pradesh, and OneWorld Foundation India, 2014



Image 1: Waste menace in Himachal Pradesh

Implementation Strategy

The Sustainable Plastic Waste Management Plan has been implemented in three stages. Stage I aimed at creating an enabling framework, Stage II focussed on creating awareness through campaigns, and Stage III on consolidation and sustainability.

Stage I: Creating an enabling framework

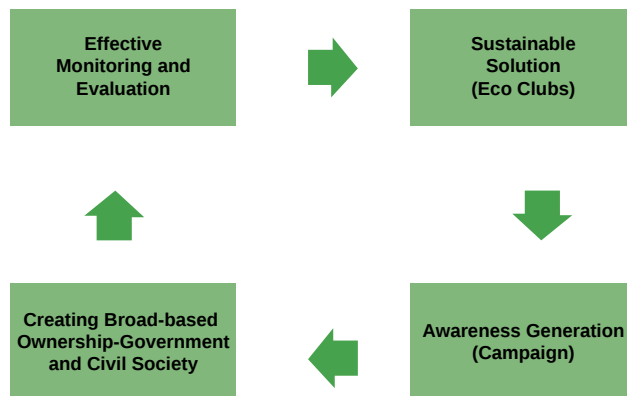
The DEST began by establishing an environmentally sound solution for plastic littering and disposal. Its aim was to adopt replicable and sustainable solutions for the state. After much deliberation, the DEST took the decision of processing household waste in cement kilns and using plastic waste in road construction. As the Public Works Department (PWD) plays a major role in the construction of roads, the first step was to convince it to adopt the solution.

The DEST and PWD jointly conducted a pilot project in Shimla to test the technology. While DEST identified a supplier of plastic waste shredders, PWD procured and used the output in the construction of a road in Shimla.

The pilot demonstrated that the technology was cost effective and replicable, and provided a solution to utilise plastic waste in an innovative and prudent manner. Thereafter, the DEST developed a comprehensive plan for the identification of roads, modalities for collection and storage of plastic waste at collection centres, and shredding for use in tarring.

The PWD was trained on a technology that involved shredding and mixing of various kinds of plastic food

Figure 2: Components of the project



Source: Department of Environment, Science and Technology, Himachal Pradesh, OneWorld Foundation India, 2014

packets, aluminium foil etc., with bitumen for tarring roads. Typically, each kilometre of road consumes a ton of plastic, used directly without cleaning. This cost-effective technology allows savings of approximately Rs. 35,000–40,000 per kilometre through reduced bitumen use.

Along with the introduction of a technological solution for waste disposal, attempts were also made to establish a favourable regulatory framework. In 2009, riding a wave of strong political support, the government imposed a complete ban on the use of plastic/polythene carry bags.



Image 2: Plastic waste management campaign

Source: Department of Environment, Science and Technology, Himachal Pradesh



Image 3: Use of plastic waste in road construction

Source: Department of Environment, Science and Technology, Himachal Pradesh

Intensive checking was carried out to ensure implementation, and the district administration was given the responsibility of coordinating and monitoring all related activities.

Moreover, the government organised several awareness programmes aimed at the general public on the proper disposal of plastic and use of eco-friendly products. Initially implemented on a pilot level, all these activities were scaled up to cover the entire state of Himachal Pradesh.

Table 1 provides an overview of the achievements in Stage I of the project.

Table 1: Overview of achievements in Stage I

Number of locations cleaned	1,256
Number of collection centres opened	806
Polythene waste transported from hotspots to collection centres	30,912 kg
Polythene waste handed over to PWD authorities	21,688 kg
Number of road stretches identified	35
Polythene waste utilised in road construction	468 kg
Polythene/plastic waste collected from hotspots	66,528 kg

Source: Department of Environment, Science and Technology, Government of Himachal Pradesh

Stage II: Enhancing awareness through campaigns

In this stage of the project, the government launched the Polythene Hatao – Paryavaran Bachao campaign. The first phase of the campaign focussed on voluntary participation in schemes and actions aimed at cleaning the state and encouraged citizens to understand the problem of plastic waste and the need to keep the state clean. This campaign created awareness and encouraged the participation of mahila mandals, urban local bodies (ULBs), NGOs, associations of Panchayati Raj Institutions etc. Plastic waste was collected from hill slopes, forest areas, rivers, drains etc, and IEC activities, such as video clippings and documentary films, were used to sensitise the public. In this phase, 142 tons of polythene was collected from 10 districts for use in road construction. The Table 2 provides an overview of the achievements in Stage II of the project.

Table 2: Overview of achievements in Stage II

Number of hotspots identified	750
Number of hotspots cleaned	494
Polythene waste collected from hotspots	27,008.3 kg
Number of collection centres opened	255
Polythene waste transported from hotspots to collection centres	8,940 kg
Polythene waste handed over to PWD authorities	23,432.3 kg
Number of road stretches identified	12
Polythene waste utilised in road construction	446 kg
Length of road constructed by using plastic waste	9.5 km
Amount released for purchase of plastic waste by PWD	NIL

Source: Department of Environment, Science and Technology, Government of Himachal Pradesh

Stage III: Ensuring consolidation and sustainability

Stage III of the campaign addressed the need for developing a sustainable mechanism for collection and disposal of plastic waste, and focussed on allocation of responsibilities and tasks to various departments. Role allocation and monitoring, constitution of teams to curb offences related to littering and use of plastic bags,



Image 4: Eco-monitoring scheme

Source: Department of Environment, Science and Technology, Himachal Pradesh

involvement of eco-clubs to educate the general public and imposition of *challans* (monetary fines/penalties) were the highlights of this stage.

An environment audit scheme was started in Stage III to monitor the environmental performance of the project as well as to facilitate training and capacity building among school students, teachers and citizens.

Other initiatives aimed at strengthening the effectiveness of the campaign included collection of used plastic packaging material to reduce littering by using it in the construction of roads, installation of water purifiers at tourist points to discourage purchase of plastic water bottles and indiscriminate disposal of the same, and replacement of plastic pouches by glass bottles. An advertising campaign was also held for awareness generation throughout the state and included aspects like road metalling through the use of plastic, collection of plastic and cleaning of hot spots.



Image 5: Awareness generation campaign

Source: Department of Environment, Science and Technology, Himachal Pradesh

Well thought out and efficient implementation across each stage of the plan, active multi-department involvement, and participation of citizens have helped Himachal Pradesh curb plastic use and create a positive impact on the environment.

Resources Utilised

The initiative of using plastic waste in road construction represents a highly innovative approach. After collection through various drives and campaigns, the waste was recycled and used in different parts of the state on road stretches totalling 200 km. About 36 roads across the state were identified for construction using plastic waste.

The involvement of multiple agencies and individual contributors make the initiative especially remarkable.

Table 3: Financial Resources for Operations

Bitumen required for 1.0 km of road length having 3 mtrs width	9,360 kg (approx.)
10% replacement of Bitumen saves	936 kg (approx.)
Cost of one drum	6,500/-
Cost incurred for purchase of 936 kg of plastic waste @ 4/- kg	3,744/-
Savings	35,256/-
Net saving per km to PWD	35,000/-
Bitumen required for 1.0 km of road length having 3 mtrs width	9,360 kg (approx.)

Source: Department of Environment, Science and Technology, Government of Himachal Pradesh

The different entities that contributed to its success include the government departments of education, tourism, health, transport, excise and taxation; the State Pollution Control Board; the State Council for Science; Panchayats; Urban Local Bodies (ULBs); Non-Governmental Organisations (NGOs); *mahila mandals*; *yuvak mandals*; eco-clubs; school children; and rag pickers.

The financial aspect of this initiative was handled by the DEST, Government of Himachal Pradesh. The amount received in the form of *challans* from individuals violating for the ban on using plastic bags is deposited in the Himachal Pradesh Environment Fund for environment sustenance and restoration. The total amount received from 1462 cases of violation is Rs. 11, 50,850/.

Impact

Cleaner environment and reuse of waste plastic for roads: The ban on plastics and the systematic waste recycling model have not only ensured cleaner surroundings and contributed to environmental conservation but also supported infrastructure development through road construction. The institutional mechanism for collection, transportation and utilisation of plastic waste has become functional and has been adopted across the state.

Public awareness and participation: The plan has made a significant impact in building awareness and securing people's cooperation. It is encouraging people to collect plastic waste to minimise its negative environmental impact, and assume responsibility for the maintenance of their local environment.



Image 6: Clean roads

Source: Department of Environment, Science and Technology, Himachal Pradesh

Key Challenges

Community interest and involvement is of paramount importance when it comes to successful implementation of any environmental initiative. Prior to the launch of the Sustainable Plastic Waste Management Plan, plastic carry bags and products were seen as convenient and had become part of everyday life. In fact, during the initial stage of the project, people did not show much interest in waste management and plastic disposal. Convincing them about the harmful environmental impact of plastic proved to be a challenging task. Many campaigns and IEC activities were undertaken to help create awareness and encouraged citizens to participate in the drive.

Under-performance at the lower level of administration was another key problem. It resulted in disruption of activities planned as part of the campaign. Poor coordination and monitoring at the district level (in terms of campaign-related events, performance monitoring, training, capacity building and awareness generation) also hindered the initiative in its initial stages. Moreover, the non-availability of shredding machines in many districts delayed implementation.

However, concerted efforts, teaming up of resources of different departments and agencies and motivation of the community brought success to the initiative. Accomplishments on this front have gone a long way in making Himachal Pradesh a cleaner, plastic-free state and reducing the health and environmental hazards that threatened the state before the implementation of the Sustainable Plastic Waste Management Plan.

Replicability and Sustainability

The strength of the Sustainable Plastic Waste Management Plan lies in its ability to effectively bring together government resources and community participation for long-term implementation and continuance. The environmentally sound technique of using plastic waste in road construction recommended and implemented under this Plan is sustainable and is worthy of replication in states across the country. Himachal Pradesh's success and the cost effectiveness of the model have inspired and attracted states such as Rajasthan, Jammu and Kashmir and Maharashtra to adopt the Plan. In Himachal Pradesh itself, the initiative has been gradually scaled up.

To further increase the effectiveness and sustainability of the initiative, the State government has put a ban on plastic cups/glasses and established institutional mechanisms to control the inflow of plastic from outside the state. In a move that could further improve the long-term sustainability of the initiative and secure greater participation from the general public, the Himachal Pradesh State Civil Supplies Corporation has offered

to supply refined vegetable oil in pouches if customers return the used pouches.

Conclusion

The Sustainable Plastic Waste Management Plan is an innovative and simple yet highly effective solution that

has not only alerted the community about the menace of plastic and the need for sustained waste management practices but also set up a robust mechanism for its achievement. The project was implemented throughout Himachal Pradesh without any financial provisions, which is an indication of its financial viability and replicability. The convergence of various departments and utilisation of existing resources has helped shape a high-impact initiative with limited resources.

Fact Sheet

Theme	Environment
Nodal Implementing Agency	Department of Environment, Science and Technology; Government of Himachal Pradesh
Geographical Coverage	All districts of Himachal Pradesh State
Target Groups	Citizens of Himachal Pradesh
Years of Implementation	2009 - 2011