

One Lakh Kilometres Of Roads In India Are Being Made From Plastic Waste, Is This The Solution To End Plastic Crisis?

Roads constructed using waste plastic are durable against extreme weather conditions, are cost-effective and pothole-resistant says World Economic Forum

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India has built one lakh kilometres of roads using plastic waste

Image credit: istockphoto.com/VasukiRao

Mumbai: Yes, you read that right. India has built one lakh kilometres of roads in at least 11 states using discarded plastic. The revolution of plastic waste roads started brewing in 2015 when the Centre made it mandatory for all road developers in the country to use plastic waste for road construction after Padma Sri Rajagopalan Vasudevan, a professor from Madurai's Thiagarajar College of Engineering, laid out a process of building roads by recycling plastic waste. This initiative falls in line with government's [Swachh Bharat Abhiyan](#) that aims to address India's garbage crisis.

The roads made from waste plastic are more durable against extreme weather conditions like floods and heat as compared to the conventional roads, points a report by World Economic Forum.

We spend so much on building roads that develop potholes and need rebuilding in no time. The road I built is still intact – there are no potholes, no cracks. That is proof of its strength and durability, plus it uses waste plastic that otherwise litters streets and rivers. At least 11 states have used the technology to build more than 1,00,000 km of roads, professor Vasudevan told Thomson Reuters Foundation.

Using plastic waste can help India, which has the world's second largest road network, in curbing road accidents deaths. Potholes, a common feature of roads in India, are responsible for one tenth

of deaths that occurred in 2017 due to road accidents in the country. And as explained by professor Vasudevan, fondly known as the 'Plastic Man Of India', [plastic waste](#) roads can prevent potholes.

Also Read: [‘One Man’s Trash Is Another Man’s Treasure’: Meet India’s ‘Plastic Man’](#)

India produces about 15,000 tonnes of plastic waste daily, of which about 9,000 tonnes is recycled. The remaining plastic is either burnt leading to [air pollution](#), ends up in [landfills](#) or clogs drains. At a time when the entire world is grappling with disposal problems of huge volumes of plastic waste, professor Vasudevan's technology is easing out India's plastic crisis.

Roads From Waste Plastic: How It Works

The onus of ensuring that every urban region is utilising its plastic waste into making roads lies with the City Engineers of municipal corporations. The civic bodies of each city are required to gather all the city's plastic waste and put them through three tasks – cleaning, drying and shredding. The plastic waste can include anything from sweet wrappers to shopping bags.

Once all the plastic waste is shredded (a technique where all the dust particles are eliminated, and plastic items are shredded into fine pieces) these are heated at 165°C. Next, the shredded pieces are added to bitumen mix, which is also heated at 160°C. The final mix is used for constructing roads.

“Depending on the quality of tar, a 10-30 per cent of it is replaced with the waste plastic. Since both, tar and plastic are petroleum products they gel well together,” said Asad Warsi, Swachh Bharat Mission Consultant, Indore Municipal Corporation.

Also Read: [A Nation Without Plastic Waste – Dream Of A Young Innovator, Can It Be A Reality?](#)

Success Stories: A Look At Cities Where Roads Made From Plastic Waste Are Working Wonders

The plastic tar roads in Chennai have not developed any potholes, rutting, raveling or edge flaw, even though these roads are more than four years of age, read a performance report by India's Central Pollution Control Board (CPCB).

Chennai is one of the first and leading cities in India to implement professor Vasudevan's technology.

The city has, so far, used 1,60,000 (1.6 Lakh) kilos of plastic waste to build 1.035 kilometres of roads. Prominent areas in the city like the N.S.C Bose road, Halls road, Ethiraj Silai street and Sardar Patel street are layered with plastic components.

Two-time winner of India's cleanest city title, Indore recycles 100 per cent of its plastic waste and has used 5,000 kilos of waste plastic to build 45 kilometre stretch of roads in the last two years.

The strength and finishing of roads when waste plastic is used is much better than tar. These roads have a better resistance to water stagnation. We noticed that areas in Indore where plastic was used to build roads saw less water clogging during monsoons as the roads didn't develop potholes. In other words, the life span of the road is substantially increased, added Mr Warsi.

Also Read: [This Meghalaya Village Uses 430 Kilos Of Plastic Waste To Construct One Kilometre Long Road](#)

In terms of economics, the plastic layered roads are cost effective. Indore Municipal Corporation saves upto Rs 2,500 every time it uses thousand kilos of plastic waste to build roads. No new machinery is required to produce the plastic-bitumen mix and the maintenance cost of the road is almost nil. The process of shredding takes place at a bare minimum cost pointed out Mr Warsi.

[Maharashtra's](#) Pune city is also silently putting its plastic waste to use. The city, which generates over 200 tonnes of plastic waste per day, has used 3,343 kilos of plastic waste in building 1,430 kilometres of roads in the last two years.

The Pune Municipal Corporation (PMC) tied up with the Rudra Environmental Solution (India) Ltd and gave them a contract of building plastic roads across the city.

"Plastic helps in increasing the durability and flow of roads. It will take atleast 2 years for the plastic roads to get more durable and the cost is expected to come down to Rs. 30,000-40, 000, says Shirish Phadtre, Director, Rudra Foundation.

Surat finally heaved a sigh of relief during monsoons last year. The idea of using plastic-bitumen mix was executed in January 2017. The problem of potholes significantly reduced last year as no cracks developed in areas where roads were layered with waste plastic says Akshay Pandya, Executive Engineer, Road Development Department, Surat Municipal Corporation (SMC).

Also Read: [Road To A Plastic Free City: Surat Aims To Produce Diesel Out Of Plastic Waste](#)

We conducted physical testing of roads just at onset of monsoon to prepare the civic body for repairing potholes that would develop during heavy rains. As expected, the roads were strong and durable, Mr Pandya said.

He further added,

The roads made out of plastic-tar combination have proved to be eco-friendly. Tar is a fossil fuel and hence by reducing the usage of tar, we are indirectly reducing carbon footprints.

The diamond city has used 90,000 kilos of waste plastic to layer 15.91 kilometres of roads. The SMC is currently working on a design where they would be able to increase the volume plastic waste and decrease bitumen in the mix. This new design will hope to achieve two things – help the environment and make road construction process cost-effective.

Conclusion

Plastic items have become an integral aspect of our lives. From waking up to a buzzing plastic phone, using a plastic toothbrush, drinking water from a plastic bottle, carrying a plastic credit card to consuming fast food wrapped in plastic, it has caused an irreparable impact on the environment.

While it is a long way before the omnipresent plastic is shunned out of each individual's life, the least we can do is to implement the 3Rs – reduce, reuse and recycle to prevent plastics from reaching landfills and entering water bodies. And if plastic waste can be used to build roads, then it will be a huge load off the planet that is currently choking on plastic.