

SMART CITY WITHOUT PLASTIC POLLUTION

Respected Thiruvananthapuram Administrators--

Thank you for allowing us to share our materials on marine and river debris, one of the most pressing environmental issues of our time. From 11-15 June the National Workshop on Experiential Learning with Indian Educators on Marine Debris and its Management has been held here in your City of Thiruvananthapuram, at the Department of Environmental Studies, University of Kerala-Karyavattom Campus. This Department has a special interest in human health and the environment and is a hotbed of marine debris research in the country and a terrific resource for the City of TVM.

This group of nearly 50 energetic university faculty, students, researchers, and NGOs came together from across the country and globe to learn and work on the critical issue of marine debris. We conducted a snapshot study at both the Karamana River and Menamkulam Beach and want to share our results with you, as well as suggestions for steps that can be taken to build upon your leadership in this area.

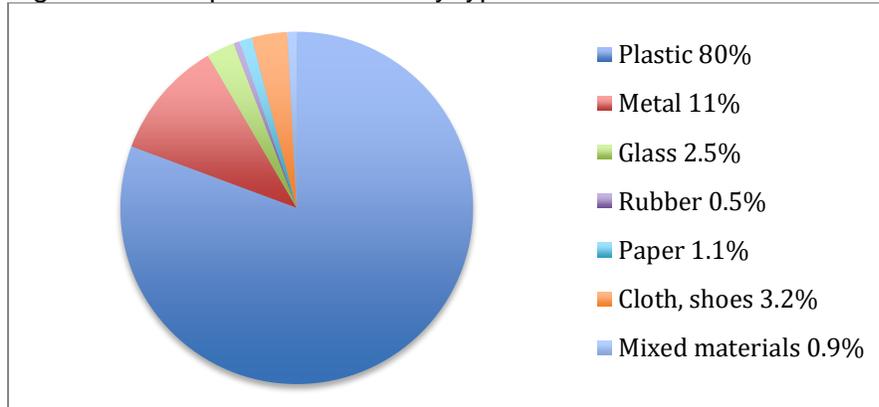
Your ongoing leadership

We are aware of efforts by the City of TVM to make a green city with the “Our City, Beautiful City” programme and are impressed with your leadership on environmental issues, particularly the Green Protocol that calls for no plastics in government functions. You have been actively involved in cleaning rivers and we hope to add support to your work through our scientific analysis of both river and ocean debris.

Our results

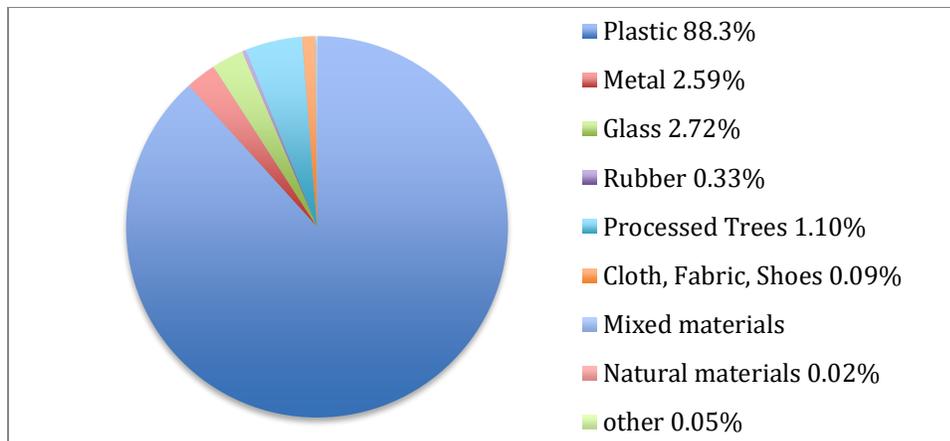
In 2 ½ hours of collecting at Karamana river we found 1630 individual pieces of debris in a 500 m² area, 80% of which was plastic by count (Figure one). The material found included clothing items, plastic carry bags, food wrappers, beverage bottles, and bottle caps.

Figure one. Proportion of count by type: Karamana River



At Menamkulam beach we found 6437 pieces in a 2000 m² area, 88% of which was plastic (Figure two). The material included plastic carry bags, food wrappers, toothbrushes, beverage bottles, and Styrofoam down to the small individual particles that are only slightly larger than a grain of sand.

Figure two. Proportion of count by type: Menamkulam Beach



As you are aware, while plastic is a material meant to ease our lives, it has severe environmental consequences. In a river environment, plastics can choke the watercourse, thereby contributing to potential seasonal flooding that can impact communities as we saw here in Kerala in 2018. These materials can also flow through the system to our beautiful beaches. Additionally, as the plastics break down, water quality is impacted, affecting our health and the fish upon which we depend.

In a marine environment, plastics break down into smaller pieces that may be taken in by invertebrates, shellfish, and fish, working their way up the food chain to humans. As the plastics disintegrate, water and sediment quality are impacted. So, in addition to our ingestion of toxins through eating these fish, our fisheries economy is impacted as well as that of tourism. With TVM having the second highest number of tourists in the state, this could be a critical impact to this city.

Recommendations

As you already have taken a leadership role in green practices, we have some recommendations for how you can build upon your efforts to date:

In Mumbai, we have seen a successful program of the Mumbai Metropolitan Region Environment Improvement Society that provides funding for environmental restoration to organizations, individuals, and industry that undertake this work. Additionally, the National Lake and River Conservation Policy was developed to provide funding for restoration projects.

In the Andaman Islands, policies have been developed to:

- Regulate tourism,
- Ban and recycle plastics,
- Establish water 'ATMs' to reduce single-use plastic bottles, and
- Promote green fisheries practices

Next Steps

Now a number of local scholars and practitioners have been trained in the scientific analysis of marine debris through this workshop and are available to provide support to your administration toward framing and developing similar policies to address this critical issue. We recommend a collaboration between you and these practitioners, as well as local communities, NGOs, and corporations to continue the research and to look for ways to prevent plastics from reaching our waters in order to protect water quality, human health, marine life, and our economy. TVM is a pioneer city. Through development and implementation of such policies, combined with outreach and educational programs, we believe that our city of TVM, can truly be made to be 'our city, a beautiful city.'