

National Colloquium

Collaborative Approach to Mitigate Plastic Pollution

Event Brief Report

Opening Remarks:

Hon'ble Minister Dr. Birendra Prasad Mahato, Ministry of Forests and Environment (MoFE);
Ganesh Sah, Former Minister of Environment, Science and Technology, MoFE; Deepak Shrestha, Plast Nepal Foundation

Speakers:

Prof. Dr. Rameshwar Adhikari, RECAST;
Sujata Koirala, CREASION;
Sunena Maharjan Singh, Plast Nepal Foundation

Panelists :

Shankhar Poudel, Department of Environment;
Deepak Shrestha, Plast Nepal Foundation;
Jyoti Joshi Bhatta, Nepal Bureau of Standard;
Sanu Maya Maharjan, Kathmandu Metropolitan City;
Binod Uprety, Nepal Recyclers and Recollectors Association

Moderator:

Agrima KC, CREASION
Jyoti Giri, PhD. , Nepal Polymer Institute

Closing Remarks:

Aanand Mishra, Founder and President, CREASION

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1. KEY HIGHLIGHTS

Key highlights that emerged from the colloquium are as follows:

- There is a need for in-depth research on the quantification of plastic waste generation. This will resolve the gap between the policymakers and other relevant stakeholders to understand the gravity of the issue.
- Collaboration and partnership among stakeholders, including manufacturers, consumers, recyclers, waste management organizations, and policymakers, are crucial in effectively addressing plastic pollution. This requires stakeholder dialogue, standardized value chains, tax regulations, and the establishment of recycled plastic standards.
- Continued collaboration, research, innovation, and policy implementation are necessary to successfully mitigate plastic pollution in Nepal. This includes the adoption of recycled pellets by plastic manufacturers and the formulation of entrepreneurship-friendly government policies.
- Gradual transition towards alternative materials and promotion of recycled products are significant steps towards mitigating plastic pollution. This shift should be supported by data-driven approaches, guidelines for plastic processing and recycling industries, and government support for plastic recycling.
- International cooperation and support for plastic waste management, including the development of a draft document for the UNEA 5.2 plastic treaty, are being pursued. Additionally, local-level attention is needed to address challenges associated with specific types of plastic waste, such as polyethylene and multilayer waste plastic.
- The colloquium should be followed up with a larger and more extensive discussion and action Plastic Recycling Conference.



2. INTRODUCTION

2.1 SCENARIO OF PLASTIC POLLUTION IN NEPAL

The consumption of plastics in Nepal has increased significantly over the last few decades. According to the data from Waste Management Baseline Survey of 2020, around 165,000 tons of plastic products are manufactured in Nepal . Similarly, around 170,5339 tons of plastic products were imported in Nepal in FY 21/22 . The increasing demand of plastic and lack of waste collection and management has resulted in high plastic leakage in the environment.

The mismanaged plastic waste has severe environmental and economic consequences. The recent discovery of macro plastic particles in the greater one-horned rhino dung in Chitwan National Park also highlights its negative impacts on Nepal's biodiversity. Although plastic ingestion is one of the major causes of mortality in marine ecosystem, its effect on terrestrial ecosystems is relatively understudied . Similarly, a group of scientists have discovered microplastics at an altitude of 8440 meters on Mount Everest. They collected 11 snow samples between the altitude of 5300 meters to 8440 meters, and microplastics were found in all of them .

According to a report, plastic leakage in Nepal is estimated around 20,000 tons per year. Similarly, research conducted by UNDP states that on average, 41% of the waste in municipalities is land-filled, while 32% is burnt, and 27% is openly dumped on riversides . The same report highlighted that the main reason for open burning and open dumping (especially along the river areas) is due to the lack of a strong waste collection and management system.

2.2 ABOUT THE COLLOQUIUM

There was a need for a platform for diverse stakeholders, including plastic manufacturers, consumers, recyclers, waste management organizations, civil society organizations, municipalities, policy makers, governmental agencies, academia, and other sectors to discuss on the increasing generation and disposal of plastics. To further discuss on the issues of plastic pollution and discuss way forward, 'National Colloquium on Collaborative Approach to Mitigate Plastic Pollution', was jointly organised by CREASION, Plast Nepal Foundation, and Nepal Polymer Institute on June 6, 2023 on the occasion of World Environment Day in Kathmandu, Nepal.



The event saw a total attendance of over 150 participants, representing all the major stakeholders. The colloquium featured an exhibition showcasing recycled products from various organizations. The main topics discussed during the event included the issues and challenges of recycling in Nepal, the role of plastic manufacturers in plastic waste management, and the existing infrastructures at the local and national levels for plastic waste management.

Central Bureau of Statistics (2020). Waste Management Baseline Survey of Nepal 2020. National Planning Commission. Government of Nepal.

Department of Customs (2023). Statistics of Foreign Trade 21/22. Ministry of Finance. Government of Nepal.

Awasthi, B., Lamichhane, B. R., & McConkey, K. R. (2023). Plastic ingestion by greater one-horned rhinos in Nepal: an emerging conservation threat. *Global Ecology and Conservation*, e02549.

Napper, I. E., Davies, B. F., Clifford, H., Elvin, S., Koldewey, H. J., Mayewski, P. A., ... & Thompson, R. C. (2020). Reaching new heights in plastic pollution—preliminary findings of microplastics on Mount Everest. *One Earth*, 3(5), 621-630.

UNDP Accelerator Lab Nepal (2020). EXPLORING THE AVENUES FOR PLASTIC WASTE MANAGEMENT

2.3 OBJECTIVE OF THE COLLOQUIUM

The goal of the colloquium was to bring together major stakeholders and engage in discussions to address the issues and challenges, aiming to pave the way for effective and efficient plastic waste management in Nepal.

The colloquium aimed at achieving following objectives:

- To explore and discuss challenges in plastic recycling and management, and sharing best practices that add value to the circular economy.
- To facilitate dialogue and collaboration among plastic producers, recyclers, civil society organizations, local government, governmental agencies, academia, and other sectors.
- To raise public and stakeholder awareness about the adverse impacts of plastic pollution on human health and the environment, while educating participants about their responsibility and role in tackling plastic pollution through sustainable actions and practices.
- To inform policy makers about the imperative for plastic standards, recycling standards guidelines, acts governing plastic production and recycling, and encourage their effective implementation to combat plastic pollution.

This briefing note provides a concise background on the bottlenecks and challenges faced by the recycling sector in Nepal, along with an overview of the available plastic recycling technologies. Additionally, it offers a summary of the key inputs and discussion topics covered during the colloquium.

2.4 ORGANIZERS



Center for Research and Sustainable Development Nepal (CREASION): CREASION is a not-for-profit organization leading in environmental protection in Nepal through recycling, research, emergency response, grassroots and circular economy related interventions. CREASION is the largest collector and recycler of plastic waste, with a monthly collection capacity of around 450 tons and also houses innovative, impact-based projects as well as a learning center for youth.

Nepal Polymer Institute (NPI): NPI is a nonprofit organization founded by a team of enthusiastic chemists and physical scientists working at different academic institutions and government bodies. NPI aims to foster research in cutting-edge areas of materials science and engineering, with a particular focus on polymers, the environment, plastics based on renewable resources, and nanotechnology.



PlastNepal Foundation: PlastNepal Foundation is a non-profit organization, an umbrella organization of major plastic industries of Nepal. It is working in close coordination with government and trade bodies for the sustainable growth of Nepalese Plastic Industries. It supports strengthening governmental policies, regulations, and commitments for a circular plastics economy by boosting stakeholder's engagements in the same.

3. EVENT DESCRIPTION



Agrima K.C., Innovation Coordinator of CREASION addressed and welcomed the Minister of Forest and Environment, Dr. Birendra Prasad Mahato; Under Secretary of Minister of Forest and Environment, Ms. Nirmala Thapa, Spokesperson of Department of Environment, Mr. Shankar Prasad Paudel; Former Minister of Environment, Science and Technology, Er. Ganesh Shah, exhibitors, all distinguished speakers and the numerous participants. She emphasized that 11 million tons of plastic enter the ecosystem every year and this will continue to increase due to dependence on single use plastic and the current take - make and dispose model. The only solution is to move towards a circular economy where our waste will be recovered, recycled and reused so that it does not end up in nature. She outlined that the colloquium was intended to as a platform for diverse stakeholders, including plastic manufacturers, consumers, recyclers, waste management organizations, civil society organizations, municipalities, policy makers, governmental agencies, academia, and other sectors to have a dialogue on addressing the increasing issue of plastic pollution in Nepal.

Mr. Deepak Shrestha, President of Plast Nepal Foundation has been striving to collaborate with ministries, local governments, and academia to raise public awareness about plastics. He acknowledged the suspicion often associated with industrialists in Nepal and commended Dr. Rameshwar Adhikari, an academic, for advocating for the plastic industry. Mr. Shrestha highlighted the government's perspective on plastics, stating that completely banning plastic is not a sustainable solution, considering its extensive use in various aspects of our daily lives. He emphasized the need to shift from perceiving plastics as pollution to utilizing them as means to protect the environment. Mr. Shrestha emphasized the data gap prevailing that small percentage of plastics ending up in landfills, with the majority being reused. He stressed the importance of consulting with plastic entrepreneurs to gather accurate data and urged collaboration between research and plastic production.

3.1 SPECIAL REMARKS



Dr. Birendra Prasad Mahato, Minister of Forest and Environment, acknowledged the differing perspectives on plastics, with plastic industrialists emphasizing their importance in day-to-day life while the government highlights them as a problem. He proposed aligning and conducting research to assess the benefits and harm caused by plastics to the environment. Recognizing that plastics have been part of our lives for a long time, he emphasized the need for a gradual shift toward alternative materials. Dr. Mahato advocated for promoting and purchasing recycled products and called on researchers to develop innovative recycled products.

He also highlighted the practical implementation of recycling and recycled products in our daily lives, urging government officials, researchers, and entrepreneurs to discuss and explore alternatives to plastics. Dr. Mahato expressed concern that many entrepreneurs have become profit-oriented, neglecting their social responsibility. He suggested the establishment of recycling facilities alongside plastic manufacturing units to ensure manufacturers take responsibility for quality maintenance and plastic management. He highlighted the ministry's openness to future collaborations in addressing these challenges.

“ There is a need to take a collaborative approach between local, provincial & federal government, researchers, and academicians to look for solutions to plastic pollution and also discuss the prospects of recycling in Nepal



3.2 KEYNOTE SPEECH AND PRESENTATION



Prof. Dr. Rameshwar Adhikari

3.2.1 Partnership between Plastics Industries and Academia

Prof. Dr. Rameshwar Adhikari, a senior polymer scientist, started off by explaining the current urban waste disposal mechanism i.e., landfills (48%), burned (32%), or littering rivers (27%). While plastics are often viewed as environmentally degrading, they should instead be recognized as suitable packaging material. Prof. Adhikari presented a successful model from Korea where academics, plastic manufacturers, and the government collaborated, leading to the development of plastic recyclers (entrepreneurs).

He emphasized the need for standards for recycled pellets, quality testing, and trust-building among stakeholders. Currently, plastic manufacturers are hesitant to adopt recycled pellets and instead opt for virgin pellets. Prof. Adhikari also advocated for entrepreneurship-friendly government policies and collaborations between entrepreneurs and researchers to foster the development of the plastic sector in Nepal. He suggested shifting to plant fiber-based bags as an alternative to plastic bags and reprocessing plastic bags for the production of valuable products like particle board. He concluded by sharing the need of innovation, research, and the development of plastics for overcoming challenges in plastic waste management.

3.2.2 Issues and Challenges in Plastic Recycling in Nepal

Ms. Sujata Koirala, General Secretary of CREASION started her keynote with the generation of plastics waste data in Nepal, which is around 600 tons according to the World Bank Group. Household recyclable waste is transported to transfer stations, aggregators, traders, and finally to recycling facilities. PET, HDPE, and LDPE recyclers operate in Nepal. Based on plastic waste characterization conducted by CREASION, PET constitutes the highest percentage of plastic waste. A significant portion, 2.12%, of the total plastic waste ends up in landfills, contributing to pollution. Plastic recycling can be economically viable in Nepal; however, there are several challenges to address. These include lack of policies for plastic recycling, inadequate Solid Waste Management Acts and Regulations, insufficient stakeholder representation, absence of waste plastic regulations, and a lack of local-level plastic recycling resources.



Ms. Sujata Koirala
CREASION



Recycling has emerged as an important solution to the plastic problem. Lack of policies and more importantly investments has hindered the growth of this sector in Nepal.

Ms. Koirala shared an example from the UK to emphasize the importance of addressing recycling on a policy level, suggesting that at least 30% of recycled plastic should be used in manufacturing plastic bottles. She also highlighted CREASION's contribution to plastic waste recycling.

Key issues in plastic waste recycling include source segregation, informal waste worker integration, policy prioritization, and the cost-effectiveness of virgin plastics. The low profitability of plastic recycling hampers investment and engagement in the sector. Additionally, the imposition of multiple taxes on plastic at various stages poses challenges. Tracking and traceability of plastics are lacking, with insufficient data on import/export quantities and types.

Ms. Koirala concluded her keynote by providing solutions to tackle the challenges by stakeholder dialogue, standardized value chains, tax regulations, local-level resources, and the establishment of recycled plastic standards.

3.3 EXHIBITION PARTICIPANTS AND PRODUCTS



Seven exhibitors showcased their plastic recycling, upcycling and downcycling products viz. CREASION, FabLab Nepal, Ennovent, Blue waste to Value, Centre for Energy and Environment Nepal (CEEN), National Innovation Center (NIC), Kleanit, and young researchers. The exhibition included recycled PET pellets, recycled polyester jackets, recycled plastic bricks, coasters and recycled benches. The visitors got the opportunity to observe different plastics recycled products and the scenario of plastic recycling in Nepal. The exhibition had over 150 visitors and it was met with positive reviews.

3.4 PANEL DISCUSSION



This panel discussion aimed to set the scene regarding current recycling trend and binding policies, identifying bottleneck, future innovation in order to provide participants with an understanding of the plastic waste landscape of Nepal. The panelists in this session represented the different sides of the Knowledge Triangle; and offered personal and governmental insights; and different perspectives on the importance of collaborate on between the key actors in the Knowledge Triangle. Dr. Jyoti Giri from Nepal Polymer Institute moderated the panel discussion session among stakeholders directly related to plastic processing and recycling facilities.

Deepak Shrestha, Plast Nepal Foundation highlighted the importance of data for the effective management of plastics mentioning total plastic consumption of 0.2 million MT in Nepal of which 5 to 15% reaches waste stream. He urged MoFE to prepare separate guidelines for plastic processing and recycling industries and clarify biodegradable plastics mentioned in budget speech. He also suggested government stakeholders lift off local Kawadi tax, VAT and income tax for recycled plastics and expressed that plastic industries will happily accept extended producers responsibility. He objected to the way plastics are promoted as environmental destructor and suggested systematic reintroduction of waste plastics on manufacturing stream as it is impractical to ban plastics in present context.



Jyoti Joshi Bhatta on behalf of the Nepal Bureau of Standards highlighted activities and standards regarding environment preservation. She listed the standards regarding plastic manufacturing and described the process of standard development and revision where ISO guidelines are strictly followed and concerned stakeholders are involved. She said that Bureau of Standard has permitted 10% recycled HDPE in the manufacturing of pipes. She mentioned that ISO itself from COP 29 by adopting net zero guideline, is shifting towards circular economy and Nepal as full member will also align to its guidelines. She said if quality and performance is maintained by using recycled plastic granules, the Bureau of Statistics will allow using it.



Jyoti Joshi Bhatta
Nepal Bureau of Standards



Shankar Prasad Paudel
Department of Environment

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Nepal needs a comprehensive and reliable data on plastic waste to support policy process

Shankar Prasad Paudel from Department of Environment highlighted the activities conducted by Nepal Government in managing plastic pollution. He mentioned that the government in the past focused on managing single-use polyethylene and is now expanding its focus toward overall plastics, as evident from the recent budget speech. He said that the government is trying to fill recycling gap at policy level as well as advocating and promoting plastic recycling and upcycling facilities. He also acknowledged international cooperation and support for plastic waste management expressing government's interest on facilitating plastic recycling industries. He mentioned that a draft document for UNEA 5.2 plastic treaty has been prepared and all aspects of plastic recycling have been incorporated.

Sanu Maiya Maharjan, representative from Kathmandu Metropolitan City (KMC) highlighted challenges posed by polyethylene and multilayer waste plastic in KMC. She also highlighted the necessity of household plastic segregation as formulating policies alone will not provide desired results. She also said that the stakeholders have overlooked the health of waste workers as well. She mentioned that local governments can only ask consumers to reduce and reuse plastic waste and as recycling can only be operated and monitored via government-private collaboration. She exemplified the work done by Japan and Indian governments for plastic recycling and urged the Government to be actively involved in recycled plastic promotion.



Sanu Maiya Maharjan
Kathmandu Metropolitan City



Binod Uprety
Plastic Recycling Entrepreneur

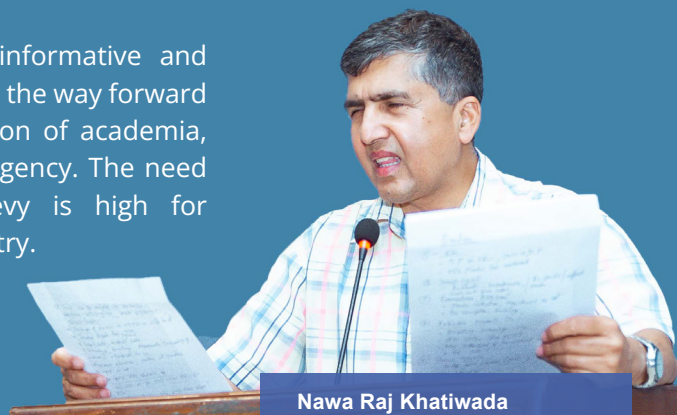
Binod Uprety, plastic recycling entrepreneur said that plastic waste collectors and recycling industries supplement each other, and collectors are the major recycling factor. Waste collectors face many difficulties leading to lower collection which ultimately affects the investment in recycling. Many workers are shifting away from plastic recycling sector as there are limited recycling industries, legal difficulties in export, and lack of recycling policy in Nepal. He through the colloquium suggested government to develop recycling policy, set value of recycled products, and manage, support and incentivize recycling facilities.

3.5 SUMMARY OF THE KEYNOTE & PANEL DISCUSSION

Nawa Raj Khatiwada, Founder of Nepal Development Research Institute (NDRI) summarized the keynote presentation and panel discussion. He praised Prof. Dr. Rameshwor Adhikari as the senior most knowledgeable resource for innovation in plastic recycling. He emphasized recognition and rewarding plastic manufacturers supporting plastic recycling through CSR by the government. He commended on the macroeconomics of solid waste management put forward by Sujata Koirala and diverted the focus of all plastic recyclers and governmental agencies towards development of a robust plastic recycling system for handling and recycling huge amount of plastic waste. According to Deepak Shrestha, the import of plastic raw materials is 2 lakhs tons per annum whereas, reports from World Bank Group and UNDP claim to have plastic waste generation from 350 tons to 600 tons per day. In regard to discrepancy in data, he argued that developmental agencies, biliteral and multilateral agencies should focus on the development of infrastructures enabling the nation for better plastic recycling and research should be conducted by academicians and research institutions.

He suggested that the Department of Environment should highlight the policy gap and collaborate with academicians and researchers to work towards closure of policy gaps. He, on highlighting the data clash of plastic waste, requested academicians and researchers to work and generate data. He complimented the plan of Nepal Bureau of Standard to align with net zero emission. He appreciated the concept of economic distance put forward by Binod Upreti from the recycling sector and suggested further discussions on the concept. And he suggested revisiting taxation on recycling companies based on economic and physical distance.

He summarized the colloquium as informative and informed all stakeholders and panelists the way forward for plastic waste recycling as a coalition of academia, recycling industry and governmental agency. The need for recycling standards and tax levy is high for empowering the plastic recycling industry.



Nawa Raj Khatiwada
Founder of Nepal Development Research
Institute (NDRI)

5. CONCLUSION

5.1 CLOSING REMARK



In closing remark, Aanand Mishra, Founder and President of CREASION thanked everyone for participating in the colloquium. He highlighted that the government and plastic manufacturers are not to be blamed for the current issue of plastic waste litter in river and roadside. The plastic producers (FMCG) produce items wrapped in MLPs based on market demand thus, it is the take-make-waste lifestyle that pushes MLPs production. Similarly, a ban on plastic bags below 40 microns has been implemented by the government several times, but it has not been effective due to consumer behavior. Plastics can be found from Terai to the Himalayan region. CREASION conducted a Mountain Cleanup Campaign on May 2023 in the Everest region where 35.78 Tons of plastic waste was recovered.

Our education system needs reformation to adapt to drastically changing plastic landscape along with raising awareness for behavioral change. There are several issues such as data discrepancy but the presence of all relevant stakeholders (academia, plastic manufacturer, governmental agencies, CSOs) in the colloquium represents a coalition and this should be continued. So that we can leave our future generation a better world where plastics are not part of the problem. This coalition should not be limited to a particular Environmental Day and similar to 2023s theme 'Beat Plastic Pollution', he pointed that we should all work together in this cause.

He put forward the need to promote and incentivize plastic recycling industries and touched on Dr. Rameshwar Adhikari's statement of under utilising our manpower, researchers and technical experts. He focused on the need for collaboration with innovative minds, academia, researchers, governments, revenue department and all stakeholders on solutions to plastic pollution and put forward his interest in conducting Nepal's first plastic conference.

Plastic is a need and necessity of today's world and putting a ban is not the effective solution. He emphasized on moving toward a solution by developing a resolution by through Nepal's First Plastic Recycling Conference. He stressed that this half day colloquium is not enough for addressing all the issues and solutions. He put forth Nepal's First Plastic Recycling Conference as a resolution from this event. By putting forward the resolution he invited all the government stakeholders, academia, revenue department, innovators and incubators, international researchers, and activist to be a part and develop a road map for plastic recycling in Nepal which will be handed over to the Ministry of Forest and Environment, Ministry of Federal Affairs and General Administration, and Ministry of Urban Development for implementation.

6. POLICY RECOMMENDATIONS

■ National Level Research on Plastic Waste:

A national level research is required to understand the plastic consumption, plastic waste generation and plastic waste leakage which will be important in informing policies to mitigate the challenge of plastic waste.

■ Development of a strategy to effectively implement the ban on Single use Plastic (SuPs) below 40 Micron:

The government-imposed ban on import, export and sales of plastics smaller than 20 x 35 inches and below 40 microns based on Environment Protection Act, 2019 (Act 9, sub act 15). The ban was previously imposed in 2015 and then again in 2021. However, lack of strategy to enforce or implement the ban has emerged as one of the most prominent bottlenecks. The very first step towards plastic waste management and recycling is reducing the single-use plastic. Majority of the nations around the globe have imposed ban on SUP which is hard to recycle including India in 2022, Bangladesh in 2021, and European Union in 2021.

■ Formation of national taskforce to develop roadmap for plastic sustainability(EPR):

A comprehensive way of dealing with plastic waste management is involvement of all stakeholders (recyclers, academicians, governmental representative, activists, FNCCI, CNI) in the formation of a national taskforce to develop a roadmap for plastic waste management and reduction. The roadmap includes sustainable financing, plastic alternatives, innovations and technologies that support plastic recycling. The roadmap provides areas of investment in the development and expansion of waste collection infrastructure, including efficient waste management systems, recycling centers, and collection points. Establish a well-coordinated network of collection facilities across urban and rural areas to ensure widespread access to recycling services. Encourage collaborations between the government, private sector, and non-governmental organizations to enhance plastic waste recycling efforts. Foster partnerships to develop and fund recycling initiatives, technology advancements, and capacity building programs. Extended Producers Responsibility, a major component of polluters pay mechanism also should be introduced by the taskforce as a mean to reduce plastic pollution which Nepal has also abided in the plastic pollution treaty.

■ Development of recycling standards/ guidelines/certification

Recycling standards, rules, and certification should be developed with the help of the government, the Nepal Food Scientists and Technologists Association (NEFOSTA), and recyclers to promote the circulation of plastics throughout the nation. A standard or guideline guarantees that producers will set up a system to certify goods created in conformity with the standards. Promoting and supporting certification of recycled plastic builds confidence in its production from recycled materials. Certification ensures quality and traceability of recycled plastics, creating a robust market framework for waste sorters, compounders/recyclers, and manufacturers/producers. It also promotes transparent communication throughout the value chain. This will provide a complete end-to-end recycling solution for plastic waste.

■ Provision of taxation on virgin plastics

One of the major barriers to recycling is low demand for recycled products which stems directly from low price difference with virgin plastics. To even the playing field, the government should levy additional taxes for virgin plastics. Additional tax will help limit the imports of virgin plastics and boost the recycling industry. This will encourage plastic manufacturers to use recycled pellets for manufacturing plastic articles.

7. EVENTS PHOTOGRAPHS

