Technical Guidance Note- Plastics

Introduction

Plastics have become an integral part of our daily life: the packaging industry has the most intensive use of plastics, but also agriculture, textiles, transportation and consumer products have a supply chain that is filled with plastic. Plastic waste takes between 400 to 1000 years to disintegrate.[1] The mismatch of the short widespread use of plastics and the long time they take to decompose creates one of the most prominent environment and health crises in our time. ***If we do not reimagine and reset our current consumption patterns and waste management practices, by 2050 there will be more plastic than fish in our ocean.***

More than half of the plastic products are used only once and then discarded. Every year, up to 13 million tonnes of plastic - the equivalent of one garbage truck per minute - leak into the ocean.[2] It is estimated that more than 100,000 marine animals are killed by plastics each year[3] and about 40 percent of cetaceans such as whales and dolphins have ingested plastics.[4] Most plastic disintegrates into particles smaller than five millimeters, referred to as microplastics, and breaks down further into nanoparticles, which are less than 0.1 micrometer in size. Chemicals leaching from plastics can affect the hormone systems of vertebrates and invertebrates. Microplastics also interacts with soil fauna, affecting their health and soil functions.

Most of plastic was not designed for recycling which is also economically unviable and unsustainable in many countries. There are hundreds of plastic, collection and sorting are daunting and practically impossible. The low price of oil and gas makes it cheaper to produce virgin plastic than collection, sorting and recycling of plastic. Financially, most of plastic is too cheap to be worth of recycling. Of all the plastic produced since 1950s, only 9% has been recycled, and a large portion was done by China. Before 2018, US and Europe sent collected plastic to China for sorting and recycling. In 2018, China adopted the National Sword Policy banning the import of plastic, breaking the recycling chain. Furthermore, even when it is recycled, plastic degrades and soon will end up in the trash bin. When

[1] World Economic Forum. 2018. "This is how long everyday plastic items last in the ocean." available at https://www.weforum.org/agenda/2018/11/chart-of-the-day-this-is-how-long-everyday-plastic-items-last-in-the-ocean/

[2] United Nations Environment Programme, The State of Plastics: World Environment Day Outlook 2018, June 2018, available at https://www.unenvironment.org/resources/report/state-plastics-world-environment-day-outlook-2018

[3] United Nations Environment Programme, World Environment Day 2018: Overview, June 2018, available at https://wedocs.unep.org/bitstream/handle/20.500.11822/25398/WED%20Messaging%20Two-Page%2027April.pdf?sequence=12&isAllowed=y

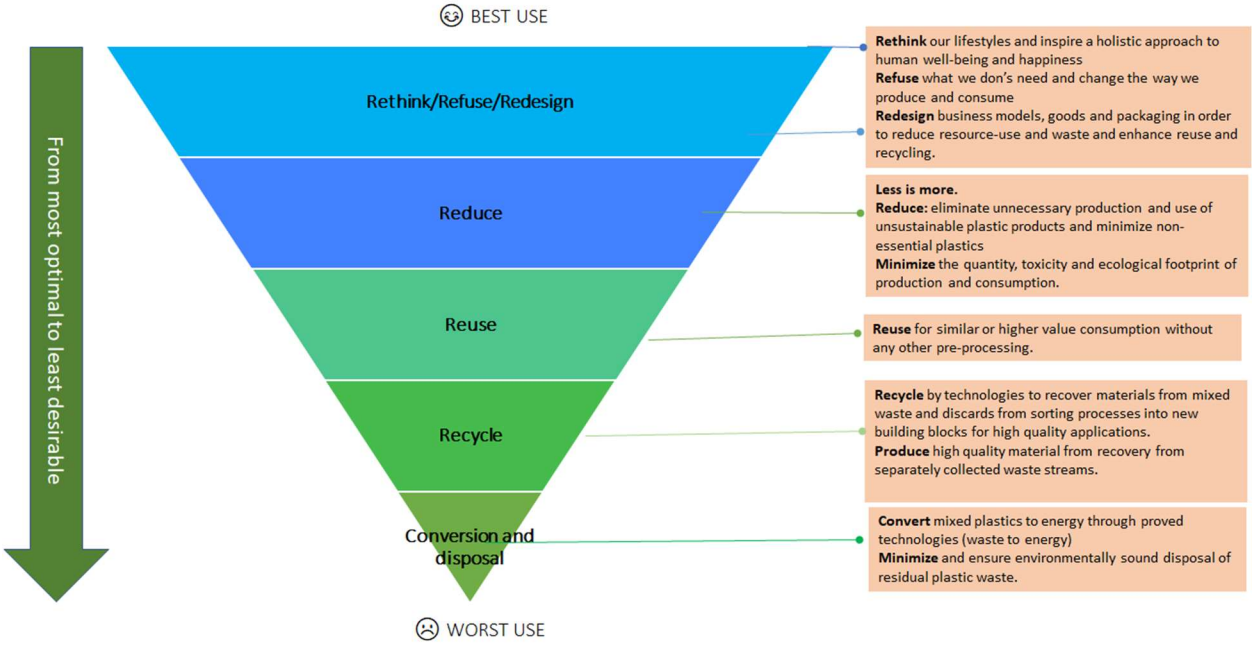
[4] Secretariat of the Convention on Biological Diversity, Marine Debris: Understanding, Preventing and Mitigating the Significant Adverse Impacts on Marine and Coastal Biodiversity, 2018, available at https://www.cbd.int/doc/publications/cbd-ts-83-en.pdf

plastic is reheated, remanufactured and remade, toxins can emit and pollute the air, soil and water. Recycling is needed but cannot solve the problem.

Waste management hierarchy

UNDP will promote the widely accepted waste management hierarchy (Figure 1) in its Plastics Offer programming.

Figure 1. Waste management hierarchy



Our Approach

We need to move away from today's linear take-make-waste model and fundamentally rethink our life styles and reimagine the way the way we design, produce, consume, and dispose of plastics, and envision the way we work together as a global community to tackle plastic pollution. There is a need to focus on the source of pollution and "to turn of the tap" and to direct much of the responsibility for closing the loop to resin and product manufacturers not municipalities and consumers. This requires a paradigmatic shift in our behaviors and systems, and to undertake a paradigmatic shift towards a society free of plastic waste. Our society needs to reimagine our behaviors and systems, and undertake a paradigmatic shift towards to a society free of plastic waste.

Plastic waste accounts for 10% of global solid waste. Activities that address plastic waste management can also incorporate other materials including metals, glass, papers and other recyclables. Furthermore, organic waste can be separated and composted for other use. ***A comprehensive and integrated approach to waste management should be developed and implemented at city and community level in participating countries.***

Eliminate: turn off the tap

There is growing concern over how much of the plastic problem could be addressed through recycling due to its (potential) limitations. It may lead to downcycling, contributes to overconsumption, and a large majority of plastics are not viable for recycling. Despite these limitations, much of the work done so far has focused predominantly on recycling of plastics. While it is important to ensure the collection and proper disposal of plastic waste, we need to recognize that once plastic products are produced and used, the collection and recycling challenge is paramount with little market incentives, and fails to address upstream issues. Additionally, nearly a third (32%) of plastic packaging waste are not managed, and are discarded via open burning, dumping, and littering, particularly in developing countries – with less developed waste management and disposal facilities[i]. As plastic production (and resultant waste) increases[ii], the negative impacts of these disposal methods, as well as mismanaged and unmanaged plastic waste, will increase substantially. ***Therefore, we must first focus on reducing the use and consumption of non-essential plastic products*** as this could go a long way to reduce pollution and associated impacts. This could be delivered by taking actions that eliminating non-essential plastics, especially single use plastics.

Eliminate use of non-essential plastics

Key elements:

- Develop an inventory of non-essential and problematic plastics and chemicals in plastics;
- Dialogue with public and private sectors to identify and agree upon non-essential plastics and explore options of elimination;
- Develop policies and regulations to support the elimination of non-essential plastics;
- Roll out awareness campaigns in combination of regular clean-up on reducing plastic use and eliminating non-essentials.

Results:

- An inventory of non-essential and problematic plastics developed;
- Reduction of plastic waste;
- Alternative courses of action for eliminating non-essential plastics identified.
- Reduced demand for and consumption of non-essential plastics.

Innovate: challenge business as usual There is growing evidence that current human practices, policies, and technologies cannot resolve overconsumption and plastic pollution [iii] . This challenge is further compounded by difficulty in changing human behaviors, lack of readily available (sustainable) substitutes for plastics, and technologies that can significantly reduce the impact of plastic production and waste management. However, there is hope if we pursue innovation and technological advancement. UNDP therefore aims to take urgent steps to support innovative sustainable alternatives for product design, resource efficiency, waste management practice and technologies, and environmentally sound products; and to promote innovative reuse and recycling schemes. UNDP supports innovation through creation of enabling policy environment, small grants to small businesses, and support governments to develop and implement extended producers' responsibility policies.

Innovate for impact

Key elements:

- Support governments to provide tax incentives or funding for research and development for alternatives;
- Develop and promote innovative sustainable alternatives;
- Invest in small- and medium-sized enterprises on innovative alternatives, reuse and recycling;
- Comprehensive mainstreaming of extended producer responsibility.

Results:

- Innovative sustainable alternatives developed and adopted by stakeholders.
- Extended Producers Responsibility (EPR) policies developed/revised and implemented.

Circulate: closing the loop

Promoting circular economy

Key elements:

- Support the provision of innovative infrastructure and technology to advance circular economy;
- Support the creation of policy and regulatory instruments to circulate plastics in the economy;
- Support informal sector waste sectors, build their capacities, and ensuring that they are well integrated into the waste management system.

Results:

- Enabling environment for innovation created;
- Innovative technologies developed and adopted to reduce plastic production; waste, and for improved treatment/management of plastic waste.
- Enhanced work conditions and improved livelihoods for informal sector workers (e.g., plastic waste-pickers).
- Increased rate of recycling waste from essential plastics.
- Reduction in the amount of plastic waste in the environment.

Current use of plastic follows a linear economy pattern, with multiple socio-environmental problems such as increased plastic pollutants in marine ecosystems and substantial greenhouse gas emissions resulting from plastic production to degradation[iv,v]. We should strive to attain a society where nearly all plastics produced that are used remain in the circular economy, following the principles of waste minimization, materials resource efficiency and appropriate value addition, and eliminating plastic pollution to our land, waterways and oceans. This will reduce, for instance, emissions associated with manufacturing virgin plastics as measures to recirculate materials could cut emissions by 178 Mt CO_2 each year[vi]. Further evidence shows that plastics have the largest potential to circularity as only a tenth of plastics are currently being recycled[vii]. There is the need to reuse and recycle the plastic that is already in the economy. Where residual plastic waste is generated, UNDP shall work with governments, private sector, academia and civil society organizations to identify and promote innovative solutions to recover and dispose of plastic in an environmentally sound manner.

Waste management: reducing existing stress on ecosystems

According to a UNEP report, 127 countries have introduced legislation to regulate plastic bags[viii], but the effectiveness of the implementation of these regulations remain unclear. People often are unaware of the existence of these laws and regulations. There is a need to bring polices and regulations down to local and community level for enforcement, and bring policy makers to on-the-ground reality. A routine whole-of-society clean-up of plastic littering, championed by government officials in collaboration with businesses and civil society organizations is an effective approach to link upstream policy making with downstream reality check-up of the effectiveness of policy implementation.

According to Jambeck et. al., an estimated 4.8 to 12.7 million metric tons of plastic waste entered the ocean in 2010[ix]. This accounts for the predominant amount of the total plastics entering the ocean. Stopping littering and cleaning up coastal communities and cities can not only effectively reduce plastic leakage to the oceans, but also change business practices, people habits and community behaviours. A recent study has shown that, while pre-consumption interventions could reduce plastic pollution

significantly (59%) by 2040, it is not enough and will need to be complemented with post-consumption interventions such as clean-up[x].

UNDP's clean-up strategy is based on its significant experiences of working with communities, national and global stakeholders, informed by behavioural change theory and broken window theory supported by evidenced-based experiments and research. The broken windows theory, defined in 1982 by social scientists James Wilson and George Kelling, drawing on earlier research by Stanford University psychologist Philip Zimbardo, argues that no matter how rich or poor a neighborhood, one broken window would soon lead to many more windows being broken[xi]. Repair the broken windows quickly, in a day or a week, and vandals are much less likely to break more windows or do further damage. Similarly, clean up the sidewalk every day, and the tendency is that the rate of littering to be much less. A clean environment encourages good behaviors and human consciousness. It argues that physical environment influences human behaviors and can have a spill-over effect on other aspects of community life.

Clean-up for policy effectiveness and behavioral change

Key elements:

- Intensive and regular (weekly) clean-ups
- Powered by awareness raising and advocacy by media
- Whole-of-society participation (governments, businesses, consumers, civil society organizations)
- Government-private sector-civil society meetings

Results:

- Effective monitoring of policy effects and identification
- Data/information collection on sources and brands of plastic waste

UNDP will support governments to design and implement integrated community-based clean-up strategies based on successful country experiences. According to our experiences, weekly clean-up with full government officials' and community participation powered by intensive awareness raising and advocacy is an effective way to shift people's habits and stop plastic leakage. Engaging in clean-up and awareness raising activities could contribute to the formation of social norms regarding sustainable plastic consumption in the long term.

UNDP will also use citizen science to promote citizen participation, enhance data generation, awareness and behavioral change. While working closely with central governments and global networks, UNDP believes in the power of local people and communities. Local people have interacted with their environment for decades, have observed and reflected on a wide range of socio-ecological and cultural processes, and are thus likely to have gained tacit and explicit knowledge. As the need to provide context specific advice increases, citizens must be involved throughout the process, from problem identification and definition stage. UNDP will adopt an integrated top-down and bottom-up approach to make citizens part of the process, enhance their understanding, create trust, allow for knowledge exchange and co-construction, promote community empowerment and project ownership.

Priority Activities

Systems baseline analysis and preparation of baseline report and national action plan

- Baseline: analyze who is producing/using what plastics, where, and how to dispose of the plastic waste
- Stakeholders consultation and identification: what plastics are essential? How to minimize the use or import of plastics? What actions will be needed to achieve desired outcomes to eliminate non-essential plastics? What government policies are needed to implement the changes? What activities should be undertaken to shift human behaviors? (A series of stakeholders' workshops, meetings and focus group discussions to identify areas of reduction).
- Design and implementation of activities in the national action plans

Development and implementation of community-based zero waste management systems demonstration sites (waste intelligent communities and cities)

- Prevent, reduce and eliminate unnecessary and non-essential plastic products to stop pollution at its source;
- Develop and implement actions to rethink, reuse, reduce, recycle and environmentally dispose of waste, following waste management hierarchy;
- Support the development of ecological alternatives and solutions;
- Incorporate informal waste sectors and enhance livelihoods for informal workers;
- Conduct regular clean-up for awareness raising, advocacy and behavioral change.

Policy development and implementation

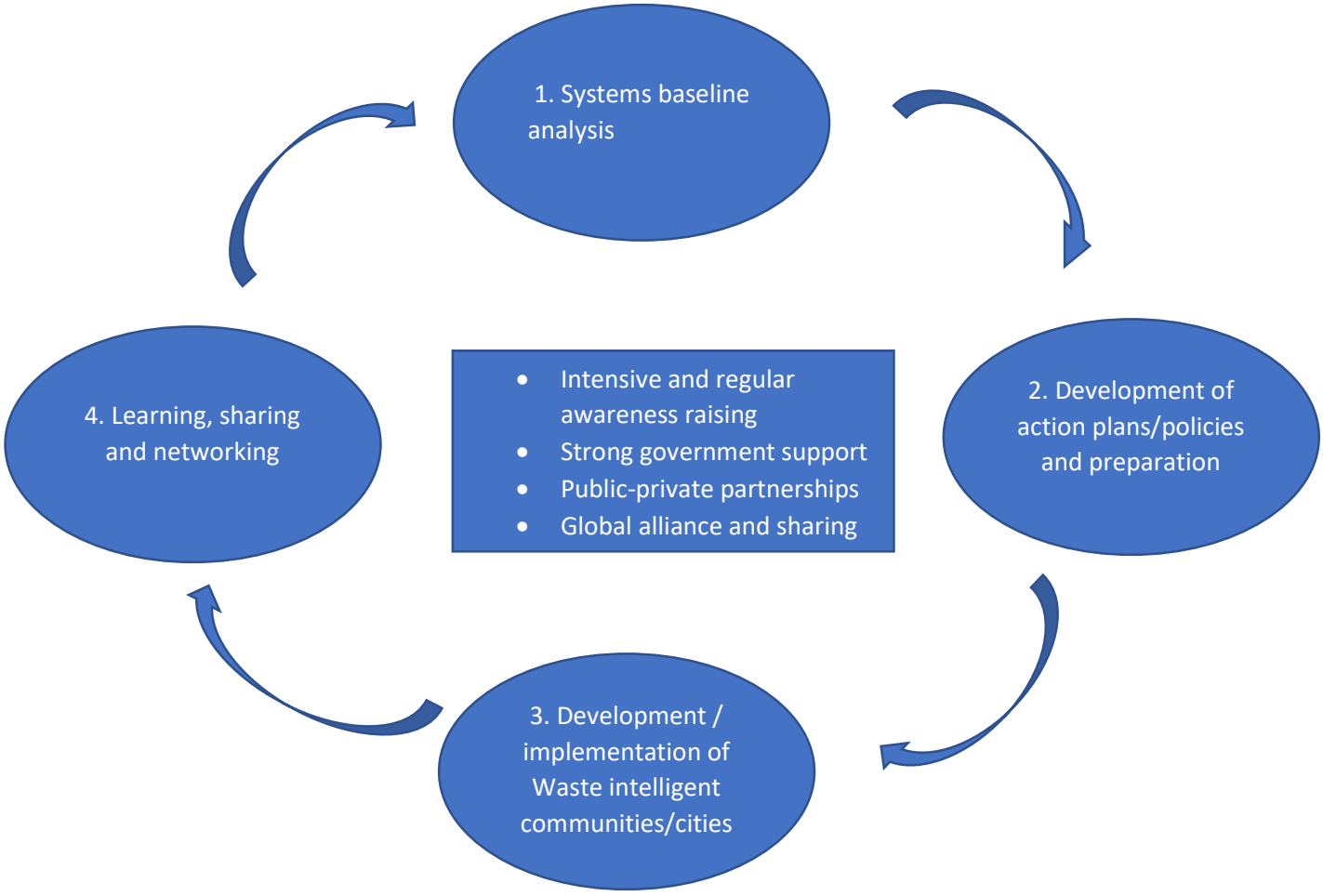
- Support policy formulation and implementation (including plastic ban on single use plastics, extended producers' or importers' responsibility, and incentives for clean environment);
- Conduct Government-civil society-private sector meetings/dialogues to formulate and implement policies and regulations.

Awareness raising, public participation and global campaigns

- Develop awareness-raising materials and outreach activities;
- Develop and implement intensive and regular awareness raising and public participation (such as weekly clean-up activities, radios/TVs programs, and social media campaigns);
- Organize the Annual Zero Single Use Plastic Week Campaign, June 8th World Ocean's Day and/or Clean-up Campaign on World Clean-up Day on the third Saturday of September with whole-of-society participation (high level government officials, businesses and civil society organizations);
- Participate in South-South cooperation and exchange.

Figure 1 illustrates the steps to implement this program at the national and local level. Annex 1 to this document provide some guidance on some misperceptions and pitfalls in plastic management.

Figure 1. Steps Towards Zero Plastic Waste Communities and Cities



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[vii] Ibid.

[viii] UNEP. 2018. *Legal Limits on Single Use Plastics and Micro Plastics*.

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