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Towards a Roadmap for a Plastic-Free Small Island Developing States

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Abstract: In the contemporary era, plastic pollution is regarded as a significant environmental issue, given its deleterious effects on the ecosystem and, consequently, on human health. The proposed roadmap delineates the steps and measures to address marine plastic pollution, and strongly urges the participation of various key stakeholders, including policymakers, scientists, community members, non-governmental organisations, and other organisations that are impacted or can help to enforce policies. This is to be done with consideration for the specificities and challenges faced by Small Island Developing States. To develop this roadmap, several key elements are essential, including conducting plastic audits, implementing circular economies, formulating strategies and actions, establishing regulatory frameworks, and monitoring progress. The implementation plan comprises a series of actions which have been categorised into three distinct timeframes: short, mid and long term. In conclusion, it is imperative that Small Island Developing States pursue international collaboration for the effective implementation of the roadmap, given that marine debris is being deposited on their shores despite its genesis in distant locations.

Keywords: plastic pollution; Small Island Developing States; audit; circular economy; regulatory framework; implementation plan

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1. Introduction

Worldwide, it is estimated that 300 million tonnes of plastics are manufactured on a yearly basis [1]. The world is already overburdened by current levels of plastic waste. If the current trend of increasing plastic production continues for the next three decades, the amount of plastic waste will quadruple [2]. Plastic is a useful, long-lasting material with many applications, particularly as single-use packaging for retail purposes. It is estimated that 75% of manufactured plastic ends up as waste [3,4]. A substantial quantity of plastic, amounting to around 13 million tonnes, finds its way to the ocean through mismanagement, where it becomes marine litter [5]. Consequently, there is an adverse effect on the ecosystem, population and the economy [6]. The ocean is also contaminated by a further 1.1 million tonnes of land-based plastic waste and 3.25 million tonnes of sea-based plastic waste [7]. Plastic waste that drifts in the oceans poses a serious threat to marine species due to pollution, entanglement and ingestion [8]. Plastic can also accumulate on beaches and on the seabed as it takes many years to degrade [9–11]. Marine litter also poses risks to human health in terms of accidents and following the release of endocrine disrupting and carcinogenic substances when microplastics are ingested [12,13].

Small Island Developing States (SIDS) are very much vulnerable to plastic pollution owing to the transboundary movement of plastic waste in the oceans [14]. In fact, they are at the receiving points of marine debris, being close to ocean gyres. SIDS are already severely threatened by climate change [15–17]. The manufacture, use, and disposal of plastic contribute significantly to greenhouse gas emissions, thereby aggravating the effects of climate change that SIDS are currently facing. Tackling plastic pollution safeguards marine and terrestrial ecosystems, increases climate resilience and helps to meet sustainability goals. Moreover, because of their remote locations and the lack of funds, there are no proper waste disposal and treatment facilities [18–21]. Plastic pollution is responsible for significant economic losses incurred by SIDS through clean-up operations, the decline of the tourism industry and 'ghost fishing' caused by abandoned, lost and discarded fishing gear (ALDFG) [22]. SIDS are also facing 'mid-stream challenges' relating to the plastic life cycle, such as chemical pollution and the carbon footprint of plastics. For example, the Caribbean islands, considered to be one of the planet's 35 biodiversity hotspots are adversely impacted by plastic pollution. It is estimated that the Caribbean coastline is littered with approximately 2,014 objects per km, with 20% of these being plastic bottles [23]. In this respect, the Closing the Caribbean Plastic Tap project promotes the implementation of circular economy principles to support plastic waste management in Antigua and Barbuda, Grenada, St. Lucia, St. Kitts and Nevis, and St. Vincent and the Grenadines [24]. Barbados is one of the rare SIDS which conducted a baseline study on plastic waste. They reported that about 15,000 tonnes were generated in 2021 alone [25]. Alarmingly, 508 tonnes leaked into the environment, of which 308 tonnes ended up in the sea and 200 tonnes remained on land. They

predicted that, if no remedial action is taken, plastic waste will increase by 12% by 2033 and about 4,000 tonnes will enter the sea (2%). This information was reported by Common Seas in collaboration with the Government of Barbados.

2. Importance of a Roadmap to Tackle Plastic Pollution for SIDS

Despite their relatively small land area, SIDS have large exclusive economic zones. Their economic pillars mostly involve fisheries, aquaculture and tourism [26]. They are disproportionately impacted by sea-based plastic pollution, despite contributing less than two percent of the world's plastic waste [5]. Moreover, the situation is worsened by two predominantly domestic sources of plastic waste. Firstly, the use of plastics and plastic products is constantly increasing in many SIDS. Given that these products are imported, it is difficult to tackle the pollution at source. Secondly, the tourism industry generates a significant amount of plastic waste, producing considerably more plastic waste per capita than the local population [27,28]. In SIDS, mismanaged plastic waste is very common due to inadequate waste collection services. Waste streams are not separated, sorted or recycled, and there are insufficient regulated landfills or dumpsites to prevent leakage. Open burning of plastic waste is common, and there is an absence of proper recycling technologies to treat plastic waste. Existing waste management policies and regulations are often poorly promulgated and enforced [29–31]. Last but not least, there is a lack of coordinated effort in monitoring plastic flow within the economy and its impact on the environment and human health.

The effects of plastic pollution on the environment and human health are undeniable [32–34]. The leakage of plastic waste from landfills and dumpsites poses a serious threat to marine and coastal ecosystems, such as mangroves, seagrass and coral reefs, as well as to land and waterways. Leaked plastic waste can also obstruct or block the course of water, leading to floods during heavy rains. As mentioned above, open burning of plastic waste releases toxic, hazardous and carcinogenic pollutants into the air, which impacts human health. Residual ash from open burning also contaminates water and soil, posing further risks to human health [28]. To sum up, the presence of marine plastics in the human food chain poses a significant risk to SIDS. People living in SIDS ingest significant amounts of plastic when they consume seafood, which is their main source of protein [35].

Because of these reasons, SIDS has adopted the United Nations Environment Assembly (UNEA) Resolution 5/14 with the aim of eliminating plastic pollution [36]. A shift from a linear economy to a circular approach is essential. It is very important to reinforce legislative and institutional governance, raise awareness, actively involve stakeholders and civil society, and establish a solid science-to-policy platform. These measures can make a huge contribution to the battle against plastic pollution [37]. Similarly, a combination of other measures must be adopted, such as designing products for recycling/reuse and eliminating unnecessary and problematic plastic

products. Furthermore, incorporating the UN Sustainable Development Goals (SDGs)[38] into the plan can help to boost action. Sound plastic waste management is vital to ensure clean water and sanitation (SDG 6), sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), life below water (SDG 14), and life on land (SDG 15) for a healthier, more sustainable future for SIDS.

A number of initiatives have already been undertaken by SIDS. Examples of relevant policy measures include the prohibition of single-use plastics and the implementation of extended producer responsibility (EPR) schemes [39]. In 2019, a regional strategy for the management of marine litter and microplastics was adopted by the Caribbean Community [40]. Barbados is in the process of formulating a National Action Plan to address the issue of plastic pollution, with a particular emphasis on Macro plastic pollution. The five strategies involved are as follows: The primary strategy entails the mitigation of single-use plastic bottles, with the objective being the reduction of plastic pollution by 14%. The second strategy is to tackle single-use plastic bags, with the objective being to reduce plastic pollution by 8%. The third strategy pertains to the mitigation of other single-use items, with the objective being the reduction of plastic pollution by 2%. The fourth strategy is to implement enhanced source separation through Extended Producer Responsibility (EPR), with the objective being to reduce plastic pollution by 2%. The fifth strategy is focused on enhancing the management of solid waste and subsequent measures, with the objective being to reduce plastic pollution by 48%.

Whilst the initiatives represent a significant advance towards achieving a plastic-free island, further actions are required to accomplish the stated objectives. In order to solve this global crisis, the United Nations Environment Programme (UNEP) has established an Intergovernmental Negotiating Committee (INC). The objective of the INC is to finalise a legally binding instrument. To date, five INC meetings have been convened: INC-1 (2022) in Uruguay, INC-2 (2023) in France, INC-3 (2023) in Kenya, INC-4 (2024) in Canada, and INC-5 (2024) in the Republic of Korea.

3. Aim and Objectives of the Roadmap

The aim of this paper is to facilitate the development of a roadmap for SIDS to beat plastic pollution in a sustainable manner in a way that the people will become responsible in their consumption/purchasing habits and towards the environment. This roadmap has been designed with SIDS in mind, given the dearth of technical and financial support to tackle plastic pollution from both land and sea, in contrast to other countries where plastic pollution is predominantly from land and is already being managed to a certain extent.

The objective is to facilitate the integration of the various stakeholders and environmental considerations into all aspects of the roadmap development by providing a consistent approach to plastic pollution management, allowing for impactful, coordinated and sustainable actions.

4. Main Content of the Roadmap for a Sustainable Plastic Industry

Following the adoption of the plastic treaty on a global scale, many countries will be required to devise a roadmap to combat plastic pollution. In this regard, the layout of a general roadmap, as discussed here, can be adopted by any island as a guide to accelerate the transition towards a sustainable and resilient future. In order to achieve this objective, there is a necessity for commitment, collaboration and partnership among stakeholders [comprising governmental bodies, businesses, Non-Governmental Organisations (NGOs) and community groups], and innovation. The integration of scientific evidence within the policy-making process is imperative. The development of a comprehensive plan for a plastic-free island is a challenging undertaking, but it is a worthwhile endeavour with the potential to have significant positive impacts on both the environment and the economy. The measures under discussion in the following section take into account the local context and the challenges faced by islands in terms of establishing reliable baseline data for plastic waste (which is often limited or non-existent) and creating synergies between the public and private sectors, as well as the general population.

It is imperative that key steps are given due consideration if the following elements are to be addressed: the conduction of a plastic waste audit; the establishment of clear and measurable goals; the facilitation of the implementation of the circular economy; the encouragement of research into product design for remanufacturing and recycling; and the improvement and implementation of the required legislative measures [41,42]. In the process of manufacturing plastics, it is vital for the plastic industries to be transparent, traceable and to label their products. This is important for the remanufacturing and recycling of plastics, in order to avoid a toxic circular economy. The labels on plastic products should indicate the type of plastic and whether there is a presence of chemical additives such as flame retardants, fillers, plasticisers, pigments, UV stabilisers, and so on. The components of the roadmap are as follows.

4.1. Plastic Waste Audit

A plastic waste audit is imperative for acquiring invaluable information regarding sources, leakages and sinks of plastics across diverse sectors, including households, businesses and public spaces. It is important to note that leakage of plastics into the aquatic system can occur at any point during the life cycle of the product, but is most commonly the result of inadequate wastewater and solid waste collection and management. The audit will facilitate the identification of the sources and types of plastic waste generated, thus informing the development of targeted interventions and strategies to reduce plastic waste production on the island. UNEP and the International Union for Conservation of Nature (IUCN) have collaboratively developed a methodological framework and a suite of practical tools to quantitatively and

qualitatively assess plastic pollution at the national level [43]. In the case of SIDS, the following approaches may be considered.

(1) Establish the scope of the audit, including the geographic area and the types of plastic waste that will be included in the audit.

(2) Identify

(a) The following categories of plastic products can be eliminated:

Those for which there is no viable alternative.

Those for which a viable alternative exists, but which are not subject to reduction.

Those for which a viable alternative exists, but which cannot be eliminated or reduced.

(b) The following sectors are problematic:

Plastic products have potential for prohibition due to the availability of eco-friendly substitutes. This is in addition to measures which have been successful on both local and international fronts. As a word of caution, it is imperative that scientific knowledge is sufficiently available prior to the creation of a market for reusable, biodegradable, and compostable substitutes. This is to avoid a 'regrettable' situation where plastic pollution will still prevail due to the presence of microplastics associated with other toxic chemicals in the environment, as well as an increase in carbon footprint with these substitutes. Furthermore, it is imperative to conduct a feasibility study on the implementation of the necessary recycling and composting infrastructure prior to the adoption of these plastic substitutes. In this context, the principles of life cycle assessment and life cycle costing must be applied.

(c) Plastic products possess the potential to be reused, recycled, or converted into energy.

(3) Collect data on the amount and types of plastic waste generated in the defined scope. This objective can be achieved through the implementation of surveys, waste characterisation studies, and waste composition analysis. Data can also be obtained from waste management companies and recycling facilities.

(4) Analyze the data to identify the sources and types of plastic waste generated on the island. This can assist in identifying areas where efforts to reduce plastic waste should be concentrated, such as with single-use plastic items, including bags and straws.

(5) Use data analysis to identify ways to reduce plastic waste, such as encouraging the use of reusable bags and containers, introducing bans on plastic bags and straws, and improving waste management systems.

(6) Use the results of the plastic waste audit to develop a plan of action for reducing plastic waste. This plan could involve a mix of policy changes, regulations, incentives and educational and awareness campaigns.

4.2. Set Clear Goals

Setting clear goals gives everyone involved a clear sense of direction and purpose. It also helps align efforts, create a sense of urgency and track progress towards a plastic-free future. To ensure that progress can be

effectively tracked and assessed, the goals should be specific, measurable, achievable, relevant, and time-bound (SMART).

Points to consider include:

(1) To develop specific targets to reduce plastic waste and increase recycling rates. For example, the target could be to reduce plastic waste by 50% by 2025 or to ban single-use plastic bags by a certain date.

(2) To ensure measurability, so that progress can be tracked and assessed over time. This may involve setting up monitoring and reporting systems to track the amount of plastic waste generated and the progress made towards achieving the targets.

(3) To ensure achievability, consider the current infrastructure, available resources and other constraints. Unrealistic targets may lead to disappointment and loss of momentum.

(4) To ensure that the goals are time-bound, creating a sense of urgency and providing a clear timeline for achieving progress. Specific dates and deadlines should be set for achieving the targets.

4.3. Engage Stakeholders

Engagement with relevant stakeholders is therefore integral to the effective, sustainable, and comprehensive implementation of the resulting plan, ensuring its acceptance by all relevant parties. This can result in heightened ownership and dedication to achieving a plastic-free future. The following actions are recommended for consideration:

(1) To identify stakeholders: relevant to the plastic waste problem and this may include government agencies responsible for waste management, businesses that produce or use plastic products, civil society organizations working on environmental issues, and individual consumers.

(2) To assess stakeholders' interests and priorities: understand the interests and priorities of the stakeholders to ensure that the roadmap reflects their needs and perspectives. The process may entail the administration of surveys or the facilitation of focus group discussions, with the objective of eliciting feedback and input.

(3) To create a communication strategy tailored to the needs of different stakeholders. This may entail the utilisation of diverse channels and methodologies in order to engage with disparate groups. Such engagement may be achieved through the use of social media, the organisation of public events, and the execution of targeted outreach initiatives directed towards specific organisations.

(4) To build partnerships to develop and implement the roadmap. The establishment of multi-stakeholder working groups or task forces is a potential avenue for facilitating collaboration and coordination.

(5) To provide incentives to encourage stakeholders to take action towards reducing plastic waste. The provision of tax incentives or subsidies to businesses that adopt sustainable practices, as well as the facilitation of education and training opportunities for individuals and organisations, may be considered as potential measures in this context.

(6) To foster a culture of participation by creating opportunities for stakeholders to provide feedback and input throughout the process. It is possible that this will necessitate the organisation of public consultations or the solicitation of feedback through online platforms.

(7) To monitor and evaluate stakeholder engagement efforts to ensure that the roadmap remains relevant and responsive to the needs of all stakeholders.

4.4. Identifying Priority Areas

The identification of priority areas is pivotal in ensuring the allocation of efforts and resources to the areas that are most critical for achieving the desired outcome. This approach can facilitate the analysis of the environmental impact of plastic waste in various settings, including marine ecosystems, landfills, and natural habitats. In order to assess the economic impact of plastic waste, it is necessary to consider the costs associated with waste management, damage to infrastructure, and loss of revenue from tourism. This will provide a clear picture of where the reduction of plastic waste can have the most significant economic benefits. In addition, social and cultural factors that may affect the generation and disposal of plastic waste must be considered, such as consumer behaviour, waste management practices, and social norms. Finally, existing initiatives and programs that are already in place to address plastic waste must be identified in order to investigate where additional efforts are needed and areas where collaboration and coordination may be possible.

4.5. Develop Strategies and Actions

The development of strategies and actions will contribute to the success of the implementation of the roadmap. This may encompass a reduction in the utilisation of single-use plastics, alongside the introduction of a combination of regulatory, economic, and behavioural interventions. This can facilitate the effective allocation of necessary resources, including financial and human resources, to implement the identified strategies and actions.

4.6. Monitoring and Evaluating Progress

Through the meticulous monitoring and evaluation of progress, the roadmap can be adapted and modified as required to ensure its continued relevance and efficacy in achieving the established goals. The process entails the systematic tracking and evaluation of the implementation of the strategies and actions delineated in the roadmap, with the objective of ascertaining the efficacy of these strategies in the reduction of plastic waste.

In order to facilitate the measurement of progress towards the achievement of the set goals, it is recommended that performance indicators be defined. Indicators of success may include a reduction in plastic waste generation, an increase in recycling rates, and a decrease in plastic pollution in the environment. In order to establish a monitoring and evaluation

framework, a range of data collection and analysis methods and tools will be outlined. These will be drawn from a variety of sources, including, but not limited to, stakeholders, surveys, and secondary data sources. Furthermore, it is imperative to analyse the collected data in order to ascertain the efficacy of the strategies and actions in reducing plastic waste. This may entail the analysis of trends over time and the comparison of results against established performance indicators. The findings may then be utilised to adjust the roadmap from the monitoring and evaluation process, thereby modifying the strategies and actions delineated in the roadmap. This may entail the modification of extant strategies and actions, or the development of novel ones that are more efficacious in achieving the set goals.

4.7. Communicating and Excitation Mechanism

The communication and celebration of success has been demonstrated to engender positive outcomes, including the generation of momentum, the cultivation of enthusiasm, and the motivation of stakeholders to persist in their endeavours to achieve the stipulated objectives outlined in the roadmap. The process entails the communication of the progress accomplished in achieving the established objectives, in addition to the celebration of the successes achieved by the relevant stakeholders. This initiative is a testament to the island's commitment to sustainable development. This may entail the utilisation of diverse communication channels, including social media, websites, and newsletters, for the purpose of accentuating both the accomplishments and the obstacles encountered during the execution of the roadmap. It has been demonstrated that this can assist in the establishment of trust and credibility with stakeholders, whilst simultaneously serving to demonstrate transparency in the process. Furthermore, it can be used to acknowledge the contributions of stakeholders, including individuals, organisations and government officials. This process may entail the recognition of their contributions in a public forum, as well as the facilitation of opportunities for them to articulate their accomplishments and the challenges they have faced. This may encompass the organisation of events or activities that facilitate the congregation of stakeholders for the purpose of celebrating progress and showcasing the impact of the roadmap. Furthermore, it may also include the sharing of best practices and lessons learned from the implementation of the roadmap with the aforementioned stakeholders. The establishment of a knowledge-sharing network has been instrumental in facilitating the implementation of analogous initiatives within a range of other contexts.

4.8. Regulatory Measures

It is imperative that well-defined standards are established prior to the approval of ecological plastic substitutes. The implementation of regulatory measures is crucial in contexts where there is a lack of clarity regarding the definitions of biodegradable, bio-based, compostable, and oxo-degradable plastics, thereby ensuring their recognition as environmentally friendly

alternatives. However, it is important to note that effective implementation of these measures requires a supportive policy and regulatory environment, as well as effective enforcement mechanisms and stakeholder engagement.

This objective can be realised through the implementation of bans on single-use plastics, accompanied by the promotion of more sustainable alternatives. EPR policies can serve to hold producers accountable for the environmental impact of their products throughout their lifecycle. Schemes such as deposit return schemes for plastic bottles have been shown to encourage the return of bottles for recycling and to reduce littering. It is recommended that further measures be considered, such as the imposition of a tax on plastic products, the establishment of mandatory recycled content requirements for plastic products to encourage the use of recycled materials, the introduction of enforcement mechanisms, including fines and penalties, to ensure compliance with plastic-related regulations, and the launch of public awareness campaigns to educate the public about the importance of reducing plastic waste and the impact of plastic pollution on the environment. It is also highly recommended to consolidate and sustain the implementation of the existing policy on the loss of plastic waste from land and at sea, for example, the International Convention for the Prevention of Pollution from Ships (MARPOL).

5. Implementation Plan

In the initial phase, it is essential to consider the potential benefits of international assistance, including technical and financial support, in order to ensure the success of the implementation plan. For instance, in the Comoros, the accumulation of plastic waste on the beach has the potential to jeopardise the ecological integrity of the island of Moheli, including its UNESCO Biosphere Reserve status. Consequently, the United Nations Development Programme (UNDP) and UNEP have established the Comoros Integrated Waste Management Alliance to address the issue of waste management, with a particular focus on plastic pollution and integrated waste management, in 2024. In a similar manner, UNDP has played a pivotal role in the Seychelles' efforts to eliminate plastic straws and balloons. From 2018 to 2019, UNDP initiated the 'The Last Straw' campaign, which aimed to raise awareness and encourage behavioural change among the public. The implementation plan can be divided into three categories: short-, mid-, and long-term actions.

5.1. Short Term Actions

In order to achieve the short-term objectives of a plastic-free island, it is essential to address the following three points with immediate effect:

(1) The population at large must be encouraged to reduce the use of plastic.

(2) Proper disposal practices must be adopted in order to reduce plastic pollution.

(3) Plastic categories must be defined for reuse, recycling and conversion to energy.

A number of short-term actions can be taken. Firstly, there is a necessity for the promotion, amendments and implementation of existing resolutions and policies relating to plastic reduction and waste management. It is imperative that these are undertaken with consideration of the gaps, needs and challenges to transition to a circular economy model. Alongside the required regulatory frameworks, innovative policy measures, economic instruments and technical/technological support must be considered. It is also necessary to establish resolutions to reinforce existing guidelines and to limit the use of plastics by developing policies to enforce proper waste segregation and recycling strategies for plastics. These policies may include provisions to

(1) update lease contracts with business concessionaires to include points on plastic reduction;

(2) supply waste bins and encourage proper waste disposal and implement the segregation system;

(3) promote reusable and/or recyclable plastic material;

(4) ensure sustainable food packaging;

(5) provide water refilling stations;

(6) implement other appropriate measures.

Furthermore, consultations should be undertaken with relevant stakeholders, including public bodies and the private sectors. These consultations should be conducted using a participative and constructive approach to maximize stakeholders' engagement and inputs in developing the roadmap for its successful implementation. This objective may be accomplished through the utilisation of various methodologies, including meetings, online questionnaires and Key Informant Interviews (KIIs). The establishment of technical working groups is recommended for the purpose of collating information and contributions towards the development of the roadmap. By taking this action, the current status of the following can be determined:

(1) The sources, amount and different types of plastics are to be considered in all sectors, namely food, agricultural, medical and packaging sectors, amongst others.

(2) Both the public and private sectors, in addition to NGOs, are undertaking initiatives with the objective of reducing, reusing and recycling plastic. This endeavour involves the assessment of alternative materials that are available on the market and which are not associated with issues.

(3) Research should be undertaken into eco-friendly, biodegradable, and compostable alternatives, including their biodegradability.

(4) The following projects are currently underway in the field of plastic, including those relating to waste management and existing infrastructure, as well as the circular economy.

(5) The technical, economic and social viability of recycling different types of plastic waste is dependent on the implementation of systems and

infrastructure to facilitate sorting at the source, both on a consumer and industry level, and collection for the purpose of recycling.

A significant undertaking is the execution of a plastic waste audit, which is imperative for comprehensive assessment. Value Chain Analysis (VCA) is a methodology that can be employed to identify the types and origins of plastic pollution. In addition, it facilitates the selection of system boundaries and the mapping of stakeholders for the purpose of data collection, which is based on plastic production, imports, distribution, consumption and disposal methods. Concurrently, Life Cycle Thinking (LCT), a concept of some renown, may also be applied. This is a holistic approach, taking into account the environmental, social and economic impacts that could result during a product's lifetime. Life-Cycle Assessment (LCA) is a set of tools used to quantify environmental impacts over the entire lifecycle, from production to disposal. It supports decision-making processes related to waste and resource management. The adoption of the most appropriate economic instruments (taxes, bans and so on) is facilitated by this process.

5.2. Medium-term Actions

On a medium-term basis, the following actions may be considered:

(1) Evaluate the effectiveness of existing policies, regulations and institutional set-up for sustainable plastic management and pollution control. In order to achieve this, the mainstreaming of concepts such as the circular economy, industrial symbiosis, and sustainable consumption and production will be considered by (a) creating and implementing a procurement policy that will support the avoidance of plastic waste when purchasing various goods and services. This can be achieved through the implementation of environment-friendly technical specifications; (b) launching and promoting a handbook on a plastic-free island; (c) strengthening the position of the local departments of environment in the implementation of environmental sustainability initiatives; (d) continuously assessing and adjusting memoranda in collaboration with recycling organisations and facilities is intended to promote behavioural modification; (e) increasing support for the operations of the materials/energy recovery facility.

(2) Push a cultural and behavioural shift within the community as a whole, ensuring that members are mindful of sustainable practices and that environmental sustainability is promoted through the following measures: (a) The continuous education and assistance of community members and stakeholders in their adjustment to plastic-free practices is to be implemented; (b) The continuous provision of guides and materials to assist the community in implementing plastic-free policies is to be ensured; (c) The recognition and incentivisation of best practices in plastic reduction across different community members is to be facilitated; (d) It is imperative to acknowledge and incentivise research and initiatives that seek to minimise the carbon footprint by employing alternatives to plastic.

(3) SIDS' governments should authorise the importation of plastic products, provided that there is transparency, traceability and labelling with

regard to the presence of harmful chemicals or additives. In this manner, the utilisation of harmful plastic goods, in addition to the adoption of a toxic circular economy during the recycling of plastic waste, can be circumvented.

(4) Establishment, if not available, of testing capacity of plastics in terms of analytical techniques and equipment, capacity building and training needs, including governmental/private laboratories, as well as research institutions.

(5) The government should consider the importance of encouraging and investing in research on product design with a view to increasing the rate of recycling. In order to facilitate the evaluation of potential health and ecosystem impacts, it is recommended that UN organisations are offered the necessary resources.

5.3. Long-term Goals

The proposed roadmap envisions the establishment of an island community that has cultivated a profound appreciation for environmental sustainability principles and has assumed a leadership role in the formulation of policy, underpinned by robust and reliable scientific evidence and innovative concepts for the management of plastic waste. A roadmap of this nature will ensure the ongoing and sustainable provision of straightforward access to alternative lifestyle choices across the island. Furthermore, it will explore the possibility of the development of in-house recycling technologies, whilst concomitantly promoting environmental awareness and conducting in-depth research.

6. Conclusion

This roadmap sets out a comprehensive range of actions, strategies, circular economic concepts and regulatory measures designed to address the issue of plastic pollution. It calls for concerted action from government bodies, the general population, relevant stakeholders, NGOs, and other relevant stakeholders, with the aim of addressing the plastic waste crisis in a coordinated manner. The various steps involved aim to identify priority areas for action. The roadmap also incorporates the SDG 11, SDG 12 and SDG 14, with the objective of effecting a positive change in the public's mindset with regard to their consumption and purchasing habits, and of encouraging greater environmental awareness. Furthermore, policy makers would be better equipped with robust and reliable scientific data to implement the right strategies and policies to address plastic waste. It is also important to be signatory to international conventions such as the MARPOL convention, which can provide a helping hand to further consolidate and sustain the policies put in place. Consequently, the most effective recycling strategies and technologies can be envisaged.

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