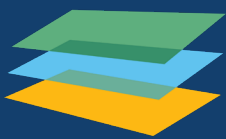




RESEARCH PAPER / NOVEMBER 2022

Plastic Production in SIDS

**Preliminary data on the role of small
island developing states in global plastic
production**



Guarini Center
on Environmental, Energy
& Land Use Law

NEW YORK UNIVERSITY SCHOOL OF LAW

RESEARCH PAPER

Plastic Production in SIDS: Preliminary data on the role of small island developing states in global plastic production

Lead Author

Saeed Hamid, Legal Fellow

Contributing Authors

Adalene Minelli, Senior Fellow

Bryce Rudyck, Director of International Environmental Law

Karmjit Sangha, International Climate Fellow

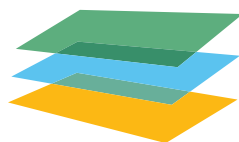
November 2022

Copyright © Guarini Center on Environmental, Energy and Land Use Law 2022. All rights reserved.

Guarini Center on Environmental, Energy and Land Use Law
New York University School of Law
139 MacDougal Street, 3rd Floor
New York, NY 10012 212

law.guarini@nyu.edu
guarinicenter.org

This material is based on work funded and supported by the **United Nations Environment Programme** (UNEP). Any opinions, findings, and conclusions are those of the author(s) and do not necessarily reflect the views of UNEP.



Guarini Center
on Environmental, Energy
& Land Use Law

NEW YORK UNIVERSITY SCHOOL OF LAW



Executive Summary

Following the adoption of a resolution to develop an “international legally binding instrument” on plastic pollution¹ at UNEA 5.2, there is a high likelihood that global plastic production may be affected. Measures to reduce, control and/or regulate plastic production are likely to be accompanied by social, environmental and economic impacts. Through interviews and surveys, we have gathered information on plastic production from thirty-four (34) members of the Alliance of Small Island States (AOSIS).² This data shows that:

- 7 (21%) respondents are currently producing plastic pellets and/or nurdles,³ with 1 respondent actively seeking to commence the production of plastic pellets/hurdles.
- 16 (47%) respondents are currently producing primary plastic products, with 1 respondent actively seeking to commence the production of primary plastic products.
- 9 (26%) respondents are currently producing plastic products via recycling, with 10 (29%) respondents actively seeking to commence production of plastics via recycling.

The research finds that a significant portion of small island developing states (SIDS) are not plastic pellet/hurdle producers nor plastic product producers; the former being lesser than the latter. The research also supports the contention that production via recycling is very low among the SIDS. However, there is a significant interest among SIDS for potential production via recycling. This suggests that should a global plastics treaty be facilitative of reduced and/or more sustainable plastic production, the transition may be less strenuous for SIDS, provided that there are adequate mechanisms for support.⁴

1 UNEA Resolution UNEP/EA.5/Res.14, **End plastic pollution: Towards an international legally binding instrument** (Mar. 7, 2022).

2 See Figures 1, 2 and 3, and Annex I.

3 Plastic nurdles/pellets are pre-production plastic raw materials used to create virtually anything plastic. Ocean Blue Project, **What are nurdles? Why you need to worry about them**.

4 Notably, this research did not assess the scale of the plastic production industry in any particular state. Here, additional research would be necessary in order to more fully assess the potential economic impact of a new global plastics treaty on plastic-producing SIDS.



Introduction

Plastic pollution is rapidly developing as one of the most significant threats to the health and wellbeing of humans, and the environment, posing serious risks to biodiversity, ocean health, human livelihoods, and economies.⁵

Following a series of UNEA resolutions on plastic pollution in prior years,⁶ the international community reconvened at the United Nations Environmental Assembly in 2022 (UNEA 5.2) to consider this issue once again. In resolution 5/14, UNEA-5.2 requested the UNEP Executive Director to convene an intergovernmental negotiating committee (INC) to develop an international legally binding instrument (ILBI) to end plastic pollution.⁷

Plastic pollution has disproportionate impacts on small island developing states (SIDS), which are particularly vulnerable as a result of their proximity to and reliance on marine resources.⁸ The impacts of plastic pollution are exacerbated by the proliferation of plastics over the years, warranting an investigation into global plastic production, including in SIDS.

Resolution 5/14 specifically prescribes for the instrument to include provisions which would address certain activities in the life cycle of plastics, including the production of plastics.⁹ Consequently, it is important for SIDS to consider how the new instrument might potentially impact plastic production, as well as the implications that this may pose to SIDS that produce or are actively seeking to produce plastics. This research aims to support these efforts by summarizing the extent to which SIDS are currently involved in plastic production.

This paper proceeds as follows. Part I briefly discusses the importance of investigating national plastic production among SIDS in the context of a new global treaty on plastics. Part II describes the study's methodology for gathering data on SIDS plastic production, paying particular attention to the extent to which SIDS are actively engaged in various types of plastic production activities. Part III then outlines the findings from this research. Finally, Part IV discusses the implications of the findings for SIDS, including how SIDS might approach negotiations in light of these findings, and then concludes by identifying the challenges and limitations encountered in our research, and issues for future research.

5 UNEA Resolution UNEP/EA.4/Res.6, **Marine plastic litter and microplastics**, 1 (Mar. 28, 2019).

6 UNEP, **Compilation of United Nations Environment Assembly Resolutions on Marine Litter and Microplastics** (UNEP/EA.1/Res.6, Marine plastic debris and microplastics (2014); UNEP/EA.2/Res.11, Marine plastic litter and microplastics (2016); UNEP/EA.3/Res.7, Marine litter and microplastics (2017); and UNEP/EA.4/Res.6, Marine plastic litter and microplastics (2019). See also **Chair's Summary of the work of the ad hoc open-ended expert group on marine litter and microplastics**, 122(g) (Nov. 13, 2020) (recommending the development of a global plastics treaty).

7 UNEA Resolution UNEP/EA.5/Res.14, **End plastic pollution: Towards an international legally binding instrument** (Mar. 7, 2022).

8 F. Lachmann et al., **Marine plastic litter on Small Island Developing States (SIDS): Impacts and measures**, Report No. 2017:3, 30-35, Swedish Institute for the Marine Environment (2017).

9 UNEA Resolution UNEP/EA.5/Res.14, **End plastic pollution: Towards an international legally binding instrument** (Mar. 7, 2022). See PP11 ("Underlining the importance of promoting sustainable design of products and materials so that they can be reused, remanufactured or recycled and therefore retained in the economy for as long as possible along with the resources they are made of, as well as minimizing the generation of waste, which can significantly contribute to sustainable production and consumption of plastics,") and OP3B ("To promote sustainable production and consumption of plastics, including, among others, product design, and environmentally sound waste management, including through resource efficiency and circular economy approaches").



I. The Importance of Understanding SIDS' Role in Plastic Production

Given the challenges posed by plastic pollution, the proliferation of plastic production has generated much concern among the international community, especially considering the fact that virgin plastics require the extraction and refinery of fossil fuels. It is estimated that by 2050, emissions from the current plastics lifecycle, could consume 10-13% of the remaining global carbon budget required to maintain temperatures below 1.5C as prescribed by the Paris Agreement.¹⁰ Given current rates of unsustainable production and consumption, it is also projected that plastic production will almost quadruple by the same year.¹¹

In recognition of the foregoing, Resolution 5/14 specifically instructs the INC:

... to develop an international legally binding instrument on plastic pollution...based on a comprehensive approach that addresses the full lifecycle of plastic ... including provisions:

... To promote sustainable production and consumption of plastics, including, among others, product design, and environmentally sound waste management, including through resource efficiency and circular economy approaches;

On the one hand, a 'circular economy' would seek to minimise both the extraction of raw materials and the production of new virgin

plastics, based on three principles: "design out waste and pollution; keep existing plastic products and materials in use; and regenerate natural systems."¹²

Proponents of a circular economy approach recognize that the generation of virgin plastics requires fossil fuel extraction and production, undermining the achievement of many of the UN Sustainable Development Goals (SDGs), and the objective of the UNFCCC and its Paris Agreement. These concerns are bolstered by the fact that only a very small portion of plastic waste is currently recycled, representing a significant loss of value to the economy.¹³ For instance, the loss in value for plastic packaging alone is estimated to be between \$80–120 billion USD annually based on global supply chains.¹⁴

On the other hand, a 'lifecycle approach' to plastics would entail provisions to control, manage and/or regulate production (upstream), product design (midstream) and waste management (downstream).¹⁵ Measures to reduce plastic waste while reusing and recycling existing plastics will require, inter alia, more sustainable production strategies (upstream), modifications in product designs (midstream, e.g. to remove toxic additives and compounds) and the advancement of coherent standardisation in plastics coding and treatment (downstream) for ease in waste management.

10 Lisa Anne Hamilton et al, **Plastic and Climate: The Hidden Costs of a Plastic Planet**, 19, Center for International Environmental Law (2019)

11 **The New Plastics Economy Rethinking the future of plastics**, 10, World Economic Forum.

12 Pew Charitable Trusts, **Breaking the Plastic Wave: A Comprehensive Assessment of Pathways Towards Stopping Ocean Plastic Pollution**, 137 (2020).

13 Only nine per cent of plastic waste has been recycled, Environmental Investigation Agency, **Connecting the Dots: Plastic Pollution and the Planetary Emergency**, 9 (2022).

14 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, **The New Plastics Economy — Rethinking the future of plastics**, 26 (2016).

15 Environmental Investigation Agency, **Connecting the Dots: Plastic Pollution and the Planetary Emergency**, 15 (2020).



The instrument could potentially include a number of different measures and tools to regulate plastic production, including:

- Phase-out of chemicals, micro-plastics and other harmful substances and additives from plastic product designs;
- Introduction of global harmonized standards, labelling and coding systems for plastics;
- Restrictions against specific types of plastic products, such as single-use plastic products;
- The imposition of market instruments or measures, such as Extended Producer Responsibility/Liability (EPR/L) and plastics taxes;
- Reporting requirements on plastic production and plastic waste generation;
- Transitions to more environmentally-friendly alternatives and substitutes; and
- Adapting to more stringent technical and scientific requirements for improved plastic production.

SIDS engaging in plastic production therefore need to be cognizant of how this could affect their domestic plastic industry. It is also critical for plastic-producing SIDS to anticipate the possible capacity building, technical transfer and financial support required to effectively implement the future instrument. Certain SIDS may also find themselves more integrally involved in plastic production than others, particularly those who are also petroleum producers. Thus, reconciling these roles with an agenda to minimise plastic production and consumption may present challenges for SIDS.

I. Methodology

Our research included a review of relevant literature and public data sources, and interviews with various organizations involved in related work. However, our research found that data

and information on plastic production in SIDS is extremely limited. As a result, we developed a short survey (Annex 2) aimed at determining the extent of SIDS' involvement in the following activities:

- Production of plastic pellets/nurdles from fossil fuels;
- Production of primary plastic products (e.g. plastic bags, plastic packaging, beverage bottles, etc.); and
- Production of plastic products via recycling.

The survey was distributed to members of the Alliance of Small Island States (AOSIS) with special efforts made to maintain communication and engagement with AOSIS representatives who attended the Ministerial Conference on Marine Litter and Plastic Pollution held on June 28-29, 2021. Data from the completed surveys was then compiled and analyzed.

III. Findings

In total, we received completed surveys from 87% of the AOSIS membership (34 of 39 AOSIS member states). This data reveals that:

- 7 (21%) respondents are currently producing plastic pellets and/or nurdles, with 1 respondent actively seeking to commence the production of plastic pellets/nurdles.
- 16 (47%) respondents are currently producing primary plastic products, with 1 respondent actively seeking to commence the production of primary plastic products.
- 9 (26%) respondents are currently producing plastic products via recycling, with 10 (29%) respondents actively seeking to commence production of plastics via recycling.



IV. Discussion & Analysis

Though similar in their shared experiences with developmental, geographical, and environmental challenges, SIDS constitute a dynamic group of states, including within the context of plastic production. For instance, SIDS may be petroleum producing states contributing to the raw materials required to make plastics, host countries to refineries or industrial plants for pellet production, plastic product manufacturers, exporters of plastics, plastic waste importers, any combination of the above, or none of the above.

This section discusses and analyzes the survey data that was collected from AOSIS member states (Annex 1).

Plastic Production Roles among SIDS

Figures 1-3 below illustrate our findings based on feedback obtained from thirty-four (34) AOSIS member states.

Plastic Pellet/Nurdle Production in SIDS

Currently, 7 (21%) respondents are producing plastic pellets and/or nurdles, representing a relatively small proportion of SIDS (Fig 1). Moreover, only one respondent indicated that there are active measures toward potential plastic pellet/nurdle production within the jurisdiction, illustrating limited plans among SIDS to begin to engage in this industry. Many SIDS are therefore not integrally involved with the refinery of raw materials to manufacture nurdles/pellets. However, those SIDS that are producers of plastic nurdles/pellets may want to consider how demand may be affected by the instrument.

Primary Plastics Production in SIDS

Currently, 16 (47%) respondents are producing primary plastic products (Fig. 2), representing a larger portion than the number of pellet/nurdle producers among SIDS. Thus, there are a considerable amount of SIDS that would need to be wary of measures to regulate and/or manage the production of primary plastic products under the new instrument.

Notably, only one respondent indicated that there are active steps being taken toward the production of primary plastic products within the country. Currently, only 4 of the 14 respondents that produce plastic products are also nurdle/pellet producers. Plastic-producing SIDS may therefore want to consider how the importation of plastic nurdles/pellets for plastic production within their respective jurisdictions may be affected by potential regulatory measures under the instrument.

Plastic Production via Recycling in SIDS

The data indicates that 9 (26%) of the respondents are currently producing plastic products via recycling, with a further 10 (29%) actively taking steps to commence production via recycling (Fig. 3). Cumulatively, active and potential producers of recycled plastic products (19, 56%) among the SIDS would outnumber the cumulative figure of current and potential producers of primary plastic products (17, 50%). This trajectory may be considered congruent with a potential plastics treaty by advancing more sustainable plastic production. The promotion of a circular economy via recycling may therefore be attractive to the SIDS with existing recycling capacities, as well as those with potential capacities. It may also provide the opportunity for the sub-regions of SIDS to promote cooperation and cohesion through the sharing of information, lessons learned, and experiences in setting up this industry.



PLASTIC PRODUCTION IN SIDS

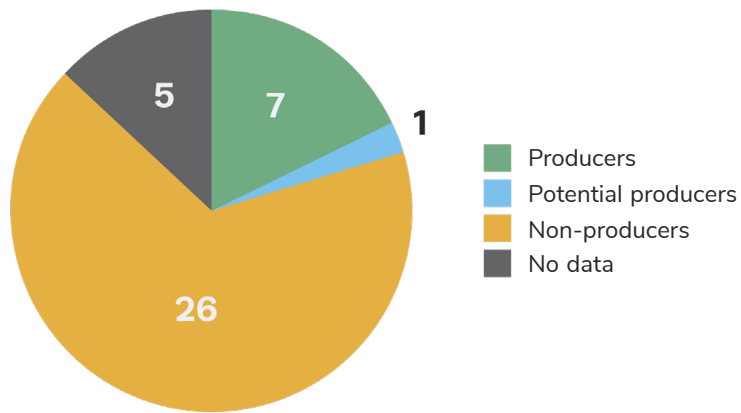


Figure 1. Plastic pellet/nurdle production in SIDS

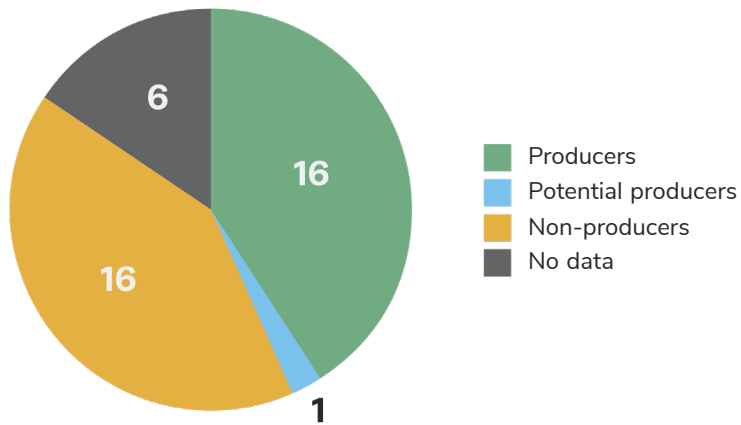


Figure 2. Primary plastics production in SIDS

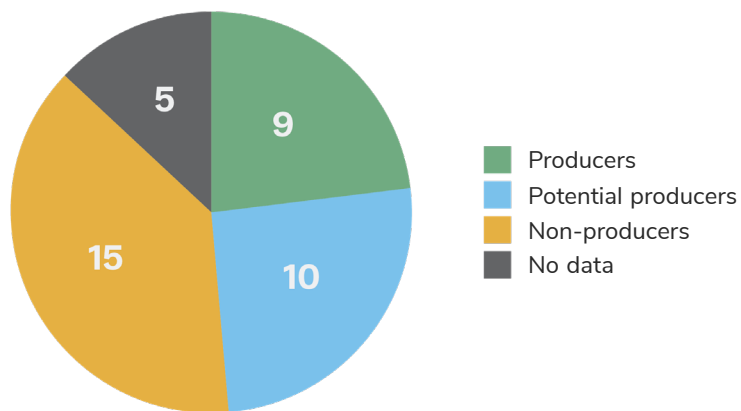
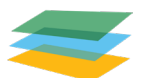


Figure 3. Plastic production via recycling in SIDS



Challenges and limitations

Challenges and limitations encountered during the compilation of this research paper included, inter alia, lack of data regionally or internationally on the subject matter, difficulties and delays in receiving responses due to the COVID-19 pandemic, overlapping commitments, unavailability of mission and capital officials, and lengthy process of identifying the appropriate competent national authorities to serve as respondents. In light of these challenges, this research produced thirty-four (34) respondents, representing 87% of the AOSIS membership.

Potential future research

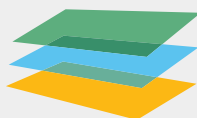
In response to various challenges in collecting data, the survey was designed in as concise a manner as possible, in order to serve as a general qualitative baseline of plastic production roles among SIDS, with the understanding that it may later serve as the impetus for further studies on the relationship between SIDS and plastic production. Thus, this research only examined whether an AOSIS member state was engaged in various types of plastic production—these findings do not consider the quantity of plastics being produced in each state, nor the size of the plastic production industry relative to each state's economy. Further research into these issues may be necessary to assess the potential impact of the regulatory mechanisms which may be established under the instrument.

Subsequent research may also seek to determine the possible movement, if any, of pellets/nurdles from pellet/nurdle-producing SIDS to other SIDS for the manufacture of plastic prod-

ucts. Further inquiries could probe the issue of what percentages of locally produced plastic products and plastic waste generated and/or imported within these member states are used to manufacture plastic products via recycling. It may also be worth considering the scope of these industries and how SIDS may be able to expand on opportunities for the sustainable production of plastics which may become available under the instrument. Moreover, studies to identify limitations in technical and financial capacity to facilitate transitioning to more sustainable plastic production activities may be warranted as well.

Conclusion

Resolution 5/14 provides the foundation for provisions in a global plastics treaty which may reduce, control and/or regulate plastic production. While only a limited number of SIDS are currently producing plastic pellets/nurdles, a greater number of SIDS are producing primary plastic products. Notably, however, a larger number of SIDS are both actively and potentially involved in production via recycling which may indicate an easier transition for SIDS to be supportive of a circular economy approach to managing plastics, provided that there are adequate mechanisms for support. Comparatively, this becomes increasingly apparent when one considers that only one respondent is actively seeking to initiate the production of primary plastic products. Further research into economic impacts, supply chains and scope of the various plastic production activities studied hereunder may be necessary to more clearly assess the potential impacts of various regulatory options under a plastics treaty.



Guarini Center
on Environmental, Energy
& Land Use Law

NEW YORK UNIVERSITY SCHOOL OF LAW

The **Frank J. Guarini Center on Environmental, Energy, and Land Use Law** tackles environmental and energy challenges at the local, regional, and international levels. Through policy-relevant research and multi-stakeholder dialogues, we identify and advance innovative legal and policy solutions for addressing environmental and energy challenges and for building a sustainable economy.

Annex 1. Dataset on Plastic Production

Table 1. Distribution of plastic production activities among SIDS

SIDS Roles	Plastic Pellet/ Nurdles	Primary Plastic Products	Recycled Plastic Products
Producers	7	16	9
Non-Producers	26	16	15
Potential	1	1	10
No data	5	6	5



Annex 2. Sample Survey

AOSIS – Plastics Production Profiles

Objective: The Guarini Center on Environmental, Energy and Land Use Law is currently assisting the Alliance of Small Island States (AOSIS) with preparing for upcoming negotiations at UNEA 5.2 (February 2022) on a mandate resolution for a new international agreement on plastics. AOSIS is the negotiating group based at the United Nations Headquarters (UNHQ) for the Small Island Developing States (SIDS) in climate change, sustainable development and oceans.

To this end, we are currently gathering information about national plastic production across AOSIS Member States in order to identify and more fully understand the potential implications a new international agreement might pose to them.

1. **Country:**
2. **Name of National Authority/Ministry:**
3. Please indicate with an 'x' whether your country is currently engaged in any of the following activities. Additionally, please select '*Potentially*' **only** where there are known active steps underway at the time of this survey to engage in such activities in the future:

Plastic Pellets/Nurdles Production	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Potentially <input type="checkbox"/>
Production of Plastic Products (e.g. plastic bags, plastic packaging, beverage bottles, etc.)	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Potentially <input type="checkbox"/>
Production of Plastic Products via Recycling	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Potentially <input type="checkbox"/>

4. If you selected 'Potentially' for any of the activities above, please provide any additional details deemed relevant to this survey.

Thank you for your time and cooperation.

