

Information paper:

Strengthening the National Regulatory Regime on Single-Use Plastics in Papua New Guinea



Executive Summary

This Information Paper has been prepared for the Technical Working Committee to support decisions regarding the strengthening of Papua New Guinea's regulatory regime for single-use plastics. Task 1 assesses options for strengthening the existing plastic bag ban through a cost-benefit analysis. Task 2 considers the case for extending regulation to additional priority single-use plastic items.

Within Task 1, two policy options were assessed against the baseline of the current situation in PNG, in which the existing ban on non-biodegradable plastic shopping bags is largely unenforced in practice. Option A retains the current ban on non-biodegradable bags and introduces a verification regime, with onshore and offshore biodegradability testing variants. Option B is a comprehensive ban on all single-use bags (including biodegradables) with exemptions for fresh food and medical purposes. All three variants are loss-making in financial terms but generate positive economic Net Present Values (NPVs) once the avoided cost of marine plastic pollution is incorporated. The two Option A variants are close in economic terms. Option B delivers both the highest economic NPV and the highest economic benefit-cost ratio, reflecting its larger leakage reduction set against the smallest cost base of the three.

Table E 0.1: Summary of options - (present values over 20 year period)

Item	Option A onshore (PGK million)	Option A offshore (PGK million)	Option B (PGK million)
Costs			
Cost to government	(37.2)	(8.8)	(7.1)
Cost to industry	(17.9)	(17.9)	—
Cost to households/consumers	(3.6)	(3.6)	(4.5)
Total Present Value (PV) of costs	(58.7)	(30.3)	(11.6)
Financial benefits			
Avoided plastic waste collection and disposal	0.1	0.1	0.3
Permit revenue	0.4	0.4	—
Enforcement fines collected	6.3	6.3	4.6
Verification fees collected	17.5	—	—
Total PV of financial benefits	24.4	6.8	4.9
Financial summary			
Financial Net Present Value	(34.4)	(23.5)	(6.7)
Financial benefit-cost ratio	0.42	0.22	0.42
Economic summary			
Avoided cost of marine plastic pollution	516.9		
Economic Net Present Value	482.5	493.4	510.2

Economic benefit-cost ratio	9.22	17.31	45.1
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The choice between options also depends on how reliably each delivers the intended reduction in plastic pollution and how the burden is distributed. Option B is simpler to enforce and gives greater certainty of outcome, whereas Option A depends on a functioning verification regime. Option A also imposes verification fees of up to USD 7,500 per test on the industry, a cost that some small businesses will find difficult to meet.

In summary, our analysis supports Option B, a comprehensive ban on single-use bags, as it delivers the highest economic NPV and benefit-cost ratio and is the most administratively feasible. The recommended approach is to phase in the ban over a 6- to 12-month transition period, ensuring that affordable alternatives are available before the ban takes effect, that enforcement is strengthened across the supply chain, and a sustained public awareness campaign drives both compliance and behavioural change. Targeted support for local producers of alternatives, together with procurement from government bodies, will help to anchor demand and support local industry.

For Task 2, four single-use plastic items are assessed for regulatory expansion: straws, polystyrene food containers, PET bottles and cutlery. Plastic straws and expanded polystyrene food containers are recommended for an immediate ban due to their high litter rates, poor recyclability, environmental persistence, health concerns and availability of alternatives. Plastic cutlery is recommended for a phased ban to enable businesses and consumers time to transition to often higher-cost alternatives. More research is required for PET bottles due to their significant role in providing access to safe drinking water and supporting beverage supply chains.

Table E 0.2: Task 2 - priority items for SUP ban expansion

SUP Item	Recommendation	Justification
Straws	Immediate ban	• High litter risk and commonly found in coastal clean-ups. • Generally non-essential with readily available alternatives (e.g. paper, metal, bamboo). • Minimal economic and operational disruption expected.
Polystyrene food containers	Immediate ban	• Poor recyclability and long environmental persistence. • Potential health concerns associated with styrene exposure as a possible carcinogen. • Suitable alternatives are widely available (e.g. paperboard, bagasse, reusable containers).
Cutlery	Phased ban	• Difficult to recycle due to contamination and limited end markets. • Alternatives exist but require time for businesses and consumers to transition due to higher costs and supply-chain constraints. • Reusable cutlery can be mandated early in dine-in settings, where reuse systems are practical and single-use provision is least justified.

PET bottles	Additional analysis required	• Important for beverage supply chains and access to safe drinking water, making immediate bans impractical. • Globally, benefit from established collection and bottle-to-bottle recycling pathways, supporting transitional recovery efforts. • Initial restrictions should focus on coloured and opaque PET bottles, which are more difficult to recycle than clear PET. • DRS can improve collection rates, recycling performance, and litter reduction, but should be viewed as a transitional measure rather than a complete solution. • Long-term policy should support a shift towards reusable and refillable bottle systems, which offer greater reductions in plastic consumption and waste generation.
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To support the successful expansion of Papua New Guinea's single-use plastics regulatory framework, a phased and evidence-based implementation approach is recommended. Key next steps include:

1. **Strengthen the evidence base** by assessing SUP import volumes, distribution channels, and informal market flows, mapping the availability and cost of alternatives, and engaging key stakeholders to address data gaps.
2. **Establish a framework for alternatives** by developing a national list of approved substitute products, defining environmental performance criteria, and providing guidance to businesses on compliant options.
3. **Phase regulatory expansion according to market readiness**, prioritising immediate bans for items such as straws and EPS food containers while introducing staged restrictions for plastic cutlery and undertaking more research for PET bottles.
4. **Introduce supporting incentives** through measures such as tariff reductions or GST exemptions for SUP alternatives, and targeted financial support for businesses transitioning to alternative products and reuse systems.
5. **Strengthen awareness and enforcement capacity** through sustained public education campaigns, coordinated enforcement across all levels of government, and early engagement with industry stakeholders.
6. **Align with regional best practice** by continuing to benchmark against Pacific Island approaches and considering future expansion of regulated items based on lessons learned and emerging industry commitments.

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1. Introduction

1.1 Background

Papua New Guinea (PNG) is facing a growing single-use plastic (SUP) pollution crisis that threatens its environment, public health, and economic resilience. According to PNG's National Action Plan, approximately 214,700 tonnes of macro-plastic waste were generated in 2024, with around 118,200 tonnes escaping into the environment. Single-use plastics account for more than 68% of plastic waste leaking into the ocean, and without decisive action, plastic pollution is set to grow by 43% to 169,500 tonnes per annum by 2035. The National Action Plan responds to this trajectory with a target to reduce plastic pollution by 61% by 2035, with a dedicated strategy prioritising the reduction in problematic single-use items.

Plastic pollution is causing significant damage to PNG's coastal and marine ecosystems, including coral reefs and mangroves, while also affecting key sectors such as fisheries, tourism, and agriculture. It contributes to urban flooding by blocking drainage systems and creates public health risks through the widespread open burning of waste. The economic costs of inaction are also substantial, with rising clean-up costs and increasing pressure on already under-resourced waste management systems.

PNG's current regulatory framework is limited, with only non-biodegradable plastic shopping bags regulated under the Customs Act (Regulation 2011). While biodegradable bags are permitted under the Environment Act, enforcement is hindered by unclear standards, limited verification capacity, and practical challenges at the border. These gaps have highlighted the need for broader and more effective regulation.

To address this challenge, the Pacific Ocean Litter Project (POLP), funded by the Australian Government and implemented by the Pacific Regional Environment Programme (SPREP), is supporting PNG to strengthen its response to plastic pollution. POLP aims to reduce plastic pollution across Pacific Island countries by decreasing reliance on single-use plastics and promoting sustainable alternatives.

In PNG, POLP has worked closely with the Conservation and Environment Protection Authority (CEPA) to convene multi-stakeholder consultations from 2023 to 2025 to review and strengthen the existing regulatory framework. This work has focused on improving current plastic bag regulations and exploring the extension of controls to other priority SUPs, including PET bottles, polystyrene food containers, plastic cutlery, and straws. These efforts led to the establishment of a Technical Working Committee by the PNG National Environment Council to guide reforms and support the development of a stronger, evidence-based regulatory framework to reduce plastic pollution.

1.2 Policy context and rationale for reform

1.2.1 Existing legal framework

Papua New Guinea regulates plastic shopping bags through a combination of environmental and customs legislation that bans non-biodegradable plastic bags while allowing biodegradable alternatives under strict regulation.

The primary legal basis is the Environment Act 2000, which governs environmental protection, pollution control, and waste management, including the regulation of plastic products. Under the Environment (Control of Biodegradable Plastic Shopping Bags)

Regulation 2011, biodegradable plastic bags may only be imported, manufactured, or sold with an environmental permit. The Environment (Amendment) Act 2015 further strengthened this framework by expanding government powers to manage waste and administer permits for regulated materials.

At the border, the Customs Regulation 2011 prohibits the importation, sale, and distribution of non-biodegradable plastic shopping bags, while the Customs (Amendment) Act 2014 strengthens customs officers' powers to detect and seize prohibited goods.

Together, these laws create a dual regulatory approach: banning non-biodegradable plastic bags through customs controls, while permitting biodegradable alternatives under environmental regulation.

1.2.2 Institutional roles

The implementation of the plastic bag ban in PNG involves multiple institutions operating across national and subnational levels.

The Conservation and Environment Protection Authority (CEPA) is the primary agency responsible for environmental regulation and enforcement. CEPA oversees the issuance of environmental permits and regulates manufacturers and importers of biodegradable plastic bags. However, since 2020, environmental permits are no longer being issued. This is further discussed in Section 1.2.3 below.

The PNG Customs Service plays a critical role in enforcing the ban at the border. Empowered by customs legislation, it is responsible for detecting and preventing the importation of prohibited plastic bags. However, enforcement effectiveness is influenced by resource limitations and the complexity of monitoring extensive and porous borders.

Other national and local institutions also contribute to implementation. Local Level Governments (LLGs) are empowered to develop and enforce waste management by-laws. In some jurisdictions, such as Alotau, LLGs have taken proactive measures, including inspecting retail outlets and confiscating banned plastic bags. At the provincial level, authorities such as the National Capital District Commission (NCDC) support compliance through local regulations and awareness initiatives.

While there is potential for broader inter-agency collaboration in enforcement, this has not yet been fully institutionalised, resulting in fragmented implementation across jurisdictions.¹

1.2.3 Key challenges

Despite a formal ban on non-biodegradable plastic shopping bags, significant challenges persist that undermine its effectiveness.²

¹ SPREP. (2024). Assessment of effectiveness of bans, levies and other instruments addressing single-use plastics in the Pacific Island Region.

² SPREP. (2025). Enhancing Papua New Guinea's Regulatory Framework on Single-Use Plastics.

Misaligned Standards and Definitions

Papua New Guinea's legal definition of biodegradable plastic is set out in the legislation, which defines plastic bags as biodegradable if they meet either the relevant standards (Australian Standard AS4736-2006 for compostable plastics or American Standard ASTM D6954-04 for oxo-biodegradable plastics) as well the photodegradation condition of 10 per cent or less of original mass remaining after 90 days of sunlight and air exposure when passed through a 2 mm sieve. In practice, however, there is no domestic facility capable of administering these tests and no field protocol for verifying the photodegradation condition.

Also, neither degradation standard reflects the ability to truly degrade in PNG's environment. AS4736-2006 is designed for industrial composting environments requiring sustained temperatures of 55–60°C, controlled moisture, and oxygen levels. These disposal conditions do not exist in PNG, where waste is predominantly managed through informal dumpsites, open burning, or uncontrolled disposal. Similarly, ASTM D6954-04 relates to oxo-biodegradable plastics, a category that has been widely criticised in the scientific literature and was banned in the European Union in 2021 due to concerns that it does not result in true biodegradation and may contribute to microplastic pollution.³

The practical consequence is that plastic bags may be legally classified as “biodegradable” under PNG law while failing to degrade in real-world environments such as waterways, coastal areas, or open dumps. This creates a fundamental regulatory gap between legal compliance and environmental outcomes, weakening the effectiveness of the ban.

Enforcement and Verification Constraints

The effectiveness of the regulatory framework is further constrained by limited institutional capacity to verify compliance with even the existing standards. The Regulation requires testing by laboratories approved by the Director of Environment; however, there is currently no gazetted list of approved laboratories, and no domestic testing facility with the necessary technical capability. As a result, CEPA lacks the means to independently verify whether imported or manufactured products meet the legal definition of biodegradability.

This enforcement gap has been acknowledged in recent policy analysis (e.g. Justin Rose Consulting, 2024), which highlights the absence of testing infrastructure and certification pathways as a critical weakness. In practice, this means that compliance is largely based on documentation provided by importers, with limited ability for regulatory oversight or verification.

Weak Enforcement and Compliance

Beyond technical standards, enforcement remains inconsistent. Monitoring of retailers and distributors is uneven, particularly outside major urban centres. While larger retailers, especially in Port Moresby, have increasingly shifted to reusable alternatives such as material bags, many smaller retailers continue to supply prohibited plastic bags, reflecting limited regulatory reach and capacity.

³ European Union (2021). [Restrictions on oxo-degradable plastics under the Single-Use Plastics Directive](#).

Border Control and Illegal Importation

Border enforcement challenges also significantly undermine the ban. PNG's extensive and porous land and maritime borders, particularly with Indonesia (West Papua), make it difficult to prevent the illegal importation of plastic bags. These challenges are compounded by limited resources, insufficient training, and logistical constraints faced by customs officials.

As a result, prohibited plastic bags continue to enter the domestic market through informal channels, weakening the intended supply-side restrictions established under customs legislation.

Black Market Activity

The persistence of demand for plastic bags has contributed to the reported emergence of informal or black-market supply chains. Even where formal compliance exists, particularly among larger retailers, illegal distribution networks enable continued access to banned products, especially in rural and peri-urban areas.

Implications for Reform

Taken together, these challenges indicate that the primary weakness of the current policy framework lies not only in enforcement capacity, but in the misalignment between legal standards and environmental realities, combined with limited institutional capability to operationalise those standards.

1.3 Study objectives

Given these significant challenges facing the existing plastic bag ban in PNG, the Technical Working Committee (TWC), formally established in December 2025 by the PNG National Environmental Council (EC Decision 06/2025), is seeking to strengthen the existing national regulatory regime to reduce plastic pollution in Papua New Guinea. To that end, this information paper is expected to:

- **Task 1:** Apply cost-benefit analysis to assess two options for strengthening the plastic bag legislation and develop a recommendation:
 - Option A: Retaining the current framework with improved standards, renewed verification capacity, and CEPA resourcing;
 - Option B: Introducing a full ban on plastic bags – including biodegradable bags (with exemptions for medical and food purposes), including enforcement implications;
- **Task 2:** Provide evidence and analysis to inform decisions on expanding regulations to additional SUPs (e.g. PET bottles, polystyrene containers, cutlery, straws), considering the availability of alternatives.

Overall, the paper provides the analytical foundation and policy recommendations necessary for PNG to strengthen its regulatory regime and take decisive, evidence-based action to reduce plastic pollution.

The scope of this analysis is to strengthen the existing plastic bag regime and to consider additional priority single-use items that could reduce plastic consumption. A number of other regulatory and fiscal instruments fall outside the assessed options and warrant separate consideration as part of PNG's broader response to plastic pollution.

These include waste levies on producers and importers, container deposit schemes and broader Extended Producer Responsibility schemes

2. Methodology

2.1 Analytical framework

This study employs two complementary analytical approaches, each tailored to the nature of the policy questions it addresses. These approaches are set out in sections 2.1.1 and 2.1.2 below.

2.1.1 Task 1: Strengthening the current plastic bag ban legislation

For Task 1, the study applies a cost-benefit analysis (CBA) framework. As directed by the Terms of Reference (TOR), the CBA analyses two policy options against a baseline scenario representing the current policy settings in PNG.

Within Task 1, Option A retains and strengthens the existing regulatory system by developing biodegradability standards, establishing a verification facility, and funding CEPA personnel to oversee this operation. Option B replaces the current framework with a comprehensive ban on all plastic bags, with exemptions for fresh food (fish and meat) and medical purposes (transportation of blood and organs). Each option is assessed separately against the baseline. All costs and benefits are quantified in Papua New Guinea Kina (PGK) and discounted over a 20-year appraisal period using a real discount rate of 10 per cent. Where monetisation is not feasible, particularly for environmental and social impacts, the impacts have been assessed qualitatively and presented alongside the quantitative results. A net present value (NPV) and benefit-cost ratio (BCR) are calculated for each option to support a transparent comparison.

The costs and benefits evaluated under this CBA consider the impact of the two options on a range of stakeholders across the single-use plastic supply chain in PNG, including consumers, businesses (including manufacturers, suppliers/distributors, retailers, etc.), and government. They have been informed by interviews with local stakeholders and regional and global literature on the impact of plastic bag bans.

Where publicly available data is insufficient to evaluate costs or benefits, assumptions have been used to address these gaps. These assumptions are outlined in the relevant cost and benefit sections and are considered reasonable based on the available evidence. Where assumptions could not be appropriately applied, the associated cost or benefit is described qualitatively.

2.1.2 Task 2: Potential to extend the ban to additional SUPs

Task 2 assesses the potential to extend the current ban on non-biodegradable plastic bags to four additional single-use plastic (SUP) items: PET bottles, polystyrene and Styrofoam containers, plastic cutlery, and plastic straws. The assessment was originally intended to directly address the structured questions set out in Annex B through a quantitative analysis of import volumes, domestic production, market conditions, fiscal implications, and the feasibility of substitution within Papua New Guinea.

However, limited public availability of Papua New Guinea-specific data, along with minimal responses from key local stakeholders and industry actors, constrained the ability to conduct a comprehensive quantitative assessment of all Annex B indicators. In particular, reliable product-level data on import volumes, domestic manufacturing

capacity, market penetration of substitutes, supply chain participation, and associated tariff revenues were not consistently available for all product categories.

Given these limitations, the assessment adopts a qualitative, evidence-based approach informed by global literature on SUP regulation, policy implementation, and market transition pathways. The analysis draws on regional and international case studies, comparative regulatory experiences, and lessons from jurisdictions that have implemented similar restrictions or phased bans on targeted SUP products.

Particular emphasis is placed on identifying implementation design considerations, enabling policy measures, and practical sequencing strategies relevant to Papua New Guinea's regulatory and market context.

This approach provides the Technical Working Committee (TWC) with a structure qualitative evidence base to inform decision-making on whether and how to expand the scope of existing legislation. The chapter concludes by identifying SUP items most suitable for immediate regulation versus those requiring a phased approach, and outlines key recommendations to support effective implementation of an expanded regulatory framework.

3. Findings

TASK 1: Strengthening plastic bag regulation

This section establishes the baseline, sets out the costs and benefits of each option for business, households and government, presents a sensitivity analysis, and identifies the preferred policy option for strengthening PNG's plastic bag regulation.

3.1. Baseline

For the purposes of this CBA, the costs and benefits of the two options are assessed against the baseline scenario. As outlined in the methodology, the baseline reflects the current status quo in PNG, in which the legislation is, in practice, not enforced.

3.2 Option A: Strengthening the current system

3.2.1 Description of Option A

This analysis examines the costs and benefits of implementing a renewed ban on non-biodegradable plastic bags relative to the baseline. It includes establishing a verification facility in Papua New Guinea, as stipulated in the TOR, and an additional policy variant in which the biodegradability of plastic bags is tested offshore. It would also reintroduce the issuance of permits for importers and manufacturers of biodegradable bags, with strengthened enforcement.

3.2.2 Government revenue

CEPA ceased issuing permits for biodegradable plastic bags in 2020. As a result, the K5,000 application fee and K1,000 annual fees set out in Schedule 1 of the legislation are not being collected. If the permit system were reinstated for the 25 permit holders noted in 2014, permit fees would generate approximately PGK 0.4 million in present value over the 20-year appraisal period.

Non-compliance fines collected by CEPA constitute an additional revenue stream, although in the absence of historical data on the number and value of fines that have been issued, the analysis assumes this revenue stream is equivalent to enforcement costs.

PNG also collects import duty on biodegradable plastic bags. The applicable import duty rate is 10% under the post-2018 schedule, followed by a 10% Goods and Services Tax (GST). Given that non-biodegradable plastic bags are prohibited, the legislation assumes they generate no tariff revenue.

3.2.3 Industry profile

In the absence of data on plastic production in PNG, we have assumed that 10% of plastic bags are produced locally. With more than 60% of the economic value added of plastic production being generated in polymer production and the preceding stages in the production of plastic items⁴, the implications of the ban on the broader economy are likely to be limited.

⁴ Systemiq (2023), *Towards Ending Plastic Pollution by 2040- Technical Appendix*

3.2.4 Externalities

Quantifying the economic costs of plastic pollution necessitates translating environmental and social impacts (so-called externalities) into monetary values. This study draws on Dalberg (2021), which estimates the cost of marine ecosystem service losses per tonne of plastic entering the marine environment each year. The cost of greenhouse gas emissions in the production and disposal of plastics is also included in this estimate, covering both plastic production and plastic waste disposal.

The analysis applies the Dalberg externality estimate of USD 4,085 to 8,170 per tonne of plastic waste entering the marine environment. The same range for the reduction in plastic entering the marine environment applies to both options. This reflects the absence of PNG-specific data on the differential leakage reduction achievable under a strengthened standard versus a full ban, and the uncertainty about how much plastic would enter the environment under Option B, which depends upon how many times reusable materials are used before being disposed of. Discounted over the 20-year appraisal period, the present value of avoided marine ecosystem service loss is approximately PGK 516.9 million.

Several other externalities are not quantified in this analysis. These include lost marine tourism revenue, government cleanup costs, reduced fisheries and aquaculture revenue, impacts on public health, and flooding and infrastructure damage from blocked drainage systems.

The avoided cost of marine plastic pollution presented above reflects the monetised value of pollution prevented under each option. Both options are assumed to deliver an equivalent reduction in leakage of 2,358 tonnes relative to the baseline. This assumption represents an upper bound on pollution reduction and reflects uncertainty about how many times reusable bags would be used before disposal, as well as the properties of the biodegradable bags used under Option A.

Table 3.1: Cost and benefit analysis: Option A (present value over 20 year period)*

Item	Onshore verification (million PGK)	Offshore verification (million PGK)
Costs to Government		
Development of an onshore verification facility	(18.7)	—
Operating costs of the verification facility	(9.7)	—
Enforcement costs	(6.3)	(6.3)
Public awareness campaigns	(2.5)	(2.5)
Costs to industry		
Permit fees	(0.4)	(0.4)
Verification fees	(17.5)	—
Costs of offshore verification	—	(17.5)
Costs to households		
Costs to households	(3.6)	(3.6)

Total Present Value (PV) of costs	(58.7)	(30.3)
Quantified financial benefits		
Avoided plastic waste collection and disposal	0.1	0.1
Permit revenue	0.4	0.4
Enforcement fines collected	6.3	6.3
Verification fees collected	17.5	—
Total Present Value (PV) of financial benefits	24.4	6.8
Financial Net Present Value	(34.4)	(23.5)
Financial benefit-cost ratio	0.42	0.22
Externalities		
Avoided cost of marine plastic pollution	516.9	516.9
Economic Net Present Value	482.5	493.4
Economic benefit-cost ratio	9.22	17.31

*Values in brackets represent negative values or costs to stakeholders. **Financial values reflect cash flows to identifiable entities (government, firms, households); economic values reflect the costs and benefits to society as a whole, including externalities.

Under the offshore variant, verification fees are paid directly by permit holders to accredited overseas laboratories and are therefore allocated to industry. Under the onshore variant, verification is delivered by a domestic facility operated by CEPA; the capital and operating costs are borne by the government, with a portion recovered through verification fees collected from permit holders (shown as revenue under Quantified financial benefits).

3.2.5 Costs

Quantified costs

The primary cost associated with this measure is the development and operation of a facility capable of testing biodegradability to the NF T51-800 standard, which, as discussed in Section 1.3.3, provides a more realistic measure of degradation in PNG's environment than the standards in the current legislation. This is a costly measure, with the initial capital outlay required to develop such a facility being a large expenditure item costing approximately PGK 18.7 million.⁵ over the 20-year timeline and PGK 9.7 million in operating costs to run the verification facility (these costs are partly offset by the fact that permit holders are required to pay for the cost of verification under Section 6 of the legislation).

An alternative variant of this policy has also been costed, which examines the cost of offshore testing. This variant has been incorporated as the costs and level of expertise required to develop local testing capabilities are considerable. Assuming 50 bags per year

⁵ This represents the cost of developing a testing facility from scratch, including the purchase of land and the construction of a dedicated building, alongside the procurement of laboratory equipment and the necessary technical fit-out to meet international biodegradability testing standards.

are tested at USD 7,500 per sample⁶ this amounts to PGK 17.5 million, which would be borne by permit holders. This cost to permit holders has been assumed to be collected by the Government of PNG as revenue in the scenario where testing is conducted locally.

At present, enforcement of the ban on plastic bags is nonexistent, with CEPA having ceased issuing permits since 2020. Enforcement is estimated to cost PGK 580,800 per year, assuming one dedicated officer in each of PNG's 22 provincial divisions.

Educational campaigns are needed both to inform people about the strengthened ban, the new standards and consumer responsibilities, and to drive behavioural change. Successful implementation depends on securing buy-in from both the public and private sectors, which is crucial for compliance. The campaign cost is estimated at PGK 235,127 each year, adapted⁷ from Price Waterhouse Coopers' (2022), and Marsden Jacob Associates' (2016)⁸ studies on a plastic bag ban in the Australian state of Victoria.

Costs to households

Costs to households under Option A reflect the price differential between conventional single-use plastic bags and biodegradable alternatives. As most of the plastic items consumed in Papua New Guinea are imported from China⁹, the prices of biodegradable and non-biodegradable plastic bags were drawn from listings of Chinese suppliers. This cost differential was then applied to consumption volumes and discounted over the appraisal period, which generates a household cost of approximately PGK 3.6 million.

Non-quantified costs

Impact on manufacturers. Domestic manufacturers currently producing non-compliant plastic bags will face transition costs to either retool for compliant biodegradable production or exit the market. The number of active domestic manufacturers cannot be confirmed without additional data on local production, and therefore, these costs are not included.

3.2.6 Benefits

In the absence of historical records on the number and value of non-compliance fines issued, revenues from non-compliance fines are assumed to equal enforcement costs, which are estimated at approximately PGK 6.3 million.

Avoided plastic waste disposal costs reflect the reduction in material entering the waste management system resulting from the strengthened ban. Applying a collection and disposal cost of PGK 473 per tonne¹⁰ generates a value benefit of approximately PGK 0.09 million.

⁶ Wisconsin Institute for Sustainable Technology (2025), *Laboratory Services Pricelist*

⁷ Costs are transferred from the Australian states of Victoria and Western Australia to PNG using a unit value transfer approach, a standard benefit transfer method in which a value from one location is applied to another by adjusting for differences in population and economic conditions between the two.

⁸ Marsden Jacob Associates (2016), *Plastic Bags Ban Options – Cost Benefit Analysis*

⁹ United Nations (2026), *UN Comtrade Database*

¹⁰ Based on Systemiq's collection and disposal costs in Systemiq's *Towards Ending Plastic Pollution by 2040*

3.3 Option B: Complete ban on single-use bags

3.3.1 Description of Option B

Option B extends the prohibition currently in place on non-biodegradable single-use plastic shopping bags to cover all single-use shopping bags, including biodegradable single-use bags. Reusable plastic shopping bags that meet a defined durability standard are permitted. Exemptions are only allowed for fresh food and medical applications.

3.3.2 Costs

Compared to Option A, this option forgoes the requirement to test for biodegradability standards but introduces additional consumer and business adjustment costs as single-use bags are replaced with reusable alternatives. It also forgoes the permit and tariff revenue which would arise under Option A.

Option B can be either a cost or a benefit to households, depending on how many times reusable bags are used before being disposed of. At lower reuse rates, the per-use cost to consumers is higher, and households will face a net cost. It is expected that it will take some time for consumers to alter their behaviour.

Enforcement costs

Enforcement is likely to be simpler under a comprehensive ban, as customs and retail inspectors will no longer need to distinguish biodegradable from non-biodegradable bags. This removes the need for verification that has hampered the current policy.

Loss of revenue

Under Option B, the prohibition extends to imports of biodegradable bags, which currently attract a 10% import duty and 10% GST. The fiscal cost of the ban is the foregone duty and GST currently collected on these products. While these figures represent the direct revenue loss, it is likely that additional GST revenue will be collected from the sale of alternatives, though quantifying this displacement effect is beyond the scope of this analysis. This is a deliberately conservative assumption: by not deducting the offsetting revenue from alternatives, the analysis treats the full amount as lost and therefore overstates rather than understates the net cost to government.

Table 3.2: Cost and benefit analysis: Option B (present value over 20 year period)

Item	Option B (million PGK)
Costs to Government	
Enforcement costs (ongoing)	(4.6)
Public awareness campaigns	(2.5)
Costs to households	
Consumer adjustment costs (transition to reusable alternatives)	(4.5)
Total Present Value (PV) of costs	(11.6)
Quantified financial benefits	
Avoided plastic waste collection and disposal	0.3
Enforcement fines collected	4.6
Total Present Value (PV) of financial benefits	4.9
Financial Net Present Value	(6.7)
Financial benefit-cost ratio	0.42
Externalities	
Avoided cost of marine plastic pollution	516.9
Economic Net Present Value	510.2
Economic benefit-cost ratio	45.1

3.3.3 Benefits

Option B is likely to result in less waste being collected and landfilled. As a result, the benefit arising from avoided waste management costs is higher under this option than in Option A. The benefits which are not quantified in this analysis are also expected to be larger under Option B. Reduced litter improves local amenity and would support PNG's appeal as a holiday destination, and a lower volume of waste reduces the risk of drainage blockages and associated flooding. These benefits will accrue disproportionately to low-income households.

3.4 Comparative cost-benefit analysis

3.4.1 Sensitivity analysis

PNG-specific data is limited for several of the inputs underpinning this analysis. A sensitivity analysis tests how the Net Present Values and Benefit Cost Ratios respond when key cost, benefit and demographic assumptions are varied simultaneously to plausible high and low values. The findings are presented in Table 3.3 & 3.4 below.

The economic outcomes are clearly most sensitive to the per-tonne value of avoided ecosystem service losses and the assumed annual tonnage of plastic bags entering the marine environment (see table 3.3). The externality used as per Dalberg (2021), ranges from USD 4,085 to 8,170 per tonne. Under adverse assumptions across all variables

simultaneously, the economic NPV remains positive for each option but the BCR falls close to one for the Option A variants. Under favourable assumptions, the economic NPV rises substantially across all three options, reflecting the scale of marine externality benefits avoided when the upper end of the parameter range is applied.

Table 3.3: Sensitivity analysis results: Economic Option A and Option B

Item	Base	High cost	Low cost
Option A — Onshore verification			
Net Present Value (PGK million)	482.5	4.6	1,502.2
Benefit-cost ratio	9.22	1.06	38.7
Option A — Offshore verification			
Net Present Value (PGK million)	493.4	9.9	1,517.3
Benefit-cost ratio	17.31	1.23	94.4
Option B — Full ban			
Net Present Value (PGK million)	510.2	35.6	1,525.9
Benefit-cost ratio	45.1	3.46	240.0

Excluding the avoided marine externality, the financial impacts show a net cost across all three options. None of the options recovers its costs from permits, fines and avoided collection alone. This is expected for a regulation of this kind, where the principal benefit is a public good. The financial shortfall represents the net cost to government, industry and consumers of securing that benefit, and as shown in Table 3.5, is modest relative to the scale of the marine externality avoided.

Within the financial sensitivity analysis, a small number of variables drive most of the variation in cost outcomes. For Option A, the dominant factor is the cost of verification, in particular, the capital and operating cost of establishing and running a domestic testing facility under the onshore variant, which is the main point of difference between the two variants. For Option B, the key variable is the assumed reuse rate of reusable alternatives, which determines whether households face a net cost or a net saving: at high reuse rates, the per-use cost of a reusable bag falls below that of a single-use bag, while at low reuse rates it remains higher. Other inputs, including the consumer prices of plastic and biodegradable bags and the public awareness budget, have a comparatively minor effect on the financial outcome.

Table 3.4: Sensitivity analysis results: Financial Option A and Option B

Item	Base	High cost	Low cost
Option A — Onshore verification			
Net Present Value (PGK million)	(34.4)	(38.9)	(27.5)
Benefit-cost ratio	0.42	0.48	0.32
Option A — Offshore verification			

Net Present Value (PGK million)	(23.5)	(33.5)	(12.4)
Benefit-cost ratio	0.23	0.22	0.24
Option B — Full ban			
Net Present Value (PGK million)	(6.7)	(7.9)	(3.7)
Benefit-cost ratio	0.42	0.46	0.42

3.4.2 Preferred option

All three variants are loss-making in financial terms but generate positive economic NPVs once the avoided marine externality is included. The two Option A variants are close: onshore has the higher NPV because it collects verification fee revenue that offshore forgoes, while offshore has the higher BCR because its smaller cost base raises the ratio of benefits to costs. Because the avoided externality is the same for both, it does not affect the choice between them, only whether each is worth pursuing at all. Option B delivers both the highest NPV and BCR, reflecting its larger leakage reduction against the smallest cost base of the three. For context, Option B's total cost of around K12 million spread over 20 years is equivalent to roughly 0.002 per cent of PNG's 2026 National Budget.

Table 3.5: Summary of options (present value over 20 year period)

Item	Option A onshore (PGK million)	Option A offshore (PGK million)	Option B (PGK million)
Costs			
Cost to government	(37.2)	(8.8)	(7.1)
Cost to industry	(17.9)	(17.9)	—
Cost to households/consumers	(3.6)	(3.6)	(4.5)
Total Present Value (PV) of costs	(58.7)	(30.3)	(11.6)
Financial benefits			
Avoided plastic waste collection and disposal	0.1	0.1	0.3
Permit revenue	0.4	0.4	—
Enforcement fines collected	6.3	6.3	4.6
Verification fees collected	17.5	—	—
Total PV of financial benefits	24.4	6.8	4.9
Financial summary			
Financial Net Present Value	(34.4)	(23.5)	(6.7)
Economic summary			
Avoided cost of marine plastic pollution	516.9		

Economic Net Present Value	482.5	493.4	510.2
Economic benefit-cost ratio	9.22	17.31	45.1

Non-financial considerations

The preferred choice among the options should consider more than just the headline net present values and benefit-cost ratios. With regards to households, Option A leaves the costs largely unchanged, while Option B requires consumers to adopt reusable alternatives or pay more for paper or locally produced substitutes. The broader gains in amenity, flood-risk reduction, and reduced exposure to toxins from the burning of plastics under Option B will accrue disproportionately to low-income communities, who currently bear the heaviest burden of pollution.

The decision, therefore, depends not only on cost but on how reliably each option delivers the intended reduction in plastic pollution. Option B is relatively simple in compliance terms: a full ban is more straightforward to enforce and gives a high degree of certainty that the intended outcome will be achieved. Option A, by contrast, depends on a functioning verification and enforcement regime, which introduces uncertainty. Weak testing capacity or inconsistent enforcement could create confusion and leave room for obfuscation, making Option A a less certain route to reducing plastic pollution. Furthermore, Option A also perpetuates a linear economy by maintaining reliance on single-use items, whereas Option B moves PNG towards the elimination and reuse approaches that sit higher in the waste hierarchy.

A further consideration is that Option B removes the verification fees that businesses must pay under either Option A variant, which, at USD 7,500 per test, will place a considerable burden on the industry, particularly for small businesses. The two options distribute costs differently: Option A falls more heavily on industry, whereas Option B is felt more by consumers.

3.4.3 Recommendation for plastic bag regulation

It is recommended that the Technical Working Committee adopt the following approach to strengthening plastic bag regulation in PNG:

Implement Option B, a comprehensive ban on plastic shopping bags, subject to the fresh food and medical exemptions. Amend SI No. 3 of 2011 to prohibit the sale, supply and distribution of plastic shopping bags, removing the need to distinguish biodegradable from non-biodegradable bags. Option B delivers the highest economic NPV and benefit-cost ratio among the options assessed, the largest reduction in plastic leakage, and removes the USD 7,500 per test verification fees that businesses would face under either Option A variant, a high cost that falls hardest on small businesses.

Phase in the ban with a transition window. Announce the ban ahead of enforcement, with a 6- to 12-month transition period that allows retailers to use up existing stock and secure approved substitutes.

Ensure alternatives are available before the policy comes into effect. Confirm that affordable reusable alternatives are available at scale, supported by concessional

finance or grants to bilum¹¹ cooperatives and small-scale manufacturers of plant-fibre and banana stem bags through existing SME programmes, reduced duty on imported inputs such as starch resins and unbleached paper, and a requirement that CEPA, NCDC and provincial administrations procure only approved alternatives to support demand. It is a policy imperative to ensure that the shift away from single-use plastic bags does not fall hardest on those least able to absorb it, as reusable alternatives carry a higher upfront cost that disproportionately weighs on low-income households.

Strengthen enforcement. Increase funding for CEPA, the PNG Customs Service, and Local Level Governments so the ban is enforced at each point in the supply chain. As most single-use bags are imported, the Customs Service is central at the border, screening consignments under the relevant tariff headings and guarding against misclassification. CEPA needs resourcing to inspect importers, manufacturers, and retailers and to apply penalties consistently, while Local Level Governments enforce at markets and retail outlets, particularly outside the main urban centres.

Run a sustained public awareness campaign covering the ban, its rationale, and the approved alternatives, with the aim of informing the public and driving behavioural change. Clear messaging on which bags are prohibited, which alternatives are approved, and the reasons for the change will limit the scope for non-compliance. A workable regime needs both awareness and enforcement. Awareness builds the voluntary compliance that makes enforcement manageable, and enforcement gives the campaign its credibility.

¹¹ Bilums are traditional PNG handwoven string bags made from plant fibres or wool.

TASK 2: Assessment of extending regulation to additional SUPS

Extending the regulation to additional single-use-plastic items was originally intended to directly address the structured questions set out in Annex B using quantitative analysis of import volumes, domestic production, and market conditions in Papua New Guinea. However, the very limited availability of PNG-specific data, together with the absence of responses from key local stakeholders, has constrained the ability to undertake a comprehensive quantitative assessment across all Annex B indicators.

Given these limitations, the analysis adopts a qualitative, evidence-based approach drawing on global literature on SUP regulation. This chapter provides insights into effective implementation design, enabling policy measures, and practical lessons from comparable regulatory contexts. The chapter concludes by identifying SUP items suitable for immediate versus phased regulation and outlining the subsequent steps needed to support the successful expansion of PNG's regulatory framework on the environmental impact of SUPs.

3.5 Important considerations for SUP ban effectiveness

A circular economy approach begins by eliminating problematic and unnecessary plastic items. Where elimination isn't possible, transitioning from single use to reuse models should be prioritised. For any remaining necessary single-use items, practical, large-scale recycling systems should be firmly in place.

Single-use plastic bans have been shown to have the potential to reduce the amount of plastic waste generation, therefore reducing plastic pollution and driving broader shifts in social systems and how individuals engage with plastic use, contributing to broader circular economy strategies. A review by the Global Plastics Policy Centre (2023) of 100 policies designed to tackle plastic pollution worldwide identified three key factors underpinning the success of SUP bans:

- ensuring access to affordable alternatives
- implementing a phased and gradual rollout
- building strong public support.

These enabling factors are explored in greater detail below.

3.5.1 Alternative availability

Affordable alternatives are essential to the success of SUP bans. Businesses and consumers must have access to reliable, cost-effective substitutes to ensure a smooth transition. Measures that minimise the direct pass-through of additional costs to consumers can help sustain public support, while clearly identifying approved alternatives can assist businesses in navigating procurement and transition processes. Alongside imported substitutes, locally available materials in Papua New Guinea, such as banana-fibre-based packaging, can play an important role in reducing dependence on single-use plastics. Vanuatu has one of the most comprehensive and stringent SUP bans both in the Pacific and globally, with its Department of Environmental Protection and Conservation providing guidance on permitted materials and practical alternatives.

It is also important that approved alternatives have a smaller environmental footprint than the banned SUP items which they are replacing. Alternatives to plastics do not always have a lower environmental impact when considering factors like material inputs, energy use, emissions, and waste and resource consumption, across their entire lifecycle. This is particularly true when the alternative is also a single-use item, or a reusable item that is not reused enough times to reach the break-even point.¹² Substituting SUP bags with single-use paper bags, for example, is not always environmentally preferable (e.g. Ubando et al., 2024). Ultimately, wherever possible, the focus should be on minimising the use of SUPs by scaling up reuse, refill, and packaging-free models, rather than simple material switches from SUPs to other single-use products.

3.5.2 Phased approach

Giving businesses and consumers sufficient time to adjust to a ban, by providing a phase-in period between the announcement of a ban and implementation, can improve its effectiveness. But a phased approach requires clear and consistent communication about what products will be banned, and when the ban will come into effect, to avoid confusion. Often, it is best to restrict importation first, followed by a ban on distribution, to enable suppliers to use up their existing stock of the banned items and procure alternatives. This approach was adopted in England when plastic straws, cotton buds and stirrers were banned in 2020. Retailers were allowed to use up their supplies for six-months following the introduction of the ban (Global Plastics Policy Centre, 2023).

3.5.3 Public education and engagement

Education and awareness campaigns, including information on which items will be targeted by the ban, why, and when, can help to enhance public support for SUP bans. Engaging communities can also help raise awareness of the potential opportunities and challenges of the ban. In Vanuatu, for example, public concerns about the alternatives to single-use plastic diapers¹³ led to a postponement of their ban until suitable alternatives could be identified (RNZ, 2020).

3.6 Examples of SUP bans in the Pacific

Several Pacific Island countries have introduced bans on single-use items, including many of those identified in the TOR for this assignment. These measures are summarised in Table 3.6 below, with green checks indicating items that are banned. These regional experiences provide important lessons for PNG, particularly in terms of implementation challenges, enforcement capacity, and the types of alternatives that have been officially approved or successfully adopted. Reviewing these approaches can help inform more practical and context-appropriate regulatory design.

¹² The break-even point is the minimum number of uses necessary for the reusable item to be environmentally preferable to a single-use item.

¹³ Reusable diapers, for example, require time, water and energy to clean, and many households in Vanuatu lack washing machines.

Table 3.6. SUP items banned in other Pacific Islands

SUP Item	Fiji	Samoa	Solomon Islands	Vanuatu
Plastic straws		✓	✓	✓
Plastic cutlery			✓	✓
Plastic stirers				✓
Plastic plates	✓		✓	✓
Plastic takeaway trays	✓			
Plastic containers without lids				✓
Plastic takeaway containers with lids				✓
Plastic cups – cold beverages				✓
Plastic cups – hot beverages				✓
PET bottles (<1.5L)			✓	
EPS foodware (e.g. clamshell)	✓	✓		✓
EPS cups	✓	✓		
EPS trays (food grade)				✓
Lightweight plastic bags (<36 microns)		✓	✓	✓
PS takeaway food and beverage packaging			✓	
Other PS food & beverage packaging	✓			
PE egg cartons				✓
Nylon mesh nets				✓
Plastic flowers				✓

(Table adapted from ANZPAC (2024a))

The members of the Australia, New Zealand and Pacific Islands Plastics Pact (ANZPAC) have also identified a list of priority SUP items for elimination (ANZPAC, 2024b). Among the items listed include two of the SUPs identified in the TOR for this assignment: expanded polystyrene (EPS) for food and beverage packaging, and opaque PET bottles.

3.7 Other policy options to encourage the uptake of SUP alternatives

A successful transition away from SUPs requires a broader set of supply-chain interventions that make alternatives both accessible and economically viable.

A key lever is **fiscal support**, including temporary reductions or exemptions on import duties and/or GST for approved alternative products. This reduces upfront costs for businesses and consumers and helps accelerate substitution toward reusable or lower-impact materials. Similar approaches have been used in PNG, including GST exemptions for 13 essential household goods including food staples and personal care items (Department of Prime Minister and National Executive Council, 2024). In Fiji, duty concessions are applied to selected biodegradable products (Fiji Revenue and Customs Service, 2021).

Alongside this, **capital support mechanisms** such as grants or concessional loans can help firms invest in retooling and switch production toward alternative packaging. This is particularly important for SMEs, where upfront investment costs can be prohibitive without public support. The Thai government previously committed a US\$10 million grant

for a public-private bioplastics resin pilot plant and also supported 24 bioplastic projects between 2018 and 2023 (Thailand Board of Investment, 2017).

A third mechanism is **green public procurement**, where government procurement is used to drive demand for compliant products by setting environmental criteria in procurement processes. This helps to stimulate early demand and create stable markets for sustainable alternatives and encourage private sector innovation (OECD, 2025).

Finally, **Extended Producer Responsibility (EPR) fee modulation** can shift market incentives by making environmentally harmful packaging more expensive while rewarding recyclable or reusable designs. International experience shows a range of approaches, including tiered fee systems and bonus–malus schemes that differentiate between packaging types based on recyclability and environmental performance. Chile, for example, uses bonus–malus pricing within its EPR system to reward simpler, recyclable packaging and penalise formats that are complex or costly to collect and recycle.

3.7.1 Existing initiatives in PNG

Policy instruments targeting SUP reduction in PNG remain limited but are gradually emerging. The main national measure to date is the ban on non-biodegradable single-use plastic shopping bags, discussed extensively under Task 1.

More recently, a private-sector PET collection scheme led by Coca-Cola Europacific Partners PNG and Branis Recycling has expanded PET bottle recovery in Port Moresby and Lae, offering financial incentives for returned bottles and exporting collected material due to the absence of domestic recycling infrastructure. While this initiative has significantly increased PET recovery volumes, it remains limited to specific urban centres and relies on external processing capacity (The Coca-Cola Company, 2023).

Although reusable bag substitutes enter duty-free under existing tariff classifications, PNG has no other tariff or tax measures specifically designed to encourage the uptake of plastic alternatives. This contrasts with regional approaches such as Fiji's use of import duty reductions for biodegradable products combined with higher tariffs on virgin plastic inputs.

Complementary efforts are also emerging through non-state actors. Regional and NGO-led programmes, including SPREP-supported initiatives and the Pacific Ocean Litter Project (POLP), have focused on behaviour change campaigns and demonstration of locally sourced alternatives. In parallel, at the regional level, a Pacific Tourism Organisation campaign launching this year will encourage all Pacific resorts and operators, including those in PNG, to phase out single-use plastics in favour of sustainable alternatives (Pacific Tourism Organisation, 2026).

3.8 Overarching recommendation for extending regulation

SUPs for Immediate Ban

When determining which SUP items should be prioritised for prohibition, policymakers typically consider factors such as persistence in the environment, availability of alternatives, how necessary or unnecessary the item is, recyclability, and the likelihood that an item will become litter. Littering risk is particularly important, as items that frequently escape waste management systems can cause disproportionate

environmental harm. A global review of coastal litter found that food and beverage packaging, including takeaway containers, was the dominant type of debris on the world's shorelines, present on 93% of studied coastlines worldwide (Kelly et al., 2026). Plastic straws are also consistently among the most common items collected during beach clean-ups globally.

Based on these considerations, plastic straws and expanded polystyrene (Styrofoam) containers are among the strongest candidates for an immediate ban. Straws are generally nonessential and can be easily replaced with alternatives such as paper, metal, or bamboo, making them clear “low-hanging fruit” for prohibition. As of 2026, hundreds of jurisdictions have either restricted or completely banned single-use plastic straws. Exemptions for medical or accessibility purposes, such as allowing their use in hospitals and care facilities, should be considered.

Styrofoam containers raise greater concern due to the presence of styrene, a potential carcinogen¹⁴, as well as their very poor recyclability and tendency to persist in the environment. Given the wide availability of alternatives, including bagasse-based and paperboard food containers, as well as reusable glass and stainless-steel options, the environmental and public health benefits of an immediate ban are likely to outweigh the short-term transition costs.

SUPS for Phased Ban

Plastic cutlery should also be considered a priority for restriction and eventual ban, given they are not easily recyclable, are frequently contaminated after use, and typically lack closed-loop recovery or stable end markets, resulting in significantly low material recovery rates.

Plastic cutlery has a range of alternatives, but a transition period is needed for businesses and consumers to adopt reusable or compostable options without significant cost or disruption. Sustainable alternatives are generally more expensive than SUP cutlery and face more complex supply chains.

Within this phased approach, there is a particularly strong case for mandating reusable cutlery in dine-in settings. Reuse works best in these venues, where cutlery stays on site and can be washed and reused on the premises. In contrast, single-use provision, including of sustainable alternatives, is least justified in these contexts, making dine-in settings an appropriate early focus for regulatory intervention as part of a broader SUP cutlery phase-out.

Requires additional analysis

Banning PET bottles outright is less straightforward, given their widespread use, central role in delivering safe drinking water, and integration into beverage supply chains. There is an opportunity to ban hard-to-recycle variants such as coloured and non-transparent PET bottles, while shifting toward clearer, more recyclable designs. For instance, Sprite moved away from its distinctive green bottles to clear bottles to improve recyclability, as the green colouring made it harder to recycle the plastic into new food-grade bottles.

Globally, PET bottles benefit from relatively strong, well-established recycling systems and are widely accepted in bottle-to-bottle recycling streams, allowing them to more readily re-enter food-grade packaging loops, which could make PET bottles be considered less problematic than other types of plastics.

Deposit Return Schemes (DRS) can improve PET collection and recycling rates and reduce littering, but they do not significantly reduce overall plastic consumption. As such, it should be treated as a transitional measure rather than a complete solution. Longer-term strategies should focus on upstream alternatives that reduce PET bottle generation and consumption, including reusable glass bottle systems, refill models, and standardised returnable packaging. Examples such as Coca-Cola’s returnable universal bottle systems in Latin America¹⁵, and the universal glass beer bottle shared by various breweries in the Netherlands (Bruine Nederlandse Retourfles (BNR))¹⁶, demonstrate the viability of reuse-based approaches. Samoa also recently called on Coca-Cola to keep plastic out of the Pacific and bring back reusable packaging.¹⁴

Nevertheless, according to PNG’s NAP, PET bottles are the number one packaging item (in weight) entering the ocean, highlighting the need for targeted action to address their environmental impact. Given the complexity of transitioning from single use PET bottles to alternative models at scale, additional analysis would be needed to recommend a phased ban or other policy approaches.

Further Market Development Needed for alternatives

Some alternatives are likely to still require further market development before large-scale adoption is realistic. This includes strengthening local supply chains for sustainable packaging, improving access to reusable systems, and ensuring that alternatives are affordable and practical in PNG’s context. Reviewing approved alternatives used in other Pacific Island jurisdictions with similar bans would help identify proven and adaptable solutions that can be scaled effectively.

Incentives and Supporting Measures

As explored in Section 3.7, a range of supporting measures will be needed to ensure successful implementation. These include taxes or levies on single-use plastics, reduced tariffs on sustainable alternatives, and targeted support for local businesses transitioning to reusable systems. Investment in recycling infrastructure, particularly PET collection through DRS, should be combined with broader upstream circular economy initiatives. Ongoing public awareness campaigns will also be important to drive behaviour change and highlight the environmental and health impacts of plastic pollution.

Table 3.7 priority items for SUP ban expansion

SUP Item	Recommendation	Justification
Straws	Immediate ban	• High litter risk and commonly found in coastal clean-ups. • Generally non-essential with readily available alternatives (e.g. paper, metal, bamboo). • Minimal economic and operational disruption expected.
Polystyrene food containers	Immediate ban	• Poor recyclability and long environmental persistence. • Potential health concerns associated with styrene exposure. • Suitable alternatives are widely available (e.g. paperboard, bagasse, reusable containers).

¹⁴ Break Free From Plastic. (2026). [Samoan Community Leaders, Environmental Advocates call on Coca-Cola’s Largest Bottler to Keep Plastic out of the Pacific and Bring Back Reusable Packaging.](#)

Cutlery	Phased ban	• Difficult to recycle due to contamination and limited end markets. • Alternatives exist but require time for businesses and consumers to transition due to higher costs and supply-chain constraints. • Reusable cutlery can be mandated early in dine-in settings, where reuse systems are practical and single-use provision is least justified.
PET bottles	Additional analysis required	• Important for beverage supply chains and access to safe drinking water, making immediate bans impractical. • Globally, benefits from established collection and bottle-to-bottle recycling pathways, supporting transitional recovery efforts. • Initial restrictions should focus on coloured and opaque PET bottles, which are more difficult to recycle than clear PET. • DRS can improve collection rates, recycling performance, and litter reduction, but should be viewed as a transitional measure rather than a complete solution. • Long-term policy should support a shift towards reusable and refillable bottle systems, which offer greater reductions in plastic consumption and waste generation.

3.9 Suggested next steps for regulatory expansion

To progress the expansion of SUP regulations in Papua New Guinea, a staged and evidence-led implementation process is required. Given current data limitations and variability in market readiness across product categories, the following steps are recommended:

1. Strengthen evidence base and market understanding:

- Conduct a targeted baseline assessment of SUP import volumes, distribution channels, and informal market flows.
- Map existing and potential alternative products, including availability, price points, and supply chain constraints across urban and rural areas.
- Engage importers, retailers, and waste operators to address current data gaps and validate assumptions used in this assessment.

2. Establish a framework for alternatives:

- Develop a national list of approved substitute materials and products based on environmental performance and lifecycle impacts.
- Include clear criteria to avoid unintended substitution with equally high-impact single-use materials.
- Provide technical guidance for businesses on compliant procurement options.

3. Phase regulatory expansion by readiness level:

- Prioritise immediate bans on items where alternatives are readily available and disruption is limited, such as straws and EPS food containers. Introduce phased restrictions for higher-impact or system-dependent items (e.g. plastic cutlery and PET bottles), aligned with alternative availability and infrastructure development.

- Begin with import restrictions, progress to distribution limits and then to full bans, allowing suppliers and consumers time to adjust at each stage

4. Implement supporting fiscal and regulatory incentives:

- Reduce tariffs or GST exemptions for certified alternative products and reuse systems.
- Provide targeted financial support (grants or concessional loans) to SMEs transitioning to alternative packaging systems.

5. Strengthen public engagement and enforcement readiness

- Maintain a sustained public awareness campaign explaining what is changing, when, and which alternatives are acceptable, with the dual aim of informing the public and driving behavioural change. Coordinate with provincial and municipal authorities to ensure consistent enforcement capacity across regions.
- Engage industry stakeholders early to reduce compliance gaps and improve implementation feasibility.

6. Align with regional best practice and phased learning

- Continue benchmarking against Pacific Island regulatory models to:
 - Identify effective design features and avoid known implementation barriers.
 - Explore expanding Papua New Guinea's list of banned problematic and unnecessary items, drawing on successful phase-outs implemented in other countries and the voluntary commitments already signaled by industry in the region.

4. Conclusion

This assessment examined options for strengthening Papua New Guinea's existing plastic bag regulations and evaluated the potential for extending restrictions to additional SUP products. Across both tasks, the findings demonstrate that stronger regulatory intervention has the potential to deliver substantial environmental and economic benefits, particularly through reducing plastic leakage into the marine environment.

The cost-benefit analysis undertaken for Task 1 found that all regulatory options generate positive economic outcomes once the avoided costs of marine plastic pollution are considered. While each option imposes some costs on government, industry, and consumers, these costs are small relative to the long-term environmental and societal benefits achieved through reduced plastic pollution. Among the options assessed, a comprehensive ban on all plastic shopping bags (option B), subject to limited exemptions for fresh food and medical purposes, provides the strongest overall outcome. It delivers the highest economic net present value and benefit-cost ratio, offers greater certainty of environmental outcomes, removes the need for costly verification systems, and aligns more closely with circular economy principles that prioritise elimination and reuse over continued reliance on single-use products.

Task 2 highlighted the challenges associated with assessing additional SUP products in the absence of comprehensive PNG-specific market data. Nevertheless, international experience and regional case studies provide a strong evidence base for identifying

priority items for future regulation. Plastic straws and expanded polystyrene food containers emerge as suitable candidates for immediate prohibition due to their high environmental impact, limited recyclability, and the availability of practical alternatives. Plastic cutlery is better suited to a phased transition, while PET bottles require further analysis given their importance to beverage supply chains and access to drinking water.

The findings also demonstrate that regulation alone is unlikely to achieve optimal outcomes. The success of any expanded SUP framework will depend on the availability of affordable alternatives, clear implementation timelines, effective public awareness campaigns, and adequate enforcement capacity. Supporting measures, including fiscal incentives, green public procurement, investment in local alternative products, and stronger producer responsibility mechanisms, can help facilitate a smoother transition while minimising impacts on consumers and businesses.

Overall, the evidence supports a gradual but decisive expansion of Papua New Guinea's approach to managing problematic and unnecessary single-use plastics. By combining targeted bans with supporting policy measures and ongoing stakeholder engagement, PNG can reduce plastic pollution, protect marine and terrestrial ecosystems, improve public amenity and health outcomes, and advance its transition towards a more circular and resource-efficient economy.

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ANNEXES

Annex I: Stakeholder consultations

Organisation	Date interviewed
CEPA	April 23rd, 2026
Paper Bag Manufacturer	May 6th, 2026

Annex II: Completed Annex B (Table B)

Please fill in and provide the data, information and analysis as appropriate to the following questions	Single use plastic bags	(PET) bottles	Polystyrene/ Styrofoam containers	Plastic Cutlery	Plastic Straws
1. Is the SUP being imported or manufactured/produced in PNG?	Yes- biodegradable bags are permitted, but importation of non-biodegradable bags is banned. Local manufacture of non-biodegradable bags also banned.	Yes - imported.	Yes - imported.	Yes - imported (no local manufacturing identified).	Yes - imported (no local manufacturing identified).
1.1 Is there a substitute for the SUP being imported or manufactured/produced in PNG?	Yes- Reusable fabric/material bags, paper bags, woven bilum bags (locally made).	Yes- Aluminium cans, glass bottles, paper beverage cartons (Tetra Pak).	Yes- Bagasse (sugarcane fibre) containers, paper/cardboard containers.	Yes- Wooden cutlery, bamboo cutlery.	Yes- Paper straws, bamboo straws, metal/stainless steel straws.
2. Volume of the single use product is being imported, manufactured, produced in PNG?	Data unavailable.				
2.1 Volume of the single use product substitute is being imported, manufactured, produced in PNG?	Data unavailable.				
3. Number of businesses involved in the importation manufacture, distribution, sale of SUP.	Data unavailable.				

3.1 Number of businesses involved in the importation manufacture, distribution, sale of the SUP substitute.	Data unavailable.				
4. What is the tariff on the SUP item being imported and how much revenue is being collected by government?	Data unavailable.				
4.1 What is the tariff on the SUP substitute item being imported and how much revenue is being collected by government?	Data unavailable.				
5. Assuming tariff on SUP import is lower than substitute equivalent how much revenue would government lose if tariff imposed on SUP was higher than the tariff imposed its substitute equivalent?	Data unavailable.				
6. What incentives could be provided to the SUP producer/importer by government to switch to using the substitute equivalent?	See section 6.				
7. Are there any schemes/incentives in place promoted by		The National Capital District Commission (NCDC), with partners		While not PNG specific, the South Pacific Tourism Exchange 2026	In 2021, Nestle Papua New Guinea announced its MILO UHT products

government/business to reduce the waste generated by the SUP product?		Coca-Cola Europacific Partners PNG, and Branis Recycling, is leading initiatives to collect PET bottles and promote sustainable packaging alternatives in 2025/2026.		has phased out SUP, including cutlery, straws, cups, bags and plastic bottles. This commitment aligns with the Pacific Sustainable Tourism Policy Framework 2030, and ongoing efforts to reduce plastic waste across the region's tourism sector. ¹⁵	would be sold with paper straws instead of plastic straws. This announcement saw Nestle become one of the first food companies in PNG to remove all plastic straws from its packaging. The move was thought to eliminate 750,000 plastic straws from PNG each year. ¹⁶
8. Are there any schemes/incentives in place promoted by government/business to promote the use of the substitute?	Australian Government-funded project supporting conversion of banana stems into biodegradable paper in PNG: https://png.embassy.gov.au/pmsb/1340.html				
9. If the SUP was banned or phased out what would be the economic, health, social, environmental costs and benefits?	Dimension	Potential costs		Potential benefits	
	Economic	- Government incentive programmes require budget allocation. - Substitutes may initially cost more than SUPs. - Gradual market shift reduces tariff dependency on SUPs. - Local production of bagasse, bamboo, and traditional woven products creates value-added industries.		- Reduced waste management costs. - New markets for local substitute production (bilum bags, bamboo, banana-fibre paper). - Reduced cleanup and pollution remediation expenses.	
	Health	Transitional supply gaps for food packaging could affect hygiene if substitutes are not readily available.		- Reduced exposure to microplastics in food/water. - Lower risk of vector-borne disease from plastic-clogged drainage.	

¹⁵ Pacific Tourism Organisation. (2026). [Facebook Post](#).

¹⁶ PNG Consumer Advocacy Network. (2021). [Facebook Post](#).

	Social	Job losses in plastic import/distribution sectors; need for retraining.	- Employment in local artisanal and substitute manufacturing sectors. - Community pride in traditional crafts (bilum).
	Environmental	Negligible.	Significant: Projections indicate >2.3 million tonnes of plastic waste could enter PNG's environment between 2024–2035 under "business as usual." Bans would sharply reduce marine litter and protect coastal ecosystems critical to PNG's fisheries and tourism.
10. Conversely if SUP substitutes were encouraged would be the economic, health, social, environmental costs and benefits?	Dimension	Potential costs	Potential benefits
	Economic	- Government incentive programmes require budget allocation. - Substitutes may initially cost more than SUPs.	- Gradual market shift reduces tariff dependency on SUPs. - local production of bagasse, bamboo, and traditional woven products creates value-added industries.
	Health	Minimal.	Same health benefits as above, but achieved more gradually.
	Social	- Slower cultural shift. - Continued litter.	- Lower disruption for businesses; time for workforce transition. - Opportunity for phased public education campaigns.
	Environmental	Plastic pollution continues during transition.	- Measurable reduction over time if adoption rates are high. - Pilot programmes can identify most effective substitutes before scaling.

Annex III: International biodegradability standards

PNG's legal definition of biodegradable plastic, set out in the Environment (Control of Biodegradable Plastic Shopping Bags) Regulation 2011 (Statutory Instrument No. 3 of 2011) under Section 1 of that regulation, "biodegradable plastic" is defined as plastic that will decompose under natural sunlight and air within a specified period of time, such that only 10% of the original mass of plastic material should remain after 90 days when sifted through a 2 mm sieve. Biodegradable plastic must also meet the requirements of the recognised international testing procedures for either oxo-biodegradable plastic or compostable plastic, whichever is applicable. The Regulation distinguishes between two categories: "compostable plastic", which must be certified according to Australian Standard AS4736-2006 (Biodegradable plastics suitable for composting and other microbial treatment) or an equivalent standard approved by the Director; and "oxo-biodegradable plastic", which must be certified to Tier 1 of American Standard ASTM D6954-04 (Standard Guide for Exposing and Testing Plastic that Degrades in the Environment by a combination of Oxidation and Biodegradation). The approved testing laboratory must be one approved by the Conservation and Environment Protection Authority.

There is a clear shortcoming regarding the definition of "biodegradability" as per the current legislation. It is that neither AS4736-2006 nor ASTM D6954-04 reflects the ability for plastic bags to degrade in PNG natural environment – and would require . AS4736-2006 requires biodegradation at 55-60 degrees celsius under controlled composting conditions that do not exist in PNG. ASTM D6954-04, which covers oxo-biodegradable plastics, was banned by the EU in 2021 on the basis that it does not result in genuine biodegradation and may generate microplastic pollution. Bags certified under either standard may therefore carry a legal claim to biodegradability without degrading in any of the environments where they actually end up in PNG. Compounding this, CEPA has no gazetted list of approved testing laboratories and no capacity to verify whether a consignment meets even the existing definition¹⁷.

The most advanced international standards which correlate to plastic bags biodegradability in PNG's national environment is France's NF T51-800 standard, which requires at least 90% biodegradation within 12 months at 25 degrees celsius, making it more environmentally appropriate for PNG's context than the current standards. If Option A is pursued, aligning PNG's definition with NF T51-800 or the EU's EN 17427:2022 would represent a more credible definition of biodegradability.

¹⁷ Justin Rose Consulting (2024)



About Common Seas

Common Seas is a social enterprise that drives systemic change, creating partnerships to design and deliver resources and solutions that stop the flow of plastic pollution.

Our programmes are centred on:

- Leading policy changes through partnerships with governments, providing technical expertise and convening the right stakeholders for action.
- Commissioning research and raising awareness of the human health impacts of plastics to inspire and motivate change.
- Empowering and equipping children through their schools, to stop the flow of plastic pollution.

We work with countries that are most affected by plastic, particularly SIDS and developing coastal economies, supporting a just transition to a future freed from plastic pollution.

To find out more, please visit: www.commonseas.com

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For more information, please visit: sbe-platform.org.uk/about#sbe-programme

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