ADDRESSING POLLUTION FROM SINGLE-USE PLASTIC PRODUCTS:

A LIFE CYCLE APPROACH

KEY MESSAGES FOR TOURISM BUSINESSES

ACKNOWLEDGEMENTS

Disclaimer: This document has been developed within the framework of the Global Tourism Plastics Initiative, and with the support of the project Transforming Tourism Value Chains in Developing Countries and Small Island Developing States to accelerate more resource efficient, low carbon development. This project is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag.

Supported by:

based on a decision of the German Bundestag

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'Addressing pollution from single-use plastic products: A Life Cycle Approach – Key messages for tourism businesses' was led by the United Nations Environment Programme (UNEP), with the support of the United Nations World Tourism Organization (UNWTO) and the Ellen MacArthur Foundation.

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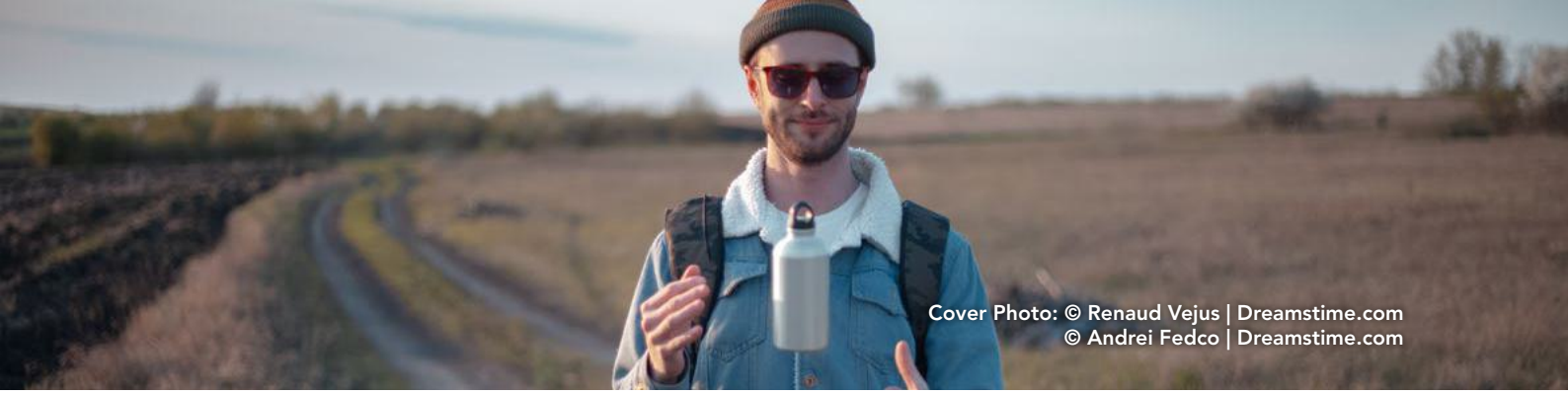
We would like to thank the Advisory Group members and signatories of the Global Tourism Plastics Initiative, for their contributions. Special gratitude goes to the following people for their review, feedback, and inputs on a draft extract of this document:

Delphine Stroh (Accor), Matt Crane (Aviation Sustainability Forum), Thomas Loughlin (Booking.com), Xenia Hohenlohe (Considerate Group), Philippe De Naeyer (deSter, gategroup), Florence Guiho (Euro Disney Associes SAS), Rachel McCaffery (Green Case, Travel without Plastics), Louise Holder and Anett Kiss (IHG Hotels and Resorts), Saskia Pepping (MVO Netherlands), Graham Harper (PATA), Juan Ruiz (Plastics Europe), Sven Wiltink (Radisson Hotel Group), Claire Whitely (Sustainable Hospitality Alliance), Katie James (Travel Foundation), Andreas Vermöhlen (TUI Group).

The layout of the document was carried out by Javier P. Spuch (UNWTO).

RECOMMENDED CITATION

Global Tourism Plastics Initiative (2021) - Addressing pollution from single-use plastic products: A Life Cycle Approach – Key messages for tourism businesses.



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INTRODUCTION

In March 2019, the UN Environment Programme was requested by the Fourth session of the UN Environment Assembly[1] to make available existing information on the full life cycle environmental impacts of plastic products compared to products of alternative materials. In answer to this, the UNEP-hosted Life Cycle Initiative conducted a series of meta-analyses of LCA studies on single-use plastic products and their alternatives[2]. The high-level summary report 'Addressing Single-Use Plastic Products Pollution Using a Life Cycle Approach'[3] integrates the findings from these studies to support policymaking on single-use plastic products using LCA as a tool to complement evidence-based decision-making.

The present document "Addressing pollution from single-use plastics products: A life Cycle Approach – Key messages for tourism businesses" summarises, from the perspective of the tourism sector, the key findings of the Life Cycle Initiative's report series and summary report. It aims to educate tourism stakeholders and provide evidence-based guidance for decision-making to address pollution from single-use plastic products. In the following sections, key messages and recommendations are presented for the following single-use plastic products: bottles, cups, bags, take-away food packaging and tableware. These key messages and recommendations are also relevant for other single-use plastic products commonly used in the tourism sector, such as single-use toiletries and straws—the main problem is their single-use nature and the impacts resulting from it, more than the material they are made of.

The content is relevant for the achievement of the objectives of the Global Tourism Plastics Initiative. It supports the elimination of unnecessary and problematic plastic products; highlights the role of reuse models to eliminate the use of unnecessary and problematic plastic items; it outlines areas in which engagement throughout the value chain is required to spur innovation; and reinforces the need for context-based approaches to ensure plastic is circulated back into the economy through recycling and material recovery.

1 Operative paragraph 8c of Resolution 9 of UNEA 4 (Resolution 9 UNEP/EA.4/Res.9
2 Life Cycle Initiative (2021). Single-Use Plastic Products (SUPP) and their alternatives: Recommendations from Life Cycle Assessments, available at: https://www.lifecycleinitiative.org/activities/key-programme-areas/technical-policy-advice/single-use-plastic-products-studies/
3 United Nations Environment Programme (2021), Addressing Single-use Plastic Products Pollution Using a Life Cycle Approach. Nairobi, available at: https://www.unep.org/resources/publication/addressing-single-use-plastic-products-pollution-using-life-cycle-approach

WHAT ARE LIFE CYCLE ASSESSMENTS?

A Life **Cycle Assessment (LCA)** is a quantitative tool designed to assess the environmental impacts of products and services across their full life cycle. This includes stages such as raw material extraction, production, logistics and distribution, use, and end-of-life.[4] To assess the multilayered impacts a product can have on the environment, the life cycle approach analyses various "environmental categories" for the different "stages" of the life cycle; these range from climate change, acidification, and eutrophication, to ozone depletion and other environmental issues. The environmental performance of the examined products varies across different environmental categories and stages.

While LCAs provide comprehensive assessments of environmental impacts, it is important to note that some important environmental issues are not quantitatively covered by the studies, such as impacts from littering or microplastics. Social impacts arising from plastic pollution, including health and gender considerations, are also not covered and need to be supplemented by additional research.

PLASTIC POLLUTION IN TOURISM

Every year, an estimated 100-150 million tonnes of plastics are produced for single-use purposes and about 8 million tonnes of plastics are dumped into the oceans.[5] The tourism sector is a significant contributor to the problem of plastic pollution, as much of the plastic used in tourism operations is made to be thrown away and often cannot be recycled. The issue is exacerbated by the littering of plastic products in pristine environments where tourism takes place (both on land and in marine environments), thereby causing significant harm to the health of animal species, humans and ecosystems.[6] At the same time, the tourism sector is directly impacted by plastic pollution, as it leads to the degradation of the quality and health of the destinations' ecosystems – the very basis on which the sector relies. For instance, the seasonal amount of waste in the region of the Mediterranean Sea increases by as much as 30 per cent during the summer, resulting not only in severe ecological damages but also in a yearly economic loss of the sector of up to €268 million from plastic pollution.[7]

Eliminating single-use plastic products across the tourism industry represents an opportunity to tackle plastic pollution at the source and enhance the contribution of tourism to the protection of ecosystems, thereby preserving the attractiveness of destinations. Single-use plastics are usually considered problematic and unnecessary and can be eliminated without compromising the tourist experience.[8] In addition, addressing problematic plastics across the tourism value chain can lead to a shift towards innovative and circular business models, which can result in added value and support a sustainable recovery from COVID-19.[9]

4 United Nations Environment Programme (2020), Single-use plastic bags and their alternatives: recommendations from life cycle assessments, available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/31932/SUPB.pdf?sequence=1&isAllowed=y

5 United Nations Environment Programme (2021). Single-Use Plastic Products (SUPP) and their alternatives: Recommendations from Life Cycle Assessments, available at: https://www.lifecycleinitiative.org/activities/key-programme-areas/technical-policy-advice/single-use-plastic-products-studies/

6 UNEP & WTTC (2021), Rethinking single-use plastic products in travel & tourism, available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/36324/RSUP.pdf

7 WWF (2019), Stop the flood of plastic Effective measures to avoid single-use plastics and packaging in hotels, available at: https://www.wwf.de/fileadmin/user_upload/WWF_Plastikstudie_Hotelma%C3%9Fnahmen_eng.pdf and Stop the Flood of Plastic-How Mediterranean countries can save their sea, WWF (2019) available at: https://awsassets.panda.org/downloads/a4_plastics_reg_low.pdf

8 New Plastics Economy Global Commitment (2020), available at: https://www.newplasticseconomy.org/assets/doc/Global-Commitment_Definitions_2020-1.pdf

9 One Planet Sustainable Tourism Programme (2020), One Planet Vision for a Responsible Recovery of the Tourism Sector, available at: https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-06/one-planet-vision-responsible-recovery-of-the-tourism-sector.pdf

PRINCIPLES FOR ACTION TOWARDS ELIMINATING POLLUTION FROM SINGLE-USE PLASTIC PRODUCTS IN TOURISM BUSINESSES

The following principles will contribute to the elimination of plastic pollution and the reduction of environmental impacts related to the use of single-use plastic products and their alternatives by tourism businesses.[10] These principles are relevant across all single-use plastic products, beyond the five types that are detailed in this publication, and aim to consider all stages of the product life cycle, including design, procurement, use, and disposal.

1. Reduce the use of single-use products regardless of the material (e.g., glass, paper, plastic, etc.).

2. Promote reusable products and systems in your tourism business – the most sustainable product is the multi-use product.

3. Use tourist and staff-targeted strategies and communications to ensure products are continuously reused.

4. Decrease the environmental footprint of production (through reuse, demanding products with high recycled content, and partnering with suppliers engaging in sustainable production methods).

5. Engage with suppliers and relevant actors in the value chain to procure products that are designed to be fit for purpose, durable, and functional.

6. Ensure that resource-efficient washing technologies are in place.

7. Establish good waste separation systems and the correct waste management contracts to ensure products receive proper end-of-life treatment.

8. Know your context when making decisions related to single-use plastic products (Cultural norms, production methods, waste management technology infrastructure available, tourist behaviors, regulatory framework).

10 Adapted from the 'Ten factors for policymakers to consider when using LCA to inform policymaking on single-use plastic products and their alternatives' (UNEP, 2021)

SINGLE-USE PLASTIC BOTTLES

- In addition, they tend to have a lower littering share (1%) compared to plastic bottles (8%).

Avoid replacing single-use plastic bottles with other single-use solutions

Whatever the material, the environmental impact of a bottle decreases with the number of uses.

- **Single-use glass bottles score worse in almost all environmental categories,** whereas reusable glass bottles can show better environmental performance than single-use plastic (SUP) Bottles if used enough times.

- **Switching to other single-use options likely leads to burden-shifting;** certain single-use bottle types might outperform SUP bottles in one environmental category (e.g. marine ecotoxicity), but have worse impacts in another (e.g. climate change).

Encourage the use of reusable bottles instead of single-use plastic bottles

If used enough times, reusable containers have a lower environmental impact than SUP bottles.

- **Insights on aluminium bottles/containers:**
  - If used multiple times, they generate lower greenhouse gas emissions and other environmental impacts compared to SUP bottles.
  - Their technical life span allows for a much higher number of uses, which indicates substantial potential environmental gains compared to SUP bottles.

Introduce reusable bottle systems in your tourism business to enable multiple uses

To guarantee that reusable bottles show better environmental performance, they must be reused multiple times.

- ☐ Select the reuse model (in-house, third-party, mixed) that fits the business. *For inspiration on reuse models, read the guideline on Upstream Innovation.[11]
- ☐ Adapt operating procedures and standards to accommodate a multiple-use bottle system.
- ☐ Use incentives to encourage reuse: e.g., discounts on purchases for guests who bring their own bottle/container; establish a deposit system where the customer is provided a reusable bottle in exchange for a fee and paid back upon return.
- ☐ Couple incentives with strategic communications and consumer-behavior campaigns.

Consider that non-container options show considerable advantages in all environmental categories compared to bottled water.

- ☐ Install water dispensers wherever possible in your tourism business (e.g. in public areas, corridors). Make sure to always provide background information on the water quality to guests.[12]

11 Ellen MacArthur Foundation (2020). Upstream Innovation: a guide to packaging solutions, available at: . https://plastics.ellenmacarthurfoundation.org/upstream#resources

12 Futouris (2021), How to Reduce Single-Use Plastic - Guidance for tourism businesses, available at: https://www.futouris.org/en/news/futouris-publishes-guidance-on-how-to-reduce-single-use-plastic/

Understand how product design can help reduce environmental impact

- ☐ Be mindful of the bottle volume and weight.
  - A 2 litre PET reusable bottle with carbonated beverage has a lower environmental impact per litre than four 0.5 litre bottles of the same material.
- ☐ Re-assess the way you deliver drinks to customers.
  - If you will be pouring the beverage into cups/glasses, delivering it in bigger bottles leads to a smaller environmental impact than using smaller ones of the same material.
- ☐ Source from suppliers who offer reusable bottles which are easy to handle and that show strong technical performance and durability.
- ☐ Consider options for end-of-life treatment when making a product choice (e.g. recyclability of the material).

Engage your bottle suppliers to examine their production sources

- ☐ Choose sustainably sourced packaging whenever it is possible.

  Bottles made from or including high amounts of recycled content are environmentally preferable compared to bottles made of virgin plastic.
- ☐ Choose bottles from low-carbon production sources whenever available.

  Low-carbon production will include suppliers engaging in emissions reduction efforts, carbon offsetting schemes or renewable energy production.

Use resource-saving washing technologies

The washing stage can have a significant impact on the environmental performance of bottles.

- ☐ Whether the washing is done in-house or by a third party, ensure the technical appliances are water-efficient and energy-saving.
- ☐ If bottles are transported for washing, procure low-carbon transportation.

Establish effective waste separation and recycling systems

The more bottles are recycled, the lower their impact on the environment.

- For example, only 24% of PET bottles were being recycled in the UK in 2013. By increasing this number to 60%, the climate impact of one drink could be reduced by half.

- ☐ Engage with your local or municipal waste service providers to monitor and/or influence the recycling capabilities at the destination.
- ☐ Engage with suppliers that offer take back systems.

For additional support:

- Read the Global Tourism Plastic Initiative's COVID-19 related guidelines[13] on how to use reusable products while ensuring proper hygiene and sanitization practices.
- Consult the decision-trees on single-use plastic bottles in the report "Rethinking single-use plastic products in tourism: impacts, management practices and recommendations", jointly authored by the World Travel and Tourism Council & UNEP.

13 Global Tourism Plastics Initiative (2020), Recommendations for the tourism sector to continue taking action on plastic pollution during COVID-19 recovery, available at: https://www.oneplanetnetwork.org/sustainable-tourism/recommendations-plastic-pollution-and-covid-19

SINGLE-USE PLASTIC CUPS

Shift away from single-use cups towards reusable solutions

Reusable cups generally have lower environmental impacts than single-use cups, regardless of the material used.

- Switching to a reusable cup (regardless of the material) from a single-use paper cup can reduce environmental impact by 76 per cent (compared to landfilling a single-use paper cup) and 60 per cent (recycling single-use paper cup).

- **Insights on stainless steel cups:**

- It only takes 20 uses to have a lower impact on the climate and on fossil fuel resource depletion compared to PET (Polyethylene Terephthalate) cups.

- If used around 140 times (about 5 weeks, 4 times a day), they outperform a SUP cup across all environmental impacts, whether they are washed by hand or dishwasher.

Introduce a reusable cup system in your tourism business to enable multiple uses

To guarantee that reusable cups show better environmental performance, they must be reused continuously/multiple times.

☐ Select the reuse model (in-house, third-party, mixed) that fits the business and allows keeping track of the use of cups in your operations. *For inspiration on reuse models, read the guideline on Upstream Innovation.[14]

☐ Adapt operating procedures and standards to accommodate a multiple-use cup system.

☐ Use incentives to encourage reuse: e.g. discounts on purchases for guests who bring their own bottle/container; establish a deposit system where the customer is provided a reusable bottle in exchange for a fee and paid back upon return.

Be aware that consumer behavior directly influences environmental outcomes.

☐ Use communications to promote the social acceptability of using reusable alternatives among customers and staff, e.g. by carrying out informative, creative and encouraging campaigns related to reusable cups.

☐ Aim to make the reusability strategy part of your branding, more coherence can result in more effective communication.

Understand how product design can help reduce environmental impact

☐ Consider using more lightweight, durable cups which still achieve your required functionality.

- The larger or heavier the cup within the same material category, the higher the environmental impact.

- Common "add-ons" to the cups, such as lids to prevent spilling of drinks, or bands, sleeves, and carriers to make the cup more transportable, increase environmental impact.

☐ Consider options for end-of-life treatment when making a product choice (e.g. recyclability of the material).

14 Ellen MacArthur Foundation (2020), Upstream Innovation: a guide to packaging solutions, available at: https://plastics.ellenmacarthurfoundation.org/upstream#resources

Partner with suppliers engaging in sustainable material sourcing and production methods

The largest contributor to the environmental impact of beverage cups is the manufacturing stage.

- ☐ Engage with suppliers who adopt sustainable production of cups (e.g. by using renewable instead of fossil energy, integrating the reduction of energy and water use, waste and emissions generation across all production stages).
- ☐ Make sure to select suppliers who produce cups made from sustainably sourced materials, e.g. cups with high amounts of recycled content.

Use resource-saving washing technologies

The use phase (mainly washing) is the second most significant contributor to the impact of reusable cups, after manufacturing.

When cups are washed, both water temperature and electricity source to heat the water are more important than whether cups are washed by hand or dishwasher.

- ☐ Whether the washing is done in-house or by a third party, ensure the technical appliances are water-efficient and energy-saving.
- ☐ If cups are transported for washing, procure low-carbon transportation.

While transitioning from single-use to reusable cups, establish good waste separation systems to support cups getting recycled

End of life treatment has a substantial influence on the environmental results of single-use cups—in general, the higher the recycling rate the lower the environmental impact.

- ☐ For lined paper cups, incineration and recycling are preferable to landfilling.
- ☐ For petroleum-based plastic cups, recycling is the best option from a global warming perspective, followed by landfill and incineration.
- ☐ Make sure that cups which can be recycled end up in the right bin—this is an important first step for their proper end-of-life treatment.
    - Recycling paper cups rather than sending them to landfill could reduce their environmental footprint by up to 40 per cent.

For additional support:

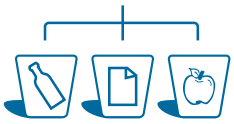
- Read the Global Tourism Plastic Initiative's COVID-19 related guidelines[15] on how to use reusable products while ensuring proper hygiene and sanitization practices.
- Consult the decision-trees on single-use plastic bottles in the report "Rethinking single-use plastic products in tourism: impacts, management practices and recommendations", jointly authored by the World Travel and Tourism Council & UNEP.

15 Global Tourism Plastics Initiative (2020), Recommendations for the tourism sector to continue taking action on plastic pollution during COVID-19 recovery, available at: https://www.oneplanetnetwork.org/sustainable-tourism/recommendations-plastic-pollution-and-covid-19

Lowest impact type of beverage cups depending on waste management context and behavioural considerations

This matrix aims at supporting tourism businesses and destinations to identify the most appropriate options for their current context. It also allows tourism businesses and destinations to plan for the fulfillment of conditions to ensure that reusable cups outperform single-use alternatives.[16]

Highly engaged tourists and staff

Considerations of geographical and technological context.	 **EFFICIENT WASHING during use-phase (energy efficient dishwasher or hand wash in cold water).**	 **CUPS REUSED many times.**	 **UNLIKELY TO LITTER likely to recycle or compost.**
NO FORMAL WASTE MANAGEMENT & POOR RECYCLING SUPPORT unsanitary landfill, open dumps, open burning, no policy support for recycling and/or composting.	Reusables regardless of energy mix.	Reusable Ceramic; glass; stainless steel; bamboo.	Reusable Ceramic; glass; stainless steel; bamboo.
FORMAL WASTE MANAGEMENT BUT POOR RECYCLING SUPPORT sanitary landfill, incineration with energy recovery, but no or low policy support for recycling and/or composting.	No Clear preference in case of carbon intensive energy mix.	Reusables Ceramic; glass; stainless steel; bamboo; PP.	No Clear preference between reusable and single-use (EPS) If incineration with energy recovery and importantly if single-use are being collected and managed.
	Reusables in case of renewable energy mix.		
FORMAL WASTE MANAGEMENT & RECYCLING INFRASTRUCTURE sanitary landfill and/or incineration with energy recovery.	Single-use in case of Carbon Intensive energy mix.	Reusable especially recyclable materials such as PP; glass; and stainless steel.	Single-use PE- or bioplastic-lined paper; rPET.
	Reusables in case of renewable energy mix .		Reusable especially recyclable materials such as PP; glass and stainless steel.

Reusable products lowest impact option **Single-use products lowest impact option** **No clear preference for reusable or single-use products**

16 The content of the matrix is simplified. Please refer to the original meta-study for details. United Nations Environment Programme (2021). Single-use beverage cups and their alternatives - Recommendations from Life Cycle Assessments.

Indifferent tourists and staff

Considerations of geographical and technological context.	 INEFFICIENT WASHING during use-phase (Handwashing in hot water).	 INSUFFICIENT REUSE of cups (Little consumer awareness).	 LIKELY TO LITTER unlikely to recycle.
NO FORMAL WASTE MANAGEMENT & POOR RECYCLING SUPPORT unsanitary landfill, open dumps, open burning, no policy support for recycling and/or composting.	Reusable in case of renewable energy mix. Single-use in case of carbon intensive energy mix.	Single-use Wax-; PE- or bioplastic-lined paper.	Reusable Ceramic; glass; stainless steel; bamboo.
FORMAL WASTE MANAGEMENT BUT POOR RECYCLING SUPPORT sanitary landfill, incineration with energy recovery, but no or low policy support for recycling and/or composting.	Single-use in case of carbon intensive energy mix. No Clear preference in case of renewable energy mix.	Single-use EPS; wax-; PE- or bioplastic-lined paper.	Reusables Ceramic; glass; stainless steel; bamboo.
FORMAL WASTE MANAGEMENT & RECYCLING INFRASTRUCTURE sanitary landfill and/or incineration with energy recovery.	Single-use regardless of energy mix.	Single-use PE- or bioplastic-lined paper; rPET.	Reusables PP; ceramic; glass; stainless steel; bamboo.

Reusable products lowest impact option

Single-use products lowest impact option

No clear preference for reusable or single-use products

SINGLE-USE PLASTIC BAGS

Shift away from single-use bags regardless of material

Be aware of burden-shifting as bags from all materials have an impact. The issue is not just plastic, it is how the bags are used.

- Options such as single-use paper bags and biodegradable bags have lower impacts related to littering than their plastic equivalent.
- However, they often score worse in other environmental categories (climate change, acidification, eutrophication, ozone depletion, land use change) compared to single-use plastic (SUP) bags.

Introduce a reusable bag system in your tourism business

Reusing extends the lifetime of bags and reduces their impacts from the production of new bags and waste management.

- The number of times a bag is used directly influences its environmental impacts: If a bag is used for shopping twice instead of once, it has only half the environmental impact per shopping round.
- Bags (including shopping bags, laundry bags, etc.) designed for multiple uses have lower impacts than single-use plastic bags in most environmental categories.

For reusable bags to be more environmentally friendly in practice, a longer lifetime of the bags needs to be guaranteed by encouraging business and consumers to reuse them as many times as possible.

☐ Adapt operating procedures and standards to allow for bags to be used multiple times.

☐ Use staff and tourist-targeted strategies to encourage continuous reuse of bags.

☐ Incentivize customers to bring their own bag (e.g. through discounts on purchases) and use communications, e.g. creative campaigns with messages to support the shift to multiple use.

- "The shopping bag that has the least impact on the environment is the bag the consumer already has at home."

Understand how product design can help reduce environmental impact by engaging suppliers

The design stage is an important opportunity to decrease environmental impacts across the product life cycle.

- Smaller, lighter and more durable bags in the same material categories are less impactful for the environment.

☐ Choose bags which are as lightweight and durable as possible while achieving your required functionality.

☐ Consider options for end-of-life treatment when making a product choice (e.g. recyclability of the material).

Innovative design schemes can positively influence user behaviour.

☐ Pay close attention to design elements of bags that can encourage its reuse (e.g. with high functionality, strong technical performance, and easy use).

Engage your suppliers to learn about the environmental impacts of production; choose low-carbon and resource efficient production

Production is a significant contributor to the environmental footprint of bags, regardless of the material.

- ☐ Revisit procedures to eliminate the use of bags when not necessary to guarantee guest experience or to encourage multiple uses.
- ☐ Engage with suppliers with high environmental standards, e.g. by producing with renewable instead of fossil energy, using resource-saving appliances etc.

Establish effective waste separation and disposal systems for each type of bag used

The way in which products are managed in their final life stage has a substantial influence on their environmental impact.

- ☐ Make sure waste separation is easy to understand and well-guided.
- ☐ Establish designed disposal systems which effectively segregate different types of materials, e.g. degradable plastic bags / biodegradable bags used for collection of biological waste / non-degradable bag.
- ☐ Ask your waste service provider about their current and projected capacity to recycle bags of different materials.

Know your context when making decisions related to the purchase and use of bags

The specific geographical, cultural, and technological context in which you are operating your business can directly influence the environmental outcomes of your decisions.

Be aware that factors such as the weight of plastic products and recycling rates can differ between regions and countries.

- ☐ Stay informed about your supplier's environmental performance, the recycling capabilities in the destination, and the disposal methods.
- ☐ It is pressing to shift away from single-use plastic bags if:
  - The local or municipal waste-management system is poorly developed.
  - Incineration is prevalent as a waste-treatment approach.
- If incinerated, paper, cotton, bio-based bags have lower impact on climate than SUP bags.

For additional support:

- Read the Global Tourism Plastic Initiative's COVID-19 related guidelines[17] on how to use reusable products while ensuring proper hygiene and sanitization practices.
- Consult the decision-trees on single-use plastic bottles in the report "Rethinking single-use plastic products in tourism: impacts, management practices and recommendations", jointly authored by the World Travel and Tourism Council & UNEP.

17 Global Tourism Plastics Initiative (2020), Recommendations for the tourism sector to continue taking action on plastic pollution during COVID-19 recovery, available at: https://www.oneplanetnetwork.org/sustainable-tourism/recommendations-plastic-pollution-and-covid-19

SINGLE-USE PLASTIC TAKE-AWAY FOOD PACKAGING

Avoid switching from plastic packaging to another single-use alternative

When evaluating alternatives, be aware of trade-offs.

- A single-use polypropylene (PP) container has the most severe impacts on climate change, acidification and other environmental categories.
- An aluminium container scores worst in terms of ozone layer depletion, human toxicity, marine and terrestrial ecotoxicity.

☐ Before switching to another single-use options, carefully learn about and evaluate the alternatives according to your context.

Introduce reusable take-away food packaging systems

Reusable packaging, if reused enough times, has better overall environmental performance than single-use packaging.

☐ Consider introducing incentives, such as discounts for customers who bring their own food containers from home.

☐ Select the reuse model (in-house, third-party, mixed) that fits the business and allows keeping track of the containers in your operations.

Use communications to create guest and staff awareness around reuse practices

Consumer behavior directly influences the environmental performance of food packaging.

☐ Commit to reuse practices as part of your business strategy and communicate it to your customers in encouraging and innovative ways.

☐ Use targeted campaigns to encourage customers to consistently reuse their reusable food containers brought from home and/or provided by your tourism business.

Engage your suppliers to understand their material sourcing and production processes

The environmental impact of a type of packaging is influenced by whether it is made from fossil or bio-based resources, and from primary or secondary (i.e. recycled) resources.

☐ Partner with suppliers committed to sustainable production methods (e.g. renewable energy, resource-saving appliances, low emissions and waste generation etc.).

For additional support:

- Read the Global Tourism Plastic Initiative's COVID-19 related guidelines[18] on how to use reusable products while ensuring proper hygiene and sanitization practices.
- Consult the decision-trees on single-use plastic bottles in the report "Rethinking single-use plastic products in tourism: impacts, management practices and recommendations", jointly authored by the World Travel and Tourism Council & UNEP.

18 Global Tourism Plastics Initiative (2020), Recommendations for the tourism sector to continue taking action on plastic pollution during COVID-19 recovery, available at: https://www.oneplanetnetwork.org/sustainable-tourism/recommendations-plastic-pollution-and-covid-19

Understand how product design can help reduce environmental impact

The design and technical performance of a food container can directly influence its environmental impact throughout the product lifecycle.

- Designs with straighter lines and that avoid corners and narrow openings are easier to wash, and therefore more resource efficient.

☐ Consider using technologies that allow careful tracking of how the product is used, whether it has a problem that makes it unsafe, etc. (e.g. Radio-frequency Identification).

☐ Purchase containers which are easy to handle and which encourage future uses in internal operations (e.g. cleaning, cooking, etc.) and by guests.

☐ Choose packaging that is as lightweight and durable as possible while achieving your required functionality.

☐ Consider options for end-of-life treatment when making a product choice (e.g. littering rates at the destination, recyclability of the material).

The food contained often has a higher environment impact than the packaging itself.

☐ Evaluate how well the packaging used prevents food waste and spoilage.

Reevaluate the transport and delivery schemes behind take-away or room services

A well-established delivery system and efficient ways of transportation can significantly improve environmental performance.

☐ Develop sustainable transport options, e.g. delivery by e-trucks and bikes, energy-efficient elevators in-house etc.

Implement resource-efficient washing solutions for reusable food containers

The biggest share of the environmental footprint of reusable containers is created during the washing stage (>40%).

☐ Take advantage of technological innovations to reduce the use of water, energy and detergent.

While you transition to reusable food packaging, ensure good waste separation systems in your tourism business

The way products are managed in their final life stage has a substantial influence on their environmental impact.

- Packaging that is effectively recycled can significantly reduce the use of raw materials for producing new ones.

☐ Make sure waste separation is easy to understand and well-guided.

☐ Establish disposal systems designed to effectively segregate different types of materials (e.g. those that can be recycled, and those that cannot) and free of food leftovers.

☐ Ask your waste service provider about their current and projected capacity to recycle bags of different materials.

SINGLE-USE TABLEWARE

Try to replace single-use tableware of any material with reusable systems to minimise waste and environmental impact

- Reusable tableware consistently outperforms single-use alternatives across all environmental impact categories (except for water, due to washing), regardless of material.
- Reusable plates, bowls, trays and cutlery not only outperform the single-use plastic and paper equivalents but also the compostable single-use tableware.

Define procedures that respond to customer needs and allow for tableware to have multiple uses

Reusable packaging, if reused enough times, has better overall environmental performance than single-use packaging.

For customers ordering room service, attending excursions, events, or tailor-made service services:

- ☐ Introduce ordering systems which assess customer needs for tableware and provide it only upon request (e.g. Many customers order takeaway food for enjoyment at home and will not need tableware).
- ☐ Encourage customers to bring their own reusable container.
- ☐ Provide customers with reusable tableware which will be collected, cleaned and reused afterwards.

Understand how product design can help reduce environmental impact

The design of lighter weight but durable and robust tableware is important, as these features can directly influence environmental performance.

- Lightweight tableware, regardless of material, shows consistently lower environmental impacts than heavier tableware.
- Be mindful that light single-use products may also lead to higher rates of litter.

Innovative design options can help to cut down food waste (e.g. smaller plates) or reduce water use in washing (e.g. plates and cutlery which allowing food stains and leftovers to be removed easily and with little water).

- ☐ Choose tableware that is as lightweight and durable as possible while achieving your required functionality.
- ☐ Consider options for end-of-life treatment when making a product choice (e.g. recyclability of the material).

Purchase your tableware from suppliers that engage in sustainable material sourcing and production methods

For all tableware products, production is the biggest contributor to the environmental impacts.

- ☐ Engage with suppliers that use technological innovation to reduce production-related impacts, such as emissions and waste generation as well as water and energy consumption.

Minimise the environmental impacts from washing by ensuring your washing appliances are resource-efficient

The washing stage is crucial for the environmental impact of your tableware.

- ☐ In case you clean the tableware in-house, make sure your washing machine is energy- and water-efficient and fully loaded.
- ☐ If the washing is carried out by a third party, check their environmental standards.

Ensure good in-house waste separation and disposal

The way tableware is treated at their end of life is an important contributor to its environmental impact.

- Recycling/composting the tableware or a combination of recycling/ composting with incineration and/or landfill has lower environmental impacts than only landfill.

- ☐ Establish in-house waste separation systems to distinguish products requiring different treatment, e.g. compostable products with food waste vs. plastic products with food waste.

For additional support:

- Read the Global Tourism Plastic Initiative's COVID-19 related guidelines[19] on how to use reusable products while ensuring proper hygiene and sanitization practices.
- Consult the decision-trees on single-use plastic bottles in the report "Rethinking single-use plastic products in tourism: impacts, management practices and recommendations", jointly authored by the World Travel and Tourism Council & UNEP.

19 Global Tourism Plastics Initiative (2020), Recommendations for the tourism sector to continue taking action on plastic pollution during COVID-19 recovery, available at: https://www.oneplanetnetwork.org/sustainable-tourism/recommendations-plastic-pollution-and-covid-19

Lowest impact type of tableware depending on waste management context and behavioural considerations

This matrix aims at supporting tourism businesses and destinations to identify the most appropriate options for their context. In general, reusable tableware has lower environmental impacts than single-use tableware. Therefore, the first option should be to look into ways to make reusable alternatives practical[20].

Highly engaged tourists and staff

	Practical Reusable tableware is practical (willingness to separate from food waste, availability of return schemes and efficient washing facilities)		**Impractical*** Reusable tableware is impractical (tableware disposed with food waste, no good return scheme and no washing facilities)
Waste Management Context	**Within own facilities**	**Outside of own facilites but within operational control***	**E.g. Excursions in remote destinations; Situations where hygiene and safety cannot be ensured.**
POOR RECYCLING AND INDUSTRIAL COMPOSTING (no infrastructure & policy support)	Reusables always lowest impact option regardless of material and energy mix	Reusables always lowest impact option regardless of material and energy mix	Single-use fossil-based plastic, provided that tableware is not littered.
GOOD RECYCLING AND INDUSTRIAL COMPOSTING (good policy support & infrastructure)	Reusables always lowest impact option regardless of material and energy mix	Reusables always lowest impact option regardless of material and energy mix	Single-use bioplastic, paperboard, fibreboard and other products made from renewable materials lowest impact option over fossil-based plastic

Reusable tableware lowest impact option **Single-use tableware lowest impact option**

* Important Note: The meta-analysis concludes that in general, reusable tableware has lower environmental impacts than single-use tableware. Therefore the first option should be to look into ways to make reusable alternatives practical.

Source: United Nations Environment Programme (2021). Single-use plastic tableware and its alternatives – Recommendations from Life Cycle Assessments

* e.g. beach, self-operated excursions.

20 The content of the matrix is simplified, and the suggested preferences are indicative. Please refer to the full narrative of the original meta-study for details. United Nations Environment Programme (2021). Single-use beverage cups and their alternatives - Recommendations from Life Cycle Assessments.

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