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TOGETHER FOR A PLASTIC FREE OCEAN

THE ART AND SCIENCE OF REMOVING SINGLE-USE PLASTIC BOTTLES FROM SHIPS

A practical guide to ensuring safe and high-quality drinking water and realising the environmental benefits of plastic removal

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Executive summary

There is an urgent need for action on marine plastic pollution due to the environmental impact on marine ecosystems and the potential harm to human health.

This guide addresses the issue of how to provide drinking water on ships without using single-use plastic (SUP) bottles. Such bottles are recognised as a significant source of marine pollution due to the sheer volumes used globally and the high potential for mismanagement of waste on land – meaning they become litter.

The guide provides information for shipowners to enable them to develop strategies and plans and highlights the significant cost-savings and additional business, moral and environmental benefits of stepping away from plastics. Practical steps are provided for shipowners wishing to move away from the use of plastic bottles for supplying drinking water on board. The guide describes technologies designed to replace bottled water and details key questions for shipowners to ask potential suppliers – providing the necessary tools to choose the most effective and suitable system.

Changing seafarers' behaviour and attitude towards drinking water provided from an onboard system (or "tap water") is fundamental and is perhaps the most critical component towards ensuring the success of the whole initiative. As such, this guide outlines different methods to encourage seafarers to trust and consume water produced on board, including regular water testing, transparent communication of test results and conducting blind taste tests as well as ways to dispel misconceptions about tap water.

Reducing plastic waste generated from the shipping industry is not only crucial for the health of the ocean but also presents an opportunity for the shipping industry to demonstrate significant leadership in environmental stewardship.

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PART 1 – An introduction to the single-use plastic problem

WHY FOCUS ON PLASTIC BOTTLES?

Public surveys have shown that marine plastic pollution is considered one of the greatest threats to both the health of the ocean and to human health.

Whilst plastic provides significant benefits to our lives nearly half of the plastic produced globally is used in products designed to be used just once. These “single-use plastics” (SUP) are often only used for a few minutes but if not disposed of in an environmentally-sound manner (ie sent for recycling) or if improperly discarded they can persist in the environment for hundreds, if not thousands of years. Many find their way to the ocean – becoming marine litter often with drastic consequences for the ecosystem.

The presence of plastics in the ocean is linked solely to human activity – activity taking place on land and at sea. There are no natural sources of plastic in the environment. All sectors and individuals contribute to this pollution. Most of the plastic found in the ocean has reached there due to mismanagement on land and, whilst there are uncertainties in measurement, river-born plastics are undoubtedly the major source of marine litter.

MARINE LITTER *is any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores (UNEP).*[1]

Plastic is the largest, most harmful and most persistent type of marine litter accounting for around 85%.[1] Of all the plastic litter nearly half is SUP. A “top ten” of items found on beaches in the European Union has plastic bottles in a dishonourable first place.

Curbing the use of plastics bottles is simply the best way of reducing the risk of them becoming litter and harming the marine environment. In addition, reducing or removing this specific stream of waste generation now will prepare shipowners for any future waste management regulations or plastic usage restrictions – which are likely to become stricter as public attention on the plastic problem continues to grow.

[1] **From Pollution to Solution: a global assessment of marine litter and plastic pollution | UNEP – UN Environment Programme**

What is the problem with plastic in the ocean?

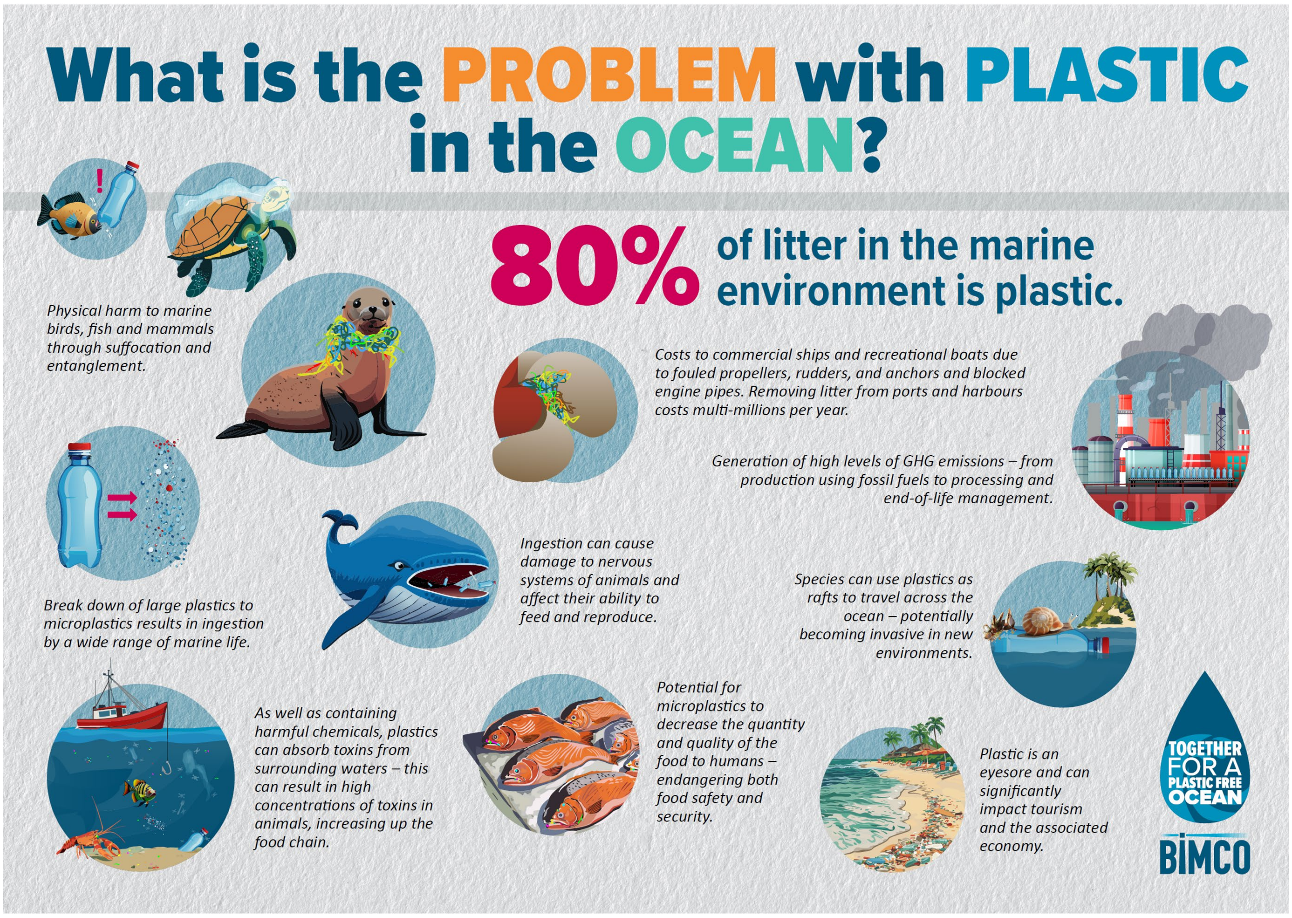

Figure 1. The problems caused by marine plastic litter (see also Annex C).

Shipping as an industry leader in reducing the use of SUP bottles

Across the globe, individuals, organisations and nations are working to address plastic litter. The shipping industry has an opportunity to play a significant leadership role in the prevention of plastic litter. This can be done within the existing regulatory framework and by voluntary actions such as reducing the use of SUP bottles.

INTERNATIONAL POLICY AND REGULATION

Overview and general principles

The regulation covering the disposal of plastic at sea is clear – discharge of all plastics into the sea from ships is prohibited[2]. As such plastic waste generated on a ship needs to be managed on board and discharged to port reception facilities. Whilst the existing global regulatory framework for shipping does not work on premise of banning certain plastics from being used on board, some country specific regulation is in place (India, Kuwait) that prevents or limits certain plastics from being used.

There is no doubt that the use of SUP globally will become restricted in the future as all countries grapple with tackling the plastic crisis. The development of an international legally binding instrument on plastic pollution, including in the marine environment, will further heighten the urgency to address SUP. The shipping industry has an opportunity to be ahead of the game when it comes to improving its plastic footprint, which could help reduce the impact of future regulatory changes on operations.

An overview of the regulatory and policy framework is provided in Annex A.

[2] Annex V of MARPOL 73/78

SOLUTIONS TO AVOID PLASTIC POLLUTION

A hierarchy of action for waste management

The waste hierarchy is a simple ranking system used for the different waste management options according to which is the best for the environment. The most preferred option is quite simply to prevent a product ever becoming waste – by ceasing use of that product all together.

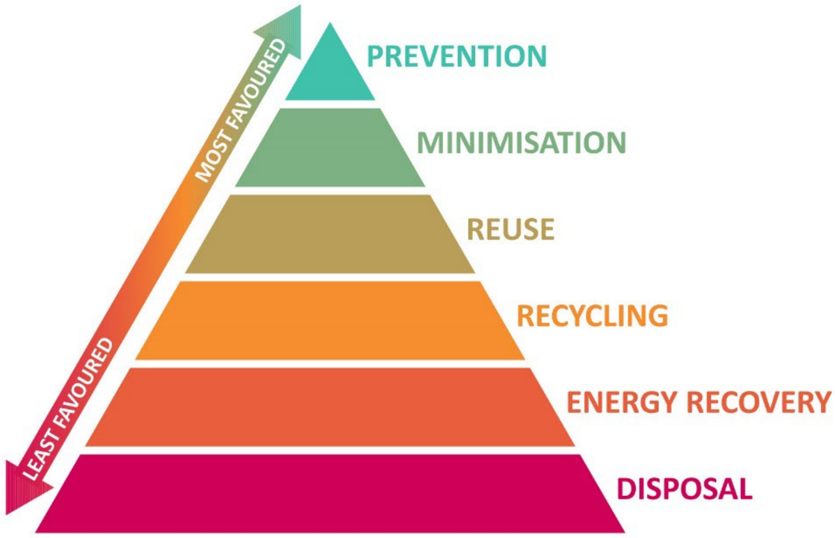

Figure 2a. Waste management hierarchy.

Placing the hierarchy in context for a ship the following actions should be considered:

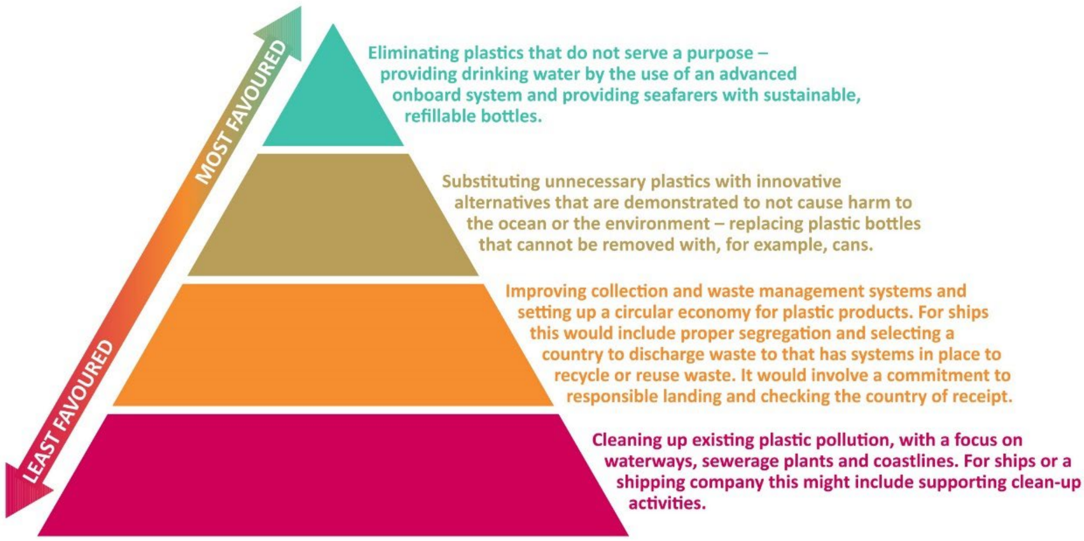

Figure 2b. Waste management hierarchy applied to a ship.

PART 2 – A practical guide to ensuring safe and high-quality drinking water and realising the environmental benefits of plastic removal

INTRODUCTION TO THE GUIDE

This best practice guide aims to support shipowners through the provision of practical information and advice to enable them to reduce, and eliminate where possible, single-use plastic (SUP) bottles on board ships. It provides a step-by-step guide from decision-making to selection of a system to engaging seafarers – ensuring that the health and safety of those working on ships is always front and centre.

The focus is on the removal of SUP water bottles carried on board ships and replacing them through the provision of safe and high-quality drinking water generated by an onboard advanced drinking water system. In the absence of truly biodegradable or sustainable alternatives, and the lack of globally consistent collection and recycling options, this is considered the most effective and safest way of tackling the problem and within a timescale that recognises the enormity and urgency of the problem.

The guide is not intended to provide shipowners with detailed technical or sales information related to specific systems that may be available on the market. Shipowners should undertake their own research on specific systems or refer to an existing directory of systems such as that provided by IMPA SAVE[3] – who have undertaken research to ensure that systems within their directory are feasible solutions.

[3] Solutions (impasave.org)

UNDERSTANDING THE SCALE OF THE PROBLEM ON BOARD SHIPS

It is important to understand the scale of the problem to communicate the need for change. If we assume that all ships are providing drinking water for seafarers in plastic bottles, then approximately one billion plastic bottles a year are being used on commercial ships. The following figures are derived from a survey of BIMCO members undertaken in 2021:

- On average seafarers use between one and two 1.5 litre bottles per day
- The average number of seafarers per ship is approximately 25 – resulting in 25 to 50 bottles per ship per day
- The number of bottles consumed per ship per year is between 9,000 and 18,000 (average 13,500)
- With approximately 60,000 merchant ships in the global fleet between 540 million and 1.08 billion plastic bottles per year are used by the industry (average 810 million).

This estimate is probably much lower than the actual number of bottles being used. Firstly, there is a 3-litre minimum requirement for drinking water per day per seafarer so supplies on board reflect this amount. Secondly, this total does not include cruise liners or ferries which are likely to both use smaller bottles and have larger numbers of seafarers and passengers. Thirdly, the numbers provided do not include emergency stock or account for any bottles purchased through the slop chest by seafarers. For a ship with a company of seafarers of 25 this would be at least 75 additional 1.5 litre bottles (or 4,500,000 bottles over the global fleet).

Finally, only bottled water is included in this calculation. Juice and soft drinks, sparkling drinks etc are also typically delivered in plastic bottles. So the total numbers of SUP bottles will be higher. A survey carried out by BIMCO in 2021 highlighted that many shipowners and operators have begun to take action to remove SUP used on their ships. These initiatives have demonstrated there is potential to significantly reduce the number of plastic bottles purchased by a company and used on board through the purchase or leasing of an advanced drinking water system (or systems) to provide fresh potable water.

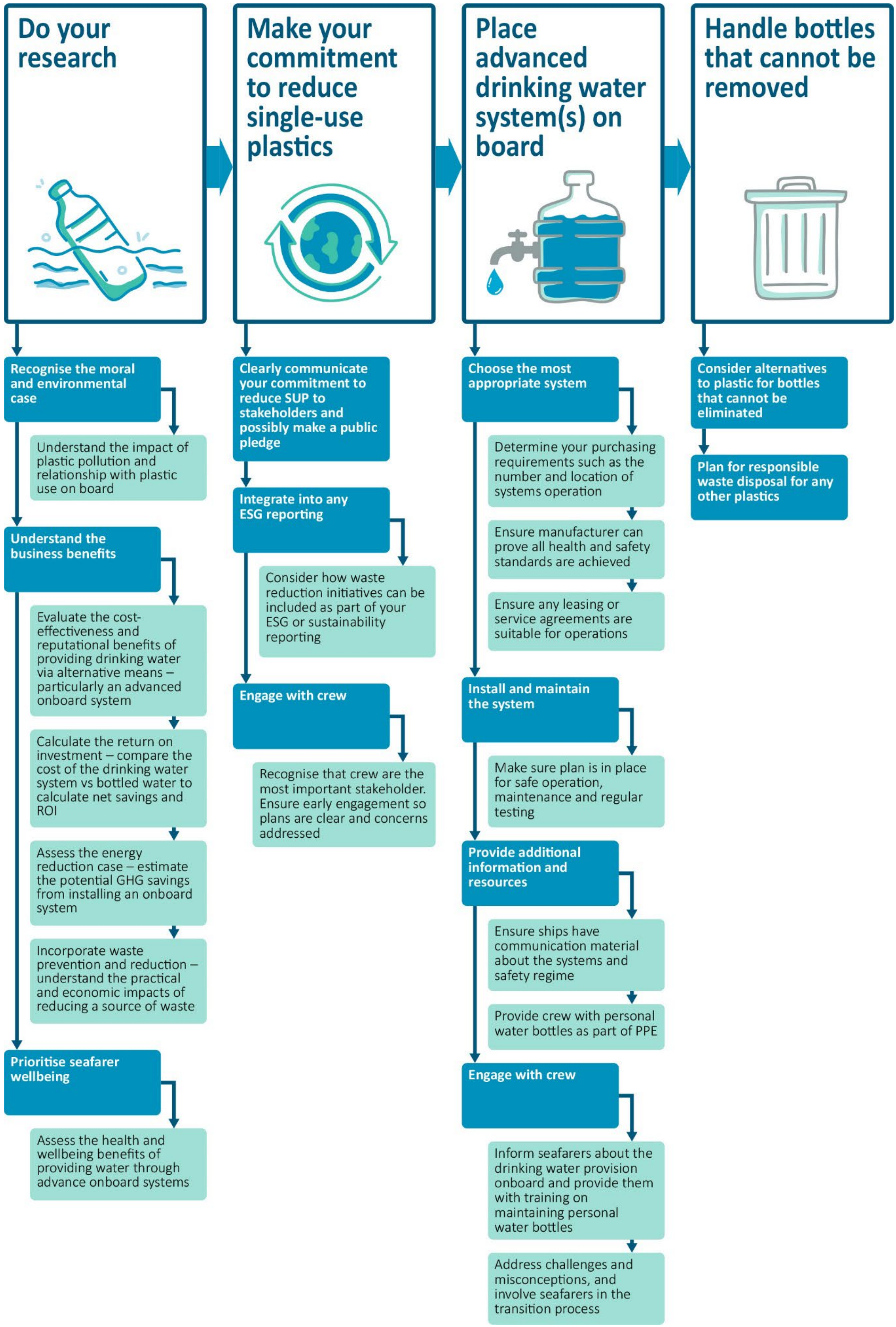

Figure 3. Overview of the main actions to take in order to remove or reduce SUP drinking water bottles from ships.

STEPS TO TAKE TO REMOVE SUP BOTTLES FROM SHIPS

SUMMARY OF BENEFITS OF CHANGING PROVISION OF DRINKING WATER

Today's ship	Your ship in 5 years	Benefits
Generating 13,500 waste plastic bottles per year	Only bottles onboard are for emergency supplies	Reduction in generated waste – and reduction of likelihood of waste ever reaching the ocean
Seafarers needs met by bottled water	Seafarers needs met by high-quality, safe water generated onboard	Seafarer wellbeing
Greenhouse gas footprint of around 16,200 kg CO_2 per year attributed to plastic bottle use	Savings of 16,150 kg CO_2 per year from onboard generation	GHG savings of 80,000 kg
Contribution to global water scarcity through bottled water use	Positive contribution to global water conservation efforts	Positive contribution to global water conservation efforts
ESG reporting let down by SUP usage	Great ESG story	Company reputation enhanced

ANNUAL COST OF PROVIDING WATER FOR A CARGO SHIP (USD) AND FINANCIAL SAVINGS THROUGH THE PROVISION OF WATER USING AN ONBOARD SYSTEM

Means of providing water	Cost per year	Cost over 5 years	Potential savings after 5 years by changing water supply
Plastic bottles	7,258	36,290	0
Advanced drinking water system (purchased) including annual maintenance fee	5,920	8,920	27,370
Advanced drinking water systems (leased)	2,920	14,600	21,690

Figure 4. Summary of the benefits of removing SUP bottles from ships.

STEP 1 – Establishing the case for reducing or eliminating the use of plastics bottles to provide drinking water

The moral and environmental case

There is a moral and environmental imperative for everyone to prevent the risk of plastic becoming marine litter driven by the consequences illustrated in Figure 1. Reducing, or removing entirely, unnecessary plastics used on a ship prevents or decreases the chance of that plastic becoming litter – where all plastic has the potential to become litter, even if managed well on board. Any action to reduce plastics acts to protect the marine environment against plastic pollution, to protect marine animals from the physical harm caused by plastics and to protect human health.

In addition, reducing the consumption of SUP globally will reduce the demand for raw materials – particularly fossil fuels – thus saving energy and reducing greenhouse gas (GHG) emissions. Reducing consumption of bottled water can also reduce the billions of litres of water used during production globally,[4] (where each litre of bottled water takes up to three litres to produce) which is crucial at a time where water scarcity is increasing in many regions around the world.

The business benefits

By using an alternative to bottled water, shipowners can demonstrate their commitment to sustainability and responsible resource usage, which can enhance their reputation among customers, investors, and potential employees.

However, primarily, installing and maintaining an advanced drinking water system is significantly cheaper over time than purchasing water supplied in plastic bottles.

Return on investment (ROI) should be considered in conjunction with other factors when selecting a system. A simple ROI can be calculated using the costs of purchasing the supply of water in plastic bottles compared to cost of the system to provide fresh potable water over a specific timescale.

[4] Etale, A., Jobin, M. and Siegrist, M. (2018). Tap versus bottled water consumption: The influence of social norms, affect and image on consumer choice. *Appetite*, 121, pp.138-146. doi: **https://doi.org/10.1016/j.appet.2017.11.090**

A more holistic calculation can also be carried out as follows, for example:

1. Calculate the total cost of the drinking water system over its intended lifespan – based on information from the manufacturer. This should include the initial purchase price or rental cost, installation costs, and any expected maintenance or operational costs over the intended lifespan of the system. You may also wish to incorporate the provision of refillable bottles for seafarers as part of their personal protective equipment (PPE) as well as any testing of the water to be conducted by an external laboratory.
2. Calculate the total cost of bottled water over the same period. This should include the price of the bottled water and any delivery or storage costs as well as any costs incurred in the disposal of the waste – noting this may vary depending on the port(s) where waste is discharged.
3. Subtract the total cost of the drinking water system from the total cost of the bottled water to establish the net savings.
4. To calculate the ROI, divide the net savings by the total cost of the drinking water system, then multiply by 100 to get a percentage.

IMPA SAVE[5] provide estimated figures that demonstrate significant savings through the installation of an onboard system. They use an average annual cost of providing drinking water in plastic bottles of USD 6,858. This is compared to a USD 2,700 one-off fee for purchasing one system to provide fresh potable water (250 litres per day) and USD 1,200 annual fee for leasing such a system. In both cases an additional cost of around USD 400 per year also needs to be factored in for emergency supplies and some waste management. When purchasing a system an additional cost estimated at the order of USD 600 a year would be needed to maintain the filters on any purchased system.

Whilst there should already be testing of any potable water on the ship regularly, a more frequent and robust testing regime may be introduced to ensure seafarer confidence. This would be of the order of USD 300 for an independent test.

If renting a system, a service plan that may include replacement filters and independent testing should be addressed as part of the leasing agreement discussions. This may of course impact the cost.

With all this in mind there are substantial savings to be made through the provision of water via an onboard system which complement the other benefits. These can be seen in Figure 4.

The energy reduction case

It can be difficult to estimate the GHG savings from the installation of an onboard system compared to the provision of water in plastic bottles as there are many factors to consider for a full lifecycle calculation. This includes calculating the footprint of a plastic bottle from production, transport and disposal and comparing it to the production, installation and running costs of an

[5] **https://www.impasave.org/**

onboard system. Please see Annex B for an example methodology that might be used as a starting point should a detailed calculation be required.

A range of numbers also exist for the GHG footprint of a plastic bottle and many of these are not recent. However, all published figures suggest is likely to be significantly higher than that from an onboard system. The US National Institutes of Health estimate the emissions of a single bottle of water to be around 120g $CO_{2\text{-eq}}$[6] and this is considered to be a sensible estimation based on other publicly-available figures.

Annex B can be used to estimate the footprint of an advanced drinking water system. Assuming the advanced drinking water system uses reverse osmosis (where a system might have an energy demand of 5-14 kWh per 1000 litres of water) and UV treatment (an additional 0.01-0.05 kWh per 1000 litres of water produced), and the ship uses marine diesel oil to provide energy a figure of approximately 4.25 g CO_2 per bottle refill compared to 120g CO_2 per plastic bottle is derived. Using the average figures earlier in this guide for the numbers of seafarers and bottle usage this would suggest that an annual saving of 16,150 kg CO_2 per ship might be achieved. However, these numbers should be considered as best estimates only.

The waste prevention and reduction case

There are both practical and economic incentives for ships to prevent or reduce waste, particularly plastic waste that requires discharge to shore. Less waste means a reduction in costs associated with waste management such as storage, treatment and disposal of waste. Also, less waste results in more storage capacity onboard and potential time savings for seafarers involved in waste management activities.

The seafarers' wellbeing case

Providing seafarers with drinking water from an advanced drinking water system onboard can be as safe, as healthy and as reliable (if not more so) than providing water in bottles. Some plastic bottles can shed microplastics into the water they contain which is then ingested by seafarers. Whilst the impact on human health remains unknown, any risks can be eliminated by the use of an onboard system. There are also risks through chemical leaching where plastic drinking bottles are often left on quaysides or on deck and are exposed to heat and sunlight, which increases the potential for chemicals from the plastic to enter the water.

From a well-being perspective, an onboard system can provide a constant stream of water and can be easily linked with efforts to encourage the seafarers to stay hydrated. Some systems can also provide chilled and sparkling water – these tend to be preferred by seafarers so should be seriously considered when selecting a system.

With an onboard water system, the seafarers often have direct control over the water quality and the maintenance of the system. The quality of water provided in bottles can be significantly variable depending on where it was purchased.

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[6] **Sustainability Life Cycle Environmental Impacts of PET Plastic Water Bottles (nih.gov)**

Further information on the topics covered here is provided the section on seafarer engagement.

Contribution to Environmental, Social and Governance (ESG) initiatives and reporting

A commitment to ESG initiatives and to reporting against them is becoming more commonplace among shipping companies. An ESG, or sustainability, report might provide the most suitable place for detailing any plastic reduction and/or plastic waste prevention initiatives. However, transparency and accountability are key parts of reporting and as such you should be clear about the metrics used to measure any plastic reductions – whether it is the total number of items replaced, percentage reductions etc.

Several existing ESG standards provide guidance on how to report on waste generation, waste reduction efforts, and strategies for managing waste that might be referred to.

- The Global Reporting Initiative (GRI) 306: Waste 2020 is a comprehensive standard for reporting on waste management and reduction efforts[7].
- The Sustainability Accounting Standards Board (SASB) has developed specific standards for the marine transportation industry and whilst it does not specifically mention plastics it includes guidance on waste management under its ecological impacts section[8].

STEP 2 – Making the commitment to remove – planning and communication

Introduction to pledging

Once the decision has been made to remove or reduce SUP bottles for the supply of drinking water it can be helpful to make any commitment clear to stakeholders including seafarers and/or to make a public pledge. A pledge clearly demonstrates that the company has made the commitment and can drive positive behaviours. Benefits of making a pledge include:

- Increasing awareness and transparency – making sure everyone has access to the same information
- Encouraging normative behaviour – if something becomes normal, people are more likely to exhibit a tendency to identify, adopt, and enforce that norm
- Establishing an explicit goal – this encourages people to reduce the discrepancy between their current behaviour and that goal.

Pledges can be more effective if made to a person, a group or an organisation, whose approval matters in an organisation as it can motivate people to fulfil the commitment. Public commitments tend to work better than private ones as accountability is more likely to be required.

7 **GRI – Search (globalreporting.org)**

8 **Download SASB® Standards – SASB**

However, at a minimum, an internal pledge should support the people concerned in the company to hold each other accountable, while also taking personal responsibility. It is recommended that a pledge should include written, specific commitments, rather than vague verbal ones. A communication plan should be in place to make sure that all stakeholders are aware, conscious, and reminded of their commitment and their expected behaviour. It is also important that progress is communicated to enhance transparency and commitment and so that good news can be celebrated.

Organisations which support companies in making such pledges include IMPA SAVE[9] and the UK Chamber of Shipping.[10]

STEP 3 – Determining your requirements and choosing the most appropriate system(s)

Existing methods of supplying drinking water on board

Ships provide fresh and potable water by either bunkering fresh water at port or producing the water onboard. This is done either by turning seawater into fresh water by evaporation (using a freshwater generator onboard) or by reverse osmosis. Fresh water is used for various purposes on board such as cooking, dishwashing, showering, laundering and drinking. Depending on the ship, fresh water can be supplied through either one system or multiple systems that separate potable (drinking) water from sanitary and wash water systems – although it is most common for them to be linked but with a certain level of separation to prevent contamination. All potable water must undergo some level of treatment, monitoring and maintenance to meet health and safety standards. Please see section on assuring quality and safety for more details.

Concerns about the quality and safety of drinking water due to contamination from basic systems combined with concerns about the cost of upgrading or installing advanced systems have led owners to more frequently offer bottled water as an alternative or in addition to the potable water generated onboard. Source contamination can occur from bunkered water or from seawater used to generate fresh water. Contaminants can include bacteria, viruses, heavy metals, and pesticides. Even if the water is initially clean, storage and distribution contamination can occur and cross-contamination is a risk if potable water systems are located too close to, or not properly separated from, non-potable water systems.

However, advanced drinking water systems are now readily available on the market and can provide solutions that address all safety concerns, reduce costs, and eliminate unnecessary plastic waste. These systems can easily meet the daily demand for drinking water for seafarers (between 1.5 litres and 3 litres per day). They can easily be integrated into the current systems on board and there are various different models to accommodate different ships and requirements. However, it is crucial that the best and most appropriate system is selected for a ship and that a strict testing

9 **IMPA SAVE**

10 **Single-Use Plastic Charter | UK Chamber of Shipping**

regime is implemented to verify performance, ensure the water is safe and provide confidence to seafarers.

COMPARISON BETWEEN SYSTEMS

The most basic systems usually involve simple desalination units, such as evaporators. The water may be treated with basic filtration and disinfection methods such as chlorination. Basic systems can produce potable water that meets standard requirements, but the taste and quality may not be as high as the water from more advanced systems. Additionally, basic systems with less automation and fewer built-in safety features may require more manual monitoring and control.

A more advanced system will use more sophisticated desalination technology, such as reverse osmosis. They may also use advanced filtration and disinfection methods, such as ultraviolet (UV) light or advanced oxidation processes. These systems can often produce higher-quality water, with better taste and fewer residual chemicals. Some, also have built-in sensors and automatic controls to monitor water quality continuously and more safety features to prevent contamination.

Advanced drinking water systems

There are a wide range of advanced drinking water systems and models available on the market. However, the most common type of system either comes as a small filter unit that is often fitted under the sink and a water bottle refill fountain where the fountain has an in-built filter within it. These systems are usually "plug and play" – with easy integration with an existing water system – often compared to the installation of a washing machine. Most of these systems can process freshwater on board regardless of the method used to generate that water (RO, freshwater generator, bunkered water) but some do only support a specific source of freshwater often being that produced by RO. Therefore, it is important to check when selecting a system if it is compatible with the existing supply.

ADVANCED DRINKING WATER SYSTEM

An advanced drinking water system is a system designed to provide safe-to-drink water using methods such as filtration, reverse osmosis, distillation, and/or UV sterilisation to remove salt, bacteria, and other impurities. Advanced systems have the ability to maintain a constant supply of fresh water for seafarers' hydration needs. They are termed advanced because they are able to produce drinking water that can exceed the quality and safety standards as well as being easy to maintain and use. An advanced drinking water system normally consists of two elements (a water purification element and a dispensing element).

It is also important to understand the difference between water purification systems and water dispensers. Water purification systems are primarily designed to convert water, regardless of its source, into safe and potable drinking water. They employ a series of filtration stages, each designed to remove specific types of contaminants. The end result is water that is not only safe to drink, but which does not have a bad taste. This makes these systems the most suitable for ships.

On the other hand, water dispensers are designed for the convenience of seafarers. They are usually equipped to dispense hot, cold, and sometimes sparkling water, thus making it easier for seafarers to stay hydrated. Some dispensers come with basic filtration systems, but some do not. Therefore, a water dispenser without in-built filters should always be paired with a standalone water purification system. In this setup, the water is first treated by the purification system, then fed into the dispenser for easy access and use.

The specifics when it comes to the system varies between brands and models but the majority employ between 3 and 7 treatment stages to provide drinking water. These are the most common treatment methods that can be included in the system:

- **Pre-Filtration**: In some advanced drinking water systems, the process begins with pre-filtration which can be especially useful when using bunkered water as the quality can vary depending on the ports. Filters used at this stage are designed to tackle larger particles that might be present in the water, including sand, silt, and other sedimentation. The goal of this stage is to protect the entire system from problems that might be caused by untreated water and enhance the longevity of the subsequent filters.
- **Sediment filter**: Designed to remove larger particles from the water which includes dirt, dust, sand, and rust. These particles, if not removed, can cause damage to the delicate membranes of the subsequent filters. The filter operates through a physical process where the water is passed through layers of filter materials which trap and hold the larger particles.
- **Carbon filter**: This filter is key for removing chemicals that might be present in the water. It is particularly effective at removing chlorine, a common disinfectant used in water treatment, that can affect the taste and smell of the water. The carbon filter also removes organic compounds and other chemicals, including trihalomethanes, further improving the water's taste and odour.
- **Reverse osmosis (RO) membrane**: This membrane has very tiny pores that only allow water molecules to pass through, effectively filtering out a high percentage of microscopic contaminants. The process works on a molecular level, where water is forced under pressure through the semi-permeable membrane, leaving contaminants behind. This includes heavy metals, such as lead and mercury, as well as bacteria and viruses. The result is highly purified water.
- **Remineralisation**: After the rigorous purification process, some beneficial minerals like calcium and magnesium might have been removed. These minerals are essential for human health and also contribute to the taste of the water. In the remineralisation stage, these minerals can be added back into the water which not only enhances the water's nutritional value but also restores its natural taste and balances its pH, making it more palatable.
- **Ultraviolet (UV) Disinfection**: Sometimes the filtration process involves UV disinfection. A UV lamp emits UV-C light, the most lethal type of UV light to microorganisms. This provides a final safeguard, ensuring the water is free from harmful microorganisms and safe to drink.
- **Other methods of disinfection** Other methods of disinfection might include chlorination, ozonation, electrolysis or silver ionisation.

Number of systems and installation locations

The number of systems that need to be installed will vary from ship to ship based on a range of factors including the number of seafarers and the configuration of the ship. One system is often enough to produce the quantity of water that meets the needs of the seafarers. However, many ships will have two to three systems installed either to deal with redundancy reasons and to avoid using emergency stocks in the case of a system failure or to ensure that water is provided where needed and where convenient. Systems can either be purchased or leased depending on what is most suited to your operations and the business case.

The most common place to install is in communal or most frequented areas, which include the seafarers' mess, galley, bridge and engine room. If one system is installed it would normally be situated in the mess – and then be used to fill smaller dispensers that can be placed around the ship for seafarers' convenience.

Seafarers should be provided with stainless steel or similar personal water bottles to enable them to refill at convenient times and locations. Bottles, which can keep water cold or hot, are normally preferred by seafarers. A small bottle of between 500ml and 750ml can be provided to seafarers for carrying on their person and a larger bottle (1 litre or larger) for keeping in their living quarters.

Operation and maintenance of systems

Once the system is operational, the advanced drinking water system should be regularly maintained and monitored to ensure continued operation and water quality. All systems designed for use in the maritime sector are typically designed with low maintenance requirements. The responsibility for maintenance may differ depending on whether the system is leased or purchased and this should be factored into decision making.

Typically, the most important requirement will be the replacement of the filter cartridges. The frequency of filter changes is generally 12 months although some companies suggest six months and others advise that it should be based on the volume of water that has been produced. Some models will also have indicators that light up when the filter needs to be changed. When choosing a system, you should consider how and where you may need to source replacement filters or whether you will carry spare filters on board for replacement by the seafarers.

Testing should be carried out on a regular basis. Some companies provide testing kits along with their systems thus allowing seafarers to collect samples and test them on board. Routine testing should also be undertaken by independent laboratories where more in-depth chemical analysis is carried out. The independent laboratory should be consulted to ensure that sampling of the water can be done in a scientifically valid way.

Testing should be frequent enough to ensure that any irregularities are caught early on but not so frequent that seafarers may fear that the water is inherently unsafe. Setting up a focus group can be useful to help decide on the best frequency to ensure everyone feels safe and comfortable drinking the water from the systems.

Seafarers should be trained on the operation, maintenance, and monitoring of the advanced drinking water system. This includes understanding how to use any automated controls and sensors, and how to interpret the results of tests.

Assuring quality and safety

Water safety and quality is essential for the protection of seafarers and any passengers or visitors. General requirements for food and drink provision are provided in the Maritime Labour Convention, 2006 (Standard A3.2 – Food & Catering)[11].

When selecting a system, the provider must be asked to demonstrate their compliance with all international standards and regulations regarding drinking water.

Whether fresh water is produced onboard or bunkered from shore; the same regulatory requirements apply. This requires internal control of the shipboard distribution systems as well as record keeping of the water quality.

Guidance for drinking water supply, storage, distribution and use, have been published by various authorities and organisations such as:

- International Health Regulations (IHR) by the World Health Organization (WHO)
    - Guide to Ship Sanitation, 3rd Edition, 2011[12]
    - Guidelines for Drinking Water Quality, 4th Edition, 2022[13]
- Drinking water on board ships – A guidance about how to provide clean drinking water (SeaHealth, Denmark).[14]

A water safety plan onboard all ships (stand alone or part of a catering safety plan) is recommended by the World Health Organization. The plan must include procedures for purchasing, delivery, sampling, storage and distribution of drinking water onboard. As implementation of rules by flag states can be inconsistent it is recommended that shipowners put their own testing regimes in place.

General advice for choosing systems

- Ensure that the model is suitable for marine use as not all are – some are better suited to homes or offices rather than ships. It may be useful to refer to a directory of systems such as that provided by IMPA SAVE[15], which has had an element of peer review. Consultation with other shipowners and operators, who have had experience in installation of such systems is also recommended.
- Only choose a system or systems that can demonstrate compliance with drinking water regulations and guidelines. This not only ensures the system produces safe water but will help to reassure seafarers that the water is safe.

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11 **MSN 1845 (M) Food and catering, provision of food and fresh water – GOV.UK (www.gov.uk)**

12 **Guide to ship sanitation, 3rd edition Global reference on health requirements for ship construction and operation (who.int)**

13 Guidelines for drinking-water quality: fourth edition incorporating the first and second addenda. Geneva: World Health Organization; 2022. Licence: CC BY-NC-SA 3.0 IGO. **https://www.who.int/publications/i/item/9789240045064**

14 **Drinking water on board ships.pdf (demp.com)**

15 **Solutions (impasave.org)**

- Avoid models with small filter/tank capacities and those with too many electric components (screens, lights etc) as these can be hard to maintain or get repaired.
- Ensure that that the system can easily be installed by seafarers and if maintenance is not provided by the manufacturer as an aftersales service or as part of a leasing agreement that seafarers receive adequate training.
- Consider whether replacement filters, spare parts and technical aftersales help is easily accessible at convenient ports for the ship.
- When selecting testing kits, consider the ease of use and how long it takes to carry out the testing. Regular testing on board is important as well as independent testing at a laboratory for more detailed results.
- If you choose to install fewer systems, then you should consider providing seafarers with larger refillable bottles to ensure they have enough water with them throughout the day without having to spend too much time going back and forth to refill their bottles.

STEP 4 – Engaging with seafarers and proving practical support

Overview of challenges and misconceptions

When it comes to eliminating plastic bottles for the provision of drinking water, the biggest challenge is often convincing seafarers that it is a good idea. Often, concerns about seafarer acceptance are cited as a limiting factor by shipowners. Many seafarers come from countries where tap water is not safe to drink and where bottled water is the norm. Bottled water may in some cases (if mineral water) be considered a luxury, so people are likely to be reluctant to move away from what they perceive to be the safest and healthiest choice.

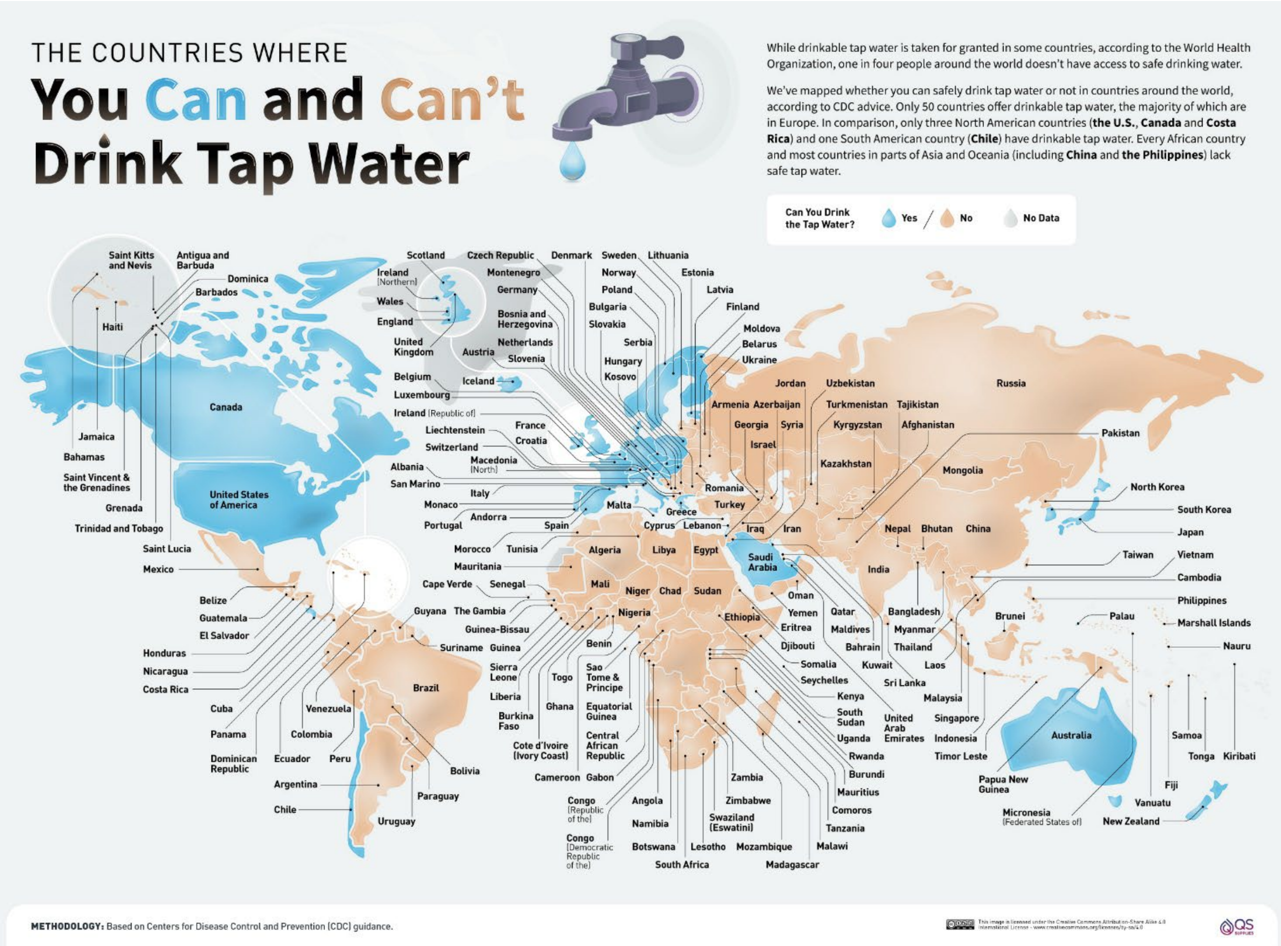

Figure 5. Map showing the countries where drinking tap water is considered safe or unsafe to drink.[16]

A transition period or gradual implementation of systems can give seafarers time to adjust to the changes and persuade them that the water from these systems is safe and of good quality. The plan for the withdrawal of the supply of water in plastic bottles should be clearly defined and communicated.

A common misconception is that bottled water is the safer choice, but bottled water rarely faces the same rigorous public health and environmental regulations as tap water and the water that would be provided by an onboard advanced drinking water system. Scientific evidence backing claims of bottled water purity and safety is limited. In 2023, the United Nations investigated bottled water from tens of countries in every region of the world. This illustrated many cases of inorganic, organic and microbiological contamination of bottled water from hundreds of brands[17]. The quality of bottled water can be compromised either by the origin of water or by industrial processes that may potentially impact human health. Additionally, many people believe that bottled water is all mineral water that comes from springs or aquifers, but some companies simply sell bottled tap water.

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16 **Where Is the World's Most Dangerous Drinking Water? | QS Supplies**

17 **UNU_BottledWater_Report_F.pdf**

There is also evidence that bottled water has traces of microplastics[18]. In 2024, microscopic pieces of plastic were found in bottled water in concentrations 10 to 100 times more than previously estimated – with 240,000 detectable plastic fragments in a typical litre of bottled water[19]. Microplastics are known to leach chemicals that act as endocrine disruptors, which can have adverse effects on various aspects of our health including hormone production, toxicity and the reproductive system[20]. Long term impacts of microplastics on humans are still being researched.

Many people dislike non-bottled or tap water due to the way they consider it to taste and smell, but this can be dealt with by using filters and mineralisers integrated into the onboard system. However, people often cannot tell the difference, when blind tastes are introduced, as shown by multiple studies[21].

Wilhelmsen Ship Management organised a blind taste test involving their seafarers. The results demonstrated that while the seafarers could differentiate between bottled and tap water at room temperature, it was more difficult to do so when the water was served cold.

The choices people make when it comes to drinking water provided from a water system or tap versus a bottle is often linked to social norms, which continue to reinforce that bottled water is safer but without any solid basis/evidence for that belief.

It can take a while to change people's habits, so this is something that needs to be consistently promoted over a period of time. It is also necessary to work with seafarers to identify things that could help them feel more comfortable drinking the tap water.

Certificates of health and safety testing

Displaying test results near the water dispenser or making them easily accessible eg uploading to a shared file system, including in a newsletter, sharing via email etc could help to reassure seafarers that the water is safe to drink. Outlining the testing procedure in a clear and understandable way to all seafarers, and not just those that carry out the testing, can also improve confidence in the systems and how they are maintained.

Debunking health myths

There are a variety of misconceptions about the impact of tap water on health which can be varied depending on the country of origin of the seafarers. Those occasionally cited amongst the

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[18] Mason, S.A., Welch, V.G. and Neratko, J. (2018). Synthetic Polymer Contamination in Bottled Water. *Frontiers in Chemistry*, [online] 6. doi: **https://doi.org/10.3389/fchem.2018.00407**

[19] **Rapid single-particle chemical imaging of nanoplastics by SRS microscopy | PNAS**

[20] Ullah, S., Ahmad, S., Guo, X., Ullah, S., Ullah, S., Nabi, G. and Wanghe, K. (2023). A review of the endocrine disrupting effects of micro and nano plastic and their associated chemicals in mammals. *Frontiers in Endocrinology*, [online] 13. doi: **https://doi.org/10.3389/fendo.2022.1084236**

[21] **Polarized but illusory beliefs about tap and bottled water: A product- and consumer-oriented survey and blind tasting experiment – ScienceDirect**

seafaring community being that it causes kidney stones or can lead to tooth decay or teeth falling out.

Engaging with trusted medical professionals in the country of origin of seafarers, particularly those issuing medical certificates, can help to debunk any myths and misconceptions related to the consumption of non-bottled water – such as advising on the benefits of good hydration and dental care as the primary factors related to kidney stones and tooth decay, respectively.

Addressing seafarer changeover and new seafarers

Seafarers joining the ship for the first time should be informed about how drinking water is provided onboard: the location of the system(s) and how it works, details of the testing regime and how to access their personal bottle(s) or other refillable bottles.

What can be done to support seafarer acceptance?

Some general recommendations to increase seafarer acceptance include:

- Involving seafarers in the transition process ensuring clear communication and acting on any concerns raised
- Having blind tasting sessions
- Highlighting to seafarers, the negative impacts of plastic pollution and the positive impact of changing to water supplied by an advanced drinking water system
- Testing at a frequency agreed by consultation that provides assurance to seafarers on the safety aspects
- Ensuring senior seafarers and company management are setting a positive example and encouraging others
- Providing seafarers with personal, attractive and easy to use refillable flasks or bottles. Enough bottles of suitable size should be provided to ensure that a healthy level of water is available conveniently. New seafarers joining the ship should have access to a bottle(s)
- Conducting training sessions to educate seafarers about the safety and quality of the water. This can include providing information about the purification and filtering processes used in the systems and how they work
- Provide training on maintaining personal water bottles and containers to ensure water stays fresh and clean
- Running ongoing communication campaigns using a variety of media – posters/newsletters, company magazines and videos and ensure successes are celebrated.

A set of posters that can be co-branded are provided in Annex C and are available from the BIMCO website.

WHAT TO DO WITH THOSE BOTTLES THAT CANNOT BE REMOVED?

Overview

Ultimately there are some bottles that cannot be eliminated. A key example is emergency water stocks that need to be kept onboard to ensure that seafarers and any passengers have access to water during emergency situations as well as the supplies required in lifeboats. Visitors to the ship including agents, pilots, port state control officers etc may not feel comfortable drinking the water produced onboard so might need an alternate provision. This is particularly likely to be the case in countries where drinking tap water is not safe or commonplace.

There may be some seafarers that have specific paragraphs in their contract of employment entitling them to specific drinking water allowances. In this case it is recommended that contract reviews take place to ensure that the contract covers the basic principle of providing a specified amount of safe drinking water rather than providing that water in plastic bottles.

Considering alternatives to plastic

Various existing and new materials, including glass, aluminium cans, cartons and bioplastics, are being proposed as possible solutions to the plastic issue but it is often unclear whether they present a good alternative – particularly on a lifecycle basis[22]. Minimising or eliminating the use of SUP should always the preferable option. Nonetheless the use of alternative materials can still make a difference when looking into cases where “bottled” water needs to be available as highlighted. When selecting an alternative, an assessment of the relative sustainability and cost should be undertaken.

Glass bottles

Unlike plastic, glass can be recycled endlessly without degrading its quality. Making new glass from recycled waste produces less emissions than from raw materials. However, glass has higher transport costs due to its weight, which may constitute a higher GHG footprint than at first appearance. Glass also poses a threat to health and safety on board due to likelihood of breakages. The production of glass is also more expensive than plastic.

Cartons

Commonly used for milk and juice, cartons (such as Tetrapack™) are normally made up of 4 main materials: cardboard (75%), PET film (20%), aluminium (5%) with a bio-degradable plastic cap. Whilst recycling is available for cartons, they are not typically turned into new cartons and therefore do not fall into a closed recycling loop like glass or aluminium. Furthermore, since the aluminium cannot be separated and recycled, it limits the type of products that can be made. As

[22] **PlastPoll.pdf.pdf (unep.org)**

such cartons can often be downcycled into items such as car mats and plastic pens which eventually end up in landfill.

Bioplastics and biodegradable plastics

Bioplastics are made from bio-based polymers[23] derived from plant-based proteins, like starch and cellulose, or from microorganisms. Biodegradable plastics differ from bioplastics in that they are still petroleum-based but are combined with additives that allow them to break down at a quicker rate. There is some concern amongst the scientific community that the majority of bio-based and plant-based plastics alternatives contain toxic chemicals and can pose risks similar to those of conventional plastics particularly in terms of being carriers for pollutants and vectors for pathogenic organisms. Specific and proper conditions for biodegradation need to be met and waste should be processed at an industrial composting facility to ensure the correct disposal of both bioplastics and biodegradable plastics. It is important to note that most of these new plastic alternatives are not degradable in seawater and as such, many products labelled as biodegradable can present the same risks as conventional plastics to the marine ecosystem. There is also some evidence that biodegradable labelling may result in a greater inclination to litter on the part of the public[24] which, once again, may continue to fuel the marine plastic litter issue.

Prior to the introduction and storage of biodegradable bottles onboard ships, further research would likely be required to determine if the conditions on board are suitable for their storage eg to ascertain the level of the bottle's vulnerability to moisture in the air.

Aluminium cans

Drinking water can be provided in aluminium cans and may be a solution for ships operating on certain routes from/to developed countries where there is an existing consumer demand. It can be an expensive option due to the lack of producers. From an environmental perspective, aluminium cans are recyclable. They often contain a higher percentage of recycled material than plastic bottles and are also more likely to be recycled. The process of producing aluminium is energy-intensive and produces a significant amount of GHGs and, like glass, is heavier to transport than plastics. Nonetheless the lifecycle emissions of an aluminium can may still be lower than that of a plastic bottle.

Discharging remaining waste to ports

Even after taking steps to remove SUP bottles from ships, it is inevitable that some may remain alongside other SUP objects that might not have been eliminated (such as shampoo bottles, yoghurt pots etc). All waste onboard should be separated and disposed of correctly according to MARPOL regulations and/or local port regulations.

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23 **https://doi.org/10.1038/s41578-021-00407-8**

24 **Biodegradable Plastics and Marine Litter: Misconceptions, concerns and impacts on marine environments | UNEP – UN Environment Programme**

Not all ports or countries have the correct facilities for collecting, sorting and recycling plastic waste. This can result in the plastic ending up either in landfill, being incinerated (without energy recovery) or even finding its way into the water system and out into the ocean. Additionally, whilst some ports are able to handle the collection of plastic waste in a responsible manner, the waste management facilities in the country are inadequate. Finally, some ports or countries simply do not allow plastic waste to be discharged in any of their ports. Ships should try and discharge waste to facilities and countries with suitable waste management noting that ships are not always able to prioritise ports with suitable facilities due to operations.

With this in mind we would recommend the installation of garbage compactors if not already installed onboard. This allows the storage of more plastic waste until the ship reaches a "suitable" port for landing the waste. Compactors come in all sizes and can compact waste to up to 1/10th of original volume.

This can approach can also have an economic advantage as charges for handling plastic waste vary between countries and ports and the waste can be stored until reaching an economical port. Simply, the benefits of compactor installation are:

- Low initial investment and low operating costs with very little maintenance
- Substantial reduction in waste handling costs.

Incineration

Whilst incineration can reduce the waste problem, incineration of plastics onboard should be avoided wherever possible. Incineration of certain types of plastic (PVC and PCB) is not permitted onboard and as there is no confident way of knowing the chemical composition of a plastic item it is recommended that this practice is avoided.

IN SUMMARY

Plastic pollution has serious effects on both marine life and human health, making it essential for everyone to take responsibility for preventing plastic from becoming marine litter. Curbing the use of plastics bottles on ships reduces the risk of them ever becoming marine litter – and taking action now has numerous benefits for shipowners.

By installing an advanced drinking water system onboard, shipowners can not only demonstrate their commitment to sustainability, waste and GHG reduction and responsible resource usage, but can also enjoy significant financial benefits over time compared to purchasing water supplied in plastic bottles. With investment in both systems, testing and training shipowners are able to provide seafarers with safe and high-quality drinking-water supporting seafarer wellbeing efforts and contributing positively towards ESG efforts.

ANNEX A – OVERVIEW OF REGULATION AND POLICY CONCERNING PLASTIC WASTE AND SHIPS

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL 73/78)

Annex V of MARPOL 73/78 aims to prevent garbage pollution from ships and specifically prohibits the discharge of all plastics waste into the sea. There are guidelines and requirements to be followed by ships and port reception facilities on garbage handling in the port. In addition, there is the implementation of a garbage management plan on ships to specify procedures and ensure efficient handling and storage of garbage.

THE CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTES AND OTHER MATTER (LONDON CONVENTION) AND ITS 1996 PROTOCOL (THE LONDON PROTOCOL)

The London Convention aims to prevent marine pollution from the dumping of waste and other matter into the ocean. In 1996, a new Protocol to the London Convention was adopted to reduce dumping of waste. The Protocol further prohibits the dumping and incineration of waste including plastics at sea. It also establishes a so-called “reverse list” that prohibits dumping of all waste except those specifically listed, providing the responsible party has obtained the necessary permit.

THE IMO STRATEGY AND ACTION PLAN

In 2021, IMO Member States adopted the “Strategy to Address Marine Plastic Litter from Ships”. The Strategy recognises that despite the existing regulatory framework to prevent marine plastic litter from ships, discharges into the sea continue to occur. It sets an overarching aim to achieve zero plastic waste discharges into the sea from ships by 2025.

Actions relevant to addressing SUP include enhanced enforcement of MARPOL Annex V and familiarisation of all seafarers of the existing minimum requirements of the STCW (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers). This includes highlighting the existing best practice, guidelines and programmes as well as developing teaching material for training courses on all aspects of marine environmental protection (eg an IMO model course).

THE INDIA BAN

In October 2019, the Director General of Shipping in India (through the Order No.5 of 2019) imposed a ban on SUP on all Indian ships and foreign ships when in Indian ports and places (territorial waters) with entered into force on 1 January 2020. Items prohibited include bags, bottles (for water, cleaning products, shampoo etc unless they are refilled), hot drinks cups, potato chip packets, cutlery, plates etc. Verification of compliance is to be done during surveys, inspections and audits with enforcement for foreign-flagged ships based on SUP not being in use (and locked away) during stays in Indian ports. There is no prohibition on usage while an internationally-flagged ship is passing through Indian territorial waters. Log entries of SUP on board are advised and no discharge of SUP to the port reception facilities is allowed.

Following the issuance of the directive, there was a move from a number of representatives of the shipping industry to address some potential difficulties with compliance which resulted in an amendment being issued on 8 January 2020. The amendment refined the definition of single-use plastics, removed prohibition of biodegradable plastics, exempted seafarers' and passengers' personal effects, personal protective equipment (PPE), medicines and other essential single-use items. The targets set under the order were to remove 50% by 1 April 2020, 75% by 1 July 2020 and 90% by 1 October 2020. The percentages are based on number of items not total quantities so, for example, all plastic bottles, count as one item.

All ships are required to have a plan on board showing how the ship is going to comply with the requirement of a gradual phase out of single-use plastics on board. All Indian-flagged ships have such plans onboard and these are verified by the recognised organisation during their annual surveys.

A report submitted to the IMO in 2024 shows high compliance with the ban but with water still being provided in plastic bottles – but of much larger size (20 litres). Whilst there are benefits to using larger size bottles including a lower plastic to water ratio, greater transport efficiency and greater likelihood of recycling it is important to note that the best option from an environmental perspective is to minimize the use of SUP altogether.

THE KUWAIT BAN

Kuwait is another country, which has joined India in banning SUP items onboard all ships. The Kuwait Ministry of Communications issued Circular No. 08/2019 on 28 November 2019, which very much applies the same principles as the India Ban – in that any ships deemed to be Kuwaiti ships under Kuwaiti maritime commercial law and foreign ships are prohibited to use SUP in any port or place in Kuwait and this include water bottles and other drinks bottles. As with India, Kuwait no longer permits SUP items to be discharged to their port reception facilities.

Regardless of the existing challenges with the two bans, these provide two examples of what national recommendations and requirements might look like in the future.

ANNEX B – SAMPLE METHODOLOGY FOR A GHG COMPARISON CALCULATION

Should a company wish to do a detailed calculation of the GHG savings it might include the following steps:

1. Calculate the GHG emissions from bottled water:
   - Production: The production of plastic bottles is energy-intensive and releases a significant amount of CO_2. The exact figure can vary, but studies have estimated that for every ton of plastic, around 1.9 to 3.8 tons of CO_2 are produced
   - Transportation: There are also CO_2 and other GHG emissions from transporting bottled water from the production site to the point of distribution, and from the point of distribution to the ship. This can vary significantly depending on distances involved and knowledge would be needed on the point of origin and method of transport as well as associated emission factors
   - Disposal: There are CO_2 and GHG emissions from the disposal of plastic bottles. If they are recycled, the emissions will be less, but if they are sent to landfill or incinerated, the emissions will be higher. Knowledge would be needed on disposal methods and this may vary depending on ship operations
2. Calculate the GHG emissions from the potable water onboard:
   - The water provided from the onboard system also has associated GHG emissions, from the energy used in the treatment and a small amount in the production and transportation of the system. However, these emissions are usually much lower than those for bottled water. The exact figure can vary depending on the energy requirements of the installed system
   - Determine the energy demands of the system with information gained for the supplier. This would usually be supplied in kWh
   - Calculate the amount of amount of fuel needed to provide the energy required ensuring the units are correct – this will normally need to converted to kg
   - Work out the related CO_2 emissions by multiplying the fuel consumed by the relevant emission factor for that fuel. For example, this would be 3.21 for marine diesel oil (MDO)
3. Ensure all the units are comparable ie per one litre of water and subtract the CO_2 (or GHG) emissions of water produced onboard from the CO_2 (or GHG) emissions of bottled water to get the savings.

ANNEX C – POSTERS AVAILABLE FOR BIMCO MEMBERS TO USE

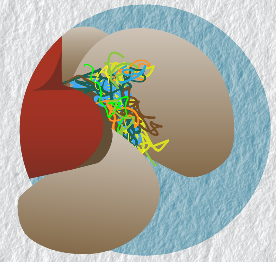
1. **The Problem with Plastic in the Ocean**
2. **Plastic Bottles Remain in the Ocean for 450 Years**
3. **Plastic Pollution has Devastating Consequences for Marine Life**
4. **The Shipping Industry Uses up to 1 Billion Single-Use Plastic Bottles a Year**
5. **Bottled Water is Often Produced Under Less Stringent Requirements Than Onboard Drinking Water**
6. **There are More Microplastics in Your Bottled Water Than from an Onboard Dispenser**
7. **Thank you for refilling and Helping us Reduce Single-Use Plastics Onboard and in the Ocean**

What is the PROBLEM with PLASTIC in the OCEAN?

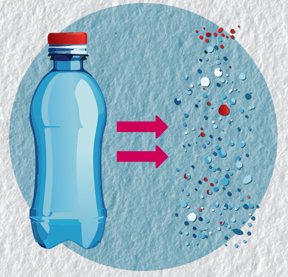
80% of litter in the marine environment is plastic.

Physical harm to marine birds, fish and mammals through suffocation and entanglement.

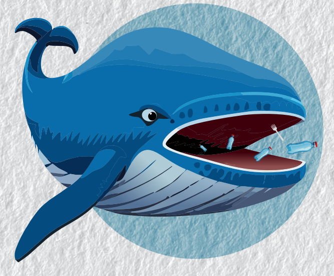
Costs to commercial ships and recreational boats due to fouled propellers, rudders, and anchors and blocked engine pipes. Removing litter from ports and harbours costs multi-millions per year.



Generation of high levels of GHG emissions – from production using fossil fuels to processing and end-of-life management.



Break down of large plastics to microplastics results in ingestion by a wide range of marine life.



Ingestion can cause damage to nervous systems of animals and affect their ability to feed and reproduce.

Species can use plastics as rafts to travel across the ocean – potentially becoming invasive in new environments.

As well as containing harmful chemicals, plastics can absorb toxins from surrounding waters – this can result in high concentrations of toxins in animals, increasing up the food chain.

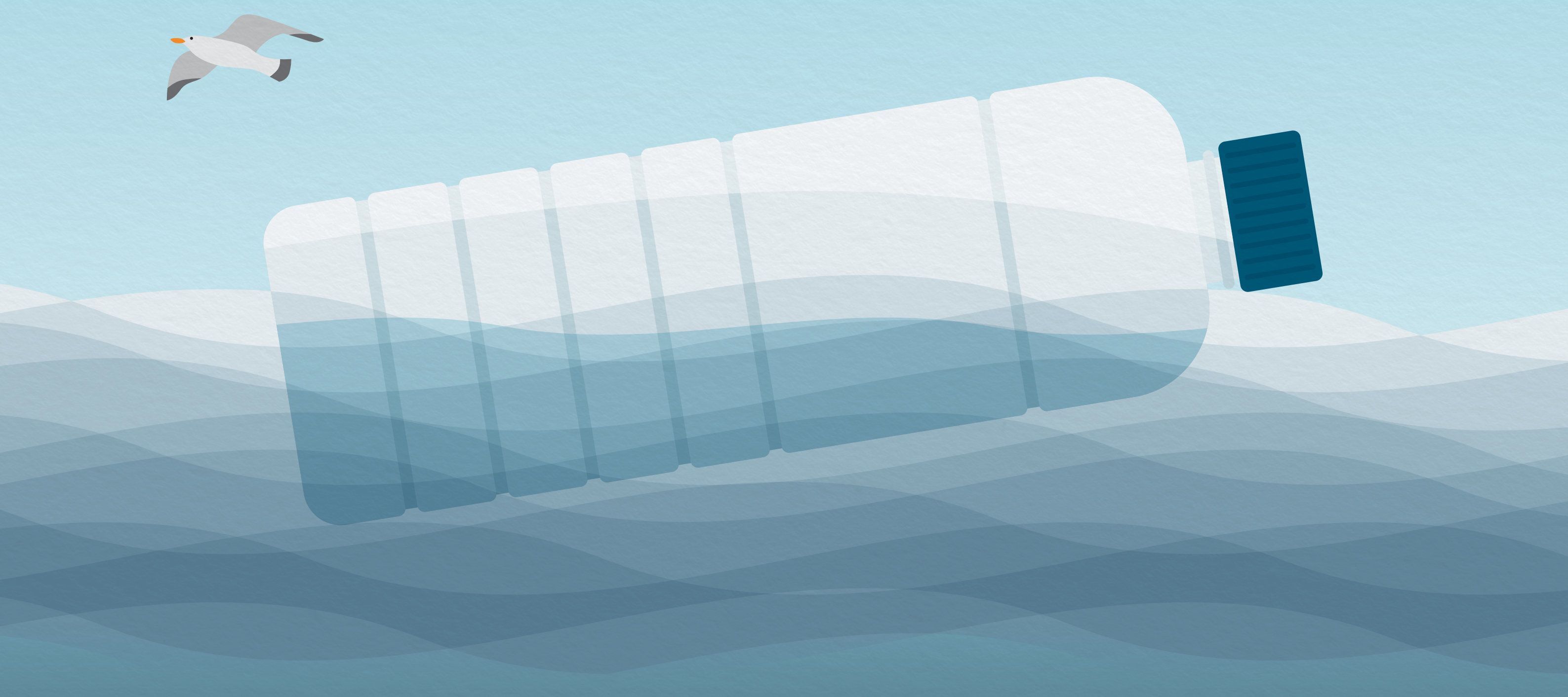
Potential for microplastics to decrease the quantity and quality of the food to humans – endangering both food safety and security.

Plastic is an eyesore and can significantly impact tourism and the associated economy.

TOGETHER FOR A PLASTIC FREE OCEAN

BIMCO

PLASTIC BOTTLES
REMAIN IN THE OCEAN FOR
450 YEARS



CHOOSE TO DRINK FROM AN ONBOARD DISPENSER

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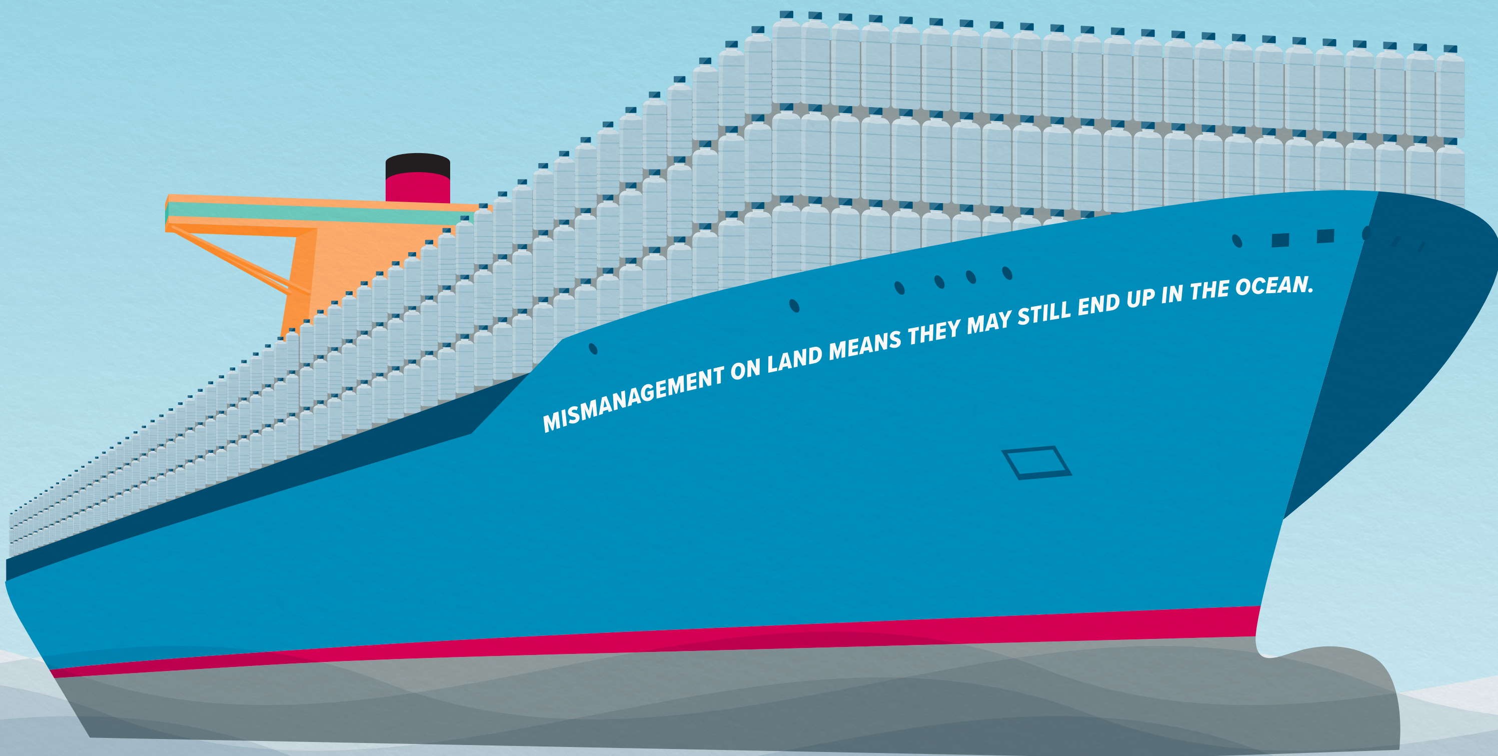
TOGETHER FOR A PLASTIC FREE OCEAN


PLASTIC POLLUTION HAS
DEVASTATING CONSEQUENCES
FOR MARINE LIFE
CHOOSE TO REDUCE
SINGLE USE PLASTICS
BIMCO
TOGETHER FOR A PLASTIC FREE OCEAN

THE SHIPPING INDUSTRY USES UP TO 1 BILLION SINGLE USE PLASTIC BOTTLES A YEAR



CHOOSE TO REDUCE SINGLE USE PLASTICS

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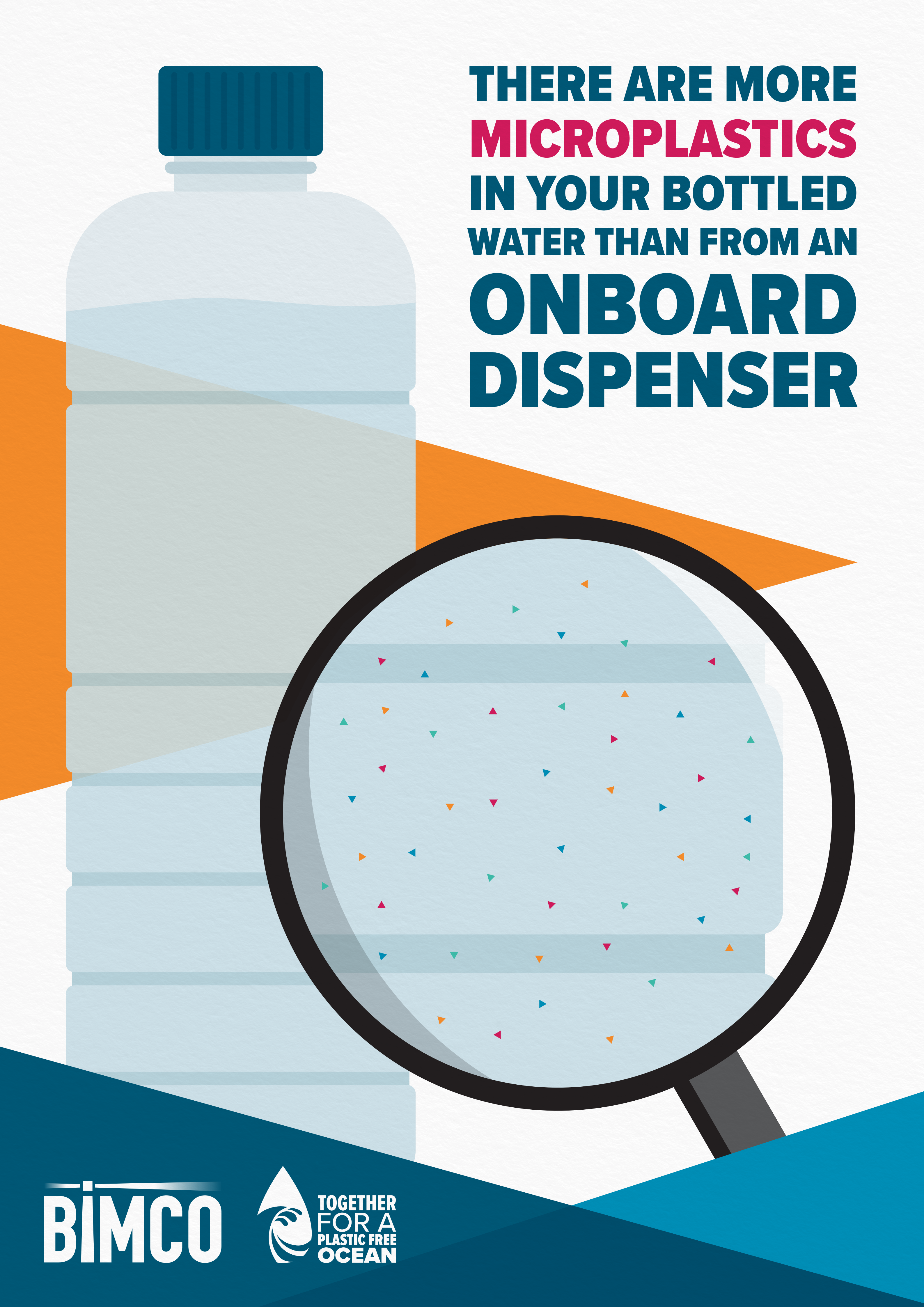
TOGETHER FOR A PLASTIC FREE OCEAN


BOTTLED WATER
IS OFTEN PRODUCED UNDER
LESS STRINGENT
REQUIREMENTS
THAN ONBOARD
DRINKING WATER
ONBOARD WATER
IS TESTED TO THE
HIGHEST STANDARDS
DRINK WITH
CONFIDENCE
BIMCO
TOGETHER
FOR A
PLASTIC FREE
OCEAN


THERE ARE MORE MICROPLASTICS IN YOUR BOTTLED WATER THAN FROM AN ONBOARD DISPENSER
BIMCO
TOGETHER FOR A PLASTIC FREE OCEAN


THANK YOU
FOR REFILLING AND HELPING US
REDUCE SINGLE-USE PLASTICS
ONBOARD AND IN THE OCEAN
BIMCO
TOGETHER FOR A PLASTIC FREE OCEAN