

WEST AFRICA

1 Cape Verde

1.1 Marine plastic pollution in Cape Verde

1.1.1 Sources of marine plastic pollution

This report provides the first estimate of marine plastic pollution (MPP) in Cape Verde. The estimate is preliminary and relies on several assumptions (see Table 1). There are three main sources of MPP in Cape Verde:

- mismanaged, or unmanaged solid waste which is by far the most important
- marine sources, mainly fishing activities and shipping with a minor contribution from marine leisure (yachts, cruise ships)
- plastics transported by ocean currents from non-AIODIS countries.

Table 1. Estimate of marine plastic pollution in Cape Verde

Item		Source/ Assumption
Population	549,935	World Bank 2019
Waste (kg/person/day)	0.874	PENGeR 2016
Waste (tons/year)	175,435	calculation
Plastic (%)	10.2%	PENGeR 2018
Plastic waste (tons/year)	17,859	calculation
Mismanaged plastic waste (tons/year)	5,358	30% (assumption)
Marine plastic pollution(tons/year)	268	5% of mismanaged waste (assumption)
Fisheries and shipping (tons/year)	30	assumed*
Microplastics	2	assumed
Non-Cape Verde sources	-	no information

* mainly attributable to regional tuna fishing

The impacts of MPP are addressed in the main report.¹

Solid waste. Although a relatively high proportion of urban waste collection is reported (about 85 percent of residences serviced), progress on implementation of national waste management plans has been slow.² Implementation faces a number of problems, including the island geography of Cape Verde and the mountainous terrain which results in relatively high costs of waste transport, lack of economies of scale for the municipal authorities responsible for about 17 municipal dumps and

¹ Specifically for the Eastern Central Atlantic islands, see e.g.: Rodríguez, Y. et al. 2020. Socio-economic impacts of marine litter for remote oceanic islands: The case of the Azores Marine Pollution Bulletin Volume 160, November 2020, 111631. <https://www.sciencedirect.com/science/article/abs/pii/S0025326X20307499>.

² Plano Nacional de Gestão de Resíduos (PNGR) 2004-2014; Plano Estratégico Nacional de Gestão dos Resíduos Sólidos (PENGeR) 2015-2030; Ecovisão. 2017. Roadmap dos Resíduos em Cabo Verde.

various collection systems.³ In addition, high seasonal winds in Cape Verde carry plastic waste from mismanaged dumps where burning also contributes to dispersion of plastic waste particles. In 2017, over 8 percent of households disposed of waste directly into the environment (i.e., in gardens or local public spaces), while over 10 percent burned waste locally. Occasional flash floods may also transport waste plastic and litter to the ocean, including from about 150 'uncontrolled' waste dumps.

Progress on national waste management plans and 'roadmap' remains constrained by resources, lack of opportunities for recycling and means of generating value from wastes. Attempts have been made to organise waste-pickers, known as 'catadores' and there is ongoing concern for the health and well-being of these disadvantaged workers.⁴

Fisheries. Both local fisheries and international tuna fishing is a source of MPP through lost gear, including fish aggregating devices. Losses are generally related to the type of gear and location where the fishing takes place. Over 200 small-scale fishing boats operate in Cape Verde and about 50 larger 'industrial' (mainly tuna) vessels are based in Cape Verde. Global estimates of MPP from these sources are preliminary.⁵ Gillnets have a high level of loss while fishing on rocky bottoms also increases losses

Since 2015, the NGO 'Calao' has collected over 16 tons of marine debris on Sal islands western beaches (about 90 percent plastic), a constant leakage of debris, mainly produced by the international fishing industry, some carried from mainland West African coastal fisheries. While there are a range of guidelines available, and various workshops have been held, it is unclear to what extent best practices are implemented in Cape Verde and regionally.⁶ A 2019 regional workshop indicated a low level of awareness on the scale of and nature of appropriate solutions. Although most small fishing vessels are wooden, fibreglass (GRP) fishing vessels and pleasure boats are progressively reaching the end of their useful life, will accumulate as plastic waste and may degrade to marine microplastics if abandoned on beaches. Most countries have no provision for appropriate disposal of GRP vessels.

Shipping. Galley waste from shipping, including from cruise ships, can be a source of MPP, particularly if the waste disposal arrangements at ports are inadequate. Most major ports have waste reception facilities and implement the controls required under MARPOL Annex V. There are no reported irregularities regarding the access to waste disposal in AIODIS main ports. Arrangements for disposal of ships garbage in smaller ports in Cape Verde needs assessment. Inter-island cargo shipment of is about 1 million tons per year, an increase of over 12 percent per year in recent years.

³ Ventura J.E., Santos E.D.O.S., Cabral A., 2013. A Problemática dos Resíduos Sólidos na Cidade da Praia. Atas do Colóquio Internacional Cabo Verde Guiné-Bissau: Percursos do saber e da ciência.

⁴ About 80 catadores worked in Praia in 2015 (UNISOL study). See: <http://www.southsouthworld.org/pt/component/k2/97-solution-pt-br/2109/apoio-a-promocao-do-artesanato-e-a-reciclagem-de-lixo-na-cidade-da-praia-cabo-verde-pt-br>.

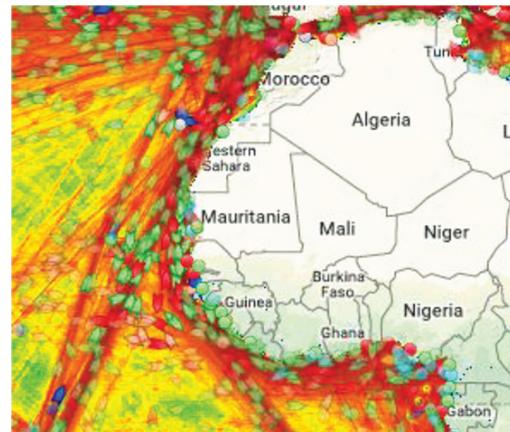
⁵ FAO, 2016. Abandoned, lost and discarded gillnets and trammel nets: methods to estimate ghost fishing mortality, and the status of regional monitoring and management. FAO Technical Paper No. 600. Rome. Italy.

⁶ Macfadyen, G., Huntington, T., and Cappell, R. 2009. Abandoned, lost or otherwise discarded fishing gear. UNEP Regional Seas Reports and Studies No.185; FAO Fisheries and Aquaculture Technical Paper, No. 523. Rome, UNEP/FAO. 2009. 115p.; FAO 2020. Report of 2019 FAO Regional workshops on best practices to prevent and reduce abandoned, lost or discarded fishing gear in collaboration with the Global Ghost Gear Initiative. Port Vila, Vanuatu, 27–30 May 2019. Bali, Indonesia, 8–11 June 2019. Dakar, Senegal, 14–17 October 2019. Panama City, Panama, 18–23 November 2019. FAO Fisheries and Aquaculture Report No 1312. Rome. <https://doi.org/10.4060/ca9348en>.

Foreign sources. MPP in Cape Verde results from MPP in other countries including mainland Africa and South America. Beach litter surveys show marine litter originating in 25 countries. Circulation models for the Canary Current, the North Equatorial Counter-current and the Amazon plume suggest that plastic marine debris, including microplastics can be transported to Cape Verde waters. In addition, it is possible that some microplastics are carried in atmospheric dust on the NE trade winds from the West Africa mainland.⁷ Although there are no specific reports of marine plastic debris originating from non-Cape Verde flag vessels, it is likely that industrial longline gear, FADs and other lost or abandoned gear contributes to MPP (see main report also).

Microplastics. The level of marine microplastic pollution depends on a wide range of factors. Population, density of housing and the type of treatment of waste water are important factors. Where there are slow-moving rivers and extensive estuaries microplastics may become trapped before entering the sea. However, this is not the case in Cape Verde and the main sources are likely to be waste water (cosmetics, cleaning agents, laundry), road runoff of rainwater containing microplastics from car tyre abrasion, and air-borne microplastics resulting from burning and breakdown of macroplastics by wind and sun. There are no requirements to exclude microplastics from cosmetics and cleaning agents imported into or sold in Cape Verde. It is unclear if the various waste water treatment plants trap and effectively dispose of microplastics. The Ministry of Agriculture and Environment is understood to have initiated a study on microplastics.

Figure 1. Shipping traffic density West Africa



1.1.2 Existing and potential measures to combat MPP

The priority is to implement the PENGeR, which provides a comprehensive check-list of policy, legislative, infrastructure and behavioural actions required by government, by the private sector and by consumers. Financing for implementation of the PENGeR appears to be a significant constraint and is not prioritised in any of the plans of the major development partners.⁸ Parliamentarians have referred the Canaries ('zero plasticos no mar') and the Azores as providing examples of good practices adapted to Macaronesian region. Solid waste management is linked to numerous SDGs. The inclusion and tracking of indicators on urban waste management (SDG 11), plastic consumption (SDG 12) and marine pollution (SDG 14) in the INE reports on sustainability could be considered.⁹

A review of policy gaps and PENGeR implementation could uncover some cost-effective measures to reduce waste in general and MPP in particular. These may include measures to reduce or phase-out SUPs, codes of industry conduct for tourism to reduce SUPs and plastic waste, EPR schemes and a ban on the import of cosmetic and other household products which contain microbeads. Measures with respect to fisheries, shipping and development of awareness are briefly described below. Reference should be made to the main project reports for greater detail and discussion of recycling of plastic waste.

Solid waste management. A number of the activities set out in the PENGeR are under way or have been completed, such as the establishment of an information system (Sistema de Informação de Resíduos (Sires)) and the development of the Ilha Santiago sanitary landfill. National regulations on

⁷ Zhang, Y. et al. 2020. Atmospheric microplastics: A review on current status and perspectives. *Earth-Science Reviews*, Volume 203, April 2020, 103118.

⁸ E.g., WB, AfDB, EU, Luxembourg, Portugal.

⁹ INE, 2019. Relatório Estatístico. Indicadores dos Objectivos de Desenvolvimento Sustentável, Cabo Verde. Agenda 2030.

municipal waste management were approved in 2020;¹⁰ the prohibition on plastic shopping bags was introduced in 2015.¹¹ A range of studies may also provide insights for solid waste management.¹² Work by NGOs, by partnerships and others may also provide a basis for actions to combat MPP and address some the social issues involved.¹³

Tourism, including cruises, contributes about 25 percent of Cape Verde's GDP but drives about 40 percent of the economy. The number of tourists has quadrupled in the 2001-2017 period placing significant strain on waste management. A projected decline of about 70 percent in tourism in 2020 may offer the opportunity to introduce measures on plastic pollution and waste management, such as in tourist codes of conduct and reduction of SUPs by hotels. About 70 percent of cruise passengers disembark and spend an average of \$45 per day.

Fisheries. In Cape Verde, marking of fishing gear, requirements for reporting loss and location of loss (i.e. with GIS reference), 'fishing' to recover lost gear, port reception facilities for waste gear and arrangements for recycling are all measures which can help reduce MPP from fishing.¹⁴ Measures based on MARPOL Annex V can be applied to fishing vessels. The arrangements for collection and recycling of fishing gear collection and gear recycling programme require practical local solutions. Recycling of nets and ropes may require the economies of scale which are only feasible through regional schemes, through close engagement with businesses and possibly with economic support from EPR arrangements with importers. Studies suggest that the direct economic costs and benefits of fishing gear EPR schemes, such as deposit-return arrangements, or 'environmental taxes' on fishing gear imports are considered to be about equal (excluding indirect environmental benefits). However, the distribution of costs can be skewed, e.g., if manufacturers simply increase the cost of gear to fishers to cover EPR.¹⁵ Fishers could introduce local rules to curtail gillnets in rocky areas where nets are frequently lost, as ghost fishing impacts on all fishers.

Abandoned GRP vessels present a growing plastic waste problem. Rules for disposal are required and the responsibilities specified. Measures could include a requirement that the annual vessel registration fee is paid until appropriate disposal is certified. EPR schemes may be difficult to design given the life of these boats.

Reduction of MPP from international fisheries (e.g., tuna) requires a regional approach. This could start with resolutions by ICCAT, SRFC, and COMAFAT phasing in MARPOL Annex V requirements for vessels and with respect to FADs and specifying responsibility for recovery of FADs. Enforcement could be through the PSMA. Appropriate requirements could eventually become part of minimum terms and conditions of access, included in licenses for vessels and be an approved ICCAT management measure. Fisheries support vessels could be included. FAO might be requested to provide support for design of a phased approach.

¹⁰ DL 26/2020.

¹¹ Lei nº 99/VIII/2015.

¹² Moreira, A.J.G. et al., 2020. Application of a decision support tool for municipal solid waste open dumps remediation in Cape Verde. *African Journal of Environmental Science and Technology*, January 2020; Silva, M.A.R., 2018. Plano De Negócios – Criação de uma Empresa de Reciclagem em Cabo Verde. Projeto de Mestrado, Instituto Politécnico de Lisboa; Mendes de Castro, M.E., 2017. Avaliação Ambiental Estratégica (AAE) de um Plano Operacional de Gestão de Resíduos na ilha do Sal - Cabo Verde. Universidade do Minho.

¹³ WWF/ FIBA, 2010. Proposta do Plano de Gestão da Reserva Natural Marinha de Santa Luzia, Ilhéus Branco e Raso; and work by Sociedade Portuguesa para o Estudo das Aves (SPEA); GCV, ANMCV & PNUD. 2017. Catalog of Good Practices of Development in Cape Verde; Dias, S., 2018. Three ways waste pickers can be included in the new circular economy. *Equal Times*, 23 March 2018. www.equaltimes.org/three-ways-waste-pickers-can-be#.

¹⁴ Huntington, T.C., 2016. Development of a best practice framework for the management of fishing gear – Part 2: Best practice framework for the management of fishing gear. Confidential report to World Animal Protection; Also see the Global Ghost Gear Initiative.

¹⁵ EC, 2018. Study to support impact assessment for options to reduce the level of ALDFG Final Report 22-02-2018. <https://webgate.ec.europa.eu/maritimeforum/en/system/files/Final%20Report%20Plastics%20from%20Fishing%20Gear%20Delivered.pdf>.

Shipping. Ensuring that Cape Verde meets its obligations under MARPOL Annex V is the key action. Engagement between vessels operators and agents, port officials and waste disposal enterprises can help to ensure compliance on ships garbage disposal. Clarity on responsibilities for control, for inspection of ship's waste management logbooks and monitoring of practices at smaller ports may require agreements between Enapor, responsible ministries and municipal authorities. Dialogues could also help in separation of recyclables in ship's garbage. Possible dialogue IMO and regional port authorities could ensure coordinated measures to prevent dumping of waste by other shipping and foster codes of conduct by cruise lines.¹⁶

Possible regional initiatives. Prevention, reduction, or control of MPP from foreign sources requires regional (or global) action. Cape Verde could consider several cooperative initiatives:

- preparation of joint strategic plan on MPP under the Abidjan Convention
- a COP resolution on monitoring and reporting on MPP and marine microplastic pollution as part of the implementing arrangements for the Abidjan LBSA Protocol
- preparation by the Abidjan Convention of programme and associated funding submission for a regional MPP monitoring. including from distant sources and collating information on beach clean-up through existing initiatives, and preparation of a strategic plan on MPP
- Further use of Comunidade dos Países de Língua Portuguesa in the context of a follow up to the Mindelo Declaration (2018).

Cape Verde could also consider initiating a dialogue in ECOWAS on trade issues related to MPP and plastic waste management in general. In particular, regional arrangements on trade in plastic (and other) waste would be useful to enable economies of scale in recycling. Regional measures to reduce or eliminate un-necessary plastics, such as microbeads in household products and selected SUPs would also foster innovation in development of substitutes and collection and recycling schemes. Regional measures also invoke market power in relation to the behaviour of major users of plastics (e.g. PET bottles), can underpin dialogues with major corporate sources of MPP (see main report), and inform discussions within the WTO.

At the level of AIODIS and Africa, Cape Verde could consider contributing to a common AIODIS position on MPP, possibly with a view to consolidating actions and positions through existing AMCEN and SIDS initiatives. Such engagement could also contribute to the oceans agenda of UNGA and UNEA. A regional action plan could also enable access to resources, including from global partnerships on plastic waste (see main report).

Awareness of MPP. A range of approaches to raising awareness is detailed in the main AIODIS report. In the case of Cape Verde, the existing awareness may need to be channelled into practical actions, such as the separation of plastic waste, access to sources of funding for recycling, possibilities with regard to EPR schemes and development of a business case for 'valorização' of waste streams. Specific attention may need to be directed to preparing consumers for possible measures on SUPs and raising awareness on microplastic pollution as this is less visible. In addition to possible public awareness campaigns, awareness activities can build on the work of environmental NGOs and the development of materials for school curricula. Campaigns can also focus on voluntary actions and procurement policies, e.g., elimination of SUPs from public procurement. Given the relatively low level of manufacturing in Cape Verde engagement with existing manufacturers (e.g., CERIS(Estrela) and AguaBrava (water)) could foster innovation, initiatives and awareness.

¹⁶ UK Chamber of Shipping, 2020. Best Practice on combatting Single-Use Plastic in Shipping; Carnival Corporation & PLC, 2019. Sustainability from Ship to Shore FY2019 Sustainability Report (see commitment on phasing out of SUPs).

Resources. As already noted, solid waste management does not appear to have a high priority in any of agendas of the development partners. This implies increased attention to the cost-effectiveness of waste management, means to reduce wastes (e.g., import of packaging), application of 'polluter pays' charges on items such as plastic bottles and plastic packaging, recovery of waste collection costs and possible cross-subsidy for collection from remote communities. A small task force could review the PENGeR with an emphasis on availability investment and recurrent finance and (in the absence of investment funds) the prioritisation of low-cost actions, including awareness raising and change in consumer and household behaviour on waste management. Island-level, or sector-specific plans to combat MPP, or to manage waste could be considered with a view to improved synergies between existing public and private efforts. The proposed 'blue bond' concept note flags the challenge posed by MPP and solid waste management and could potentially provide catalytic resources.¹⁷

¹⁷ World Bank. 2020. Cabo Verde: Blue Bond Note. Report No: AUS0001012. See also: World Bank, 2016. World Bank Group Engagement in Small States: The Cases of the OECS, PICs, Cabo Verde, Djibouti, Mauritius, and the Seychelles Clustered Country Program Evaluation.