

# »» Perspectives on Development Financing



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## Marine protection starts on land Technical solutions to rid the oceans of plastic offer limited help

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**The coronavirus pandemic has pushed the critical condition of the oceans to the back of our minds. However, the seas continue to be inundated with plastic waste which breaks down into tiny particles and ultimately ends up in the food chain. There is even a plastic garbage patch the size of Europe floating in the Pacific Ocean. If current practices don't change, it is estimated that there will be more plastic than fish in the oceans by the middle of the century. The technical solutions some are hoping for, like enormous vacuums, are not yet fully developed. Moreover, these only deal with the consequences of pollution. If we want to protect the oceans in the long term and preserve them as eco-systems, we have to make sure that nothing ends up in the oceans that does not belong there: the most effective marine protection starts on land.**

Oceans form the largest habitat in the world and cover 70% of the Earth's surface. They produce 50% of the

world's oxygen, capture far more carbon dioxide than forests, regulate the climate, are home to a vast abundance of species, provide raw materials, are used as trade routes and offer a place for recreation. They also make a key contribution to the world's food supply. Around half of the world's population lives near a coastline and relies on an intact marine ecosystem. Fish, for example, play a crucial role in developing countries as a source of protein and income.

### More plastic than fish

For a long time, oceans were taken for granted as a resource that could be "emptied" and "filled" as needed. In the meantime, it is clear that this view is outdated and no longer acceptable because the oceans are under extreme pressure for various reasons. One reason is the growing volume of marine litter: pollutants end up in the oceans, most in an untreated state, they threaten fish, sea birds and turtles, make their way into the food chain

and are also ultimately harmful to humans.

Ocean Cleanup, a non-governmental organisation, estimated that there are already more than five trillion plastic particles in the oceans today, mainly concentrated in five "marine garbage patches", the largest of which is found between Hawaii and California.

The overwhelming majority of plastic waste – reportedly up to 80% – comes from land and makes its way to the ocean in streams and rivers. In comparison, lost fishing nets and solid waste from shipping make up less than 20% of the plastic rubbish. Overall, around 8 million tonnes of plastic waste makes its way into the oceans year after year. And more than half of global waste discharged to the oceans can be attributed to six countries: China, Vietnam, Indonesia, the Philippines, Sri Lanka and Thailand.

It is also certain that the consumption of plastic has increased drastically in the last 50 years: more than 600% in the period between 1975 and 2012.



The abundance of fish as it exists here is becoming increasingly rare.

And, according to forecasts, this quantity is expected to double again in the next 20 years because plastic has become a practical and widely used material in people's everyday lives in most countries in the world. But this does not just harm the oceans, it also endangers the climate because around 6% of the oil and gas consumed goes to the production of plastic.



#### Quote

"The plastics sector will account for 20 % of total oil consumption and 15 % of the global annual carbon budget by 2050 (...)."

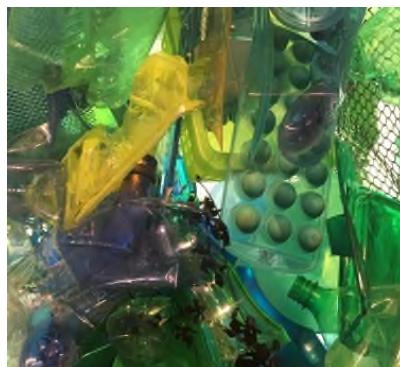
*Global Economic Forum in Davos*

### The plastic economy

The main reason plastic is such a problem is its durability. Scientists hypothesise that it can take up to 500 years for plastic waste to completely biodegrade. Still, most countries are miles away from having a system that even slightly resembles a "circular economy". In other words, this means that only a few countries have organised and, most importantly, extensive waste and wastewater systems to date. In terms of plastic, this means that only a small portion is reused for a new purpose. According to calculations by the Ellen MacArthur Foundation, national economies lose an estimated USD 80 to 120 billion in value every year as a result – to say nothing of the environmental costs which are not included in the calculations. As a result, the Foundation also holds the view that we already live in a "plastic economy".

### Technical solutions

More and more technical solutions are being introduced to overcome the problem, for example, to filter plastic out of the ocean using currents. Gigantic vacuums have also been proposed. None of these solutions have been fully developed yet; the first tests began at the end of 2017. However, it became apparent that removing and tediously picking waste out of the oceans is much more complicated than initially presumed. The non-



Plastic, plastic, plastic in the oceans.

governmental organisation Ocean Cleanup, for example, is hoping to launch a test system in 2021. In addition, larger plastic items like bags are to be collected near rivers first. Another idea is to collect plastic waste from smaller islands scattered in the Pacific with rubbish ships, to separate the waste on board and then process it further. But until now, none of the solutions has proven truly worthwhile in practice. And whether or not the harmful microparticles that accumulate in the food chain can be removed from the ocean with a technical solution remains questionable.

### Lowering consumption

It is more likely that the plastic already floating in the oceans can no longer be removed. This makes putting a rapid end to more plastic waste all the more important. If the "business as usual" scenario came true and the volume doubled again in the next 20 years, this would likely overwhelm the oceans and be harmful for people sooner or later. Effective waste management on land therefore plays a central role. The triad of "Reduce – Reuse – Recycle" should apply here as well:

- **Reduce:** It would be advisable to reduce plastic consumption with a combination of bans – e.g. on plastic bags – and incentives – e.g. to use alternative materials.
- **Reuse:** To enhance these efforts, as much plastic as possible should be reused, e.g. recycling of plastic bottles (product reuse)
- **Recycle:** And finally, plastic should be recycled (material reuse) or, where this is not possible, disposed of properly.

There are encouraging examples: the small, densely populated, landlocked country of Rwanda in eastern Africa banned plastic packaging and the previously omnipresent plastic bag out of hand several years ago, and strictly monitors this ban. Kenya followed suit several years later. And starting in 2021, several disposable products like plastic cutlery, plastic dishes and straws will be banned.



#### Quote

"KfW doesn't think that technical solutions for removing plastic waste from the oceans are very promising just now because many of the particles are so small. Our efforts should focus on preventing plastic from ending up in the oceans in the first place."

*Stephan Opitz, Member of the Management Committee of KfW Development Bank, Head of the Policy and Latin America Department*

### Not for free

Proper rubbish disposal, however, comes at a cost. Yet it is cheaper than the time-consuming process of removing plastic from the ocean in the long run. KfW estimates the costs of collecting, recycling, incinerating or storing (plastic) waste to be roughly EUR 60 to 80 per household per year. The countries listed above that are the primary producers of plastic waste in the oceans are almost all economically advanced. They could afford the costs for systematic waste management, especially because it would

create work for lower skilled people – a factor that is often overlooked in the discussion about costs. The best strategy, of course, would be to follow the example of Rwanda and reduce plastic consumption to a minimum from the start. International agreements and standards would also be helpful to reach this goal.

### The construction of treatment plants

Microparticles, however, do not just emerge when large plastic pieces floating in the ocean are crushed. They occur much earlier, for example, as a result of the abrasion of car tyres or due to cleaning additives like the ones in toothpaste or other synthetic fibres in clothing that erode over time. Substances of this kind can also make their way through the sewage system to rivers and later to the ocean. It would be technically feasible to remove them, even though this is an expensive process, but in most developing countries and emerging economies wastewater and rainwater is not treated before it flows into the ocean. With this in mind, it would be advisable to construct technically advanced treatment plants in the river basins and coastal regions of developing countries and emerging economies. They play a very important role



Seemingly intact underwater world.

in marine protection.

The heartening news is that many countries have undergone a shift in awareness in past years. National governments are beginning to set ambitious targets to reduce plastic waste and thus also to keep rivers clean, implementing these measures with international support as well. For

example, the Indonesian government intends to reduce the amount of plastic waste by 70% by 2025.



Collecting plastic covers in Tunisia.

### Time to act

To make a significant contribution to these efforts, KfW launched the “Clean Ocean Initiative” together with its European partners the EIB (European Investment Bank) and the French development agency AFD (Agence Française de Développement) in 2018. Together with further partners, the intention is to invest over EUR 2 billion in marine conservation projects by 2023. Plastic waste is to be collected and recovered or at least safely stored, and the entry of small plastic particles will be significantly reduced through the use of more and improved treatment plants. Close to two years after its inception, commitments have been made to projects amounting to EUR 1 billion. In this context KfW is supporting Cape Town in South Africa, for example, in modernising and expanding old sewage treatment plants.

### Conclusion

Marine protection always has to start on land and include waste and wastewater systems as well as treatment plants in an overall strategy. This is the only effective way to protect the oceans in the long run and keep them usable as a habitat for humans over the long term – to achieve SDG 14 by the year 2030.



#### Photos

p.1: WWF, p.2: Friederike Bauer, p. 3, left column: vlad61 / thinkstock, p. 3, middle column: KfW-Bildarchiv / photothek.net



#### Literature and link selection

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- Marine Litter Solutions: 2016 Progress Report, 2016.
- Ocean Cleanup <https://www.theoceancleanup.com/>
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