Plastic Interceptors Clean Up The Bangkok River

Plastic pollution is one of the grave environmental threats we face, harming both animal and human health. Single-use plastic accounts for 40% of plastic production globally (Parker, 2024). Owing to the take-make-dispose culture, most of these plastic bags and wrappers end up in waterways and ultimately the ocean. Plastic flow to the oceans is predicted to triple between 2016 and 2040, from approximately 11 million tonnes in 2016 to 29 million tonnes in 2040 (UNEP, 2021). Trash escapes to the sea from major rivers picking up more garbage as they travel downstream. According to research by The Ocean Cleanup, 80% of the world's plastic waste comes from 1000 rivers. The Ocean Cleanup has invented plastic interceptors to capture marine trash from rivers before it reaches the ocean.

Source: The Ocean Cleanup

The Pollution in Bangkok River

According to records, Thailand is one of the leading contributors to marine plastic pollution. The country is ranked among the top 10 countries polluting the ocean with plastic waste and debris (Popattanachai, 2020).

In Thailand, approximately 2 million tonnes of plastic waste are generated annually, according to the Pollution Control Department. The country has a significant reliance on plastic. Takeaway food is typically packaged in plastic containers, accompanied by plastic cutlery, and transported in plastic bags. Only about a quarter of this plastic waste is collected and recycled.

The Chao Phraya River is one of the main rivers flowing into the Gulf of Thailand. The Interceptor is designed to filter up to 1.5 tonnes of trash daily, preventing it from reaching the Gulf of Thailand (Jones, 2024). A quick calculation determines this will only remove a quarter of the annual plastic waste.

Negative Impacts of the Polluted Bangkok River

The river is the source of water for more than 10 million residents (Ta and Babel, 2020). As a result, pollution in the Chao Phraya River has severe negative impacts on the residents owing to water quality degradation making drinking and bathing hazardous to human health. Furthermore, the presence of plastics and other pollutants can be toxic to fish and other aquatic organisms. This leads to the disruption of aquatic ecosystems, impacting food chains and the overall health of the river.

The Chao Phraya River is vital for agriculture, fishing, and tourism. Farmers using polluted river water for irrigation may see reduced crop yields and soil degradation (The Third Pole, 2022). Aquatic farming on the river accounts for 200,000 tonnes of annual production (Ta and Babel, 2020). Pollution can lead to a decline in fish populations, affecting local fisheries and the livelihoods of people depending on fishing. Poor water quality can also deter tourists, negatively impacting the tourism industry (Lange, Schoenig, and Khokiattiwong, 2019).

Pollution, especially in the form of solid waste, can clog the river and its

tributaries. This impedes water flow and increases the risk of flooding (Netpae, 2014). This in turn leads to property damage and displacement of communities.

What Are Plastic Interceptors?

The Interceptor's arms use the river's current to capture the trash.
Source: Phys.org

In an era where the health of our planet is under constant threat from human activity, innovative solutions are crucial. The Ocean Cleanup is a non-profit organisation founded in 2013 by Boyan Slat. It aims to tackle the plastic problem upstream rather than dealing with the consequences downstream. The Interceptor is a floating river cleanup technology powered by solar energy that captures waste, preventing it from flowing downstream.

The system consists of several key components, including a floating barrier, a conveyor belt, and a collection bin. As water flows through the interceptor, the barrier prevents plastic debris from continuing downstream, while the conveyor belt scoops up the waste and deposits it into the collection bin for later disposal or recycling (Plastic Soup Foundation, 2024). The Interceptor is capable of capturing waste as large as 10 meters long to microplastics ranging from 0.5 to

5.0 mm (Babel et al., 2022).

How Can Plastic Interceptors Clean Up The Bangkok River?

Since its inception, The Ocean Cleanup has deployed Plastic Interceptors in rivers around the world, targeting some of the major sources of plastic pollution. The first plastic interceptor was installed in Indonesia in 2019. Currently, the Ocean Cleanup has The Interceptor deployed in Indonesia, Malaysia, the Dominican Republic, Vietnam, the USA (California), and Thailand.

The Interceptor Originals have removed over 3 million kilograms of trash from rivers around the world. In total (Interceptor Original, Interceptor Barrier, Interceptor Tender, Interceptor Barricade, and Interceptor Guard) have removed a total of over 11 million kilograms of trash from rivers and oceans.

These deployments have already yielded promising results. Significant quantities of plastic waste have been intercepted and prevented from reaching the ocean. Moreover, the visibility of these installations serves as a powerful reminder of the importance of addressing plastic pollution.

Why should We focus on This?

Plastics when exposed to all types of weather in the ocean, break down into small particles. These particles are spread through the water and have been found at the peak of Mount Everest and the troughs of the Mariana Trench (Parker, 2024).

They spread across all the waterways and have even been found in municipal drinking water systems. As a result, microplastics have ended up in animals and humans alike. Scientists have found these particles in human blood, lungs, and even faeces.

Not only is it harmful to human health, but it is responsible for killing millions of animals each year. Most of the animals affected are ocean creatures and seabirds. The main causes of death are either strangulation by abandoned fishing gear or discarded plastics, or starvation (from malnutrition) by ingesting such a quantity of plastic they no longer feel hungry (Parker, 2024).

The scale of the problem demands urgent action, and traditional methods of cleanup and waste management have proven inadequate. The Plastic Interceptor represents a paradigm shift in how we approach this challenge.

Moving forward

While the Plastic Interceptor represents a major advancement in the fight against ocean plastic pollution, it is not without its challenges. Scaling up deployment to target all major rivers worldwide will require significant resources and coordination. The Ocean Cleanup aims to continue to cooperate with more nations across the world to implement its solutions. Furthermore, they aim to partner up with suppliers and manufacturers to build better, technologically advanced and more effective solutions.

Ongoing research and development are needed to optimise the efficiency and effectiveness of the technology. With continued innovation and collaboration, the potential impact of the Plastic Interceptor is boundless.

Achieving the UN Sustainable Development Goals (SDGs) through Plastic Interceptors

The Plastic Interceptor supports SDG6 (Clean Water and Sanitation), SDG13 (Climate Action), and SDG14 (Life Below Water). It directly addresses pollution, enhancing water quality, promoting sustainable practices, and protecting aquatic and marine ecosystems. Hence, contributing to broader environmental and societal benefits.

The Interceptor helps to remove plastic waste from rivers, which are primary conduits for marine pollution. Capturing plastic before it reaches the ocean significantly reduces the pollution levels in rivers. By reducing the amount of plastic and other debris in the water, the interceptor helps improve the overall water quality. Therefore, making it safer for communities that rely on these water bodies for drinking, bathing, and irrigation.

By intercepting plastic before it reaches the ocean, the device directly reduces

the amount of plastic entering marine habitats, thereby protecting marine life from ingestion and entanglement. Cleaner rivers help preserve biodiversity and maintain the health of critical habitats like coral reefs and estuaries. The protection of marine ecosystems like mangroves and coral reefs is crucial as they play a vital role in carbon sequestration.

A Thrivable Framework

THRIVE's mission is the long-term well-being and the thrivability of all humanity. The Plastic Interceptor is a groundbreaking technology designed to intercept plastic waste before it has a chance to harm ocean life and cause irreversible damage. In addition to reducing harmful health effects to animals and humans, it has supported the growth of coastal mangroves and prevented flooding from blocked water pumps and drains.

In the face of unprecedented environmental challenges, the Plastic Interceptor offers a ray of hope. By intercepting plastic waste at its source, this revolutionary technology has the potential to stem the tide of ocean plastic pollution and safeguard the health of our planet for future generations.

As we look to the future, THRIVE Project continues to support and advocate for initiatives such as The Ocean Cleanup and the Plastic Interceptor, ensuring a cleaner, healthier planet for all. At THRIVE, we invest interest in educating and advocating for issues fundamental to the sustainable development of our communities. Listen to our podcasts and take part in our webinars to learn more about life below water and how we can protect our marine resources, ensuring sustainable development and a thrivable future for all. Sign up for our newsletter to receive regular updates!