

The World of **Watermaster**

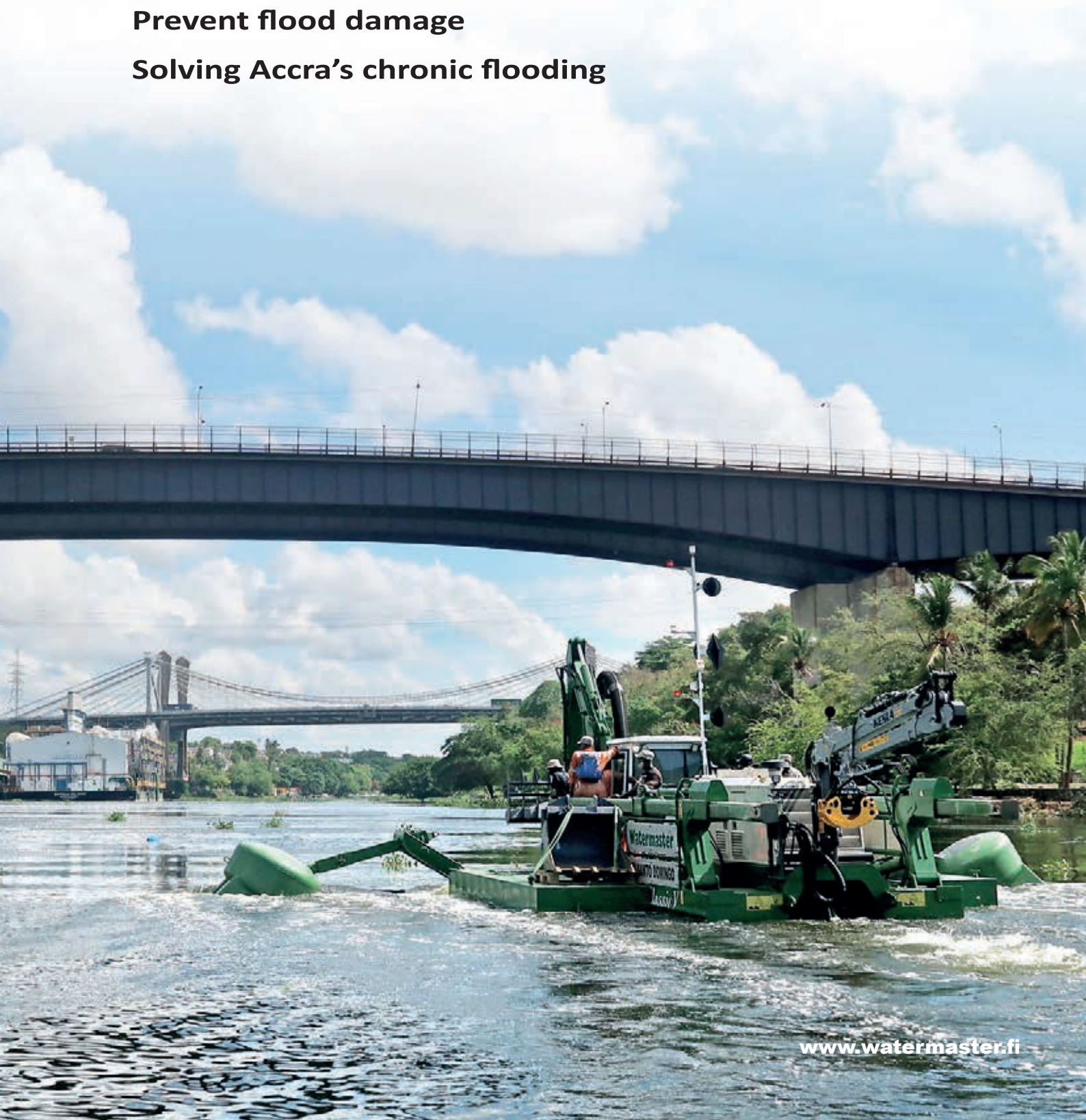
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smart solution for hard work

Take action

Prevent flood damage

Solving Accra's chronic flooding



Clean, safe and healthy waters belong to all

We have a collective responsibility to take care of our environment and each other. Clean water is the foundation for all life and development.



Are your local waters in bad condition?

Take action

We have heavily interfered with the natural balance of our environment. Through our cities, farming, transportation, and industries we have polluted our air, soil, and water. The vital ecosystem services, biodiversity, and freshwater availability we all depend on are under threat. We must act fast to first minimize the ongoing damage and then reverse it. Since water is at the core of life, it is through solving the world's water-related problems that we can most improve the health of our planet and its inhabitants, and with immediate effect. Restoring our deteriorated water bodies is an investment that will pay dividends many times over.

The freshwaters of our planet are not so fresh anymore. We have polluted them with our urban waste, fertilizers, chemicals, pesticides, and heavy metals. Our rivers, lakes, and waterways are full of contaminants, trash, excess nutrients, organic sludge, and erosion-induced sedimentation. **Consequently, we now struggle with the collapse of freshwater habitats and biodiversity, severe water scarcity, massive eutrophication, destructive floods, and the spreading of harmful invasive aquatic plants.**

We cannot turn back time, but we can change our direction. Let us not forget that all life on Earth, including ours, depends on water. It is our most precious resource.

We need to show our waters more respect and care. In return, they will give much more to us. Cleaning our dirty water bodies, de-weeding our eutrophicated water systems, de-silting our choked waterways, and improving the safety and functionality of our urban and industrial waters will make our cities and environment healthier, safer, more sustainable, and more enjoyable. It will also boost the protection and recovery of biodiversity.

With amphibious multipurpose technology, it is possible to do more with less and solve these water challenges in the most effective, ecological, and economical way. It means **more restored water bodies, fewer project costs, and shorter project times.**

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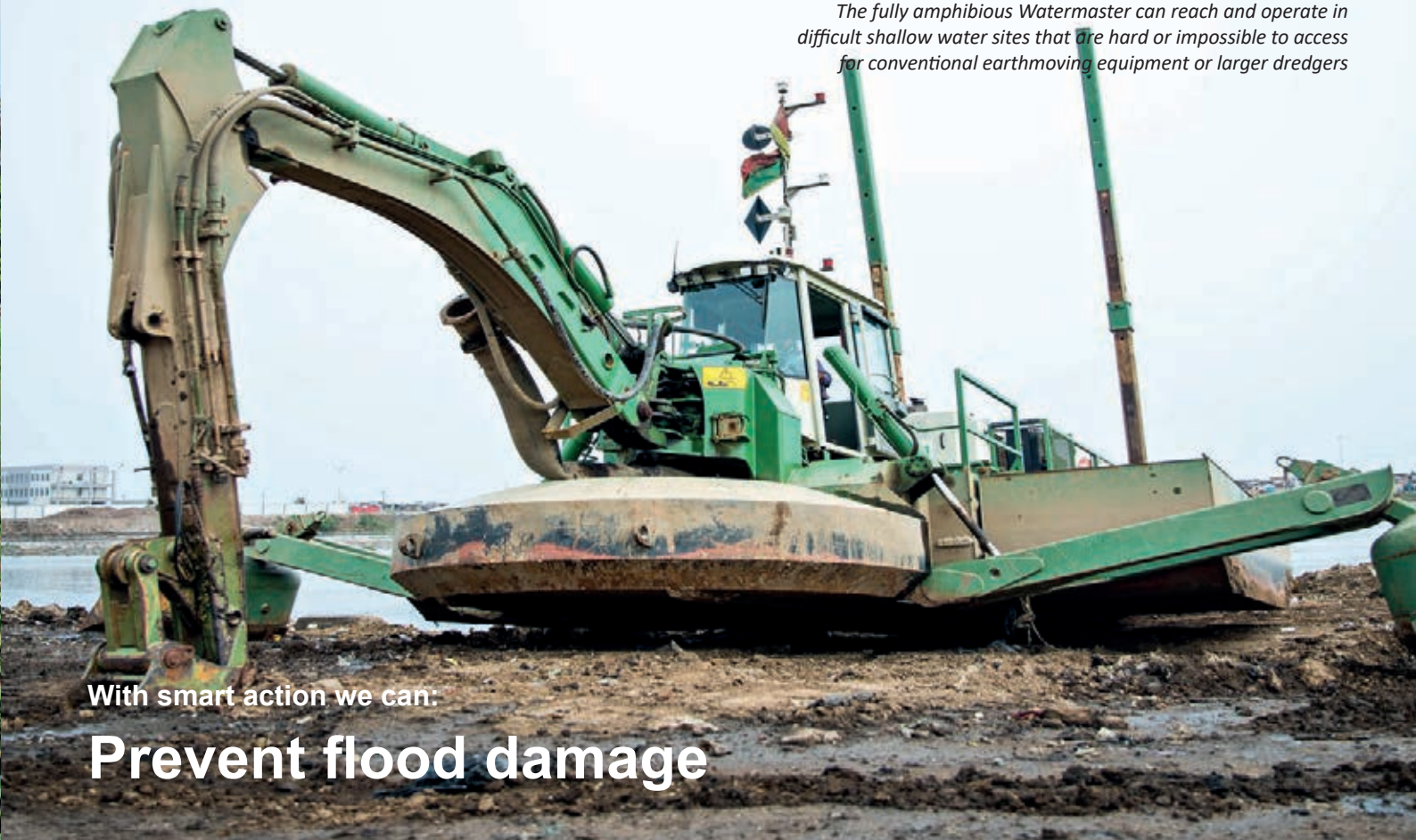
We are proud to say that **for over 35 years, our innovative Watermaster technology has helped to provide cleaner, safer, and better functioning waters around the world.** The work is far from over, however.

There are many detailed studies on the condition of our struggling waters and comprehensive plans for reviving them. But without implementation, these are all useless. **Only action creates change.** Only restoration action with the best equipment possible shows that we truly value our waters and the environment that sustains us.

Yours faithfully,
The Watermaster Team

The walking water restoration machine

The fully amphibious Watermaster can reach and operate in difficult shallow water sites that are hard or impossible to access for conventional earthmoving equipment or larger dredgers



With smart action we can:

Prevent flood damage

Flooding is a natural phenomenon, but floods are becoming more numerous, destructive, and unpredictable due to our harmful activities. Trash and debris, excessive siltation and eutrophication, and invasive aquatic vegetation (such as the water hyacinth) block the free flow of water and make our rivers and urban water bodies more vulnerable to flooding. Revitalizing floodplains helps to absorb floodwaters, but restoring our waters can prevent urban floods from happening in the first place and mitigate them if they do occur. The amphibious multipurpose Watermaster is a powerful tool that helps to clean and maintain flood-prone waters around the world.

Rivers, channels, canals, and other flowing waters are the veins of our cities, nations, and planet. If they get clogged, there will be trouble. Large-scale deforestation has accelerated the erosion of soils, filling our waterways with too much sediment. The influx of nutrient pollution from our fertilizers and urban wastewater causes the overstimulated growth of aquatic plants and algae. This overgrowth clogs waterways, deprives water bodies of oxygen, and fills our waters with organic sludge. The dumping of plastics and other domestic waste into our natural waters aggravates the situation further. In short, there is too much sediment, vegetation, organic sludge, and trash in our urban waters. They have become more shallow, stagnant, and vulnerable to flooding. We

need to restore their water capacity and get them flowing again. The advancing climate change with its heavier rainfalls makes this work even more urgent.

Due to its unique mobility and heavy-duty versatility, the amphibious multipurpose Watermaster can single-handedly carry out all kinds of restoration projects in shallow waters. Watermaster can dredge out excess siltation with the powerful Watermaster Cutter Pump and discharge the sludge up to 1.5 km away. It can clear water-blocking trash, debris, and vegetation with a rake or a bucket. It can also prevent ice jams by breaking ice into smaller pieces with its flexible excavator arm and sturdy hull. By equipping the Watermaster with a



Protection against riverbank erosion

Multipurpose Watermaster can be equipped with a pile driver for installing sheetwalls to improve safety and protect against erosion

vibratory pile driver, the same unit can also strengthen riverbanks to minimize erosion and improve safety. These works would conventionally need more machines, personnel, time, and money. Watermaster enables doing more with less.

Thanks to smart restoration action with Watermaster technology, millions of people in the Philippines, India, Indonesia, China, Ghana, South Africa, Mexico, the US – and many others, can now enjoy a cleaner, safer, better functioning, and a more flood-resilient living environment. →

TAKE SMART ACTION WITH
Watermaster
 ONE MACHINE FOR ALL FLOOD PREVENTION TASKS

1. FIX THE PREVENTABLE CAUSES OF FLOODING



CLEAR TRASH AND DEBRIS

that restrict the free flow of water



DREDGE OUT EXCESS SILT AND SEDIMENT

that restricts the free flow of water



REMOVE EXCESS VEGETATION

that restrict the free flow of water



BREAK THE ICE

into smaller pieces to prevent ice from stacking up and causing floods downstream

2. IMPACT POSITIVELY



SAVE LIVES

Fewer floods means saved lives and fewer injuries



PROTECT PRIVATE PROPERTY AND PUBLIC INFRASTRUCTURE

Avoid repair costs and efforts



DEFEND LIVELIHOODS AND BUSINESSES

Help people and the economy to thrive



SECURE A CLEANER, SAFER AND HEALTHIER LIVING ENVIRONMENT

It is what we all want and need

*“For our communities, our environment, and for each other”
Dredge Masters are on a mission to deliver a cleaner, safer and
better functioning water environment for the people of Accra*



River cleaning and flood prevention project in Ghana: **Solving Accra’s chronic flooding**

Ghana’s capital city Accra is a rapidly growing metropolis on the coast of the Atlantic Ocean. Its economy has vastly developed during recent years, but serious environmental, health and safety challenges have also emerged. For example, the rivers and lagoons of Accra have become filled with waste and silt and are now more prone to dangerous flooding. A local company, Dredge Masters, uses a fleet of amphibious multipurpose Watermaster dredgers to clean and de-silt the important Odaw River as a part of the Ghanaian government’s program to mitigate and prevent perennial floods in the city.

In recent decades, Ghana has become one of the fastest-growing economies in Africa. Ghana’s capital and largest city, Accra, is the bustling administrative and economic center of the country. The population of the Greater Accra Metropolitan Area is over 4 million people.

The rapid urbanization of major cities across Africa, including Accra, has led to a vast increase in their waste generation. Indiscriminate littering is common and leads to the pollution of these urban centers and their water bodies. Inadequate housing and poverty are also some of the causes of Accra’s waste problem. People without proper sanitation facilities or waste management services have found shelter in settlements on the banks of the

river channels, which results in more waste discarded directly into the environment. All the accumulated waste from the city eventually piles up in the drainage system and blocks the unobstructed flow of water. This gradually results in another problem: harmful deposits of silt that negatively impact the capacity of the drainage channels.

The Odaw River is strategically very important for Accra since it drains a large portion of the city and finally flows into the Atlantic Ocean through the Korle Lagoon. However, the **excessive amount of waste and silt restricts its water flow** and prevents it from fulfilling its purpose. The Odaw River has become one of the most polluted waters on earth. As a result, Accra has frequently endured dangerous flooding



Accra is the capital of Ghana, located on the shores of the Atlantic Ocean in Western Africa

during the months of June to August, when the rainfall is at its highest. The most devastating disaster occurred in June 2015, when the clogged Odaw River could not handle three days of heavy rain, **leading to severe flooding in the city**. One hundred and twenty-six people died, and local infrastructure and private properties suffered massive damage. Authorities were resolute that this should never happen again.

WATERMASTER PERFECT FOR THE JOB

Dredging has proved to be one of the key elements to solve the problem. After the 2015 disaster, the government of Ghana launched the National Flood Control Programme and authorized



With a fleet of six Watermasters, the Dredge Masters are able to carry out large-scale shallow water restoration projects

Multipurpose Watermaster clears the trash by raking and removes excess silt by backhoe and suction dredging. The extremely shallow water is not a problem for the amphibious machine.

Dredge Masters to start the cleaning operations at the Odaw River and Korle Lagoon. Dredge Masters is a **Ghanaian company** that specializes in dredging and environmental clean-up services across the African continent. For this extensive and challenging project, they **deployed a fleet of six mobile and versatile Watermaster dredgers**, which are ideal for shallow water work. The multipurpose Watermaster **can perform all the different tasks** needed in demanding restoration projects. It can clear out trash and vegetation by raking, and can remove excess siltation by suction and backhoe dredging. It can also drive piles to help protect riverbanks from erosion.

Watermaster is compact-sized and easy to transport on public roads and even in cities. It is a fully amphibious machine that can “walk” in and out of the water without crane assistance and **operate in very shallow or even water-free environments**. One of Watermaster’s unique advantages in flood control is its independent mobility and anchoring without the laborious

assisting equipment of traditional dredgers. **A Watermaster can perform precision dredging according to the natural flow dynamics of the water.** It can dredge at the specific points where the effect is the greatest. Conventional dredgers are more tied to predefined geometric areas, and thus do a lot of unnecessary work in areas where the benefits remain smaller and shorter-term. Watermaster can keep the natural flow beds open very effectively.

REMOVING WASTE AND SILT

According to Dredge Masters experts, the main reason for the flooding of the drainage system is not the rubbish discarded in the drains but the accumulation of silt. Nevertheless, trash makes the problem even worse. During their two-year contract **between 2016 and 2018, the Dredge Masters removed over 1 000 000 cubic meters of silt and rubbish from the Odaw River and Korle Lagoon.** Watermasters lifted the materials from the riverbed to the shore and floating barges. The materials were

then loaded into trucks and transported for final treatment and deposit. After the restoration work, the drainage system started gradually fill up with trash and silt again. It became clear that these waters need regular maintenance.

TOWARDS A FLOOD-FREE ACCRA

Things are currently looking brighter in Accra. Dredge Masters have just completed another phase of the restoration plan, and the Odaw River is in considerably better condition than in previous years. The waters are now expected to flow smoothly during the rainy season.

A permanent solution to prevent Accra floods for good requires changing people’s attitude towards waste disposal, re-engineering the drainage system, and regular Odaw River and Korle Lagoon de-silting. The World Bank estimates that improving the management of waste and flood risk in Accra **would benefit over 2.5 million people** in the Odaw River Basin of the Greater Accra Region.

BEFORE restoration

Pollution, excessive siltation, poor water flow, high risk for floods



AFTER restoration

Cleaner and healthier environment, improved water flow, lower risk of floods



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case examples, pictures and videos
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