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Harnessing opportunity

Wastewater as a managed resource

GPA Global Programme of Action for the Protection of the Marine Environment from Land-based Activities

GLOBAL WASTEWATER INITIATIVE

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Cover photo: Ultra-pure water resulting from an intensive three-step purification process; Orange County Water District, California.

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Contents

Foreword

Wastewater is a global concern. It has a direct impact on the biological diversity of aquatic ecosystems, with potentially disruptive influences on every aspect of life, from health, education and urban development to food production and industrial output. The issues associated with improper handling of wastewater disproportionately affect the poor, women and children. Addressing these issues is important to the achievement of several Sustainable Development Goals, including Goal 6, with its specific target to ensure availability and sustainable management of water and sanitation for all.

The Global Wastewater Initiative (GW^{2}I), under the auspices of UN Environment and its Global Programme of Action for the Protection of Marine Environment from Land-based Activities, is working to promote better management of wastewater. As a platform to exchange information and best practices for wastewater management and to encourage new investments in wastewater, the GW^{2}I brings together UN agencies, international organizations, government agencies, scientists, the private sector and other stakeholders, creating a basis for new partnerships and programmes to address the challenges and potential of wastewater.

The work has a dual purpose: to avert the societal and environmental costs associated with not taking action and to demonstrate the benefits of using wastewater as a valuable resource. In fact, the term wastewater is misleading, because—if treated properly—wastewater can in fact be a resource with the potential to solve a web of interconnected health, development and environmental problems.

As a source of water and nutrients, wastewater can be used for crop production, reducing the need for scarce freshwater and expensive fertilizers. As sludge, it can be used as a raw material in construction materials and to generate biogas and biofuel, providing opportunities for green jobs, sustainable development and social well-being.

This publication showcases some of the innovative approaches being used and provides guidance on how communities can put their wastewater to purposeful reuse — as reclaimed water — for the benefit of all.

The case for wastewater reuse

The issue of what to do with the wastewater generated by humans, agriculture, livestock and industry has long challenged development experts, companies, environmentalists, policymakers and urban planners alike.

Despite improvements in recent years, the untreated wastewater that seeps into the global water supply continues to devastate families and entire communities. According to the World Health Organization, nearly one million people die each year from illness caused by unsafe water supply, poor sanitation and improper hygiene, including almost 400,000 children under the age of five (WHO, 2015). These illnesses strain local resources and create an economic burden, leading to lost wages, lower productivity and decreased competitiveness.

Poor wastewater management and improper sanitation represent a significant factor in the spread of infectious disease. Untreated wastewater pollutes streets, fields, rivers, lakes, and the coastal and marine environment. It destroys economically valuable fisheries, elevates the health risks after natural disasters and threatens increasingly scarce freshwater resources. The negative impacts overwhelmingly hit the poor and vulnerable, including women who must spend a large part of their day fetching clean water for their families' needs. It is also an issue for girls in poor countries. These girls are at risk for dropping out of the educational system at puberty because schools lack the sanitation facilities that would allow them to tend to their personal hygiene with dignity during their menstrual cycles. This reinforces and deepens inequality and poses an obstacle to reducing poverty and achieving the Sustainable Development Goals (Anderson et al., 2016).

Clearly, there are significant health and environmental costs associated with not taking action on this issue. There is also a strong business case to be made about the potential benefits associated with treatment and reuse of wastewater for agricultural purposes, energy production and sludge generation — in addition to potable uses, such as replenishing dwindling water supplies.

10 guidelines to maximize wastewater's resource potential

1. Create an integrated and comprehensive approach to water resources management that includes wastewater management and reuse
2. Incorporate planning for wastewater management and reuse in community development and urban expansion
3. Shift focus from waste disposal to resource recovery
4. Find the balance between most effective technology and financial, resource and community capacity
5. Develop a coordinated policy framework and establish clear lines of authority by involving policymakers, public and private sector investors and managers, government agencies, and community organizations
6. Enact realistic, enforceable regulations and achievable standards
7. Minimize top-down decision-making by empowering local authorities to set standards and charge fees
8. Increase public awareness through marketing campaigns and by engaging with male and female community leaders and heads of households
9. Apply market-based methodologies, such as the "polluter pays" principle for commercial and industrial wastewater management, to finance operations
10. Promote international cooperation on sustainable wastewater management by building global partnerships and sharing knowledge and best practices

Source: CReW, 2010.

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