



# KUMASI WASTEWATER TREATMENT PLANT

Healthier environment for the people of Kumasi



His Excellency...  
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AKUFO-ADDU**  
President of the Republic of Ghana



# A HEALTHIER ENVIRONMENT FOR THE PEOPLE OF KUMASI

BROUGHT TO YOU BY THE STRATEGIC PARTNESHIP OF



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The purpose of this document is to introduce a sustainable and unique solution for Kumasi for treating the sewerage and wastewater in an efficient and environmental friendly way.

Based on ongoing successful professional and technical **Ghanaian-Hungarian cooperation** and fruitful dialogue between **Pureco Ltd.** and **Sewerages System Ltd.**, a subsidiary of the **Jospeng Group of Companies**, this unique partnership have set the objective of building a state-of-the-art, **fully customised wastewater treatment plant (WWTP)** in Kumasi to **solve** the environmental and sanitation problem of the city.

In Kumasi, with more than 3 million citizens, only 7-10% of the wastewater is adequately treated. From an environmental and public health point of view the **urgent development** of new wastewater treatment facilities is indispensable for the city.

The solution we provide **solves** the treatment of the collected **septic water** in a self-manageable way.

In-line with the local conditions and needs we design and build a tailor-made wastewater treatment plant in Kumasi not only providing optimal technological solution for the city but **giving priority to training** programs as well in order to build capacity and help the local people to operate and maintain the system, offering not only treated wastewater but **jobs and educational supports** for the citizens of Kumasi.

By establishing the new, sustainable wastewater treatment plant the livelihood of more than **100,000 people** will be improved as they can live in a healthier environment and Kumasi is able to significantly reduce its ecological footprint that helps achieving the Sustainable Development Goals (SDGs) of the United Nation.

**7-10%**  
**OF WASTEWATER IS ADEQUATELY  
TREATED IN KUMASI**

## OBJECTIVES AND GOALS:

- To construct the new faecal treatment plant in Kumasi as a greenfield project providing healthier environment for more than 100,000 citizens
- To build the plant in a sustainable and cost-effective way
- To establish the plant with the consideration of the local conditions and needs (customized solution)
- To remarkably reduce the impact on the environment as well as hazards on health
- Providing new jobs through the training programmes (knowledge transfer)





# GHANAIAN-HUNGARIAN WATER RELATED PROFESSIONAL PARTNERSHIP

## PURECO LTD. (DESIGN, PLANNING AND CONSTRUCTION)

PURECO Limited is a Hungarian water resource technology engineering firm with international experience and exposure. We design-build, operate and maintain water and wastewater treatment facilities that combine technical and economic performance, while respecting site environments, whether it is natural or urban.

Special devotion and professionalism are applied during our work, which is in the fields of drinking water purification, communal and industrial wastewater and landfill leachate treatment, ground water remediation, storm water collection and treatment.

PURECO and its partners believe that the best solution can be born with a strong cooperation and collaboration. This philosophy and our excellence, reliability, professionalism let PURECO to be unique in the market and provide fully customized and innovative solutions in all aspects of water management for our wide range of public and private clients.

PURECO has exceptional and significant references in the field of municipal wastewater treatment (200-18,000 m<sup>3</sup>/d) in Hungary and also abroad.



## SEWERAGE SYSTEMS GHANA LTD. (CONSTRUCTION AND OPERATION)

SSGL, a subsidiary of Zoomlion Ghana Ltd., is an engineering, construction and procurement specialist that focuses on the provision of efficient liquid waste treatment technologies. Our mission is to provide efficient, sustainable and environmentally friendly treatment of effluent and faecal sludge in Ghana and beyond. We aim to provide the good people of Ghana, with a decent and cost-effective means of disposal of effluent and human sludge and to ensure the financial sustainability of the business. With the

local experience SSGL has the understanding and know-how to be the most suitable local partner in the execution and operation of the planned Kumasi WWTP.

SSGL builds on the environmental sanitation experience of Zoomlion with the requisite expertise, technical and managerial competences as well as resources to support government, and local authorities to clean up cities and towns, improve the environmental quality.



## SEWERAGE SYSTEMS GHANA LTD. – PURECO LTD. A SUCSESFUL PARTNERSHIP

SSGL and Pureco strongly believe that the best solution can be born with a strong cooperation and collaboration. This common business philosophy and the excellence, reliability, professionalism in the field of water treatment helped us to build a fruitful partnership in Ghana, where we are working together to develop a new wastewater treatment facility in

Kumasi for handling the sewerage and wastewater of the city in an efficient, sustainable and environment friendly way.

SSGL and Pureco as partners have already provided a fully customized and innovative solution for the people of Kumasi to leave in a healthier environment.

SOD CUTTING CEREMONY FOR THE KUMASI WWTP PLANT



JOSEPH AGYEPONG  
WITH THE PRESIDENT OF HUNGARY,  
H.E. JÁNOS ÁDER



SEWERAGE SYSTEMS GHANA LTD. – PURECO LTD. A SUCSESFUL PARTNERSHIP

## NEW WWTP IN KUMASI

To solve the problem of untreated wastewater in Kumasi, professional and technical consultations have been initiated to treat 1,000 m<sup>3</sup> wastewater a day in the city.

We believe that through our state-of-the-art technologies and solutions combined with the international experience and references we have in the field of water treatment while keeping in mind the local conditions and needs, the new

project will help to fulfil the goals of the national and local governments in improving the sanitation and health objectives that were set out by the new administration.

PURECO, Sewarage Systems Ltd., and Zoomlion Ltd. strongly believe that together we can bring a new era in Kumasi in terms of effective wastewater treatment, facility development and improvements, while creating hundreds of new jobs.





## BENEFITS OF THE NEW SYSTEM

AS A RESULT OF THE  
INFRASTRUCTURE THAT  
WILL BE BUILT:

**IMPROVING LIVING CONDITIONS  
OF THE INHABITANTS**

**INCREASING LIVING STANDARD**

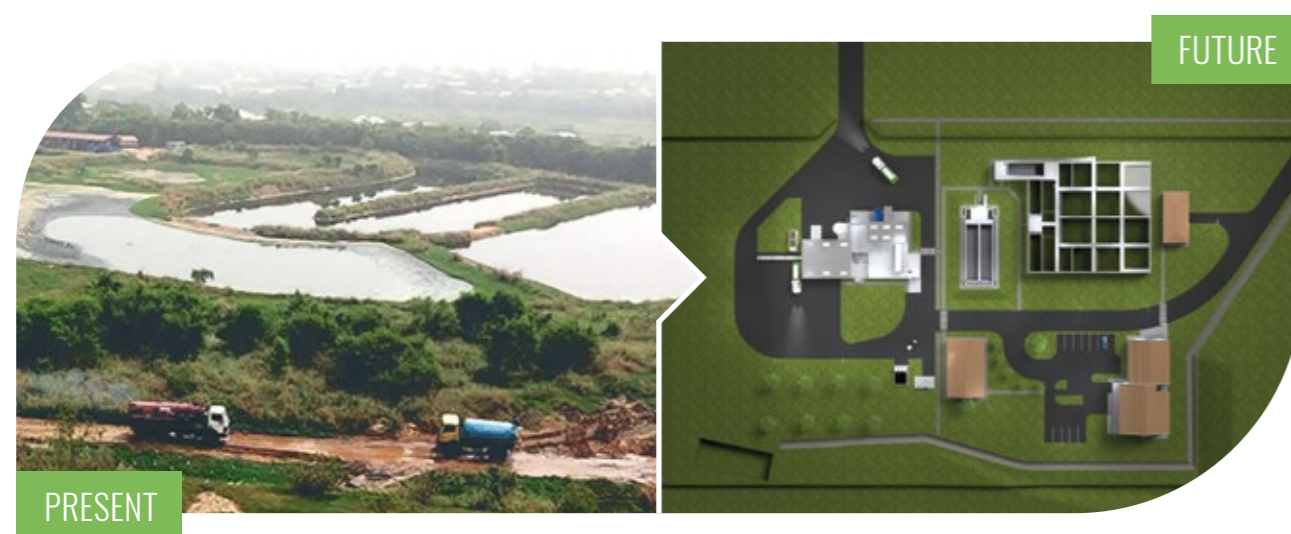
**DECREASING LEVEL OF  
CONTAMINATION IN THE GROUND  
AND SURFACE WATERS**

**ACHIEVING GOOD  
HYGIENIC CONDITION**



## ABOUT THE TECHNOLOGY

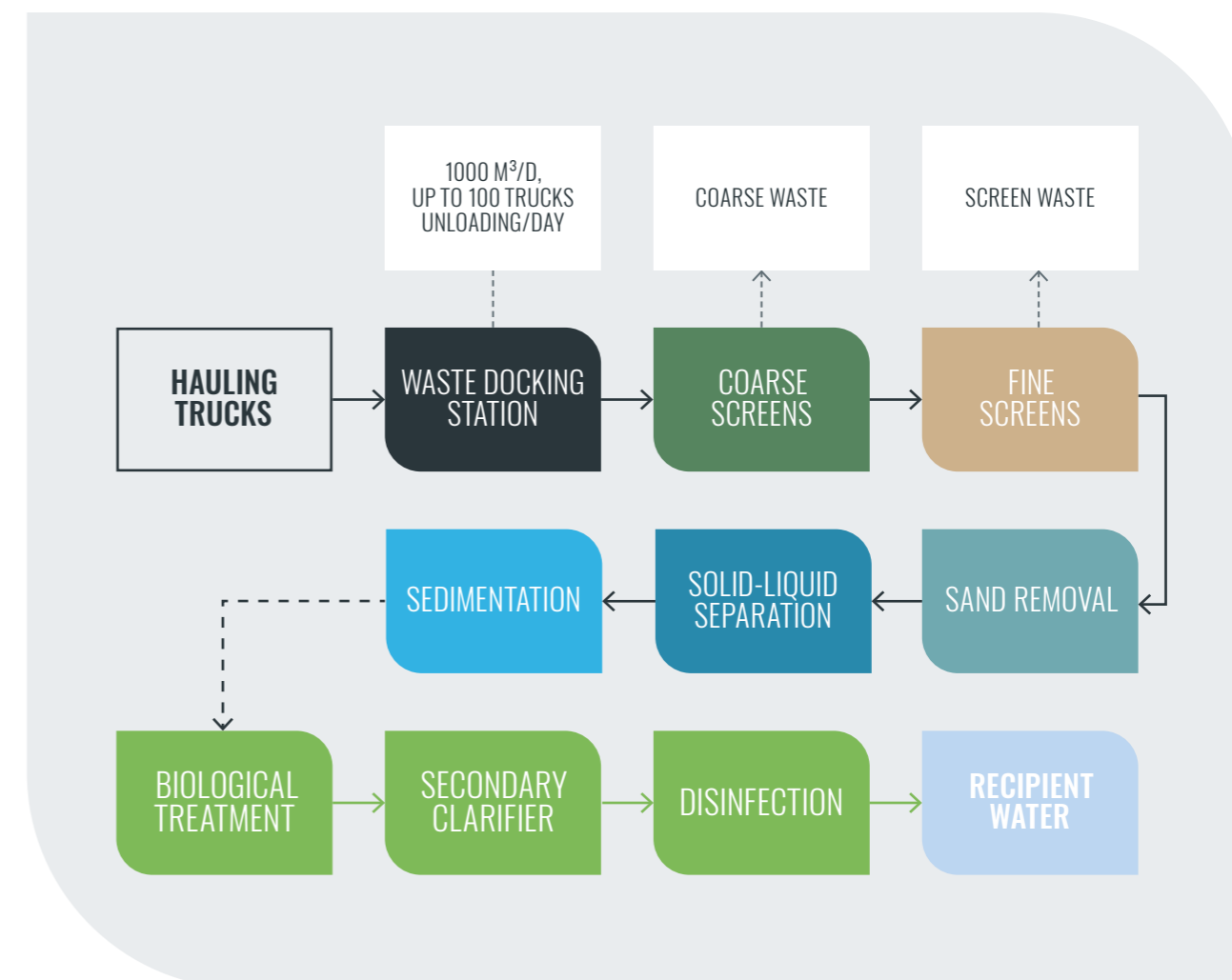
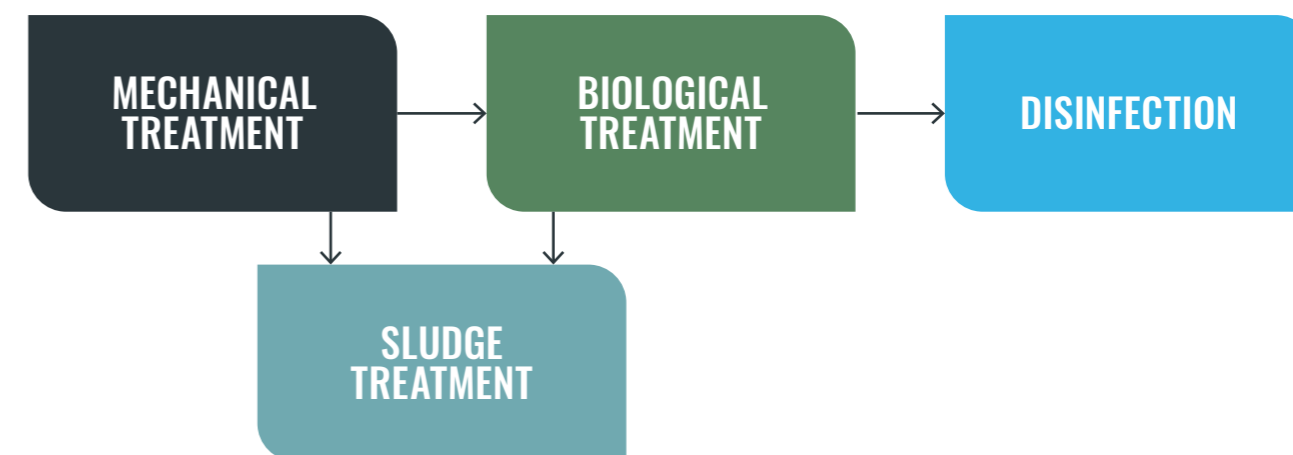
Due to the relative variation and wide range of pollutant concentration, a massive mechanical treatment will be designed.



The faecal sludge that is going to be transported to the WWTP comes from two main sources: public latrines - highly concentrated and private latrines - more dilute. As according to the received laboratory measurements both their ratios and the pollutant concentrations show great variability, the treatment technology should be a robust, but highly flexible one, prepared for the „worst case” scenario. Overview of the treatment process: The hauling trucks discharge their content into a receiving channel, from where the septage flows through screens, as a different kind of coarse material and bigger pieces of waste is expected to occur in the dumped septage. Then the screened wastewater flows into the lifting pump station, where pH is going to be measured. In case some hazardous e.g. industrial liquid waste comes in, the unloadings are stopped and the content of the pit goes to the emergency basin from where it can be either slowly added to the technology or it can be removed.

As a next step the sand content shall be significantly lowered by a longitudinal grit and fat separator, in order to protect the forthcoming equipment. After the first steps, the pollutant content is still extremely high: as a next stage, the septage flows to the primary clarifier unit, where the high amount of the suspended solid content will be reduced. This solid-liquid separation phase is able to remove the pollutant content up to a 90% efficiency. The primary clarifier also allows for the pollutant level to be further decreased via sedimentation. The mechanically treated wastewater is pumped to the biological treatment unit where different activated sludge treatment steps (anaerobic-anoxic aerobic) take place, allowing the septage to be cleaned from hazardous dissolved pollutants. The treated water-activated sludge mixture will be separated in the secondary clarifier unit. After the disinfection phase (blocking pathogens), the cleaned wastewater flows into the recipient.

## THE TREATMENT PROCESS



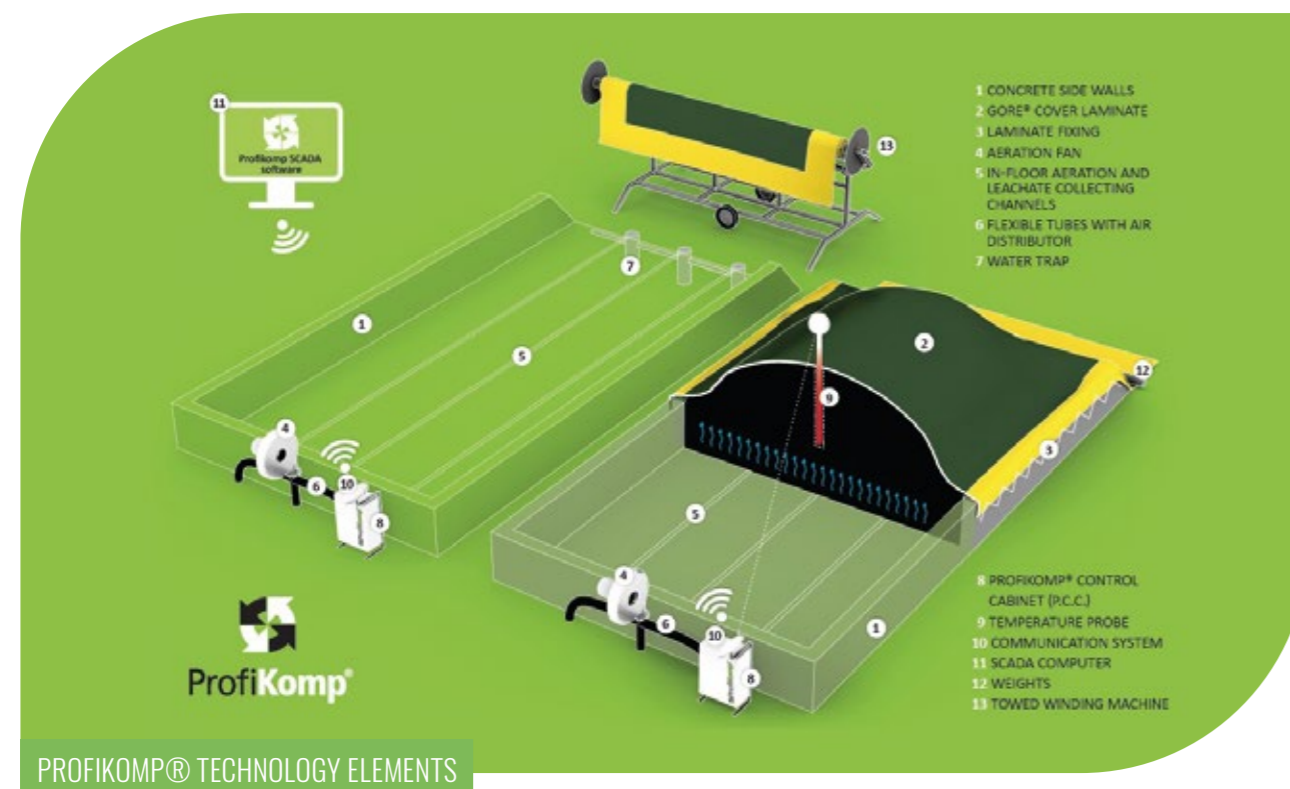


## COMPOSTING\*

The sewage sludge from the last phase of the wastewater treatment plant (WWTP) can be processed with ProfiKomp® Biological Waste Treatment Technology at the Kumasi facility. The aim is to produce organic fertilizer for agricultural application hence the best practice is a 3+3 weeks long treatment cycle of the sewage sludge mixed with structure material.

Advantages of the ProfiKomp® Technology:

- In-vessel technology means the system is enclosed, thus external environmental factors are not significantly affecting the treated material compared to open technologies
- Provided with BAT/BREF conformity which also determine its applicability issued by the Industrial Emissions Directive (IED)
- Hygienisation occurs due to appropriate temperature during the phases
- More than 90% reduction in odorous gas emission
- Specific energy consumption is less than 3 kWh/t during the treatment
- Flexibility for the future demands related to the type and amount of input material
- Low initial and operating cost compared to other enclosed composting systems



\* optional





## KUMASI WWTP UNDER CONSTRUCTION



Considering the challenges Kumasi is facing in terms of wastewater treatment, PURECO, Sewerage Systems and Zoomlion **can together build an effective, affordable, sustainable system** with know-how and technology-driven solutions **to provide a customized project** for the people of Kumasi.

Bearing in mind the proposed technologies and the local and international references, together we can establish **reliable wastewater treatment systems** to meet for the increasing demands in the **city of Kumasi**. Additionally, through the **training programs**, we will teach the local workforce how to operate and maintain the system, therefore, creating **new jobs** in this very important field that helps the city achieve its environment related goals.

Our aim is to participate in the **success of Kumasi** via creating something new and remarkable in the field of wastewater treatment. We do believe that together we can build and bring **new values** into the life of the great people of Kumasi! We can do it together, we will be proud together when we achieve: **Sanitation for All together!**

**WE BELIEVE IN  
THE HEALTHIER  
ENVIRONMENT FOR THE  
PEOPLE OF KUMASI**

