



**Project title:** CleanWater – Modular lightweight wastewater treatment units made with TRC for rural and peri-urban dwellings

**Partner:** Indian Institute of Technology Madras  
CSIR-Structural Engineering Research Centre  
Raina Industries Pvt. Ltd.  
Betonwerk Hentzschel GmbH

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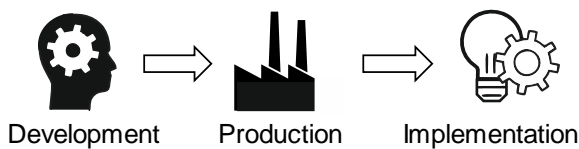
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Mission Statement

Wastewater treatment is an essential prerequisite for a healthy society. 90 % of the water consumed worldwide is discharged untreated into the environment. Most rural and peri-urban regions of developing countries do not have access to a wastewater treatment plant, as the current medium/large wastewater treatment plants require an immense energy supply and a lot of space. At present, septic tanks or cesspools are used in many regions, which could be replaced by modular and lightweight treatment plants. Such plants are easy to transport and can therefore also be used in places that are otherwise difficult to access. A realization of these required systems is possible by the development of high-strength and lightweight materials. By using durable materials, the operating and maintenance costs can be kept as low as possible, which is an important decision criterion for the application.

**Objective: WTP made with TRC**



**Advantages**

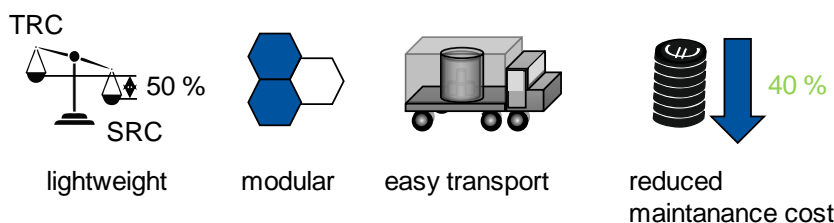


Figure 1: Schematic representation of the project goal and the resulting benefits

## Approach

Within the project a textile concrete (TB) wastewater treatment plant will be designed. An application-specific concrete matrix and corrosion-resistant textile reinforcements consisting of alkali-resistant (AR) glass and/or carbon rovings will be developed. The use of TB in sewage treatment plants allows for much thinner concrete structures (up to 10 mm) instead of normal reinforced concrete (min. 40 mm). The use of TB as a building material also reduces CO<sub>2</sub> emissions during production and transport to the environment. Compared to reinforced concrete, the use of TB can save up to 70 % concrete, which leads to an immense reduction in transport costs. The aim is to create a plant with low maintenance and energy consumption. At the end of the project a prototype of a sewage treatment plant will be realized and a business case for different zones in India and the neighbouring countries of India will be created.

## Acknowledgement

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