

Local and Innovative Waste Water Solution

This model brings following advantages for the city of Kochi

- Scientific treatment of wastewater (grey and blackwater) and septage helps to improve the living conditions by reducing health risk and preventing pollution of the water bodies and ground water contamination.
- Decentralised systems can be adapted on an individual basis to areas where centralised or conventional system are not an option
- Separation of liquids and solids from wastewater streams and by this decoupling transport of solids from water. This is precondition for water transport.
- Treated septage can be used for revenue generation through by-products such as biogas, manure, etc.
- Integrating septic tanks as an existing asset, is part of the proposed solution

THE CITY OF KOCHI – SANITATION SITUATION

The situation of wastewater management in Kochi is serious and risky for its citizens and the environment. Only 5 per cent of households in the city are connected to the 60 years old sewerage system whereas most of the households are dependent on septic tanks which are connected to soak pits. Moreover often these septic tanks are either non-functional or not constructed properly, the overflowing effluent from the septic tanks has severely contaminated the backwaters. The city's high ground water table and flat terrain make a centralized and conventional sewerage system not viable.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH supported the Kochi Municipal Corporation (KMC) in the development of the City Sanitation Plan. During this participatory planning process wastewater management already emerged as high priority. It became clear that a conventional centralized sewer system is not the best option for the entire city of Kochi. The idea was taken up by the KMC for developing this innovative project for a non-conventional sewerage system in three wards (Footprint of 3 wards is equal to 30,000 capita). After public tendering, the contract for the preparation of the Detailed Project Report (DPR) was signed between KMC and a consulting firm. A tripartite agreement between Suchitwa Mission, Kerala Water Authority and Kochi Municipal Corporation was commenced in August 2016.



The purpose of this innovative project is to develop an energy and resource-efficient wastewater and septage management system that suits the high groundwater table condition of a coastal city such as Kochi.

Kochi was among the 20 winning cities in the first round of the national flagship programme of Ministry of Urban Development, Smart Cities Mission. The Government of India and the Government Germany have selected Kochi as one of the Smart Cities to be supported by the German Development Cooperation. Their Smart City Proposal included wastewater management as a priority and provides the importunities to upscale the presented approach to the other areas of the city.

HOW THE SYSTEM WORKS – TECHNICAL APPROACH

The non-conventional system in principal combines the collection, conveyance and treatment of septage, greywater and the effluent of septic tanks.

The traditional system in the city of Kochi is based on the separation of greywater and blackwater at the household level. The blackwater goes into the septic tank, which most households already have installed. The project proposes that the effluent from the septic tank together with the grey water from the household will be conveyed to a decentralized treatment plant through a shallow and solid free sewer system. As the system will now transport only waste water without any solids, the diameter of the sewer system pipes and the gradient can be small. The pipes can be laid a few feet below the surface and do not require substantial excavation works.

The treated waste water from the decentralized plant could be re-used for non-potable purpose such as horticulture. The septage from the septic tanks has to be collected by vacuum trucks and then transported to a centralised septage treatment facility.

The treatment technology for the septage treatment facility and the decentralized wastewater treatment plants, the number and location of the wastewater treatment plants and the type of simplified sewer system is currently evaluated for the preparation of the DPR.

THE STEPS OF THE PROJECT

- 1 Preparation of City Sanitation Plan and identification of lack of wastewater management as key issue.
- 2 Prefeasibility study to assess the possibilities for implementation of a non-conventional sanitation system in Kochi.
- 3 Feasibility study with identification of the Model Service Area (MSA) of three wards and outlining of different feasible technology options.
- 4 Formation of a task force chaired by the Mayor of Kochi including representatives from KMC, state departments such as KWA, Suchitwa Mission, KSUDP, and GIZ.
- 5 Submission of project proposal as part of State Annual Action Plan of Kerala under AMRUT.
- 6 State approval for proposal on DPR preparation by an agency was selected through competitive process.
- 7 GIZ supported in conducting baseline survey for 10 % of households (800 hhs).
- 8 Tripartite agreement commenced between KMC, KWA & Suchitwa Mission to have clear roles & responsibilities between the agencies.
- 9 Detailed Project Report including Preparatory Project Report and detailed designing of a selected technical option with a management model
- 10 Tender for construction of simplified sewers, wastewater treatment plants and septage treatment plant.
- 11 Commissioning of operation and maintenance of the various systems through service contracts.



The innovative project of Kochi Municipal Corporation (KMC) on Non-Conventional Wastewater Treatment System was awarded with the prestigious 'Skoch-Platinum Award' during the 49th Skoch Summit. Additionally KMC also received the 'Skoch Order-of-Merit' award as one of the top 100 projects in India under the Smart City-Wastewater category.

About GIZ

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is a global service provider in the field of international cooperation for sustainable development with around 16,400 employees. GIZ has over 50 years of experience in a wide variety of areas, including economic development and employment, energy and the environment, and peace and security. Our business volume exceeds two billion euros. As a public-benefit federal enterprise, GIZ supports the German Government – in particular the Federal Ministry for Economic Cooperation and Development (BMZ) – and public and private sector clients in around 130 countries in achieving their objectives in international cooperation. With this aim, GIZ works together with its partners to develop effective solutions that offer people better prospects and sustainably improve their living conditions.

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Support to National Urban Sanitation Policy (SNUSP) – II

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