

Q&A The Warm and Clean City

What is The Warm and Clean City?

The Warm and Clean City is a unique research project, with 16 participants, which will be taking place at Källby wastewater treatment plant in Lund until August 2016. The aim of the project is to find new solutions for effective future wastewater plants, in order to purify more water in a smaller space, with lower energy consumption. In addition, the water should be cleaner than it is using today's techniques.

Why is The Warm and Clean City needed?

The trend of ever expanding cities is global and it places new demands on cities' infrastructure. More people in cities leads to greater pressure on wastewater treatment and expanding cities causes a shortage of land. At the same time, it is anticipated that demands will increase concerning what wastewater treatment plants should remove – for example, heavy metals, pharmaceuticals and micro-plastic.

Another problem with today's wastewater treatment is that phosphorous, which is a vital nutrient and a finite resource, is not recycled to a sufficient extent. Also, a great deal of energy is expended to purify wastewater.

What is being done within the framework of The Warm and Clean City?

The project is in its second phase, which means that we are now testing the concepts and methods produced in phase one. This involves creating a wastewater treatment plant that can meet high demands for both purity and resource efficiency, and that can create resource loops and products from waste. The concepts now being tested in Lund are *Energy-positive treatment* and *Compact treatment*.

Furthermore, a system analysis of the results will calculate operational, economic and environmental consequences on the entire wastewater treatment plant, investigate the possibilities for system integration in existing wastewater treatment plants, and examine effects on the energy system.

What is "Energy-positive treatment"?

Energy-positive treatment can produce at least 50 percent more biogas and uses 50 percent less electricity compared to conventional methods. In addition, phosphorous can be retrieved and bio fertilizers can be produced by its residues. In the process, waste heat from large plants such as the European Spallation Source (ESS) is utilized.

What is "Compact treatment"?

Compact treatment requires only ten percent of the area needed for conventional wastewater treatment. Water is also purified from pharmaceuticals and heavy metals and the nutrients found in water can be recovered and returned to agriculture.

What is the wider potential of The Warm and Clean City?

The breadth of the project entails that cities with different needs can find tailor-made solutions. Sometimes the greatest need is to save valuable land through a more compact wastewater plant, while in other cases, it is more important to recover waste heat from industries and reduce energy use when treating water. A system analysis of the results will be made in order to calculate operational, economic and environmental consequences of the entire wastewater plant and to

investigate the possibilities for system integration with existing plants as well as effects on the energy system.

Who is participating in The Warm and Clean City?

Sixteen actors are collaborating in the project, all but two, local to Scania. The participants include both small, research-intensive companies like Ekobalans and large companies such as Alfa Laval as well as municipalities and the university. (See all participants [here](#).)

What is the budget for The Warm and Clean City?

The project has a total budget of 20.3 million SEK (≈ 2.2 M€), of which 10 million is a grant from Vinnova.

What is the next step in The Warm and Clean City?

Phase three in the project concerns fine-tuning the concepts, continuing to work with the best ideas and developing finished products and solutions that can be tested on a larger scale. During the autumn 2015 the participants in the project will gather in a number of workshops to work on the next step in the project, which will in due course lead to a project application for phase three.