A Concept of Resource Recycling from wastewater

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The chosen topic deals with a technical waste water system, which is planned to be realized in 2017 in a small village close to Weimar, Germany. The system includes vacuum pipes for house sewage, vacuum toilettes in the private households and a biogas plant.

The novel system is able to provide many advantages compared with a conventional one.

1. Saving water by reducing the amount of drinking water for using the flush and transport the excrements to the biogas plant (from an average of seven litres to only one litre).
2. Saving water by recycling grey-water (so not highly contaminated water such as from the shower or the laundry machine) with a grey-water filter and reuse the recycled water for flushing the toilet or watering the plants.
3. Reducing the amount of chemical fertilizer for agriculture by using the leftovers from the biogas plant, which are high concentrated in phosphorus and nitrogen.
4. Reducing the need for energy to heat water inside of the private households by using heat exchanging devices.
5. Production of biogas in the biogas plant by using highly concentrated black water (excrements) from the vacuum system and furthermore using agricultural waste and provide energy (thermal and electrical).
6. The sewage is no longer conducted to settling pits, which, in case of heavy rain, overflow and conduct the water to a river nearby.
7. Reducing the need for fossil fuels by running the biogas plant.
8. Saving money for the citizens by lowering the costs for energy and water.

As can be seen, the advantages of this technical system are numerous. The main focus is here definitely sustainability and eco friendliness. It is one of only two or three pilot projects in Germany and is planned in cooperation of Bauhaus University of Weimar, the Technical University of Stuttgart, the Fresenius Institute and many others.