The Braunschweig model

The idea of the Braunschweig model, developed by the Abwasserverband Braunschweig, is unique in Germany. Wastewater from the city and bio-energy from the countryside are combined to create a water-nutrient-energy cycle.

The wastewater from the city of Braunschweig and a number of boroughs covered by the Gifhorn water board is mechanically and biologically purified in the wastewater treatment plant Steinhof.

The purified water is then subsequently used for the irrigation of agricultural areas belonging to our members. The plants thereby receive the necessary water and important nutrients at the same time. In this way, we are able to ensure the production of food and energy plants. We use the energy plants for the CO_2-neutral production of biogas in our biogas plant, whereby electricity and heating for several thousand Braunschweig households are produced.

Find out more about the Braunschweig model at

www.abwasserverband-bs.de

Foto: Arntzenbrink & partner design

Abwasserverband Braunschweig

The Abwasserverband Braunschweig was founded on 30th November, 1954. It is a water and ground association on the basis of the Water Association Law from 1991 and therefore a statutory corporation.

The entire operational area covers 4,300 hectares, approximately 2,700 of which are irrigated, agriculturally-used areas. The remaining area is covered by towns, streets, paths, ditches, woodland and hedges.

70 committed employees ensure that the Braunschweig model functions smoothly every day, as problems in just one individual area could jeopardise the entire cycle.

Our main tasks at a glance:

- wastewater purification
- utilisation of wastewater through agricultural usage and irrigation
- utilisation of sewage sludge
- sewer system operation
- laboratory tests
- biogas production through renewable raw materials

Foto: Arntzenbrink & partner design

Contact

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Abwasserverband Braunschweig

THE BRAUNSCHWEIG MODEL

A WATER-NUTRIENT-ENERGY CYCLE

Foto: tostas – Frank

1 Households in the city of Braunschweig and several boroughs covered by the Gifhorn water board

Each inhabitant of Braunschweig and the surrounding area uses an average of 122 litres of water every day; this then flows away through the sewage system. The Braunschweig sewage system is 1,300 kilometres long.

Foto: Klaus-Peter Schleicher

2 Wastewater treatment plant Steinhof

With the help of 78 pumping stations, 700 litres of wastewater per second enter the wastewater treatment plant Steinhof in order to be purified. That is 55,000 cubic metres of wastewater dai- Here, the wastewater is mechanically and biologically purified in a multi-stage process. During this process sewage sludge is produced, which is used as fertiliser on agricultural areas. On average, 21 million cubic metres of wastewater are purified annually.

Foto: Klaus-Peter Schleicher

3 Infiltration fields

One-third of the fully-biologically purified wastewater (about 20,000 cubic metres) is fed into the Braunschweig infiltration fields daily. The fields cover an area of 220 hectares and their main purpose is the secondary cleansing and storage of the wastewater which has been purified in the wastewater treatment plant Steinhof. Through the continuous watering of the infiltration areas and securing of the soil wetness of selected areas, even in times of low water availability, valuable biotopes have been created and, in regard to the Oker meadows, biotope structures have arisen which are extremely worthy of protection.

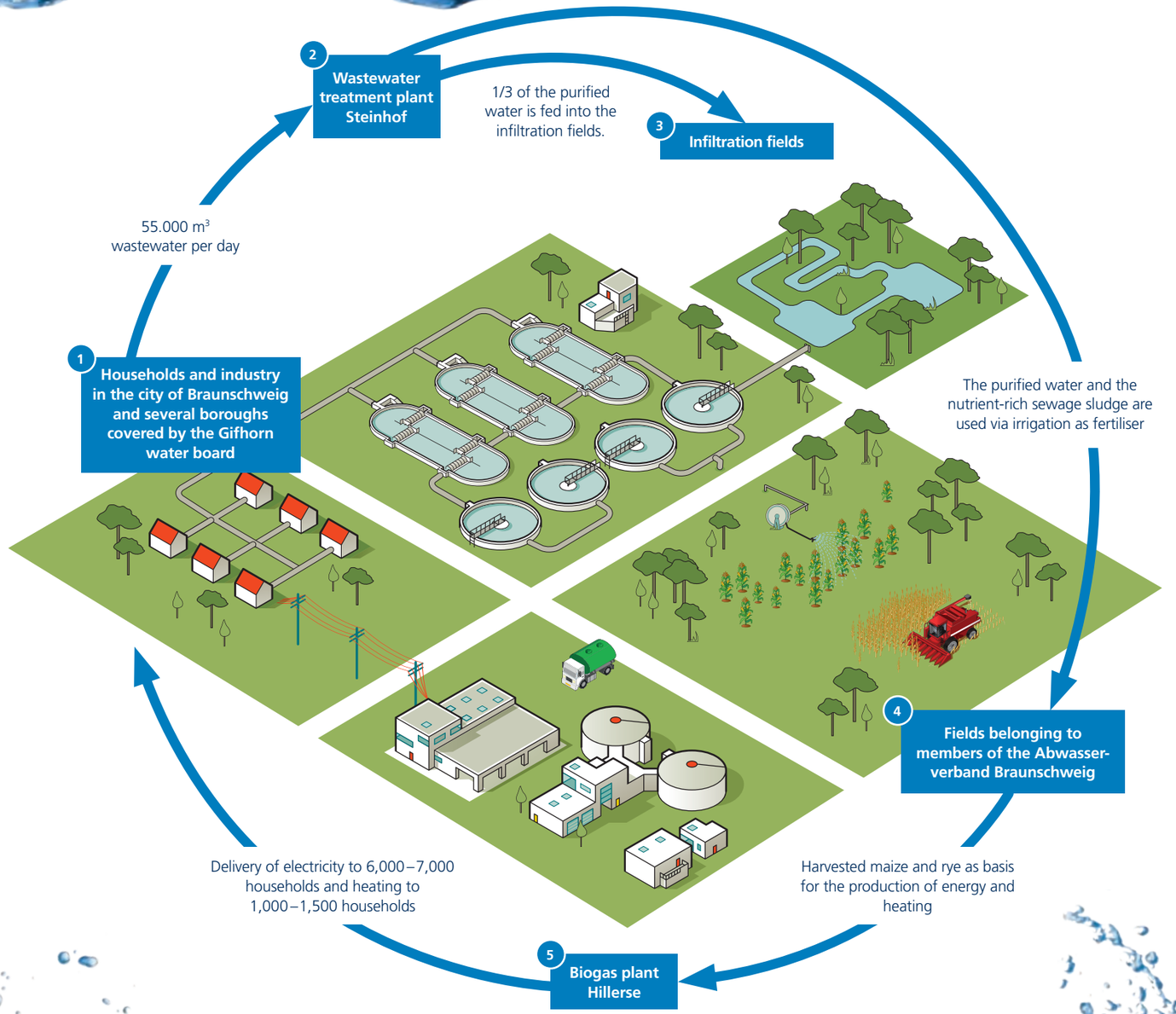

Foto: Amtenbrink & partner design

4 Irrigation

2/3 of the wastewater which has been purified in the wastewater treatment plant Steinhof, combined with nutrient-rich sewage sludge, are used by the Abwasserverband Braunschweig to irrigate 2,700 hectares of agriculturally-used land within the Association's area during the months of February to November. This equates to an annual water quantity of around 14 million cubic metres. The reason for the irrigation is a negative climatic water balance and the low water-retention capacity of the ground. This is not sufficient to allow unrestricted plant growth during the vegetation period and it is therefore necessary to supply the plants with additional water. This enables the agricultural enterprises operating within the Association's area to cultivate demanding crops such as sugar beet or maize.

Foto: Wilfried Kücherthal

5 Biogas plant Hillerse

Approx. 38 per cent of the Association's area is used for the production of renewable raw materials for the generation of biogas. The biogas plant needs 44,000 tonnes of maize and green rye annually in order to produce 19.3 million kilowatt hours of electrical energy. The biogas is transported via an underground gas pipe to Braunschweig, where it is transformed into electricity and heating by BS|ENERGY. The resulting energy provides 6,000–7,000 Braunschweig households with electricity and 1,000–1,500 households with heating.

Through the operation of our biogas plant, we are making a considerable contribution towards a reliable, sustainable and affordable supply of energy.