

Environmental politics in Kiel at the turn of the century:

the introduction of a centralised sewerage system

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Abstract

This article focuses on the last decades of the 19th century to the late 1920s, when a centralised sewerage system was built in Kiel. Urbanisation started in the city of Kiel in the 1870s, when Kiel became a base for the German Navy. The Navy had its own interests when the municipality was making decisions affecting the fjord and harbour areas. At the end of the 19th century the city council made plans for a centralised sewerage system covering the whole city. Particular interest was expressed in local pollution problems and their solutions, planning of sewerage systems, and delays in the actual construction of the system. Due to the Navy's resistance the plan not approved until 1906. Negotiations with the Kiel Canal Administration and some local farmers whose land had to be expropriated also delayed the beginning of the work. A major part of the construction was finished before the First World War, but the work was interrupted until 1922, when the city could afford it. The sewerage system was completed in 1929.

The beginning of urbanisation in Kiel

The years 1865 and 1871 could be considered major landmarks in the history of Kiel.

In 1865 the city was chosen to become the major naval port of Prussia. In 1871, when

the new German Empire was founded under the leadership of Prussia, Chancellor Bismarck designated Kiel as the "Reichskriegshafen", the main German naval harbour for the Baltic Sea. That required a small university town with a population of less than 30 000 inhabitants (1871) to develop into a modern city with a population of nearly 250 000 inhabitants (1914). The Navy soon became a strong and influential factor within the city and many municipal decisions could not be taken without having consulted its authorities beforehand. The Navy did not hesitate to show from the very beginning that their own interests ranked much higher than those of the city.

Before 1870, Kiel could be described as a small town at the seaside whose inhabitants mainly lived from fishing, local trading, and from its centuries-old university. The fjord 'belonged' to local fishers. Besides the good fishing, the cultivation of mussels at special mussel poles was very popular. The water quality used to be good and the city's beaches and its beautiful coastline were praised by travellers from all over the country. Economically, however, Kiel had little significance. The city's own trading port was rather small and there was hardly any industry located in the area.

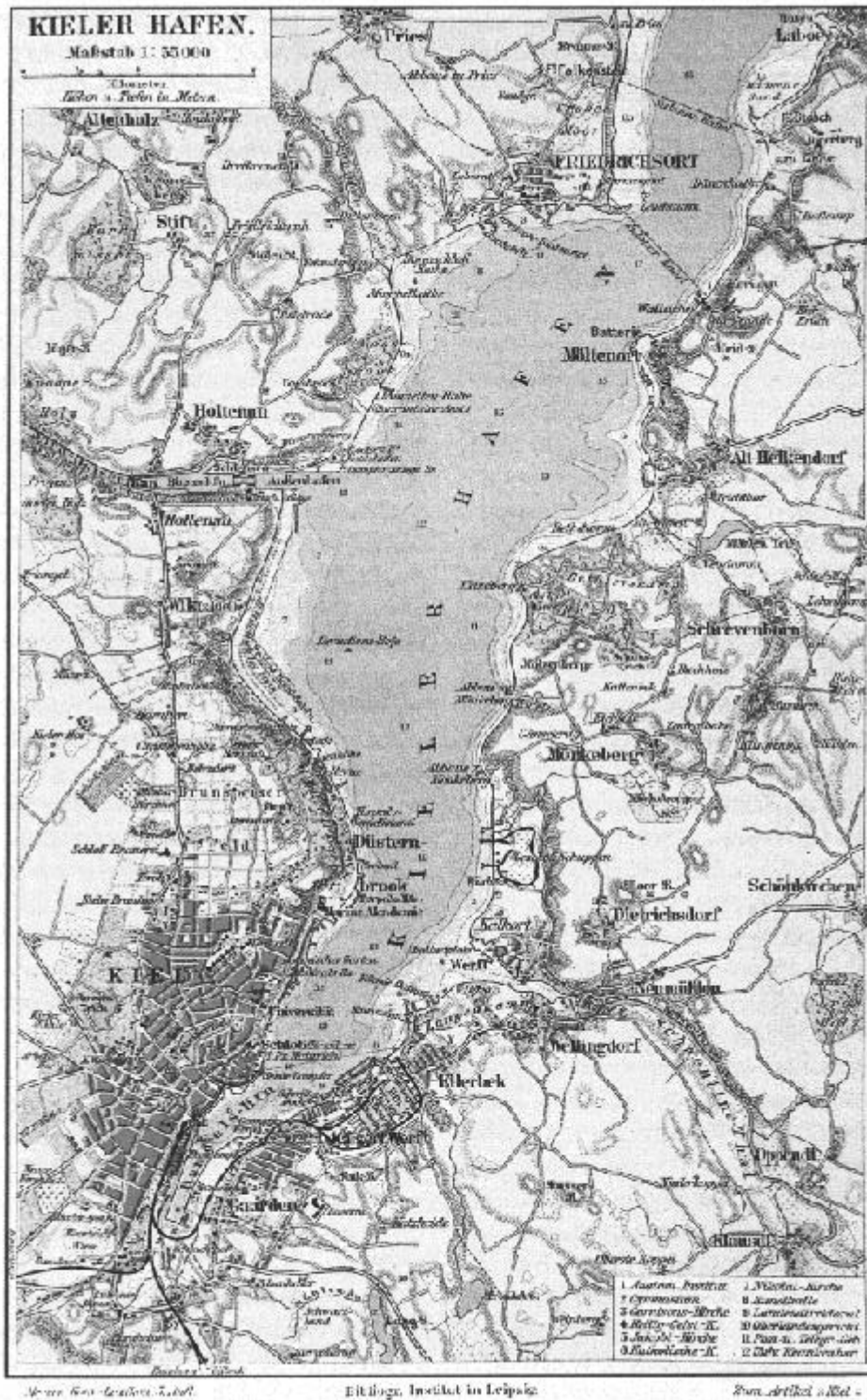


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Figure 1. Kiel at the turn of the century.

When after 1865 the Navy moved to Kiel, the city started to transform completely. The Navy was stationed there to demonstrate Prussian power in the

Schleswig-Holstein after Prussia and Austria had won the war against Denmark. In 1871 the German Empire was founded and the importance of the Navy increased even more. From that point on, the city started to grow rapidly.

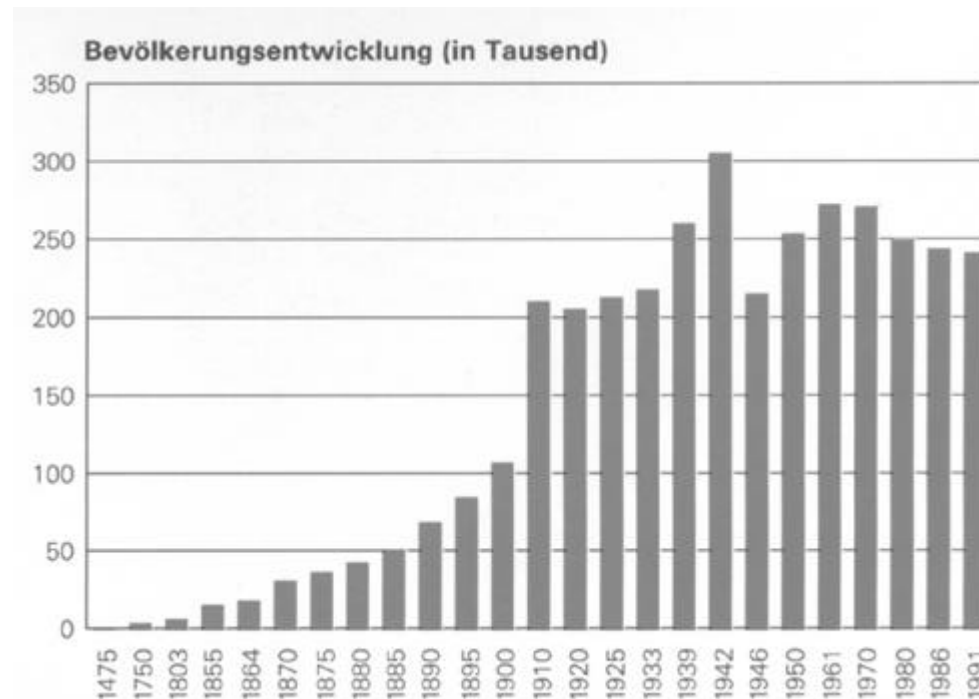


Figure 2. Population growth of Kiel (in thousands).

First reactions to sanitary problems

As the constantly growing population produced increasing amounts of waste, the city was forced to find new ways of dealing with its sanitary problems. In the early days waste and wastewater were dumped in ponds and creeks which ran into the fjord. The amount of garbage, wastewater and excrement, however, soon exceeded the capacity of the natural disposal.

The first reaction to this unpleasant state was a medical report on the pollution of a city pond published by a local doctor in 1866. According to Bockendahl, the pond had silted up with sludge. He feared it could be a source of disease and thus constitute

a health hazard. As a result of his report, which was addressed to the local Prussian government, the pond was filled. In addition, the report initiated discussion of the best wastewater treatment.

In 1870 an edict was issued prohibiting dumping of excrement in urban creeks or ponds. Instead a bucket system was introduced. Human waste was to be kept in a suitable barrel within the house or in the corridor. At least twice a week the barrel was removed by a private company. Although the waste problem was resolved temporarily, the removal of the growing amount of wastewater still remained unsolved. Even though in the 1870s some creeks were partially canalised by private initiative, there was no sewerage system covering the whole city.

In 1880, when the first water plant was installed in Kiel, the question of wastewater disposal became urgent because the new water supply system had led to an increase in the consumption of water. The city decided to focus on the construction of a public sewerage system for rainwater and wastewater. The plan was approved by the city council in 1885 and the work was completed in the following years. The city was divided into 17 separate districts, each with its own outlet into the fjord. The drainage area extended beyond the city borders.

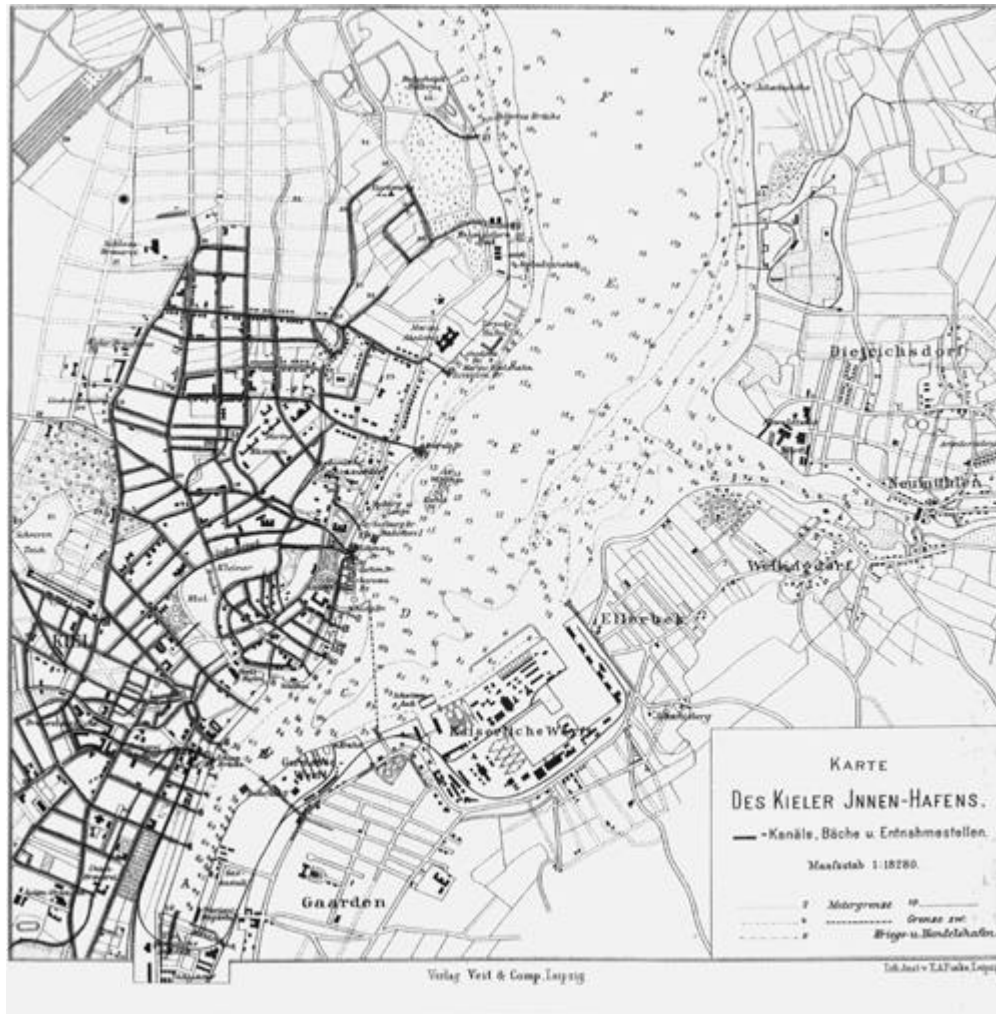


Figure 3. The outlets of the sewerage system.

At that time, the city council was convinced that the sewerage system, combined with the bucket system for solid waste disposal, would meet the future hygienic and sanitary needs of the citizens. However, in less than ten years the discussion on the sewerage system and pollution started again.

The reactions to the pollution of the fjord

The wastewater discussion started again in 1895. Bernhard Fischer, who was the director of the Institute of Hygienics, published a study on the pollution of the inner

fjord. He had taken samples during three years from various locations in the fjord and analysed their chemical, visual, and bacteriological status. He stated that the fjord, especially the innermost area, the Hörn, was heavily polluted. Fischer pointed out that the sewer outlets were the main source of the pollution. Although the disposal of human faeces and garbage had been prohibited since 1870, it seemed to be a common practise. According to Fischer, the current waste disposal system was insufficient for dealing with the rapidly growing population of the city. Even though he could not yet give any indication of immediate harm to people's health, he could not exclude that the bad water quality might be a source of illness and disease in the long run. To eliminate the potential health risk, Fischer suggested to the city administration the introduction of a sewerage system with water closets. The outlet of the sewer system was to be built not in the inner fjord but at a distance of 30 kilometres in the open sea.

For the city council Fischer's suggestion was completely out of question because the installation of such a long sewer pipe, which furthermore had to cross the new Kaiser Wilhelm Canal, was considered both technically and financially unrealistic.

The issue of water pollution was at the same time taken up by the Navy. In February 1895 the Navy Administration employed a medical officer to study the water quality of the inner fjord. Even though David's report was not as detailed as Fischer's, he came to the same conclusions: the fjord, especially the Hörn area, was highly polluted. He demanded a solution to the city's wastewater problem.

In November 1895 a conference was held in the city hall where officials of the Navy, Prussia, the canal administration and the city met to negotiate. The mayor emphasised that the city was in favour of a modern sewerage system, but it was absolutely unaffordable at the moment. The participants agreed on a list of smaller

measures which the city should carry out within the following years. The dumping of garbage from the ships into the fjord was restricted, the outlet pipes were extended and the outlet points were deepened. Even though in the following years the Prussian ministries repeatedly pressured the city administration, the city delayed the process, stating that some of the changes were too expensive and partly unnecessary anyway. The city council regarded the pressure as interference of the Prussian authorities in municipal affairs. But the resistance to the improvements did not mean that the city council ignored the problem. On the contrary, it founded a special commission of experts which prepared a plan for a better solution for wastewater and human waste disposal. Besides there were two other urgent matters which needed consideration, namely the inability of the bucket system to operate satisfactorily and a constant need to enlarge the existing sewer system due to the population growth. The bucket system had had a bad reputation and the number of complaints was constantly increasing: neither regular and reliable removal nor appropriate cleanliness seemed to have been guaranteed. More and more, the people demanded the comforts of water closets.

Buckets or sewerage system

From 1896 on, several debates on disposal systems took place in the city council. The council was split into two factions. One side committed itself to the immediate introduction of a combined sewerage system, which had successfully been introduced in several cities. The other group regarded this too expensive and technically impossible due to the topography of the city. That group preferred combining the current sewerage system with an improved municipal bucket system.

After long discussions it was decided that both alternatives should be studied in detail before making a final decision. A modern sewerage system was to be studied by R. Schmidt, an authority in the municipal building department. The other option was planned by its initiator, H. Lorey.

Schmidt planned a sewerage system which took into account the uneven terrain of the city. A main collector of the upper area of the city had its outlet in the Wik Bight, outside the city limits. To prevent pollution of this area a mechanical treatment plant was to be constructed. The lower area of the city was to have a combined sewer system with several outlets for rainwater, and pumps to transport the wastewater into the collector of the upper area. Schmidt estimated the costs to be roughly 3 million marks and duration of its construction no more than four years.

Figure 4. The upper and the lower areas of the sewerage system in 1899.

Lorey suggested an improvement to the bucket system, which would have been a cheap investment and was eventually to produce income. His major innovation was the founding of a factory to convert human waste into fertiliser to be sold to farmers. The buckets were to be transported by a municipal company. Afterwards the buckets were to be cleaned in a central "bucket-cleaning station". The citizens themselves could decide how often they wanted their buckets to be changed. The minimum changing time was twice a week.

When these two projects were presented at the city council in summer 1899, they were both accepted. Lorey's ideas seemed suitable at that time because they could be carried out quickly. Thus the city gained time to elaborate a detailed plan for a long-lasting sewerage system.

Poudrette-Fabrik

In April 1900 the project started off with 3500 buckets throughout the city, soon covering nearly all households in the area. It turned out to be a limited success: the construction costs of the fertiliser factory were low and the number of buckets in use was high, but the profits gained by the selling of fertiliser hardly ever reached the expected levels. The availability of low-priced artificial fertilisers destroyed these hopes.

Excrement disposal was continued by the bucket system, but the operation faced more problems and the city had no ambition to invest in the necessary repairs. The "Poudrette-Fabrik" was closed in 1919.

Process of building a sea outlet

In 1904 the new sewerage system was approved and the sum of 2.8 million marks was appropriated to start the construction. The upper area, the main collector and the treatment plant in Wik were to be build first. The Navy opposed the location of the sewer outlet, stating it would seriously threaten the new harbour in Wik Bay. The city council gave up this location and started to look for another place for the outlet. Fischer's suggestion was taken up again and the new location close to the Bülk lighthouse was chosen. There, wastewater could be discharged directly into the open sea without any treatment.

The new sewerage plan was drafted in 1906 and approved in 1907. This time the Navy made no objections. The crossing of the Kaiser Wilhelm Canal turned out to

be a problem because instead of installing a pipe, a tunnel had to be dug deeper than planned. The construction of the tunnel started in 1911 and was completed in 1912.

New resistance appeared. In addition to the delay referred to above, the farmers who owned the land on the north side of the canal, where the sewer pipe had to be constructed, did not want to sell their land. The city council applied for the right of expropriation. At first, this application was denied on the grounds that a peaceful agreement should be found. After four years of fruitless negotiations with the farmers, the city finally received the right of expropriation. In 1913 the actual construction of the incline pipe could begin, but already in 1914 the work was interrupted due to the outbreak of the First World War. The network of sewer pipes of the upper area and the main collector, and the pumping station were almost finished in 1914.

After the war the city budget did not allow the construction to be continued, and it was decided to build a temporary wastewater treatment plant in Wik with an outlet into the fjord.

In 1922 the city council decided to continue work on the sewerage system, and that same year the pumping station and the collector pipe to Bülk were completed. Shortly afterwards the sewerage system permitted the use of water closets. In 1925 a law was passed which forced all households to be connected to the sewerage system. With the fee income the city planned to finance the continuation of the construction of the lower area network, including the city centre and the southern parts of the city.

In 1926 the work began in the lower area. During the Great Economic Depression cheap labour was available and the Berlin government granted money to employ labourers. As a result the network in the area was finished in three years. In 1929 about 80% of the residents were connected to the sewerage system and could enjoy such modern comforts as the water closet.

Conclusions

The planning and building of the sewerage system took more than 30 years. In the beginning the delay was mainly due to economic factors, as the city council feared the tremendous costs of the construction. Later, when the city finally had decided to carry on the construction, the resistance of some influential parties, such as the Navy, the Kiel Canal Administration and the local farmers, slowed down the building process. After the completion of the sewerage system in 1929, it was welcomed as a necessity.

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