

Survey results:

Traffic impact of Tempelhofer Damm pop-up environmental / cycle lane

Background situation:

The planning of bicycle traffic infrastructure on Tempelhofer Damm dates back many years. As early as 2017, a decision was made to build a bicycle traffic system. In September 2018, a 30 km/h speed limit was imposed on Tempelhofer Damm. After initial positive experiences with pop-up cycle lanes in Berlin, a pop-up cycle lane was also to be established on Tempelhofer Damm in the summer of 2020 and then made permanent from autumn 2020. This did not happen and the implementation was delayed again and again. In April 2021, construction work began on the U6 underground line and a separate bus lane was designated for the rail replacement traffic.

At short notice, this arrangement was replaced by a temporary cycle lane with clearance for bus traffic. In the area between Alt-Tempelhof and Alt-Mariendorf, all car parking spaces on the right-hand side of the road were removed. After completion of the construction work on the U6, the lane was preserved as a pure cycle lane.

At the beginning of November 2021, construction began on the permanent and double-sided 2.9-kilometre-long cycle lane in Berlin's Tempelhof-Schöneberg district. This creates a continuously safe connection between Alt-Tempelhof and Ullsteinstrasse. The 2.85 metre wide cycle lane is to be separated from motor vehicle traffic by approx. 530 protective barriers and other structural measures. Individual sections are already separated from motorised traffic by safety dividing strips with bollards – other areas are still being completed.



Figure 1: Permanent cycle lane with pop-up protection elements at Tempelhofer Damm.

Volume of traffic: Survey commissioned by the Berlin Senate

The number, composition and speed of motor vehicles on Berlin's roads are measured at over 240 locations in Berlin using infrared detectors (so-called TEUs = Traffic Eye Universals). There are a total of two measuring points along the section of Tempelhofer Damm that was surveyed, each with one measuring sensor per lane. Unfortunately, the operation of these traffic detectors was discontinued at the end of 2020. Since the traffic measures were not implemented until the beginning of 2021, the impact of the new cycle lanes cannot be measured. In order to be able to evaluate the effect of the new bicycle traffic system, the Berlin Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action (SenUMVK) provided modelled traffic volumes from a traffic volume model (IQ Mobility). The traffic volume model models hourly traffic volumes for all main roads on the basis of the Berlin traffic model (as at 2014) and the TEU detectors.

The data shows a reduction in average motor vehicle traffic volume of approx. 8 percent after the construction of the pop-up cycle lane on Tempelhofer Damm. This corresponds to a reduction in the average traffic volume from just under 31,000 motor vehicles per day to just over 28,000 motor vehicles per day. On an average working day, almost 3,000 fewer vehicles use Tempelhofer Damm than before the cycle lane was established. It should be noted that the IQ model tends to underestimate the absolute traffic volumes, however the relative development is presented plausibly.

30,806 vehicles before pop-up cycle lane



28,225 vehicles after pop-up cycle lane

Cycle traffic counts through the Strava Metro mobility data platform.

The SenUMVK operates 17 automatic permanent counting stations for the continuous survey of bicycle traffic. There is however no counting station on Tempelhofer Damm, so other data sources have to be used to quantify the development of cycle traffic. For this purpose, data from the Strava Metro mobility platform is used.

A comparison with the official figures from the Senate Department shows that Strava records slightly more than one percent of all cycling movements in Berlin - with the trend increasing. The proportion of movements recorded was calculated as an annual average and applied to the figures contained in Strava for Tempelhofer Damm, so that a statement can also be made for streets that are not covered by the permanent counting stations.

For Tempelhofer Damm, the daily average cycling traffic figures at the position of house numbers 148 and 147 were measured and evaluated by Strava Metro. This is the section of the street where air quality measurements are also carried out by the Berlin Senate Department, which were also evaluated as

part of this report. The development of the cycling traffic volume from January 2019 to December 2021 is shown on the next page.

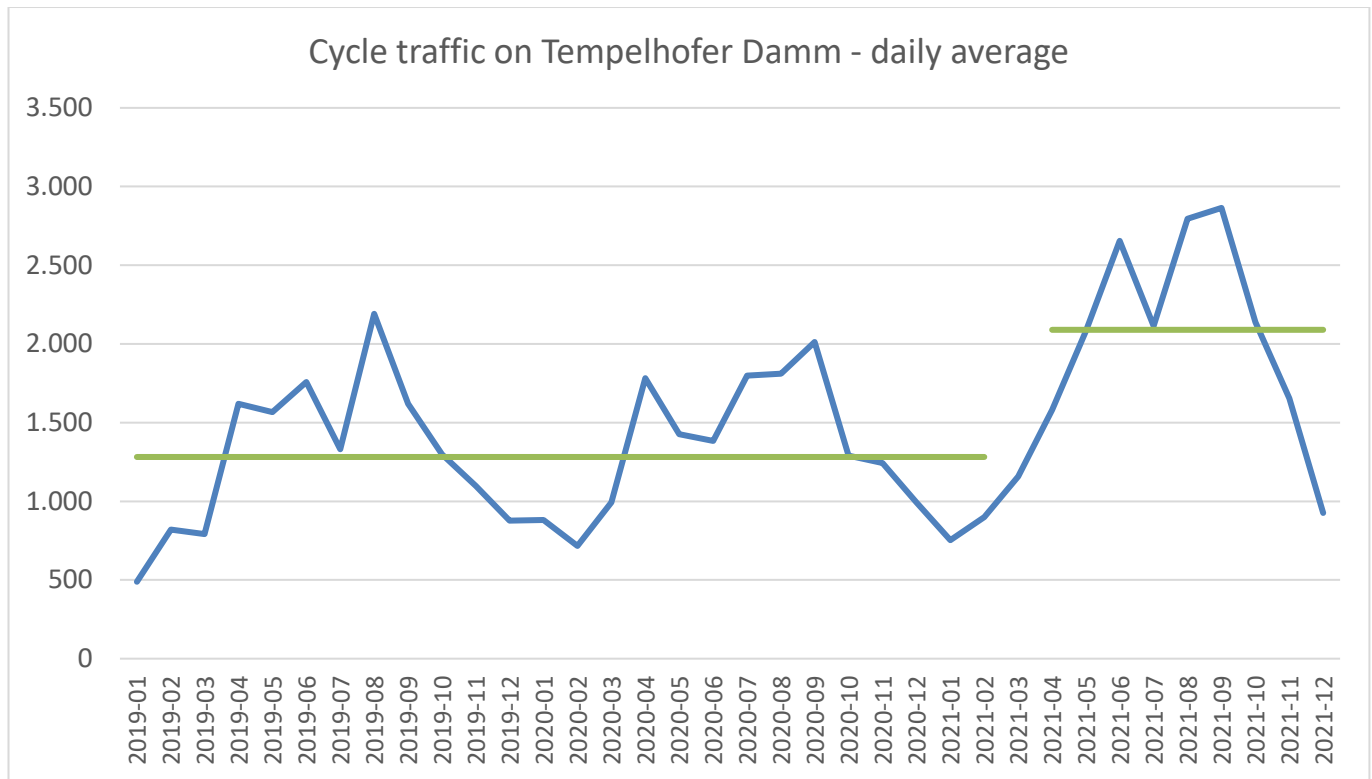


Figure 2: Development of cycle traffic on Tempelhofer Damm - daily average. Data from Strava Metro; calculation: Environmental Action Germany

Between January 2019 and March 2021, the average volume of bicycle traffic on Tempelhofer Damm was 1,282 per day. From the establishment of the environmental lane in April 2021 until the end of the year, the number of cyclists has increased to 2,090 per day. This corresponds to an increase of 63 percent.

While cycle traffic in Berlin as a whole increased by an average of 22.6 percent in 2020 compared to the previous year, this trend is not evident at Tempelhofer Damm. The average volume of cycling traffic did not change significantly here between 2019 and 2020. In the following year 2021, this positive trend across Berlin changed with an average reduction of 10.5 percent in the volume of cycling. This is shown by a data evaluation of the official cycle counting stations carried out by Rundfunk Berlin-Brandenburg (rbb).

Contrary to the trend across Berlin, Tempelhofer Damm shows a development characterised by stagnation in 2020 and a strong increase in 2021. This shows in a very clear way that local parameters are decisive here and that the development on streets previously perceived as dangerous does not necessarily follow the city-wide trend.

2,090 bicycles after the environmental lane



1,282 bicycles before the environmental lane

Air quality: Nitrogen dioxide pollution in Berlin

The SenUMVK operates a measuring station at 148 Tempelhofer Damm to measure the concentration of the diesel exhaust gas nitrogen dioxide (NO₂) in the air.

Due to the persistently high levels of air pollution, among other places along Tempelhofer Damm, Environmental Action Germany filed a lawsuit against the State of Berlin at the beginning of 2018. As a result, Berlin's Administrative Court ordered the State of Berlin to update its Air Quality Plan. The 2nd update of the Air Quality Plan for Berlin included, among other things, a concept for the introduction of a 30 km/h speed limit on main roads as well as a concept for evaluation. While the NO₂ pollution at 18 measuring stations in Berlin decreased by an average of 2.6 µg/m³, Tempelhofer Damm showed a decrease in NO₂ pollution of 5.2 µg/m³ after the introduction of the 30 km/h speed limit over the same period. This results in a net decrease in NO₂ pollution of 2.6 µg/m³ attributable to the 30 km/h speed limit.

In order to examine the effectiveness of the new cycling facility, only a period after the introduction of the 30 km/h speed limit was considered in order to be able to attribute the effectiveness to the specific measure. The evolution of NO₂ pollution is shown in Figure 3. It can be seen that after the introduction of the pop-up environmental lane, NO₂ pollution has decreased by almost 5 µg/m³. Before its establishment, NO₂ pollution was 34.7 µg/m³, even though the year 2020 was characterised by below-average motor vehicle traffic volumes. After the introduction of the pop-up environmental lane, average NO₂ pollution was reduced to 30.1 µg/m³. Peak pollution levels during the most heavily polluted periods fell by more than 10 µg/m³.

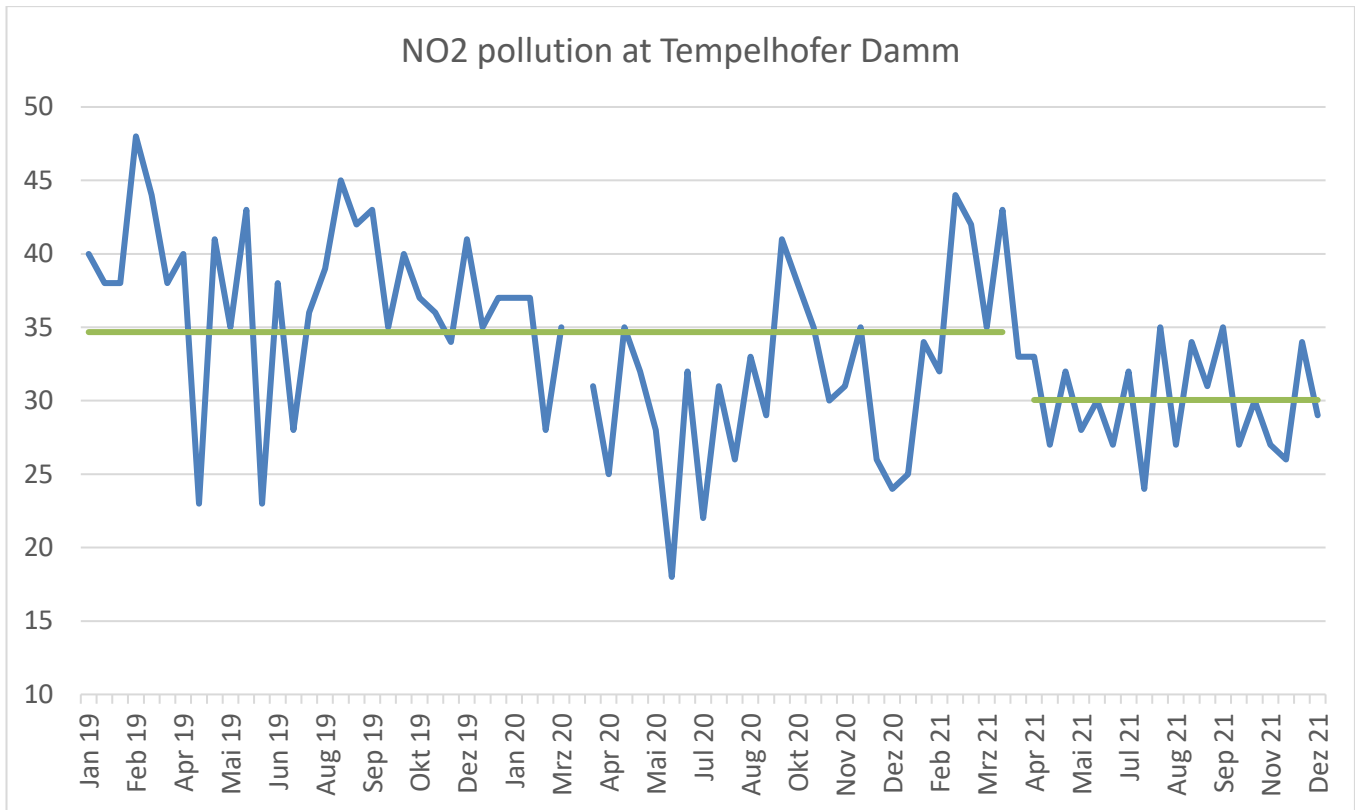


Figure 3: Development of NO2 pollution at the 148 Tempelhofer Damm measuring station

Classification:

In Berlin as a whole, NO₂ pollution has recently been on the decline. This reduction is partly due to the Corona pandemic. However, as the cycle lane along Tempelhofer Damm was not introduced until spring 2021, both the periods before and after the introduction of the cycle lane were characterised by pandemic-related changes in behaviour. The change in the pollution level can therefore be attributed with a high degree of plausibility to the new infrastructure. In combination with the 30 km/h speed limit already implemented in 2018, this shows that municipal administrations have extensive scope for action to reduce air pollution. The fear that the pop-up cycle lane would lead to more congestion and thus to higher NO₂ pollution cannot be confirmed.

The improvements to the cycling infrastructure were largely achieved at the expense of stationary vehicles and not at the expense of flowing motor vehicle traffic. Therefore, there has only been a relatively small decrease in the appeal of motor vehicle traffic – especially since there is sufficient parking capacity in the adjacent streets as well as in multi-storey and underground car parks. As there was no significant intervention in the flow of motor vehicle traffic, there was only a slight reduction here of 8 percent. In other study areas – such as Kantstrasse in Charlottenburg – the pop-up cycle lane was created at the expense of a motor vehicle lane. Accordingly, motor vehicle traffic fell by 22 percent in this area.

Before the cycle lane was established, the ratio of bicycle to motor vehicle traffic was 1:24. After the cycle lane had been created, the ratio of bicycle to motor vehicle traffic had already reached 1:14 – and this despite the fact that buses also used the cycle lane for many months, which adversely affected the subjective feeling of safety. Furthermore, there was no safe bicycle traffic infrastructure further out of town along Mariendorfer Damm, although this is now being constructed. A study including the latest traffic figures for the year 2022 should therefore be supplemented.

About the project:

DUH has been working since October 2020 on the project "Pop-up Republic: New Mobility Berlin", which is funded by the international association of cities ICLEI within the framework of the ICLEI Action Fund. The aim of the project is to collect, prepare and analyse environmental data in order to objectify discussions about the transition of mobility. The impact of new cycle lanes, with a special focus on pop-up cycle lanes, parking space management, neighbourhood traffic calming measures and 30 km/h speed limits on the volume and composition of traffic as well as on NO₂ pollution is investigated in order to be able to make informed statements about the impact on air quality and climate.



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