Using Resources from Public Transport Companies During a Blackout

During a power outage, the population is left in the dark. Not only does the light go out, but also many information and communication tools, heating and air conditioning systems, gas stations, and many essential infrastructures will fail. When a power outage lasts a long time and affects multiple countries, experts refer to it as a blackout. Last winter, this word was frequently used in German media due to the concern about a gas shortage or a hacker attack on infrastructure caused by the war in Ukraine. Preparation for a blackout can be expensive and time-consuming, so it makes sense for the responsible authorities for disaster management to use existing resources. In particular, the resources of public transport companies are well-suited, as they have large fuel reserves that can be used to refuel emergency vehicles or generators. The buses and drivers can provide necessary transport services and spread information. The bus stops can be used as familiar meeting points to reach the population.

As part of the master's thesis, this idea was examined to determine if it is realistic and under what conditions transport companies can cooperate with disaster management authorities. Interviews were conducted with various experts from transport companies, disaster management, and scientists to investigate the idea. Specifically, the categories of technical implementation, organisational requirements, legal and safety regulations, profitability, and acceptance of the idea were examined. These categories are common for conducting a so-called feasibility study, as done in the thesis. Overall, it was found that cooperation is useful in many cases. The organisations involved are also willing to participate because they have already experienced positive cooperation in other situations, such as evacuations. However, there are also contexts where some challenges must be overcome before such collaboration can be established. For example, the increasing number of electric buses, which cannot be charged during a power outage. This problem will become even more severe in the coming years as disaster management depends on fossil fuels. Still, politicians are pushing for fossil-free fuels for climate protection reasons. Another problem that needs to be addressed is the failure of many means of communication, or if the transport company operates in multiple districts, it is unclear who will bear the costs.

In the last step of the process, a proposal was made on how practical cooperation can be structured. The existing resources were incorporated into a modular and scalable system, along with identifying the corresponding functions that these resources can take on. It should be noted that while this concept can be relatively generalisable, certain preconditions must always be fulfilled, and its application may not necessarily make sense in every context. Additionally, suggestions for properly implementing such a concept were provided along with the proposal.