

Power Play in Urban Transport Policy: The Electrification Strategy of the Energy Utility RWE in Berlin

Oliver Schwedes

The transport sector is facing a fundamental change from a fossil-based to a post-fossil mobility culture, in which electric transport plays a central role. In light of the re-charging infrastructure, it is clear that the development of electric transport has to be politically planned and managed in order to facilitate sustainable transport development. However, the necessary political regulatory framework is lacking. As a result, recent development has been dominated by particular economic interests, while sustainable transport development in the general public interest has been assigned lower priority. As will be shown in the present article, the challenge of the impending transformation from the fossil-based to a post-fossil mobility culture consists in establishing new forms of communication, participation and cooperation, in order to be able to design and plan sustainable transport development on the political level.

Keywords: *Conflicts, deficiencies, Electric vehicles, governance, re-charging infrastructure, regulation.*

1. Introduction

Transport policy is a distinct sphere of government activity (Stopher and Stanley 2014). In the context of general public services, it is meant to provide every citizen with a minimum level of transport services in order to ensure social participation for all sections of the population. The main task of transport policy is to provide the necessary infrastructure for a functioning transport system, for which the Federal Ministry of Transport in Germany has the largest investment budget at its disposal. As part of the federal transport infrastructure planning, a regime of double financing of road and rail infrastructure has been established over time, with the financing of road infrastructure still dominant today.

In recent times, the decades-old, firmly entrenched transport regime has been increasingly shaken up. Motorised road transport is increasingly perceived as a societal problem, whether due to the adverse consequences for health, the effects on climate change, or the foreseeable finiteness of oil reserves, on which the transport sector is dependent to the tune of more than ninety percent (Walks 2015). Against this background, a profound change in the transport system from a fossil-based to a post-fossil mobility culture is emerging, with the main focus currently on electric vehicles,¹ with the intention of powering them in the future with

¹ I have deliberately chosen the term electric transport, which is to be distinguished from the popular concept of electro-mobility. Whereas transport in the everyday sense refers to physical movement in space, mobility is the subjective perception of potential mobility from the user's perspective, and which is measured by the degree of social participation. Since the debate on electro-mobility focuses primarily on the technical artefact electric automobile and in particular on the question of how it can be used as a vehicle in urban areas, the

renewable energy (Nilsson et al. 2012). Through the interlinking of the transport, energy and information sectors, electric transport opens up new spheres of activity in which, in addition to established stakeholders, other participants are becoming increasingly active. The transport sector is experiencing a phase of dynamic transformation, but the direction in which it is developing has so far remained completely open. This raises the question of who is to determine the future development of electric transport. In the context of the neoliberal hegemony, the field of transport policy has become pervaded by the view that transport development should be the task of private actors in the transport markets, more so than in the past, while the state should play the role of moderator, at most.

As a result, the dynamic development of transport in recent years has been shaped only to a minimal extent by political policy. Instead, the public sector has lagged behind and has limited itself to rectifying undesirable developments (Shaw and Docherty 2014). In particular, the development of electric transport is mainly led by industry, while original transport policy goals, which go beyond fostering purely economic development, so far remain practically indiscernible. Experience with this diffident transport policy stance over the past decade has shown that it creates problems for the common good. In addition, it is becoming clear what role the public sector has to play in shaping the transformation process in the transport sector, if it wants to live up to its own aspirations and strive for sustainable transport development serving the interests of the common good.

In what follows, the charging infrastructure for electric cars in the capital city Berlin will be used to illustrate the new challenges that are emerging in the sphere of transport policy and the role played by the public sector.

2. Integrated Transport Policy

Politicians have set themselves as a goal the programmatic model of an integrated transport policy (Givoni and Banister 2015). The aspiration is to no longer view transport in isolation and instead view it in its social context. Accordingly, integrated transport policy examines transport in the context of five fields of action: society, technology, ecology, politics and economics.

The societal or social dimension examines the specific requirements of users. This means that transport is no longer understood solely as a quantitative phenomenon to which politicians and planners respond with a corresponding expansion of infrastructure. Rather, the qualitative needs of people are now taken into account, which require new responses from politicians and planners. This is evident in the many new lines of conflict in the field of transport policy, which are leading to increasing confusion, manifest in the contradictory attitudes of the users who - for example - call for improved quality of life in public urban space but at the same time restrict its use by parking their cars there. Politicians and planners are today faced with the task of resolving these dilemmas.

In the field of technology, too, transport policy and planning are facing new challenges. Previously separate sectors such as the transport, energy and information sectors are becoming increasingly interconnected. The electric automobile, for example, is conceived as an integral component of electricity grids for renewable energy and at the same time integrated into the information and communication networks, with a view to operating

appropriate description is thus electric transport. In other words, from a subjective point of view, one is as just as mobile in a car with an internal combustion engine as in an electric car.

autonomously in the future (Noel et al. 2019). This sectoral coupling requires new forms of cooperation between players who were previously focused solely on their core business (Finger and Audouin 2018). In addition, new players are entering the field of transport, offering mobility services and thus competing with the established stakeholders. This difficult new situation is accordingly conflict-laden and requires political supervision in the interests of sustainable transport development.

Ecology is a relatively new field of action in the area of transport policy. While the 20th century was known for concerning itself with social issues, the 21st century is becoming the era of ecology (Radkau 2014). The transport sector poses a particular challenge in this respect because on the one hand it is the second largest producer of CO₂ emissions, after the energy industry (ITF 2017). Even more problematic, however, is that transport is the only sector in which CO₂ emissions are still rising. This is mainly due to the fact that the efficiency gains achieved by more fuel-efficient engines have been negated and partially even eclipsed by the absolute growth in traffic volume (EEA 2018). Unlike other sectors, no change in behaviour has been achieved in road traffic, which has meant no reduction in traffic volume. Here, the task of transport policy and planning is not just to support technical innovations aimed at increasing efficiency but also social innovations that contribute to a reduction in traffic volume (Schwedes 2019). Above all, this requires a fundamentally new organisation of the economy and society, one that consumes less space and is predicated on covering smaller distances and, as a result, necessitates less traffic.

Politics as a field of action is increasingly faced with overcoming the old domains of responsibility and developing new forms of interdepartmental cooperation. In particular, integrated transport policy is endeavouring to develop a systematic link with urban development and environmental policy. In this way, it should be possible to evaluate at an early stage the consequences of political decisions in the field of urban and spatial development, especially the effect they have on transport and the resulting environmental effects, in order to be able to formulate alternatives, should they be necessary.

Lastly, integrated transport policy traditionally also includes the economy as a field of action. The economy and transport are clearly closely interconnected, which is expressed in the fact that economic growth appears to be inevitably associated with growth in traffic volume. The efforts made in the past - for instance, in the energy sector - to uncouple development from economic growth, have so far failed. In addition, the economy as a field of action is characterised by a special mode of integration. While other fields of action are based on forms of cooperation and thus follow the mode of positive integration, the economy, as a result of market-driven competition, is based on the mode of negative integration (Vanberg 2001). This results in a permanent set of tensions, which have to be mediated by transport policy and planning.

Integrated transport policy thus aims to conceive of transport policy as social policy and to shape it accordingly. The following analysis of the development of the charging infrastructure for electric cars in the capital Berlin takes the programmatic ambition of integrated transport policy as the standard of evaluation and thus assesses the policy based on its own ambitions.

3. The Research Project and Design

The deliberations that follow are based on a research project financed by the German Federal Ministry for Economic Affairs (Schwedes et al. 2011). The research project was conducted in

close cooperation with the German energy supply company *Rheinisch-Westfälische Elektrizitätswerke AG* (RWE), which wanted to establish a charging infrastructure for electric vehicles covering all of Berlin. In this respect, it was of particular interest how the stakeholders were involved on the different political levels and interacted to enforce the charging infrastructure. Therefore we did a policy study to analyze the political decision making process. Because of our privileged position as researchers within the publicly funded research project and the close cooperation with the RWE, we decided for a participant observation on the one hand to record our special insights in the decision making process of the company. And on the other hand, we conducted thirteen guided interviews with experts from administration, politics and economy with respect to the federal state of Berlin as well as on the district level. Finally, for a broader contextualization, we did a media based analysis of the German e-mobility discourse (Schwedes et al. 2013).

While the research project finished in 2011, the following years I was able to pursue the analysis in three different research projects with focus on the charging infrastructure in Berlin. This particular situation made an exceptional long-term analysis of the implementation process possible. Therefore this paper will cover the last ten years as well as current developments.

4. Electric Mobility in the Capital City, Berlin

The starting point for the debate on electric-based transportation in 2007 was the concurrence of two events: the financial and economic crisis and the publication of the 4th climate report of the Intergovernmental Panel on Climate Change (Schwedes 2019). In this situation, German federal politicians were urged by the industry to support the German economy and especially the economically important automotive industry. At the same time, it increasingly had to seek public legitimation through activities designed to combat ongoing climate change. In the Economic Stimulus Program II, in addition to the so-called “environmental bonus” (also popularly known as the “scrapping bonus”, the “*Abwrackprämie*”), electric transportation was expressly promoted.² In reality, however, the German automotive industry has displayed reluctance towards electric transportation from the beginning. The energy industry, on the other hand, saw a new field of business opening up and took the lead in the movement.

3.1 RWE and the City-State Berlin

The Rheinisch-Westfälische Elektrizitätswerke AG (RWE) led the way in mid-2008, when the CEO at the time, Jürgen Grossmann, approached Berlin's governing mayor, Klaus Wowereit, seeking an exclusive contract to build a comprehensive infrastructure in Berlin and beyond.³ This was unusual in that the four large energy supply companies (ESC) had

² While the “environmental bonus” was financed with public funds to the tune of five billion euros in just one year, which benefited the German automotive industry in particular, until the introduction of the premium for the purchase of an electric car in 2017, electric transport received only comparatively modest support, amounting to several hundred million euros.

³ Accordingly, the advertising slogan of the energy utility RWE was “go ahead with RWE” (*VoRWEg gehen*).

previously divided the German market regionally, with the competitor Vattenfall located in Berlin.

When Vattenfall became aware that RWE was about to conclude a contract with the Senate Chancellery, with the aim of opening up and developing a new market, there was an initial conflict, which was resolved by the Senate Chancellery by concluding a joint contract with both companies which excluded any third party (see Fig. 1). Nevertheless, the relationship between the two companies remained strained, until in the end no real cooperation developed.⁴ This conflict situation was problematic in that each company set up its *own* charging stations that could be used by its *own* customers, but they were not interchangeably compatible. From the beginning, this resulted in a segmented network instead of an integrated network, which moreover excluded all those who were not customers of Vattenfall or RWE.⁵

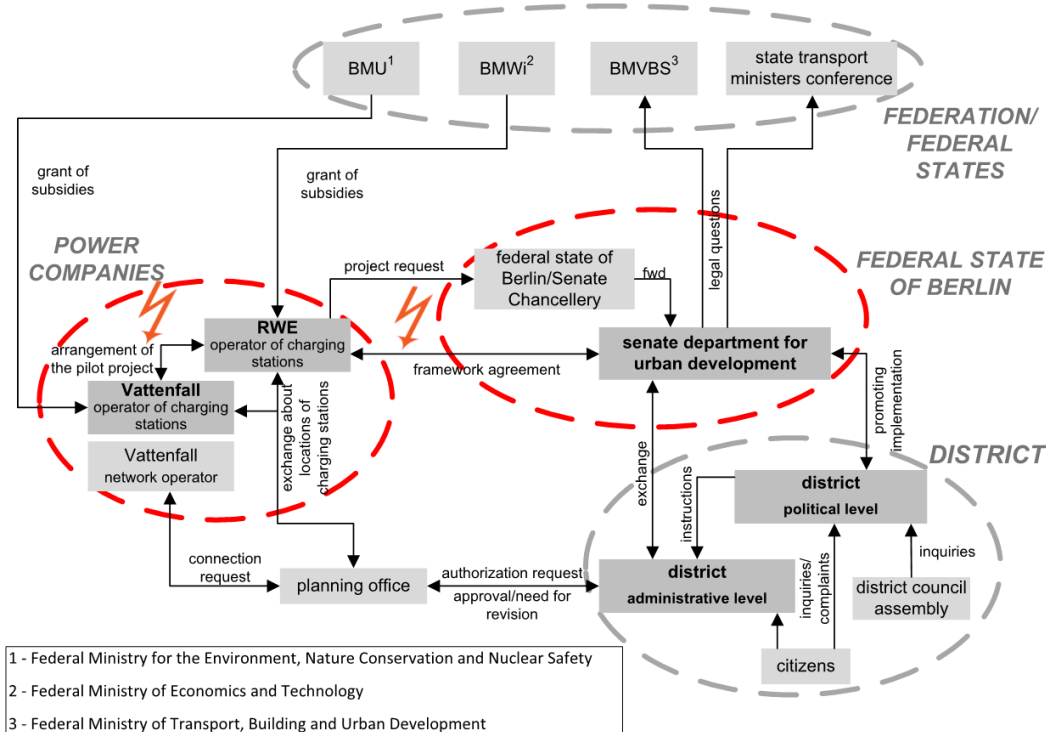


Figure 1: Lines of Conflict between the ESCs and the City-State Berlin (own illustration)

The establishment of a charging infrastructure in Berlin had been initiated by the Federal government, which wanted to make the capital city, in particular, the flagship of electric transport. From that point on, however, the development was mainly driven by the energy industry. The governing mayor of Berlin had signed the contract with the goal of promoting electric transport, but in the absence of an underlying transport strategy and policy. Subsequently, a corresponding directive was issued to the Berlin Senate Department for Urban Development to actively support the energy companies in achieving their goals.

⁴ The aggressively competitive relationship was expressed in an exemplary way in an internal working session, when the senior RWE manager, asked if one should consult with Vattenfall, responded: "Why talk to frogs if you can drain the pond."

⁵ In the contract with the city-state Berlin, the original agreement included non-discriminatory access to the charging infrastructure on public streets.

The Berlin Senate Department for Urban Development considered this procedure problematic because the development of electric transport - specifically, the development of a comprehensive charging infrastructure - was not embedded in the general strategy of existent plans, such as the urban development transport plan. Given how little time was allocated to considering it, this wasn't even possible, since electric transport was a new phenomenon, where no-one could say what role it would play in the future as part of a sustainable transport development strategy and whether it requires a comprehensive charging infrastructure. Instead of examining electric transport with regard to these questions, it was promptly established as the bearer of hope for a sustainable traffic development strategy, and then became the object of intense media hype (Schweddes et al. 2013). In the case of Berlin, this resulted from the outset in a discrepancy between the lack of a transport strategy in promoting electric transport on the one hand, and the already-established transport planning strategies on the other hand. Thus, the urban development plan (*Stadtentwicklungsplan, StEP*) for transport, which had been in existence for almost ten years, was not taken as the basis for the development of a transport policy strategy for electric transport in order to achieve the goals formulated in the plan. Instead of a planned, integrated approach, incorporated into a set of overall goals as envisaged by the urban development plan (*StEP*) for transport, actionism took over.

3.2 RWE in the City Districts

After the energy utility RWE had obtained approval from the governing mayor to build a charging infrastructure in Berlin and concluded a contract with the Senate Chancellery and Vattenfall for a corresponding pilot project, it initially turned its attention to the two Berlin pilot districts Mitte and Charlottenburg-Wilmersdorf.⁶ The Berlin Senate Department for Urban Development had previously tried to prepare the districts for the new requirements and asked them to carry out the implementation "with utmost speed" (Schweddes et al. 2011, p. 18). The energy company RWE was not aware, however, that the Berlin state government has no authority over the districts concerning decisions that affect their own street space. Instead of consulting with the districts, RWE initially presented them with ready-made lists listing the locations of the desired charging stations and expected prompt implementation (see Fig. 2).

⁶ RWE entered into a cooperation with the automotive group Daimler, Vattenfall with BMW.

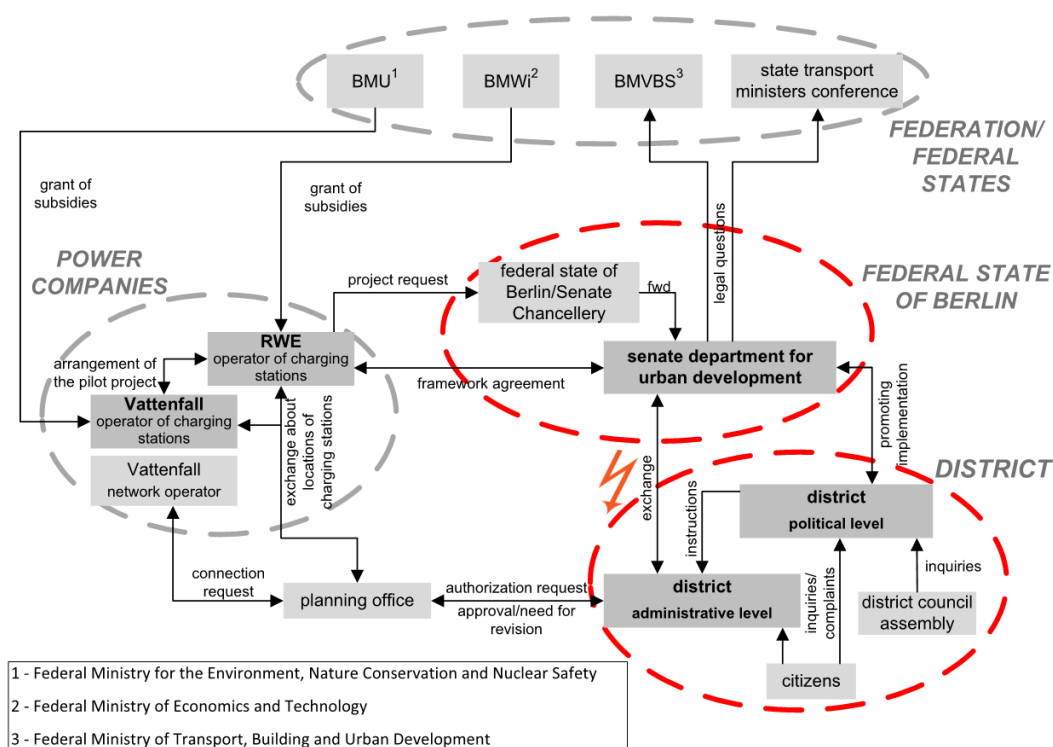


Figure 2: Lines of Conflict between the City-State Berlin and the Districts (own illustration)

Apart from the fact that it was not at all clear at that stage whether the electric transport of the future required a comprehensive charging infrastructure in densely populated inner cities, when choosing sites for its charging stations RWE catered above all to special interests rather than adhering to transport policy or planning goals. The company's main concern was to place its own charging infrastructure in public space in a way that made it as visible and thus as promotionally effective as possible. Its proposals for the installation of charging stations therefore focused on high profile public places such as the Brandenburg Gate and the Reichstag (seat of the federal parliament), amongst others.⁷

From the point of view of the districts, this procedure was problematic because each charging station provided charging points for two electric cars, so that in each case two public parking spaces had to be assigned. However, Mitte and Charlottenburg-Wilmersdorf are both relatively densely populated districts and the available public street space is scarce. In addition to which, a growing conflict concerning the use of public street space was already becoming apparent. For example, loading/unloading bays were to be designated for the increasing commercial traffic in order to avoid friction caused by double-parked trucks and delivery vans. In addition, in the framework of parking space management, some districts began to charge for the on-street parking of private cars in order to make it less attractive. Instead, they proceeded to assign public parking spaces to car-sharing vehicles, in order to provide an alternative to private cars. There also were more and more public systems for bicycle rental, which of course also required public space for their bicycles. Lastly, the

⁷ Here RWE was regularly thwarted by the objections of the authority responsible for the protection of historical buildings and monuments. After the group was unable to impose its interests by "lobbying its way through, top-down" as it had expected (as a district representative put it), RWE engaged the services of an intermediary in the form of a planning office with which the districts were already acquainted.

number of cyclists with private bicycles also increased, with available parking spaces for 25,000 bicycles, whereas there was a need for 60,000 spaces. In short, RWE's goal to use public urban space for charging electric vehicles was in direct competition with the transport policy objectives of the districts, which were also dependent on public space. That provoked growing tensions between RWE and the districts (see Fig. 3).

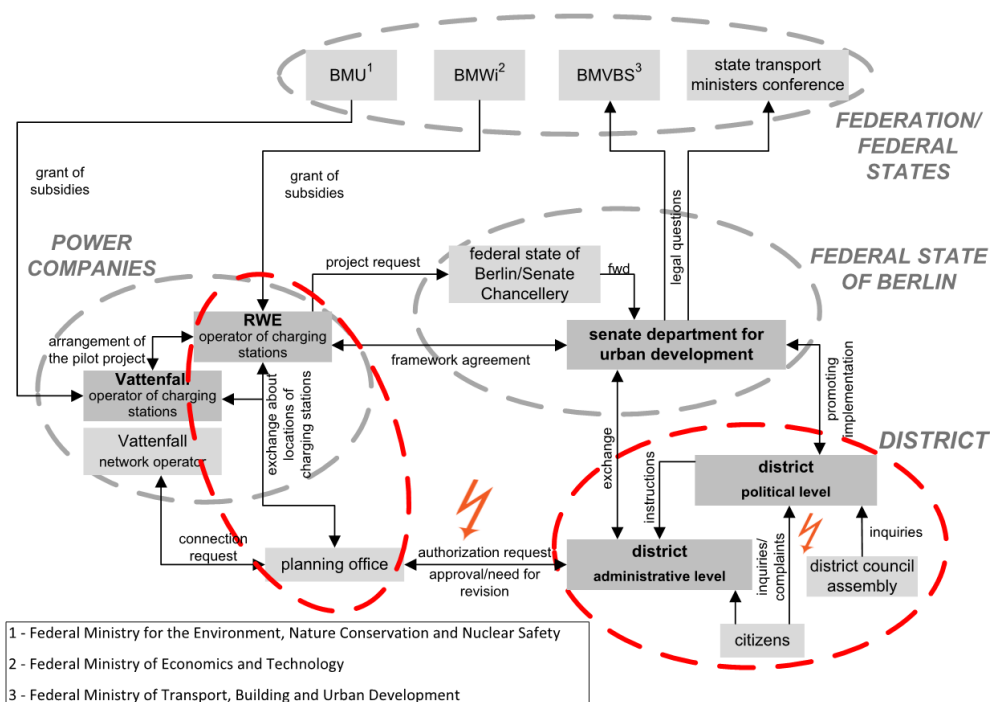


Figure 3: Lines of Conflict between RWE and the Districts (own illustration)

In all these instances, the districts had to weigh up how much public space was to be made available for which purpose, and how much importance they wanted to assign to electric transport. However, while in the above-mentioned cases the arguments for or against a particular use existed, this did not apply to public parking spaces for charging electric cars. As shown above, at the time nobody knew what form of charging infrastructure was needed in order to successfully introduce electric transport. By contrast, RWE's strategy was clear: the company was aiming for a comprehensive “roll-out” in Berlin and Brandenburg as well as throughout Germany. On the one hand, the goal was to create a factual situation that could not be ignored, by establishing an area-wide charging infrastructure, thereby influencing the direction in which electric transport would develop.⁸ Above all, however, this strategy was aimed at gaining a dominant position in the market. This corporate strategy was pursued “blindfold”, so to speak: the company knew neither whether a comprehensive charging infrastructure was required, nor did it have a corresponding business model, where one followed from the other. The intention was to use the nationwide charging infrastructure to put its own standards in place, which would allow the company to create its own demand and develop a business model on this basis.

⁸ Research into the genesis of technology has revealed many historical examples that show how the directions taken by developments in the long-term have been determined by large, cost-intensive infrastructure measures (Wieland 2009; Fishedick and Grunwald 2017).

Therefore, while from the point of view of the energy utility the strategy of a comprehensive charging infrastructure, despite all the uncertainty, possessed a certain plausibility, the districts found it didn't make sense from a transport policy standpoint. The strategy was also competing with known and in certain instances proven alternative uses. Overall, a complex constellation of actors appeared, which was heavily loaded by numerous lines of conflict (see Fig. 4).

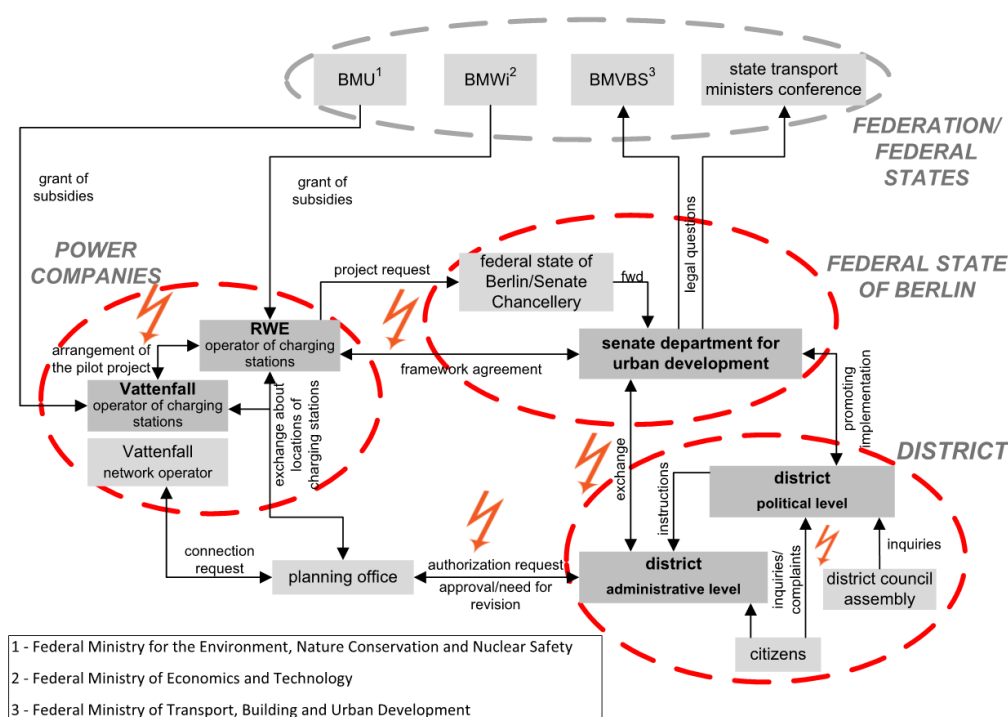


Figure 4: The Conflictual Constellation of Actors in Berlin (own illustration)

At the same time, due to the predominantly euphoric public sentiment regarding electric transport as the best hope for the future, most districts came increasingly under pressure to meet the wishes of the Federal and State governments and to support RWE in the construction of charging stations. As was the case with the Berlin State government, it was also evident at the district level that, generally speaking, it was not possible to integrate electric transport into a transport policy strategy. As a consequence, most districts were unable to formulate well-founded alternatives in order to oppose the charging infrastructure. One exception was the Berlin district of Pankow.

3.3 RWE and the Berlin District of Pankow

Pankow was already pursuing a resolute integrated transport policy with the goal of sustainable transport development. The aim was to develop public urban and street space for other user groups, at the expense of automobile traffic. By extending the kerbs and constructing bicycle paths, the district gave priority to pedestrians and cyclists. Spaces for public bicycle rental systems were also provided by the district. On the other hand, the district reduced the attractiveness of using one's car by introducing regulations and fees for parking. In addition, car parking spaces were converted into spaces for bicycles. At the same

time, Pankow was the first district in Berlin to provide public parking spaces for car sharing in order to offer an attractive alternative to private cars.

Thanks to a transport policy strategy with the clear objective of supporting sustainable traffic development by reducing car traffic, the district had developed criteria that made it possible to assess and situate electric transport in the framework of a sustainable transport development strategy. When the energy company RWE wanted to set up charging stations in Pankow, the district suggested installing charging stations in the parking spaces that had been made available for car sharing, in order to electrify the collectively used car fleet in the medium and long term. The energy group rejected this offer of slotting itself into an integrated transport concept, since it contradicted its own strategy, which was aimed at serving particular interests. As a result, there are still no RWE charging stations for electric cars in Pankow.

A formal study examined the need for a comprehensive charging infrastructure in the Prenzlauer Berg district of Pankow (Ahrend et al. 2014). At the time, RWE had simply assumed that all residents who currently park their private car on the street (so-called “kerbside parkers”) would in future have to charge their private electric car in public street space. Thus, RWE used the existing situation as the basis for projecting future developments and then extrapolated a corresponding charging infrastructure. In contrast to this traditional adaptive planning, the formal study examined households with a private car in order to establish how they actually use their car and to identify their concrete needs (Ahrend et al. 2014). The study revealed that most households do not use their vehicle at all during the week, but rather use other means of transport for their everyday life. Despite the associated costs, they retain a private car for certain occasions, such as weekend trips away or other transport needs for which they do not see a suitable alternative.

In light of this scenario, entirely new options open up for an integrated transport policy, options designed to provide households with adequate alternatives for the few situations in which they need a car. These could include nearby mobility stations, for example, where - according to the usage requirements - appropriate vehicle types and mobility services would be made available for collective use. These mobility stations could also be integrated into neighbourhood parking garages for the cars belonging to households that - despite the alternatives - claim to be unable to dispense with their private car. In this case, it would be sufficient to equip the neighbourhood garages with the necessary charging infrastructure.

As a result, a transport policy strategy for the development of electric transport would no longer be dependent on the establishment of a comprehensive charging infrastructure in public urban space and thus provoke the usage conflicts outlined above. Instead, pressure would be taken off public urban space and the usage conflicts thus defused. An integrated transport policy, which aims at sustainable transport development in the interests of the common good, would - thanks to the public open spaces it had gained - then also have more room in which to take action - for example, pursue the expansion of bicycle infrastructure.

5. New Challenges in the Field of Transport Policy: Cooperation, Participation and Communication

The analysis of the diverse conflicts identifies three recurring modes of conflict, across the lines of conflict described (see Fig. 5).

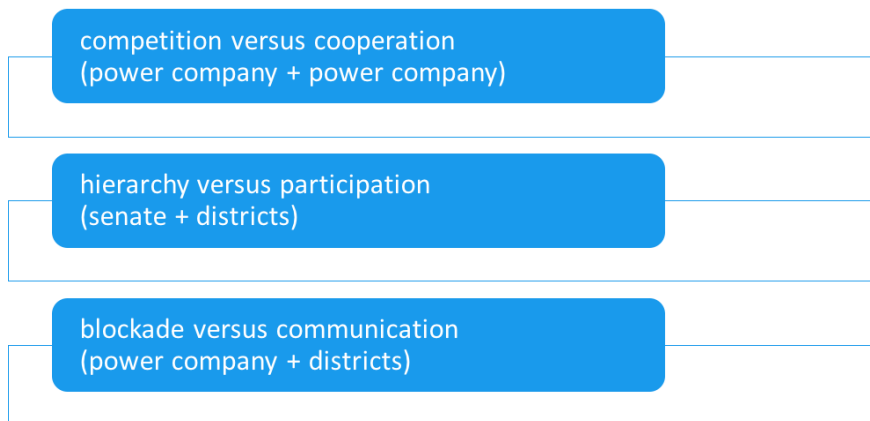


Figure 5: Modes of Conflict (own illustration)

The first field of conflict is located in the tension between the two opposing modes of functioning of competition and cooperation.

This mode of conflict becomes particularly clear in the interaction of the two energy utilities. While in the past the energy market was divided between the major energy utilities in regional monopolies, in recent times the utilities have increasingly been moving beyond the borders of their traditional monopolies, in order to open up new markets. Consequently, they inevitably force their way into the traditional territory of their competitors and enter into direct competition with them, which abruptly shakes up the oligopoly that had been ossified for decades (Scheer 2012).

This trend is gaining additional momentum due to the new requirements of individual electric transport. It is becoming apparent that electric transport in general and renewable energy in particular are providing an impetus for a decentralised energy supply. New energy providers are already emerging, specialising in small-scale energy supply concepts. In addition, in recent years there has been a wave of re-municipalisation of the energy supply, a development that points in the same direction (Becker 2010; Matecki and Schulten 2013). Ultimately, electric transport brings with it completely new constellations of actors, with the energy utilities constituting only one amongst others.

In the present case, Vattenfall is confronted with the market competitor RWE. The actual conflict did not arise from the competition between the two utilities, but from the technically based cooperation. For while the requirements of a comprehensive charging infrastructure for electric vehicles in public space require cooperation between the energy providers, their corporate strategies continue to be characterised by competitive behaviour. As shown, in the present case the political administration had to intervene as a moderating instance in order to compel the divergent interests to join forces. However, contrary to the demand formulated by the Senate itself for non-discriminatory access to the system, a compromise has been worked out that gives both energy providers a privileged position in relation to potential competitors and makes it possible for them to exclude other competitors.

The result was unsatisfactory in several respects. On the one hand, the politically imposed “non-aggression pact” between the two utilities Vattenfall and RWE did not lead to a productive cooperation with possible synergies. Instead, each company had pursued a project largely independently of the other, each of which emphasised specific features but which existed side by side, largely disconnected from each other. Thus, in light of these experiences, the question arises whether, for electric transport to be successfully established in the market, in the near future it will not be much more reliant on forms of cooperation. This is lent credence not only by the growing pressure on the “big four” to cooperate with each other, as

shown in the case of Vattenfall and RWE, but also by the emergence of completely new players in the energy market, as well as the already-mentioned growing trend towards a decentralised energy supply.

The second mode of conflict consists in the tension between the functional logics of hierarchy and participation, structurally predominant in the relationship between the Senate and the districts. In the case of Berlin, a development is emerging that shows a move away from centralised and hierarchically structured governmental and administrative action towards negotiation procedures based on the principle of equality. The clearest expression of this development was the abolition of the Senate's supervisory control over the districts in technical matters, with the autonomy of the districts being strengthened at the expense of the Senate's decision-making power (Nissen 2002). While business leaders complain about this development because they are confronted with a confusing political patchwork and are therefore working to reverse the development, political scientists recognise in it a paradigm shift in advanced democratic societies, away from traditional State rule, away from *government*, towards a greater involvement of civil society actors, thus towards *governance* (Miller and Rose 2008). Consequently, the implementation of an integrated transport policy can only succeed if the coordination between the Senate and the districts is improved and transport policy measures are presented more regularly for public discussion. This would make it possible to negotiate the future role and significance of the electric automobile in Berlin in the framework of a sustainable transport development strategy, in the interest of the common good, without the decision being substantively determined by particular interests.

The planning to deal with major societal challenges, such as the establishment of electric transport, can therefore no longer proceed top-down, as in the past. On the contrary, one must proceed on the assumption that the diverse, specific, local interests have to be taken into account, much more so than previously, all within the framework of an integrated, strategic policy. Against this backdrop, Berlin's approach to integrated urban and transport development, which has been formulated in various contexts over the course of many years, is on a progressive track (Rauterberg-Wulff 2008). At the same time, a gap persists between the programmatically formulated aspirations concerning integrated development concepts and the tenacious forces of the old, segmented political and administrative structures described above, which continues to hamper inter-agency cooperation between the Senate and the districts (Bracher 2011). This makes it unnecessarily difficult for economic players to become active in Berlin.

For the future development of electric transport in Berlin, it follows that it can only be successfully established in the context of a coordinated, broad strategy. For this purpose, the binding forms of political cooperation still have to be developed, in order to live up to the programmatic aspirations and encompassing the implementation phase. The future of electric transport in Berlin will be decided not least of all based on the political willingness to propose reforms, as well as the ability to implement them in accordance with the general strategy outlined here.

Lastly, the third mode of conflict concerns the relationship between the energy utilities and the districts and can be described using the antagonistic duo obstruction versus communication. From the outset, the districts felt they were not adequately involved in the decision to make Berlin the experimental field for electric transport, a complaint that was especially levelled against the Senate. Accordingly, their initial reactions to the proposal were skeptical. The fact that the pilot project nevertheless got off the ground in the first two districts was doubtless also due to the brief period allotted to thinking it over (a result of the framework conditions described above), as well as the political pressure. In the course of the project, however, the misgivings re-emerged, a principal factor being the troubled

relationship with the energy utility RWE. While the districts reported traditionally good relations with the local energy provider Vattenfall, in the case of RWE they complained about an unwillingness to communicate, which caused a “spate of hindrances” on the part of the districts, as a district representative put it.

After a year had gone by, the Senate Department for Urban Development invited all districts to a meeting in order to gain an impression of the state of electric transport in Berlin. At this meeting, the discontent was voiced in a concerted fashion. Both the two pioneer districts as well as many of the other districts in Berlin in which RWE had sought to introduce the charging infrastructure, now refused to do so. As explained above, this reaction was prompted by a lack of information: for instance, it was unclear how many of the charging stations agreed upon with RWE in the pilot project had already been set up; additionally, there was no information as to whether, and if so how often, the charging stations were used, so that at the time it was also unclear whether RWE’s proposed comprehensive charging infrastructure would be needed at all.

Instead of seeking clarification of these and other issues in a joint discussion, RWE continued to focus on implementing the agreement concluded with the Berlin Senate. Offers from the Senate and individual districts to participate in integrated transport development strategies for electric transport were also repeatedly rejected by RWE. This approach met with increasing resistance at the district level and led to obstructive actions against the construction of the charging infrastructure.

Given this situation, on the one hand the question arises as to whether such a lack of willingness to cooperate is politically apposite and, on the other, whether it is objectively and technically appropriate with regard to the requirements of electric transport. If it is correct that the advent of electric transport requires new forms of cooperation, as is indicated by the mode of conflict between the energy utilities (competition versus cooperation), and, moreover, new participatory forms of government are gaining in importance, in which equality-based procedures are favoured over hierarchical procedures (as illustrated by the relationship between Senate and the districts), then it can be assumed that communication-based negotiation processes will in future have to be accorded a higher status than hierarchical forms of organisation. New forms of deliberation could be able to avoid future obstructive attitudes.

The city-state Berlin has now moved from a passive to a pro-active strategy.⁹ Instead of restricting itself to commissioning an energy utility with setting up a comprehensive charging infrastructure in the densely populated areas of Berlin, the city has launched a public tender for a charging infrastructure and selected a provider that a) meets the requirements of non-discriminatory access as defined by the state of Berlin and b) fits into an overall urban planning strategy.¹⁰ Following the formation of a coalition government between the Social Democrats, the Green Party and Die Linke (leftist party) in 2017, a transport policy strategy is taking shape in Berlin for the first time since reunification. The recently adopted “law on

⁹ For information on the current state of play, I would like to thank Hermann Blümel of the Senate Department for Environment, Transport and Climate Protection.

¹⁰ Even after long negotiations with the Berlin administration, RWE was unwilling to guarantee non-discriminatory access to its charging stations in public streets and the company also refuses to cover the costs of dismantling its charging infrastructure. Since the beginning of 2018, RWE and the city have been contesting the case before the administrative court.

mobility” could form the binding basis for an integrated transport policy that develops electric transport as part of a sustainable transport development strategy.¹¹

6. Conclusion

Electric transport exemplifies the profound change that is underway from the fossil-based to a post-fossil mobility culture. In the transport sector, a comparable process of transformation took place in the late 19th and early 20th centuries (Hall 2014) in the context of heavy urbanization. In order to make it possible for many people to live in a confined space, the state administration of public services was established; in particular, the public sector was supposed to provide the basic infrastructure services that are necessary for a functioning urban society. It was at that time that the network infrastructures that are so commonplace today were put in place, such as water supply and sanitation, electricity and communications networks, as well as transport networks.

The connections that are currently forming between the networks of urban transport, electricity and communications through the development of electric transport are in many ways reminiscent of their historical precursors. At the same time, however, differences are also becoming evident; in particular, the role of the public sector has altered. While the original concept of public services was based on an authoritarian understanding of the State and the administration of such services was largely carried out in an autocratic fashion by the public authorities, the understanding of the State in democratic societies has changed, with the State now viewed as a *guarantor* of services (Schuppert 2017). Accordingly, the State is no longer the sole decision-making authority, nor is it the exclusive provider of public services; instead, it finds itself confronted with numerous social agents who exert influence on political decision-making (Jessop 2007).

Using the development of the charging infrastructure in the capital city Berlin, I have been able to show the multi-layered constellation of social agents involved, a constellation comprised of the State and the private sector but which has recently been supplemented by an increasing number of players from civil society, thus provoking many lines of conflict within the framework of the old societal structures. In order to avoid the resulting obstructive behaviour, more communication-oriented forms of management will be required in the future. Consequently, the concept of public services has to move away from authoritarian-hierarchical processes towards participatory processes. In particular, the field of transport policy, which has been heavily marked by competition and rivalry in recent years, requires reorganisation in the direction of cooperative management and control mechanisms (Bache et al. 2015). Lastly, centralised and hierarchically structured political decision-making processes must be opened up for new procedures based on active and meaningful participation.

The mismatch between the new requirements and old social structures is currently weakening the political capacity to take action. This can lead to a situation where private interests prevail and influence future developments in their favour. The development of major network infrastructure serving the common good played an important role in the past, and still does. As the example of charging infrastructure for electric vehicles has shown, a variety of lines of conflict emerge in this endeavour, which have to be resolved politically by adjudicating between the conflicting priorities of positive (political) and negative (economic) integration.

¹¹ Cf. <https://www.berlin.de/senuvk/verkehr/mobilitaetsgesetz/>

The task of an integrated transport policy is therefore to deal with the conflicts, not to avoid them. While the field of transport policy is non-transparent and still highly encumbered with outmoded power structures, an integrated transport policy is reliant on a culture of conflict that makes it possible to publicly address and negotiate conflicts of interest, prior to resolving them politically for the common good. The challenge of the imminent transformation from a fossil-based to a post-fossil culture of mobility therefore consists in establishing new forms of communication, participation and cooperation in the political sphere in order to be able to design and plan sustainable transport development in the future.

References

- Ahrend, C., Delatte, A., Kettner, S., Schenk, E. and Schuppan, J. (2014) *Multimodale Mobilität ohne eigenes Auto im urbanen Raum. Eine qualitative Studie in Berlin Prenzlauer Berg. Teilbericht des Projekts City 2.e zum Arbeitspaket 2: Nutzer- und Akzeptanzanalyse*. https://www.ivp.tu-berlin.de/fileadmin/fg93/Forschung/Projekte/City_2.e/IVP_Projektbericht_City2e_Lange_Fassung.pdf. (Accessed, March 2019).
- Bache, I., Bartle, I., Flinder, M. and Marsden, G. (2015) *Multi-Level Governance and Climate Change. Insights from Transport Policy*, Rowman & Littlefield, London and New York.
- Becker, P. (2010) *Aufstieg und Krise der deutschen Stromkonzerne*, Ponte Press, Bochum.
- Bracher, T. (2011) Stadtverkehr in Schwedes, O. (ed) *Verkehrspolitik. Eine interdisziplinäre Einführung*, VS Verlag für Sozialwissenschaften, Wiesbaden.
- EEA – European Environment Agency (2018) *Trends and drivers in greenhouse gas emissions. EU greenhouse gas inventory*. <https://www.eea.europa.eu/themes/climate/eu-greenhouse-gas-inventory/eu-greenhouse-gas-inventory-2016/download.pdf.static> (Accessed, March 2019)
- Finger, M. and Audouin, M. (2018) *The Governance of Smart Transportation Systems: Towards New Organizational Structures for the Development of Shared, Automated, Electric and Integrated Mobility*, Springer Nature, Cham.
- Fischedick, M. and Grunwald A. (eds.) (2017) *Pfadabhängigkeiten in der Energiewende. Das Beispiel Mobilität (Schriftenreihe Energiesysteme der Zukunft)*, München.
- Givoni, M. and Banister, D. (2015) *Integrated Transport: From Policy to Practice*, Routledge, Oxfordshire.
- Hall, P. (2014) *Cities of Tomorrow. An Intellectual History of Urban Planning and Design Since 1880*, Wiley Blackwell, Oxford.
- ITF (2017) *ITF Transport Outlook 2017*, OECD Publishing, Paris, <https://doi.org/10.1787/9789282108000-en>. (Accessed, March 2019).
- Jessop, B. (2007) *The Future of the Capitalist State*, Polity Press, Cambridge.
- Matecki, C. and Schulzen, T. (2013) *Zurück zur öffentlichen Hand? Chancen und Erfahrungen der Rekommunalisierung*, VSA, Hamburg.
- Miller, P. and Rose, N. (2008) *Governing the Present: Administering Economic, Social and Personal Life*, Polity Press, Cambridge.

- Nilsson, K.H., Rickne, A. and Magnusson, T. (ed) (2012) *Paving the Road to Sustainable Transport: Governance and Innovation in Low-Carbon Vehicles*, Routledge, Oxon & New York.
- Nissen, S. (2002) *Die Regierbare Stadt. Metropolenpolitik als Konstruktion lösbarer Probleme. New York, London und Berlin im Vergleich*, VS Verlag für Sozialwissenschaften, Wiesbaden.
- Noel, L., Zarazua de Rubens, G. and Kester, J. (2019) *Vehicle-to-Grid: A Sociotechnical Transition Beyond Electric Mobility*, Palgrave Macmillan, London.
- Radkau, J. (2014) *The Age of Ecology*, Polity Press, Cambridge.
- Rauterberg-Wulff, A. (2008) 'Advantages of an integrated air quality control and noise abatement plan and its implementation - experiences from Berlin Transport', in Merritt, A.-S. and Hein, D. (ed) *Environment and Health: What Can Be Done to Improve Air Quality and to Reduce Noise in European Regions?* Pronet Workshop Report, 16-17, June 2008, Stockholm, Sweden.
- Shaw, J. and Docherty, I. (2014) *Transport Debate*, Policy Press, Bristol.
- Scheer, H. (2012) *The Energy Imperative: 100 Percent Renewable Now*, Earthscan, Oxon.
- Schuppert, G.F. (2017) *The World of Rules: A Somewhat Different Measurement of the World*, Max Planck Institute for European Legal History, Frankfurt Main.
- Schwedes, O., Ahrend, C., Kettner, S. and Tiedtke, B. (2011) *Die Genehmigung von Ladeinfrastruktur für Elektroverkehr im öffentlichen Raum. Policy-Analyse. Teilbericht des vom BMWi geförderten Projekts „IKT-basierte Integration der Elektromobilität in die Netzsysteme der Zukunft*. http://www.ivp.tu-berlin.de/fileadmin/fg93/Forschung/Projekte/e-mobility/Ergebnisbericht_Policy-Analyse__2_.pdf. (Accessed, March 2019).
- Schwedes, O., Kettner, S. and Tiedtke, B. (2013) E-mobility in Germany. White Hope for a Sustainable Development or Fig leaf for Particular Interests?, in *Journal of Environmental Science & Policy*, Vol. 30, no. 1, pp. 72–80.
- Schwedes, O. (2019) Object of Desire. The Electric Car in the Political Force Field, in Schwedes, O. and Keichel, M. (ed) *The Electric Car. Mobility in Transition*, Springer Natur, Cham (in print).
- Schwedes, O. (2019) Field of Innovation Transport, in Blättel-Mink, B., Ebner, A., Schulz-Schaeffer, I. and Windeler, A. (ed) *Handbook Innovation Research*, Springer Nature, Cham (in print).
- Stopher, P. and Stanley, J. (2014) *Introduction to Transport Policy. A Public Policy View*, Edward Elgar, Cheltenham & Northampton.
- Vanberg, V.J. (2001) *The Constitution of Markets: Essays in Political Economy*, Routledge, London.

Walks, A. (ed.) (2015) *The Urban Political Economy and Ecology of Automobility: Driving Cities, Driving Inequality, Driving Politics*, Routledge, Oxon & New York.

Wieland, T. (2009) *Neue Technik auf alten Pfaden? Forschungs- und Technologiepolitik in der Bonner Republik. Eine Studie zur Pfadabhängigkeit des technischen Fortschritts*, transcript Verlag, Bielefeld.