FernUniversität in Hagen

From Aarhus to Aachen

Necessary and sufficient conditions for local driving bans for diesel cars becoming a real option for German cities

Roadmen setting up signs for diesel driving bans in the city of Hamburg

Source: https://www.n-tv.de/politik/Hamburg-baut-Diesel-Verbotsschilder-auf-article20437185.html

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Abstract

Driving bans for diesel cars have either been adopted or are looming in 34 major German cities as of June 2019. This is the highly unlikely result of a political process that began in 2010. The paper – in a qualitative single case study drawing on 34 cases – analyzes this political process by applying PIDA, a theoretical approach that has been developed for explaining environmental policy results. The paper identifies four necessary conditions and one sufficient condition for the local driving bans having become a real option by now. The adoption of the European ambient air quality directive (1), the introduction of a right to sue – based on the Aarhus convention – for acknowledged environmental associations (2), the systematic utilization of this right by the Deutsche Umwelthilfe for its "fight for clean air" (3) and the striking failure to adopt alternative measures to significantly reduce noxious NO_2-immissions on all levels (4) qualify for necessary conditions. Whereas "Dieselgate" (opposed to what most observers claim) did not have a traceable effect on the policy-result, the way German administrative courts (and in particular the Federal Administrative Court) handled the legal cases filed by the DUH with a high emphasis on health protection and compliance with European law qualifies as a sufficient condition. On a general note, the case study demonstrates the high relevance of the European impact on German environmental policies and also displays some more general patterns with regard to the interplay of actors and institutions in bringing about public policies.

Content

1. Introduction[1]

In 2019 the adoption of local driving bans for diesel cars in 34 of Germany's major cities has become a real option and thus a crucial political issue. To be precise, by the time of writing[2] 5 cities (*Berlin*, *Hamburg*, *Stuttgart*, *Darmstadt* and *Mainz*) have already adopted such driving bans, while they are actually being implemented in *Hamburg*, *Stuttgart* and *Darmstadt*. In 6 cases, the city of *Aachen*[3] among them, driving bans have been mandated by courts, but the respective authority has appealed to the higher instance challenging the decision – and thus the driving ban. In 4 cities, *Munich* among them, the introduction of a driving ban has been mandated by a court in last instance but not implemented though, even though several penalty fines have been imposed. In 19 most recent cases, among them the city of *Hagen* where the *Fernuniversität* is located, the question if a driving ban has to be adopted is still in the decision-making process at the responsible courts (see Table 1). The aim in all cases is to reduce noxious NOx[4]-pollution and by doing so to make these cities (and Germany as a whole) comply with the NO_2-immission limits stipulated by the EU-directive 2008/50/EC. In 2018, 35 German cities exceeded the annual limit value of 40 microgram/m^3, 14 of which displayed even immission values above 50 microgram/m^3 (so called "intensive cities"; DUH 2019: 10-11; UBA 2018). Diesel cars below the standard of Euro 6d[5] are considered to be the major source of NOx-emissions[6] (European Commission 2015: 14; 2018). NOx is assumed to cause serious health damage to humans, ranging from respiratory illnesses to cardiovascular diseases and heart attacks (WHO 2013). The European Environmental Agency estimates 13.100 premature deaths for Germany in 2015 as a consequence of NO_2-exposure as a whole (EEA 2018: 64). Jonson et al. estimate more than 2000 premature deaths a year for Germany due to NOx-excess by diesel cars (Jonson et al. 2017: 7).

Among the instruments in transport and environmental policy driving bans are most intrusive in restricting the individual's behavior, while their effectiveness for reducing pollution is at least dependent on how they are constructed (e.g. DUH 2019: 7; Leopoldina 2019). Driving bans (at least if they concern relevant areas of the city and not only a street or two) have a strong unfavorable effect in two respects: For individuals owning and driving a diesel car (even relatively new cars with Euro-5-classification) that car is subject to severe devaluation: functional, because the owner cannot pass the driving ban areas with that car anymore; and financial, because the resale value of the car will

[1] I thank Paul Schnase, Mascha Liening and Robin-Philipp van Parijs for most valuable research assistance, Prof. Dr. Oliver Dörr for explaining the logic of court decisions to me, to Dr. Daniela Perbandt for helping me distinguish NOx and NO_2, and to Sarang Thakkar for critically reading the paper. Thanks to DUH for sharing some of their (preliminary) data with me. All mistakes are in my sole responsibility.

[2] There is a lot of movement in this field, thus I can only display the state of affairs at the point of writing which is June 9, 2019.

[3] I chose Aachen as a representative of the 34 cities in the title of this paper, because it starts – like the city of Aarhus – with double-A. Looking at the issue from a political/geographical angle, one could also mention Brussels, where the European legislation is made, and Leipzig, where the Federal Administrative Court is located.

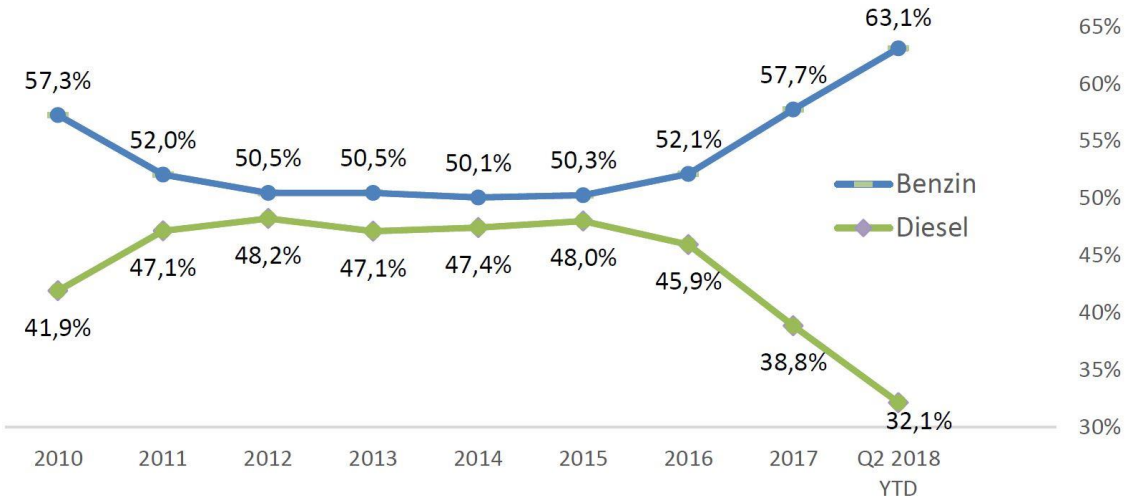
[4] NO_x-Emissions include NO_2 and NO. In the political discussion, both terms are used almost as equivalents. Technically, however, when we talk about emissions from cars, we deal with NOx, whereas within immissions we can identify NO_2, therefore the ambient air quality directive sets immission limit values for NO_2 (cf e.g. Jonson et al 2017).

[5] 46.5 Mio passenger cars are registered in Germany, 33 per cent of them are diesel-powered. Among these 15.2 Mio diesel cars, 63 per cent comply with Euro 5-6d (Leopoldina 2019: 45). Among utility vehicles the majority is diesel-powered.

[6] An *emission* is what is emitted by a plant or a car etc. An *immission* is what can be identified on a certain spot. While with gasoline cars with the help of catalysts NOx-emissions are converted, this is more demanding with diesel cars (Leopoldina 2019: 13).

decrease considerably (Bratzel 2018: 17). Because less affluent people will face greater problems to buy a new car, driving bans furthermore appear as a socially unjust measure. For the German automotive industry, the probability of driving bans being adopted throughout Germany results in a drastic breakdown of the market for diesel cars[7] (which strangely enough did not occur as a direct consequence of the diesel-scandal) (see figure 1).[8] Whether this is the beginning of the end of the diesel-technology as such or whether cleaner diesel-cars will be able to reconquer the market is an open question.

Figure 1: The development of the share of diesel cars among newly registered cars in Germany



Source: Bratzel 2018: 14

Because first, politicians would not upset their individual, diesel driving voters with such an intrusive measure and second, the automotive industry is a "holy cow" in Germany (see e.g. Bollmann & Töller 2018; Sternkopf & Nowack 2016; Traufetter 2019), the adoption of diesel-car driving bans was the most unlikely result of a political process that began in 2010. Such an unlikely result presents a *scholarly problem* whereas the number of premature deaths due to NOx-emissions excess constitutes clearly a *political problem*. Both problems provide a sufficient justification for selecting this issue for comprehensive analysis.

Why do we face a situation in which driving bans have been adopted and others can be expected to be adopted in the near future in a relevant number of cases? This is the question the present paper seeks to answer. The paper does not address the question of whether driving bans are an effective of efficient instrument or why driving bans have been adopted in some cities and not in others. The latter simply cannot be analyzed at the moment, because in most cities a final decision has not yet been reached. Furthermore, the paper does neither address diesel driving bans that have been adopted in cities outside Germany (e.g. Paris) nor lawsuits by environmental association in other EU member states (cf. DUH 2019: 6). Even though it is generally recommendable to look at the problem of NO_2 immissions not in an isolated way (Leopoldina 2019), but rather by considering the problem of

[7] So far driving diesel cars has been subsidized by the state by a lower tax rate on diesel fuel (Bratzel 2018: 24).
[8] This will make it much harder for car manufacturers to comply with EU-fleet targets for CO_2 since gasoline cars emit more CO_2 than diesel cars (Bratzel 2018: 18). Manufacturers will have to expand their share of electronic cars which have the potential to reduce NOx-emissions in cities.

PM_{10}- and CO_2 emissions in a comprehensive manner, this paper concentrates on the problem of (an excess of) NO_2 immissions because those are the reason why we have to deal with driving bans.

So far, scholarly literature has dealt with several aspects of our case, such as the use of the right to take legal action by environmental NGOs in Germany in general (SRU 2016; Schmidt & Zschiesche 2018), the implementation of the EU-ambient air quality directives (Cancik 2011; Gollata & Newig 2017), the quality of ambient air more generally (e.g. EEA 2018; Umweltbundesamt 2018), the role of diesel in German politics (Dudenhöfer 2017), the diesel-scandal (Bratzel 2018) and its management by the German Government in particular (Töller 2019a), the detrimental effects of high NOx-concentration on human health (e.g. WHO 2013; Jonson et al. 2017; EEA 2018; Wichmann 2018), and the role of NO_2-pollution in German cities as one reason amongst others to promote electromobiles (Bollmann & Töller 2018). Law scholars have debated in particular the role of the Federal Administrative Court in paving the way for driving bans (e.g. Franzius 2018; Mainka 2018; Scheidler 2018), Leopoldina has discussed the usefulness of driving bans (Leopoldina 2019).

This paper presents a theory-led qualitative case-study drawing on the comparison of all 34 cases of cities for which driving bans were either adopted or can be expected. Cases are reconstructed based on a systematic evaluation of primary sources (court decisions in particular), newspaper articles, documentations (e.g. DUH 2019), and a number of technical studies plus secondary literature from several disciplines. The paper applies the *"political process inherent dynamics approach" (PIDA)* as a theoretical approach that has been developed for analyzing political processes in environmental policy and explaining their results (Böcher & Töller 2015). For the purpose of this paper I apply this framework not only (as we did before) in order to identify causal factors and their interplay (e.g. Töller & Böcher 2018). The novel theoretical contribution of this paper is to distinguish necessary and sufficient conditions for the adoption of driving bans and to reflect more generally on the interaction of actors and institutions.

The paper proceeds as follows: in section 2 my theoretical tool, the "political process inherent dynamics approach" (PIDA) is briefly presented. In section 3, in a descriptive venture, the adoption of driving bans for German cities is laid out and systematized. Section 4 deals with identifying necessary conditions, addressing the legal context of the EU ambient air legislation (4.1), the introduction and implementation of the right of environmental groups to take legal action before courts (4.2), and the role of the Deutsche Umwelthilfe (DUH) which has been utilizing these legal opportunities in a specialized way (4.3). Section 4.4 argues that the failure of politics on all levels to adopt other, less intrusive and yet effective measures to reduce NO_2-immissions, constitutes a further necessary condition for diesel driving bans becoming a realistic option. In section 5 I discuss the role of Dieselgate and find that it is neither a necessary nor a sufficient condition for driving bans to become a real option. In section 6 I finally present my sufficient condition: the role of administrative courts all over Germany and how they decided the cases the Deutsche Umwelthilfe (DUH) put forward. In section 7 I analyze how my necessary and sufficient conditions interact (see also figure 3). Finally, in section 8 I conclude.

2. PIDA as a theoretical tool

Being aware of the strengths and weaknesses of usual theories and approaches for explaining environmental policy outputs, Michael Böcher and I started to develop the *political process inherent dynamics approach* (PIDA) in 2007 in a paper that aimed at explaining the choice and change of policy instruments in environmental policy (Böcher & Töller 2007). In 2012 we further elaborated on that aiming at explaining environmental policy results more generally (Böcher & Töller 2012a and 2012b). We presented that in an updated English version at ICPP Milan in 2015 (Böcher & Töller 2015) and applied the approach to several cases of environmental policies (e.g. Töller & Böcher 2018). PIDA is not a theory, but a theoretical framework, a tool that hints at factors that may play a role in the political processes and gives some ideas how to conceptualize these factors.

When we developed PIDA we started from the observation, that political decision-making-processes – at least in environmental politics – are neither stepwise, purely goal-oriented problem-solving activities in which the best instrument for a given problem is being looked for (as public administration and policy analysis tend to suggest) nor the mere aggregation of fully rational interests (as rational choice theories assume). Rather, inherent dynamics, coincidence and unintended consequences play an important role in driving the political processes, while there certainly are elements of rational interest mediation and also goal-oriented problem-solving. Thus our understanding of the nature of political processes draws strongly on the garbage-can model developed in 1972 by Cohen, March and Olsen. Accordingly, political processes are "organised anarchies", in which preferences are fuzzy and inconsistent, interdependencies are unclear and participation in decision-making processes is fluid (Cohen et al. 1972: 1). As in a garbage can (before the era of waste separation), problems, solutions and decisions run into each other rather by chance, "a collection of choices looking for problems; solutions looking for issues to which they might be the answer; and decision-makers looking for work" (Cohen *et al.* 1972: 1).[9]

The second root of our approach is the early work of Elinor Ostrom, in particular her chapter with Larry Kiser published in 1982 on “three worlds of action” in which they model decision-making processes as being shaped by the interplay of five factors, namely “the decision-maker”, “the community affected by interdependent decision-making”, “events (or goods and services) that interacting individuals seek to produce and consume”, “institutional arrangements guiding individual decisions”, and “the decision situation in which individuals make choices” (Kiser & Ostrom 1982: 182). We were convinced by the idea of an interplay of several factors that helps best to analyze political processes and explain their results. However, while the Kiser/Ostrom-model is clearly based on rational choice assumptions, we decided to work with a different understanding of political processes as presented above. Like in the Kiser/Ostrom model we see actors (as decision-makers) and institutional arrangements as core factors. We merged the idea of the affected community and the events or goods that individuals seek to produce into a broader notion of problem structure. We included the decision-situation as a fourth factor and added “instrument alternatives” as a fifth factor since we realized

[9] If PIDA bears some resemblance with the multiple streams approach developed by John Kingdon (1984), this is because we based our considerations on the nature of the political process on the garbage can model – as did Kingdon. However, our approach is clearly distinct from Kingdons’s. First we do not think in “streams”. Second, institutions play a major role in our approach while the inobservance of institutions – in spite of its path breaking nature – is one of the major flaws of MSA.

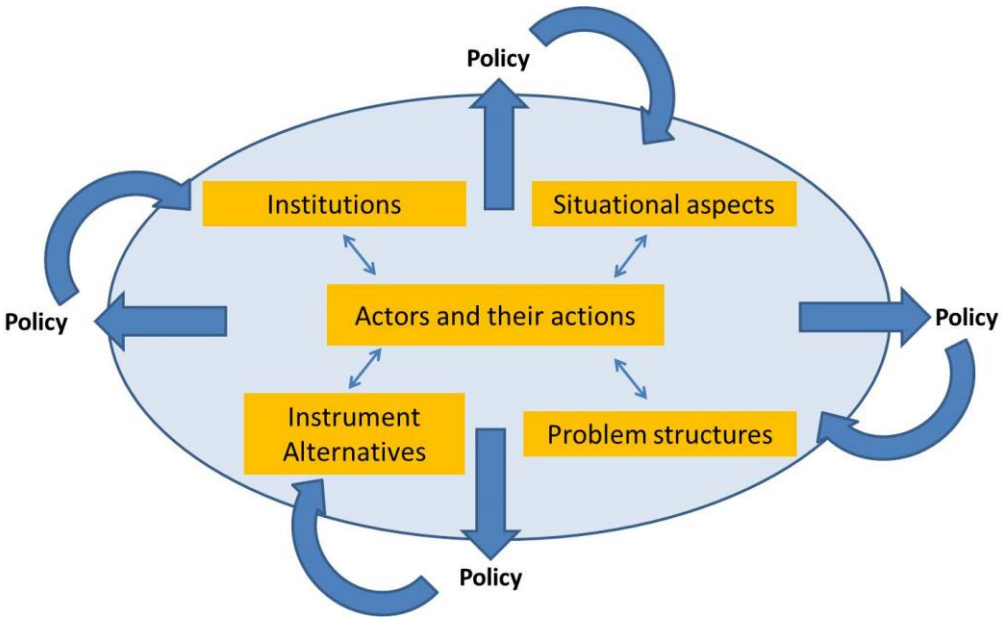
that for the choice of one policy option much depends on the (political, legal, technical) availability of other, alternative options.

Thus our model includes five factors each of which is subject of inherent dynamics which means that these factors will not necessarily be driven by a pure problem-solving or utility-maximizing logic, but by different, inherently dynamic logics. Furthermore these factors interact with each other in partly unforeseeable ways.

With regard to *actors* (individual or collective) we do not assume that actors are either fully rational utility maximizers or purely altruistic problem-solvers. Rather, actors may be driven by rational interests (yet under the condition of "bounded rationality", Simon 1972), professional standards, normative concerns, or ideologies (and party politics).

We understand *institutions* as formal and informal rules that define who is allowed to decide on what and according to which rules (Peters 2012). So far this is a pretty normal rational choice view on institutions. However, to look at institutions from an inherent dynamics approach means for instance to understand that actors are not fully rational by foreseeing the full implications of an institutional arrangement they favor (an idea that certainly has been put forward by historical institutionalism, cf. Peters 2012)). What is more, actors (even governmental actors) might develop strategies to informally evade from formal rules (e.g. Töller 2018).

Figure 2: The political process inherent dynamics approach (PIDA)



Source: Böcher & Töller 2015

The *problem structure* is an immensely important factor in any decision on policies. Whether a problem is apparent and can be perceived by everyone, or is dependent or the mediation of science (as climate change) or the measurement of monitoring stations (as NO_2 immissions), may make a difference for the political opportunity to address the problem. Similarly it can be relevant if the certainty of the consequences, e.g. of harmful health effects, are controversial or not. What is more, if the problem is a health-problem for a definable group of people or of the possible harm is not attributable, if victims or polluters are poor or rich, if a problem is geographically evenly distributed or con-

centrated on a few areas (e.g. Töller and Böcher 2018) may play a role as well. Thus some problems are easily defined as problems (e.g. dependent on whether they are easily to solve) while some never are.

Especially in environmental politics much depends on the availability of *alternative instruments*. From our perspective we are not interested in determining first-best or second-best instruments as economists are. Rather, we observe that a number of instruments that economists recommend as first-best (effective or efficient) are not chosen, not only because they are against powerful interests (as rational-choice theories suggest), but also because they are rejected for ideological reasons (e.g. the greens have for a long time rejected economic instruments because they do not morally condemn pollution, as do regulatory instruments) or because they appear politically risky because we have little experience with them.

Finally, *situational factors* refer to the fact that policy processes are often influenced by factors that might not be related to the issue at stake or to the quality of its solution. E.g. sudden incidents may attract or distract public attention, change a dominant perspective or support or weaken politicians in favor of or against a particular project. Although this might not be related at all to the issues at stake, it can influence the course of the political process and its result.

By spelling out these five core factors our understanding of political processes is not totally opposed to what other approaches suggest, but with regard to the question what drives the process it is less based on the idea of pure problem-solving or interest aggregation, but sees political processes as what (we think) they are: driven by inconsistent preferences, unclear interdependencies and fluid participation in decision-making processes, ideologies, coincidence and unintended consequences.

3. Driving bans in Germany in 2019

In this section I want to set out the phenomenon that requires explanation, the situation in which the adoption of driving ban has become reality or at least a probable option for 34 German cities.

3.1 Different types of driving bans

Driving bans can be distinguished along several lines. First, it is important to mention that the bans adopted or about to be adopted vary considerably in their range. As to the local range, in some cases the ban applies only to a number of streets (e.g. 2 in Hamburg[10], 11 in Berlin), while in other cases (e.g. Stuttgart) the ban applies to a zone that may cover the entire city (Scheidler 2018: 4). Whereas the latter will make diesel owners wish to replace their car, the former will rather induce them to evade the bans and take alternative routes. As to the technical range, i.e. the cars affected, in some cases only diesel Euro 4 are covered while in most cases Euro 5 and also gasoline 1 & 2 are included.[11] Finally, the bans vary according to the exceptions which they allow (e.g. for residents or local business). The difference that seems most important though, is the legal status of the ban. I.e. whether the ban has been adopted and if it is already being implemented, if it has been mandated by a Court but challenged by the public authority before a higher instance, mandated by a Court in the

[10] In the case of Hamburg it was criticized that the driving ban cures rather the measuring result (if at all) then the air quality since diesel cars will take different routes and deteriorate air quality there.

[11] If driving bans would apply for all diesel cars Euro 4 and 5, this would cover 75 per cent of all diesel cars which would be 11.4 Million cars (Leopoldina 2019: 45).

final instance but not been implemented or whether a possible ban is still the issue of an ongoing (first instance) procedure.

Thus, in the next paragraph I organize the cases into four groups with similar characteristics. All together we face driving bans or possible driving bans in 34 German cities.[12]

3.2 The legal status of driving bans

Effective or about to be effective driving bans (Type 1)

The first group covers five cities for which driving bans have indeed been adopted after court decisions taken. This is the case in *Hamburg* where in June 2018 the first driving ban was introduced. It includes a ban for diesel 4 and 5 cars on one major street on a length of 600m and a ban for vans only on a second street on a length of 1600 m (die Zeit 31.05.2018). Second, *Stuttgart* adopted a driving ban for diesel cars Euro 4 that has been implemented from January 2019 (and from 1st of April also applies to city residents) while the adoption of a driving ban for diesel Euro 5 cars is an issue of a further legal suit. *Darmstadt* has been implementing a driving ban for diesel cars up to 5 and gasoline cars up to Euro 2 since June 2019 (FAZ 14.12.2018). *Berlin* will implement a ban for diesel cars Euro 4 and 5 covering 11 street sections from first of July on. Finally *Mainz* adopted a driving ban for diesel cars that will apply from September on, if until then compliance with the 40 Microgram/m3 cannot be achieved (Allgemeine Zeitung 04.12.2018).[13]

Table 1: The legal status of driving bans in 25 German cities (June 2019)

Type	Type 1: Driving ban adopted/ implemented after court decision: 5 cases	Type 2: Driving ban challenged before a higher instance: 6 cases	Type 3: Driving ban mandated by a court (last instance) but not implemented: 4 cases	Type 4: Driving ban before courts: 19 cases
Cities	• Hamburg (active since 6/2918) • Stuttgart (active since 1/2019) • Darmstadt (active since 6/2919 • Berlin (7/2019) • Mainz (9/19 if NO_X-limits exceeded)	• Aachen • Köln • Bonn • Gelsenkirchen • Essen • Frankfurt	• Munich, • Limburg • Reutlingen • Düsseldorf	• Bielefeld • Bochum • Düren • Dortmund • Hagen • Oberhausen • Paderborn • Wuppertal • Baknang • Esslingen • Heilbronn • Ludwigsburg • Marbach • Offenbach • Hannover • Oldenburg

[12] Not among these 34 cities, is the case of Wiesbaden, where a number of demanding measures improved NO_2-immissions to an extent that allowed for refraining from the adoption of driving bans (DUH 2019: 5). In Halle, NO_2-immissions reached the limit surprisingly without adopting any measures (DUH 2019: 27).

[13] Once a driving ban is being implemented, a major practical problem – which cannot be discussed here in more detail – is that compliance with driving bans is difficult to control. This is the case because there is no labelling of cars according to their NOx-emissions, because the federal government failed to do introduce the co-called "blue badge" which would allow for identifying cars without controlling the papers (Töller 2019a).

				• Freiburg • Kiel • Würzburg

Driving bans challenged before a higher instance (Type 2)

For six cities a court has mandated a driving ban to be adopted. However, the respective authority (usually the Land) has appealed to a higher instance to challenge the ban. This is the case for several cities in North Rhine-Westphalia, namely *Aachen*, *Cologne*, *Bonn*, *Gelsenkirchen*, *Essen*, and *Frankfurt* (Hesse).

Driving bans mandated by a court but not adopted (Type 3)

Even though a court decision of the final instance must be complied with, the court has limited means to force compliance. All it can do actually is to impose a penalty fine on the government unit responsible. In a number of cases final court decisions commanded that a driving ban to be adopted has not been implemented – in spite of considerable penalty fees that were imposed. This is actually the case in *Munich*, *Reutlingen*, *Limburg*, *Düsseldorf* (and in addition in *Stuttgart* with regard to Euro 5, see below).

Driving bans still issue of Court decision (Type 4)

The largest number of cases falls into this category: 19 cities in particular in North Rhine-Westfalia, Baden-Württemberg, Hesse, and Lower Saxony are still expecting court decisions. Due to a change in the access-to-justice-act, for all suits filed since June 2nd, 2017, courts of higher instance are in charge of suits against clean ambient air plans.

4. Necessary conditions

In a first step I will now present four factors that might qualify as a necessary condition for driving bans being a real option. This means that if they had not been existent, we would not face driving bans in 34 German cities today. Yet they are not sufficient for this event to happen. These factors are the European legislation on ambient air quality (section 4.1), the right of environmental NGOs to take legal action (section 4.2), both falling into the category of institutions; and how did the Deutsche Umwelthilfe (DUH) as an actor use these institutional settings (section 4.3). Finally I address the failure of alternative instruments (section 4.4).

4.1 Institutions I: European legislation on ambient air quality

The field of environmental protection in general displays a high degree of Europeanization. This means that a majority of policy decisions relevant for EU member states are decided on the EU-level – under participation of member states representatives. Thus, national policy making in this field is strongly influenced by the European rules (Töller 2019b). Between 1996 and 2008 the European Union adopted a series of directives for reducing the concentration of several pollutants, in particular particulate matters (PM_{10}) and nitrogen dioxide (NO_2) in ambient air (Cancik 2011: 283). In directive 2008/50/EC (ambient air quality directive) adopted in 2008, a limit threshold of 40 microgram/m^3 was set for yearly average NO_2-immissions which became applicable from January 2010 on (O.J. No. L 152/30). Implementing authorities are obliged to install measurement stations and to perform measurements of various pollutants.[14] Once zones or agglomerations exceed pollutant limit values for

[14] Today there are more than 650 measurement stations in Germany (Leopoldina 2019: 18-24).

NO_2, air quality plans have to be set up containing adequate measures to make sure that the period of exceeding the limit is kept as short as possible (Art. 23 of directive 2008/50/EC).

The setting of a supranational European Union implies that EU law has to be implemented within all member states. This means, among other things, that directives have to be transposed into national law and that all authorities on all state levels have to apply European law (Krämer 2016). Due to Germany's federal structure the implementation of EU law is generally a demanding task, because at least part of the legislative competences and most of the administrative competences lie with the 16 states (Länder). In the case of the implementation of the air quality directive, a complex multi-level structure emerged (Gollata & Newig 2017). First, the federal immission protection law (BImschG) was amended by adopting the 39th regulation on the federal immission protection law (BImschV), shifting the policy focus from PM_{10} reduction to the reduction of NO_2 (Cancik 2011: 287). The further implementation of this piece of federal legislation, namely the responsibility for setting up air quality plans, lies with the Länder. The implementation structure within the 16 Länder, however, is complex and diverse.[15]

In a study published 2017, Gollata & Newig found 137 air quality and action plans in Germany (2017: 1309) but were unable to identify cities (or zones and agglomerations) which should but did not have such plans (1317; DUH 2019). Whereas the NO_2-immissions altogether have decreased since 2010 (Leopoldina 2019: 12), the limit immission values continued to be exceeded in quite a number of cities: In 2017 there were 45 German cities in which the annual limit value of 40 microgram/m^3 was exceeded, whereas this number dropped to 35 in 2018 (UBA 2018). Yet 14 of these still displayed even immission values above 50 microgram/m^3 (DUH 2019: 10-11; UBA 2018).

The non-compliance with European law (meaning either delayed, inadequate or non-translation into national law or the non-application of the rules "on the ground") is a common feature in environmental policy (Krämer 2016). In such cases the European Commission can take member states to the European Court of Justice (ECJ) by way of the infringement procedure stipulated in Art. Art. 258 II of the Treaty on the Functioning of the European Union (TFEU). In the case of non-compliance with the NO_2-immission limit values of the ambient air quality directive, the European Commission took first steps against Germany (and other member states) by sending a letter in June 2015. In this letter the Commission complained that Germany, in spite of having adopted air quality plans and other measures to reduce NO_2-immissions, violates its duties resulting from Art. 23 (1) of the air quality directive, in particular the duty to keep periods of noncompliance as short as possible (European Commission 2015). In February 2017 the European Commission sent a "reasoned opinion" to the German Government as a first step of an infringement procedure (European Commission 2017) because of the "persistent breaches of NO_2 limit values" in 28 cities. In January 2018 the Commissioner in charge invited the member states with a problematic compliance to Brussels – as a last chance to demonstrate their strategies to cope with the problem and thus to avoid an infringement procedure (European Commission 2018a). But the federal environmental minster, then Mrs. Hendricks, failed to

[15] While in some Länder the environmental ministry is in charge of setting up the air quality action plans (e.g. Hesse, Bavaria, Schleswig-Holstein, the city states Berlin, Hamburg and Bremen), in some other Länder an administrative layer that others do not have is in charge: the "Mittelbehörden" (mediation authorities) that are representing the Land on the local level. E.g. in NRW these are five "Bezirksregierungen" whereas in Baden-Württemberg there are four "Regierungsbezirke". In a third group of Länder the local level is in charge of the plans (e.g. in Lower Saxony) (cf. Gollata & Newig 2017: 1320; DUH 2019: 9-10).

convince the Commission that Germany will adopt adequate measures to secure compliance with the air quality directive (Handelsblatt January 31, 2018). Thus in May 2018 the European Commission finally initiated an infringement procedure against Germany, France, and the United Kingdon[16], for continuously not complying with the NO_2-limit values of the ambient air quality directive and for not taking adequate measures (European Commission 2018b). For Germany, the Commission criticized the non-compliance in 26[17] cities, in particular in *Berlin*, *Munich*, *Hamburg*, *Cologne*, *Stuttgart* and *Düsseldorf*.

If the Court of Justice will eventually find that Germany violates Community law, fines of several billion Euros can be imposed. However, procedures before the ECJ take their time. And even if Germany was convicted in the end, changing the situation in the 34 cities does not lie with the federal government, but with the Länder again which demonstrates how difficult it is to reach compliance with European Law this way.

To conclude, without the legally binding limit values stipulated by the ambient air quality directive, plus the obligation of Member States to set up air quality plans in case of noncompliance with NO_2-limit values and to adopt adequate measures to keep periods of noncompliance as short as possible, no driving bans in German cities would have been possible. ***Thus the adoption of the respective European legislation is the first necessary condition for driving bans in German cities to become a real option.***

4.2 Institutions II: The right of environmental NGOs to take legal action

In 1998 in the Danish city of *Aarhus* the so-called *Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters* was adopted. The aim of the convention, which was the result of a pan-European process at UNECE (United Nations Economic Commission for Europe) level, was to strengthen the participation rights of civil society in the field of environmental protection. As an international treaty it established important rights for citizen participation in this field, in particular access to environmental information (Art. 4), public participation in environmental protection (Art. 6-8), and finally and of relevance for our case here, access to justice in environmental matters (Art. 9). According to Art. 9 of the Aarhus Convention legal remedies for individuals and environmental organizations must be provided in case of denial of access to information, decision-making processes subject to public participation and, in general, violations of environmental regulations. For EU Member States, the transposition of the convention occurred in two steps. In May 2003 the European Union adopted Directive 2003/35/EC "providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment". Art. 4(4) of this directive obliges Member States to grant "members of the public concerned (…) access to a review procedure before a court of law to challenge the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of this Directive." This stipulation had to be transposed into national law by all Member States by June 2005.[18]

[16] 13 other member states had been taken to court before.

[17] This number refers to the Commission's data for the year 2016. Meanwhile the data for 2017 and even 2018 have discovered more cities with NO_2-immissions above the limits (UBA 2018).

[18] See e.g. van den Broek & Enneking (2014) on the implementation of this stipulation in the Netherlands and Fasoli (2013) on Italy.

In Germany, environmental associations traditionally had no right to take legal action in situations in which – e.g. when granting admissions in the context of emission- or water protection law – environmental concerns had not been given adequate consideration (so called "Verbandsklagerecht", right of associations to take legal action). The reason for this lies in a German legal principle according to which in general only persons that have been impinged upon their own rights are allowed to take legal action (SRU 2016: 4). Whereas this legal principle had already been weakened to some extent when in 2002 recognized nature conservation associations were granted the right to go to court, the transposition of the above mentioned European directive required even more fundamental changes to German law. The "Umwelt-Rechtsbehelfsgesetz" (Law on access to justice in environmental matters) that came into force in 2006 stipulated that so-called "recognized environmental associations" were given the right to take legal action before courts. However, this right remained rather limited in the beginning: the associations were allowed to take legal action only if regulations could have been violated, that serve the protection of the environment, constitute rights of individuals and would be relevant for the challenged decision (Schmidt & Zschiesche 2018: 7). In 2011 this rather restrictive way of transposing the European directive into German law was successfully challenged before the European Court of Justice[19]: In the famous "Trianel Decision" the European Court of Justice held that the German rules violated European law (Case C-115/09).[20] Thus in 2013 the Umwelt-Rechtsbehelfsgesetz was revised. Now associations were granted the general right to take legal action against any violation of regulations related to the protection of the environment (Schmidt & Zschiesche 2018: 7). A further decision of the European Court of Justice, holding that the strict preclusion rules[21] in the German law did not satisfy the needs of an encompassing and effective access to justice (Case C-137/14)[22], caused a further extension of the environmental associations' rights in 2017: now environmental associations may also file law suits against measures against which they had not objected before (BGBl. I No. 32, 1st of June 2017: 1298).

To conclude, without the Aarhus Convention and the transposition of its article 9 into first European and then German law, and without the stepwise extension of the legal clout of the environmental association's rights by the European Court of Justice, no driving bans in German cities would have been possible. ***Thus the right of environmental NGOs to take legal action as rooted in the Aarhus Convention and its stepwise incorporation into German law qualify as the second necessary condition.***

4.3 Actors I: The role of the Deutsche Umwelthilfe (DUH)

Only actors can act, but they do so under institutional conditions. While the comparably new right of environmental NGOs to take legal action has been utilized by many of the almost 300 recognized environmental and nature protection associations[23] as one strategy amongst others (cf. Schmidt & Zschiesche 2018), it was only the Deutsche Umwelthilfe (DUH), that specialized in utilizing the right

[19] I conceptualize the ECJ here as part of the EU institutional setting because the ECJ's judgements are important, but not in the main focus pf my interest. It would be a different option though, to distinguish the ECJ as an actor from the legal (i.e. institutional) setting.

[20] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A62009CJ0115

[21] A preclusion rule implies that legal action against a fact that had not been put forth in the admission procedure is not allowed (SRU 2016: 9).

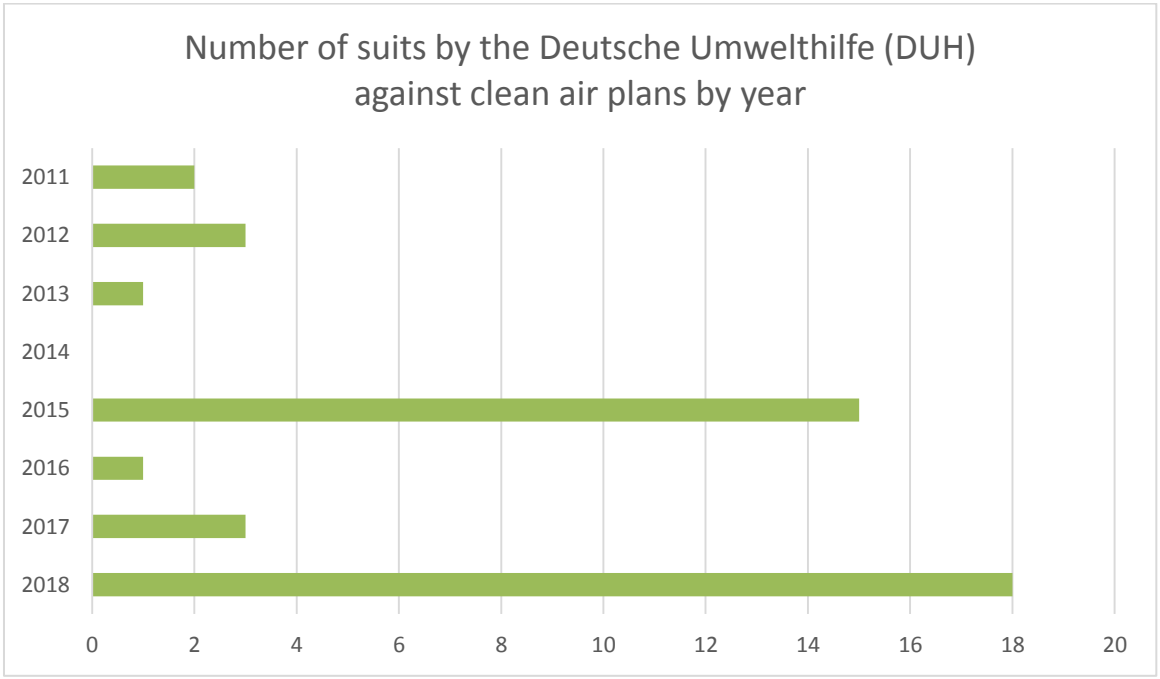
[22] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1557848552554&uri=CELEX:62014CJ0137

[23] By the end of February 2018 113 environmental associations were recognized on the federal level whereas 182 were recognized on the Länder level, which adds to 295 (Schmidt & Zschiesche 2018: 17).

to take legal action for a systematic "fight for clean air" (DUH 2019). The DUH, funded in 1975, is a rather untypical environmental association, being based much more on external funding[24] and professional staff than on membership – as most other environmental NGOs are (SPON November 21, 2018[25]; Tagesschau April 1st, 2019[26]).

Starting from the observation that the yearly average limit values for NO_2 were exceeded in quite a number of German cities on a regular basis, in July 2011 the DUH started taking authorities in charge of the air quality plans (see section 4.1) to court. In all cases DUH argued that the respective air quality plan did not provide adequate measures to reduce the NO_2-immissions in the respective urban area and thus put the health of their citizens at risk. In many (but not in all) cases the DUH demanded driving bans to be adopted. I will not deal with all of the 37 lawsuits that the DUH filed in detail, but rather display the initiated procedures in temporal context (see figure 2) here. In Par. 5 I will show what the courts did with these suits.

Figure 2: Law suits "for clean air" filed by DUH



Source: Data provided in DUH 2019

In figure 2 we see that between 2011 and 2018 DUH initiated legal suits before administrative courts against air quality plans in 43 cases altogether.[27] Furthermore, there was one case (Hamburg) in which it was the Bund für Umwelt und Naturschutz (BUND) that took legal action in 2013 and won in 2015 (see sect. 5). This was the legal basis for the driving ban adopted in Hamburg in 2018.

[24] The DUH has been criticized, among other things, for receiving donations from Toyota (SPON 21.11.2018).
[25] https://www.spiegel.de/wirtschaft/soziales/deutsche-umwelthilfe-wer-steckt-hinter-der-organisation-die-dieselfahrverbote-erstreitet-a-1239713.html
[26] https://www.tagesschau.de/inland/deutsche-umwelthilfe-101.html
[27] The difference between the number of 43 suits altogether and the number of 34 cities differs because in some cases there were more than one suit for one city, whereas one suit was shut down whereas in one case it was not the DUH that filed the suit.

Thus without those legal actions taken by the DUH in the first place, driving bans in German cities would never have become a real option, ***which means that the activities of the DUH (as long as no other environmental group would fulfil this function) constitute the third necessary condition.***

4.4 (The failure of) alternative instruments

Seen from a normative angle, driving bans are clearly second-best options for various reasons. In terms of goal attainment, their potential performance is disputed as long as they are constructed in an isolated manner, because they might rather shift pollution instead of seriously reducing it (Leopoldina 2019: 10).[28] With regard to their effect on addressees, driving bans are – as prohibitions generally – highly intrusive and socially imbalanced by devaluating diesel cars, no matter if their owner can or cannot afford to buy a new car.

According to PIDA, the (political, technical, ideological etc.) availability of alternative instruments may have had a major influence on the situation which we want to explain. There are quite a number of alternative instruments for reducing NO_2-immissions that could have been adopted on various levels – instead of driving bans. Some measures were indeed adopted (but did not achieve the goal of significantly reducing NO_2-immissions) while on all levels responsible actors failed to adopt such measures that would have been adequate to effectively reduce NO_2-imissions. In this section I will first present which alternative measures have been debated and then briefly address the reasons for the failure to adopt these alternative measures.

It should be mentioned, that as major settings of decision-making there were five so-called "diesel-summits". After the administrative court of Stuttgart had decided in July 2017 that driving bans must be adopted in Stuttgart, between August 2017 and November 2018 five "diesel-summits" took place for which the Federal Government (more precisely the Minister of the Environment and the Minister of Transport) invited car manufacturer CEOs, prime ministers of those Länder with relevant automotive industry plus majors of those cities with particular NO_2-problems as well as car manufacturers' associations, the association of municipalities and the trade unions and employees of the automotive sector. Consumers and environmental protection associations were not invited, however. The declared aim of those summits was to prevent the adoption of driving bans (SPON August 2nd, 2017). There are three groups of measures that have been debated and in part adopted at various levels.

Alternative local measures to improve the air quality

A first group of measures is located at the local level. Since the NO_2-imission limits came into force, most municipalities have adopted some measures to reduce NO_2-immissions excess. Among these are measures to improve traffic management, speed limits, the construction or improvement of ring roads, and measures to improve, expand and electrify public transport (DUH 2019: 11-44; Leopoldina 2019: 49- 50).[29] Gollata and Newig in their analysis of 137 air quality plans adopted for German cities found that the most popular measure (included in 72 per cent of the plans) was to improve the traffic flow, to expand public transport (43 per cent), and to introduce low emission zones (41 per cent) (Gollata & Newig 2017). However, in most cases these measures did not succeed in lowering pollu-

[28] A major criticism expressed by Leopoldina refers to a too narrow focus on NOx while ignoring the problems of particulate matter and CO_2 (Leopoldina 2019: 10). E.g. simply replacing diesel cars by gasoline cars would probably increase CO_2-emissions. Altogether a more systemic transition of the entire transport sector ("Verkehrswende") seems to be required (Leopoldina 2019: 10).

[29] The court decisions referenced in section 6 give a precise impression of the measures adopted.

tion below the threshold, as various studies and documentations demonstrate (Diegman et al. 2014: 133-134; Gollata & Newig 2017: 1318; DUH 2019: 11-46). Rather, in many cases compliance could not be expected before 2020 to 2024.

In the context of the diesel-summits in 2017 the "Sofortprogramm saubere Luft" (immediate action program for clean air) was set up, underpinned with 1 Billion Euro (25 per cent of which was expected to be paid by the automotive industry) and augmented to 1,5 Billion in December 2018 (SZ 04.12.2018). One focus of the program was to refit public-transport-buses with SCRT- exhaust purification systems (e.g. for *Aachen*, DUH 2019: 11), to replace public and private transport vehicles with electronic cars, and to digitalize local traffic systems (Bundesregierung 2017).

Among the local – and somewhat surprising – technical solutions there are huge filters being tested recently in the city of Kiel. Like a vacuum cleaner, the machine should hoover 85 per cent of noxious substances out of the air. The city hopes to avoid driving bans by applying this technology (SPON January 11, 2019).

Alternative systemic approaches to regulating transport in cities

A congestion charge, as has been applied in a number of major European cities, such as London, Stockholm, or Oslo, has not been applied (or even seriously discussed) in German cities so far. However, the concept was advocated by DUH (DUH 2019: 8) and recently by a number of economists as an alternative to driving bans (RWI 2019; Leopoldina 2019: 49). It would be introduced stepwise and motivate citizens to use public transport or a bike instead of his or her car. The size of such a charge would be dependent on the distance a car covers, and the pollutants that it emits. It appears to be less intrusive and gives more room for manoeuvre to individuals with low income (RWI 2019). Local communities would gain additional revenues that could be spent for improving public transport or bike paths. The money could also be spent in order to socially absorb the costs for low income households, e.g. by subsidizing public transport tickets for this group of people. The scholars argued that according to a recent survey such a congestion charge would enjoy a much higher acceptance among the population than driving bans (RWI 2019: 4).

Technical solutions related to diesel cars

As the far too high NOx-emissions of diesel cars were obviously a major reason for the failure to reduce NO_2-immission excess, fixing this deficit has been the focus of the debate since Dieselgate and especially so with driving bans looming. We can distinguish proponents of a hardware-solution from supporters of a software-solution (Leopolidna 2019: 12). Choosing a hardware solution would mean to refit diesel cars with a catalyst. Experts discussed the technical effectiveness (NOx-reduction of up to 70 per cent[30]) and side-effects (e.g. higher fuel consumption implying higher CO_2-emissions) (DERC 2018; Leopoldina 2019: 48). The costs of hardware updates were estimated between 1.400 and 3.300 Euro (DUH 2019: 7; DERC 2018: 11). Environmental associations and other actors demanded that car manufacturers were obliged to recall all Euro 5 and 6 diesel cars to install a urea-powered SCR exhaust purification system (DUH 2019: 6). However, on the first diesel summit in August 2017 car manufacturers offered to conduct software updates for about 5 Mio diesel cars (the cost of this is about 100 Euro per car) and promised that this would reduce NOx emissions between 25 and 30 per cent and make driving bans unnecessary. Experts doubted this and demanded hardware solutions to

[30] https://www.adac.de/rund-ums-fahrzeug/abgas-diesel-fahrverbote/dieselkauf/hardware-nachruestungen/?redirectId=quer.mwe.scr.

be carried out by the manufacturers (SPON 02.08.2017; die Zeit 02.08.2017). The federal government itself was split. While the transport minister, a Bavarian conservative, rejected a hardware solution for a long time, the environmental minister, a social democrat, demanded a hardware solution to be financed by the car manufacturers from the outset. After more than a year of difficult negotiations, in October 2018 (and shortly before elections in Bavaria and Hesse), the Government announced that a solution had been found (SZ 02.10.2018). Citizens who live in one of those 14 cities with the highest NO_2-immissions (and possibly in other cities for which driving bans could be adopted) and whose diesel EU4 or EU5 cars do not comply with an emission-limit of 270 mg NOx, will have a choice between two options: they can either take advantage of an exchange program including high discounts and buy a new (or used) car. Or they have the hardware of their car refitted (Süddeutsche Zeitung October 2nd, 2018[31]). For the latter point the government expressed that they expect car manufacturers to pay up to 3000 euro for each car. Yet in fact only Volkswagen and Daimler agreed to do so (Manager Magazin 08.11.2018) and so far there are no admitted technologies for refitting[32]. Furthermore, the government volunteered to pay half a million Euro for the hardware-refit of light duty commercial vehicles (SZ 04.12.2019). Thus, the Government failed to force the car manufacturers to effectively take responsibility for air quality.[33]

Modifying the limit value

In April 2019 the 13th amendment of the Federal immission protection act (BImSchG) came into force. With this amendment the federal legislator, following the governing majority as it is common in parliamentary systems, stipulated that driving bans would only have to be adopted if the excess of the limit value would be 50 microgram NO_2 per m^3 air or higher, where as of now this is the case for values above 40 microgram (Leopoldona 2019: 42). However, a number of administrative courts rejected this rule in their subsequent court decisions. E.g. the Administrative Court (Verwaltungsgerichtshof) of Mannheim, when dealing with the question of diesel-driving bans for the City of Reutlingen, decided that this amendment is a violation of European law (SPON April 16, 2019; Leopoldina 2019: 42).

Concluding this section we can identify a striking failure to adopt alternative measures that would be able to reduce NO_2-immission excess on all federal levels – from the local level to the Länder and the federal level. This phenomenon itself requires explanation to an extent that cannot be given within the framework of this paper. One factor has to do with human psychology: for a long time many local actors pushed aside the unpleasant fact that the gap between legal standards and real immissions would cause trouble sooner or later. However, drawing on the factors suggested by PIDA we can subsume that there are in particular three more factors responsible for this failure.

The first factor has to do with problem structure. The problem structure of NO_2-immissions displays a strong bias in terms of involved interests and their chances to be organized and represented. The group of polluters (i.e. drivers of diesel cars) is easily to define and – as members of auto-clubs (such

[31] https://www.sueddeutsche.de/wirtschaft/diesel-kompromiss-bundesregierung-1.4153883

[32] https://www.adac.de/rund-ums-fahrzeug/abgas-diesel-fahrverbote/fahrverbote/dieselfahrverbot-faq/.

[33] A different technical option is to replace combustion motor cars with electronic cars. Since 2015 electro cars have increasingly been discussed as a solution for the problem of NOx-excess in cities. Whereas in terms of climate change they can only be as climate-friendly as the national electricity-mix allows, electric cars are indeed a means to reduce local pollution. However, as Bollmann and Töller show, the German federal government failed massively to increase the number of e-cars (Bollmann & Töller 2018).

as the ADAC), protesters and in particular as voters – can clearly and effectively express their preference, not to have their liberty restricted by a driving ban. On the contrary, the people who suffer from health problems caused by NO_2-immissions will mostly not know why their asthma has worsened or what added to their heart attack. Thus, victims of NO_2-immissions are neither organized nor represented in the political process.

The second factor is the enormous political influence of the automotive industry being a core actor in all of these political processes. The influence is exercised by the individual car manufacturers located in different parts of federal Germany and traditionally supported by the respective Länder governments (e.g. Baden-Württemberg and Lower Saxony), no matter which political color they have (Töller 2019a), and by the association of the German car manufacturers (VDA) which maintains close relations with the Federal Government (Bratzel 2018: 30; Loer & Töller 2019; Töller 2019b; die Zeit 25.04.2019). There is a long tradition that any government Germany ever had would support this branch – which stands for 800.000 Jobs in all over Germany – and would protect this industry from too high burdens – either by national or European policies (see Sternkopf & Nowack 2016; Töller & Böcher 2017; Bollmann & Töller 2018, Traufetter 2019).

Finally, the third factor is the implementation structure (which again refers to the role of institutions). As pointed out in par. 4.1 the responsibility for applying the standards and rules of the ambient air quality directive varies considerably between the Länder. What is more, responsibility seems to have been diluted to levels where the necessary resources to implement far-reaching modifications, such as to exchange the public transport busses and to install electro buses are lacking.

When I address the role of German administrative courts in part 6, it becomes apparent that the courts would not have decided that driving bans are suitable instruments and can or even must be adopted if on all levels more adequate and effective instruments had been chosen – from the beginning. ***Thus the failure to adopt alternative measures addressed in this paragraph constitutes a further necessary condition for driving bans becoming a real option for 34 German cities.***

5. Situational factors: Dieselgate. Neither necessary nor sufficient

With the so-called emission-scandal (or Dieselgate) that began in September 2015 in the US, it became apparent also in Germany that diesel cars produced by Volkswagen emitted amounts of NOx and CO_2 far above the allowed limit values[34] and that car technicians had manipulated testing software so that the real amount of emissions was disguised (European Commission 2018: 13). Later it turned out that also with Audi, Porsche, Daimler and BMW cars there was a discrepancy between test and real emissions so that the use of similar software appears highly probable (Bratzel 2018: 19). With regard to NOx emissions these have been emitting four to seven times more in on-road driving than in type approval tests (Jonson et al. 2017). The scandal and what became known by and by did not really change any facts concerning NO_2-excess and the causal role of diesel-cars for this excess. It had already before September 2015 been known that diesel cars were the major source of NO_2-immissions, as e.g. the complaint filed by the European Commission in June 2015 demonstrates (European Commission 2015). The scandal rather changed the way people (and media) looked at the problem. Before Dieselgate, NO_2-excess had been discussed in the media as a problem occurring in *Hamburg*,

[34] This could have been known before, as several statements and studies demonstrate (cf. Bratzel 2018: 23).

Aachen, *Cologne* or *Stuttgart*. Since September 2015, the problem of NO_2-excess has increasingly been discussed as a national problem, and the reason for this problem was now addressed (Bollmann & Töller 2018: 119): diesel cars emitted much more NOx than was allowed. Thus, the share of diesel cars in causing this problem was much higher than had been assumed before (DUH 2019: 4). Only then the public related the NO_2-excess in German cities to the much too high NOx-emissions that even rather new diesel cars displayed. Media attacked the car manufacturers fiercely (Bratzel 2018). However, even though in Germany the public indignation with the automotive industry was immense, this did not lead to the government making them effectively responsible for the NO_2-excess (e.g. Bratzel 2018: 19-21). If at all, the willfully illegal practices of the car manufacturers and their attempts to obfuscate what they did may not have propitiated the administrative judges who had to decide on the DUH's suits.[35] Thus, beyond such "atmospheric effects" Dieselgate did *not* have any traceable impact on the situation which we try to explain, which is somewhat surprising as many observers do relate Dieselgate more or less directly to the driving bans (e.g. Bratzel 2018: 15; RWI 2019; Leopoldina 2019).

6. Sufficient condition: German Administrative Courts as Actors

In this section I argue that the way the administrative courts in Germany handled the suits filed by DUH (and BUND in one case) qualifies as a sufficient condition for driving bans having become a real option. This means that the factor – if the necessary conditions are given – inevitably leads to the situation in which we face driving bans in 34 German cities.

In general, suits in which environmental associations challenge administrative decisions according to the rules pointed out in par. 4.2 have a much higher success rate than other administrative suits. Between 2012 and 2016 a share of 36.5 per cent of these suits was successful (as compared to 12 per cent among all cases), 12.1 per cent was partially successful and a bit more than half (51.5 per cent) ended unsuccessfully (Schmidt & Zschiesche 2018: 18). Suits against clean air plans – as far as they have already the issue of court decisions – have been successful in 100 per cent. So far for 17 out of the 34 cities mentioned above, court decisions were taken – yet in most of them not in the last instance (see table 1).

When the DUH began filing suits against clean air plans in 2011, the affected authorities challenged if the DUH was entitled to file suits against clean air plans. The first paradigmatic case in this regard concerned the City of *Darmstadt* in Hesse where limit value for NO_2-immissions was not complied with on a regular basis and there was no chance to reach compliance in the foreseeable future. Thus in February 2012 the DUH filed a suit against the ministry of the environment of the Land Hesse, the authority in charge of the air quality plan. On August 16, 2012 the Administrative Court of *Wiesbaden* decided that the air quality plan for *Darmstadt* was unlawful because it did not consider measures like low emissions zones or traffic restrictions. The Land would have to take necessary measures to meet the immission thresholds as soon as possible.[36] Now the Land Hesse, by way of "leapfrog appeal" (Sprungrevision) turned to the Federal Administrative Court, the highest administrative court of Germany, and argued that the DUH was not entitled at all to take legal action against an air quality

[35] Yet the courts in their decisions taken after September 2015 only rarely refer to Dieselgate.
[36] VG Wiesbaden, 4 K 165/12 WI.

plan.[37] The Federal Administrative Court in its much noticed judgement on September 5, 2013 rejected the revision and held – on a general note – that recognized environmental associations are indeed entitled to take legal action against ambient air quality plans.[38] In its decision the court referenced the "Slovak Brown Bear" judgement of the ECJ in 2011.[39] Accordingly national courts are obliged to interpret national law with regard to granting an effective access to justice as much as possible in accordance with Art. 9 of the Aarhus-Convention (SRU 2016: 10; Schmidt & Zschiesche 2018: 9). Had the Federal Administrative Court decided otherwise – that recognized environmental associations were not entitled to take legal action against ambient air quality plans – the DUH's fight for clean air would have come to a sudden end here.

In all of the 21 court decisions related to these 17 cities mentioned above, the respective administrative court held that the suit was not only admissible but also justified. That means in all cases that the responsible authority has to change the respective air quality plan and to provide necessary measures to keep the noncompliance with the NO_2-immission-limits as short as possible. This sentence referring to the ruling of Art. 23 (1) 2 of directive 2008/50/EC appears like a mantra in all the court decisions over a time span of 8 years. Beyond this mantra, there are some notable differences in how the courts dealt with the issue, though. In particular the courts' stances towards the adoption of driving bans differ to some degree, and some tentative patterns can be identified.

Let us imagine a continuum between a weak and a strong advocacy for driving bans by the courts. On the one side of this continuum there is the administrative court of *Munich* which in 2012 in its decision on the clean air plan for *Munich* alluded rather vaguely to driving bans: the court held that there are many possible measures, naturally more intrusive ones than those adopted so far, that could help to decrease NO_2-immission values. The extension of low emission zones[40] was only one of them.[41] In a similar vein, in 2014 the administrative court of *Sigmaringen* mentions in its decision on the clean air plan for the city of *Reutlingen* that for one problematic street according to an expertise a driving ban would help to comply with EU immission limits für NO_2.[42]

Second there is a group of court decisions which argue more assertive with regard to the role of driving bans. In 2015 the administrative court of Wiesbaden argued that the clean air plans for the cities of *Offenbach*[43] and *Limburg*[44] are unlawful because traffic restrictions like driving bans have not been *considered* at all. In the same year the administrative court of *Hamburg* went one step further. It argued that the city did not implement alternative measures successfully and thus will have a hard time *in the future* to justify that it did not adopt effective measures (such as the restriction of the traffic) for economic, financial or other reasons.[45] In a similar vein the administrative court of *Düsseldorf* in March 2016 argued for the city of *Düsseldorf* that the Land North Rhine-Westphalia will have to adopt far reaching measures that reflect the high responsibility of diesel cars for NOx-emissi-

[37] The Federal Administrative Court in these cases may not reappraise facts but can only check if the law has been adequately applied.
[38] BVerwG 7 C 21.12.
[39] ECJ C-240/09.
[40] XXXX
[41] VG München, M 1 K 12.1046.
[42] VG Sigmaringen 1 K 154/12.
[43] VG Wiesbaden 4 K 1178/13.WI(V).
[44] VG Wiesbaden 4 K 97/15.WI(2).
[45] VG Hamburg 9 K 1280/13.

ons. Driving bans which can be considered particularly effective are not excluded from the outset and have to be considered.[46]

Finally, a third group of court decision argues in an assertive way that for the respective city, given the fact that the authority has failed to adopt other effective measures, the clean air plan must contain driving bans. Whereas the court decision for the city of Wiesbaden as early as in 2011[47] was clearly an exception in this respect, the paradigmatic case was the decision taken by the administrative court of *Stuttgart* in July 2017. The court held that the clean air plan for *Stuttgart* was to be revised in a way that it contains necessary measures for achieving compliance with the NO_2-immission limit values for the city of *Stuttgart* (whereas 18 for days a year exceeding the values would be acceptable). The court found it doubtless that driving bans are suitable to achieve compliance with immissions limits and that actually there is no other equivalent measure that would strain addresses less. Thus the court decided that driving bans for cars with gasoline engines below Euro 3 and for diesel cars below Euro 6 have to be considered.[48] The Land Baden-Württemberg took the *Stuttgart*-decision to the Federal Administrative Court (as did the Land North Rhine-Westphalia did with the *Düsseldorf*-decision mentioned above) by way of "leapfrog appeal". In February 2018 the Federal Administrative Court rejected both revisions by and large. In both judgements the court argued that even though the German federal immission law (BImschG) does not provide for a legal basis for diesel-driving bans, it has to remain unapplied, since the European directive demands that the period in which the limit value for NO_2 is exceeded has to be kept as short as possible (cf. Franzius 208: 433). For the city of *Düsseldorf* the court held that the Land is obliged to revise the air quality plan and to think about driving bans for diesel cars. However, the principle of proportionality must be given adequate consideration which the administrative court of *Düsseldorf* had not done properly.[49] For the case of *Stuttgart* the Federal Administrative Court accepted that only a driving ban for diesel cars below Euro 6 and for gasoline cars below Euro 3 is an effective measure. The court emphasized in this decision, too, that the principle of proportionality must be given adequate consideration. This could be done e.g. by a stepwise introduction of driving bans. In particular diesel with Euro 5 could not be banned before September 2019, and exception rules for local businesses must be established.[50]

Even though in various cases before courts had suggested that driving bans would have to be adopted (see above), these two decisions taken by the higher court hit the Federal Republic hard, since many had still doubted that driving bans would become reality. The echo (both, positive and negative) was enormous (see e.G. Franzius 2018).

It is maybe little surprising that the decisions of administrative courts that were taken after February 2018 (and quite some had just been waiting for this) were clearly more determined with regard to the explicit necessity to adopt driving bans. *Aachen* was the first city to which this applies. In June 2018 the administrative court of *Aachen* held that the Land North Rhine-Westphalia has to revise the air quality plan for the city of *Aachen*. The Land has to consider diesel driving bans and, if no other measure is equally suitable to comply as soon as possible with limit values, adopt diesel driving bans.

[46] VG Düsseldorf 3 K 7695/15
[47] VG Wiesbaden 4 K 757/11WI
[48] VG Stuttgart 13 K 5412/15.
[49] BVerwG 7. C 26.16.
[50] BVerwG 7 C 30.17.

Whereas diesel below Euro 5 can be excluded immediately, diesel Euro 5 could be subject of a driving ban by September 2019 the earliest.[51] Next the administrative court of *Wiesbaden* decided that the environmental ministry of Hesse has to revise the clean air plan for the city of *Frankfurt*. Accordingly the ministry must adopt driving bans for diesel below Euro 5 and gasoline below Euro 3 by February 2019, and for diesel Euro 5 from September 2019 on.[52] In October 2018 the Administrative Court of Berlin decided that the Land has to adopt driving bans on 11 street sections and examine the adoption of driving bans for 117 street sections with a length of 15 km.[53] Similar decisions giving clear guidance as to how the clean air plan has to be revised and that a driving ban for diesel cars in particular has to play a crucial role in this were taken in November 2018 for the cities of *Cologne*[54], *Bonn*[55], *Gelsenkirchen*[56] and *Essen*[57].

To conclude, from the beginning all courts decided in all cases that respective clean air plans have to be modified in a way that they allow for compliance with NO_2-immission limits. As to how clear and how strongly the courts advocate driving bans, there was some variance up to the path breaking decisions of the Federal Administrative Court in February 2018 which paved the way for driving bans being clearly mandated by the courts. It is notable that the administrative courts in general and the Federal Administrative Court in particular applied the European law in a dutiful and sometimes path breaking way. They put high emphasize on the legal duty to protect citizens' health and to comply with European law (e.g. Franzius 2018; Deutscher Bundestag 2018). Thus, while even in 2017 few would have expected driving bans to be imposed, these two judgements of the Federal Administrative Court led to driving bans for the first time being perceived as a realistic option by politicians and citizens. It becomes more than obvious, however, when reading each single court decision, that it was clearly the lack of effective alternative measures, as pointed out in section 4.4. that made the courts declare driving bans to be necessary measures for reducing NO_2-immissions and achieving compliance with EU-law.

The way the courts handled the suits filed by the DUH clearly qualifies as a sufficient condition because – given the necessary conditions presented above – this leads inevitably to the situation of 34 cities with driving bans either adopted or looming.

7. The Interplay of necessary and sufficient conditions

The fundamental idea of PIDA is, that the factors do not work in isolation but are interrelated and interact. This is the case for our factors spelled out in chapter 4 and 6 (see figure 3). In chapter 4.1 I addressed the adoption of the European air quality directive which paved the way for NO_2-immissions being a legal and political (as well as technical) issue at all. Whereas the effective implementation of EU environmental law in member states has always been at risk, the European Commission figured out strategies beyond infringements procedure. Forcing member states to give their environmental NGOs the right to sue in environmental matters was a deliberate strategy of the Euro-

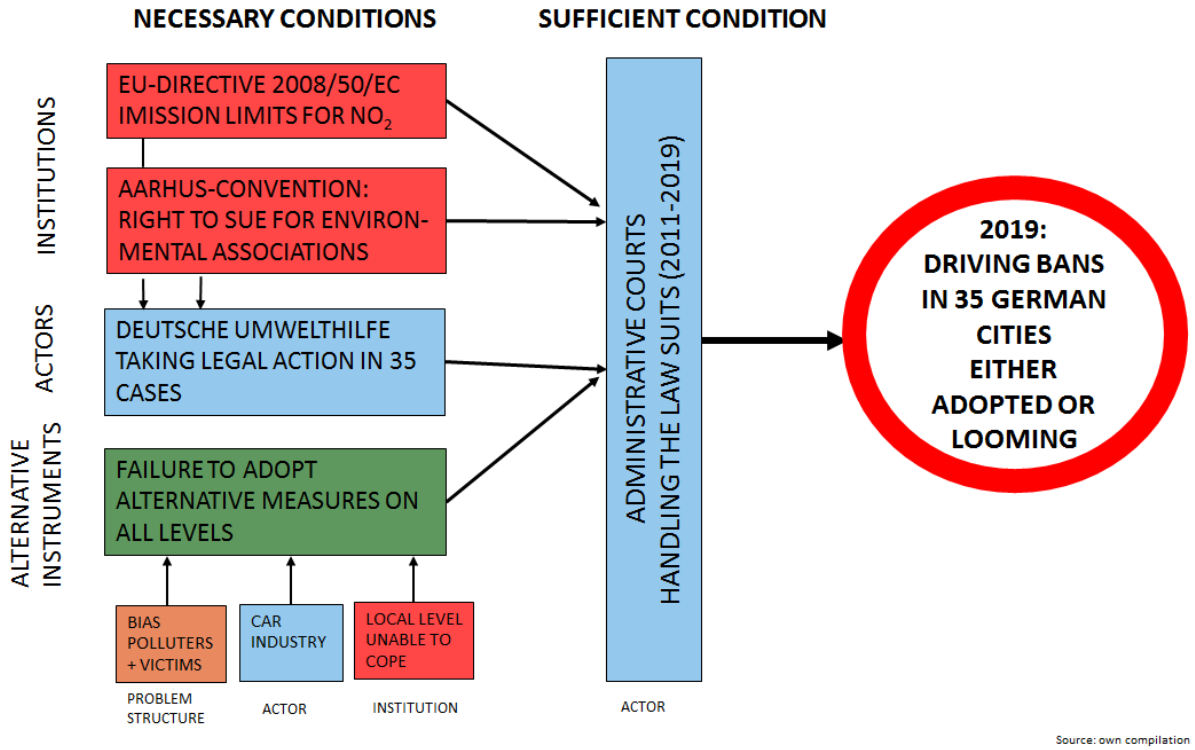
[51] VG Aachen 6 K 2211/15.
[52] VG Wiesbaden 4 K 1613/15.
[53] VG Berlin VG 10 K 207.16.
[54] VG Köln 13 K 6684/15.
[55] VG Köln 13 K 6682/15.
[56] VG Gelsenkirchen 8 K 5254/15.
[57] VG Gelsenkirchen 8 K 5068/15.

pean Commission to improve the implementation of EU environmental law in member states. Germany established this right only reluctantly and stepwise. We have to emphasize that two of our necessary conditions stem from the European Union. Thus, the impact of EU law and politics on German environmental policy is enormous – which is not an entirely new finding though (cf. Töller 2019b). Whereas many environmental associations in Germany have utilized this new opportunity as one option beside others, the Deutsche Umwelthilfe (DUH) as a rather untypical NGO started its "fight for clean air" in 2011 and was encouraged to continue by the first court judgements, in particular the decision by the Federal Administrative Court in 2013, acknowledging that recognized environmental associations do have the right to take legal action against air quality plans.

Limit values on NO_2-immissions have been valid since January 2010 (and known before). So with the beginning of measurement the federal government, Länder and their administrative levels and municipalities could have known that in many German cities limit values were exceeded on a regular basis. The failure to adopt adequate measures to reduce NO_2-excess on all levels appears striking. Responsible actors did not take the legal duty to comply with NO_2-immission limits seriously. For years, they missed the opportunity to adopt measures that may have needed time to push immissions below limit values. Thus since in 2011 the DUH began to pursue a strategy of taking responsible authorities to court (based on the right to sue provided by the Aarhus convention), these authorities wasted time. One by one they found themselves before courts that took Art. 23 of the ambient air quality directive seriously by demanding that *the period in which the limit value for NO_2 is exceeded must be kept as short as possible*.

To some extent the problem is of a structural nature, since much of the burden of necessary change lies with the Länder and within the Länder with different administrative level. If measures (e.g. like improving and modernizing public transport) must be taken, this must be politically decided and financed at the local level. The problem structure implying different opportunities to polluters and victims to be represented politically and the traditionally strong influence by the car manufacturers are reasons for the failure to adopt alternative measures. Dieselgate, however, only added an additional layer of complexity to this by making the excess of NO_2-immissions more plausible and giving

FIG. 3: NECESSARY AND SUFFICIENT CONDITIONS FOR DRIVING BANS



the responsibility of diesel-car manufacturers a dimension of moral outrage. But the broad public indignation with the car manufacturers did not make the federal government adopt or support effective means to make them financially responsible.

Finally, it was the way the courts handled the suits filed by the DUH that led inevitably to the result: driving bans for diesel cars having been adopted or looming in 34 cities. If, on the contrary, the courts – and in particular the Federal Administrative Court – had rejected the right of environmental associations to take legal action against clean air plans or the legality of driving bans in general, we would not face the situation which we have to explain, in spite of the list of necessary conditions spelled out in section 4.

8. Conclusion

This paper tried to explain how the most unlikely result of 34 German cities facing driving bans for diesel cars (and partly also for gasoline cars) could come about. This result is unlikely because driving bans are intrusive and socially unjust – thus they strain quite a number of citizens who are voters; and they violate the vested interests of the German automotive industry which is a "holy cow" in Germany. On the other hand, the issue of non-compliance with NO_2-immission limits touches the health of many inhabitants of the cities mentioned and makes this a politically highly relevant issue.

My analysis is based on PIDA (as pointed out in section 2) which is a theoretical approach that arranges five factors (actors, institutions, problem structure, alternative instruments and situational factors) in a political process that is neither based on the idea of pure problem-solving nor on the concept of rational interest aggregation. Drawing on garbage can, PIDA sees political processes as what

(we think) they are: driven by inconsistent preferences, unclear interdependencies and fluid participation in decision-making processes, ideologies, coincidence and unintended consequences.

In a first step (section 3) I specified the situation of driving bans. I pointed out that by the time of writing (June 9, 2019) there are 5 cities in which driving bans for diesel cars (either below Euro 5 or 6) are implemented our about to be implemented (type 1). For 6 cities driving bans have been mandated by courts, but the decision has been challenged before higher courts (type 2). The higher court in charge for 5 out of 6 cases is the Oberlandesgericht *Münster* which is expected to decide in the course of this summer. For 4 cities the adoption of a driving ban has been mandated by a court of last instance, but is not being implemented though. In January 2018, the Bavarian Administrative Court imposed a penalty fine of 4000 Euro on the Land of Bavaria for not complying with the court ruling mandating the adoption of a driving ban for the city of *Munich* (Süddeutsche Zeitung October 29, 2018). Whereas the Land payed the fine (which will remain in the same public budget), it has not adopted a driving ban. In August 2018, the Court asked the European Court of Justice by way of preliminary ruling, if an arrest of the Land's governments' officials ("Erzwingungshaft"), possibly the minister of the environment or even the Prime Minister, would be an adequate means to secure compliance with European law.[58] Finally there is a group of 19 cities for which legal suits regarding clean air plans have recently been filed and will be deicide by courts in the near future.

I took three steps to identify causal factors, applying PIDA and looking for necessary and sufficient conditions (see figure 3). In section 4 I identified four necessary conditions: first, the adoption of the ambient air quality directive. The directive sets the immission limit values cities are struggling with and stipulates that air quality plans have to be set up containing adequate measures to keep the period of exceeding the limit as short as possible (Art. 23 of directive 2008/50/EC). Second, the introduction of a "right to sue" for acknowledged environmental associations which was rather novel in German law. Third, the Deutsche Umwelthilfe as a rather exceptional case of an environmental association specialized in utilizing this tool for taking up it "fight for clean air". And forth, there is a striking failure to adopt more adequate, less intrusive measures *in time* on all levels of the German federal system. The latter aspect is complex and requires explanation itself. In a nutshell, it is the problem structure which makes it much easier for car drivers interests than for NO_2-victims to be politically represented and articulated, the immense and institutionalized influence of the automotive industry and the fact that local actors cannot cope with the task of securing compliance with NO_2-immission values.

Looking at Dieselgate as a situational factor I found in section 5 – contrary to a dominant view in literature – that the scandal did not have any traceable causal impact on the adoption of driving bans. The scandal changed the public discourse in perceiving non-compliance with NO_2-limits a national problem (instead of many local problems). And it certainly emphasized the responsibility of diesel cars for NO_2-excess. Yet it did not make the government adopt effective ways of making the automotive industry responsible (which possibly could have avoided the imposition of driving bans by courts).

[58] What is more, the Administrative Court of Stuttgart confirmed on April 29, 2019 that Stuttgart also has to adopt a driving ban for Diesel cars of Euro 5. If the Land fails to do so (and Stuttgart does not comply with the NO_2-standards by alternative means), it will have to pay a penalty fine of 10.000 Euro (VG Stuttgart 17 K 1582/19).

In section 6 I identified the way the administrative courts handled the legal suits filed by the DUH as the sufficient condition. The Federal Administrative Court confirmed that environmental associations are entitled to take air quality plans to court. All administrative courts involved so far decided that the respective air quality plan was unlawful because it did not entail adequate measures to keep the period of non-compliance with NO_2-limits as short as possible. In February 2018 the Federal Administrative Court declared driving bans as a viable and under certain conditions inevitable option. Whereas before, there was some variance as to how careful or affirmative the courts mandated driving bans to be adopted, after the Federal Administrative Court's decisions all courts took decisions in which they clearly mandated driving bans to be adopted for the cities of *Aachen*, *Frankfurt*, *Berlin*, *Cologne*, *Bonn*, *Gelsenkirchen,* and *Essen*. There are six cases waiting for revisions and 19 cases waiting for a decision in the first instance. Most of them are expected to be decided in 2019. It is hard to imagine that these courts will step back behind the line drawn by the Federal Administrative Court in 2018.

Looking at the general question of our ICPP panel, *how institutions and actors interact in political processes* we can see that institutions are strongly represented among the necessary conditions (figure 3). Institutions pave the way for agency, whereas it is no coincidence that it is a group of actors (though strongly constructed by institutions) and what they did that qualifies for the sufficient condition. This could possibly be a more general pattern that should be tested empirically with more cases. Coming back to the question brought up in section 2 (what drives the political decision-making process?) we find that this political process analyzed here appears not in the least as a rational problem-solving process. Instead, I have to concede, it does have strong elements of rational interest politics. Yet, many actors seem to have an extremely short-term perspective when calculating their interests and also did so with incomplete information. There seems to be no other way to interpret the head-in-the sand policy of many actors in this case.

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