

Environmental zoning of belief systems

Using Q methodology to explore the involved belief systems in environmental zone conflicts.

Steven Blok¹

Abstract

Sustainable development receives increasing importance and attention. Together with growing urbanisation, measures such as an environmental zone (or LEZ) are deployed as a sustainability policy. In Utrecht this measure has become highly contested and it may be an intractable policy controversy. This study presents four *belief systems* involved in the environmental zone debate using Q methodology: environmental zone protagonists, antagonists, policy realists and reconfiguration-ists. These belief systems all view the environmental zone in a distinct way, seemingly withholding the conflict to be solved. Using Sabatier's Advocacy Coalition Framework, the differences between the belief systems are uncovered. This empirical research shows that positions in the debate are not just diametrically opposed. There are certain arguments that have been suppressed by the polarized opposing belief systems. This study suggests that center positions can be designated and developed, and the suppressed arguments could be put on the agenda, both options might alleviate the contention. Similar policy problems concerning sustainable development can adopt this understanding of belief systems, allowing to develop new center positions or uncover suppressed arguments in heated debates.

Keywords

Mobility, sustainable development, policy, controversy, environmental zone, LEZ, belief systems, Q methodology, the Netherlands

Introduction: sustainability policy and belief systems

Sustainable development, fuelled by climate change, is considered to be major challenge today (Bulkeley, 2002, p. 727; Sachs, 2015, p. XI; United Nations [UN], 2015). It is characterised by the relation between climate change on the one hand and a healthy, equal future for humanity on the other (Hopwood et al., 2005, p. 39; UN, 2015). In the sustainability debate, there is in particular attention for cities (Evans et al., 2013; Kenworthy, 2006; Mega, 1996; Portney, 2005). Findings indicate that many causes of environmental problems can be found in large cities (Neuens et al., 2013, p. 111; United Nations, 2013, p. 53). Cities are also likely to experience the consequences of climate change such as flooding (Christensen & Christensen, 2003), drought (Corfee-Morlot et al., 2009), worsening air quality,

¹ Utrecht University

Corresponding author

Steven Blok

Research in Public Administration and Organizational Science, Utrecht University, Bijlhouwerstraat 6, 3511 ZC Utrecht, the Netherlands

e-mail: s.n.blok@students.uu.nl

health problems (Mage et al., 1996), and unfit infrastructure to deal with extreme weather changes (Satterthwaite, 2008, p. 311). The effects of climate change affect many, and due the expected increasing urbanization (ibid., Sachs, 2015, pp. 54 – 55, UN, 2013, p. 53), the magnitude of affected is expected to grow.

The aim of sustainable development is for a part translated into policies. Sustainability policies can on its turn lead to policy conflict (Giddings et al., 2002, p. 188; Schön & Rein, 1994). Examples of previous contentious conflicts cover the areas of more windmill capacity (e.g. Bouma, 2012; Wolsink, 2000), geothermal energy development, hydroelectric development, and biomass development (Devine-Wright, 2005, p. 126). When conflicts or disagreement can no longer be resolved by new information or research findings due a different focus on what is important, it can be labelled *intractable policy controversies* (Hisschemöller & Hoppe; 1995; Schön & Rein; 1994, p. 4). A policy controversy is a disagreement between actors about beliefs, therefore *belief systems* (Sabatier, 1986; 1988) regarding sustainability policies are inquired in this research. Belief systems are structured at different levels ranging from the more fundamental axioms to instrumental preferences. Because people's belief systems influence how they view sustainable development *and* its policies, understanding belief systems contributes to an understanding of both. To explore and compare the various levels of belief systems in a possibly intractable policy controversy, the *Environmental Zone* in Utrecht is selected. The environmental zone is a sustainability policy deployed in 2015 and it repels certain vehicles from the city centre to mitigate air pollution by reducing harmful emissions, while improving health by contributing to cleaner air (van der Waard & Meijles, 2015, p. 6). The research question is as followed: *how do the levels of belief systems differ between actors involved in the Environmental Zone?*

The objectives of this research are twofold. First, this research aims to determine what different belief systems are involved in a conflict of a sustainability policy. Second, the aim is to understand on what levels the belief systems differ from each other and how these differences explain the current state of the conflict. The environmental zone debate is a contentious one, with seemingly no solution. It may be a dialogue of the deaf (van Eeten, 1999) or an intractable policy controversy. Studying the belief systems might resolve or alleviate the contention by uncovering new positions, allowing actors to reposition in the debate. Understanding the belief systems can also be used to acquire legitimate support, by doing justice to all involved positions represented through these belief systems. This can be done by designating new shared concerns across all belief systems. Lastly, assuming that more sustainability policies are likely (see next section), this study presents belief systems that account for a certain view on sustainability in relation to other issues, such as health, economic development, autonomy, mobility and effectiveness of policy.

Q methodology (Stephenson, 1953; Brown, 1980), a method to study human subjectivity, is deployed to answer the research question. Q methodology applies both quantitative and qualitative features (McKeown & Thomas, 1988). This method has proven successful in previous research across various value loaded topics (Watts & Stenner, 2005), of which, sustainability affairs with high-strung debates (cf. Ellis et al., 2007; Van Eeten, 1999; Wolsink & Breukers, 2010).

Context and relevance

To mitigate climate change, and accelerate sustainability international agreements such as the Paris Agreements in 2015 are invoked (UN, 2015). The agreement requires the included parties to contribute to the agreement's goals by domestic measures, i.e. policies (ibid., art 4.2). A recent rapport by Carbon Market Watch (2017, March) showed that three European countries are moving in the 'right' direction towards the goals of Paris Agreements. The European Commission (2017) developed legislation with respect to air quality covering more pollutants than carbon emissions. The commission demands its member states to comply to the standards, prepare air quality plans (i.e. policies), and inform the public.

Acknowledging European standards, the Paris Agreements, and the result that its goals are far from being reached, future policies addressing sustainable development are likely.

When various belief systems are involved, the problem is refrained from a “logic of cost/benefit analysis” (van Eeten, 1999, p. 117) and it becomes an *intractable policy controversy* (Schön & Rein, 1994, p. 4). When various policy coalitions of actors are merely ritually repeating arguments, it can be labelled a *dialogue of the deaf* (Koppenjan & Klijn, 2004, p. 33). A dialogue of the deaf is not a problem due a lack of scientific knowledge (ibid., p. 29) but rather it is due a disagreement of the interpretation of knowledge. When ‘facts’, new information or reasoned arguments are unlikely to solve the controversy, understanding how they are interpreted through belief systems, is promising. For collaborative and efficient policymaking in the future, acknowledging various belief systems is crucial (van Bueren et al., 2003, p. 211) because it enhances mutual understanding: “the establishment of this common ground of respect is a pre-condition for more productive and effective forms of dialogue and resolution” (Ellis et al., 2007, p. 539).

This study applies the Advocacy Coalition Framework (Sabatier; 1988) on local governance actors involved in the environmental zone and hence allows to determine whether coalitions can be formed. The phrase ‘think globally, act locally’ which is used in environmental and sustainability debates frequently (Gough, 2013, p. 55; Schwarz, 2014) fits as another context for this research. The environmental zone is an example of a local measure (partially) deployed in contributing to greater ambitions of the municipality and to global sustainable development. Understanding how relevant actors view local measures in the context of global problems thereby fits well in the relationship between, for example, the role of international agreements and local policies.

Previous research

Research of environmental zones has been done, but mostly in terms of measurable chemical effects. Early 2016, TNO [Toegepast Natuurwetenschappelijk Onderzoek], the Dutch organisation for ‘Applied Physics Research’ published a report on the environmental zone Utrecht (Eijk & Voogt, 2016). This report is concerned with the effects of the policy, in terms of ‘fleet composition’ and the concentration of ‘elemental carbon’ [EC] (ibid., p. 2; 43). With cautious claims about the causality of the findings being related to the measure, it is *conjectured* that the decreases concentration is due the environmental zone (ibid. p. 41). This research does however not account for the societal effects of the implemented measure. Another study by Boogaard *et al.* (2012, p. 164), not specifically about Utrecht, concludes that “that local traffic policies contribute to air quality improvements at street level and health gains of residents nearby.” Other studies (e.g. Ligterink *et al.*, 2012; Motshagen & Hoogma, 2006; Panteliadis, 2014; Voogt & Verhagen, 2014) focus on the measured effects of air quality as well, while passing by the societal effects.

International studies on environmental zones, or ‘low emission zones [LEZ]’ show similar tendencies. In London, Ellison and colleagues (2013, p. 33) ascribe an improving air quality to the change in fleet composition. In Rome (Cesaroni *et al.*, 2012, p. 138) evidence was found for the positive influences on health by policies aimed at reducing traffic-related air pollution. A Munich study (Qadir *et al.*, 2013, p. 66) shows that the implementation of a LEZ led to both an increase and a decrease of various concentrations. EC was claimed to have decreased, leading to possible health benefits. Other studies, for example in Stockholm (Rapaport, 2002), London and Mexico City, show the disputability of the LEZ’s, through no measured effect in air quality due the zone (Panteliadis, 2014, p. 113). This study aims to contribute to the body of environmental zone/LEZ research by inquiring the involved belief systems within a framework of policy change and learning.

Several studies deployed Q methodology to study sustainable development or intractable policy controversies. Barry and Proops (1999) attempted to find discourses on sustainability in the United Kingdom using Q methodology. Even though their research was dedicated to showing how Q could be used in assisting environmental policymaking (ibid., p. 345), it shows how the role of perception is an important element in sustainability debates. Van Eeten (1999) used Q methodology to study a *dialogue of the deaf* concerning Schiphol Airport. This case, characterised by a stagnated and polarised debate, is therefore a fitting example of how Q was used to illuminate the ‘real discussion’ involved. He found that there were not just diametrically opposed positions, but that these positions suppressed other issues: “the diverging arguments are ‘absorbed’ in the opposing ends of the dilemma” (ibid., p. 148). The other positions that were found did represent however relevant arguments and van Eeten’s suggestion is hence to put those arguments explicitly on a new agenda (ibid., p. 163) and cut through the polarized positions. Ellis *et al.* (2007) sought discourses on support and objection to an offshore windfarm near the coast of North Ireland. They deployed Q methodology because authors deemed positivist research frames inadequate in dealing with subjectivity and the value-basis of public acceptance (p. 517). They concluded that there are gradations of support and objection, hence their title ‘many ways to say no; different ways to say yes’. In order to settle the difference, they argue, the “establishment of this common ground of respect [for values, worldviews, fears, and interests] is a pre-condition for more productive and effective forms of dialogue and resolution” (ibid., p. 539). Wolsink and Breukers (2010) were among others in analysing debates relating wind power. Uittenbroek and colleagues (2014) inquired Dutch municipal policy departments relating climate adaption, showing general agreements on problems, but differences in terms of frames for action and necessary resources.

Previous research shows that studies of environmental zones present no societal effects, and do not consider public acceptance, perception, or belief systems. The LEZ studies contribute by providing information and knowledge, they do however not include subjectivity: how is this information or knowledge perceived? This study aims to take into account the element of subjectivity. Furthermore, research also contributes to the field of Q studies by including a specific policy that has not been inquired by Q so far, and by using structure of belief systems to understand policy conflict and potential controversy.

Theoretical framework

Three concepts are fundamental to the theoretical framework for this study. Sustainable development is context of the goals and rationale of the environmental zone. Schön & Rein (1994) indicate how conflicting frames can lead to intractable policy controversies. Sabatier’s concept of belief systems from his Advocacy Coalition Framework is central to this study and used to interpret the environmental zone debate.

The concept sustainable development was first branded as “meeting the needs of present without compromising the ability of future generations to meet their own needs” by the World Commission on Environment and Development [WCED] (1987, p. 41, see also: Giddings *et al.*, 2002, p. 189). Sustainable development thereby included that the goals of economic and social development must be compatible with sustainability. It is, on a more general note, an ambition to promote harmony among human beings, and between humanity and nature (WCED, 1987, p. 57). To realise such a harmony, it requires sustainability in: political, economic, social, production, technological, international, and administrative systems. The commission that drafted the report argue that these requirements should underlie national and international action on development (ibid., p. 58), and it thereby underlies policies on the respective systems as well.

More recently, the *Paris Agreements* have been invoked (UN, 2015) and it demands that “each Party shall prepare, communicate and maintain successive nationally determined contributions that it

intends to achieve. Parties shall pursue domestic mitigation measures” (UN, 2015, art. 4.2). The Agreement hereby shows that sustainable development, concerned with climate change and health (Hopwood et al., 2005, p. 39), requires local policies, in other words: global problems need local solutions.

Local policies can be disagreed upon, they can also become controversial. Interpretation of information and problem perception differ through frames of reference. (Koppenjan, & Klijn, 2004, p. 6; Klijn & Koppenjan, 2015, p. 46). Koppenjan and Klijn’s work focuses on how perception complicates policy, Schön and Rein (1994) use the concept of frames to argue the same. Schön and Rein (1994, p. 4) distinguish between policy disagreements and policy controversies on the basis that controversies cannot be resolved by information, such as research findings, because it is interpreted in different ways: they see

“policy controversies as disputes in which the contending parties hold conflicting frames. Such disputes are resistant to resolution by appeal to factors or reasoned arguments because the parties’ conflicting frames determine what counts as a fact and what arguments are taken to be relevant and compelling” (ibid., p. 23).

Frames are problematic because they lead to different views of the world and thereby to different views on policy (ibid., p. 147). The main suggestion on dealing with various frames and their conflict is by *reframing* and *frame-reflection* (ibid., p. 165). The authors argue that frame reflection is about acknowledging other frames, understanding their sources and rationales, in order to find leads in co-designing policy.

The policy perspective thus indicates that problem definition and interpretation of information both depend on a subjective point of reference. There are various notions describing this mechanism in the literature: Taylor (1989, p. 30) speaks of how our identity determines what is important or not (see also de Hedlund-deWitt, 2013; Witt et al, 2016). Koppenjan and Klijn (2004) use *perception* as requisite for complexity and wickedness of problems. Other concepts are *problem formulations* or *problem definitions*, defined as the ideas that underlie the causes and consequences of undesirable situations, supplemented by theories of how to deal with these undesirabilities (Dery 1984; 2000; Rochefort and Cobb 1994 in Klijn & Koppenjan, 2015, p. 46). Furthermore, the work of Schön and Rein of *frames* (cf. supra), and Sabatier’s *belief systems* (1986; 1988) are discussed. There are various ideas of how policy actors interpret information, the shared underlying factor is that either worldviews, values, or belief systems are grounded in human subjectivity (Fischer 2003, p. 44; p. 49).

In this research Paul Sabatier’s concept of *belief systems* from his Advocacy Coalition Framework [ACF] of policy change is used. Policy change and learning is understood in ACF as a process that (a) can take about a decade; (b) given such time frames, should focus on the interactions between policy relevant policy actors; and lastly (c) acknowledges the role of belief systems. The ACF combines *bottom-up*’s acknowledgement of various actors and their concerns, interests, and strategies with the *top-downer*’s concerns with the conditions and instruments necessary to achieve policy results. In this research, the main focus is on *belief systems* because, as indicated above, the interest lies at how people view certain problems. Belief systems are defined as the “sets of value priorities and causal assumptions how to realize them” (Sabatier, 1988, p. 131). The coalitions are “composed of people from various organisations who share a set of normative and causal beliefs and often act in concert” (ibid., p. 133). The three central elements to the structure of belief systems (Sabatier, 1986, p. 43; Sabatier, 1988, p. 145) are:

1. the ‘*deep normative core*’, the fundamental normative and ontological axioms;

2. the '*near policy core*', the fundamental policy positions concerning the basic strategies to achieve the deep normative core; and
3. the '*secondary aspects*', the instrumental decisions and information searches necessary to implement the policy core.

The former, more abstract elements are more resilient than the latter (Sabatier, 1991, p. 153). The secondary aspects, on their turn, are more likely to be abandoned when necessary (Sabatier, 1988, p. 148). This hierarchical structure is also found in the work Schön and Rein (1994). They apply a somewhat similar distinction in their explication of how frames are ordered. They argue that underlying '*metacultural*' frames determine '*institutional action*' frames which in turn determine '*policy*' frames (p. 33). A layered notion of belief systems is important in studying policy conflict and intractable policy controversies because the different layers allow actors to bargain with their instrumental aspects in order to achieve the realization of their deep core. Deliberation and negotiation allow for a fruitful collaboration necessary for network governance (Klijn & Koppenjan, 2015, van Bueren et al., 2003), co-design (Schön & Rein, 1994), and policy-oriented learning (Sabatier, 1988).

Sabatier (1988, p. 142) argues that belief systems are more inclusive than interests and therefore belief systems are particularly fit to study environmental policies because it enables different actors to set different goals and deploy various measures under the aegis of a higher ambition: sustainable development. Such dynamic could lead to unexpected coalitions of policy actors. The environmental zone debate is characterized by supposedly multiple supporting actors and opposing actors. The empirical part will show whether coalitions can be formed based on the expected views by the included actors, or that unexpected coalitions can be formed based on the uncovered belief systems. A last relevant feature of belief systems that the ACF hypothesises is the that the "line-up of allies and opponents will tend to be rather stable over periods of a decade or so" (Sabatier, 1988, p. 141). Jenkins-Smith and Sabatier (1994, p. 195) found that purposive groups, such as environmental groups "showed relatively little tendency to change positions regarding any of the beliefs." Therefore, understanding the belief systems of such stable (coalitions of) actors, bears resilient results in studying policy controversies. Next, an integration of the theoretical framework is discussed.

There are differences in how sustainable development is perceived, interpreted, evaluated, and how it ought to be dealt with. The ACF offers a qualified concept, belief systems (on par with metacultural, institutional and policy frames), to explore how actors view various problems and how they can coalesce with others based on their beliefs. Belief systems both influence and determines the relative importance of sustainable development *and* the policy at hand: the causal assumptions of how to address what is important. Belief systems are considered to be resilient, stable over time, and central in forming coalitions. Such stability offers a relevant research entity with respect to current but also future policies of sustainable development. Intractable policy controversies are, in this framework, understood as a possible conflict somewhere in the three levels of belief systems, but according the ACF the deep normative core is least susceptible to reconsideration. It can thereby be expected that conflict in the deep core is more likely to be a controversy, whereas conflict in secondary aspects is more likely to be a 'policy disagreement'. This research designates which levels of belief systems differ, and which levels share common ground, allowing to find new arguments and positions, reframe the debate, and acquire more and legitimate local support. For future policies addressing the same problems, such as air quality, emissions and health, the knowledge of belief systems contributes to how policy actors view these problems and how they are part of their various cores. Based on Sabatier, one can expect that when sustainable development is part of multiple deep core belief systems, strong coalitions of actors across these belief systems be formed. On the opposite, if sustainable development is supported *and* opposed at various deep cores, policy controversies about the sustainability is likely. Sustainable development is related to many more concepts, as indicated above. Putting it alongside other themes in the framework

of belief systems shows the relative importance of sustainable development across different belief systems of actors.

The case, methodology and procedures

The environmental zone policy aims to contribute to “sustainable, clean mobility” and creating a city with minimal or no emissions (van der Waard & Meijles, 2015, p. 6). The policy hence deals with the impact of transport on the *environment* and on *health*. The environmental zone is part of a set of policies aimed at reaching a more overarching goal for Utrecht: to “improve the quality of the air, to realise a 30 per cent reduction of carbon emissions by 2020, to be a climate-neutral city by 2030, and to reduce traffic noise” (ibid.). The environmental zone has been active for trucks since January 1, 2007; and for personal cars and delivery vans since January 1, 2015 (Baggen et al., 2016, p. 4). The municipality will reflect every year on the ‘extent’ of the environmental zone (van der Waard & Meijles, 2015, p. 6). In an evaluation of the Environmental Zone, the municipality stated that it considered including mopeds in the policy (van der Waard & Meijles, 2015, p. 22), hence excluding them from the city centre. While it was not final, it is a possibility per January 1, 2020 (Baggen et al., 2016, p. 8). The zone is part of larger ambitions to mitigate carbon emissions and increase the air quality for health-related purposes. Therefore, it is likely that similar policies are to be enacted and implemented in the near future. Recent events (e.g. RTV Utrecht, 2016a; RTV Utrecht, 2016b; van Vliet, March 27, 2017) shows that the debate has become contentious, opponents of the zone even arraigned the municipality. The environmental zone can therefore be considered a potential policy controversy. The case of the Environmental Zone applies to a broader context: there are for instance 13 environmental zones in the Netherlands (March 29, 2017 according to Milieuzones).

Q methodology, the method of dealing with subjectivity (Brown, 1980; McKeown & Thomas, 1988; Stephenson, 1953; Watts & Stenner, 2005), is used to answer the research question. This methodology, invented by psychologist and physicist William Stephenson, is described by Stenner and Stainton Rogers (2004, p. 166) as *qualiquantological* because it incorporates the quantitative feature of replicability and empirical rigour, and the qualitative focus on the self-referential opinions of the participants (Dryzek & Berejikian, 1993, p. 50; Ellis et al., p. 523). Q has been proven successful in studying various sustainability affairs (cf. Barry & Proops, 1999; Uittenbroek, 2014; Wolsink & Breukers, 2010) and mobility (cf. van Exel et al., 2011).

The promise of a Q study is to “discern people’s perceptions of their world from the vantage point of self-reference” (McKeown & Thomas, 2013, p. 1). The methodological principle of Q methodology is that subjectivity is the expression or communication of an individual point of view. Such expressions are “anchored in self-reference – an ‘internal’ frame of reference, relating to anything about which an individual expresses a point of view” (ibid., p. 2). Furthermore, subjectivity is understood as operant, not as “not methodological artefacts resulting from external measurements conducted in accordance with a researcher’s understanding or presumptions of the world” (ibid., p. 65). The participants decide what is meaningful and what has value, in other words they reveal their subjective expressions (Watts & Stenner, 2005, p. 69). In this study, the internal belief systems of participants relating to the environmental zone are of interest.

Q methodology allows studying concepts such as belief systems because participants, when carrying out the Q sort, are actively “distinguishing among values, such as making decisions about the relative importance or unimportance of the Q sample items” (McKeown & Thomas, 2013, p. 25). In this respect, Q method can be considered appropriate in exploring belief systems, by the definition of this concept earlier in the theoretical framework (Sabatier, 1988). Respondents are making choices about the importance of the respective deep core statements, policy core statements, and secondary aspects. Q methodology can, by revealing subjectivity, also be used to compare groups inter-individually. As

Wolsink and Breukers (2010, p. 539) put it: “the factors that result from a Q analysis represent the common parts of individual narratives and can be considered as ideal types.” The common parts and differences of various factors are of particular interest in this study. By the structure of belief systems, one can compare the different configurations of Q sorts, and infer about how the commonalities (or differences) in the deep core, policy core, or secondary aspects contribute to the conflict.

Q method generally follows the same procedure: (1) creating a Q sample by sampling an issue domain (the concourse of communication), (2) selecting the respondents (the P set), (3) the Q sort of the Q sample by the respondents, (4) factor analysis, and (5) interpreting the analysis outcome (Brown, 1993; McKeown & Thomas, 2013; Uittenbroek et al., 2014; van Exel & de Graaf, 2005; Watts & Stenner, 2005).

The q set: selected statements

The Q set is the sample drawn from the total concourse which encompasses the complete scope of a discussion about topics: well-informed statements, opinions, ‘common’ knowledge, or even gossip (McKeown & Thomas, 2013; van Exel & de Graaf, 2005). The sample, according to McKeown and Thomas (2013, p. 18), is ideally “*naturalistic* in the language of the parties to the concourse”, this can be done by retrieving items from interviews. A less direct approach, still naturalistic, was chosen in this research using indirect external sources such as newspapers, internet discussion boards, columns, policy documents and information sheets.

The Q set should be sampled with great care. This could either be done in an *unstructured* manner, “in which items are selected by means presumed to ensure comprehensive coverage” (McKeown & Thomas, 2013, p. 23). Such sampling is usually applied to concourses which are undeveloped. *Structured* samples are systematically drawn based on theoretical arguments (ibid.). This research structures the Q sample according the different levels of belief systems. The deep (normative) core contains any statement relating to assumptions about human nature, priorities of values, and priority of welfare and the role of government, market, or civil society (Sabatier & Weible, 2016, p. 194). The (near) policy core are statements about applications of deep core beliefs, and seriousness of policy problems (ibid.). The secondary aspects are more detailed preferences, addressing budgeting and rule problems or consequences that are supposedly not accounted for (ibid., p. 196). All three levels of beliefs are to be *equally* present in the sample. Furthermore, following the concerns of sustainable development (Hopwood et al., 2005, p. 39; UN, 2015), and the ambitions of the municipality, the sample must at least cover one statement involving health and one involving climate change. The theoretical arguments hence dictate a Q sample with the three dimensions of belief systems of which, in each dimension, there must be at least a statement relating to either support or opposition the environmental zone in relation to health or climate change. Furthermore, considering that actors may have other motivations outside concerns for health and climate change, ‘other’ statements concerning the deep core, policy core, and secondary aspects are included based on their salience in the debate and coherence with respect to the policy (e.g. statements not relating to environmental zone, sustainable development or policy will not be included). 36 statements were selected from a ‘population’ of 298 statements ranging from 54 sources.

Two interviews were held with local politicians – one in favour of the environmental zone, one against – to verify the preliminary Q sample. As local democratic representatives it is conjectured that they possess some knowledge of the environmental zone and position themselves in the debate. The interview was open so additional statements could be collected and the initial statements were reviewed for their comprehensiveness and variety. Through deductively structured sampling, additional inductive unstructured sampling, and verifying the sample, the certainty of representativeness is increased. Ultimately, whether the sample is representative or not, is reflected on earlier (Watts and Stenner, 2005,

p. 75): the sample should generally be representative. This research provides theoretical arguments of several elements of the sample, e.g. the structure of belief systems. Furthermore, the 'other' category was sampled with care, based on their presence in the acquired discourse. Van Exel and de Graaf, (2005, p. 5) reject the criticism that different researchers may sample different Q sets from a discourse. Given that the structure is a logical construct for the researcher, the aim representativeness is equal among all researchers applying the same procedures. Furthermore, regardless of the exact sample, it is the respondent that gives meaning to the various statements by ordering them (Brown, 1993 in van Exel & de Graaf, 2005, p. 5).

The p set: selected participants

The point of reference for selecting participants taken in this study is a theoretical selection: "participants are chosen because of their special relevance to the goals of the study" (McKeown & Thomas, 2013, p. 31; van Exel & de Graaf, 2005, p. 6). The aim of this research is to uncover and compare belief systems of different governance actors involved in the environmental zone. Relevant policy actors in the environmental zone case include in the first place the municipality and local politicians. The latter decided upon the measure in the council and the former designed and implemented the environmental zone. Local politicians also represent their local constituencies, which is relevant in this research, because their constituencies are, more or less, affected by the environmental zone. It is assumed that local politicians, but also the advocacy coalitions represent the various interests of their backbones. Second, multiple advocacy groups were at a 'council information meeting' (25th of August, 2016) and participated in the conversation about the environmental zone. These advocacy groups were approached as well. Furthermore, other advocacy groups that released a statement, published an article, or were in another way involved, were also approached. Third, local affected entrepreneurs, shop holders and known car-owners within the geographical reach of the environmental zone were contacted. Lastly, *zfp'er*-collectives (independent entrepreneurs without employees) were approached to be included in this study.

Q sort: ranking the statements

In the stage of the Q sort, "subjectivity is expressed by participants modelling their viewpoints" (McKeown & Thomas, 2013, p. 5) through the rank-ordering of the Q sample in a Q sort. When performing the Q sort, the participant is instructed to rank the statement, and thereby engages in distinguishing among values (ibid., p. 25; van Exel & de Graaf, 2005, p. 6), according to some face valid and subjective criterion (Watts & Stenner, 2005, p. 69) by assigning each item of the sample in a position ranked on a 'fixed quasi-normal distribution' (ibid., p. 77). The condition of instruction is to order the statements in accordance/discordance with the respondent's point of view. The 36 items in this study are to be ranked from -4 to +4 which is appropriate for Q samples smaller than $N = 40$ (McKeown & Thomas, 2013, p. 29). The score sheet ranges from *most* to *most* (van Exel & de Graaf, 2005, p. 6). Such scoring is applied due to the meaning of the middle score 0, which is not an average, but it is neutral and without significance (McKeown & Thomas, 2013, p. 65). A score sheet ranging from 'least in accordance' to 'most in accordance' indicates that a score is always to some extent in accordance. Rather, opposites are expected and thereby 'most in discordance' is the counterpart of 'most in accordance'.

Results

A total of 14 respondents are included in the study: 2 from the municipality, 4 local politicians, 6 people from advocacy groups, and 2 local citizens within the reach of the zone, one associated with entrepreneurial association and one known local in possession of a car. There was non-response from

multiple entrepreneurial associations, local shop-owners, and *zsp*-collectives and from one advocacy group. There was a rejection by one advocacy group that was explicitly involved in the environmental zone case through for example the council information meeting. One respondent (7) was not able to finish the Q sorting stage, but the comments of this respondent are nevertheless included in this study (not in the description of the factors). After the Q sorts were administrated, the statistical analysis took place via PQMethod version 2.35 (Schmlock, 2017). Correlations between sorts were calculated, unrotated factors extracted via centroid analysis, and finally factors were rotated using varimax rotation. The goal of the factor analysis is to identify natural groupings – belief systems in this study – of Q sorts. People who share a common point of view will also share the same *factor* (van Exel & de Graaf, 2005, p. 8). The principal component analysis showed three factors exceeding an eigenvalue of 1.00, a fourth factor was included in the final analysis (eigenvalue = .70). The fourth factor allowed participants who only loaded negatively on one factor in the three factor solution to load positively on another factor. This decision resulted in one respondent’s high loading on factor C, but as the results show, this factor presents a unique belief system. *Factor loadings* are presented in table 1, and can be read as the “participants association with these subjective states [factors]” (McKeown & Thomas, 2013, p. 6), i.e. participants with similar belief systems will share the same factor. A significant factor loading a $p < .05$ is one that exceeds $1.96(1/\sqrt{36}) = \pm 0,33$. At the $p < .01$ level the equation leads to $2.58(1/\sqrt{36}) = \pm 0,43$ (see Watts & Stenner, 2005, pp. 87 – 88). Therefore respondents that load significantly on a factor show a coefficient higher than 0,43, these respondents were flagged for the Q analysis.

Table 1: correlation coefficients respondents’ Q sorts and factors

	Factor A	Factor B	Factor C	Factor D
Resp. 1 Advocacy Environment	0.86	– 0.01	0.31	0.02
Resp. 2 Advocacy Cars	– 0.64	0.52	0.19	0.11
Resp. 3 Entrepreneurial Association	0.87	– 0.11	– 0.05	0.27
Resp. 4 Municipality	0.78	0.02	– 0.26	0.39
Resp. 5 Advocacy Nature	0.13	0.17	– 0.09	0.81
Resp. 6 Advocacy Environment	0.86	– 0.26	0.22	0.19
Resp. 8 Advocacy Cars	0.23	0.06	0.16	0.83
Resp. 9 Local politician Opposed	– 0.13	0.82	0.23	0.28
Resp. 10 Local politician Opposed	0.10	0.17	0.92	0.02
Resp. 11 Local politician Support	0.69	– 0.38	0.07	0.02
Resp. 12 Local driver	– 0.20	0.87	– 0.02	– 0.04
Resp. 13 Municipality	0.59	– 0.22	– 0.08	0.39
Resp. 14 Local politician Support	0.66	– 0.18	0.33	0.44
Explained variance	36 %	16 %	10 %	16 %

Based on the four factor solution, *factor scores* were computed indicating the idealized Q sort for a factor (McKeown & Thomas, 2013, p. 60). The ideal Q sort of is a hypothetical respondent with a perfect loading on the respective factor for all the different items (van Exel & de Graaf, 2005, p. 9). The factor scores are used to empirically generalize the subjective points of view (McKeown & Thomas, 2013, p. 60) it is the methodological illumination of subjectivity made operant. The factors are interpreted based on the *characterizing statements*: statements with a score of ± 3 or 4 (van Exel et al., 2010, p. 388), the *distinguishing statements* (‘significantly’ different in statistical terms), and the explanations of the respondents.

Factor A: environmental zone protagonist: care for clean air and climate change

The first belief system is the typical supporter of the environmental zone. Two advocacy groups for the environment, a local citizen from an entrepreneurial association, two local politicians in favour of the zone, and the municipality loaded significantly on this belief system. This view on the environmental zone is characterised by support for the goals that the environmental zone serves: clean air and climate change mitigation. Respondent 4 said: “*We need to do something ourselves. Being a little more aware of what we do and how we travel*”, and another: “*It is the bigger problem, the total (broader) picture; it is about sustainable mobility, the way we travel. Traffic contributes to 25% of the emissions, and we are already not living up to the Paris Agreements*” (resp. 6). This belief system is deeply concerned with the future, as indicated by respondent 13 who sees the necessity of this deep core value (#21): “*This is a fact,[that] we are going to be confronted with, prognoses say[that] in 2030/2040 we reach the limits of the state of our current capacity*” when talking about Utrecht. The concern for climate change and health is illustrated in a view between particular and ‘higher’ interest, one that is not so much shared by other belief systems.

EU standards are defined as important in this belief system “*The norm is a serious issue. The problem it addresses should be dealt with and it is important that policy is made for the EU norms*” (resp. 1). Furthermore, belief system A is defined by accordance with the view that the environmental zone is appropriately located downtown (#9, +2), one of the most effective measures to improve air quality (#25, +2), and that it improves the quality of life in the city (#32, +2).

	A	B	C	D
21* If we want to stop climate change and if we want healthy air, we drastically need to change the way we move ourselves and our belongings.	+4	-1	+1	+4
20~ If we do nothing, we will not meet EU standards on air quality.	+3	0	0	+1
23* The health benefits of cleaner air are important.	+3	0	+3	+3
31* A higher interest, in this case cleaner air, is more important than a smaller, private interest.	+3	-2	0	+1

* deep core; ~ policy core; no mark indicated secondary aspects All statements are sorted descending on z-score

This belief systems shows most discordance with statements accusing the environmental zone. Statement 24 about bullying drivers was defined as most in discordance, distinguishing this belief system from others that did not weigh this statement as important: “*I get the bullying part. But it is absolutely not useless, I also don't like the framing in this statement*” (resp. 6), and “*It is factual incorrect. And if you think that bullying is the motive, then you have no idea how much effort it has cost us. If it wouldn't be effective, it wouldn't be worth it*” (resp. 11). Also, labelling the environmental zone as foul symbolic politics (#7) is seen as objectionable by this belief system.

Claiming that the air is cleaner than ever was not seen as a compelling statement: “*I'm not convinced about this. It is also about making the drivers aware of what they are doing and what their influence is*” (resp. 3). The discordant views by this belief system focus parrying possible arguments that attack the environmental zone. They are protective of clean air and climate change and willing to defend the zone in its current state.

	A	B	C	D
24* De environmental zone is the bullying of car drivers and it is useless.	-4	2	0	0
35~ The city will bleed to death when the car is no longer allowed inside.	-3	1	-3	0
7* The environmental zone is just symbolic politics, kept together by lies.	-3	1	1	-2
6* The air is cleaner than ever. As far as I am concerned, the removal of environmental zones can take place as soon as possible.	-3	0	-1	-1

While multiple advocacy groups loaded relatively high on this worldview, respondent 2 loaded significantly negative ($p < .01$) on this belief system and positively on belief system B ($p < .01$). For example statement 7, characterizing discordant with this belief system, was not deemed as problematic by respondent 2, who said that *“I agree with the first part, but I won't say others are selling lies.”*

Factor B: environmental zone antagonist: the environmental zone misses the mark

Belief system B can be considered rather archetypical car-advocating. Respondent 2 from a car advocacy group (see above), together with the local driver and an opposed politician loaded high on this belief system. Strong objections are raised to how the environmental zones are organised (#10), and they attribute the implementation of the zone partly to the political orientation of Utrecht (#16). Sustainability and climate change do not define this view on the environmental zone. Rather, mobility is seen as a pressing issue: *“Cities (and Utrecht) do have mobility problems, especially when one acknowledges urbanization”* (resp. 2). Respondent 9 stated that *“It [mobility] is the fundamental question: what are we trying to organize in Utrecht? You first need to answer that before you get into instrumental details. Mobility is important, for work, for public matters and also in our private relations and lives.”* Connecting statements 18 and 36, the protagonists have more faith in good flow for dealing with Utrecht’s mobility problems, a point of view that is not supported by other factors. In line with objections of this belief systems, it supports the notion that benefits of the zone do not outweigh the costs (#13, +2), explained as followed: *“People are personally disadvantaged: fines. It becomes some kind of toll tax. And the effects are rather disputable”* (resp. 2). Belief system B also shows support to the statement that the environmental zone to is expensive with relation to its effect (#8, + 2), and that technological progress gradual leads to a cleaner fleet (#15, +2).

		A	B	C	D
18~	Utrecht has a mobility issue that needs to be solved.	+1	+4	+4	+2
10	There is now a danger of a patchwork of many different environmental zones in the Netherlands, which the car driver cannot tell apart and thereby the driver risks a fine.	0	+3	-1	+3
36	The most important thing is to ensure a good flow, which is much more effective in counteracting emissions.	0	+3	-2	0
16	Utrecht wants to be a precursor to car-issues. The environmental zone is thus more a prestige project.	-1	+3	+2	-1

Belief system B rejects environmental zones altogether, by raising objections to its effectiveness: *“There are other, more effective measures. There is international research supporting this”* Respondent 2 said. Respondent 9 illustrated it further by touching upon questioning its effect based on the importance of proportionality: *“For example the food bank had to put away their van. It shows how rough the measure is, there should be more exemptions. Also, rich people can more easily replace their cars, hence the measure hits people with low incomes harder.”* Belief system B emphasises the necessity of cars today by also rejecting the notion that good alternatives might ease some of the burdens of the environmental zone: *“There is no alternative. One wants to be mobile, independent and autonomous. In the current situation there is, comfort-wise, no alternative to the car”* (resp. 12), and having no faith in a more deliberative process.

Belief system B can be considered the opposite of A. Table 1 shows a tendency of negative (but insignificant) loadings by participants of factor A on factor B, and vice versa. Whereas the protagonists resorts to deep core statements in defining its belief system – equal in accordance and discordance – the antagonists reject the environmental zone mostly on secondary aspects.

	A	B	C	D
25~ The environmental zone is one of the most effective measures the municipality can implement to improve air quality.	+2	-4	-3	0
33* Cars do not belong at all in the city centre of big cities.	+2	-3	-1	-3
14~ A good alternative to the car makes something like an environmental zone somewhat bearable.	0	-3	+1	+1
30 Through a careful process, the environmental zone becomes a product with a greater support.	1	-3	-2	3

Factor C: the policy realist: make it reasonable, make it fair

One local politician, opposed to the environmental zone, loaded high on belief system C. This belief system is defined by a focus on the mobility issues Utrecht has to deal with (#18), just as belief system B. The policy realist is not satisfied with the current measures: *“It [mobility] is the central problem; the whole Randstad is like one wide Los Angeles. People need to travel more and further, that is the problem you need to look at”* (resp. 10). Another remark about this view on mobility problems, is that it should be addressed more integral through spatial planning. Such an approach can deal with the question of how space is used, reducing the need to travel for people in the area. This preference for a more full-scale approach is in line with the statement that environmental zones are seen as outdated (#22, +2). Policy is the principal element in this belief system, also indicated by the statements 12 and 13 that the environmental zone as a measure is judged non-effective and unfair. The policy realist is critical of Utrecht’s policies, represented by accordance with the statement that Utrecht want to be a precursor on car issues (#16, +2) and that it attracts various events, which is not in line with a supposedly ‘green image’ (#29, +2). Like other belief systems, C regards clean air as important (#23, +3).

	A	B	C	D
18~ Utrecht has a mobility issue that needs to be solved.	+1	+4	+4	+2
12~ I am in favour of clean air in the city, but the burdens and pleasures need to be shared more equally.	0	+1	+3	+2
13~ The minimum effects of an environmental zone do not outweigh the disadvantages	-2	+2	+3	-1
23* The health benefits of cleaner air are important.	+3	0	+3	+3

Statement 5, most in discordance with the policy realists was explained as followed: *“This is equivalent to looking away. High concentrations do make a difference, especially when you are in the midst of them. Every lowering of concentration is useful”* (resp. 10). The opposition from this belief system’s point of view is, just like belief system B, its ineffectiveness. But, it this view rejects the statement that the city will bleed to death or that the government should not interfere with car autonomy, allowing to coalesce with factor A on these points and taking another course of opposition than belief system B.

	A	B	C	D
5 It is ambiguous, the whole world is full of nitrogen oxide. Like if these few streets in Utrecht are suddenly clean.	-1	-1	-4	-3
25~ The environmental zone is one of the most effective measures the municipality can implement to improve air quality.	2	-4	-3	0
35~ The city will bleed to death when the car is no longer allowed inside.	-3	1	-3	0
17* The government should not interfere with which car you drive.	-2	0	-3	0

The policy realists are highly concerned with the policy core of the environmental zone, 5 of the 8 defining statements address this core. Respondent 10, who loaded highly on this factor, explained

concern for the proportionality of the measure: *“One speaks about the needs of mobility, but this is in reality a necessity, not a need. Because often you have no choice.”* This quote is in accordance with statement 12, 13 and 25, because these address the distribution of burdens and benefits. The policy realist is not against the environmental zone per se, but is convinced that the outcomes are unjust. Proportionality was also seen as problematic by a local politician who loaded on belief system B, indicating that this problem is seen as such across belief systems.

Factor D: reconfiguration-ist: acknowledge the car, then we’ll talk

This belief system was loaded high on by a respondent at the municipality and by two advocacy groups, one concerned with nature, one car advocacy. The reconfiguration-ist shares the importance of climate change and healthy air, just as belief system A, but it rejects the current state of the environmental zone. D emphasises the ‘patchwork’ argument that every Dutch city can implement their own version of the environmental zone. Respondent 8, from a car advocacy, put it as followed: *“We observe this, we also hear this from our members. Nowadays, the municipality can set up an environmental zone as they like. This makes it really complex for our members.”* Belief system D is open to a reconfiguration of the environmental zone, believing that doing so would increase support (#30). Other important elements of this belief system are the influence of liveability on economic vitality (#4, +2), a fair distribution of burdens and benefits (#12, +2), and the fact that mopeds – and their emissions– should be addressed first.

	A	B	C	D
21* If we want to stop climate change and if we want healthy air, we drastically need to change the way we move ourselves and our belongings.	+4	-1	+1	+4
23* The health benefits of cleaner air are important.	+3	0	+3	+3
30 Through a careful process, the environmental zone becomes a product with a greater support.	+1	-3	-2	+3
10 There is now a danger of a patchwork of many different environmental zones in the Netherlands, which the car driver cannot tell apart and thereby the driver risks a fine.	0	+3	-1	+3

This belief system is in discordance with statements claiming cars do not belong in the city, ruin the street view, or that cars should vail in favour of pedestrians and cyclists. *“Mobility is awesome. It is everywhere and it is an essential part of our daily lives [...] I still remember the first time in a car. Mobility is wonderful, but it should and can be sustainable”* Respondent 5 commented. The reconfiguration-ists appreciate cars and are discontent with the current way the environmental zone targets cars. A respondent by a car advocacy argues that *“It is also kind of a right to have and [to] use a car, you should not withhold this right based on appearances of a car. It also moves past the functional aspects involved in cars”* (resp. 8). Lastly, statement 5 is deemed as discordant with this belief systems in line with all others.

	A	B	C	D
2* I think that cars are an aesthetically polluting element.	+1	-1	0	-4
5 It is ambiguous, the whole world is full of nitrogen oxide. Like if these few streets in Utrecht are suddenly clean.	-1	-1	-4	-3
34~ The pedestrian and cyclist must get the space. The space is limited, so there's only one way to make optimum use of it: taking away the car.	+1	-2	+2	-3
33* Cars do not belong at all in the city centre of big cities.	+2	-3	-1	-3

This belief systems presents overlap with various other belief systems. It supports A's concern relating clean air and climate change, while it is also highly in favour of cars – in city centres.

Consensus and conflict

The consensus statements according to the Q analysis (non-distinguishing between factors) are (#27) that the environmental zone is arbitrary and (#28) about Dieselpgate, both secondary aspects (see appendix 2 for an overview of all the statements). Further inspection of the composite statements (ordered by their variance in z-scores) show relatively less dissimilarity on statement 19 *“Bullying the car out of the centre means that physical shops will disappear”* (–1, 0, –2, –2) allowing belief system A, C, and D to reach common ground, with no opposition by the antagonists. Statement 15 *“The air will be cleaner by replacing the fleet. Also without the environmental zone”* (0, 2, 0, 0) has belief system B as its greatest advocate and no opposition. *“The more liveable the city is, the more economically vital it is”* (#4; 1, –1, 0, 2) and *“Traffic plays a crucial role in the climate debate”* (#1; 1, –1, 1, 1) show consensus between belief system A, C, and D to find common ground. Lastly, statement 18 *“Utrecht has a mobility issue that needs to be solved”* (1, 4, 4, 2), is in line with belief systems of all actors. These consensus statements indicate that there are certain issues in the environmental zone debate that are shared across belief systems. Next, the different layers of belief systems and their respective consensus and conflict is discussed.

Deep normative core

The protagonists are defined by outspoken deep core statements (#21, 23, 31, 24, 7, 6), most relating clean air and climate change. Belief system A clashes the most with B who is opposed to all the deep core elements of A except for statements about clean air (#23) and the current state of the air (#6). Belief system A can coalesce with the policy realists in relation to the health benefits of clean air, and with the reconfiguration-ists on the health benefits and a need for change in the “way we move.” The reconfiguration-ists are however also in conflict – based on its deep core – with belief system A: they appreciate cars, and strongly reject the notion that they do not belong in the city centre. This is where belief systems D finds deep core support in the antagonists, who also deeply favour cars. Belief system C's deep core is defined by the benefits of clean air, something that is virtually opposed by none of the belief systems, and by the way the government interferes with car usage (#17), finding back-up in belief system A. C is insofar not against government intervention, but it is opposed to the environmental zone, as explicated in the next section.

Near policy core

Belief system C, and B to a lesser extent, are defined by policy core elements of the environmental zone debate. Statement 18 about Utrecht's mobility problem is an important issue shared across all the belief systems, but most pressing for B and C. Furthermore, the environmental zone's ineffectiveness (#25) is a major part of the policy core for again, B and C. The policy realists' arguments cover more such arguments about the effects, burdens and pleasures (#13, 12). C does find reasonable common ground in addressing the equality issues, because across all belief systems this argument is not opposed. Returning to the perceived effectiveness of the environmental zone, B and C conflict mainly with belief system A. Belief system C and A do however share common ground relating the economic side-effects of the environmental zone (#35). The protagonists argue for the EU standards in the policy core, a position that virtually leads to no opposition. Belief system D is, compared to the others, relatively unspoken within the policy core. Their main concern lies at the use of space within the city (#34), they are absolutely against this idea, finding support in B and opposition in belief system A and C. Notable is the reconfiguration-ists' viewpoint on statement 3: “you buy a car to drive, you pay insurance, road

tax and your MOT (examination) every year. Then you can drive your car, period.” While this policy argument is supported by B, it is opposed by belief system A, C, and D. Given D’s appreciation of cars, their position on such issues indicates that they are willing to negotiate.

Secondary aspects

As for the secondary aspects, most conflict is shown in statement 30 “*Through a careful process, the environmental zone becomes a product with a greater support*” (1, -3, -2, 3). While regarded as promising by the reconfiguration-ists, and by the protagonists to a less extent, both belief system B and C, have no faith in a reconsidering the set-up of the environmental zone. This is an important difference in belief system B and D, the antagonists beliefs that reconfiguration is futile, while actors of belief system D are willing to talk.

Belief system B is, compared to the other factors, most defined by secondary statements (#16, 10, 30, 36). The patchwork argument in this belief system is shared by the reconfiguration-ists, with no opposition from belief system A. Furthermore, B’s accusation that Utrecht wants to be a precursor on car-issues is supported by C and conflicting with belief systems A and D. Belief system C and D are both defined, in terms of secondary aspects by rejecting the argument that clean air is ambiguous (#5). Lastly, B is defined as a proponent of ‘good flow’ (#36), something that conflicts with the policy realist’s belief systems: “*Traffic jams and dosing are important for solving the problem of traffic in the city. You need to create a balance between car and public transport*” indicating that a good flow is absolutely undesirable. This is supported by respondent 7, from an local advocacy group, who argued that “*the environmental zone is an instrument to make the city more sustainable. But it should be complemented with other policies, for example dosing the amount of traffic at the borders of city*” thereby fuelling the conflict about good flow.

Coalition, reframing and support

There are certain elements in the debate that create common ground and allow for various coalitions. Van Eeten (1999, chapter 7) presents several *building blocks* that enable the creation of a new agenda, based on the character of the controversy. One such building block is to “conceptualize and develop meaningful center positions” (ibid., p. 159). Several statements present interesting starting points, shown below in table 2. All belief systems seem to share that Utrecht’s mobility problem needs to be solved, as well that clean air is beneficial in terms of health, provided a just division of burdens and benefits. Belief systems A, C, and D can very well work together under the aegis of sustainable development (#21) and rethinking mobility. This point of view is not in accordance with factor B’s beliefs, but it is not a *characterizing* objection. Another interesting coalition can be found in the patchwork argument, both important for B and D. But belief system A, in favour of environmental zones, does not reject this statement, rather it stays neutral. C does reject this statement, but not in *characterizing* sense. The idea of thinking global, acting local (Bulkeley, 2002; Gough, 2013; Schwarz, 2014) resonates in statement 20, supported in belief system A and D, illustrated by an actor from the protagonists explaining that “*we are already not living up to the Paris Agreements*” (see also Carbon Market Watch, 2017). Based on the characterizing statements (e.g. ± 3 or 4), both A and B can coalesce on 4 times (with other factors) and C and D 6 times making the latter two fruitful coalition partners.²

² On the ± 3 and 4 statements, consensus is as followed: A + B = 0; A + C = 2 (23, 35); A + D = 2 (21, 23); B + C = 2 (18, 25); B + D = 2 (10, 33); and C + D = 2 (5, 23).

Table 2: consensus leads

		A	B	C	D
18~	Utrecht has a mobility issue that needs to be solved.	+1	+4	+4	+2
23*	The health benefits of cleaner air are important.	+3	0	+3	+3
12~	I am in favour of clean air in the city, but the burdens and pleasures need to be shared more equally.	0	+1	+3	+2
21*	If we want to stop climate change and if we want healthy air, we drastically need to change the way we move ourselves and our belongings.	+4	-1	+1	+4
10	There is now a danger of a patchwork of many different environmental zones in the Netherlands, which the car driver cannot tell apart and thereby the driver risks a fine.	0	+3	-1	+3
20~	If we do nothing, we will not meet EU standards on air quality.	+3	0	0	+1

The different belief systems find consensus on some issues, but the structure of their belief system differs substantively. As shown, A has incorporated many *deep normative core* statements (6), both in accordance and discordance. This makes this belief system close to an advocational philosophy. Jenkins-Smith and Sabatier (1994, p. 181) note that deep core beliefs are not very susceptible to change “essentially akin to religious conversion” (see also Sabatier, 1988, p. 145) Partly, the protagonists’ philosophy is shared by factor D, indicating that this fierce conviction is not necessarily problematic. As shown above deep core ‘controversies’ may arise between belief system A and B (Sabatier, 1988, p. 155). Belief system B is mostly concerned with objections to the environmental zone on the policy core and the secondary aspects. According to Sabatier (1988, p. 148) secondary aspects might be abandoned, or others system’s secondary aspects might be incorporated. As both belief systems share to some extent Utrecht’s mobility problems, this can be a meaningful center position (van Eeten, 1999, p. 159), indicating that policy learning across A and B might be possible on the secondary aspects.

Belief system *the policy realist* is concerned with the effects and fairness of the policy – finding alternating support in B and D. Statement 25, 31 and 13 define this topic. As described in factor B, people can feel personally disadvantaged, especially when the benefits are diffuse (Stone, 2002, p. 239). This argument is relates very well to explanations shared by both belief system B and C through discussing the proportionality of the measure – it was judged as harsh. This part of the policy might be balanced through re-framing. There were various explanations stating that the environmental zone as a sole policy is unlikely to succeed. It should be complemented with policies in terms of the achieving its goals (resp. 7). It should also be complemented with regards to how it is implemented: “*the environmental zone goes (and should go) hand in hand with subsidies and demolition schemes*” an actor from the protagonists commented. It was thus acknowledged that the zone leads to burdens, and that the government should aid ‘subjects’ of the policy (resp. 13). The policy document ‘Action Plan Clean Transport’ (van der Waard & Meijles, 2015, pp. 6 – 9) presents this as well: the environmental zone is *part* of a policy program and was for example supplemented with incentive arrangements and demolition schemes. Therefore, with reservation that coalitions can reflect on other belief systems (Schön & Rein, 1994, p. 187), reframing on totality of the issue at hand – not solely an environmental zone – might relieve problems of distribution and justice. Van Eeten (1999, p. 148; 159) speaks of how certain arguments may be *suppressed* by the opposing ends of the dilemma. The heated debate environmental zone debate and its repetition of arguments may have done so. Allowing the policy realists’ concerns about equality to cut across the polarized positions might set a new agenda (ibid., p. 163).

The reconfiguration-ists share some deep core elements with A, but it has principal differences with the protagonists as well. Statement 2 and 33, about aesthetics and belonging of cars, are the axioms of belief system D. It loves cars and while A is willing to dispose of them for the greater good. The ACF

argues “that policy change is best seen as fluctuations in the dominant belief system (i.e. those incorporated into public policy) within a given policy subsystem” (Sabatier, 1988, p. 158). Therefore, given that belief system A does not share D’s appreciation for cars, only fluctuations in this deep core might allow for support from the reconfiguration-ists – and thereby a coalition. The protagonists and reconfiguration-ists collaborate very well on the sustainability issues, but clash here. A new agenda or a center point is most likely necessary to solve the conflict about cars between A and D. Reframing the role of cars, from unwelcome to something else, also alleviates the some of the tension between A and B, because it is the only characterizing deep core statement of belief system B.

Sabatier argues for the resilience of belief systems, especially the deep normative core, change of systems is possible. Sabatier (1988, p. 150) hypothesises that “exogenous events, a loss of political resources, [...] or a variety of other factors may force proponents to revise their belief systems by incorporating some new elements.” The ‘Dieselgate’ statement (see Gates et al., 2017) potentially reflected such exogenous event, but was in discordance across all the belief systems.

Four different belief systems define various problems and their solutions. In consideration that their deep cores are distinctive but not necessarily conflicting, policy-oriented learning across belief systems is possible under the condition that policy actors are willing and able to alter “alter Policy Core aspects of their belief system – or at least very important Secondary Aspects” (Sabatier, 1988, p. 155).

Conclusion and discussion

This study revealed four involved belief systems among policy actors in the environmental zone debate. The *environmental zone protagonist*, *antagonist*, *the policy realist*, and *the reconfiguration-ist* all represent different belief systems concerning the problem and preferred policies concerning Utrecht’s environmental zone. Then, *how do the levels of belief systems differ between actors involved in the Environmental Zone?* The protagonists are driven by deep core motivations that legitimize the environmental zone. Their deep core is mainly in discordance with the antagonists, while it finds alternating support in the policy realists and the reconfiguration-ists. Belief systems A and B are, relative to the others, most diametrically positioned (see for example the factor loadings in table 1), but not in terms of total opposition, meaning that + 4 on A is automatically – 4 on B. While the protagonist’s belief systems is mainly defined in terms of the deep core, the antagonist’s belief system is defined through objections to the environmental zone at the levels of the policy core and secondary aspects. The antagonists strongly question the effectiveness of the measure and national design of environmental zones, policy core elements which are presumably possible of reframing (Schön & Rein, 1994) and susceptible to policy-oriented learning (Sabatier, 1988, p. 155). Reframing on the argument that the environmental zone is not a self-contained measure, but part of policy program, might yield more support; reframing to the carrot, away from the stick. Moreover, there are shared concerns in accordance with both belief systems, such as the mobility problems of Utrecht and the health benefits of clean air. Such issues allow for developing new center positions, possibly enabling new collaboration. The policy realists and reconfiguration-ists are, within the scope of this study, most accessible for coalitions. The latter belief system overlaps on the deep core elements of the protagonists while acknowledging the policy problems of the antagonists and the policy realists. These same policy realists share deep core elements with other belief systems, but feel the current implementation of the environmental zone is unjust. This argument might have been suppressed, and could set a new agenda and articulate another dimension of the conflict.

The empirical findings in this study add to the theoretical knowledge of environmental zones/LEZ’s. As presented in earlier (see ‘previous research’, p. 3), studies addressing the environmental zone focussed

on measurable chemical effect of the zones or fleet composition, neglecting the social aspects. This study shows how different belief systems of involved actors present different arguments and concerns relating the environmental zone. It is more than measurable effects, it is also about equality, consistency of policies, an appreciation for cars, and concerns about climate change.

There are many interpretations to sustainable development (Clarke, 2002, pp. 84 – 85; Giddings et al., 2002, p. 188), and this study confirms this. While the overarching ambitions by the municipality are a carbon emission-poor Utrecht (de Waard & Meijles, 2015), the environmental zone as a measure in its current state mainly addresses health. This was emphasised by some the respondents, nevertheless, respondents in favour of the environmental zone did not eschew linking it to climate as well. Sabatier's Advocacy Coalition Framework was therefore a fitting theoretical starting point, because it moves beyond interests. Interests may be shared, but belief systems can overlap at different levels, allowing unexpected coalitions such as one between the protagonists and the reconfiguration-ists. Combining Q methodology and ACF (also suggested by Day, 2008) provided detailed results about the involved points of view. Even though common ground was designated, the debate was (and is) still contentious. This may be due the fact that in the Netherlands a car-dependent lifestyle have been developed. Cars are a necessity. Moreover, it is argued that the Dutch love their car, it has identity value, represents freedom and self-dependence, and autonomy to live and work wherever one desires (Harms, 2003, pp. 89 – 90). Regulating such an entity could induce fierce opposition, something that is empirically supported by this study. The costs were perceived as high, argued by the antagonists, and the health benefits are diffuse. Health and air pollution are major concerns for cities (Mage et al., 1996, p. 682; The Guardian, 2017) and this makes an environmental zone a delicate issue. With supranational norms and agreements (EC, 2017; UN, 2015) more policies like the environmental zone are to be expected, leading to possibly more conflict or controversies. The next paragraphs presents suggestions on how to deal with contentious debates about sustainability policies.

Like previous Q studies in the environmental domain (e.g. Ellis et al., 2007; van Eeten, 1999) this study shows that environmental zone conflict is 'not as it seems'. Part of the debate represents how it is portrayed in the media stories, hence the *protagonists* and *antagonists*. But precisely the *policy realists* and *reconfiguration-ists*, are belief systems that are not obvious at first sight, yet promising in solving the conflict. They both present arguments and concerns that were suppressed by polarized positions (van Eeten, 1999, p. 148). Both these belief systems share common ground with the protagonists and antagonists, and this common ground is necessary for more constructive dialogue (Ellis et al., 2007, p. 539) and co-design (Schön & Rein, 1994, p. 171). Moreover, putting the policy realists' and the reconfiguration-ists' arguments explicitly on the agenda, could cut through the polarization and facilitating new coalition opportunities. Other, similar policies should acknowledge the structure of the environmental zone debate: respecting the involved deep cores, while bargaining about the policy cores and secondary aspects to create more support. Uncovering suppressed concerns is promising in relating debates. Another solution to deal with contentious conflict, as shown in this research, is developing 'new meaningful center positions'. These center positions could be new starting points for collaborative environmental local policymaking.

When a respondent completes a Q sort, the product "represents the subjects position toward the topic in question" (van Eeten, 2001, p. 119). In this study, the results are interpreted as such. With reservation that the Q sample and the P set are limited, the findings of this study represent various belief systems and positions concerning the environmental zone. This research does have its limitations. The Q sample should be generally representative (Watts & Stenner, 2005, p. 75), even though most respondents could do well with the sample, some had trouble performing the Q sort. The sample was relatively modest and because respondents were generally knowledgeable, detailed elements were perceived as missing such as diesel being 'carbon friendly' but dreadful in terms of nitrogen oxide and

grime. Gasoline is worse on the carbon emissions and ‘better’ in terms of nitrogen oxide. Future research is advised to reconsider the Q sample, taking into account these nuances. A refined the design based on this research could also focus on either health *or* climate change concerns. Second, a strategic set of participants was selected (ibid., p. 79): involved in with the environmental zone or expressing a specific point of view relevant to it. Even though the sample is small, it still falls within the ratio of ‘reliable results’ in terms of the *N-to-n* [*N* for items, *n* for participants]- ratio (McKeown and Thomas, 2013, p. 63).³ More important, the P set should be sufficient. Given that the environmental zone is a local issue with a modest amount of involved actors up to now, the set can be considered sufficient. Other relevant actors that should be acknowledged for future research, were local shop-owners, *zpz*’ers, the car lobby, and ‘green’ entrepreneurs – all involved or subject to the policy in a different way. Future research could also attempt to extract the cultural value of cars (Harms, 2003; see also van Exel et al., 2011) to explore why car-related policies spark this much contention. A last suggestion: Hajer’s (1995) discourse coalition framework is a promising alternative next to the ACF (see also Bulkeley, 2002). Studying narratives in the environmental zone debate could uncover additional elements, designate – perhaps different – discourse coalitions, and add to the findings presented in this study.

³ McKeown and Thomas (2013, p. 63) state that “various *N-to-n* ratios have been recommended, ranging from 2:1 to 10:1.” In a systematic test (with ratios ranging between 1,3:1 to 19,8:1) it was found that there was no basis for “large samples and high ratios that were posited as necessary for reliable results.”

References

- Baggen, A. M. M., Gunnink, S., Remkes, E., Geelen, L., Meulen, R. van der, Haxe, L., & Waard, E. J. L. van der (2016). Milieuzone Utrecht Effectmeting/evaluatie 17 mei 2016. Available via: <https://www.utrecht.nl/fileadmin/uploads/documenten/wonen-en-leven/milieu/luchtkwaliteit/Bijlage-4-Milieuzone-evaluatie-effectmeting.pdf>
- Barry, J., & Proops, J. (1999). Seeking sustainability discourses with Q methodology. *Ecological economics*, 28(3), 337-345.
- Boogaard, H., Janssen, N. A., Fischer, P. H., Kos, G. P., Weijers, E. P., Cassee, F. R., ... & Brunekreef, B. (2012). Impact of low emission zones and local traffic policies on ambient air pollution concentrations. *Science of the total environment*, 435, 132-140.
- Bouma, J. (2012, March 26). Vechten tegen windmolens. *Trouw*. Available via: <http://www.trouw.nl/tr/nl/4332/Groen/article/detail/3231332/2012/03/26/Vechten-tegen-windmolens.dhtml>
- Brown, S. R. (1980). *Political subjectivity: Applications of Q methodology in political science*. Yale University Press.
- Brown, S. R. (1993). A primer on Q methodology. *Operant subjectivity*, 16(3/4), 91-138.
- Carbon Market Watch (2017). EU climate leader board. Where countries stand on the effort sharing regulation – Europe’s largest climate tool. *Policy briefing, March 2017*. Available via: <http://carbonmarketwatch.org/eu-climate-leader-board-where-countries-stand-on-the-effort-sharing-regulation/>
- Cesaroni, G., Boogaard, H., Jonkers, S., Porta, D., Badaloni, C., Cattani, G., ... & Hoek, G. (2012). Health benefits of traffic-related air pollution reduction in different socioeconomic groups: the effect of low-emission zoning in Rome. *Occupational and environmental medicine*, 69(2), 133-139.
- Christensen, J. H., & Christensen, O. B. (2003). Climate modelling: severe summertime flooding in Europe. *Nature*, 421(6925), 805-806.
- Clarke, A. H. (2002). Understanding sustainable development in the context of other emergent environmental perspectives. *Policy Sciences*, 35(1), 69-90.
- Corfee-Morlot, J., Kamal-Chaoui, L., Donovan, M. G., Cochran, I., Robert, A., & Teasdale, P. J. (2009). Cities, climate change and multilevel governance. *OECD Environment Working Papers*, (14).
- Day, S. (2008). Applications of Q methodology to a variety of policy process theories and frameworks. *International Journal of Organization Theory and Behavior*, 11(2), 141.
- Devine-Wright, P. (2005). Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy. *Wind energy*, 8(2), 125-139.
- Dryzek, J. S., & Berejikian, J. (1993). Reconstructive democratic theory. *American Political Science Review*, 87(01), 48-60.
- Eijk, A., & Voogt, M. (2016). *Effectmeting milieuzone personen-en bestelverkeer in Utrecht* (No. TNO 2016 R10230). TNO.
- Ellis, G., Barry, J., & Robinson, C. (2007). Many ways to say ‘no’, different ways to say ‘yes’: applying Q-methodology to understand public acceptance of wind farm proposals. *Journal of environmental planning and management*, 50(4), 517-551.
- Ellison, R. B., Greaves, S. P., & Hensher, D. A. (2013). Five years of London’s low emission zone: Effects on vehicle fleet composition and air quality. *Transportation Research Part D: Transport and Environment*, 23, 25-33.
- European Commission (2017). Air Quality Standards. Available via: <http://ec.europa.eu/environment/air/quality/standards.htm>
- Fischer, F. (2003). *Reframing public policy: Discursive politics and deliberative practices*. Oxford University Press.

- Gates, G., Ewing, J., Russell, K., & Watkins, D. (2017, March 16). How Volkswagen's 'Defeat Devices' Worked. *The New York Times*. Available via: <https://www.nytimes.com/interactive/2015/business/international/vw-diesel-emissions-scandal-explained.html>
- Giddings, B., Hopwood, B., & O'Brien, G. (2002). Environment, economy and society: fitting them together into sustainable development. *Sustainable development*, 10(4), 187-196.
- Gough, A. (2013). "Thinking Globally in Environmental Education: Implications for Internationalizing Curriculum Inquiry", in Pinar, W. F. (2013). *International handbook of curriculum research*. Routledge.
- Hajer, M. A. (1995). *The Politics of Environmental Discourse : Ecological Modernization and the Policy Process*. Oxford: Clarendon Press.
- Harms, L. W. J. (2003). *Mobiel in de tijd: op weg naar een auto-afhankelijke maatschappij, 1975-2000*. SCP, Sociaal en Cultureel Planbureau.
- Hedlund-de Witt, A. (2013). Worldviews and their significance for the global sustainable development debate. *Environmental Ethics*, 35(2), 133-162.
- Hisschemöller, M., & Hoppe, R. (1995). Coping with intractable controversies: the case for problem structuring in policy design and analysis. *Knowledge, Technology & Policy*, 8(4), 40-60.
- Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: mapping different approaches. *Sustainable development*, 13(1), 38-52.
- Jenkins-Smith, H. C., & Sabatier, P. A. (1994). Evaluating the advocacy coalition framework. *Journal of public policy*, 14(02), 175-203.
- Kenworthy, J. R. (2006). The eco-city: ten key transport and planning dimensions for sustainable city development. *Environment and urbanization*, 18(1), 67-85.
- Klijn, E. H., & Koppenjan, J. F. M. (2015). *Governance networks in the public sector*. Routledge.
- Koppenjan, J. F. M., & Klijn, E. H. (2004). *Managing uncertainties in networks: a network approach to problem solving and decision making*. Psychology Press.
- Ligterink, N. E., Kuiper, E., Hoen, A., Traa, M., Geilenkirchen, G., & Hilbers, H. (2012). Milieueffecten van oldtimers. *Beleidsstudies*.
- Mage, D., Ozolins, G., Peterson, P., Webster, A., Orthofer, R., Vandeweerd, V., & Gwynne, M. (1996). Urban air pollution in megacities of the world. *Atmospheric Environment*, 30(5), 681-686.
- McKeown, B. F., & Thomas, D. B. (1988). *Q methodology (Quantitative applications in the social sciences series, vol. 66)*.
- McKeown, B., & Thomas, D. B. (2013). *Q methodology (Vol. 66)*. Sage publications.
- Mega, V. (1996). Our city, our future: towards sustainable development in European cities. *Environment and Urbanization*, 8(1), 133-154.
- Milieuzones (2017). Locaties milieuzones. Available via: <https://www.milieuzones.nl/locaties-milieuzones>
- Motshagen, R., & Hoogma, R. (2006). The popularity of environmental zones. *Tijdschrift Lucht*, 2(1), 6-9.
- Nevens, F., Frantzeskaki, N., Gorissen, L., & Loorbach, D. (2013). Urban Transition Labs: co-creating transformative action for sustainable cities. *Journal of Cleaner Production*, 50, 111-122.
- Portney, K. (2005). Civic engagement and sustainable cities in the United States. *Public Administration Review*, 65(5), 579-591.
- Qadir, R. M., Abbaszade, G., Schnelle-Kreis, J., Chow, J. C., & Zimmermann, R. (2013). Concentrations and source contributions of particulate organic matter before and after implementation of a low emission zone in Munich, Germany. *Environmental pollution*, 175, 158-167.

- Rapaport, E. (2002). The Stockholm environmental zone, a method to curb air pollution from bus and truck traffic. *Transportation Research Part D: Transport and Environment*, 7(3), 213-224.
- Rein, M., and D.A. Schön (1992) Reframing policy discourse, in: F. Fischer and J. Forester (eds): *The Argumentative Turn in Policy Analysis and Planning*, Durham, NC: Duke University Press: 145–166.
- RTV Utrecht (2016a). “Steun voor Utrechtse milieuzone brokkelt af.” Available via: <https://www.rtvutrecht.nl/nieuws/1477355/steun-voor-utrechtse-milieuzone-brokkelt-af.html>
- RTV Utrecht (2016b). “Teleurstelling bij tegenstanders milieuzone Utrecht.” Available via: <https://www.rtvutrecht.nl/nieuws/1576321/>
- Sabatier, P. A. (1986). Top-down and bottom-up approaches to implementation research: a critical analysis and suggested synthesis. *Journal of public policy*, 6(01), 21-48.
- Sabatier, P. A. (1988). An advocacy coalition framework of policy change and the role of policy-oriented learning therein. *Policy sciences*, 21(2), 129-168.
- Sabatier, P. A. (1991). Toward better theories of the policy process. *PS: Political Science & Politics*, 24(02), 147-156.
- Sabatier, P. A., & Weible, C. M. (2016). The advocacy coalition framework: Innovations and clarifications. In: Sabatier, PA (ed.). *Theories of the Policy Process, Second Edition*, 189-217.
- Sachs, J. D. (2015). *The age of sustainable development*. Columbia University Press.
- Satterthwaite, D. (2008, January). Climate change and urbanization: Effects and implications for urban governance. In *United Nations Expert Group meeting on population distribution, urbanization, internal migration and development* (pp. 309 – 334).
- Schmolck, P. (2017) PQMethod (Version 2.35). Available via: <http://schmolck.userweb.mwn.de/qmethod/downpqwin.htm>
- Schön, D. A., & Rein, M. (1994). *Frame reflection: Toward the resolution of intractable policy controversies*. Basic Books.
- Schwarz, M. (2014). Think global, act local De herwaardering van het lokale is één van de kenmerken van een nieuwe tijdgeest. Available via: <https://stedenintransitie.nl/stadbericht/think-global-act-local>
- Stenner, P. & Stainton Rogers, R. (2004) Q methodology and qualiquantology: the example of discriminating between emotions. In Todd, Z., Nerlich, B., McKeown, S. & Clarke, D.D. (Eds) *Mixing methods in psychology: the integration of qualitative and quantitative methods in theory and practice*. New York: Psychology Press.
- Stephenson, W. (1953). *The study of behavior; Q-technique and its methodology*.
- Stone, D. A. (2002). *Policy paradox: The art of political decision making*. New York: Norton.
- Taylor, C. (1989). *Sources of the self: The making of the modern identity*. Harvard University Press.
- The Guardian (2017). “London breaches annual air pollution limit for 2017 in just five days.” Available via: <https://www.theguardian.com/environment/2017/jan/06/london-breaches-toxic-air-pollution-limit-for-2017-in-just-five-days>
- United Nations [UN] (2013). *World Economic and Social Survey 2013: Sustainable Development Challenges*. United Nations publication.
- United Nations [UN] (2015). *The Paris Agreement*. Available via: http://unfccc.int/paris_agreement/items/9485.php
- Uittenbroek, C. J., Janssen-Jansen, L. B., Spit, T. J., & Runhaar, H. A. (2014). Organizational values and the implications for mainstreaming climate adaptation in Dutch municipalities: using Q methodology. *Journal of Water and Climate Change*, 5(3), 443-456.
- van Bueren, E. M., Klijn, E. H., & Koppenjan, J. F. (2003). Dealing with wicked problems in networks: Analyzing an environmental debate from a network perspective. *Journal of Public Administration Research and Theory: J-PART*, 193-212.

Van Eeten, M. J. G. (1999). Dialogues of the deaf: defining new agendas for environmental deadlocks.

Van Exel, J., & De Graaf, G. (2005). Q methodology: A sneak preview. *Retrieved January, 24, 2009.*

Van Exel, N. J. A., de Graaf, G., & Rietveld, P. (2011). I can do perfectly well without a car!. *Transportation, 38*(3), 383-407.

van Vliet, D. (2017, March 27). Critici milieuzone niet loyaal aan stad. *AD*. Available via: <http://www.ad.nl/rotterdam/critici-milieuzone-niet-loyaal-aan-stad~a3f762da/>

Voogt, M. H., & Verhagen, H. L. M. (2014). *Effectiviteit van verkeersmaatregelen op de concentratie van roet in de gemeente Tilburg-een casestudie*. Utrecht: TNO.

Waard, E. J. L. van der, Meijles, A. (2015). Utrecht Aantrekkelijk en Bereikbaar: Actieplan Schoon Vervoer (2015-2020). Available via: https://www.utrecht.nl/fileadmin/uploads/documenten/wonen-en-leven/verkeer/elektrisch-vervoer/Actieplan_Schoon_Vervoer_2015_2020_in_cIRVObijlagen.pdf

Watts, S., & Stenner, P. (2005). Doing Q methodology: theory, method and interpretation. *Qualitative Research in Psychology, 2*(1), 67-91.

WCED. 1987. *Our Common Future*. Oxford University Press: Oxford.

Witt, A. de, de Boer, J., Hedlund, N., & Osseweijer, P. (2016). A new tool to map the major worldviews in the Netherlands and USA, and explore how they relate to climate change. *Environmental Science & Policy, 63*, 101-112.

Wolsink, M. (2000). Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support. *Renewable energy, 21*(1), 49-64.

Wolsink, M., & Breukers, S. (2010). Contrasting the core beliefs regarding the effective implementation of wind power. An international study of stakeholder perspectives. *Journal of Environmental Planning and Management, 53*(5), 535-558.

Appendices

Appendix 1: ideal Q distribution environmental zone protagonist

				36					
				29					
			28	26	34				
			27	15	30				
		22	19	14	18	33			
	35	17	16	12	4	32	31		
	7	13	5	11	2	25	23		
24	6	8	3	10	1	9	20	21	

-4	-3	-2	-1	0	+1	+2	+3	+4
----	----	----	----	---	----	----	----	----

Most in discordance with my vision

Neutral

Most in accordance with my vision

Appendix 2: composite Q sorts

Factor		A	B	C	D	Consensus Rank
<i>Deep core statements</i>						
31	A higher interest, in this case cleaner air, is more important than a smaller, private interest.	3	-2	0	1	(26)
33	Cars do not belong at all in the city centre of big cities.	2	-3	-1	-3	(30)
24	De environmental zone is the bullying of car drivers and it is useless.	-4	2	0	0	(34)
7	The environmental zone is just symbolic politics, kept together by lies.	-3	1	1	0	(23)
6	The air is cleaner than ever. As far as I am concerned, the removal of environmental zones can take place as soon as possible.	-3	0	-1	-1	(10)
11	It is enough that the municipality serves environmental interests.	0	-2	1	0	(14)
2	I think that cars are an aesthetically polluting element.	1	-1	0	-4	(31)
1	Traffic plays a crucial role in the climate debate.	1	-1	1	1	(6)
23	The health benefits of cleaner air are important.	3	0	3	3	(9)
21	If we want to stop climate change and if we want healthy air, we drastically need to change the way we move ourselves and our belongings.	4	-1	1	4	(27)
4	The more liveable the city is, the more economically vital it is.	1	-1	0	2	(5)
17	The government should not interfere with which car you drive.	-2	0	-3	0	(16)
<i>Near policy core statements</i>						
13	The minimum effects of an environmental zone do not outweigh the disadvantages.	-2	2	3	-1	(34)
20	If we do nothing, we will not meet EU standards on air quality.	3	0	0	1	(13)
14	A good alternative to the car makes something like an environmental zone somewhat bearable.	0	-3	1	1	(22)
3	You buy a car to drive, you pay insurance, road tax and your MOT (examination) every year. Then you can drive your car, period.	-1	1	-2	-2	(17)
25	The environmental zone is one of the most effective measures the municipality can implement to improve air quality.	2	-4	-3	0	(36)
22	Environmental zones that must prevent air pollution are out of date.	-2	1	2	-1	(25)
18	Utrecht has a mobility issue that needs to be solved.	1	4	4	2	(7)
12	I am in favour of clean air in the city, but the burdens and pleasures need to be shared more equally.	0	1	3	2	(15)
34	The pedestrian and cyclist must get the space. The space is limited, so there's only one way to make optimum use of it: taking away the car.	1	-2	2	-3	(32)

8	The worst thing is that the environmental zone as a solution to this so-called problem costs a lot of money that can also be spent on real problems.	-2	2	0	0	(20)
15	The air will be cleaner by replacing the fleet. Also without the environmental zone.	0	2	0	0	(4)
35	The city will bleed to death when the car is no longer allowed inside.	-3	1	-3	0	(21)
<hr/> <i>Secondary aspects statements</i> <hr/>						
16	Utrecht wants to be a precursor to car-issues. The environmental zone is thus more a prestige project.	-1	3	2	-1	(24)
29	As long as the city of Utrecht brings all kinds of events to Utrecht and thus generates extra traffic, it has to stop giving itself an environmental-friendly name.	0	0	2	-2	(19)
9	An environmental zone is beneficial downtown because most people walk outside there and hence there is the most chance of breathing exhaust gases.	2	-1	-1	1	(18)
10	There is now a danger of a patchwork of many different environmental zones in the Netherlands, which the car driver cannot tell apart and thereby the driver risks a fine.	0	3	-1	3	(29)
30	Through a careful process, the environmental zone becomes a product with a greater support.	1	-3	-2	3	(35)
27	The environmental zone is arbitrary, because the municipality uses age as a criterion and not the actual emissions of cars.	-1	0	1	-1	(2)
19	Bullying the car out of the centre means that physical shops will disappear.	-1	0	-2	-2	(1)
32	An advantage of the environmental zone is that it improves the quality of life in the city. We live here with our children and we want to see them healthy and happy.	2	0	-1	1	(11)
36	The most important thing is to ensure a good flow, which is much more effective in counteracting emissions.	0	3	-2	0	(28)
5	It is ambiguous, the whole world is full of nitrogen oxide. Like if these few streets in Utrecht are suddenly clean.	-1	-1	-4	-3	(12)
28	New diesel cars actually dispose the same or more harmful gases than old diesel cars (based on dieselgate).	-1	-2	0	-1	(3)
26	The municipality should first do something about scooters/mopeds.	0	1	-1	2	(8)