EXPLORING THE INFLUENCE OF ONLINE SOCIAL NETWORKS ON THE URBAN SUSTAINABILITY TRANSITION

A case study of Dutch urban planning and Twitter

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Abstract

This study investigates the influence of social media on urban sustainability transition. For this purpose and by applying the inductive research method, we conducted Semi-structured in-depth interviews with thirteen participants from the governmental bodies and citizen initiatives in our case study. We also used the frequency of tweets #a27 between 2010 and 2021. in addition, we retrieved data from the online news, the website of the relative stakeholders, archives, and policy documents. Our analysis shows a strong connection between the transition path and the frequency of citizen initiatives' tweets.

Keywords: sustainable transition, niche, landscape, the regime, transition governance

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1 Introduction

The urban population will grow to 6.4 billion by 2050, while the rural population will remain at around 3.3 (Frantzeskaki et al., 2017). This result can put cities at the center of attention for achieving sustainable development for the future generation (Frantzeskaki et al., 2017). Furthermore, such findings highlight the role of cities as the frontline of sustainability since they are not only the most at risk of ecological and socio-economic hazards but also are the breeding grounds of innovations and experimentations (Loorbach, 2017). That is true that most of our daily activities, including our decision-making, aim to upgrade our urban lives. However, despite decades of attention to sustainability, the expected impact of urban life is not sustainable. Still, it damages biodiversity, causing environmental and ecological crises (Loorbach, 2017). Moreover, as cities under the influence of social media increasingly join the global dynamics, urban sustainability planning becomes more critical (Ilieva & McPhearson, 2018).

Extensive use of social media has allowed citizens to get to know different social groups' opinions formally and informally and help them initiate and organize collective actions in urban planning practices (Törnberg, 2018). In addition, new communication technologies and social media platforms facilitate the rapid spread of information across large distances, thus enabling mobilizations to occur faster (Törnberg, 2018). As a result, Twitter, Facebook, and other social media platforms have increasingly influenced planning practices (Törnberg, 2018). For example, in recent years, environmental movements are increasingly turning to social media and platforms and other digital organization tools to reach bystanders and supporters alike (Törnberg, 2018). Such acknowledgment of the power of social media and its popularity among global citizens has encouraged some governments to use online platforms to enhance citizen participation (Kleinhans et al., 2015). But despite this trend, the impact of social media and its degree of influence on urban sustainability transition are still poorly understood and researched. For instance, whether social media can polarize societal opinions has remained unanswered (Lin & Kant 2021). Therefore, it is crucial to know the principles of successful transition toward sustainable cities and use them to evaluate urban transition. One of these criteria, which is the focus of this research, is participation, co-creation, and collaboration. Therefore, to conduct this research, we need a structured understanding of critical actors in the hybrid environment, their types of actions, and interactions. For this purpose, applying new tools and data to advance understanding of complex urban dynamics and support decision-making for a sustainability transition is crucial.

In the urban context, an urban transition is a multi-actor process of co-occurring at different levels (Frantzeskaki et al., 2017). In this sense, what deserves immediate attention is the research context, such as the cultural, social, and political atmosphere, demographic

population distribution, the popularity of the kind of social media platform under research, accessibility to the Internet, etc. Such considerations can significantly impact the outcome of the study. Because, for instance, unlike in nondemocratic countries, in the Netherlands, spatial planning is a multi-actor process-oriented activity. Given the inherent 'multi-actor' nature of transitions, it is essential to understand the specifics of multi-actor power relations in transitions. Since transition processes are not without contractions, contested visions, and ideas but are somewhat unpredictable processes, their different actors can play roles in different ways (Loorbach & Rotmans, 2010).

 Also, city transition management processes have shown that interaction spaces are not power-free (Roorda & Wittmayer 2014). The fundamental sustainable transition of urbanization involves social, political, environmental, and institutional frameworks and Governance, technology, and infrastructure (Grin, Rotmans, & Schot, 2010; Markard, Raven, & Truffer, 2012). It demands focusing on learning about different actors' perspectives and engaging them in "reframing problems and solutions through social learning" and" creating space for actors to build up alternative regimes (Wittmayer & Loorbach, 2016). Thus, sustainable urban transitions can pose novel challenges to cities beyond traditional planning and urban development policies. Because they require broader public engagement, empowerment of residents, and breakthrough strategies that enable, facilitate, and direct social innovation, social learning, and innovation processes toward adaptive and innovative urban futures (Avelino & Wittmayer, 2016). This perspective necessitates engaging deeply in practical contexts and case studies where actors deal with transitions in the real world.

 Regarding the interplay between online and social life, studies show that online interaction can enhance offline interaction (Lieberman & Schroeder, 2020). People can collaborate via the internet and organize social groups and movements (Theocharis et al., 2015). The Internet provides an opportunity to develop new offline relationships, especially when offline interaction is impossible or scarce (Waytz & Gray, 2018). These relationships may begin online but often continue offline or in mixed media (Lieberman & Schroeder, 2020). Online interactions can build new connections and complement and strengthen existing personal connections (Clark et al., 2018; Waytz & Gray, 2018; Burke & Kraut, 2016). Likewise, offline social influences (interpersonal and external influences) can drive actors' attitudes on social media as information exchange between online and offline environments (Bigne, 2018). Thus, social media expands our understanding of what people do and what they value. Knowing that spatial planning is exercised at all administration levels- from the national to the local level highlights the challenges/opportunities that social media can pose to urban sustainability research.

 Social media create communication and knowledge-sharing spaces without the need for physical attachments. Online communication can both accelerate and hinder sustainable

transition. They allow their users to distribute and create content easy and expose people to diverse viewpoints and new knowledge, limiting irrelevant views or risks, mobilizing campaigns and social movements, and influencing behavioral change (Barrios-O'Neill & Schuitema, 2016; Mueller, 2019; Williams et al., 2015; Ho et al., 2019; Carlson, 2018; Merav & Idit, 2015; Westerhoff et al., 2018). Moreover, social media can sway public attention and influence politics and policies (Li et al., 2019).

The findings of this research can provide insight into better social media usage in participatory planning. First, it gives better insight into the offline factors driving social media content and its side effect on the population's emotions and movement. It helps us to understand the action and interaction between online and offline networks. To understand the influence of the online social network on urban sustainability transition, we have developed the following research question and sub-questions.

Research Question: How can the interaction between online and offline actors in planning processes stimulate urban sustainability transition?

Sub research question one: What are the criteria for sustainable transition?

Sub research question two: What are the transition paths in our case study?

Sub research question three: To what extent does the frequency of tweets with hashtags reflects the transition path's dynamic?

2 Literature review
2.1. Sustainable Transition
2.1.1 Definitions and concepts

"Transitions research aims to offer frameworks, concepts, and a language that helps to facilitate and structure discussion and reflection across different disciplines and domains" (Loorbach et al., 2017). Sustainability in an urban context encompasses processes of urban change, sustainable places, and normative social goals (Picket et al., 2013). The transition process toward developing sustainable urban areas requires a culture of open participation to achieve these objectives. Transitions are about the swapping process from one state to another due to qualitative societal changes. This process's dynamic, speed, and direction depend on how the societal system's components interact. Transition researchers try to answer how this process can lead from a non-sustainable to a sustainable state (Loorbach et al., 2017). The three main concepts in urban sustainability transition studies are as follows (Loorbach et al., 2017):

a) ***Multi-actor dynamic***: every societal system consists of multiple actors from various layers of society, for example, the market, government, et., that changes in shifting power relations between their actors are inherent to any transition process. The power relations between these actors are not always asymmetric, and different factors, either internal or external, can influence them (Avelino & Rotmans, 2011; Grin et al., 2011; Avelino & Wittmayer, 2016).

b) ***Co-evolution***: understating the dynamic of the multi-actor system leads to comprehending interconnections between institutional innovation processes and social and technological changes. This perspective means that the interacting elements also change through their interaction. In transitions research, this indicates co-evolution and nonlinear interaction between actors that react to different phenomena (Loorbach et al., 2017). The implication of this concept for our research broader our view.

c) ***Multi-level Dynamics***: Transitions emerge from interacting dynamics at multiple levels within a particular system. In most cases, their differences relate to changes in the Landscape, the regime configuration that dominates it, and the niches (Kemp et al., 1998). Figure 1 shows how landscapes hold regimes and niches within regimes.
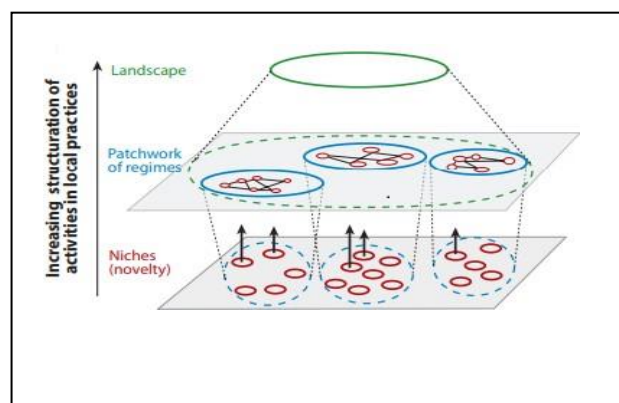
Figure 1 Note, Adapted from "sustainability Transitions research: transforming Science and practice for Social change".by Loorbach et al. (2017).

Since we are going to use the concepts of Landscape, Regime, and Niche in our conceptual framework, we give their definitions here as follows:

o **Landscape**: The Landscape contains deep structural trends of a heterogeneous set of technology-external factors (Geels, 2002). The Landscape is a macro-level that constitutes the wider heterogeneous environment. It is a stable context that holds Regime and Niche (free societal space) in itself. This context can be material such as infrastructures or embedded values, assumptions, culture, ideology, and world views. They define "*the boundaries of common-sense reality, either by ignoring views outside those boundaries or labeling deviant opinions irrational, unrealistic, tasteless or irresponsible*" (Lears 1985, p. 572). The components of the Landscape do not quickly diverge, and individual actors cannot influence them (Tornberg, 2018). Landscapes have even more decisive roles in social and technical innovations (Tornberg, 2018).

o **Regime:** this concept is a critical notion in transition research. Tornberg (2018) explains the Regime as a level between the Landscape and Niche that manifests the dominant order, regulations, and standards that guide niche actors or regime actors to follow pacific behavioral patterns. Radical technological, political, or societal innovations generally have a more challenging breakthrough, for they may not fit with existing technology's behavioral patterns (Tornberg, 2018). As pointed out by Smit, transformative dynamics arise from contradiction within the incumbent Regime (2007). These tensions can (not always) lead to a search for (new) solutions to exciting problems, often triggering conflicts between change actors and incumbent actors seeking to preserve the status quo. (Ehnert et al., 2021). These tensions are often between innovative ideas and established practices, as well as between the logic of action of state and non-state actors (Ehnert et al., 2021).

o **Niches:** niches are micro-levels where the activities/practices occur within. They offer developing protective (legitimate) space for radical innovations that cannot yet compete with established technologies/social /political within the existing Regime (Smith 2007; Geels, 2002). Geels (2005) calls them "*locus for radical innovations,*" and Törnberg (2018) names them "free social space." Törnberg (2018) further explains that free space can be in physical meeting places, social media, or internet forums. Niches, by nature, function in three ways, as Törnberg (2018) highlights "*shielding,*" "*nurturing,*" and "*empowerment.*" Shielding implies protection against the repression of the existing Regime; nurturing means supporting novelties, and empowerment can either direct toward competitiveness with the mainstream Landscape and Regime or toward adapting

the existing Regime and Landscape to social innovations. Therefore, as Törnberg (2018) indicates, niches are free social spaces. They have the potential to generate networks and grow under the surface of the existing Landscape and Regime and provide an opportunity for its actors to reach a broader audience in the society and provide a central part in social, technological, or political innovation (Törnberg, 2018).

o **Actors:** actors can be categorized as niche and regime actors. Niche actors are human actors who drive Niche and foster innovations that differ fundamentally from the prevailing socio-technical or socio-political Regime (Geels, 2005; Törnberg, 2018). Likewise, regime actors are the human actors that promote the existing Regime.

Transition encompasses an essential change in a regime's culture, fabric, and practices (Loorbach, 2007). Interestingly, culture consists of actors' values, norms, and ethics that underlie their behavior patterns and actions. Structures are standardized routines, rules, and laws of the societal system. The resources, physical entities, and artifacts produced by the material component have labeled the practices of actors (Frantzeskaki & De Haan, 2009). The core idea in transitions research is that fundamental breakthrough change occurs within the established Regime**.** Multi-level-perspective (MLP) understands a regime in its

Figure 2 the action and interaction between the three component of the system

interaction with the existing phenomenon in Landscape and Niche as external factors (Figure 2) (Geels, 2002).

In this way, the regimes emerge from historical transition paths in incremental processes, and new radical alternatives development draws the Regime into a process of increasing tension, stress, and pressure. Thus, transitioning should be understood as a dynamic breaking and building up process. Figure 3 shows this original multi-level, multiphase perspective on transitions (Loorbach et al., 2017).

*Figure 3 Note, The "multiphase concept illustrating the nonlinearity of transitions and different types of pathways. Adapted from sustainability Transitions research: transforming Science and practice for Social change. "by Loorbach et al. (2017).*
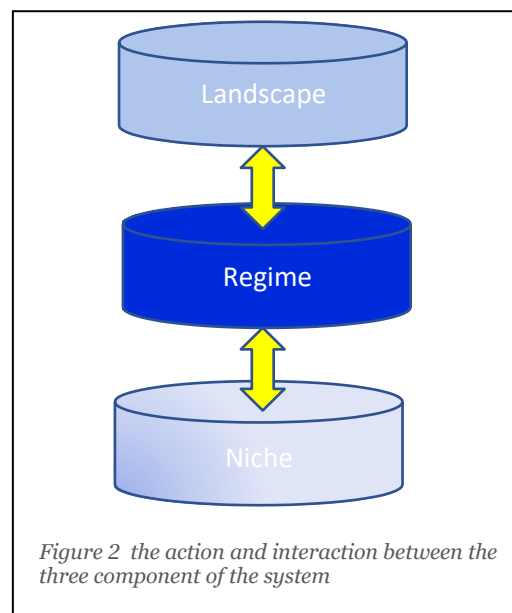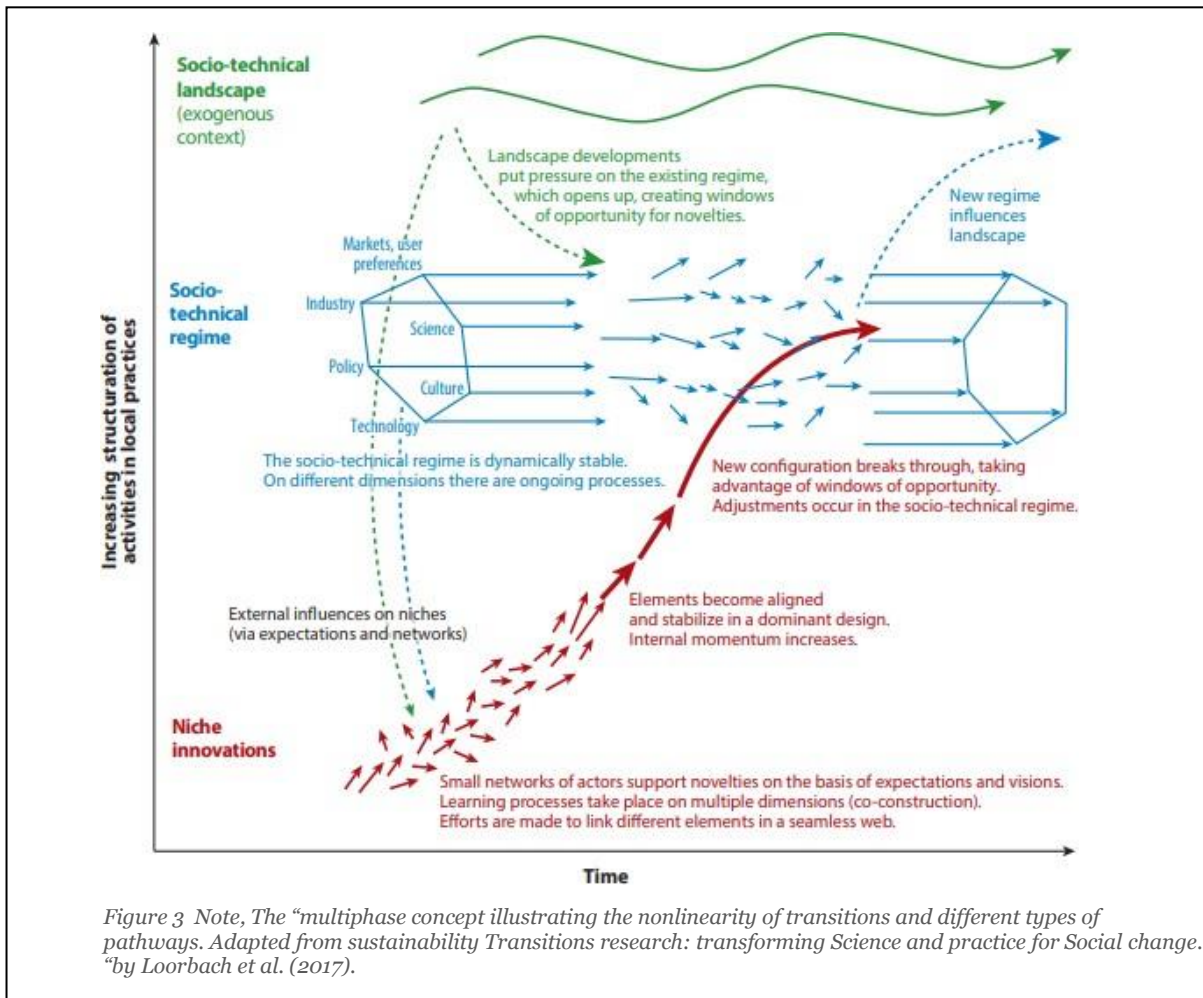
2.1.2 Socio-intuitional transition and governance studies

There are three dominant and prominent approaches in transition research. These approaches are different in perceiving the driving factors behind the different fields of

Figure 4 Note, socio-technical regime changes as result of coevolving landscape pressures and emerging niches over time; Adapted from sustainability Transitions research: transforming Science and practice for Social change.by Loorbach et al. (2017).
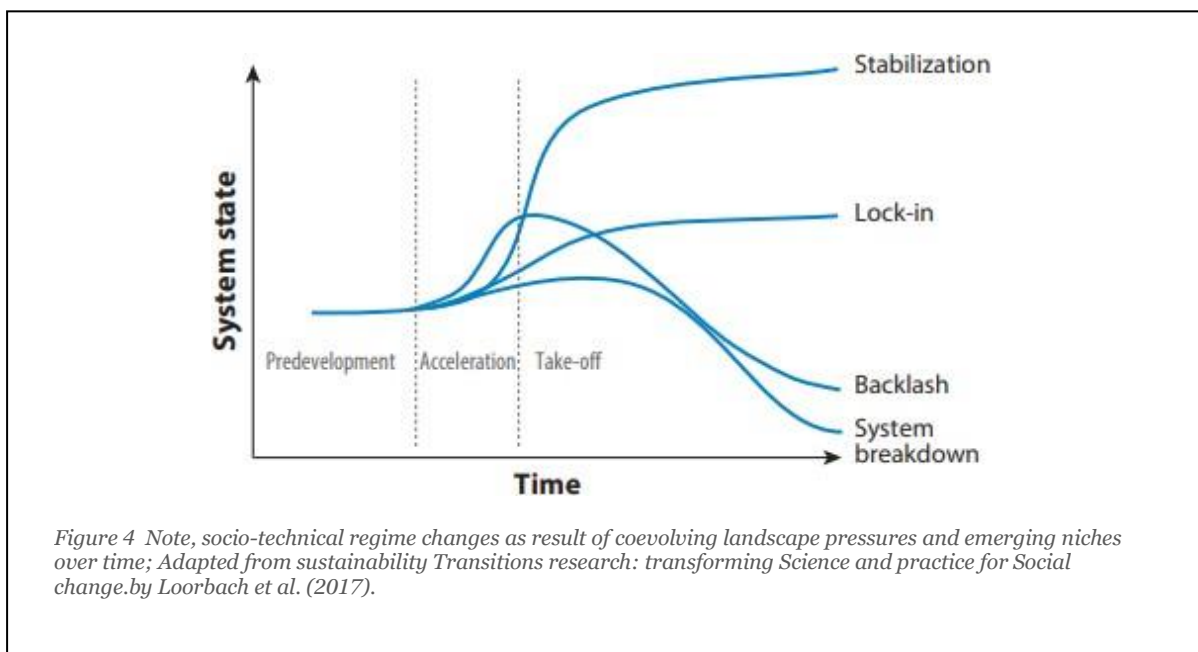
transitions: a) "*socio-technical*," b) "*socio-institutional*," and c) "*socio-ecological*" systems (Loorbach et al., 2017). Analytically, in this research, we only focus on institutional dynamics of transition: in society. Therefore, the "*socio-institutional*" and "*socio-ecological"* are beyond the scope of this research.

      The socio-intuitional approach identifies regimes as institutionalized cultures and practicing values (van Raak, 2016). This approach focuses on understating power relations between different agencies that form discourses between actors concerning the established routines and governance and, eventually, how social innovations challenge existingregulations (Loorbach et al., 2016). In addition, it highlights the importance of social learning, existing democratic regimes, and learning from experience to influence the dynamics of transition on a sustainable path (Beers et al.,2010; Loorbach et al., 2017). By doing this, it tries to identify the political and power issues behind the lock-in planning process when regimes are vulnerable to transition pressures (Brown et al., 2013; Fuenfschilling & Truffer, 2014; Shove & Walker, 2008; Meadowcroft, 2009; Frantzeskaki et al., 2017). Unlike social-technical research, socio-institutional studies demand different epistemologies and are more qualitative and action-oriented (Loorbach et al., 2017).

      Analyzing the transition process can be divided into two categories: one analyzes the transition process to comprehend its dynamics, and the other studies the possible influence of actors on transition paths which is the subject of transition governance (Loorbach et al., 2017). Nevertheless, their ultimate goal is to diagnose the root cause of unsustainability lock-in and unproductive niche-regime empowering innovations transformation (Loorbachet al., 2017), (See Figure 4). More specifically, the reflexive governance approach focuses on learning behavior among actors by analyzing their interactions, especially leading to systemic change (Hendriks & Grin, 2007; Voss et al., 2006). The results of such studies have provided a transition management framework that can be applied as a descriptive lens to understand and explain the impact of governance processes in many case studies (Frantzeskaki, 2017).

2.1.3 Patterns in transition

When a social system goes through a phase that functions to meet its societal needs fundamentally different than the previous period, this may suggest that in the coming generations, such a system might again go through such fundamental changes or, in better words, '*transition*' (de Haan & Rotmans, 2011). Therefore, it is crucial to understand better how such transition work, to prepare, to influence, or to know what is happening. In this research, we borrow the conceptual tools de Haan, and Rotmans (2011) provided to understand transitions better, what drives them, and in what form they typically come. In their article, de Haan and Rotmans (2011) introduce the dynamic of transition as a sequence

of changes in the system states, forming a chain of changes and providing patterns of transition paths. These patterns are deduced bundle of social mechanisms starting from the idea that a societal system is a complex, adaptive system (de Haan & Rotmans, 2011). These three patterns allow us to understand under which conditions they are likely to occur.

Societal systems and transition therein

The manifold of rather social structures lies in its societal systems, which is how it meets social needs. For example, energy supply transport/mobility, agriculture, or healthcare systems. In the following chapters, we categorize social media under a societal system in this study. If viewed as fulfilling a social need, geographical regions can sometimes be considered societal systems too (cities/urban regions, harbors, and nations), the same holds for ecological systems (rivers, the seas, and forests). More abstract systems can be considered as well: policy systems, political, legislative, and judicial systems, social-security systems, financial systems, and education systems. "*A societal system can be considered a composite system, built up from several societal subsystems that each contributes a part to the total functioning of the societal system. These societal subsystems will be denoted as constellations and how a societal system has subdivided into constellation as itscomposition*" (de Haan and Rotmans, 2011). All this and many more systems have in common that they can be thought of as fulfilling a social need and functioning. Although functionalism has been widely criticized for its apparent inability to address change in societal systems, de Haan and Rotmans (2011) used this notion with the idea that the societal system is a complex adaptive system. Doing so could create a framework where systems can endogenously go through those abrupt and radical phases; qualitative change is often referred to as transitions (de Haan & Rotmans, 2011).

Nevertheless, describing the functioning of societal systems appears not to be a straightforward matter at all. One could think of creating a sort of inventory of the actors in the system and how their interactions contribute to meeting the societal need, but this would be unfruitful pursuit in two ways. On the one hand, it is unlikely that even an exhaustive listing of all the 'elements and interactions in the system would provide insight into how the system functions. On the other hand, one realizes that the functioning of a societal system does not depend on its specific actors and interactions. For example, different energy companies serving different energy end-users, even possibly via different technological means, do not necessarily imply a different energy system per se. In other words, the functioning of a societal system is robust concerning the actors and processes that produce it (de Haan & Rotmans, 2011).

This robustness of the functioning of a societal system all makes perfect sense if the societal system is considered a complex, adaptive system. Then the functioning of a societal system can be regarded as an emergent phenomenon produced by its process. Such

perspective means that although functioning eventually is caused by the web of interactions of actors in their social structures and the physical world, it has autonomy concerning them. Consequently, functioning can be threatened and studied in its own right without constant reference to specific processes or actors in the societal system (de Haan & Rotmans, 2011).

In a sociological sense, this view is akin to structuration theory, where the structure-agency debate is effectively circumvented by explaining social structure as an emergent phenomenon without using the term through. In the structure theory (Giddens, 1984), the repeated actions of actors reproduce the societal structures and cultures, which in turn restrict and enable these actions. If these repeated actions were referred to as practices, a sensible triplet emerges to describe the functioning of societal systems: structures, cultures, and practices. Treating functioning in its own right, as intended above, allows the transition researcher to analyze transition processes apart from other factors influencing them. This separation makes it an assessment framework for various steering approaches (de Haan & Rotmans, 2011).

The societal system is complex; adaptive systems imply that they are open systems enveloped in an environment where they are nested or composite systems and have specific self-organizing qualities. Thus, the societal system cannot be on its own. So, for example, when talking about a mobility system, one knows that it is surrounded by an energy supply system, a legislative system, a political system, etc.; this patchwork of societal systems in which the system under study is enveloped is called the Landscape. Since every societal system is embedded in such a way, any global trend or long-term influence overlapping several societal systems naturally resides in this Landscape too.

Further, the notion of adaptive raises the question of what adapts to what. For societal systems, this concerns the adaptation of its functioning. Adaptation concerns societal needs. If societal needs are put in an active form, one obtains societal demand or is somewhat less robust. Thus, a societal system is a complex, adaptive system in a twofold manner. First, it adapts to its environment and the Landscape, and second, to the societal need and support (de Haan & Rotmans, 2011). Even within one societal system, societal needs are diverse; therefore, societal support for diverse functioning forms can exist together. In principle, a societal system could have subdivided itself into constellations, contributing to its functioning from negligibility minor to entirely dominating it (de Haan & Rotmans, 2011).

Conditions for transition change:
In their article Haan and Rotmans (2011) recognize the following three conditions for transition change that we will use in this study:

Tensions: Since, in many ways, a societal system depends on its environment to sustain itself, this relation can also compromise the functioning of the societal system, in which case one speaks of tensions. Societal systems must maintain an appropriate influx of resourceslike energy, financial capital, goods, labor, or information. The other way around, constant out-flux is maintained as well, either in the form of resources for other societal systems or simply as waste. The two factors that maintain these in- and out fluxes are the political structures and cultures of the societal system. In this manner, one can speak of structural tension and cultural tension. Structural tensions are associated with the problems associated with the physical environment and infrastructure, including their legal facets.

In contrast, cultural tensions concern the standards, cultures, and ideologies. This distinction helps refine an analysis of a particular societal system. Typically, signs of tensions would be pollution and waste disposal problems, resource depletion, hostile political climate, environmental awareness, public opinion, etc. In an energy system, several such tensions can be present simultaneously: depletion of fossil fuel reserves, an awareness of the changing climate, and a pressing public opinion.

Stress: If the Regime cannot meet societal needs or is so inconstant in providing them, it causes social usability. In maintaining its functioning societal systems form structures and complementary cultures. Such a condition implies that the structures and cultures must match in a certain way. Such a result is inferred from the interpretation of cultures in sense- making. If this matching is taken too far and the system's functioning becomes rigid, or the match is lost for whatever reason, there is stress. Typical signs of stress would be that what isdone crosses with the philosophy behind it, the system not practicing what it preaches. An example of this would be that the Regime adheres to a policy philosophy of free-market thinking. In contrast, the structures are based on organized solidarity, like in several European healthcare systems.

Pressure: when alternatives to exiting the Regime can emerge and become feasible challengers or eliminate the need for some aspects of the current Regime. One can think of pressure in terms of resources or products produced; therefore, this kind of pressure could be described as a form of competition. It is also possible that emerging constellations' novel or abnormal functioning makes aspects of the Regime functioning obsolete. For instance, new technology becomes available that takes over the old technology's leading role (gramophone to CD) or makes it obsolete (e-mail and fax). In a broader societal context, one can think of the regular healthcare regime under the pressure of private clinics for simple treatments or an agricultural regime growing food crops under the pressure of the bio-fuel niche in need of land for fuel crops. In short, typical signs of the pressure are the regime

functioning competing with the functioning of emerging constellations, or the functioning is partially rendered obsolete by such constellations.

Pattern in transition

Societal systems are constantly in flux, yet transitions are considered relatively rare, although several are probably going on. This characteristic raises the question of the difference between transitional and "*normal*" societal change. In any case, the distinction could be attributed to the circumstances, nature, or both. They suggest that the nature of transitional change is that it occurs in patterns. With the diversity and variety of possible social changes, an arbitrary number of transition patterns appear possible (de Haan & Rotmans, 2011). There are various ways a constellation can rise to power, but the three extremes of the spectrum are top-down or reconstellation, bottom-up, or empowerment and adaptation.

In reconstellation transition, constellation changes. Typical examples are a reconfiguration of rules and laws or changing the infrastructure. Another example can be reorientating an area, like changing a preserved region to an entertainment park.*Reformative legislation:* laws are enforcing structure or cultural change, e/g. Environmentallaw. In the empowerment transition, small constellations gain power and become competitors for the incumbent Regime. The typical processes are creating a network of united workers, lobbying, creating pressure groups, and researching for new development. Adaptation happens when the Regime adapts its functioning to meet social needs. For this, the Regime needs to reorganize itself toward new goals, adopt new roles, or employ new knowledge and expertise. Finally, constant adaption leads to a total shift of the system's functions. This process is called transformation (de Haan & Rotmans, 2011). We explain each of these in more detail as follows:

Top-down transition paths (reconstellation dominated):

For this type of transition, de Haan and Rotmans (2011) identify three possibilities: radical reform, revolution, and collapse. In radical reform, the Regime adapts itself to an outside constellation, like adapting new culture or technology. In the revolution, the outside constellation destroys the societal system and replaces it with a new constellation. Finally, collapse or failed transition happens when a new constellation, such as a revolution or new configuration, cannot lead to a stable societal system.

Bottom-up transition paths (empowerment dominated):

For this type of transition, de Haan and Rotmans (2011) identify three possibilities: reconfiguration, substitution, and backlash. Reconfiguration happens when niches gain power and become niche regimes. This way, the Regime can adapt to the new dominant

constellation. However, substitution happens if the adaptation does not occur, and the new niche regime substitutes the old one. Finally, transition fails new niche regime cannot meet social needs. Backslash can happen, for example, if an unpredictable risk appears after adapting new functionally.

Squeezed paths (reconstellation and empowerment of similar influence):

De Haan and Rotmans (2011) identify two possibilities for this type of transition: teleological and lock-in. The teleological transition has inspired the transition management and governance framework to cultivate it. Whenever a regime corporate with outside influence simultaneously, it leads to a cultural and structural reconstellation in the Regime. Here, the difference with top-down adaptation is that the Regime does not adapt through reforming itself in teleological transition. Contrary to this possibility is a Lock-in situation where innovation in the societal system co-exists with the established Regime because it is incompatible with the societal system and regime structures (Van der Brugge & Rotmans, 2007). As a result, it does not have enough influence in the social system to replace the Regime.

Transforming paths (adaptation dominated):

De Haan and Rotmans (2011) identify two possibilities for this transition: transformation and system breakdown. Transformation results from the Regime's co-evolution with the Niche's functioning (Geels & Schot, 2007). So, the Regime is constantly without the need for tension, pressure, or stress to adapt itself to meet the societal needs. But, on the other hand, if the Regime in its attempt fails, the system breakdown.

Chains of change: Transition paths

If all transitional change is produced by patterns proposed in the preceding, then any transition storyline can be told as a concatenation of patterns acting on a societal system. As stressed before, the processes described by the patterns are intertwined and simultaneously at play, but the transition path can be described as a chain of patterns. In this manner, narrative analyses of transitions become qualitatively comparable (de Haan & Rotmans, 2011).

Table 1Note. Transition path featuring the reconstellation and adaptation patterns. Adapted from Patterns in transition: Understanding complex chains of change by de Haan and Rotmans (2011)

System state	Pattern	System state	Pattern	System state
Regime, two niches Stress	Empowerment →	Regime and niche-regime Stress and pressure	Adaptation →	Post transition New regime from niche-regime, old regime declined or subsumed

Tables 1 and 2 give examples of a chain of chains. As illustrated in both examples, transition paths begin with the system state. The state of a system refers to the conditions of the system either before or after the transition. The pattern between states leads to a semi-transitioned state; in the case of an adaptation, the system adapts through the adaptation pattern, and a new system's state emerges. This pattern continues until we reach the system's post- transition state (de Haan & Rotmans, 2011).

Table 2 Note. Transition path featuring the reconstellation and adaptation patterns. Adapted from Patterns in transition: Understanding complex chains of change by de Haan and Rotmans (2011)

System state	Pattern	System state	Pattern	System state
Regime Tensions and stress	Reconstellation →	Regime and niche-regime Tension, stress and pressure	Adaptation →	Post transition New regime from niche-regime, old regime declined or subsumed

2.1.4 Transition governance principles

Urban areas are geographical spaces where their inhabitants live at shorter spatial distances from each other than other places like rural areas. Physical closeness eases interaction between actors. However, cities as nested networks are not free from hierarchies of power relations. Also, cities host multi-domain activities (health, transportation, energy, etc.).For these reasons, participating stakeholders in developing policies and getting to know their opinions about the problems are mandatory prerequisites for sustainable transition management. What transition management seeks is providing opportunities for empowering niches based on this view that actors must have protected and legal free space to reframe problems from different perspectives. Providing spaces distant from the existing Regime encourages actors with different backgrounds to exchange their opinions and imagined futures in a plural and diverse environment. As a result, innovations emerge through cooperation, reframing barriers, and engaging actors in generating ideas (Kemp & Rotmans, 2009; Loorbach, 2010; Wittmayer & Loorbach, 2016). Wittmayer and Loorbach (2016), in their article, highlight some vital principles for transition governance: *'visioning,' 'emergence,' 'variations and sections,' 'experimenting,'* and *'evaluation.'*

Visioning in transition governance is vital in giving directions, motivations, and empowering actors. Cooperation between actors in building alternative scenarios and exploring different paths, especially when there is chaos, and no sense of direction, can highlight the importance of visioning in transition governance (Sondeijker et al., 2006; Quist & Vergragt, 2006; Nevens et al., 2013; Loorbach et al., 2017). The notion of emergence is associated with co-evolution in 2.1.1 of this research. In other words, coordination between actors is necessary for creating shared values and organizing actions toward sustainable transition; otherwise, complex social dynamics lead to instability and disorder (Loorbach et

al., 2017). In addition, diverse initiatives' social learning and experimental learning emerge novel policies and strategies to tackle problems and contribute to sustainable transition (Loorbach et al., 2017). Since transition paths are non-linear and therefore complex and unpredictable, experimentations can unfold this complexity and expand views on sustainable transition alternatives (Bos & Brown, 2012; Loorbach et al., 2017). What is worth noting here is the importance of monitoring actions and interactions between actors during the transition process since the dynamic of the context can form social interactions and influence actors' behaviors (Loorbach et al., 2017).

2.2 Citizen participation, agonistic participation, and social media

Some advantages of public participation include inclusiveness and transparency, especially in contemporary societies with increasing diversity in interests and complex power networks (Bäcklund & Mäntysalo, 2010; Brown & Chin, 2013). In addition, according to Arnstein (1969; 2019), citizen participation is a means that empowers citizens who, under politicaland economic pressure, are ignored. Her eight-level ladder of participation has been referenced to illustrate the distinction between different types of participation regarding the degree of citizens' involvement in the decision-making process.

To avoid falling into the trap of citizen manipulation in the participation process and experience the most benefits of public participation, Brown and Chin (2013) developed a framework that evaluates the effectiveness of citizen participation. They included some criteria in their framework: transparency, early involvement, resource acceptability, aim to elaborate trust, and consensus (Brown & Chin, 2013). Despite such efforts, many scholars argue that governments often lead the direction of traditional participation, restrict citizens, and use power relations between various actors (Beitske & Luuk, 2011). Another criticism of traditional participation is limiting a relatively small group of stakeholders to meetings in a physical space at a specific time slot which is disadvantageous and can lead to exclusion and rigidity (Boonstra & Boelens, 2011; Ertiö, 2015). Regardless of the physical characteristic of traditional participation, another disadvantage of this type of participation lies in ignoring conflict.

Conflicts and challenges are inherently seen as stumbling blocks, especially in acolorful society with inhabitants with diverse backgrounds and interests. For this purpose, planners often try to deal with the disputes as '*antagonism*' (Ploger, 2004). In doing so, they aim to treat antagonism by converting it to harmony or, in better words, consensus through some means like majority votes. However, contrary to this view, Ploger (2004) argues that planners and politicians need to recognize 'agonism' as an opportunity to make peoplemasterful through political provisions. '*Masterfulness*' means being able to "*utilize the dispositional for influence in supposedly adequate ways*" (Andersen & Nordgaard, 2002: 9).

'*Agonism*' can be constructive if planners observe public participation as a continuous process that creates multi-dimensional dialogues, vertically and horizontally, between stakeholders, power people, and citizens. One of the practical mechanisms for achieving this objective is using online social media.

In the last decade, social media have become gradually popular among planners and politicians to engage citizens in planning programs (Mergel, 2012; Kleinhans et al., 2015;Lin & Benneker, 2022). In this regard, the typical arguments point out the utility of social media in contributing to democracy, creating social capital, boosting public awareness, creating bonds of trust, and speaking up for minor groups (Lin & Geertman, 2019; Kaplan, 2020). As Verdegem (p. 91, 2011) indicates that "*planning activists can use social media to encourage public participation by raising public awareness and advocating for marginalized interests.*". Also, according to Lin and Geertman (2019), social media offer opportunities for the young generations who are not interested in traditional face-to-face participatory meetings. Social media can also extend social networks by enabling online and offline interactions, emerging new social groups and strengthening existing ones (Verdegem, 2011). On the other hand, the downside of social media lies in its potential for causing digital division and, subsequently, online social exclusion (Verdegem, 2011). Since not everybody is interested in engaging in online social communications, and not all have equal access to them. In addition, it is noteworthy knowing that social media can polarize public opinions (Bakshy et al., 2015). Other concerns include personal privacy, legitimacy of the information,the accuracy of the news, etc. (Piccorelli & Stivers, 2019; Osatuyi, 2013; Feeney & Porumbescu, 2021). That is why many scholars suggest combining online and offline participation processes can enhance and increase the quality of public participation (Lin and Geertman, 2019; Deng, 2015).

2.3 Stakeholder theory

Stakeholder analysis uncovers actors' behaviors and intentions toward other actors, their interests, reactions to specific events, and their power and influence in their networks. Such an analysis's outcome can help us understand transition patterns in this research. Regarding what we have already discussed in previous chapters, it is clear that in transition governance, decision-making should be regarded as an interactive process that engages all stakeholders (Mansfeld, 2003). Therefore, stakeholders analysis is especially vital for urban planners who wish to gain public support for their plans (Arnstein, 1969; Woerkum, 2000). According to Freeman (1984), a stakeholder is someone who either can achieve an objective or is affected by others' objectives. Based on this definition, stakeholders can be categorized into two groups: one group is those who can affect the decision-making process, and the other groups are those who are affected by the decisions but have no legal mandate to change it (Carroll &

Buchholtz, 2008; Brown et al., 2016). Also, it is helpful to know that the stakeholders' role, power, and legitimacy depend on the type and mode of governance.

Another argument for classifying stakeholders refers to practicing their influence according to three criteria "power," "legitimacy," and "Urgency" (Mitchell et al., 1997). Power refers to the force of stakeholders will in a relationship, legitimacy refers to their acceptance, and urgency refers to the readiness of stakeholders to do anything to obtain their desired outcomes. In addition to the stake "influence," "relative importance" of stakeholders is another stake that some scholars like Bourne (2005), through the Circle method, applied. The three criteria in this method are "power," "proximity," and "urgency." Power refers to the measure that stakeholders can influence the objectives, proximity refers to the closeness of the stakeholder to the project, and urgency refers to the level that stakeholders are ready to act immediately.

2.4 Conceptual framework

The main goal of urban planners is to improve the quality of urban life. Spatial planning is essential to drive proactive, preventing adaptation of urban human life to hazards caused by unbalanced demands between different sectors. Moreover, it aims to improve the distribution of activities in a terrestrial environment (Wegener, 1998). In recent years, Many palling mythologies have been developed to establish systemic spatial planning in collaboration with local stakeholders such as *Geodesign*. But nowadays, due to the increasing usage of social media, a new perspective of understating the relationships between different stakeholders is demanded.

For this research, we divided our conceptual framework (Figure 5) into two smaller conceptual frameworks, which we present in the last part of our literature review: the first one is developed for analyzing stakeholders to understand the interactions between offline and online actors. And the other explains the relations between critical elements of sustainable transition, stakeholders, and transition paths based on the theories we have already reviewed. We use the latter conceptual framework first to assess the suitability of the transition path(s) based on sustainable transition criteria. And second, to understand the role of the online actors in driving the transition path.
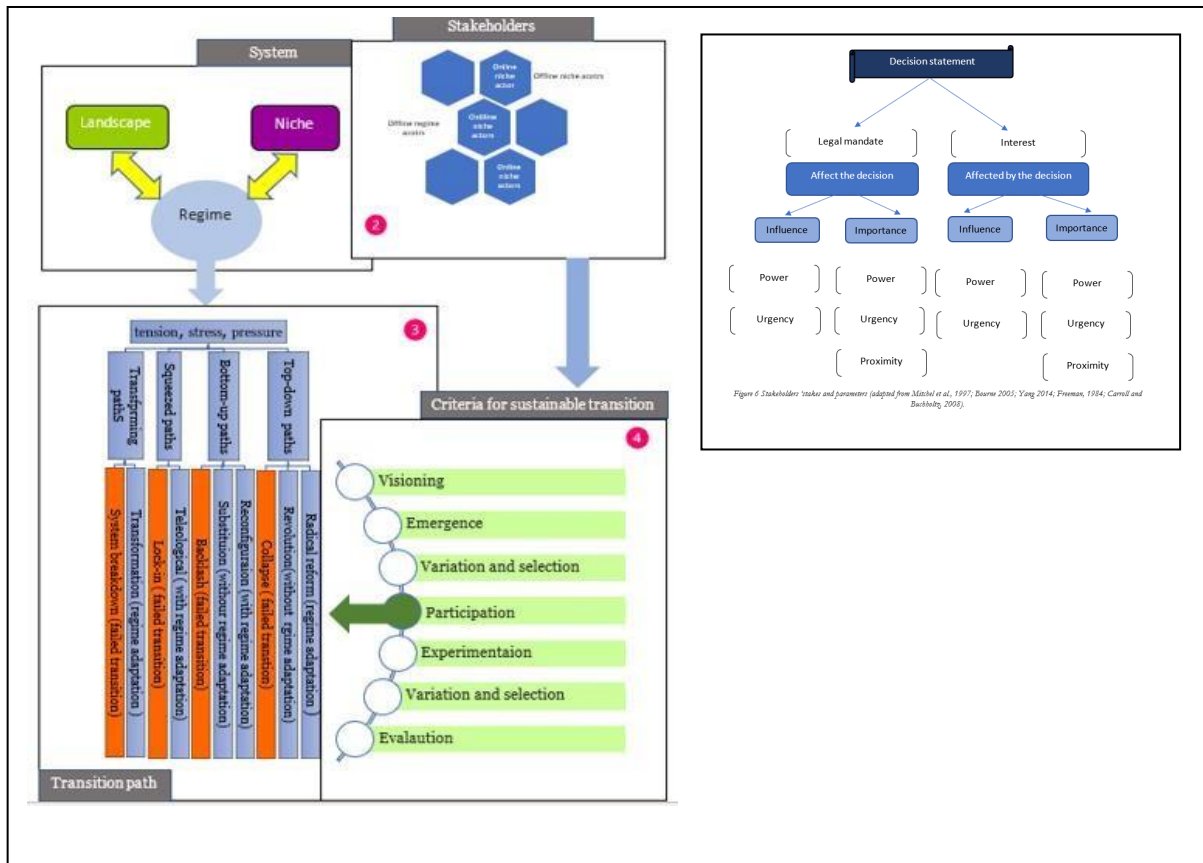
Figure 5 Conceptual framework

Figure 6 shows the structure of stakeholder analysis in a conceptual framework a. First, in this conceptual framework, we consider the stakes "*interest*" and "*legal mandate or responsibility*" to identify and classify stakeholders based on their connections to a specific "decision statement." Next, we use this division to distinguish between stakeholders with legal responsibility or mandate to affect the decisions and the stakeholders who are interested in the decision statement but have no legal mandate to change it (Carroll & Buchholtz, 2008; Brown et al., 2016). Here the critical notions are that first, as we are interested in stakeholders in a governance framework, this research considers only organizations and committees as stakeholders (not individuals). Second, stakeholders belong to only one of these two categories.

Further, in the next level of the upside-down tree-like conceptual framework, we adapted the stakes "*influence*" and "importance" to assess the impact that stakeholders, either with the *legal mandate* or with *interest,* can have on the decision statement (Mitchell et al., 1997; Bourne, 2005). Also, in assessing 'influence,' we do not consider legitimacy because stakeholders have legitimacy based on the current governance framework in our case study. Instead, we rely on the definition of *power* and *urgency* based on the literature review in this study (Mitchell et al., 1997). In addition, based on the literature review, we

adopted the following three attributes of 'importance'*: power, proximity,* and urgency (Bourne, 2005).

Figure 6 Stakeholders 'stakes and parameters (adapted from Mitchel et al., 1997; Bourne 2005; Yang 2014; Freeman, 1984; Carroll and Buchholtz, 2008).
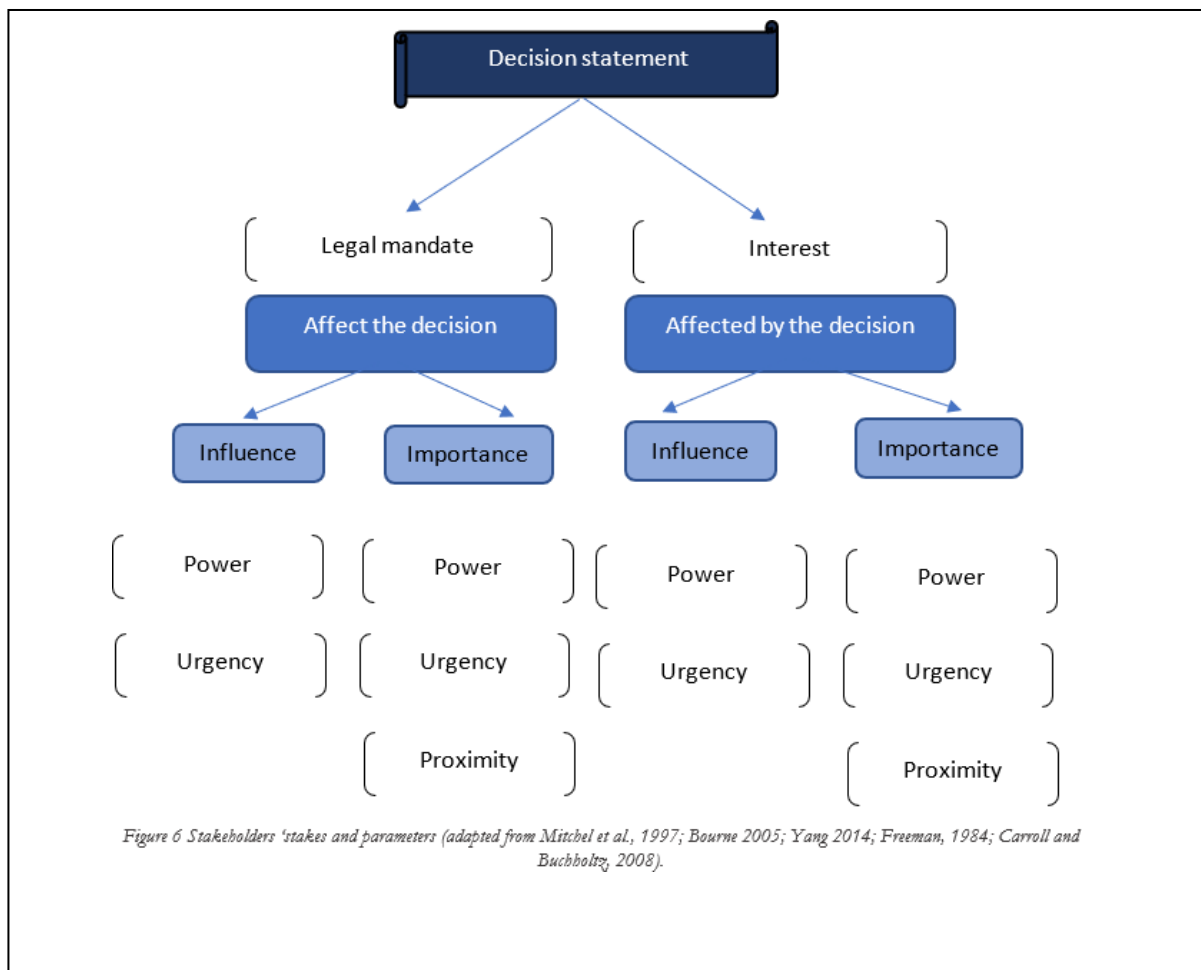
Figure 6 Conceptual framework a

Our conceptual framework b (Figure 7) covers broader relationships and concepts. It includes four subsections to clarify more straightforward the four main concepts in this framework: **(1)** multi-level nature of the sustainable transition, **(2)** Niche actors: here is where we contribute to the current studies, **(3)** transition path, and **(4)** Criteria for a sustainable transition.

Subsection (1):

Subsection (1) is related to the multi-level nature of transition in the literature and the dynamics between system layers, as described in 2.1.1 of this study. This subsection borrows the terms landscape, Regime, and niches and their definitions based on the literature review in 2.1.1. Here we identify two sorts of landscapes: physical and virtual, which is the novelty of this conceptual framework. Physical landscape in this conceptual framework includes material environments such as highways and infrastructures, which we can call hard factors

and values, and culture, which we can call soft factors. Our contribution here is that we also use social media as a virtual landscape. In this sense, social media's hard factors are related to its programming structure, programming languages, user interface, etc., and its Soft factors relate to people's perception of this social network service and its popularity among other similar platforms. Of course, there is no guarantee that these two Landscapes will cover each other entirely since not everybody who lives in the same physical landscape uses the same virtual landscape.

The second term in this part is Niche. As noted in 2.1.1, niches are free social spaces that are the locus of radical social or technological innovation. They provide incubation toom for new path-breaking transitions. As what we did regarding the landscape, here we identify two sorts of niches: physical niches and virtual niches. Physical niches include cafes, churches, schools, and parks. Another novelty of this research is considering hashtag (#) when it is used before a word or phrase. In this sense, (#) identifies specific content on social media platforms like Facebook, Twitter, Instagram, etc. In this sense, similar contents and links to each other and, consequently, help people with the same interest find each other easily. What is here essential to notice is that we assume that free social space, either physical or virtual, can exist only under a democratic political atmosphere. The non-democratic political atmosphere restricts actors from reaching a broader audience in society and, consequently, social and or technological innovation.

The third component of subsection (1) is the Regime. As explained in 2.1.1, the Regime is the dominant order, norms, values, and stable configuration in a societal (sub)system. Concerning the types of landscapes that we explained above, every social media platform has its Regime, such as its policies and ethics, way of use, and limitations. For example, the maximum length of a video on Instagram is 60 seconds, or *YouTube* offers everyone access to its *Copyright* Management Tools, etc. Therefore, the Regime can guide and limit system actors' behavioral patterns. Based on the literature review, incremental innovation happens within the Regime. Still, the transformative breakthrough results from contradiction within the incumbent Regime due to interaction with the landscape and emerging novelties fromthe niches. We used the left-right open-headed arrow in subsection (1) to show these interactions. These contradictions can create tensions, stress, and pressure as conditions for transition change, as described in 2.1.3.

Subsection (2):

For analyzing subsection (4), we use stakeholder analysis in conceptual framework 1. This section divides stakeholders into two groups: Niche actors and regime actors. Based on the literature review in 2.1.1, niche actors are human actors who drive Niche and foster innovations that differ fundamentally from the prevailing socio-technical or socio-political

Regime (Geels, 2005; Törnberg, 2018). This study associates *niche actors* with stakeholders with *interests* or stakeholders *affected by the decision* in conceptual framework 1. And *regime actors* are associated with stakeholders with the *legal mandate* or stakeholders who *affect the decision* in conceptual framework 1. The regime actors are outside of the Niche.

As we illustrated in subsection (2), these two groups of stakeholders can be active in an online and offline environment or only one of them. By online environment, we specifically mean a public social media platform. Concerning the regime actors, it is evident that they promote and implement rules, standards, policies, etc. More specifically, we assume that the regime actors need less or no desire to use social media platforms actively and frequently to promote their opinions. The choice of this assumption relates to associating *regime actors* with stakeholders with the *legal mandate or specific right* to *affect the decision*.

Contrary to regime actors are niche actors who, as we clarified in the previous paragraph, are stakeholders with *interest. Since they are affected by the decision, they* have a higher need to use public social media and physical environment to express their opinions and promote their plans concerning the *decision statement*.

As we have already pointed out, the reason that we divided our main conceptual framework into two smaller ones was for the sake of simplicity. Therefore, we use the same factors and attributes introduced in conceptual framework one here to integrate these two conceptual frameworks.

Subsection (3):

Subsection (3) illustrates transition patterns due to tensions, stress, and pressure. To study the effect of these conditions on forming transition paths, we combine the transition patterns and chains of changes of de Haan and Rotman's research (2011) in 2.1.4 with the co- evolution and multi-level dynamics characteristics of the transition system that we described in 2.1.1 of this study. In a sense, our conceptual frame system is not a societal system that includes Niche and Regime alone but a system that, as illustrated in subsection (1), includes landscape, Regime, and niches. Therefore, we translated the "*forced from outside the system*" of de Haan and Rotman's research (2011) in 2.1.4 to "*force from the landscape*". As you observe in this subsection, we use the three-four types of transition and the ten possible paths to draw the chain of changes in the case study. The result helps us realize whether the transition happened and whether the transition path was sustainable regarding sustainability criteria. Therefore, we added subsection (4) to this conceptual framework.

Subsection (4):

Concerning the criteria for sustainable transition (4), we adapted the transition governance principles highlighted in 2.1.4.
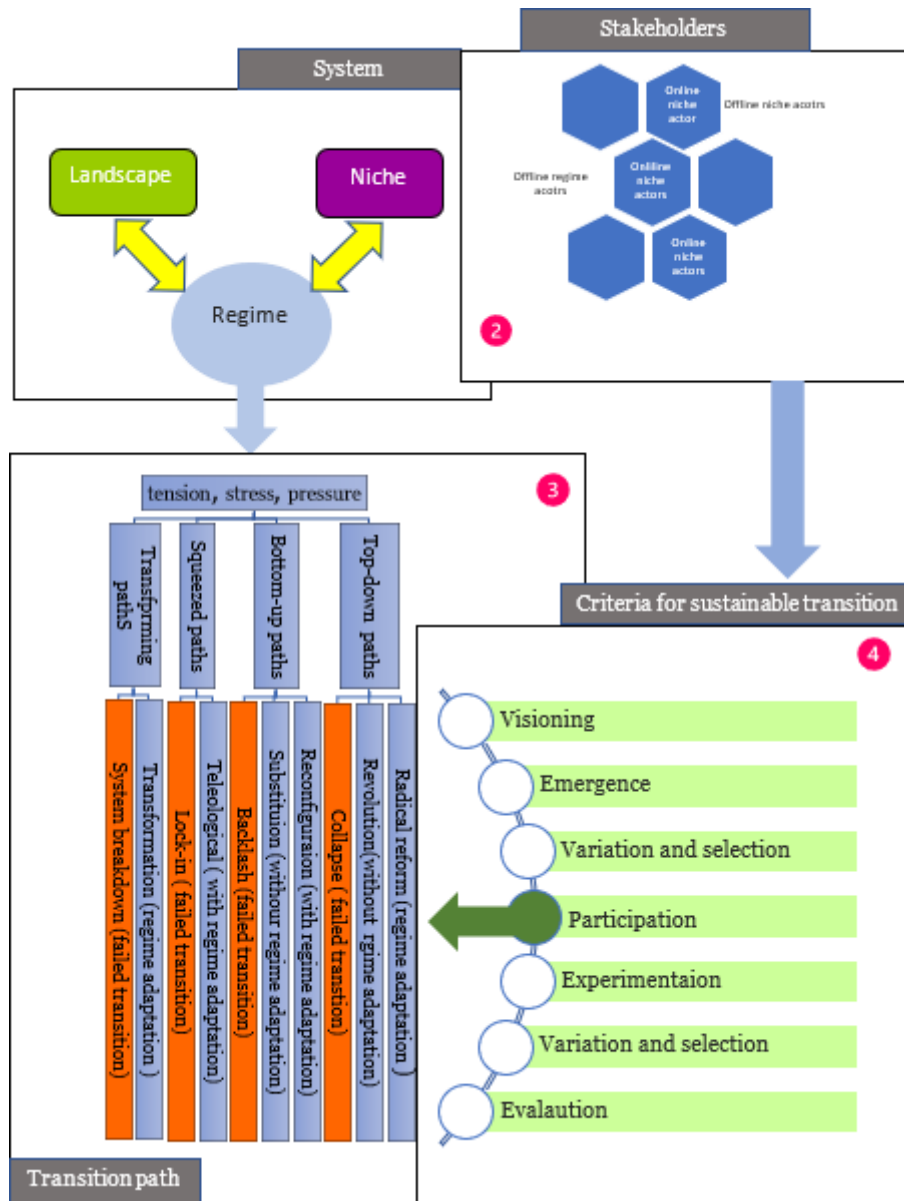
Figure 7 conceptual framework b

3 Methodological approaches

In this research, we conducted an exploratory method. The reason for choosing this approach is that we investigate the original research question, and there are no forging studies. Furthermore, we did a thematic analysis regarding the analyzing method since we wanted to interpret the data patterns. Also, we used the inductive research method, followedin three steps: collecting data from policy documents, archives, news, interview, and tweeter frequency), finding the transition pattern, comparing the pattern with tweeter frequencies developing a theory in the form of a preliminary conclusion.

Regarding the type of collected data, they are from both primary and secondary sources. This study's literature review, including existing theories, is based on secondary data. All the data from the cited organizations' websites and archives are the secondary type of data. The diagrams about the frequency of tweets are also secondary. This information was gathered and illustrated by Myrthe Hemker (Figur 10). This act was necessary for accuracy and integrity with the findings of specialists in the Artificial Intelligence department at Utrecht University. And all the data collected via interviews are primary. In the analyzing stage, collected data from the interviews, except the frequency of tweets, were compared with the online archives of the cited organizations. Concerning validity and reliability, this is an important step.

Further, we chose the mixed method of qualitative and quantitative methods. Therefore, to answer the first and second sub-research questions, we use qualitative methods, and for the third one, quantitative and qualitative methods. Using both of these methods is not only quite related to our research question and sub-research questions but also adds to the credibility and validity of the outcome of this study.

Concerning research design, we use a single case study, Amelisweerd, and Twitter. The project "Using Multi-Agent Systems for Simulating Online Social Network Influence on Urban Planning" at Utrecht University has predefined the choice of case study and social media in this research. Since this study supports the project, its outcomes can be used to validate the simulation. Using a case study allows us to discover the critical nature of the context, especially when we intend to comprehend contextual knowledge of the research topic. Our case selection offers insight into the unusual persistent phenomena in Amelisweerd, which we will explain in detail in the next chapter. It can help find the root cause of the problem of unsuitability and can open new directions for further research.

Regarding collecting data for the sub-research questions, we used the methods that suit the mixed methods of analyzing data. For the first sub-research questions, we refer to the literature review. For the second sub-question, we relied on semi-structured interviews, policy documents analysis, and stakeholders' archives retrieved from their websites. All the interviews were conducted in a semi-structured form. We asked questions within a pre-determined thematic format. However, the questions were open-ended and flexible.

Concerning the ethics and protecting the right and privacy of research participants, after consulting with the first supervisor, we decided not to include the transcription of the interviews in the appendix. And we refer to them like this: According to the specialist from organization X (Personal communication, month, day, year). For simplicity, from among about 20 stakeholders in the form of organizations, we chose four groups for interviews, the Ministry of Infrastructure and Water Management, Provence of Utrecht, Municipality of Utrecht, and two citizens' initiative organizations. Unfortunately, we had no access to the

House of Representatives, the Council of State, and the cabinet for interviews. The Ministry of Housing, Spatial Planning, and the Environment and the Ministry of Infrastructure and Environment does not exist anymore.

We sent twenty e-mails to the Ministry of Infrastructure and Water Management, Provence of Utrecht, Municipality of Utrecht, and two citizens' initiative organizations, specifically to the most involved departments and specialists. And we could interview agroup of four specialists from the Ministry, two specialists from the Province of Utrecht, six specialists from the Municipality of Utrecht, and one from the representative of two citizens' initiative organizations. Some of the questions were as follows:

When did you or your department hear for the first time about the opinion of the citizens?

When did you or your department, for the first time, communicate with these action groups

How do [name of the organizations] interact with each other regarding this project?

Are you aware of the growing media/news (TV, newspapers) attention to widening the highway?

4 Case study analyzing
4.1 Introduction

In the East of the A27 motorway near Utrecht is the Amelisweerd estate with valuable historical and ecological features such as old oaks, elm trees, forest tulips, Solomon's herbs, and lily ice of valleys. Because of its historical and cultural values, Amelisweerd has been placed on the national monument list. Therefore, the planned adjustments to A27 are very sensitive among residents and other estate lovers. During the construction of the road in the 80s of the last centuries, many protests were made against forest encroachment (Amelisweerd, n,d.).

The A27 plays a crucial role in connecting the north of the Netherlands to its South. In the summer, travelers use the A27 to get to junction Sint-Annabosch near Breda to visit France. This makes two crucial bottlenecks that the national government of the Netherlands feels is responsible for resolving. For this purpose, the national government of the Netherlands started to study at the end of 2005 to restructure the Gorinchem junction and build a second bridge at Gorinchem. From the junction with the A12 to the Maarssen exit,the A27 forms the Ring Utrecht-Oost. This part of the A27 is one of the busiest parts (A27/A12: aanpassing Ring Utrecht, n.d.) (Figures 8 and 9).

The urban planning that the government follows to reduce the traffic volume has been based on improving the capacity of the Ring Utrecht and adding additional lanes on both sides of A27 and along the parallel lanes of A12. Based on their study, this solution can lead to fewer accidents, Uithof can be more accessible for car users and cyclists, the city residents will

suffer from less noise because of the new quieter asphalt, etc. (A27/A12: aanpassing Ring Utrecht, n.d.). To accomplish the plan mentioned above, on November 17, 2009, CDA MP Koopmans proposed to the House of Representatives an amendment to add the ' RingUtrecht ' project to the Crisis and Recovery Act list. Following acceptance of this proposal on the same day, the procedural obstacles to plans to widen almost all highways around Utrecht substantially have been almost removed (Inclusion of 'Ring Utrecht' in the Crisis and Recovery Act puts the future of the Utrecht region at risk: NOW CLOSED! (18.11.09), 2009).

Figure 8 Current (n.d.) Retrieved from https://www.a27a12ringutrecht.nl/over+het+project/default.aspx

Figure 9 Future (n.d.) Retrieved from https://www.a27a12ringutrecht.nl/over+het+project/default.aspx

The other side of the story relates to the reaction of citizen initiatives to this national urban plan. Since the early years of planting the project, many residents of Utrecht, in the form of initiative groups, organized ongoing actions by sending a petition, demonstration, lobbing, looking for other alternatives, increasing public awareness, etc., have tried to raise their voice. These groups are fond of the state Amelisweerd and try to preserve this old forest. However, they argue that this national urban plan can significantly damage the wild environment long-term. Even though both sides have made many attempts to reach an agreement, there is still no sign of any success.

4.2 System

In this section, we apply the conceptual framework b (Figure 7) to describe the case study.
Landscapes: As our case study is part of a national urban plan, we consider the Netherlands as one of the landscapes in this research. One of the novelties of this research is that we regard Twitter as another landscape, too, even though the focus of this research isnot sustainability transition in social media. But Twitter as an online social media platform has some characteristics that define it as a contextual landscape. The landscapes in this studyinclude:

- o The hard factors of the Netherlands relate to the material environment, such as highways, infrastructures, etc.; in our case study, such hard factors are Amelisweerd and Ring Utrecht, A27.
- o The soft factors of the Netherlands include social and cultural beliefs and values, etc. in our case study; such soft factors include the culture of preserving Amelisweerd as a national monument, love for preserving green areas and wildlife, the feeling of responsibility toward protecting the green fields, the sense of ownership and belonging to the Amelisweerd, believing in democratic policies, etc.
- o The hard factors of Twitter relate to its programming structure, programming languages, user interface, etc.
- o The soft factors of twitter relate to people's perception of this social network service and its popularity among other similar platforms.

These two landscapes overlap each other part. This means that not everybody who uses twitter lives in the Netherlands, and not everybody who lives in the Netherlands uses Twitter. But

Regimes: Like the landscape, we have two regimes: one associated with urban policies and the other with Twitter.

- The existing regime in the Netherlands included the democratic nature of the political system, Urban policies, and programs. The particular Regime in our case study uses the Crisis and Recovery Act (Chw) to widen the Ring Utrecht A27.
- Twitter users' policies and ethics include the limitations such as the number of words in a tweet, the possibility for reaction to a statement by retweeting and replying, creating trends using the hashtag, etc.

Niche*:*

- Free physical and social spaces: in our case study, niches are Amelisweerd forest and citizen initiative organizations.
- Free non-physical social spaces: Twitter hashtags that citizen initiatives use against widen A27, such as *#a27 and #*amelisweerdnietgeasfalteerd**.** Using a hashtag in a Tweet links it to all of the other Tweets that include it. Therefore, in our case study, using *# a27 give the Tweet context and creates an abstract location that allows people interested in this subject to find each other easily.*

4.3 Stakeholder analysis

This section uses the conceptual framework introduced in the literature review to analyze the case study. Our case study's decision statement is "widening the road A27". Using the Crisis and Recovery Act to widen the Ring Utrecht A27 allows the government to shorten the procedure of decision-making and implementation. Table 3 describes the stakeholder's responsibilities.

Table 3 Stakeholders of the case study

Stakeholder	Responsibilities
The Council of State (RvS)	Is highest general administrative court in addition to advising the government and Parliament on legislation and governance.
Second Chamber of the States 'General[1] / or The House of Representatives	Reviewing the cabinet's actions and if a majority adopts it, send it on to the Senates[2]. It also proposes legislation, electing Dutch public advocates, and the first round of selection for judges to the Supreme Court of the Netherlands.
Cabinet	Appointing the king's commissioners, mayors, and judiciary members: governs the country, implements its policies, and Proposes legislation.
The Ministry of Housing, Spatial Planning, and the Environment (Active years till 2010)	It was responsible for policies for public housing, spatial planning, environment, and the housing of national government agencies.
The Ministry of Infrastructure and Environment (Active years 2010-2017)	It was responsible for transport, aviation, housing policy, public works, spatial planning, land management, and water resource management. environmental policy and climate

[1] 2de kamer
[2] 1de kamer

	change policy
The Ministry of Infrastructure and Water Management (Active years from 2017 till now)	It is responsible for Transport, aviation, housing policy, public works, spatial planning, land management, and water resource management.
Province of Utrecht	According to the Spatial Planning Act, the province can determine whether cities and villages can expand and where business and office parks may be built. In addition, it determines the location of roads, railways, shipping connections, industrial areas, agricultural and natural areas, and recreational facilities. To this end, the province prepares so-called structure plans. Municipalities take this into account when drawing up their zoning plans. Responsible for constructing and maintaining provincial roads, cycle paths, and bridges. According to the national environmental legislation, Provence must provide clean bathing water and safe routes for trucks with hazardous substances. It is also responsible for realizing new nature, preserving current nature, and monitors compliance with environmental laws for air, soil, and water. In addition, the province combats pollution, for example, through soil remediation. Also, it supervises the water boards and the municipalities. The Executive Board in the province approves the municipalities' budgets and annual accounts each year.
Municipality of Utrecht	Responsible for the Participation Act. It is also responsible for constructing public buildings such as schools, preserving green areas, land use planning for public usage, and residential and supervising the construction of homes in consultation with housing associations: Building and maintaining streets, pavements, and cycle paths. Implementing the Environmental Management Act requires that different types of household waste are collected separately, for instance.
Citizens' initiative	Promoting their members' interests and adjusting their actions align with the visions of their communities to increase their legal chance to achieve their goals.

Niche actors are the non-state or none -regime stakeholders (citizen initiative) and those state stakeholders (political parties) that try to change that part of a regime that promotes widening the road A27 in Ring Utrecht like Groenlink and Animal rights and Christian uni. *Regime actors* are state stakeholders who promote widening the road A27 in Ring Utrecht. Therefore, these actors are outside of the niches (Table 4). In addition, as we indicated in the conceptual framework, we consider regime actors offline and niche actors online. This assumption is because the citizen initiative needs to use social media to send their message and let their voice be heard because they have no legal mandate to influence the decision statement. Still, the regime actors feel no or less need to do so.

Table 4 Niche actors and Regime actors in the case study

Niche actors (online actors)	Regime actors (offline actors)
Citizen initiative	The Council of State
	Second Chamber of the States 'General[3]
	Cabinet
	The Ministry of Infrastructure and Water Management
	The Ministry of Infrastructure and Environment
	The Ministry of Housing, Spatial Planning, and the Environment
	Province of Utrecht
	Municipality of Utrecht

Table 5 stakeholders with the legal mandate and interest

Interest (Niche actors, online actors)	Legal mandate (Regime actors, offline actors)
Citizen initiative	The Council of State
	Second Chamber of the States 'General[4]
	Cabinet
	The Ministry of Infrastructure and Water Management
	The Ministry of Infrastructure and Environment
	The Ministry of Housing, Spatial Planning, and the Environment
	Province of Utrecht
	Municipality of Utrecht

We cannot group political parties as niche actors because the origin of the Niche they belong to does not relate to the transition conditions of this case study. Nor can we group them as regime actors since it depends on their values, principles, and positions in the governmental body. For example, since 2010, the VVD, under the leadership of Mark Rutte, the prime minister of the Netherlands, dominates the cabinet. Therefore, we can say that VVD is a regime actor in such a case. As the contrary example, we can name Groenlinks regarding its office's values and principles.

Based on the following factors and dimensions, we analyze the stakeholders:

Influence:
- o *"Power,"* to what degree can the stakeholder impose its will on other stakeholders?
- o *"Urgency,"* to what degree is the stakeholder ready to do anything to achieve its goal?

Importance
- *"Power"*: Do the stakeholders have the legal mandate to influence the objectives significantly?

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[3] 2de kamer
[4] 2de kamer

- "Proximity:" Is the stakeholder closely associated with the project?
- "Urgency:" is the stakeholder ready to take immediate action?

'The Council of State (RvS[5])'

Niche actor? Regime actor? Or mediator actor?

Offline actor

The Council of State is an "**important actor** "because of the factor "**power**." It can influence the decision statement significantly. It can cancel the Route Decree prepared by theMinistry of Infrastructure and Water Management. With the proper Route Decree, the Ministry cannot implement the project.

"*Depending on the nature of the issue, the council of the State can nullify the plan, like it did in 2019 because of the Nitrogen issue of the previous Route Decree.*" A specialist from The Ministry of Infrastructure and Water Management (Personal communication, Jun 7, 2022)

"*The Council of States can reject the decision on REC (Residual Energy Central REC).*" A specialist from the Provence of Utrecht (Personal communication, April 11, 2022)

"*In 2019,, the Council of State canceled the Rout decree of 2016, and on 13 January 2021, we appealed again against the new Route decree of 2020 because it is just the old one; nothing has changed in it. The minister has added only a paragraph about the Nitrogen.*" A specialist from Citizen initiatives (Personal communication, April 19, 2022)

Cabinet (The People's Party for Freedom and Democracy 'VVD[6]')'
And the house of representatives

Regime actor

Offline actor

The political party VVD dominates the cabinet, and the House of Representatives is the most "**influential actor**" because of the factor of "**power**." It can impose its will on its relationship with other stakeholders, including the Municipality and other surrounding municipalities, Provence, and other members of the House of Representatives.

"*The municipality of Utrecht (both members of the alderman and councilors as well) try to line themselves with the political parties in the House of representatives. So, the network is important. Every time there is talking about mobility, you can see a direct line between*

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[5] De Raad van State
[6] De Volkspartij voor Vrijheid en Democratie

spokespersons in the House of Representatives and the Municipality of Utrecht. So the network is important in administration and the role of political parties in the entire process of collision." A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"*Well, it does matter which political party blows the winds; yes, the VVD and other right-wing parties are very supportive of widening the road A27. I've always said this in our meetings with my colleagues. VVD has been quite dominant in this matter, and of course, they dominate the national politics too, so that's how things look like.*" A specialist from The Provence of Utrecht (Personal communication, April 11, 2022)

"*Yeah, I still find that a bit difficult. But okay, it's all about politics. I almost have one more addition to the comment I just made. I don't think that Provence has any powers. We don't even have the right to participate.*" A specialist from The Provence of Utrecht (Personal communication, April 11, 2022)

"*Amersfoort is more a car state, so that makes sense, yes, much less extensive than Utrecht and lesser dense in population, so that makes sense. The surrounding municipalities are also important. So, their accessibility also has a VVD adherence. So, I feel that it is about the political alignments, yes.*" A specialist from The Provence of Utrecht (Personal communication, April 11, 2022)

"*And this depends, does this depend on who one has power or influence, people, or the government or minister or someone else? I think this project is mainly a political decision. And it is about power relations in national politics. Yes, I think so. And do you think that that the whole empire, Minister, and Provence, citizens, should always be satisfied with the project?*" A specialist from The Provence of Utrecht (Personal communication, April, ,11, 2022)

"*You must know car parties have always domineered that cabinet for a long time. And if you need another policy. Thus, even as a city, you depend on the government, especially if you need extra money. However, it is not always possible to implement your idea. Let me give some examples; you are against widening the Ring Utrecht strongly. One of thesolutions here is trying to compensate for the problem a little bit. For example, make a green bridge between Amelisweerd and the green area. In this case, what is told to Municipality is that this plan makes the area more attractive and now if you cannot stop the plan, we try to remove some of the things from the original plan.*" A specialist from The Municipality of Utrecht." (Personal communication, March 2, 2022)

"In December 2010m they were in a sitting, that is twelve years ago, the municipality, in particular the municipal council, had already spoken out against expanding plans. But at the same time, they had an enormous wish to get a tram line to the Uithof, and the money had to come from the government. So, with the knife to its throat, I would say the municipality signed an agreement with the government. It said it did not oppose the widening A 27 if the government gives the Municipality enough money for the tram line to the Uithof." A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"And in 2013, in 2012, the state was already well underway towards a Route Decision, only then the cabinet fell and then came parliamentary elections. At that time, the majority of the Parliament was against the widening. But after the coalition negotiations between only two parties, VVD-PVDA, the whole movement in the parament suddenly changed." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

Ministry (VVD)
The Ministry of Housing, Spatial Planning, and the Environment
(Active years till 2010)

The Ministry of Infrastructure and Environment[7]
(Active years 2010-2017)

The Ministry of Infrastructure and Water Management
(Active years from 2017 till now)

Regime actor

Offline actor

The Ministry is an "**important actor**" because of the factor "**proximity**". It is closely associated with the project, holding meeting groups, informing the plan and project via the website, providing the Rout Decree, etc. Another factor that makes the Ministry an important actor is "**Urgency**." The Ministry is responsible for revising the Root decree and giving immediate reaction to the decision of the Council of State. It is also responsible for investigating other proposals for an alternative solution, discussing the matters with the citizen's initiatives, and monitoring the information via social media. Also, the ministry has the factor of "**power**." It can influence the decision statement by designing a Rout Decree that the Council cannot approve of State can postpone or even stop the project. The ministry also has the power to choose between possible alternatives.

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[7] IenM

"Everyone interested in the Project has always been welcome and invited to the meetings. We invited them through media, via our website, and newsletters. So, anyone interested in coming to a meeting to reflect on the past and present procedures is welcome. It's not like we exclude people from the project." A specialist from the organization The Ministry of Infrastructure and Water Management (Personal communication, Jun 7, 2022)

"What exactly is participation for you? Because I feel that you focus very much on approaching and responding to people individually. Uhm, only if that is the case, then I think that is a minimal picture of participation. Because of large infrastructural projects like this, everyone is free to respond through general communication but impossible to give a personal response. And when people respond to general invitations, a personal response can be given if there is reason to do so." A specialist from the organization The Ministry of Infrastructure and Water Management (Personal communication, Jun 7, 2022)

"We have gone through quite a process. We hold many information meetings, but perhaps these people are talking about the route decision 2020 that has been available for inspection." A specialist from organization The Ministry of Infrastructure and Water Management (Personal communication, Jun 7, 2022)

"It is then our task to provide clarity to all interests groups, as a civil servant. So the Ministry can ultimately decide based on all interests and all relevant information. A formal participation moment is a way, but there are also informal participation moments. And there are also all kinds of ways outside the participation process that help us to gather information. How do people naturally try to influence the decision, for example, through lobbying, and how do action groups use social media to resist the decision? These groups of people do that, and you can see that every one of them tweets all the time about the crowdedness of Schiphol. And they can direct the cause. Such information is coming to the ministry in so many different ways. As a civil servant, we naturally try to ensure that all relevant information about all the interests is presented as accurately as possible so that ultimately a minister can make decisions based on the information." A specialist from the organization The Ministry of Infrastructure and Water Management (Personal communication, Jun 7, 2022)

"Well, of course, we have explored a lot of alternatives. There is room for working in more with more lanes in A27. All of the alternative solutions by interest groups have also been tested by us. We conclude that no other variant is suitable within the project objectives and the available space." A specialist from organization The Ministry of Infrastructure and Water Management (Personal communication, Jun 7, 2022)

"Yes, there have been various initiatives, Kerngroep, Ring Utrecht. We have had intensive contact with them, and their suggested alternatives have also been discussed. We together looked at those alternatives with each other closely and checked their feasibility and promise. The design must also fit in, or the compensation must be redesigned according to the people's wishes. So that's an ongoing process." A specialist from organization The Ministry of Infrastructure and Water Management (Personal communication, Jun 7, 2022)

"The minister wants to keep widening A27 on the table as a possibility. "A specialist from Citizen initiatives (Personal communication, April 19, 2022)

'Utrecht Provence'
Regime actor
Offline actor

The Provence Utrecht is "**neither an influential nor important actor**" in this project. It has the minimal legal authority to impact the project. And has no intention and motivation to stand against the national plan regarding the widening the road A27.

"Provence prepared a motion in which Provence could speak out against the widening of A27 in that motion a year ago. That motion asked for research for a new Rout Decree as an alternative solution with supporting many political parties in the House of Representatives, such as the CDA, who supported the motion too. They voted in favor of the motion. This happened on 17 November 2020. However, they withdrew the motion because the old Rout Decree was annulled. There is another motion, a new one against the new Rout Decree on Jun 2021." A specialist from Provence Utrecht (Personal communication, March 17, 2022)

"From the start, the municipality of Utrecht has spoken out against widening road A27." A specialist from Provence Utrecht (Personal communication, April 11, 2022)

"I can say that although the Utrecht Provence has been informed about the cabinet's decision, it has no formal role there because this is just a national decision." A specialist from Provence Utrecht (Personal communication, April 11, 2022)

"But it doesn't matter whether one municipality is for or against the project. So, we're all going to go along with the government when those kinds of measures are announced. So that cooperation is always fine, regardless of whether you are an opponent or an opponent." A specialist from Provence Utrecht (Personal communication, April 11, 2022)

"We have no authority. Yes, that is a national law, and the national government has legal instruments to build a road of national significance well, thereby overruling all other governments." A specialist from Provence Utrecht (Personal communication, April 11, 2022)

"It's just a national competence. "A specialist from Provence Utrecht (Personal communication, April 11, 2022)

"That is not open to objection by lower governments, so I can object as an individual, but not as a province." A specialist from Provence Utrecht (Personal communication, April 11, 2022)

"Well, we do have our own opinion in this regard. It does matter what the region wants. But yes, the big player is of course, just the National government. And, yes, they can, they have the money, they have the legal instruments, and yes, try to do the best they can and have to deal with social debate; yeah, so basically, it has nothing to do with us." A specialistfrom Provence Utrecht (Personal communication, April 11, 2022)

'Utrecht municipality'
Regime actor

Offline actor

The Municipality of Utrecht is "**neither an influential nor important actor"** in this project. It has the minimal legal authority to impact the project. And has no intention and motivation to stand against the national plan regarding the widening the road A27.

"Of course, the city council was informed, but when I found it, I was not surprised since it was a national plan and well known because of publication. Overall, the whole country people were informed of such a plan regularly. I think we are informed about that formal consultation; I think two or three times a year, and there are also other times when that and that, say, structured, structured information" A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"We've always been against broadening, from the start." (Says Fred Dekker, 2 March).

"Municipality is also just an independent body that has its voice, and that is. Therefore, they can have different insights than the National government." A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"Well, yes, that's right on A 27. Yes, because it's not from the municipality, you can file a complaint, but that's crazy. But suppose you are the resident and there is construction and work are being done, you disagree with it, then you have formal objection procedures, then you can submit a complaint. You will receive an answer six weeks later, which will be rejected." A specialist from The Municipality of Utrecht (Personal communication, March 14, 2022)

'Citizen initiatives in Utrecht'

Niche actor

Offline and online actor

Citizen initiatives are both **"important and influential actors**." They have the factor of **Urgency**. They are highly aware of the events around the decision statements, and even though they are all volunteers, they are prepared to take actions outside their routine daily activities. In addition, they are ready to go to any length to achieve their goal. They have the factor of **Proximity**. Most of them come from the city of Utrecht and have a close bond with their environment and Amelisweerd. They also have the factor of **Power** in the stake **Influence** because of their power in lobbying, sending petitions of a large number of people, and influencing the CDA, the Provence, and the Municipality of Utrecht but not from the stake importance.

"We had no idea. The Ministry did not invite us for a participation meeting, when was that?" A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"If the municipality as an administrative body acted against widening the A27, it is because of the great movement of action groups in the city". A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"The municipality has always supported the pressure surrounding those processes against the widening A27. But that is the pressure mainly started by the action groups." A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"I have subscribed to the newsletter of Vrienden van Amelisweerd and the Facebook group, and I and I know several people I know directly, more personally." A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"I think the Kerngroep has a lot of expertise for an alternative. But if they need the data from the municipality, well, then they will also work with them, they have good direct contact with us in the municipality on mobility" A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"That action groups have their financial resources. As a municipality, we support all kinds of initiatives by people, like that Amelisweerd club. We like that, so they receive a subsidy from us. Yes, that is participation. So, we support them and make it possible for initiatives

to develop their visions and plan. This is simply part of our participation policy." A specialist from The Municipality of Utrecht (Personal communication, March 2, 2022)

"The municipality seemed to object to the project at some point. In December 2016, the municipality and province were not allowed to object to the project because this project falls under the Crisis and Recovery Act. The question now is if this law still applies or not. This is something that municipalities and provinces always must deal. Many municipalities and provinces have been decentralized in the last ten or fifteen years. But concerning infrastructure and the physical living environment, the National government has its own policy, as it had. From that is what we must pay. "A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"In 2013, the government immediately indicated and used the commission. If you go back to the starting point, you see that the argument was about the safety of the road. Because of it, there was no room for open. And, yes, you find yourself constantly in a game, a kind of triangle of the National government t, municipality, and action groups. We have had to wait for legal moments and possibilities. Well, the Rout Decree was that moment to act." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"But of course, we keep the fire. Manifestations, demonstrations, and social media play an important role." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"We are also just an extremely strongly substantiated action group. Rarely dare to be quiet; we are perfect in all kinds of technical things about traffic, construction, nitrogen things, and all that sort of thing. We are also somewhat co-thinkers and have now come up with an alternative. But that is also very typical. We have, of course, always been looking for an alternative within the existing legal framework in Amelisweerd. But we also know that s, engineering companies only receive orders from the government." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"In 2021, we, Ring Utrecht, and seven other action groups joined together and appealed against the new Rout Decree." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"We want nature. From a formal legal point of view, we want the Rout Decree to be quashed. In 2016, the Council of State said to the minister that she could not take that Rout Decree to substantiate it, and they annulled the decision. It has already been decided. The Council of States has annulled this Rout Decree of 2016 because of the nitrogen law in2019. Then in November 2020, the ministry made a new Rout Decree. And we appealed

again, on January 13ᵗʰ, 2021. The Cor van Nieuwenhuizen's new Rout Decree in 2020 was the same as the old one in 2016, but with a nitrogen paragraph." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"In addition, there are alternatives within the existing legal and technical. And Amelisweerd is a place with great public interest. In addition, we say that the ecological compensation is also far from sufficient, and that more than 60 hectares are cut along the route. So, we explained all the reasons in 75 pages." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"Well, then we just waited for that Route decision to act, so it was our moment to stop the procedure. So, we have lobbied all these times. This is political. Since 2016, things have gotten more serious legal because of a legal fight. But that is good; with the help of the Environmental Federation and several experts in the city, we are starting up an initiative group to strengthen Utrecht. This renounces taking a fresh look at mobility and space in the region of Public places like Amelisweerd. Yes, this is what we want to do. And let them see how you can bring changes in mobility through public transport and cycling. And I think that has also been very important in believing in existing alternatives. And you can see that the Municipality, now also the Provence, has taken over this story. We have put a lot of effort into that, especially in the years between2009 to 2015." A specialist from Citizeninitiatives (Personal communication, April 19, 2022)

"We sent a petition with 13,0000 signatures to the House of Representatives; they were stunned. This was an incredible action." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"Lobbying is important, and this will of course, take place almost exactly with the election battle in March 2021. This is the perfect time to start such a petition campaign because we had to start a new cabinet there. I think the CDA went along with the CDA in the city and CDA in Provence. CDA, in the beginning, supported widening A27 and now is against it, and they have also clearly sent that signal to The Hague. And that, I think, has been the major gain of our lobbying in the past year. And that success is partly due to the 13,000 signatures, I think, and the atmosphere that hung around it." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"We have not received any subsidy from the Municipality, but we requested money fromthe initiatives fund for certain things." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"We could raise 10,000 euros there through pure crowdfunding." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

"It is hilarious that we did not know how to appeal, but a good lawyer helped us. She said the greatest opportunity is in the field of Nitrogen. So, we appealed against the Rout Decree base on her advice." A specialist from Citizen initiatives (Personal communication, April 19, 2022)

This section concludes that The Council of State and the Ministry are the most "**important actors**. "The political party VVD dominates the cabinet, and the House of Representatives is the most "**influential actor**." And the Citizen initiatives are both **"important and influential actors**." Since the citizen initiatives include both online and offline actors, the question now is what has turned from not very important and influential actors in 2008 to the position they stand in now?

4.4 Transition conditions: Tenison, stress, pressure

As we pointed out in 4.3 of this study, a system needs three conditions of tension, stress, and pressure to experience transition. **Tension** can be structural and cultural. Structural tension refers to physical, infrastructural formal, and legal aspects of the relation with the environment. Cultural tension would apply to problems concerning that relation's cognitive, discursive, normative, and ideological aspects. S**tress** occurs when the regime is inadequate or internally inconsistent in providing the dominant way the societal needs are met. Therefore, to diagnose the stress, we need to see if the structure and culture match or not. If the system function becomes rigid, or the match is lost for whatever reason, there is stress. Furthermore, regarding pressure as the last but not the minor condition of transition, we need to see if there is an alternative to the functioning of the regime that is a viable competitor or removes the need for the aspect of it. In short, typical signs of the **pressure** are the regime functioning competing with the functioning of emerging constellations or the functioning is partially rendered obsolete by such constellations.

Based on these definitions, we can recognize the decision of the Cabinet on widening A27 as a structural tension, pressure, and stress. First, the legal aspect of this tension is applying the Crisis and Recovery Act. Second, the cultural tension relates to the contradiction of the Crisis and Recovery Act with the democratic political culture of the Netherlands. Third, the element of stress is associated with the current regime's inadequate approach to meeting the local people's social needs and requests. This result is because the cultural context and the existing regime do not match each other. Finally, the pressure emerges from competition between the citizen initiatives and regime actors on the best alternative.

4.5 Transition path

To draw the transition path, the first thing we need to create the timetable (Table 6)

Table 6 Timetable from 2005 till 2022. Note retrieved from interviews, (planning en aanpak, n.d.), (bibliotheek, n.d.), (Actiegeschiedenis A27, n.d.), (2005 – 2020 Geschiedenis van de plannen en de politieke besluitvorming rond verbreding A27/A12, n.d.), (Stop Verbreding Ring Utrecht Kies voor gezonde en slimme mobiliteit, n.d.)

Key Actions	Years
Cabinet prepares the '*Mobility Policy Document*.'	2005
On November 13, 2006, an agreement for the accessibility of the Utrecht Region was conducted between the government and the regions. The '*Mobility Policy Document'* was published. The general principle: preventing traffic jams/delays on the leading road network. Nowhere is a motorist allowed to travel 1.5 times longer on a route during rush hour, except directly around cities. He can take a maximum of 2x longer than that. Such a plan focused on broadening additional connections on the national road network. At the same time, money is being invested, so-called FES funds from natural gas revenues, for the economic strengthening of Randstad. Expanding and broadening the road network is part of this. The amount of 1.1 billion has been set for widening A27/A12. Minister then was Camiel Eurlings (CDA).	2006
The plan of widening A27 in the '*Mobility policy'* gets more concrete. The Ministry of Housing, Spatial Planning, and the Environment (the current Ministry of Infrastructure and Water Management) explained that the possibility of expanding public transportation service was limited and came up with a plan to build a new highway on the west side of the "A2½" around Vleuten. However, this plan cost a lot of money, and the Provincial Council of Utrecht is against it. Therefore, the ministry put the plan temporarily on hold.	2007
In December 2008, the Ministry of Housing, Spatial Planning, and the Environment (the current Ministry of Infrastructure and Water Management) published the' *project initiation documentation'*[8] Ring Utrecht. In this documentation, the ministry declared it carefully examined the citizens' opinions on the decision-making process. As a result, the plan included widening the A27. However, the ministry invited Provence of Utrecht and Municipalities of Utrecht, de Bilt, Nieuwegein, IJsselstein, Woerden, Maarssen, Houten and Bunnik for cooporation on finding the best alternatives. The project initiation documentation remained available for inspection from 2the December this year for six weeks. Based on the schedule suggested by the ministry, 2014 was the year of the project's implementation and environmental impact assessment. But the Vriend van Amelisweerd springed into action immediately. In January, they could arrange a protest walking in the area, later followed by a human ribbon along the entire length of the new highway route.	2008
The Ministry of Housing, Spatial Planning, and the Environment published its website's public response to the first project initiation documentation. From 3000 responses, many objected to widening A27 in Ring Utrecht and suggested alternatives such as public transportation instead of widening A27. In February, after a joint action between the 'Kerngroep Ring Utrecht' 'with the 'Natuur en Milieufederatie Utrecht' (NMU), 20,000 signatures were presented to the House of Representatives. Incidentally, the general estimate is that the new highway is a diversionary maneuver for a plan to widen the barge in Amelisweerd. That soon turns out to be true. In addition, the 'Vrienden van Amelisweerd' and the 'Natuur en Milieufederatie Utrecht' decide not to wait for all kinds of procedures but to come up with an alternative themselves to improve the accessibility of Utrecht without extra asphalt. Soon after, the citizens' initiative Kracht van Utrecht (KvU) was founded. The goal: was to outline a regional mobility alternative. On April 22, Kracht van Utrecht' published a report of the same name with a regional bicycle and public transport alternative. And it was handed over as an alternative plan to the Mobility Councilor of Utrecht and the provincial executive. In July 2009, the House of Representatives adopted a motion stating that the 'Kracht van Utrecht report must be included in further decision-making. However, later this year, Minister Eurlings more or less dismantled that decision due to a negative cost-benefit analysis.	2009
On 3 December 2010, the Ministry of Infrastructure and the Environment (the current Ministry of Infrastructure and Water Management), the Municipality of Utrecht, and the Province of Utrecht	2010

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[8] Startnotitie

jointly determined which Preferred Alternative forms the basis for improving traffic flow on the Utrecht Ring. Based on the '*Environmental Impact Assessment*'(EIA)[9] in 2009, *the* suggested alternative of Kracht van Utrecht on substituting widening A27 with public transportation was not efficient enough to solve the problem of accessibility, added that it is over budget. Thus, the ministry sent a letter to the House of Representatives referring to its favourite alternative, widening A27, as the best alternative. In this report, the Ministry suggested no more delay in the analysis for the best alternative for widening the A27 and expressed the approval of the province of Utrecht. However, thisreport raised the reaction of many individuals and local organizations who wrote letters to theminister concerning EIA rapport. As a result, the municipality of Utrecht announced its preferencefor 80 km/h instead of 100 km/h, the ministry's choice. The municipality received a message fromthe ministry about not receiving any budget for the Uithoflijn and Northern Ring Road. In the meantime, the Vrienden van Amelisweerd began to work with neighbourhood, nature, and environmental organizations like KvU.	
The ministry invited Utrecht province and the municipality of Utrecht for their guidelines for the second Environmental Impact Assessment process. Nevertheless, the cabinet-approved widening of A27 is the Preferred Alternative. Provincial Council formed with new parties: VVD/CDA/GL/D66.	2011
In November of this year, the Ministry of Infrastructure, and the Environment (the current Ministry of Infrastructure and Water Management) published a reading guide that explained the participation and alternative assessment processes to widen the A27 as the best choice. In its final concept report, it explained that at the request of the majority members of the house of representatives, committee Schoof did independent research on the best alternative again to see if the problem of acceptability and traffic jams on the Ring Utrecht could be tackled by narrower lane or lower maximum speed. As aresult of forming a new cabinet, the VVD and PvdA coalition agreement states that the Ring Utrecht A27 will be widened to 2x7. Consequently, A group of citizen initiatives sent a letter titled "Trust residents" to the minister RWS and asked questions about public participation and the unjust attitude of the minister. Two thousand people will gather in Oud-Amelisweerd in April for a protest meeting.	2012
In 2012, Kracht van Utrecht and de Vrienden van Amelisweerd together sent a letter to the minister and pointed out the following: the ministry did not do enough research concerning widening A27; The possibilities of influencing (citizens and interest groups) are available in all phases of the decision-making has been minimal; despite maximum social involvement, etc. As a result, theminister asked committee Schoof, under the leadership of Shoof (D66), to investigate the possibility of not widening the A27 regarding the objection of Kracht van Utrecht and de Vrienden van Amelisweerd. In 2013, The report approved the widening of A27 as the best solution. Also, the House of Representatives formulated a final requirement: a social cost/benefit analysis (SME)[10] must clarify whether the project is profitable. Nevertheless, according to Kracht van Utrecht, committee Schoof came up with a double story. In 2009, the Elverding Committee advised that people (citizens and residents) should be involved in infrastructural projects. Politicians have adopted that advice. However, the Schoof Committee claimed that in the case of the Utrecht Ring, the cabinet does not have to adhere to this because the Ring's proposal was submitted six months earlier than the Elverding Committee's advice. So everything is neatly done according to the Schoof Committee. The municipality of Utrecht commissions a bureau to calculate 2x6 at 100 km. At the presentation of the report of the Schoof Committee, this variant is fired concerning road safety.	2013
The Ministry of Infrastructure and the Environment (the current Ministry of Infrastructure and Water Management) held a participation meeting and announced the following schedule: Choice of a preferred variant by the end of the year, preparing draft Route Decision and submitting it in 2015/2016, final Route Decision and possible adjustments in 2016/2017, and finally implementation of the plan 2018-2024/2026.	2014
The report of SME was made public. This analysis showed that the expansion of A27 could be profitable with a structural economic growth of 3%. However, the Central Planning Bureau advised not to implement the plan yet and to look at the cheaper 2x6 alternative. According to Kracht van Utrecht, the minister's reaction in the House of Representatives was that Netherland always strives for high economic growth, so this is the best scenario.	2015
The Ministry of Infrastructure and the Environment (the current Ministry of Infrastructure and Water Management) made the Draft route decision available for inspection. The municipality of Utrecht submitted a view against the broadening of A27. On the other hand, the provincial Council was remarkably critical and submitted a view with questions about factual substantiation, risks, and the proposed nature of compensation. The KRU organized information evenings, and on 5 June	2016

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[9] MER
[10] kosten/baten analyse (mkba)

2016, a manifestation and demonstration were organized in Lunetten near the forest Amelisweerd and sent a petition to the House of Representatives in November. In addition, a crowdfundingcampaign raises almost €40,000 for investigations and legal costs.	
The Ministry of Infrastructure and Water Management (RWS) made Route Decree (TB) 2016 available for inspection till 2 March 2017. Also, a new minister was appointed to RWS. Kracht van Utrecht in cooperation with many other activist groups like Vrienden van Amelisweerd submitted an appeal to the Council of State in March. They began for Crowdfunding to raise money for alternative solutions. They successfully could by March 2017 collect the amount of 42,000 euros.	2017
The Ministry of Infrastructure and Water Management (RWS) made Route Decree (TB) available for inspection till October 15 October 2018, based on widening A27. KRU again appeals to the Council of State. In 2018, the campaign team affiliated with the KRU conducted a PROTECT THE FOREST/adopt a tree campaign from March to December. People could adopt a tree in the forest of Amelisweerd. This action raised money to carry out communication actions this year, in addition to the further substantiation of the legal defence: postcards, videos, I draw for clean air (drawing competition for children), and three well-attended neighborhood meetings in Lunetten, Rijnsweerd/Oost and Voordorp respectively. On November 25, the KRU sent more than 500 protest cards written by residents to parliament members of the Infra &Waterstaat committee."Sunday, Nov 4. 'DAG WEG DAG', Hundreds of protesting cyclists cycled from Domplein to Neude, where the demonstrators were addressed and received musically by a swinging Tutti Saxi.	2018
Because of the ruling of the European Court on Dutch nitrogen legislation, the Council of State decided on 17 July 2019 to annul the Route Decision Ring Utrecht A12/A27. The reason for the annulment was the decision of the European Court on the Programmatic Approach to Nitrogen (PAS)[11]. The anticipated increase in nitrogen emissions was not permissible. Therefore, the PAS was legally untenable. This means that the ground under the Route Decree disappears. Further, on Nov 13, 2019, Cabinet took measures to reduce nitrogen, offering room for adjusting A27/A12 Ring Utrecht. Soon afterward, Minister Cora van Nieuwenhuizen announced that in 2020 the Route Decree would be brought into the procedure again, now with a nitrogen paragraph. Proceeding these events, Kerngroep Ring Utrecht presented the traffic study 2 x 6 lanes A27 within the container in Amelisweerd on 6 June. It is safe and ensures a more than sufficient traffic flow with sufficient capacity on the A27 within the container. This study is briefly the conclusion of the traffic engineering study carried out by the SUUNTA agency on behalf of the Ring Utrecht Core Group. It makes 2 x 6 lanes instead of 2 x 7 lanes – the plan of the national government – a feasible alternative.	2019
Minister Cora van Nieuwenhuizen (Infrastructure and Water Management) adopted the Route Decree A27/A12 Ring Utrecht on 17 November 2020. Therefore, the route decision was available for inspection from Wednesday, December 2, 2020, to Wednesday, January 13, 2021. Therefore, according to the ministry, citizens had enough opportunities for participation. Furthermore, concerning widening the road A27 and all the necessary compensations, the Municipality and Province of Utrecht were assigned some responsibilities. The ministry came up with the construction method of 70-meter diaphragm walls to enable the widening of the foil construction to tackle the problems regarding PAS. In July, the EIA Committee fundamentally criticized the ministry's plans: is the expansion still necessary? Where are the nitrogen calculations? And the consequences of the construction method are still not well understood. Due to Corona measures, many people must work from home. Result: no traffic jams. Many large companies, including in Utrecht and surroundings. Announce to maintain their working from home. In September, the Kerngroep Ring Utrecht orgenazied a demosntration at the edge of the forest Amelsiweerd in Ode aan de Bomen. Thirty-five years ago, on the same day, 586 trees in Amelisweerd were felled for the construction of the 2x4 lanes of the A27. Approximately 300 people attended the Manifestation.	2020
The Route Decree is available for inspection. Furthermore, the coalition agreement of December 2021 states that the new coalition at the government level wants to examine whether their current alternative solutions can solve the accessibility problem in consultation with the region. Therefore, the Municipality of Utrecht announced that they would be working specifically on alternatives. In the meantime, the Ministry of Infrastructure and Water Management and Rijkswaterstaat (RWS) was preparing to actualize the old plan. However, the battle is still not over! The citizen initiatives' appeal to the Council of State was still ongoing.	2021
A new minister was appointed as the new minister of Infrastructure and Water Management and Rijkswaterstaat (RWS). Also, the ministry announced that RWS would make the Route decree available for inspection after revising the Route decree on the nitrogen component. However, it is not	2022

[11] In 2009 the development of the Programmatic approach to Nitrogen was started. The aim of PAS is to ensure that the nature goals of the European framework Natura 2000 are realized, while also offering economic activities in the areas theopportunity to continue developing. Retrieved from
https://inis.iaea.org/search/search.aspx?orig_q=RN:42034927

clear when the final version of the Route decree will be available and when the project of widening A27 will start. So far, according to the ministry, no proper alternative solution has been offered by activist groups, so widening the road A27 is the most proper solution.	

As we explained in 2.1.3, the main difference between transition and 'normal' social change is that transition occurs in patterns, unlike social changes. We also showed that the transition paths could be described as a chain of patterns. This approach makes qualitative analysis of transition paths possible. We also indicated that the system's state is the composition and condition of the system. Also, we described the system composition by describing the regime, relevant niches, and their actor's behaviors. Also, we pointed out the condition of the societal system by indicating tension, stress, or pressure. In 4.3, we indicated these conditions in our case study. These conditions describe the system conditions. The new system's state, as we pointed out in 2.1.3, is the new composition and condition of the system.

Also, in the same chapter, we explained that transitional change is described by the relevant patterns and new system state in every transition and, finally, the post-transition state. In this way, the pattern chain is created through a sequence of system state-pattern- a new system state. This is called the chain of transition. Till the whole transition path is described, we repeat this process. Table 7 shows the chain of patterns in our case study. This table emerges from the timeline (Table 6). As we can see from the data in the table, 2016 is a critical year in this transition process. From 2005 to 2016, the transition factors were tension and pressure; from 2016, another factor appeared: stress.

In 4.3, we pointed out our case study's tension, pressure, and stress. The tension and pressure in both periods before and after 2016 are the same. The condition stress we can observe from the timetable is competition and stress between the ministry and citizen initiative on the Route Decree. As we illustrated in a conceptual framework (Figure 7) subsection 3, there are four possibilities for a transition path.

Finally, the pressure emerges from competition between the citizen initiatives and regime actors on the best alternative. One of these possibilities is Bottom-up transition paths (empowerment dominated). In the first period, niche gains power; an example of this empowerment is the citizens' initiative, Kracht van Utrecht (KvU), which was founded in 2009. We see the pressure from the niche actors; however, the regime does not adapt to the new domain constellation. In this phase, a niche regime substitutes for the old regime (substitution). However, since the innovation in the societal system co-exists with the established Regime, the system experiences Lock-in. Because the innovation in the societal system co-exists with the established Regime and is incompatible with the existing societal

system and regime structures. As a result, it does not have enough influence in the social system to replace the Regime. In simple words, citizen initiatives have gained the power to resist against current Rout Decree. Still, the ministry, as a regime actor, also has the power to reject the alternative solution by the citizen initiatives. In this new societal system that co-exists with the Regime, both ministry and citizen initiative seem to have equal power. The ministry does not modify the Rout Decree appropriately to meet the condition, and citizen initiatives' alternatives are not conventional enough to satisfy the experts. Knowing that the cabinet dominated by VVD supports the Ministry, the question that remains is the role of Twitter in intensifying or lengthening this lock-in condition.

Table 7 Chain of chains

Year	System state	Pattern
2005	The Regime Tension and pressure	Bottom-up transition paths (empowerment dominated): substitution
2016	The niche- regime Tension, pressure, and stress	Squeezed paths (reconstellation and empowerment of similar influence):
2022	Post transition	Transition failed: Lock-in

4.6 Evaluation of transition path and the role of the online niche actors.

The real reason for the lock-in situation lies in subsection 4 of the conceptual framework (Figure 7). In 2.1, we highlighted the importance of participation as a requirement for sustainable transition management. Furthermore, we emphasized the vitality of free spaces. As we indicated in chapter one, free space means legal space for the niche actors. Free spaces are essential since they can contribute to reframing the problems, investigating the issues from different perspectives, and looking for the best alternatives to resolve the issues or contribute to an innovative idea for better processing. Social media is a kind of landscape, as we identified in 4.2 and explained in 2.2, contributes to democracy, creates social bonds of trust, and increases social awareness. Still, at the same time, it has the potential to polarize public opinion (2.2). In the same chapter, we highlighted that urban conflict is constructive ifurban planners perceive it as a continuous process using social media data.

Transition ends up a lock-in situation when there is no coordination and cooperation between actors. This means actors do not have shares values. We have already 2.14 outlined the principles of transition governance and indicated that vision gives direction and motivation. Therefore, a common vision becomes unachievable when there are no shared values. In addition, there is a lack of coordination between niche actors and niche regimes.

Lack of coordination cause differences in values. Monitoring action and interaction between actors during the transition process can help the urban planner observe the dynamic of the social context and its direction. As described in 2.1, the transition process is co-evolution, highlighting the vitality of learning by doing as another principle of transition governance.

For further investigation, the aim of this research in the last stage we map the demonstrations of citizen initiatives on the diagram of the frequency of tweets with #a27. These demonstrations[12] are illustrated with red bullets (Figure 10). It is clear that since 2016 the number of demonstrations has increased in comparison with the years before 2016. Also, the distance between them has shortened. Therefore, according to our definition of an online niche in 4.2 #a27 is an online niche.

Furthermore, #a27 is a locus that emerged from two landscapes: Twitter, a free platform with its regime, and the Netherlands's physical landscape with its regime. Therefore, Twitter users who use #a27 to tweet against the widening of A27 are online niche actors. It is imaginable that these online niche actors, at least most of them, are the same offline niche actors. So, citizen initiatives that are niche actors in online and offline landscapes emerged from Amelisweerd forest, a physical niche. They created a space for themselves on Twitter (free space) using #, which they named #a27.

Interestingly, niche actors (citizen initiatives) gradually have learned that using #a27 can assist them in attracting attention, more online users, and perhaps niche actors, strengthening them to resist very influential VVD and important actors, the Ministry. Figure 11 can visualize the reason behind the lock-in transition condition.

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[12] 7 April 2013 Retrieved from: https://www.nmu.nl/nieuws/groeiende-weerstand-tegen-verbreding-a27-protest-in-amelisweerd-op-7-april/ , 5 June 2016 Retrieved from: https://www.nmu.nl/nieuws/groeiende-weerstand-tegen-verbreding-a27-protest-in-amelisweerd-op-7-april/ , 24 September 2017 Retrieved from: https://www.ad.nl/utrecht/exact-35-jaar-na-bomenkap-amelisweerd-wordt-opnieuw-geprotesteerd~a4ebf398/ , 16 June 2019 Retrieved from https://www.rtvutrecht.nl/nieuws/1935710/actiegroep-amelisweerd-geeft-demonstranten-alvast-workshop-boomklimmen , Sunday 6 December 2020 Retrieved from: https://nos.nl/artikel/2359522-amelisweerd-niet-geasfalteerd-demonstranten-voeren-actie-tegen-snelwegverbreding , Sunday 6 December 2020 Retrieved from: https://www.stopverbredingringutrecht.nl/fiets-mee-voor-amelisweerd/ , Saturday 20 March 2021 Retrieved from: https://nos.nl/artikel/2373369-opnieuw-protest-tegen-verbreding-a27-in-bos-amelisweerd , Thursday 14 October 2021 Retrieved from: https://www.google.com/search?q=amelisweerd+demonstratie&sxsrf=ALiCzsbfUWAgrp7K1GfrHrw_1RNiMHiZlQ:1659607319584&source=lnms&sa=X&ved=2ahUKEwi2jYCG96z5AhUfg_0HHZh4DwkQ_AUoAHoECAEQAg&biw=1366&bih=625&dpr=1
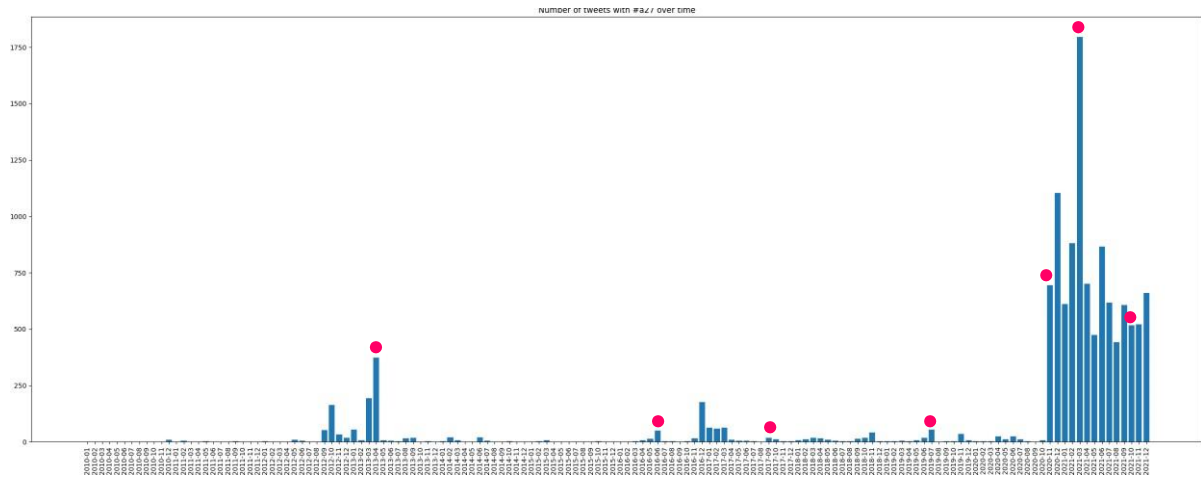
Figure 10 Mapping demonstrations in red bullets on the frequency of tweets with #a27 over time. The first tweet is obtained at 2010-01, and the last tweet at 2022-02. The frequency diagram was made by Myrthe Hemker.

We have already stated that 2016 is a year of a turning point, and we witnessed the first demonstration on 5 Jun 2016, three years after the last demonstration on 7 April 2013.Based on all we have already discussed and shown in the above sections, we cannot deny offline actors' prior role in triggering tweet #a27. However, what is worth noting is the roleof online niche actors in keeping the lock-in condition in the last five years. The frequency of tweets with #27 on 20 March 2021 (day of demonstration) reached its highest point on the same day from 2010-01 until 2022-02. And not only that but also the intensity of online activity of online niche actors in using #a27, in the last two years 2020 and 2021. It is clear
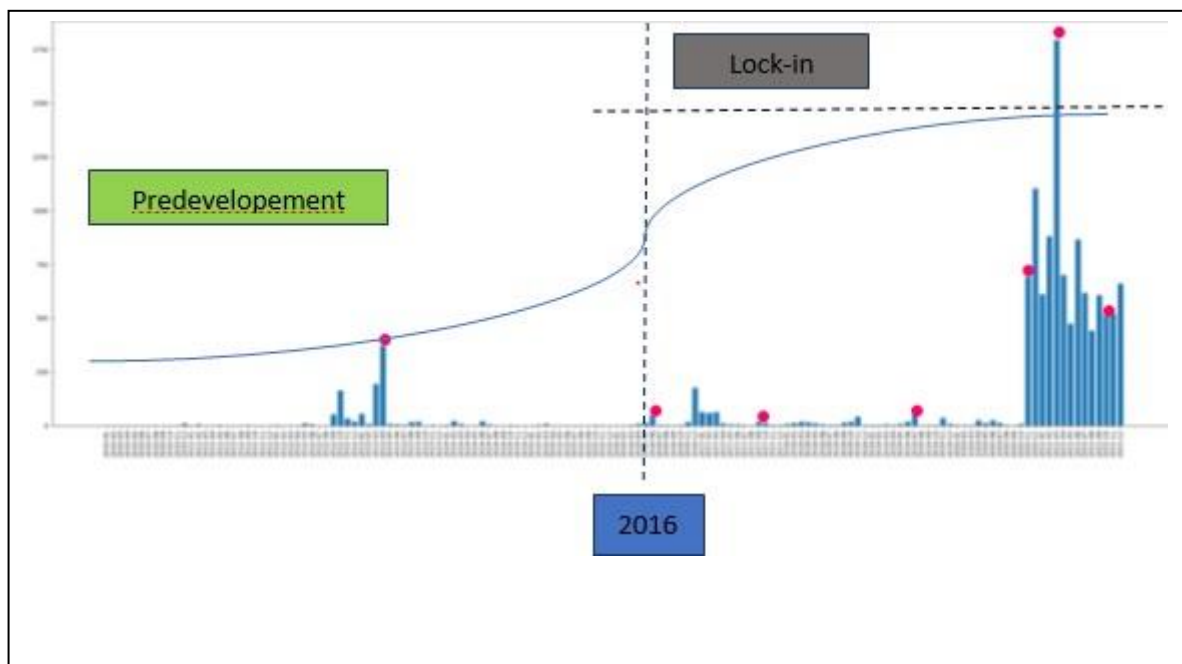

Figure 11 Transition diagram and frequency of tweets #a27 over time.

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that both online and offline niche actors support each other and contribute to the lock-in transition condition. And perhaps in the coming years, both online and offline niche actors will gain enough power that makes the regime adapt to new dominant constellations without

the Crisis and Recovery Act. This result can give new insight to urban planners looking for new and more efficient ways of public participation. A new analytical approach is necessaryto give a clearer image of what the coming years bring. Such acknowledgment can help the regimes constantly adapt themselves to meet societal needs and transform without the need for tension, pressure, or stress.

5 Conclusion and reflection

Regarding the increasing tendency to use social media in contemporary societies and the critical role of public participation in transition governance, this research aimed to explore the interaction between online and offline actors and their impact on suitability transition. Therefore, we decided first to find the criteria for a sustainable transition to achieve this purpose. In the next step, we tried to explore the type of transition path in our case study, Amelisweerd. And in the last step, we explored the reflection of tweets with the hashtag #a27 on the transition path. Further, we conducted an extensive literature review and developed a theoretical framework consisting of two smaller frameworks: one for stakeholder analysis and the other for exploring the transition path. Based on the qualitative and quantitative analysis of the case study, we concluded that social media positively impacts empowering citizens. Transformation occurs if the urban planners and policymakers see citizen empowerment as an opportunity for participation, not a threat.

The conclusion is an opportunity to remind readers why this study explored the transition path and stakeholders' analysis to answer the research question. First, stakeholder analysis helped us find the most influential and important stakeholders. We were using Twitter frequency and the number of demonstrations and mapping them with the transition map for two purposes: testing how the most influential and important stakeholders behave on social media and using frequency to visualize the comparison. Nevertheless, the outcome was unexpected. Of course, the research had the limitation of generalizing the result using a specific word with a hashtag (#a27). And it raised the question of possible results using a different word next to the hashtag, which can be the subject of further research. Finally, this research contributed to the transition theory by applying the concepts of niche, landscape, and regime for social media.

Bibliography

Actiegeschiedenis A27. (n.d.) Retrieved June 22, 2022 from
     https://www.vriendenvanamelisweerd.nl/actiegeschiedenis/
Amelisweerd. (n,d). Retrieved June 22, 2022 from
     https://www.a27a12ringutrecht.nl/over+het+project/informatie+per+thema/1981636.aspx?
     t=Amelisweerd

A27/A12: aanpassing Ring Utrecht. (n.d). Retrieved June 22, 2022 from
https://www.rijkswaterstaat.nl/wegen/projectenoverzicht/a27-a12-aanpassing-ring-
utrecht#heb-ik-last-van-de-werkzaamheden

Andersen, J. and Nordgaard, T. (2002) 'Kampen om Rummet: om Trafikpolitik Og
Kvarterløft i Kgs. Enghave' [The Fight for Space], *Working Paper No. 3/2002*,
Institut for Samfundsvidenskab & Økonomi, Roskilde Universitetscenter Beitske.

Arnstein, S, 1969, "A ladder of citizens participation" American Institute of Physics Journal
35 216–224

Arnstein, S. R. (2019). A ladder of citizen participation. Journal of the American Planning
Association, 85(1), 24–34. https://doi.org/10.1080/01944363.2018.1559388

Avelino F, Rotmans J. 2011. A dynamic conceptualization of power for sustainability research.
J. Clean. Prod. 19:796–804.

Avelino F, Wittmayer JM. 2016. Shifting power relations in sustainability transitions: a
multi-actor perspective. *J. Environ. Policy Plann.* 18:628–49.

Bakshy, E., Messing, S., Adamic, L. A. 2015. Political science. exposure to ideologically
diverse news and opinion on facebook. Science (New York, N.y.), 348(6239), 1130–   2.
https://doi.org/10.1126/science.aaa1160

Bäcklund, P., & Mäntysalo, R. 2010. Agonism and institutional ambiguity: Ideas on
democracy and the role of participation in the development of planning theory and practice -
the case of Finland. Planning Theory, 9(4), 333–350.
https://doi.org/10.1177/1473095210373684

Beers PJ, Sol J, Wals A. 2010. *Social learning in a multi-actor innovation context.*
Presented at Int. Farm. Syst. Assoc. Conf., Vienna, Austria, 3–7 July.

Beitske Boonstra & Luuk Boelens (2011) Self-organization in urban development: towards
anew   perspective on spatial planning, Urban Research & Practice, 4:2, 99-
122, DOI: 10.1080/17535069.2011.579767

Bibliotheek Retrieved June 22, 2022
fromhttps://www.a27a12ringutrecht.nl/bibliotheek/default.aspx

Bigne, E., Andreu, L., Hernandez, B., & Ruiz, C. (2018). The impact of social media and
offline influences on consumer behaviour. an analysis of the low-cost airline industry.
Current Issues in Tourism, 21(9), 1014–1032.
https://doi.org/10.1080/13683500.2015.1126236.

Boonstra, B.; Boelens, L. 2011. Self-organization in urban development: Towards a new
perspective on spatial planning. Urban Res. Pract. 4, 99–122.

Bos J, Brown R. 2012. Governance experimentation and factors of success in socio-technical
Transitions in the urban water sector. *Technol. Forecast. Soc. Change* 79:1340–53.

Bourne, L. 2005. "Project Relationship Management and the Stakeholder CircleTM." Ph.D.
diss., RMIT University.

Barrios-O'Neill, D., & Schuitema, G. (2016). Online engagement
for sustainable energy projects: a systematic review and framework for
integration. *Renewable and Sustainable Energy Reviews*, *54*, 1611–1621.
https://doi.org/10.1016/j.rser.2015.10.084

Brown, G., & Chin, S. Y. W. 2013. Assessing the effectiveness of public participation in
neighborhood planning. Planning Practice and Research, 28(5), 563–588.
https://doi.org/10.1080/02697459.2013.820037

Brown RR, Farrelly MA, Loorbach DA. 2013. Actors working the institutions in sustainability
transitions: the case of Melbourne's stormwater management. *Glob. Environ. Change*
23:701–18.

Brown, G., J. Strickland-Munro, H. Kobryn, and S. A. Moore. 2016. "Stakeholder Analysis
for Marine Conservation Planning Using Public Participation GIS." Applied Geography 67:
77–93. doi:10.1016/j.apgeog.2015.12.004.

Brugge, R., & Rotmans, J. (2007). Towards transition management of european water resources.
Water Resources Management, 21(1), 249–267.

Carroll, A. B., and A. K. Buchholtz. 2008. Business & Society. Ethics and Stakeholder
Management.   Mason: South-Western.

Clark JL, Algoe SB, Green MC: Social network sites and well-being: the role of social
connection. Cur Dir Domaradzka, A. Urban Social Movements and the Right to the City: An
Introduction to the Special Issue on Urban Mobilization. *Voluntas* 29, 607–620 (2018).
https://doi.org/10.1007/s11266-018-0030y. Environ. Innov. Societal Transitions 2, 66–81.

de Haan FJ, Rogers BC, Frantzeskaki N, Brown R. 2015. Transitions through a lens of urban

water.*Environ. Innov. Sustain. Transit.* 15:1–10Dwyer, J.; Hopwood, N.
(2013). *Management Strategies and Skills*. McGraw-Hill Education Australia.
p. 360. ISBN 9781743764930.

Ehnert, Franziska & Egermann, Markus & Betsch, Anna. (2021). The role of niche and
regime intermediaries in building partnerships for urban transitions towards sustainability.
Journal of Environmental Policy & Planning. 1-23. 10.1080/1523908X.2021.1981266.

Ertiö, T.-P. 2015. Participatory Apps for Urban Planning—Space for Improvement. Plan.
Pract. Res., 30, 303–321.

Feeney, M. K., & Porumbescu, G. (2021). The limits of social media for public administration
research and practice. *Public administration review*, *81*(4), 787-792.

Frantzeskaki, N., & de Haan, H. (2009). Transitions: two steps from theory to policy. Futures,
41(9), 593–606. https://doi.org/10.1016/j.futures.2009.04.009

Frantzeskaki, N., Broto Vanesa Castán, & Coenen, L. (Eds.). (2017). Urban sustainability
transitions (First, Ser. Routledge studies in sustainability transitions). Routledge. Retrieved
August 5, 2022, from INSERT-MISSING-URL.

Freeman, R. E. 1984. Strategic Management: A Stakeholder Approach. New York: Cambridge
University Press. Foster Engagement and Self-Organization in
Participatory Urban Planning and Neighbourhood Governance. Plan. Pract. Res.
2015, 30, 237–247.

Fuenfschilling L, Truffer B. 2014. The structuration of socio-technical regimes—conceptual
foundations from institutional theory. *Res. Policy* 43:772–91

Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: A multi-level
perspective and a case-study. Research Policy, 31(8), 1257–1274.

Geels, F. W. (2005). Processes and patterns in transitions and system innovations: refining the co-
evolutionary multi-level perspective. Technological Forecasting & Social Change, 72(6),
681–696. https://doi.org/10.1016/j.techfore.2004.08.014

Geels, F. W., & Schot, J. (2007). Typology of socio-technical transition pathways.
Research Policy, 36(3), 399–417. https://doi.org/10.1016/j.respol.2007.01.003

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*.
Cambridge [Cambridgeshire: Polity Press.

Grin J, Rotmans J, Schot J. 2011. On patterns and agency in transition dynamics: some key
insights from the KSI programme. *Environ. Innov. Soc. Transit.* 1:76–81.

Hendriks CM, Grin J. 2007. Contextualizing reflexive governance: the politics of Dutch
transitions to sustainability. *J. Environ. Policy Plann.* 9:333–50.

Ho, S. S., Leong, A. D., Looi, J., & Chuah, A. S. F. (2019). Online, offline, or word-of-mouth?
complementary media usage patterns and credibility perceptions of nuclear energy
information in southeast asia. *Energy Research & Social Science*, *48*, 46–56.
https://doi.org/10.1016/j.erss.2018.09.012

Kaplan, D. 2020. E-inclusion: New Challenges and Policy Recommendations. Brussels:
eEurope Advisor Group. 2005. Available online:
https://generationen.oehunigraz.at/files/2012/09/kaplan_report_einclusion_final_version.
pdf

Kemp R, Schot J, Hoogma R. 1998. Regime shifts to sustainability through processes of
Strateg. Manage. 10 (2), 175–195.

Kemp R, Rotmans J (2009) Transitioning policy: co-production of a new strategic framework
for energy innovation policy in the Netherlands. Policy Sci 42:303–322.

Kleinhans, R., Van Ham, M., & Evans-Cowley, J. (2015). Using social media and mobile
technologies to foster engagement and self-organization in participatory urban
planning and neighbourhood governance. Planning Practice & Research, 30(3),
237–247. https://doi.org/10.1080/02697459.2015.1051320

Inclusion of 'Ring Utrecht' in the Crisis and Recovery Act puts the future of the Utrecht region at risk:
NOW CLOSED (18.11.09). (17 Novemebr, 2009. Retrieved June 22, 2022 from
.https://www.vriendenvanamelisweerd.nl/opname-ring-utrecht-in-crisis-en-herstelwet-zet-
toekomst-van-de-utrechtse-regio-op-het-spel-gaat-inmiddels-niet-door-181109/

Ilieva, Rositsa & McPhearson, Timon. (2018). Social-media data for urban sustainability. Nature
Sustainability. 1. 10.1038/s41893-018-0153-6.

Lears, T. J. (1985). The concept of cultural hegemony: Problems and possibilities. The American
Historical Review, 90, 567–593.

Li, R., Crowe, J., Leifer, D., Zou, L., & Schoof, J. (2019). Beyond big data: social media

challenges and opportunities for understanding social perception of energy. *Energy Research & Social Science*, *56*. https://doi.org/10.1016/j.erss.2019.101217

Lin, Y., & Benneker, K. 2022. Assessing collaborative planning and the added value of planning support apps in The Netherlands. Environment and Planning B: Urban Analytics and City Science, 49(2), 391–410. https://doi.org/10.1177/23998083211009239

Lin, Yanliu & Geertman, Stan. (2019). Can Social Media Play a Role in Urban Planning? A Literature Review. 10.1007/978-3-030-19424-6_5.

Lin, Y.L.; Geertman, S. 2019. Can social media play a role in urban planning? A literature review. In Computational Planning and Management for Smart Cities; Geertman, S., Zhan, Q.M., Allan, A., Pettit, C., Eds.; Springer Nature Switzerland AG: Cham, Switzerland.

Lin, Yanliu & Kant, Stijn. (2021). Using Social Media for Citizen Participation: Contexts, Empowerment, and Inclusion. Sustainability. 13. 6635. 10.3390/su13126635.

Lieberman, A., & Schroeder, J. 2020. Two social lives: How differences between online and offline interaction influence social outcomes. *Current opinion in psychology*, *31*, 16–21. https://doi.org/10.1016/j.copsyc.2019.06.022

Loorbach D (2010) Transition management for sustainable development: a prescriptive,complexity-based governance framework. Governance 23(1):161–183.
Loorbach, Derk & Rotmans, Jan. (2010). Towards a better understanding of transitions and their governance, A systemic and reflexive approach, as Part II. Transitions to Sustainable Development - Part 1. New Directions in the Study of Long Term Transformative Change. 105-120.

Loorbach D, Wittmayer JM, Shiroyama H, Fujino J, Mizuguchi S, eds. 2016. *Governance of Urban Sustainability Transitions: European and Asian Experiences*, Vol. 1. Tokyo: Springer

Loorbach D, Avelino F, Haxeltine A, Wittmayer J, O'Riordan T, et al. 2016. The economic crisis as a game changer? Exploring the role of social construction in sustainability transitions. *Ecol. Soc.* 21:15

Loorbach, Derk & Frantzeskaki, Niki & Avelino, Flor. (2017). Sustainability Transitions Research: Transforming Science and Practice for Societal Change. Annual Review of Environment and Resources. 42. 10.1146/annurev-environ-102014-021340.

Mansfeld, M, Wintjes, A, Jonge, J D, Pleijte, M, Smeets, P, 2003, "Regiodaloog: Naar een systeeminnovatie in de praktijk" Alterra Research Instituut voor de Groene Ruimte, Wageningen, The Netherlands (in Dutch)

Rotmans, J., Kemp René, & Van Asselt, M. (2001). More evolution than revolution: transition management in public policy. Foresight, 3(1), 15–31.

Meadowcroft J. 2009. What about the politics? Sustainable development, transition management, and long-term energy transitions. *Policy Sci.* 42:323–40.

Mergel, Ines. 2012. Social Media in the Public Sector: Participation, Collaboration, and Transparency in the Networked World.

Merav, K.-K., & Idit, M. (2015). Mobilizing facebook users against facebook's energy policy: the case of greenpeace unfriend coal campaign. *Environmental Communication*, *9*(2), 248–267. https://doi.org/10.1080/17524032.2014.993413

Mitchell, R. K., B. R. Agle, and D. J. Wood. 1997. "Toward a Theory of Stakeholder Identification and Salience : Defining the Principle of who and What Really Counts." The Academy of Management Review 22 (4): 853–886. Nowland R, Necka EA, Cacioppo JT: Loneliness and social internet use: pathways to reconnection in a digital world? Perspect Psychol Sci 2018, 13:70-87. perspective. Res. Policy 39 (4), 495–510. Psychol Sci 2018, 27:32-37.

Mueller, T. S. (2019). Utility peak power messaging: eliciting consumer response through traditional and social media channels. *Energy Research & Social Science*, *57*. https://doi.org/10.1016/j.erss.2019.101244

Nevens F, Frantzeskaki N, Gorissen L, Loorbach D. 2013. Urban transition labs: co-creating transformative action for sustainable cities. *J. Clean. Prod.* 50:111–22
charpf F. 1997. The problem solving capacity of multi-level governance. *J. Eur. Public Policy* 4:520–38

Osatuyi, B. (2013). Information sharing on social media sites. *Computers in Human Behavior, 29*(6), 2622–2631. https://doi.org/10.1016/j.chb.2013.07.001
Pahl-Wostl C, Downing T, Kabat P, Magnuszewski P, Meigh J, et al. 2005. *Transition to adaptive watermanagement: The NeWater project. Water Policy.* NeWater Work. Pap., Inst. Environ. Syst. Res., Univ. Osnabr¨uck. http://nora.nerc.ac.uk/1018/

Piccorelli, J. T., & Stivers, C. 2019. Exiled to main street: how government's use of social

media diminishes public space. Journal of Public Affairs, 19(4).
https://doi.org/10.1002/pa.1955

Planning en aanpak. (n.d.) Retrieved Jun 11, 2022 from
https://www.rijkswaterstaat.nl/wegen/projectenoverzicht/a27-a12-aanpassing-ring-utrecht/planning-en-aanpak

Ploger, J. (2004). Strife: urban planning and agonism. *Planning Theory -London-*, *3*, 71–92.
R. Kleinhans, M. Van Ham, and J. Evans-Cowley. Using social media and mobile technologies to foster engagement and self-organization in participatory urban planning and neighborhood governance, 2015 the approach of strategic niche management. *Technol. Anal. Strateg. Manag.*10:175–96.

Quist J, Vergragt P. 2006. Past and future of backcasting: the shift to stakeholder
participation and a proposal for a methodological framework. *Futures* 38:1027–45

Sondeijker S, Geurts J, Rotmans Tukker A. 2006. Imagining sustainability: the added value
of transition scenarios in transition management. *Foresight* 8:15–30.

Shove E, Walker G. 2008. Transition management and the politics of shape shifting.
Environ. Plann. A 40:1012–14.

Smith, A. (2007). Translating sustainabilities between Green Niches and socio-technical
regimes. Technology Analysis & Strategic Management, 19(4), 427–450.
https://doi.org/10.1080/09537320701403334

Stop Verbreding Ring Utrecht Kies voor gezonde en slimme mobiliteit Retrieved June 22, 2022 from
https://www.stopverbredingringutrecht.nl/

Törnberg, Anton. (2018). Combining transition studies and social movement theory:
towards a new research agenda. Theory and Society. 47. 10.1007/s11186-018-9318-6.

Verdegem, P. 2011. Social Media for Digital and Social Inclusion: Challenges for Information
Society 2.0 Research & Policies. tripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society. 9. 28-38. 10.31269/triplec.v9i1.225.

Van der Brugge R, Rotmans J, Loorbach D. 2005. The transition in Dutch water
management. *Reg. Environ. Change* 5:164

Van Raak R. 2016. *Transition policies: Connecting system dynamics, governance and
instruments in an application to Dutch healthcare.* PhD thesis, Univ. Erasmus Univ., Rotterdam, Neth. https://repub.eur.nl/pub/80061/

Voss J, Bauknecht D, Kemp R, ed. 2006. *Reflexive Governance for Sustainable
Development.* Cheltenham, UK: Edward Elgar

Waytz A, Gray K: Does online technology make us more or less sociable? A preliminary
review and call for research. Perspect Psychol Sci 2018, 13:473-491.

Wegener Meadowcroft J. 2009. What about the politics? Sustainable development, transition
management, and long term energy transitions. *Policy Sci.* 42:323–40

Westerhoff, L., Sheppard, S. R. J., Mathew Iype, D., Cote, S., & Salter, J. (2018). Social
Mobilization onclimate change and energy: an evaluation of research projects in british columbia, canada. *Energy Research & Social Science*, *46*, 368–380.
https://doi.org/10.1016/j.erss.2018.07.022

Wittmayer, Julia & Loorbach, Derk. (2016). Governing Transitions in Cities: Fostering
Alternative Ideas, Practices, and Social Relations Through Transition Management. 10.1007/978-4-431-55426-4_2.

Williams, H. T. P., McMurray, J. R., Kurz, T., & Hugo Lambert, F. (2015). Network analysis
reveals open forums and echo chambers in social media discussions of climate change. *Global Environmental Change*, *32*, 126–138.
https://doi.org/10.1016/j.gloenvcha.2015.03.006

Woerkum, C , 2000 Communicatie en interactieve Beleidsvorming (Samsom, Alphen aan den
Rijn) (in Dutch)

2005 – 2020 Geschiedenis van de plannen en de politieke besluitvorming rond verbreding A27/A12.
(n.d.) Retrieved June 22, 2022 from https://www.stopverbredingringutrecht.nl/wp-content/uploads/2020/10/2005-2020-Beleid-en-politiek-rond-verbreding-A27.pdf