

Coming soon (?):

Adaptivity in Dutch planning.

Examining the adaptive capacity of the Dutch Environmental
Planning Act (Omgevingswet) of 2021.

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ABSTRACT

In 2021 the new planning system of The Netherlands – the Environmental Planning Act (EPA, or *Omgevingswet* in Dutch) – is planned to come into effect. Important aspects are flexibility, simplification, and participation. In this thesis urban areas are regarded as Complex Adaptive Systems. Such systems benefit from an improved capacity to adapt (adaptive capacity) to stresses and strains from within the system itself or its environment. Participation of citizens and stakeholders in planning processes contributes to adaptive capacity by knowledge sharing and creating social capital. This thesis attempts to answer the following main research question.

How does the Dutch Environmental Planning Act (2021) provide conditions for adaptive capacity in Dutch municipalities?

The EPA, including its rules and tools (e.g. permits, types of plans and policies, a digital system), was examined in detail and four experts were interviewed. The data was analysed by employing the Adaptive Capacity Wheel (ACW). This is a tool created by Gupta et al. (2010) for analysing the adaptive capacity in institutions (i.e., rules). After adjusting the ACW to make it applicable to this research focus, the data was analysed. This resulted in an ACW for the EPA (see appendix 5.1). The main strengths of the EPA in terms of adaptive capacity creation lie in its many options for implementation of measures and permitting activities, demanding participation, and having a transparent and accessible online system through which all policies and rules for different locations can be consulted and through which permits can easily be requested. This leads to new insights on how institutional systems can create adaptive capacity by having the separate parts of the policy cycle supplement each other.

Keywords: *Adaptive capacity, Adaptive planning, Omgevingswet, Environmental Planning Act, Complexity, Complex Adaptive Systems.*

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LIST OF ABBREVIATIONS

ACW	Adaptive Capacity Wheel
AMvB	<i>Algemene Maatregel van Bestuur</i> (=order in council)
CAS	Complex Adaptive System
DSO	<i>Digitaal Stelsel Omgevingswet</i> (=Digital System EPA)
EP	Environmental Plan (=Omgevingsplan)
EPA	Environmental Planning Act (=Omgevingswet)
ER	Environmental Resolution (=Omgevingsbesluit)
EV	Environmental Vision (=Omgevingsvisie)
GALA	General Administrative Law Act (=Algemene Wet Bestuursrecht)
SES	Social-ecological system
TFEU	Treaty on the Functioning of the European Union
VNG	<i>Vereniging Nederlandse Gemeenten</i> (=association for Dutch municipalities)

1 INTRODUCTION

In 2021 the Dutch *Omgevingswet* (Environmental Planning Act, hereafter: EPA) is planned to come into effect, bringing with it substantial change to the planning system in the Netherlands. Twenty separate laws drawn up over the past decades will be fully repealed, and some ten laws and various exemptions will be partially replaced by the EPA (Oldenziel & de Vos, 2018). By repealing and merging elements of existing environmental planning laws, while adopting new elements, a comprehensive, more comprehensible, more navigable and contemporary planning system should result (Omgevingswetportaal, 2017; Tweede Kamer der Staten-Generaal, 2014). More room is given to citizens (i.e., through participatory planning processes) and to local governments, who get more discretionary power and flexibility.

This revamp of the Dutch planning system provides an opportunity for giving citizens, governments, and other actors involved in spatial planning the means to tackle contemporary and future issues that may be faced, such as symptoms of climate change, ageing population or the energy transition. Ideally, this should be done in a manner that does justice to, on the one hand, the complexity, uncertainty and scale of such issues, and, on the other hand, the complex and diverse contexts in which such issues occur. Indeed, it is increasingly being acknowledged that the urban realm where many people live is complex and dynamic (see e.g., Batty, 2005; De Roo, 2010; Moroni, 2015; Moroni & Cozzolino, 2019; Portugali, Meyer, Stolk, & Tan, 2012; Rauws, 2017; Rauws, Cook, & Van Dijk, 2014), as has first been recognized in systems theory from the mid-to-late 1960s onwards (McLoughlin; Chadwick, as cited in Allmendinger, 2017, p. 55) following Jane Jacob's (1961) pioneering work (Moroni & Cozzolino, 2019).

1.1 WHAT COMPLEXITY MEANS FOR CITIES

Regarding cities and urban areas from the perspective of complexity theory means that they consist of many parts or components (i.e. they are complex) and allow for input and output of material and information (i.e. they are open) (Alfasi & Portugali, 2007). Within such a system feedback and feedforward loops occur between its different components, producing disproportional cause-and-effect relations (non-linearity) and potential fundamental structural and functional shifts of the system (Alfasi & Portugali, 2007; Rauws et al., 2014). Such processes of feedback and feedforward loops, or simply, interaction, between individual parts of the system causing change in or of the system are called emergence (Rauws, Zuidema, & De Roo, 2019). Moroni and Cozzolino (2019, p.44)

define emergence as “*the cumulative result, over time, of countless actions, but not ... the direct outcome of a single design*”, and state that “*emergence gives rise to systemic and interconnected wholes composed of dynamic relationships between society and space*” (p.44). Through ‘self-organisation’ within the system (in this case, the city) order and stability spontaneously comes about (Alfasi & Portugali, 2007). Simply put, self-organisation causes and explains processes of emergence. Causes of self-organization are many local interactions between actors or local initiatives without central coordination (Rauws, 2017), structured by interaction with and exposure to (local) plans (Alfasi & Portugali, 2007).

Because of the open nature of cities, including its different levels of aggregation (e.g., individuals, households and neighbourhoods), they continually evolve “*towards an optimal ‘fit’ with their dynamic environment*” (Rauws, 2017, p.33). Cities, then, according to Rauws (2017), “*are sensitive to changes in this environment and respond by adapting their configuration*” (p.33). Thus, such systems, called Complex Adaptive Systems (CAS), like cities, are sensitive to contextual influences (Schoemaker, Gemmel & de Raedt, Roose, Taleb, Rhodes as cited in Verhees & Arts, 2014) prompting systemic change to emerge through self-organisation.

1.2 WHAT THIS MEANS FOR PLANNING

A CAS requires adaptivity to thrive (Cilliers, 1998). Increased capacity to adapt (that is, adaptive capacity) allows a city to thrive despite crises or developments that may influence it externally or internally, as it adapts to these new circumstances through self-organization. Change can either be expected (e.g., aging populations) or unexpected (e.g., a natural disaster or economic crisis). Unexpected change occurs most often, through emergence, meaning that the results could be foreseeable to an extent, but the causal relationships themselves not (Rauws et al., 2019). Of course, urban and regional change is not only caused by processes of emergence and self-organization; it is also influenced by systematic and prepared interventions (Rauws, 2015). According to Boelens & De Roo this engenders a ‘process of becoming’ – as opposed to a state of *being* – where there is both emergent adaptation and planned adaptation (as cited in Rauws et al., 2019).

A CAS approach to the urban realm instils “*an awareness of time, emergence and non-linearity*” meaning that “*situations, issues and systems are open to change, follow transformative trajectories and exhibit adaptive behaviour*” (De Roo, 2018, p.27). Moreover, this brings with it the realization that there are many possible futures. However, it must be noted that although adaptation occurs, this does

not mean that its outcomes are good or desirable (Allen, 2014). Furthermore, Allen (2014, p.49) states that “[i]f plans are made that run counter to the ‘natural decision of the urban agents’ then such plans have little chance of being successful”. After all, planners are merely part of the system and cannot completely control and predict its development (Rauws, 2017). Instead, a different – but not necessarily smaller or bigger – role is needed of planners and planning (Sayer as cited in Moroni & Cozzolino, 2019)

While planning for a CAS, instead of preparing for and implementing long-term and often large scale interventions with a presumed large degree of certainty of the outcomes, uncertainty should be recognized and the planner – following Allen’s (2014) statement above – should be open to many different futures while monitoring which way the system evolves. Indeed, as De Roo (2010, p.34) states: “[n]ow, the planner is also entering the picture as a trend watcher and transition manager.” The core tasks the author focuses on in this work, however, are those of creating and maintaining adaptive and participatory capacity, as these can be seen as prerequisites for maximising the potential of processes of self-organisation and emergence (trends) that are then to be monitored. The role that participation plays in all this is that it contributes to the adaptive capacity of the planning process and that it is beneficial on its own merits by providing, for instance, legitimacy and a broader set of knowledge and interests. For planners in a world complexity and uncertainty, moreover, this means that, according to De Roo (2010, p.24), “they have to act as mediators, advocates and guides for the actors involved in the planning process in order to optimise their interests”, implying “a shift from direct control to self-regulation”. Importantly, and related to this, participation is a significant theme within the new EPA: the VNG (association for Dutch municipalities) even calls it ‘the foundation’ of the EPA (VNG, n.d.). This will, of course, be elaborated on in this research.

1.3 RELEVANCE

Using a complexity perspective and characterising urban areas as Complex Adaptive Systems has consequences for what the optimal approach to planning is. This is also true when applying different perspectives or analytical frameworks, such as a communicative-rationale perspective (approximately around the ‘90s) or a technical-rationale perspective (‘70s). However, a complexity perspective seems to resonate more with our current understanding of the (urban) world, which is indeed dynamic, clustered and connected, changing, highly uncertain, pluriform, and adaptive (Allen, 2014; Portugali, 2000). As has been demonstrated above, from the complexity perspective an adaptive planning approach – which is about “*the conscious generating, structuring and organising of*

the adaptive capacity of a socio-spatial system for the sake of the quality of the living environment” (Rauws et al., 2019, p.13) – follows. Increasing adaptive capacity of the living environment can be achieved through spatial design, but also through institutional design (such as planning law) (Engle, 2011; Gupta et al., 2010; Rauws et al., 2019). Consequently, institutional design is an important means for improving the urban realm in which many of us live, making the EPA an important research subject for the Dutch context. Not only is this true for city-dwellers, but also for planners and academics interested in an institutional approach to adaptive planning, both nationally and internationally, as it provides a link between theory and practice (i.e., implementation).

Moreover, this work can provide insight into whether the Dutch government has used the revamp of the Dutch planning system to seize the opportunity for providing an adaptive planning system that is appropriate for dealing with complex issues in a complex context, both long-term and short-term. In addition, this research contributes to improving the connection between linking the planning debate with the complexity sciences, which remains a challenge according to De Roo (2018). This thesis can provide a better understanding on how participatory and adaptive capacity manifests itself in the new Dutch planning arena, or how it is lacking. This thesis can help to show how theoretical notions have been and can be translated into law and practice.

1.4 RESEARCH OBJECTIVES AND QUESTIONS

The aims of this study are (1) to convey the importance of adaptive capacity in the contemporary (Dutch) planning context, mainly by using a complexity perspective, (2) to find out how the new Dutch planning system provides adaptive capacity through its rules, and institutionalised tools and (participatory) processes, (3) to make recommendations on how the adaptive capacity of the EPA can be improved, and (4) to provide insight into the challenges and opportunities in the implementation of the planning system in terms of adaptive capacity creation.

The objectives are intended to be achieved by researching the EPA itself in relation to adaptive capacity creation through its various tools, of which participation is often part. The focus will be on the municipal level as municipalities are and have been the main planning authorities in the Netherlands, with *“the most direct influence on development”* (Janssen-Jansen, 2016, p.26).

This leads to the following primary research question:

How does the Dutch Environmental Planning Act (2021) provide conditions for adaptive capacity in Dutch municipalities?

From this, the following secondary research questions are distilled:

- 1. What are the different tools of the EPA and how are they employed?*
- 2. What is the role of participation in the EPA in relation to its different tools?*
- 3. How do the different tools of the EPA and their participatory qualities create adaptive capacity?*

2 THEORETICAL FRAMEWORK

Several concepts have already been introduced. In this chapter many of those concepts and others will be elaborated upon. These concepts form the basis for the research and will come back during the research. This forms the theoretical framework, or context, within which this research can be positioned, starting with a short section on systems planning, in which cities are regarded as models or systems (2.1). From here the step will be made to complex adaptive systems and their properties, including adaptivity (2.2). This opens the door to adaptive planning, of which adaptive capacity is an integral part (2.3). Finally, the Adaptive Capacity Wheel – a tool which contains dimensions and criteria of adaptive capacity – will be discussed in the context of this research topic (2.4).

2.1 SYSTEMS, CHAOS AND COMPLEXITY

2.1.1 CITIES AS SYSTEMS: SYSTEMS PLANNING

Inspired by developments in biological sciences concerning systems thinking, which posited “*i) that systems existed in all areas of the natural and human environment, and ii) that systems could be controlled through regulating the communication between the various constituent parts*” (Allmendinger, 2017, p.55), this view also arose in planning in the late ‘60s and ‘70s (Allmendinger, 2017). Cities also came to be seen as systems, within which different systems existed (e.g., those of transit and retail) which influence each other (‘ripple effects’) and the system as a whole; they are in constant flux (Allmendinger, 2017). Furthermore, according to this view, systems are dynamic in that individuals bring about change through competitive behaviour – individuals “*act in an optimizing way*” (Allmendinger, 2017, p.57) – which adds considerable complexity, even though behaviour is constrained (e.g., there are financial, social, physical or legal constraints) (Allmendinger, 2017). This view is characterised by rational utility, the view that “*[w]e act either individually or collectively in predictable ways that aim to maximize personal utility*” (Allmendinger, 2017, p.57). If behaviour is rational and there are certain constraints, then systems can also be theorised and modelled, giving a central role to the planner (Allmendinger, 2017).

Such models, however, are based on a ‘simple’ conception of cities and are therefore reductionist (Allmendinger, 2017), and simulations making use of (such) models inadequately represent the social reality because of technical limitations (Byrne, 2003). Moreover, with its focus on ‘knowability’

(limited uncertainty) and predictability this systems approach is “*the apex of positivist planning theory*” (Allmendinger, 2017, p.79).

2.1.2 COMPLEX SYSTEMS

Because of the shortcomings of models based on ‘simple’ systems when it comes to comprehensibility and predictability of that which is modelled, ideas from complexity and chaos theory came to the fore in the 1980s (Allmendinger, 2017). Chaos theory considers the development of systems in a state of non-equilibrium and involves the factor of time (De Roo, 2010). Further, it posits that systems can develop in a non-linear and dynamic fashion (De Roo, 2010).

It is in this ‘world of becoming’, where both chaos and time play a role to create a world of dynamic complexity (De Roo, 2010, 2018). By including non-linearity, dynamic complexity strongly relates to the notion of CASs; adaptivity and non-linear change over time play a key role.

In the early ‘90s, Stuart Kauffman (1990) distinguished between four different classes of systems: Class I, II, III and IV systems. In line with De Roo (2010) and Zuidema’s (2016) characterisation of systems into two categories (that is, static and dynamic) Kauffman’s systems can also be categorised in line with this characterisation: Class I, II and III systems are static, while Class IV systems are dynamic (De Roo, 2018).

Class IV systems are dynamic and open (i.e., there is flow of materials and information between the system and other systems) (Alfasi & Portugali, 2007; De Roo, 2018, see table 2.1). Thus, apart from being nested in their environment with interdependence internally – between nodes and components within the system or subsystems – and externally – between the system and other systems (i.e., its environment or context) –, there is also interdependence at different moments in time as the system adapts over time to outside influences that occur at a specific moment (Rauws et al., 2014). In fact, Class IV systems and Complex Adaptive Systems are synonymous; in a nutshell, they are dynamic and progress through time in a non-linear fashion (De Roo, 2018).

	Closed	Open
Static	Class I and II	Class III
Dynamic		Class IV (CAS)

Table 2.1. Characterisation of different classes of systems. Source: De Roo (2018); table by author.

2.2 COMPLEX ADAPTIVE SYSTEMS

Already many characteristics of Complex Adaptive Systems (CASs) have been introduced: a CAS is a system which is open and responsive to its environment and its internal interactions; developments over time are non-linear (i.e., there are disproportional cause-and-effect relations); independent self-organisation leads to emergence of certain developments; and the system can adapt itself to its environment (although this does not imply a conscious teleology of the system). However, how (different characteristics and properties of) CAS actually come to be and function is still quite unclear. This will be explained by first discussing self-organisation, as this mechanism is instrumental to some of the aforementioned characteristics (e.g., non-linearity, emergence, adaptivity). Only then can adaptivity be discussed, which is also the focus of this research.

2.2.1 SELF-ORGANISATION

Action and agents

What is clear, is that at the basis of the CAS lies self-organisation, elementary to which are the 'agents', or individual components, of the system (Heylighen, 2013). In a city it is people that are the agents. People act in response to occurrences and phenomena they perceive in their direct environment (Heylighen, 2013). This can, for instance, be other people and what they do, but also the weather or the physical environment. In accordance with a systems view, as mentioned before, individuals "*act in an optimizing way*" (Allmendinger, 2017, p.57) (see 2.1.1). As Heylighen (2013, p.2) puts it: "*[A]gents are [usually] assumed to be goal-directed: their actions aim to maximize their individual "fitness", "utility" or "preference".*" Moreover, "*[w]hen no explicit goal can be distinguished, their activity still follows a simple cause-and-effect or condition-action logic: an agent will react to a specific condition perceived in the environment (cause) by producing an appropriate action (effect)*" (Heylighen, 2013, p.2-3). This behaviour of individuals shows through their actions. Moroni & Cozzolino (2019) distinguish, firstly, between individual actions and, secondly, the interaction between them. After all, action is, first and foremost, individual, but it can also be joint (e.g., in a business or a homeowner's association) or reactionary in nature. It is these complex patterns of interaction (of actions) between the different agents of the system which determine primarily the behaviour of the system (Cilliers, 1998).

An effect of action may be another action (reaction) on a local level which triggers other reactions locally, and so on. Although such an effect will first be noticeable locally, eventually the entire system will be affected. Such a global effect is like a ripple in a pond after an object has been thrown into it (Heylighen, 2013). However, such a ripple-effect is linear, as it is predictable and regular, while in a CAS effects are often non-linear (Heylighen, 2013). This means that *“small changes ... cause large effects, and the combination of patterns ... result in the formation of new ones, not merely in linear combinations of the constituents”* (Cilliers, 1998, p.95). A well-known example is the *butterfly-effect*. This non-linearity is caused by the fact that in a complex system the individuals all are different (properties, preferences, needs, etc.) and respond differently to actions (i.e., agents are not homogeneous) or because links between agents are missing or incorrect, and thus certain effects of actions and interactions are amplified (e.g., the spread of a contagious disease), while for others the opposite is true (e.g., a large spatial intervention not having much effect on daily life (Ikeda, 2017)) (Ashby, 1962/1991; Cilliers, 1998; De Roo, 2014).

Increased complexity towards the ‘edge of chaos’

If agents and linkages *were* to be homogeneous, this would inhibit the development of the system towards complexity, as all reactions would be similar as well (Cilliers, 1998). Whereas a complex system, through self-organisation, *“organises itself towards the critical point where single events [actions] have the widest possible range of effects[:] ... the system tunes itself towards optimum sensitivity to external inputs”* (Cilliers, 1998, p.97). This ‘critical point’ is also referred to as the ‘edge of chaos’, or the ‘point between order and chaos’ or ‘the point between order and disorder’ (Cilliers, 1998; Waldrop, 1992). The development towards the edge of order and chaos is driven by competition for resources, paired with a rich level of interaction between agents (Cilliers, 1998). This means that in a complex system these are the mechanisms that interrupt symmetry and lead to non-linearity (Cilliers, 1998).

A social system, such as a city, is an example of an environment where this occurs as well. On this topic, Cilliers (1998, p.120) states that in such a system *“[t]he same piece of information has different effects on different individuals, and small causes can have large effects. The competitive nature of social systems is often regulated by relations of power, ensuring an asymmetrical system of relationships.”* Examples of such asymmetrical relations, regulated by power, are those between a student and a teacher, a parent and a child, or between the state and society (Cilliers, 1998, p.120).

The pattern that results from such developments, in essence increased multiplicity, is called 'emergence' (Boonstra, 2015). This new pattern should not be understood as a replacement of the previous state of the system (in as far as one can speak of a 'state' in a system which is constantly changing and in flux). Rather, this pattern, or "*emergence of new structure*" (Boonstra, 2015, p.89) is added "on top of" what that which was before. Hence, the complexity of the system increases. Naturally, then, this also means that complex systems have a history which it carries with it through time, like the development of a language (Cilliers, 1998, p.124). Put in a better way, the individual *agents* in the system each carry with it a history or traces, like each separate word in a language has a history and etymology (Cilliers, 1998, p.124). It is these '*patterns of traces*' (emphasis in original) which result in the "*[g]lobal behaviour of the system ... – the individual traces that constitute the pattern have no meaning by themselves*" (Cilliers, 1998, p.108), again, like the separate words in a language carry no meaning by themselves, but only when combined with other words. As this history is carried forth through time by the agents – meaning there is distributed (as opposed to centralised) *memory* and control in the system (Heylighen, 2001) – this also influences behaviour of the agents and (thus) the system in the present (Cilliers, 1998). Consequently, "*movements of and inside the system can never be brought back to a single origin*" (Cilliers, 1998, as quoted in Boonstra, 2015, p.88).

2.2.2 ADAPTIVITY

According to Heylighen (2001, p. 268) "*adaptation can be conceived as achieving a fit between system and environment*" (emphasis in original). Furthermore, he states that "*[s]ystems may be called adaptive if they can adjust to ... changes while keeping their organization as much as possible intact*" (p.268, emphasis in original). In 1962, Ashby illustrated the aforementioned conception of adaptation by taking a perspective on complex systems consisting of parts, with one part of that system seen as separate of it (Ashby, 1962/1991). In such a case (or rather, with such a perspective), the system as a whole functions as the 'environment' to the separated part, and the self-organizing agents of that part would necessarily have to adapt to the environment, being the system 'as a whole' which itself consists of self-organizing agents, in order to achieve fit (Ashby, 1962/1991; Heylighen, 2001). If the part of the system would not be adaptive, under certain 'boundary conditions' (i.e., in a certain environment) (Heylighen, 2001), then it would spontaneously disintegrate (p. 268). This also means that different boundaries can be chosen to distinguish system from environment (Heylighen, 2001); after all, complex systems are open systems and are embedded in their environment and are thereby connected to other systems, but they also consist of smaller sub-systems themselves. Logically, then, each of those systems, being interconnected and self-organising, adapt to each other,

and distinguishing between them (that is, setting boundaries) can, arguably, be considered arbitrary. In other words, CAS are boundary breaking ‘dissipative systems’ (De Roo, 2014): these are “*synonymous with self-organization within an open systems environment, and their irreversible mechanisms allow energy, matter and ... information to be exchanged between the system and its environment, triggering the system itself to change*” (De Roo, 2014, p.62).

2.2.3 THE CAS-APPROACH AND PLANNING

So far an important aspect of a CAS (self-organisation) and its features (distributed control and memory, interactions between agents, adaptivity, etc.) in relation to its environment have been discussed. Cilliers summarised the effects of these features on the system as a whole as follows: “*The state of the system at any given time is ... the result of conditions in the environment, the history of the system and the effects that the system must have on its environment in order to perform its functions*” (1998, p.125). Self-organising behaviour within the system leads to increasing complexity of the system, until it reaches a point of criticality at the ‘edge of chaos’. In this subsection more general characteristics of CAS will be listed and discussed, so as to create more clarity on what is meant by ‘CAS’. Most of these have also been touched upon in the introduction (see Chapter 1). In that chapter a CAS-approach was also linked with planning. In this sub-section this link will be elaborated upon.

The CAS approach

Apart from self-organisation, key aspects of CASs are emergence, non-linearity, adaptation and the inclusion of time (De Roo, 2010). These characteristics make CASs a valuable concept to study phenomena in reality, as the ‘behaviour’ of CASs is very much like many socio-ecological or socio-spatial systems (e.g., cities and ecosystems, but also language and economies). For this reason, the CAS approach (that is, viewing and treating socio-ecological systems as CASs) provides a useful analytical framework (De Roo, 2018; Moroni, 2015; Rauws et al., 2014). The purpose of a CAS approach, however, does not concern making predictions or striving for complete comprehensibility of the system, as was the case for models in the systems approach (see 2.1.1), but rather to inform policymaking and to “*provide ways of thinking about cities*” (Batty, 2005, p.517).

To take a CAS approach on cities, means taking on an ontology in which “[c]ities are complex, non-linear systems of networks whose future behaviour is essentially unpredictable” (Hillier, as quoted in Moroni, 2015, p.254). As such, cities consist of many components (i.e., they are complex) and are open and dissipative systems, ‘nested’ within an environment (Alfasi & Portugali, 2007). In cities, the

individuals, firms, public institutions and such are the 'agents' which interact with each other (Heylighen, 2013; Portugali, 2008). These agents exhibit self-organising behaviour, and cause-and-effect relations between them are disproportional (i.e., there is non-linearity), possibly leading to fundamental structural and functional shifts of the system over time (Alfasi & Portugali, 2007; Rauws et al., 2014). This non-linearity is one reason why the behaviour of a CAS (city) is essentially unpredictable (Portugali, 2008). Other reasons are that some changes are triggered by random mutations (Allen, as cited in Portugali, 2008); that the 'predictor' him- or herself is part of the system (implying "*self-fulfilling and self-falsifying or self-defeating predictions*" (Portugali, 2008, p.256)); and, finally, cities can be considered 'dual self-organising systems' (i.e., as opposed to material systems, the individual elements of the (social) system are themselves complex systems, hence them being called 'agents') (Portugali, 2008).

Portugali (2008) points out several implications of the presence of agents (being capable of "*learning, thinking, decision-making*" and such (p.257)) in (dual) complex systems. Firstly, agents are capable of planning: "*agents plan and take decisions according to their past experience (learning) and their plans [...]; the interaction in dual self-organizing systems is between agents and their plans*" (p.257). Secondly, each and every agent "*is a planner at a certain scale*" (p.257). Finally, this means that their plans may yield larger (non-linear) effects than plans of formal or large-scale planners. Interaction between agents, then, is structured by interaction with and exposure to (local) plans (Alfasi & Portugali, 2007).

Clearly, different self-organising systems (e.g., cities and living cells) don't necessarily exhibit the same range of behaviours and characteristics (Cilliers, 1998). What all CASs have in common, however, is that the behaviour and state of the system is always 'good' according to the system, as it always seeks optimal fit to its environment, whether it concerns a city or a cell (Ashby, 1962/1991). However, as Ashby (1962/1991) and Allen (2014) note, this does not mean that this behaviour is desirable or normatively 'good'. For example, spontaneous processes of gentrification can and are generally considered good, but they can progress to the point where many of the original population is geographically displaced, which is generally deemed undesirable. As touched upon in the introduction, this has consequences for planners: "*[i]f plans are made that run counter to the 'natural decision of the urban agents' then such plans have little chance of being successful*" (Allen, 2014, p.49). In a nutshell, one can conclude that planners have little influence on the long-term trajectory of cities.

For instance, for large and elaborate spatial developments and designs there is less (literal and figurative) 'room' for unplanned activities and creativity (Ikeda, 2017). Therefore, and agreeing with the point Allen (2014) and Ashby (1962/1992) made, "*[t]he built environment should complement emergent order, not try to replace it with deliberate design*" (Ikeda, 2017, p.82). It is at this point where, using a CAS approach, the role lies for planning; "*[t]he challenge ... is to enable, rather than replace, the spontaneous, low-level planning of ordinary people, and to preserve – largely by keeping away from – the "action spaces" where informal contact and networking trial-and-error, diversity, and discovery usually happens*" (Ikeda, 2017, p.82). In other words, planning action should facilitate self-organisation and thus the adaptivity of the system. The planner, then, functions as a trend watcher (following trends in the 'natural decisions of urban agents', or emergence) and transition manager (guiding self-organisation towards 'desirable' outcomes) (De Roo, 2010).

2.3 ADAPTIVE PLANNING

Regarding cities as CASs has implications for planning (see 2.2.3). Planning becomes less 'directive', and instead more about leaving room for different development trajectories, and building capacity to engender and benefit from change (Rauws et al., 2019), or the capacity to 'trigger and direct change' (Beunen, Duineveld, & Van Assche, 2014). To begin with, this asks for an adaptive planning approach which is largely about building 'adaptive capacity' so that actors and stakeholders can more adequately respond to and prepare for (i.e., adapt to) future change and trends, but also about participatory capacity. After all, for such adaptations it is of importance that these actors and stakeholders communicate and learn from and with each other. From a CAS perspective this means stimulating learning and interaction between agents, in order to increase adaptivity of (a part of) the system, which can be achieved through formal institutions concerning spatial planning and (institutionalised) participatory planning processes (Engle, 2011; Gupta et al., 2010; Rauws et al., 2019). Because of this, adaptive capacity and participatory capacity will be discussed and elucidated separately in this section. But first adaptive planning, which can be regarded as a sort of 'overarching' concept and planning approach, will be gone into.

2.3.1 ADAPTIVE PLANNING

Adaptive planning is planning derived from or based on perspectives from complexity sciences (Verhees, 2013). Rauws et al. (2019) state that "*[a]daptieve planning gaat om het bewust genereren, structureren en organiseren van het adaptieve vermogen van een sociaal-ruimtelijk systeem ten*

behoefte van de kwaliteit van de leefomgeving” [adaptive planning is about consciously generating, structuring and organising the adaptive capacity of a socio-spatial system for the benefit of the quality of the living environment] (p.13). In short, adaptive planning is about creating or increasing adaptive capacity. However, it is worth reiterating that Rauws et al. (2019) specifically mention the ‘living environment’; adaptive planning is not about increasing adaptive capacity for organisations or policies (unless these organisations and policies are focussed on the living environment). If the EPA contains elements that (allow for) the creation or increase of the adaptive capacity of an urban area, it is within the realm of adaptive planning.

In an adaptive approach to spatial planning the emphasis is on consensus-building, flexible and inclusive co-operation between different types of actors, and facilitating self-organisation (Van Buuren et al., 2013). Moreover, adaptive planning is about flexible and adjustable initiatives (experiments, plans, incremental development) as they are “*able to adapt to unexpected feedback loops*” (Van Buuren et al., 2013, p.35). Although, on the one hand, adjustability and flexibility are of essence, on the other hand there is also need for a certain robustness (e.g., for safeguarding long-term sustainability, legal certainty, profitability of investments, and the quality of the living environment) (Van Buuren et al., 2013; see also Moroni, Buitelaar, Sorel, & Cozzolino, 2018; Rauws, 2017). Perhaps the most obvious and appropriate means for providing this flexibility and robustness is a framework of formal institutions and norms provided by the government, which on the one hand provides certainty and a robust basis, but on the other hand allows for flexibility and openness by giving room to self-organising, bottom-up approaches and strategies (Scharpf as cited in Gupta et al., 2010; Van Buuren et al., 2013).

Along similar lines, Rauws et al. (2019), while referring to the academic debate on the role of governmental steering options within adaptive planning, point to prescriptive and proscriptive interventions. The former are “*ingrepen die een specifieke systeemconfiguratie voorschrijven of de variatie aan mogelijke configuraties sterk beperken*” [measures which prescribe a specific configuration of the system or strongly restrict the variation in possible configurations] (Rauws et al., 2019, p.28). Prescriptive interventions strongly limit the possibilities for non-governmental actors to start their own initiatives and developmental trajectories, and thus often reduce the adaptive capacity of the system (Rauws et al., 2019). This can, however, be beneficial if the current direction of self-organising emergence is deemed undesirable. Proscriptive interventions (e.g., dynamic coastal zone management and organic urban development), contrarily, intentionally leave room for such emergent, bottom-up or self-organising change (Rauws et al., 2019). This equates to

an increase of the adaptive capacity, and implies an indirect way of steering (Rauws et al., 2019), a key feature of adaptive planning (Verhees, 2013; Verhees & Arts, 2014).

2.3.2 ADAPTIVE CAPACITY

Generating, structuring and organising the adaptive capacity of the living environment is the focus of adaptive planning. An institutional framework is a highly useful and perhaps the readiest means through which such adaptive capacity creation can be implemented. However, apart from allowing for self-organising and bottom-up initiatives and developments, what does adaptive capacity entail? And in which ways, shapes, and forms can it be created and found (i.e., what are the dimensions and indicators of adaptive capacity)? This will be elucidated in this sub-section. It should be noted, however, that most of the literature in this sub-section focusses on adaptive capacity (of socio-spatial or social-ecological systems (SESs)) in the context of climate change. Nevertheless, this is not problematic as the origin of ‘adaptive capacity’ in complex systems thinking is often acknowledged in the literature. Moreover, climate change is indeed an issue marked by complexity, as Van Buuren et al. (2013) have shown, and the systems it affects can also be regarded as complex—in the same literature CASs are often explicitly mentioned.

Adaptive capacity as a concept can be applied to many different things: organisations, governance systems, policies, tools, institutions, socio-spatial systems, etc. (Rauws et al., 2019; see also Duit & Galaz, 2008; Gupta et al., 2010; Pahl-Wostl, 2009; Rauws, 2017 among others). Adaptive capacity is then defined in a way that is applicable to a specific field, tool or concept. What these definitions often have in common, however, is that adaptive capacity is about how it allows the field, tool, concept, etc. to adapt to change or stresses while also allowing it to preserve and maintain its identity. For example, certain elements of socio-spatial systems like cities (such as property rights and cooperation between inhabitants) allow cities to persevere through great impacts from its environment (e.g., fires, economic crises, or even the atomic bomb). A system with great adaptive capacity, therefore, is less vulnerable to stresses. Here, again, the roles of flexibility and robustness are apparent.

Adaptive capacity in resilience and vulnerability studies

The term ‘adaptive capacity’ is used in different scientific contexts as well; it is used in resilience literature and in vulnerability literature (Berman, Quinn, & Paavola, 2012; Carter et al., 2015; Engle, 2011). Within these different branches adaptive capacity is conceptualised differently. Without going

too much into detail, in vulnerability literature adaptive capacity is more focussed on actors and the social, whereas in resilience literature it is more focussed on ecology and SESs (Engle, 2011). The common factor here is adaptive capacity as a modulator of different factors. As ascertained by Engle (2011), in vulnerability literature adaptive capacity modulates exposure (i.e., *“the extent to which the system is physically in harm’s way”*, p. 649) and sensitivity (i.e., *“how affected a system is after being exposed to the stress”*, p.649), which together are a factor of vulnerability. In this conceptualization *“adaptive capacity represents the system’s ability to prepare for and adjust to the stress, mainly to lessen the negative impacts and take advantage of the opportunities”* (Engle, 2011, p.649). In short, increased adaptive capacity leads to a decreased vulnerability of the system.

In resilience literature adaptive capacity *“is the capacity of actors in the system to manage and influence resilience”* (Engle, 2011, p.650). Here adaptive capacity modulates between the conservation of the current system state and *“transformation of the system to a new state, depending on which is most ‘desirable’”* (Engle, 2011, pp.650-651). As what is ‘desirable’ is determined by ‘the actors in the system’, and resilience is a function of adaptive capacity, an increased adaptive capacity increases the likelihood of the system taking on a desirable state. Governance and institutions were found to be critical aspects that influence adaptive capacity (Engle, 2011).

Both conceptions of adaptive capacity can be said to lack focus in certain areas, or are (partly) difficult to translate into practice (Adger; Janssen & Ostrom as cited in Engle, 2011). A commonality between these conceptions, however, is adaptive capacity as a (positive or beneficial) modulator of different variables affecting the system state. Moreover, *“[a]daptive capacity is unique in that it is a property that human beings can shape and manipulate ... [, and] it affects both social and ecological systems”* (Engle, 2011, p.652). For these and other reasons scientists like Berman et al. (2012), Engle (2011) and Gupta et al. (2010) advocate for focussing more on adaptive capacity and adaptive capacity assessments, something which is central to this research as well, and therefore also for linking resilience and vulnerability frameworks.

Institutions

As mentioned above, different authors advocate for combining vulnerability and resilience approaches. They also indicate a key role for institutions in creating adaptive capacity (Berman et al., 2012). Indeed, Gupta et al. (2010) concur that a variety of institutions (both formal and informal) can shape this adaptive capacity (see also Birkmann et al., 2009; Lemos & Tompkins, 2009; Pelling, 2011).

When applied to institutions, Gupta et al. (2010, p.461) *“define adaptive capacity as the inherent characteristics of institutions that empower social actors to respond to short and long-term impacts either through planned measures or through allowing and encouraging creative responses from society both ex ante and ex post.”* In essence it is about characteristics of institutions that facilitate and allow actors to adapt to changing circumstances. According to Young, as cited in Herrfahrtdt-Pähle & Pahl-Wostl (2012), in order to have a resilient institutional system, it needs to possess a certain robustness (in order to *“provide stability and reduce uncertainty in the SES”*, p.2) and flexibility (i.e., it must be able to *“change ... in the medium to long term to react to the uncertainties of a changing environment and/or changes in the social system”*, p.2). In conditions marked by uncertainty and surprise it is especially important that institutional systems are flexible and adaptive, as this allows for adaptation to new circumstances (Berkes et al., Handmer & Dovers as cited in Herrfahrtdt-Pähle & Pahl-Wostl, 2012; note also the importance of adaptive capacity in CASs as described in 2.2).

It must be noted, however, that institutions or institutional systems that are adaptive and flexible (so that they can co-evolve along with its corresponding social system) are not equal to institutions and institutional systems that provide or improve adaptive capacity (which allow the social system or CAS to develop and adapt in a way that allows it to thrive under stresses from inside or its environment, e.g. through facilitating self-organisation). If one assumes that the new Dutch planning system is a better ‘fit’ to contemporary Dutch society than the previous (or rather, current, until 2021) system, it might be the case that the implementation of the new system is an example of how a flexible institutional system (i.e. the Dutch legal and lawmaking system) provides the planning law system to co-evolve with or adapt to the state of Dutch society. This is an example of a transformation of the Dutch planning system being facilitated and aided by an adaptive institutional system. Clearly, this is not the same as the new Dutch planning system (potentially) aiding and facilitating change so that it can better adapt to developments and stresses within the system and from its environment. Although both examples demonstrate the importance and function of adaptive capacity in institutions, this latter example is what this thesis focusses on (that is, the adaptive capacity provided by the new Dutch planning system so that CASs like urban areas are more adaptive and sensitive to stresses, changes and developments in the CAS itself or in its environment).

Participation

As mentioned earlier, participation plays an important role in the EPA: for different tools of the EPA (i.e., the environmental vision, environmental plan, and environmental permit) some form of

participation is mandatory. Moreover, it has linkages with the CAS perspective, as participation of stakeholders in a planning process is akin to facilitation of self-organisation which can increase adaptive capacity. After all, “[k]ey attributes of adaptive capacity are social learning and knowledge exchange, empowerment and “bridging” social networks that link stakeholders and their resources across administrative levels and spatial scales” (Smit & Wandel, Armitage & Plummer as cited in Butler et al., 2015, p.347). Indeed, including a variety of stakeholders (e.g., multi-level) in participatory processes of learning and decision-making increases adaptive capacity (Pahl-Wostl, 2009). From a CAS perspective a participatory process which involves linking up different types of agents, each with their own memory and learning capacities, increases the ability of the sub-system or network of agents to adapt, as there is more knowledge, experience and an improved connection between the agents. This, in turn, better allows them to act and coordinate under different circumstances, stresses or influences.

However, this also means that different types of participation have a different influence on adaptive capacity creation. Consequently, because the EPA does not provide requirements for what ‘participation’ should entail, some traditional types of participation (e.g., “*public hearings, review and comment procedures, and citizen-based commissions*” (De Jong & Gudde, 2014, p.271)) that might be used under the EPA don’t necessarily create (the same degree of) adaptive capacity, or shouldn’t even be considered to fulfil the purposes¹ of participation, except that it is legally required (Innes & Booher as cited in De Jong & Gudde, 2014).

Innes & Booher (2004) argue for ‘collaborative participation’ as opposed to more traditional forms of participation. Of course, much like Habermas’ ‘ideal speech situations’ – where participants can communicate free from coercion and evaluate claims by merely using reason and evidence (Allmendinger, 2017) – a ‘perfect’ form of participation “*is an ideal which will never be fully attained*” (Innes & Booher, 2004, p.429). Nevertheless, such an ideal type is useful in illustrating how participation can create adaptive capacity.

¹ Innes & Booher (2004, p.422-423) describe five purposes of claims that are made to justify public participation: “*One is for decision makers to find out what the public’s preferences are so these can play a part in their decisions. A second is to improve decisions by incorporating citizens’ local knowledge into the calculus. ... Public participation has a third purpose of advancing fairness and justice ... particularly [for] the least advantaged. ... A fourth purpose is that public participation is about getting legitimacy for public decisions. ... Last, but not least, participation is something planners and public officials do because the law requires it.*”

Simply put, collaborative participation goes from “*informing and consulting to co-creation or even self-organization*” (De Jong & Gudde, 2014, p.271). Collaborative participation is about dialogue between an inclusive and diverse set of equally empowered and informed participants (Innes & Booher, 2004). This leads to mutual learning and the development of new ideas, shared meaning, and joint problem solving and action. Moreover, it builds networks of social and professional contacts, but it often also builds trust between the participants (Innes & Booher, 2004). Finally, such collaborative processes aid in building a combination of social, intellectual and political capital (Cars et al., Chaskin, Gruber, Khakee as cited in Innes & Booher, 2004). Such an advanced form of participation, thus, creates adaptive capacity by empowering participants, sharing knowledge, creating networks and building trust, aspects which strongly resonate with adaptive capacity creation in (informal) institutions (see also the ACW in figure 2.1; Butler et al. (2015); Engle (2011); Van Buuren et al. (2013)).

The Adaptive Capacity Wheel

Institutions or certain characteristics of institutions can positively influence the adaptive capacity of social-ecological systems (Berman et al., 2012; Gupta et al., 2016; Herrfahrdt-Pähle & Pahl-Wostl, 2012; Koontz, Gupta, Mudliar, & Ranjan, 2015; Lemos & Tompkins, 2009; Van den Brink, Termeer, & Meijerink, 2011). In their well-known article Gupta et al. (2010) outline six dimensions of adaptive capacity in institutions, with several criteria as indicators for each dimension. These dimensions and their respective criteria have been portrayed in the Adaptive Capacity Wheel (ACW), with the dimensions in the inner circle and the criteria in the outer circle (see figure 2.1).



Figure 2.1. *The Adaptive Capacity Wheel.* Source: Gupta et al. (2010, p.464).

In the article by Gupta et al. (2010) adaptive capacity encompasses two forms of adaptivity:

- (i) the adaptive capacity of institutions to adapt institutions or the institutional system in order to cope with change, and;
- (ii) the adaptive capacity of “characteristics of institutions ... that enable society (individuals, organizations and networks) to cope with ... change” (p.461).

By ‘institutions’ Gupta et al. (2010) mean both formal and informal institutions (“formal rules, informal norms and customs, and actual practices”, p.466). As mentioned before, this research will not focus on the first form of adaptive capacity in institutions as described in sub-section *Institutions*, which is about the capacity to change formal institutions. Form (i) of adaptive capacity as described in Gupta et al. (2010) is an overarching form, as it encompasses both formal and informal institutions. However, the first form of adaptive capacity as described in *Institutions* refers to the capacity of formal institutions or a formal institutional system to adapt (e.g., the formal Dutch planning system adapting or being adapted to change in Dutch society), and not to the capacity of informal systems and practices to adapt to change.

Form (ii) of adaptive capacity also focusses on both formal and informal institutions. Translated to a CAS perspective, this form of adaptive capacity is about how (characteristics of) informal and formal institutions enable the agents to self-organise in a way that leads to adaptation of the CAS in order to cope with change. However, this is not precisely what this research is about, as this research is centred around the EPA, a formal institutional system. In other words, we will primarily not look at how (characteristics of) informal institutions enable adaptation. As we will not look at form (i) either, certain dimensions and/or criteria in the ACW may not apply. The dimensions and/or criteria that *are* relevant will be identified in section 2.4 and the next chapter (Methodology).

Finally, to complicate matters further, it may still be the case that informal institutions will be discussed or will play a role in this research. This is because the EPA may influence or introduce (informally institutionalised) practices and tools that create adaptive capacity. This will become apparent in the coming chapters.

2.4 PLANNING AND THE ADAPTIVE CAPACITY WHEEL

According to the research protocol for applying the ACW (see figure 2.1), the first step is preparation (Gupta et al., 2010). This entails understanding and internalising the meaning of the different dimensions (variety, learning capacity, room for autonomous change, leadership, resources, and fair governance) and criteria, and also identifying the research focus (i.e., the institution or institutional context). This will also provide insight into which criteria are and which aren't applicable in the context of this research. The criteria that are applicable and will, thus, be used in the ACW for this research will be indicated **in bold** (see table 3.1 for their final definitions).

Variety

In order to deal with complex and unpredictable developments and problems it is of essence that a variety of (types of) actors, problem frames, and solutions is present or activated (Gupta et al., 2010). In the long term the CAS (in this case a city) is equally complex and unpredictable, or even fragmented, as the impacts it encounters. This is a quality of self-organising systems, as this 'variety' within the CAS allows the variety in possible complex problems or developments that are encountered to be overcome by the CAS by means of adaptation – Ashby's 'law of requisite variety' (Ashby, 1962/1991). Such variety can come in the shape of actors (the '**multi actor, level & sector**' criterion). If there is a lack of variety amongst agents (actors) in a system, this would inhibit the flexibility of the system and its development towards complexity, as the possible amount of reactions

to stresses would also be limited (Cilliers, 1998). A large variety among agents, however, leads to increased sensitivity to external inputs (Cilliers, 1998). A fragmented and polycentric governance network (i.e., multi-actor, multi-sector, and multi-level) allows for innovation and empowerment which are needed in order to cope with and adapt to stresses (Termeer et al., 2017). It also, on the one hand, leads to difference and disagreement among the actors on how the problem at hand is perceived, defined, and framed, which is inviting and inclusive towards potential actors that can contribute (i.e., the **'problem frames & solutions'** criterion). This is especially true for complex or wicked problems (e.g., the energy transition or climate change), as they have many different facets which potentially affect a more or less equal amount of sectors and subsystems (Termeer et al., 2017). In turn, on the other hand, this increases the amount of possible strategies, measures, and solutions that can be formulated (i.e., the **'diversity of solutions'** criterion) (Cilliers, 1998; Koontz et al., 2015). An adaptive institution or institutional system allows for and stimulates these qualities of variety.

In the ACW, **'redundancy'** (*"[p]resence of overlapping measures and back-up systems"*, Gupta et al. (2010, p.462)) also falls under the category of variety. If a specific system partially fails, another system can take over that function if it is designed for that purpose (Koontz et al., 2015). The same is true for institutions themselves; if redundant institutions overlap several organisations or organisational levels, risks are spread and impacts can be coped with (Low et al. as cited in Koontz et al., 2015). Moreover, if certain institutional responsibilities are shared between different actors, or responsibilities can be fulfilled by different actors so that tailor-made measures or policies can be formulated or executed, this has the same effect.

Learning capacity

According to North (1991, p.97) *"[i]nstitutions are the humanly devised constraints that structure political, economic and social interaction."* As such, they influence the linkages between agents in a self-organising system (i.e., the ways in which agents interact). Moreover, restrictive and set-in-stone rules inhibit institutional change itself – after all, *"institutional ... systems have the capacity to transform as long as these systems are open to change"* (De Roo, 2018, p.29) –, which eventually limits the amount of ways in which many different issues can be tackled. Adaptive institutions promote learning, so that practices, *"socially embedded ideologies, frames, assumptions, claims, roles, rules and procedures that dominate problem solving"* (Gupta et al., 2010, p.463) can change or be changed. If such informal institutions are flexible, behaviour (e.g., social interaction) of agents in a CAS is also

more flexible, which allows the system to self-organise and interact more efficiently across different scale-levels and sectors. Adaptive institutions should thus promote mutual **trust** and respect between actors, promote **single loop learning** (improving routines), and **double loop learning** (challenge basic norms and assumptions) (Argyris & Schön as cited in Van den Brink, Meijerink, Termeer, & Gupta, 2014). These three criteria or practices, however, are mostly present in informal institutional patterns, and are therefore difficult to research in the context of this study. Especially 'trust' requires much clarification, and institutions that are aimed at encouraging it will be difficult to identify without being able to demonstrate their impact in practice (e.g., during participation sessions). For this reason, this criterion will not be employed. The single and double loop learning criteria can, however, be identified more easily in formal institutions (e.g., see Gupta et al., 2016) even though their effectiveness in practice remains to be seen. The same is true for the '**discuss doubts**' criterion (i.e., "*Institutional openness towards uncertainties*" (Gupta et al., 2010, p.462)).

Finally, what is learned should be internalised into **institutional memory** (e.g., through documenting and publishing it) (Gupta et al., 2010; Van den Brink et al., 2014). In a CAS this is possible due to the distributed memory and control in the system across its agents (Heylighen, 2001). Institutional memory cumulates over time and thus influences (or, rather, leads to) the present configuration of the system (Cilliers, 1998). This can be seen in governance systems as well; the current configuration of systems of governance constrains change in these systems (Termeer et al., 2017), hence the importance of adaptive institutions which promote change.

Room for autonomous change

Improving or permitting the ability of social actors (agents) to act and adapt autonomously in response to change is another key quality of adaptive institutions (Gupta et al., 2010). In essence, this equates to giving room for self-organisation, which is inherently autonomous. This links to the aforementioned institutional memory, as this should be fully and equally accessible to all actors, so that they can anticipate and sense that they have to undertake autonomous action, and at the same time have the information and means to do so (i.e., the '**continuous access to information**' criterion) (Polsky et al. as cited in Gupta et al., 2010). This relates to creating for room for initiative and improvisation in institutions.

Agents in a CAS are themselves capable of planning (learning, thinking, and decision-making), and there is interaction between agents and their plans (Portugali, 2008), which in turn structures

interaction between agents (Alfasi & Portugali, 2007). Providing institutions that allow for the informal planning of agents facilitates self-organisation and improves the adaptive capacity. The plans they create should, ideally, be based on learning and should also be adaptive. Moreover, as planners and plans, who are themselves part of the social system they intend to influence, have little influence on steering the development of the CAS (see 2.2.3), the instrumental (steering, ‘teleocratic’, or goal-oriented) conception of law should be rejected (Moroni; Salet; Van Rijswick & Salet as cited in Moroni & Cozzolino, 2019; see also Schuyt (1985) for a critique and contemplations on instrumental law). After all, “[i]f the urban environment is complex and unpredictable, and human rationality is bounded, those who make rules cannot specify in advance responses to all possible contingent events which might occur” (Höijer as cited in Alexander, Mazza, & Moroni, 2012, p.52). Instead, law should allow for ‘peaceful coexistence’ and a ‘nomocratic’ approach to land use which gives room to self-organising agents (Moroni, 2015; Moroni & Cozzolino, 2019). This is done by employing basic relational rules as a framework-instrument (e.g., basic building and health regulations), as opposed to employing strict zoning plans. These relational rules or ‘urban codes’ are locationally generic, and mostly negative rules (i.e., they prevent externalities)² (Alexander et al., 2012). Such urban codes increase adaptive capacity as they allow for and promote autonomous change. This resonates with the ‘capacity to improvise’ criterion in the ACW (figure 2.1), although in the ACW it is more geared towards short-term action during crises and disasters as a consequence of climatic events. In this research, that conception will not be used as it does not relate to the research focus at hand. Instead, the ‘capacity to improvise’ criterion will be replaced by a criterion indicating the presence and promotion of relational rules as discussed above, which will be called ‘**Relational rules**’.

Another way in which the problems with the more instrumental conception of law can be dealt with, is by creating institutions which are not relational rules, but still acknowledge long-term uncertainty and promote more organic spatial developments. According to Rauws et al. (2014) as cited in Rauws (2017, p. 36) “[t]his is done by combining visioning on strategic level with design principles on operational level that generate the flexibility required to respond to changes which arise during a

² To illustrate this Alexander et al. (2012, p.56) state: “[Relational rules] are rules of the kind: “Every building project or modification must, in whatever place, avoid generating the externalities A, B, and C”. “Buildings of Type M must not be constructed within X metres of buildings of Type N”. “Each new building must be distant at least 1/Y of its height from the closest existing building”, and so forth.”

development plan's lifetime." Adaptive institutions that stimulate this will be indicated by the criterion **'flexibility accommodating rules'**. Rauws et al. (2014) identify four elements which contribute to this and to which such flexibility accommodating rules should be geared.

First, plans on a larger scale (e.g., neighbourhood) should be comprised of several smaller scale plans. Secondly, 'incremental development strategies' should be applied. These two points share several commonalities in that they easily allow for adjustment to unexpected developments, and are small-scale (both in terms of location and timescale). Thirdly, 'requisite carrying structures' (i.e., infrastructure) which projects and plans can link into should be installed and implemented, but in parts and in co-evolution with the development of the area. A final point is that 'loose rules', as opposed to detailed regulations (e.g., zoning plans), should be used. Loose rules are not detailed, quantitative, narrowly defined, and do not have an objective in mind. (Rauws et al., 2014, p.143-145).

The criterion 'Act according to plan' also refers to crisis situations as a result of sudden environmental change (Gupta et al., 2010; Van den Brink et al., 2014). For similar reasons, this criterion will not be used during the next steps in the research protocol of the ACW. In crisis situations it is, naturally, important to be able to act according to a protocol to fall back on, as it helps systems, evacuation schemes and supply chains to be set up quickly. In a planning system, however, it is more important that initiators of and actors involved in plans are easily able to set these plans up, apply for the appropriate permit, etc., and that this is also possible for laymen and not only for large-scale developers. In short, the public planning system and its processes should be accessible and easily comprehensible and navigable. This contributes to every agent in a CAS being able to alter the (socio-)spatial environment, and thus aids the adaptive capacity of the CAS itself. This criteria will be called **'Navigability'**.

Leadership

Gupta et al. (2010) recognise many different forms of leadership, and select or create – by moulding some forms together – three main types of leadership as criteria of the leadership dimension:

- Visionary leadership: leadership that provides *"room for long term visions and reformist leaders"* (p. 462);
- Entrepreneurial leadership: leadership *"that stimulate[s] actions and undertakings; leadership by example"* (p. 462);

- Collaborative leadership: leadership which “*encourage[s] collaboration between different actors; adaptive co-management*” (p. 462).

The leadership dimension in the ACW puts focus “*on how institutions encourage leaders to emerge and reshape the very institutions themselves*” (Gupta et al., 2010, p.463). As previously established and clarified this type of adaptive capacity of institutions is not the main focus of this research, as it pertains to how institutions spur on (their own) institutional change (see 2.3.2). Still, however, the other type³ of adaptive capacity in institutions can be recognised in the three different types of leadership. Moreover, leadership can spur on and guide institutional change in other institutions (e.g., the long-term vision of the Omgevingsvisie spurs on and guides change in and development of the Omgevingsplan).

The latter example relates to **visionary leadership**, which allows for connecting different time scales and encourages anticipation of future change (Young, as cited in Van den Brink et al., 2014). For entrepreneurial and collaborative leadership, however, there is no clear connection with adaptive capacity in formal institutions. For collaborative leadership it might be said that institutions which stimulate inclusion of different (types of) actors fulfils this collaborative leadership role. However, this is already included under the ‘multi-actor’ criterion in the Variety dimension. Moreover, collaborative and entrepreneurial leadership mainly pertain to leadership fulfilled by agents in an organisation (Antonakis & House, 2014; Gupta et al., 2010). Taking this into account, and as only visionary leadership is readily researchable in the context of this study, the other two criteria under the ‘leadership’⁴ dimension will not be employed.

Resources

In order for institutions concerning adaptation efforts to be effective they are often dependent on the ability to allow and stimulate agents in generating resources (Biermann; Goldfinch & ‘t Hart as cited

³ The adaptive capacity of “*characteristics of institutions ... that enable society (individuals, organizations and networks) to cope with ... change*” (Gupta et al., 2010, p.461).

⁴ Colloquially, ‘leader’ and ‘leadership’ pertain to some type of agency, which is absent in formal institutions such as the Omgevingsvisie and -plan. The term ‘leadership’ as it will be used in this research may, therefore, be confusing or misleading. However, for the sake of coherence, this term will be used.

in Van den Brink et al. (2014); Yohe et al.; Mendelsohn & Nordhaus; Nelson et al. as cited in Gupta et al., 2010). The resources dimension consists of three criteria (Gupta et al., 2010). The first is **authority**: the *“provision of accepted or legitimate forms of power; whether or not institutional rules are embedded in constitutional laws”* (p. 462). The second, **human resources**, relates to the *“availability of expertise, knowledge and human labour”* (p. 462). Finally, the third criterion is **financial resources**: the *“availability of financial resources to support policy measures and financial incentives”* (p. 462).

For ‘authority’ it may be expected that the new Dutch planning system scores well, as it is the product of a democratic law making process over several years in a country with a strong rule of law (i.e., its ‘institutional rules are embedded in constitutional laws’). For this reason it may seem superfluous to include this criterion. The ‘authority’ criterion will, however, still be employed in order to examine if the EPA and its tools also provide ‘accepted or legitimate forms of power’. Moreover, not including certain criteria because they seem redundant, obvious or do not seem to apply will skew the results. Authority can both hamper and stimulate agents in acting adaptively. For example, if no mandate is given for certain actions and decisions, then resistance may be expected from certain actors as their acting may be deemed undemocratic or illegitimate, and vice versa.

The provision of ‘human resources’ (e.g., staff in a municipality) will most likely depend on policies, financial situations of governments, and how rules and policies are performed in practice. This can be examined in case studies (e.g., see Ivey, de Loë, & Kreutzwiser, 2006; Timmer, de Loë, & Kreutzwiser, 2007). However, the allocation of human resources or, for example, how managers should act in certain circumstances, can sometimes be found in laws (e.g., see Gupta et al., 2016). This criterion, then, is applicable to the EPA.

Financial resources (including technical resources) fulfil a similar role as the other two types of resources, in that they (help to) enable adaptive action. Financial resources, for example, allow actors to implement measures and to set up experiments (Van den Brink et al., 2014). This in turn gives them autonomy and contributes to learning.

As well as the human resources, a lot depends on how institutions relating to these resources are translated into practice. This signifies a connection between institutions, resources and practice: *“[f]rom a social systems vantage point, adaptive capacity is determined by the suite of resources (technical, financial, social, institutional, political) held, and the social processes and structures through*

which they are employed and mediated (i.e., governance)” (Plummer & Armitage, 2010, p.6). By connecting adaptive capacity with institutional dynamics and environmental governance, Plummer and Armitage “[recognise] the contemporary context of environmental challenges, which are characterized by complexity, discontinuity, surprise, and change (social and ecological)” (2010, p.6).

Although this is important to recognise, and illustrates the applicability of the ACW approach and institutional perspective to CASs, the governance side of this constellation is not of primary concern during this research. This also has some consequences for the next dimension of *fair governance*.

Fair governance

Gupta et al. “*argue that adaptive institutions ... help establish a fair governance system taking into account legitimacy, equity, responsiveness and accountability” (2016, p.884). Of course, it is clear that a CAS with a ‘fair’ governance system with **legitimate** (i.e., they enjoy public support and acceptance), **equitable** (i.e., policy processes and outcomes take unequal conditions and circumstances into account), **responsive** (i.e., processes are transparent and “are able to respond to different voices in society” (Gupta et al., 2010, p.464)), and **accountable** (i.e., responsibility is clearly assigned to different organisations and parties, e.g. in certain processes) institutions is desirable in – or perhaps inherent to – a strong democracy for many legal, moral, and philosophical reasons. However, a connection with how fair governance creates adaptive capacity in a self-organising system is difficult to see and establish.*

One can make the broad argument that fair governance allows the other factors of adaptive capacity present in the ACW to be employed legitimately, equitably and responsively with clear accountability when adaptive measures and experiments are in the making (e.g., during participatory planning processes). This makes fair governance a crucial aspect of adaptive capacity. From this perspective criteria of fair governance allow adaptation to occur according to the principles of fair governance, which is desirable for all agents in the system and prevents conflict. Conversely, in a CAS not governed according to such principles, self-organisation would be hampered as not all parts of the system would be able to adapt similarly (e.g., a neighbourhood with less powerful residents, or a neighbourhood with rich and corrupt residents). This effect can, thus, be limited by ‘fair governance’.

2.5 CONCEPTUAL FRAMEWORK

Several aspects and dimensions of adaptive capacity have been identified and discussed. In the literature these aspects and dimensions are embedded in complex adaptive systems theory, from which adaptive planning stems (see section 2.3). By definition, adaptive planning is about adaptive capacity creation for the benefit of the quality of the living environment, which can be done through organisations, people, urban design and institutions (Rauws et al., 2019, see figure 2.2). In this study the focus is on institutions and adaptive capacity (see figure 2.2).

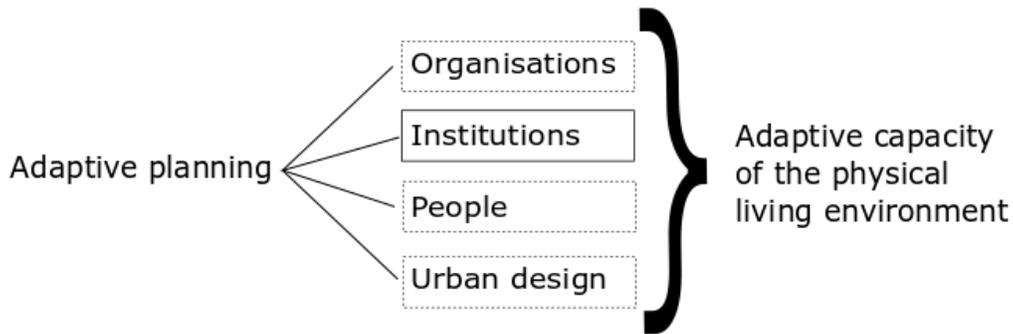


Figure 2.2. Adaptive planning, institutions and adaptive capacity. Adapted from Rauws et al. (2019).

When taking a closer look at the relationship between institutions and adaptive capacity, and looking at how it can be researched and measured (in a qualitative sense), as Gupta et al. (2010) have done, the link between institutions, the ACW (i.e., dimensions and criteria of adaptive capacity) and adaptive capacity is apparent (see figure 2.3). In this thesis 'institutions' refers to the formal institutions (i.e., rules) and formally institutionalised tools of the EPA. The relevant sets of rules and tools for this research will be laid out in the introduction of chapter four, which will be shortly explained in chapter three.

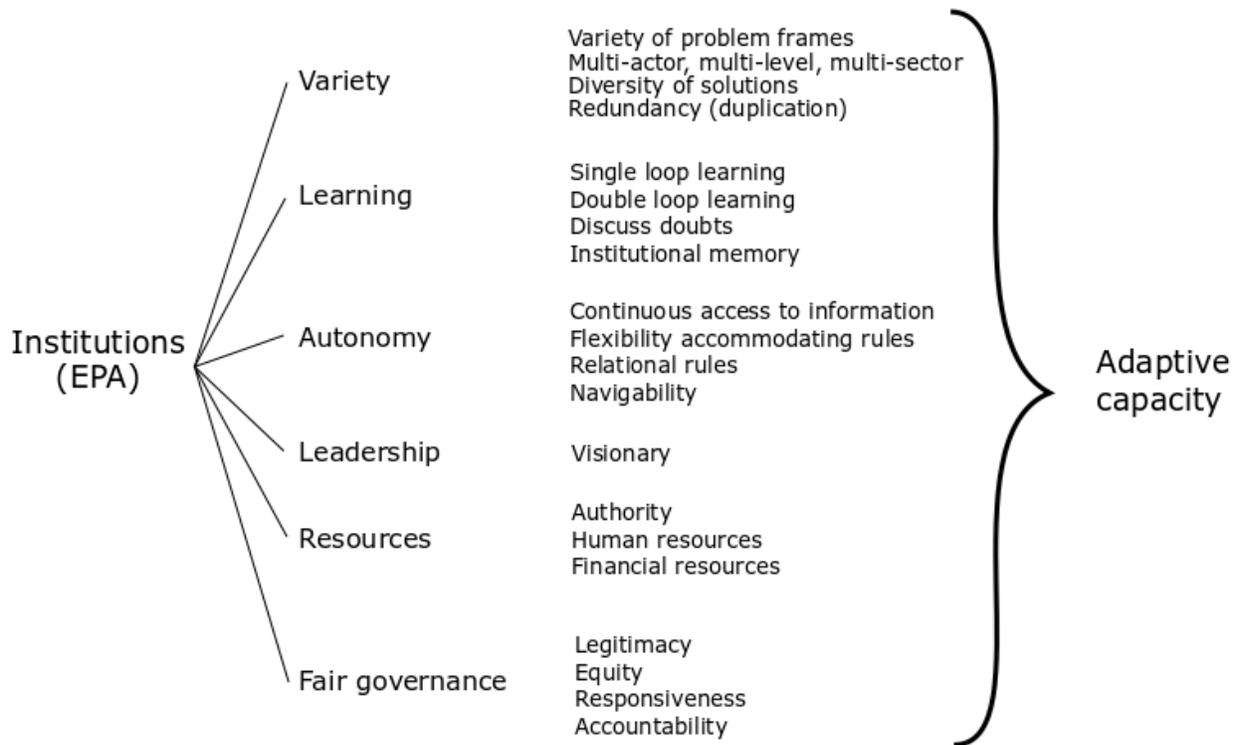


Figure 2.3. Relationship between institutions and adaptive capacity in this thesis. Adapted from Gupta et al. (2010).

3 METHODOLOGY

In this chapter the research design and strategies are considered and selected. Among other things, choices for specific methods will be explained and accounted for. As a reminder, the main research question and the sub-questions are as follows:

How does the Dutch Environmental Planning Act (2021) provide conditions for adaptive capacity in Dutch municipalities?

- 1. What are the different tools of the EPA and how are they employed?*
- 2. What is the role of participation in the EPA in relation to its different tools?*
- 3. How do the different tools of the EPA and their participatory qualities create adaptive capacity?*

3.1 UNIT OF ANALYSIS

As mentioned in section 1.4, the aims of this study are (1) to convey the importance of adaptive and participatory capacity⁵ in the contemporary (Dutch) planning context, mainly by using a complexity perspective, (2) to find out how the new Dutch planning system allows for such capacities through its rules, and institutionalised tools and (participatory) processes, (3) to make recommendations on how the adaptive capacity of the EPA can be improved, and (4) to provide insight into the challenges and opportunities in the implementation of the planning system in terms of adaptive capacity creation.

Considering the research objectives and questions, the unit of analysis is the Environmental Planning Act, as that is the ‘case’ for which the adaptive capacity will be researched (Bryman, 2012). As mentioned in the introduction, the focus will be on the municipal level as municipalities are and have been the main planning authorities in the Netherlands, with “*the most direct influence on development*” (Janssen-Jansen, 2016, p.26).

⁵ Where participatory capacity is considered a subset of adaptive capacity.

3.2 RESEARCH DESIGN

This research can, most appropriately, be done by a cross-sectional research design or a case study: an experimental design and a longitudinal design are unfeasible, if only because the EPA is not in effect yet, while a comparative research design is also out of the question as the focus is on only one case (the EPA), and not on comparing it to the current planning system or other planning systems.

A cross-sectional research design is a good option. It has been considered to study different types of participation and the implementation of the EPA in two different municipalities, to see how their approaches would affect the adaptive capacity. However, firstly, this would mostly yield results that the potential adaptive capacity when it comes to types of participation, as researching them in practice is unfeasible due to temporal and financial constraints to carry out the data collection. Secondly, focussing on two different municipalities and their approach to implementing the EPA also brings some difficulties with it, as it allows less for researching the adaptive capacity in its rules and tools in general, and amongst professionals there is still some doubt regarding how some aspects of the EPA will be translated into practice for their respective municipalities. Finally, the aim is not to explain why the adaptive capacity in the EPA manifests differently in the different municipalities. Rather, the aim is to find how the formal institutions/rules and tools in the EPA create adaptive capacity in municipalities.

This leaves the single case study as the best option as a research design, with the EPA (including its tools) itself being the case. This research design allows for and, in fact, *“entails the detailed and intensive analysis of a single case”* (Bryman, 2012, p.66). This way the different tools of the EPA can be described in detail, and their adaptive capacity creating characteristics, as well as those of other rules within that law, can be researched and analysed in detail. Moreover, a case study design lends itself well to more qualitative methods (Bryman, 2012), which are useful when aiming to describe something in-depth. In addition, such methods, as opposed to quantitative methods, are the methods which are best suited to the author.

3.3 SAMPLING AND DATA COLLECTION

The collection of data occurs through the sampling of appropriate documents (mainly the text of the EPA itself, and documents and/or articles which clarify or describe specific aspects of it, such as tools, more in-depth) and the subsequent semi-structured interviews.

3.3.1 DOCUMENTS

This research focusses on how the new Dutch planning system provides adaptive capacity by looking primarily at formal institutions (i.e., the EPA). This law is codified in text⁶, and, as such, is an obvious document to research. In fact, it can be considered the primary research unit. This law is partially worked out in greater details in its four ‘orders in council’ (*Algemene Maatregelen van Bestuur* or *AMvB*’s), which will also be analysed. However, the information in the law may or will by itself not be entirely clear. Therefore, other documents, which describe the different tools (omgevingsplan, omgevingsvisie, etc.) and processes in more detail or more comprehensively – as information on a specific tool is often scattered throughout the text of the law – are also used. This can be scientific articles, policy documents, or other official documents. This will also serve as a form of validation, which is also the case for the interviews (see 3.3.2). A full list of documents that were analysed can be found in appendix 3.7.

All documents that were sampled can be read and are preserved so that they can be analysed. Furthermore, they were not produced for the purpose of being researched by the author (or anyone else, for that matter). The documents are mainly aimed at governmental organisations and laymen, so that they can understand the functioning of the law (including enforcement of it). Therefore, the *authenticity* (“*Is the evidence genuine and of unquestionable origin?*” (Scott as cited in Bryman, 2012, p.544)), *credibility* (“*Is the evidence free from error and distortion?*” (p.544)), and *representativeness* (“*Is the evidence typical of its kind, and, if not, is the extent of its untypicality know?*” (p.544)) are of little concern. The fourth criterion, *meaning* (which concerns clarity and comprehensibility), is the only concern, as some of the document may be quite complex. However, as the subjects are relevant for both laymen and professionals, more comprehensible documents on the same subject (e.g., omgevingsvisie) may also be found.

3.3.2 SEMI-STRUCTURED INTERVIEWS

In addition to documents, semi-structured interviews are also used for data collection. These will provide additional data regarding, among other things, tools and processes of the EPA, mainly for

⁶ The most recent version of the EPA available of 17 May 2019 is being used, accessible from <https://www.omgevingswetportaal.nl/wet-en-regelgeving/documenten/publicaties/2019/02/06/geconsolideerde-versie-omgevingswet-met-wijzigingen-agv-wetsvoorstel-invoeringswet> (accessed on 7 July 2019).

municipalities. This will yield more information from the perspective of municipalities themselves on how aspects of the law can be translated into practice (that is, how they can be implemented), which significantly influences adaptive capacity creation and the effectiveness of the adaptive institutions. Moreover, as some municipalities are already preparing for implementation of the law, and are in fact already implementing parts of it, the interviews provide valuable data of various tools and the related processes in particular (e.g., the process of requesting permits). Also, input from practice that the interviews provide can put the importance of various tools in perspective, relative to each other, as the law does not necessarily do this (e.g., which tool will have the biggest impact for municipalities, and which ones less so?). Finally, the views from professionals may provide a more nuanced and balanced account, compared to (overly positive) government documents setting out governmental policy.

Interviews with municipal practitioners are most useful for gathering data regarding practice (e.g., how will the EPA affect the governance structure, how will different forms of participation be implemented, what are these forms?). However, these more informal institutional practices are not the focus of this research. Instead, the focus is on the formal rules and institutionalised tools and processes of the EPA. For these reasons a modest amount of four interviews is performed.

Sampling

Although it was not the aim to continue sampling interviewees until theoretical saturation occurred, this phenomenon was observed to a large extent after three interviews regarding the different themes—an interview guide with several themes was created to aid the process of interviewing (see appendix 3.1). Two interviewees who work at a municipality were sampled by e-mail; several e-mails were sent to different municipalities or departments of municipalities involved with urban planning and/or the EPA. The municipalities that were contacted were selected for being relatively large, as a CAS perspective mostly applies to urban areas. Moreover, this increased the odds of being able to get into contact with someone for an interview. The third interviewee, working at the VNG (Netherlands Association for Municipalities), was contacted via a mutual acquaintance. This interviewee was deemed appropriate because of his legal knowledge and his involvement with municipalities regarding the EPA. The fourth interviewee was contacted directly via e-mail, as this person (founder of a small company facilitating discussion and cooperation between, among others, lower levels of government and citizens, and researcher at the University of Amsterdam) is an expert on more

communicative approaches to planning processes and has experience in practice as well (see appendix 3.2 for an overview of the interviewees).

Interview guide

The interview guide was created by consulting Weiss (1994) and Bryman (2012). While devising the interview guide, literature on adaptive capacity in institutions and the ACW was consulted. Moreover, a list of guiding questions for the criteria of the ACW was provided by one of the creators of the ACW, which was used for inspiration for the interview guide.⁷

A shift in research focus, away from the more communicative and participative aspects of adaptive capacity, occurred after the first two interviews were already completed. However, this is not particularly problematic as most of the focus was on the different tools and the implementation of the EPA. So, although these two interviews would have been more appropriately focussed towards these formal institutional aspects of the EPA, this did not cause problems, as this focus was still present—albeit to a slightly lesser extent. All interviews were performed in Dutch and were subsequently transcribed (see appendices 3.3-3.6 for the transcripts of the interviews).

Ethics

The interviews were recorded with permission from the interviewees. The collected data (documents, sound recordings and transcripts), as well as the quotes of the coded material are collectively stored in a database. This will be used only for the purpose of this thesis, and will be deleted in three years' time.

3.4 METHOD OF ANALYSIS

The ACW, which is being used to analyse the data, comes with a 'research protocol' consisting of various steps (see Gupta et al., 2010). The **first step** ('Preparing for the research') is about understanding and internalising the dimensions and criteria of the ACW. This has already been done in section 2.4, where the criteria were connected to the topic at hand and adapted or formulated if

⁷ The author was asked not to disclose or publish the contents of this list.

necessary to make the applicable in this research. This resulted in the final ACW to be used for this research (see figure 3.1 and table 3.1).

Step two, data collection, also has been done. Here Gupta et al. (2010) note that data collection can be done in various ways, depending on the institutional context of the topic or research at hand (e.g., data regarding informal institutions could be gathered through interviews, while data on formal institutions could be gathered by analysing policy documents). This has also been kept in mind during the data collection, where there is a focus on implementation and processes of participation in the EPA during the interviews (see appendix 3.1).

Step three is data analysis. As the different dimensions and criteria of adaptive capacity were already 'discovered' and partially formulated in advance (see sections 2.3 and 2.4), a grounded theory approach to data analysis is not necessary, nor obvious. Instead, the different criteria are, if necessary, further elucidated and subsequently employed as codes while coding the transcripts and EPA text. Other codes are the different tools in the EPA (e.g., 'omgevingsplan', 'omgevingsvergunning', etc.). Which tools are present in the EPA will become apparent during the data analysis.

The different dimensions and criteria, some of which devised by the author in section 2.4, can be seen in the final ACW below (see figure 3.1, see table 3.1 for definitions). The EPA and the transcripts were coded by making use of Atlas.ti 8.4. This programme has only been used for coding.

Gupta et al. (2010) note that the criteria can be scored after analysis (from -2 to +2 points), to create an overview of the strengths and weaknesses of the unit of analysis regarding adaptive capacity creation. Here it is of essence that this is done by several people/researchers to make the scores more robust and so that differences in opinion can surface and be discussed. Arguments for different scores should be documented for the sake of transparency and further robustness. In the case of this research, the arguments will also be documented and laid out in the following chapters (see appendices 4.1-4.5 for an overview of the argumentations for each tool). Importantly, the scores of the criteria (from -2 to +2) were not calculated quantitatively or through statistical methods, but were based on the qualitative assessment of the arguments in terms of their effect or impact on the adaptive capacity as perceived by the author. However, because there will be no other 'reviewers' of the data and scoring, the documentation of the arguments will be noted not only for the sake of transparency and robustness (see appendices 4.1-4.5), but also so that this research or analysis can be extended or perhaps repeated by others. This step also highlights a weakness in this research,

namely that there may be bias involved in the arguments or scoring, or that some arguments may be overlooked by the author/researcher. In other words, the quality of the analysis depends considerably on the quality of the author's research skills and rigour. Still, the ACW method is a valid method of analysis for assessing the adaptive capacity of institutions, as has been demonstrated by its use in other studies (see e.g. Grothmann, Grecksch, Wings, & Siebenhüner, 2013; Gupta et al., 2016; Gupta et al., 2010; León-Camacho, Morales-Acevedo, & Gandlgruber, 2014; Van den Brink et al., 2014).

Depending on one's definition of 'themes' (see Bryman, 2012, p.580), the codes that were used can be described as themes, and the method of analysis (thus) as a thematic analysis. However, because of the ambiguity surrounding what constitutes thematic analysis, and the fact that the "themes" or codes were mostly formulated in advance, the author does not wish to label the employed method of analysis as 'thematic analysis'. Lastly, the data is structured, and made navigable and accessible by making use of the codes. This (analysed) data will be used to answer the secondary research questions, and finally the main research question.

Step four, 'Interpreting the data', is about communicating the aforementioned strengths and weaknesses of – in this case – the EPA regarding adaptive capacity. What do certain scores mean for the institution or tool being examined in terms of adaptive capacity? How can it be improved? How do various criteria affect or depend on each other, or conflict with each other? After this, conclusions can be drawn on what this means for the adaptive capacity of the EPA as a whole.

The final step, **step five**, is 'Presenting and communicating the data'. Gupta et al. (2010) state that this can be done by giving the scores colours (e.g., red is a low score and green is a high score). Gupta et al. (2010) do indeed note that the ACW is also a communicative tool, and properly presenting and communicating the data in the ACW is important for stimulating discussion among and with social actors (p. 466). Moreover, it can be an appropriate means for comparing different institutions or institutional contexts—or in this case, the different tools of the EPA.

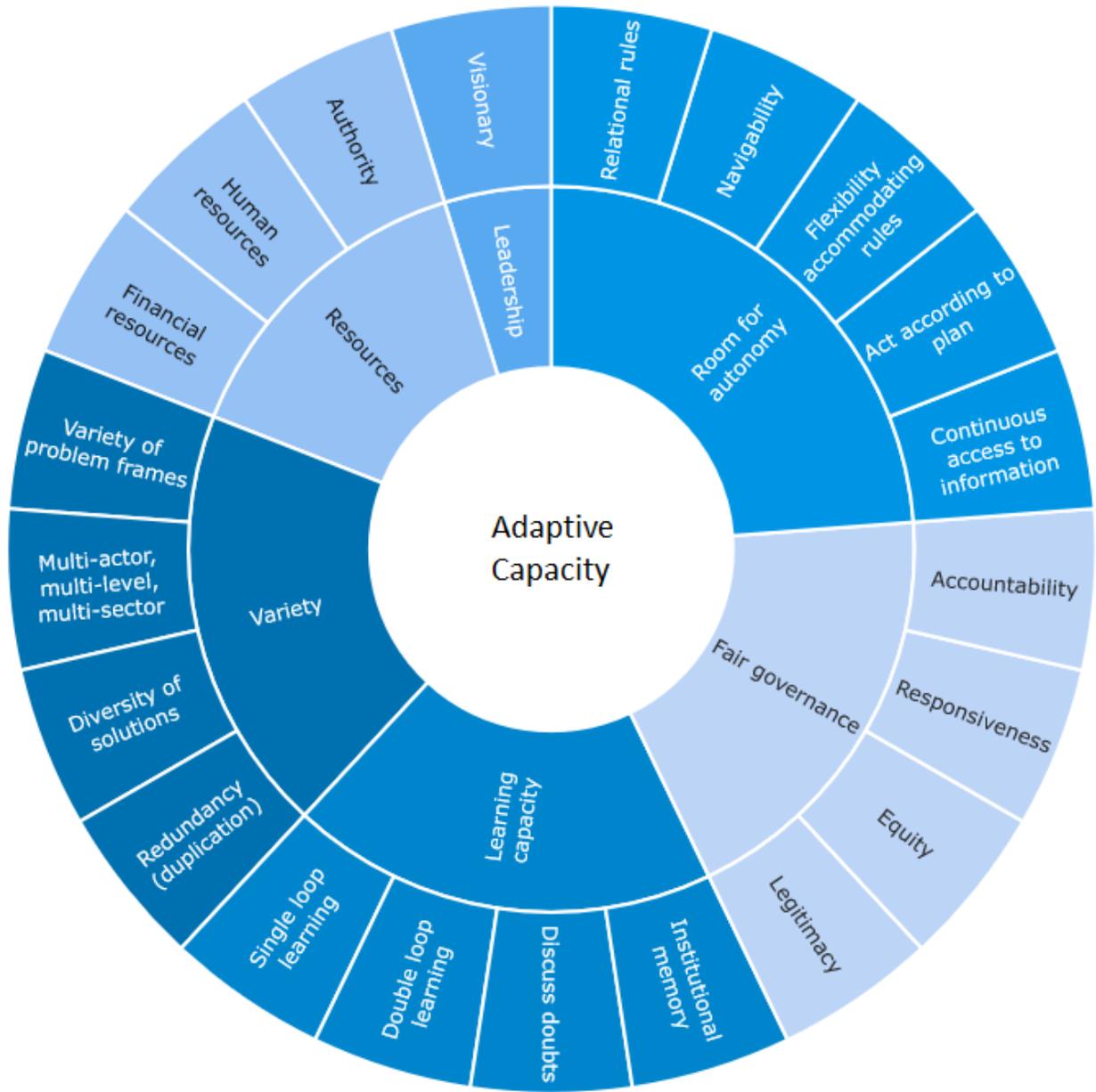


Figure 3.1. The Adaptive Capacity Wheel. Adapted from figure 2.1 (Gupta et al., 2010).

Dimension	Criterion	Definition	Relation to literature
<i>Variety</i>	Variety of problem frames	Room for multiple frames of references, opinions and problem definitions.	See Gupta et al. (2010)
	Multi-actor, multi-level, multi-sector	Involvement of different actors, levels and sectors in the governance process.	See Gupta et al. (2010)
	Diversity of solutions	Availability of a wide range of different policy options to tackle a problem.	See Gupta et al. (2010)
	Redundancy (duplication)	Presence of overlapping measures and back-up systems; not cost-effective. <i>Sharing of responsibilities between actors.</i>	See Gupta et al. (2010) and section 2.4
<i>Learning capacity</i>	Single loop learning	Ability of institutional patterns to learn from past experiences and improve their routines.	See Gupta et al. (2010)
	Double loop learning	Evidence of changes in assumptions underlying institutional patterns.	See Gupta et al. (2010)
	Discuss doubts	Institutional openness towards uncertainties.	See Gupta et al. (2010)
	Institutional memory	Institutional provision of monitoring and evaluation processes of policy experiences.	See Gupta et al. (2010)
<i>Autonomy</i>	Continuous access to information	Accessibility of data within institutional memory [...].	See Gupta et al. (2010)
	<i>Flexibility accommodating rules</i>	<i>Institutions promote incremental development and provide general and loose rules.</i>	Rauws (2017) and Rauws et al. (2014)
	<i>Relational rules</i>	<i>Relational rules and urban codes are present or promoted.</i>	Alexander et al. (2012) and Moroni (2015)
	<i>Navigability</i>	<i>Accessible, easily comprehensible and navigable public processes of the planning system.</i>	See section 2.4
<i>Leadership</i>	Visionary	<i>Institutional provisions that allow for connecting different time scales and encourage anticipation of future change.</i>	See section 2.4 and Van den Brink et al. (2014)
<i>Resources</i>	Authority	Provision of accepted or legitimate forms of power; whether or not institutional rules are embedded in constitutional laws.	See Gupta et al. (2010)
	Human resources	Availability of expertise, knowledge and human labour.	See Gupta et al. (2010)
	Financial resources	Availability of financial resources to support policy measures and financial incentives.	See Gupta et al. (2010)
<i>Fair governance</i>	Legitimacy	Whether there is public support for a specific institution.	See Gupta et al. (2010)
	Equity	<i>Policy processes and outcomes take unequal conditions and circumstances into account.</i>	See Gupta et al. (2010) and section 2.4
	Responsiveness	<i>Whether processes and institutional patterns are transparent and are able to respond to different voices in society.</i>	See Gupta et al. (2010) and section 2.4
	Accountability	<i>Whether responsibility and accountability is clearly assigned to different actors.</i>	See Gupta et al. (2010) and section 2.4

Table 3.1. Adaptive capacity dimensions and criteria. Adapted from Gupta et al. (2010). Criteria and definitions in cursive have been (re)formulated by the author (see section 2.4). See Gupta et al. (2010, p.462) for the relation to the literature of the (other) definitions.

4 FINDINGS AND ANALYSIS

In this chapter the collected data will be laid out. As the aim is to find out how the EPA, consisting of various tools and processes, creates adaptive capacity (regarded on a municipal level), the data will be structured according to these tools. Consequently, these tools and their related processes need to be explained as well. By doing this, the first secondary research question (*What are the different tools of the EPA and how are they employed?*) will be answered. The other two secondary research questions will be interpreted in the next chapter.

Each section in this chapter contains the relevant data for the different tools and instruments of the EPA. After the data for each tool has been laid out, step 3 from the ACW protocol will follow (that is, the scoring of the criteria) for each tool respectively. The argumentation for the scores can be found in the appendices 4.1-4.5.

Policy cycle

The tools or instruments of the EPA that are looked at will be ordered according to how they fit in the policy cycle of the new planning system for municipalities. Therefore, the first instrument is the **Environmental Vision** (*Omgevingsvisie*, hereafter EV); this is a document that contains a comprehensive, long-term vision with main strategic choices for the physical living environment of the municipality. In the second tool, the **Programme** (*Programma*), these choices can be worked out in more detail for specific areas or policy-fields. To an extent this makes the Programme a visioning tool as well. Next, the policy from the EV and the Programmes are translated into rules in the municipality's **Environmental Plan** (*Omgevingsplan*, hereafter EP). Social actors can then **request a permit** according to the proper procedures and start their (building) activity if it fits within the EP. Related to the permit request, there are two sidesteps that will be taken in this thesis: first, a digital system can be consulted to see which rules apply in a specific location, after which the permit can be requested within that very same system (the **DSO**, *Digitaal Stelsel Omgevingswet* [EPA Digital System]). Secondly, as participation is – in principle – a requisite in order to obtain the permit and should thus be done before the permit is requested, this **preliminary phase** of participation is also considered. Policy effects will be monitored and evaluated, which functions as input for (among other things) the EV and thus completes the policy cycle.

4.1 GENERAL PROVISIONS

Before the various tools and instruments of the EPA are discussed, the most important and more general provisions under the EPA are put forward. These typically apply to all the aforementioned tools and instruments, and should thus be discussed first.

Aims of the law

Importantly, while formulating or performing tasks and competences under the EPA (including all those mentioned above), the municipal administrative bodies (and those from the provincial and national government) have to take into account the goals or aims of the law as formulated in EPA article 1.3.⁸ These aims are, while keeping in mind the sustainable development, liveability of the land, and the protection and improvement of the living environment: (a) reaching and maintaining a safe and healthy physical living environment and a good environmental quality, and (b) efficiently managing, using and developing the physical living environment for the purpose of societal needs.⁹

Duty to care

EPA article 1.6 puts forward a ‘duty to care’ (*zorgplicht*), stating that ‘everyone shall sufficiently care for the physical living environment’. Here ‘everyone’ refers not just to all administrative bodies, but also to citizens, businesses, agencies, etc. This general duty to care mainly functions as a safety net for the cases for which there are no specific rules. When specific rules apply, then the general duty to care does not (‘Zorgplicht in de Omgevingswet’, n.d.).

Aside from this general duty to care there is also a general prohibition, similarly serving as a safety net. Article 1.7 states that ‘anyone who knows or can reasonably suspect that his or her activities can negatively affect the physical living environment is obligated to (a) take all measures that can be reasonably expected to prevent the negative effects, (b) inasmuch as these effects cannot be prevented they should at least be reduced as much as possible, and (c) if this is not possible he or she should refrain from performing this activity, within reasonable limits.

⁸ EPA art. 2.1(1)

⁹ EPA art. 1.3

Article 1.7a goes further than this and prohibits performing activities or refraining from performing activities if it can cause ‘*substantial* negative effects’ to the living environment. This prohibition is elaborated upon and limited in ‘orders in council’ of the EPA (*Algemene Maatregelen van Bestuur* or *AMvB’s*), in which aspect of the EPA are worked out in more detail.

Further, there are also specific duties to care, such as rules on fire hazards, dumping activities at sea, etc. (‘Zorgplicht in de Omgevingswet’, n.d.). These can be found in the orders in council.

Adjusting and cooperating

EPA article 2.2(1) prescribes to administrative bodies that, when performing their tasks and competences under the EPA, they should take into account the competences and tasks of other administrative bodies, for example by adjusting them or cooperating with other administrative bodies. Tasks and competences can also be performed by other administrative bodies (inasmuch that is necessary for the performance of its own tasks and competences)¹⁰, or they can be performed in cooperation with the other administrative body¹¹. Article 2.3 describes the criteria for this.

Rights of way

Under the EPA ‘rights of way’¹² (*gedoogplichten*) can be used by a government to perform works or activities without the approval or permission of the owner of a plot of land. This can only be used with the ‘public interest’ in mind.¹³ There are further requirements, as this tool is quite impactful.

An even more impactful tool is expropriation (*onteigening*), for which there are, evidently, more requirements to fulfil by the expropriator.

Advisory committee

Under the EPA an advisory committee can be created, or an administrative body or other institution (in the colloquial sense of the word) can be appointed as an advisory committee, which advises the municipality’s executive body on permit requests.¹⁴ The municipal council decides the amount of

¹⁰ EPA art. 2.2(3)

¹¹ EPA art. 2.2(2)

¹² EPA chapter 10

¹³ EPA art. 10.11

¹⁴ EPA art. 16.5 and 16.15a.c

members of this committee and the length of their term.¹⁵ The council also appoints and dismisses the members.¹⁶ The members cannot be on the board of the municipality.¹⁷ The board of the municipality can also ask the committee for advice on the development of policy related to the physical living environment.¹⁸ The advice must be based on municipal policy (i.e., the environmental vision, environmental plan and the policy rules).¹⁹ Moreover, the advice must be properly motivated and must be made public²⁰, and the committee meetings must be publicly accessible.²¹

Experiments

By means of an experiment the municipality can deviate from the rules of several laws (among others the Environmental Management Act and the EPA itself), provided that the experiment takes into account the aims of the law in EPA article 1.3 (preamble) and article 1.3(a).²² If it becomes clear from monitoring and assessment that the experiment does not contribute to the aims of the EPA, counter measures should be taken.²³ If the measures are insufficient then the Ministry can decide to end the experiment, according to article 23.3(8).

¹⁵ EPA art. 17.7(1)

¹⁶ EPA art. 17.7(2)

¹⁷ EPA art. 17.8

¹⁸ EPA art. 17.9(2)

¹⁹ EPA art. 17.9(3)

²⁰ EPA art. 17.9(4)

²¹ EPA art. 17.9(5)

²² EPA art. 23.3(1) and (2)

²³ EPA art. 23.3(5)



Effect of institutions on adaptive capacity	Score
Positive effect	+2
Slightly positive effect	+1
Neutral	0
Slightly negative effect	-1
Negative effect	-2

Figure 4.1. ACW scores for the EPA's general provisions and rules. See appendix 4.1 for arguments.

4.2 ENVIRONMENTAL VISION

The Environmental Vision (EV) is a policy document determined by the democratically elected municipal council.²⁴ It contains (a) a description with broad outlines of the quality of the physical living environment, and (b) broad outlines of the envisaged developments, use, management, protection and preservation of the territory, and (c) the main aspects of the integral policy that is to be pursued in relation to the physical living environment.²⁵ Several environmental policy-principles, adopted from the Treaty on the Functioning of the European Union (TFEU)²⁶, are to be taken into account by the municipal council when determining an EV²⁷:

1. The precautionary principle (i.e., the government can take measures if there is good reason to believe that certain activities may negatively impact the living environment);
2. The principle that preventive action should be taken;
3. The principle that environmental damage should as a priority be rectified at source;
4. The polluter-pays-principle.

Of importance is also the ‘obligation to state reasons’ (*Motiveringsplicht*) regarding early-stage participation: when the municipal council determines the EV it should provide motivation for how civilians, companies, societal organisations and administrative bodies were involved in its preparation and what the results are of this participatory involvement, as stated in article 10.7 of the Environmental Resolution²⁸ (*Omgevingsbesluit*, hereafter ER). This is also the definition of a ‘participatory approach’ as included in the ER’s explanatory memorandum (2018). There it also states that the method by which this participatory approach should be undertaken is not included in the law, so as to prevent that the participation processes will be reduced to a checklist (p.133). Such a checklist reduces the room for adjustment to different conditions and circumstances, and thus is counter effective. The ER is one of four orders in council of the EPA.

One interviewee mentioned that they (i.e., municipal employees) are already actively conversing with various citizens and citizens’ groups about which themes they feel are important and which they

²⁴ EPA art. 3.1

²⁵ EPA art. 3.2

²⁶ TFEU art. 191.2

²⁷ EPA art. 3.3

²⁸ The most recent version of the ER from 3 July 2018 was consulted, accessible from <https://zoek.officielebekendmakingen.nl/stb-2018-290.html> (accessed on 7 July 2019).

deem not important enough to become involved in. The interviewee called this “A kind of participation on participation.” This means that, even though generic comment and review procedures (*zienswijze procedures*) are accepted as forms of participation in the EPA (RE, 2018, p.133), such procedures aren’t necessarily the default option for participation. On the other hand, it also states that “[p]articipatie is [...] meer dan de formele momenten waarop alle partijen zienswijzen kunnen indienen. Het betreft juist het betrekken van partijen bij het besluitvormingsproces voordat de formele besluitvorming van start gaat” [participation [...] is more than the formal instances at which all parties can comment and review. Indeed, it entails involving parties into the decision making process before the formal decision making commences] (RE, 2018, p.133).

Finally, the different layers of government (national, provincial and municipal) all have their own EV’s. However, the EV is only legally binding for the administrative body in which it is determined (i.e., there is initially no direct relation between the national and provincial EV’s and the municipal EV’s; the municipal EV is only binding for the municipal council itself). In EPA article 2.2(1) it does say that administrative bodies (including the municipal council) should take tasks and competences of other administrative bodies (including those of other governments and governmental layers) into account, and should, if necessary, coordinate with those other administrative bodies. This also includes their EV’s. There are, however, no further rules or instructions on what ‘taking into account’ or coordinating entails or should entail. To an extent, the EV can then be regarded as functioning as a harmonising tool between the different governmental layers. Moreover, because of its long-term vision, it harmonises different time-horizons, as was also stipulated by an interviewee: during conversations on the EV with local residents the interviewee saw that “*veel inwoners beginnen te bedenken vanuit het hier en nu en wat is er nodig in de leefomgeving. En dat is niet goed of slecht, maar het gaat over verschillende tijdshorizonnen waar je ook tussen moet gaan schakelen.*” [many residents begin with thinking from the here and now, and what is needed in the living environment. And that is not good or bad, but it’s about different time-horizons between which you need to switch]. Here lies a role for the EV, as the interviewee affirmed.



Effect of institutions on adaptive capacity	Score
Positive effect	+2
Slightly positive effect	+1
Neutral	0
Slightly negative effect	-1
Negative effect	-2

Figure 4.2. ACW scores for the Environmental Vision. See appendix 4.2 for arguments.

4.3 PROGRAMME

In the EPA the Programme can be found in chapter 3, together with the EV. This is because the Programme can for a large part be considered as a more detailed EV for a specific policy field or area in a municipality. It is positioned “between” the EV and the EP in the policy cycle (and it is also perceived as such by interviewees). Primarily the programme contains a package of policy intentions and measures to realise certain goals or environmental norms (*Omgevingswaarden*).²⁹ In this latter case (i.e., when specific goals or environmental norms have to be met) this is called a ‘programmatic approach’ (*Programmatische aanpak*)³⁰, which is a type of programme.

Environmental norms are determined taking into account the aims of the EPA.³¹ An environmental norm determines, for (a part of) the living environment: (a) its desired quality, (b) the permissible burden caused by activities, and (c) the permissible concentration or deposition of substances.³² All of the above are expressed quantitatively or otherwise in objective terms.³³ An environmental norm always comes with some kind of obligation or commitment to reach or maintain this norm³⁴, with a designated location to which the norm applies³⁵, possibly with a time-scale within which the environmental status must be within the limits of this norm.³⁶ Norms can follow from the municipality’s ambitions itself (as laid down in the rules of the EP), but they can also come from the province or state government, or from international or EU obligations.

A programme can be mandatory for municipalities in specific areas³⁷ (e.g., in order to allow for more development or activities near an airport³⁸). A programme can also be mandatory if an environmental norm is not met or is (likely) not going to be met.³⁹ Monitoring of the environment in regard to the environmental norms by the local government is mandatory.⁴⁰ If it follows from

²⁹ EPA art. 3.5(a & b)

³⁰ EPA section 3.2.4

³¹ EPA art. 2.9(1)

³² EPA art. 2.9(2)

³³ EPA art. 2.9(3)

³⁴ EPA art. 2.10(1a)

³⁵ EPA art. 2.10(1b)

³⁶ EPA art. 2.10(2)

³⁷ EPA art. 3.6(1)

³⁸ EPA art. 3.6(1c)

³⁹ EPA art. 3.10(1)

⁴⁰ EPA art. 20.1

monitoring that this environmental norm cannot be met, the programme (or rather, its measures) must be changed.⁴¹ Moreover, it can be determined by order in council that a programme is to be formulated by two or more administrative bodies together in specific circumstances.⁴² Here, just like with all other tasks and competences under the EPA (including determining the EV, EP, etc.), the aims of the law (as formulated in article 1.3) have to be taken into account.⁴³ When determining a programme, just as is the case with the EV, there is an obligation to state reasons (i.e., participation is a requisite).⁴⁴

Employing programmes increases the discretion for municipalities and provides more flexibility in plans, as programmes can be formulated taking into account specific projects and fitting measures, instead of the other way around (Ministry of Infrastructure and Environment, 2016).

Interestingly, amongst the interviewees there was relatively little knowledge of what the programme or the programmatic approach entails or how it will be brought into practice. The regular programme was mostly seen as an extension of the EV. One interviewee mentioned that at their organisation “*no one is really busy with it yet*”. This may be explained by the fact that programmes are indeed a kind of extension of the EV’s, which are not yet formulated by most municipalities (that is, there is not yet much to expand upon).

⁴¹ EPA art. 3.11(1)

⁴² EPA art. 3.13

⁴³ EPA art. 2.1(1)

⁴⁴ ER art. 10.8



Effect of institutions on adaptive capacity	Score
Positive effect	+2
Slightly positive effect	+1
Neutral	0
Slightly negative effect	-1
Negative effect	-2

Figure 4.3. ACW scores for the Programme. See appendix 4.3 for arguments.

4.4 ENVIRONMENTAL PLAN

Rules concerning the physical living environment on a decentralised level can be found in the Environmental Plan (EP) for municipalities. In the EP the policy from the EV and programmes is laid down in rules. The municipal council of each municipality determines one EP for the entire municipal territory.⁴⁵ Here lies, already, a large challenge for municipalities, as there are often dozens – or hundreds, in larger municipalities – of zonal plans (*Bestemmingsplannen*) in the current planning system, as was also confirmed by the interviewees from the municipalities. Somehow these zonal plans have to be replaced by or converted into one EP, for which municipalities have until 2029. This impactful change in the Dutch planning system can also be considered an opportunity, however. As is the spirit of the EPA, municipalities aspire for more municipality-wide rules, and fewer rules in total, which can be examined during the process of aggregating the zonal plans, as is suggested by two interviewees.

Unlike the zonal plans, however, the EP does not merely contain spatial rules; e.g., it also contains rules on the environment (environmental norms)⁴⁶ and heritage, or anything else relating to the physical living environment ('Het omgevingsplan van nu tot 2029', n.d.; ER, 2018, p.90). For the EP there is also an obligation to state reasons (and, thus, participation). Moreover, if the municipal council intends to determine or adjust the EP, it has to give notice of this in advance to give others the opportunity to comment and review⁴⁷, and the aims of the law have to be taken into account. Another contrast with the zonal plans is that for the EP there is no obligation to demonstrate that permitted (spatial) activities, functions, etc. will be realised within ten years.⁴⁸ Unlike the EV and programme, the EP is not merely self-binding to the administrative body which determines and formulates it; it is a generally binding instrument.

Although there is only one EP for the entire municipality, that does of course not imply that there are no location-specific rules (e.g., for different neighbourhoods or plots of land): EPA article 4.2 states that 'the EP at least contains the necessary rules in view of a balanced allocation of functions to locations'. Here another difference with the current planning system becomes apparent; instead of

⁴⁵ EPA art. 2.4

⁴⁶ EPA art. 2.11

⁴⁷ EPA art. 16.29

⁴⁸ EPA chapter 4

the word *bestemmingen* (uses or purposes) the – more general – word *functies* (functions) is used. According to the ER (2018, p.92) “[d]e functie kan worden gezien als een gebruiksdoel dat, of de status (in de betekenis van bijzondere eigenschap) die een onderdeel van de fysieke leefomgeving op een bepaalde locatie heeft” [the function can be seen as an intended utilisation or the status (in the sense of a special property or characteristic) that a part of the physical living environment has on a particular location]. By bringing all of the different subjects that are of importance for the physical living environment together in the EP, these can be arranged in a more integral manner. This property is strengthened by EPA art. 2.7 which allows for orders in council that mandate that in certain cases rules on the physical living environment can only be adopted in the EP.

In the EP a municipal council can also decide to formulate *maatwerkregels* (custom rules).⁴⁹ The provincial and state governments have general rules (in relation to the physical living environment) which apply to certain locations. The municipal custom rules allow for deviation from those general rules in the case of unforeseen situations, special circumstances, local circumstances or because of municipal ambitions (e.g., those adopted in the municipal EV) (‘Maatwerkregels in het omgevingsplan’, n.d.). Of course, in order to apply custom rules the municipality must provide a motivation for why the general national or provincial rules are not sufficient. Moreover, the aims of the law (EPA art. 1.3) and the aims of the general national and provincial rules (art. 4.22 and 4.23) must always be taken into account.⁵⁰

Further, an EP can contain rules which mandate a permit for certain activities.⁵¹ Unlike in the current planning system, this is not limited to instalment activities (*Aanlegwerken en aanlegwerkzaamheden*, or ‘b-activities’: e.g., constructing roads and paths, excavating soil, digging canals, etc.) and demolishing activities, but can also be done for ‘a-activities’ (e.g., how plots of land or constructions should be used, or rules about the building of constructions) (RE, 2018, p.90). This provides more options and flexibility for the municipality. In conjunction with this, the municipal council can, if desired, decide to formulate rules that provide more freedom of policy and room to manoeuvre to the competent authority when exercising the discretion to grant a permit (‘Beoordelingsregels’, n.d.).

⁴⁹ EPA art. 4.6

⁵⁰ EPA art. 4.6(2)

⁵¹ EPA art. 4.4(2)

Indeed, flexibility and more administrative room to manoeuvre (i.e., discretion) are key aspects of the EPA (RE, 2018, p.101). Municipalities prefer the EP to also provide this (RE, 2018, p.101-102), a sentiment which is in line with that of the municipal interviewees. The zonings plans, with their detailed rules with a closed character, often have the opposite effect, which hinders organic development and more general allocation of functions. For areas which need to be protected and maintained (e.g., inner-cities) this is not a problem, however, for many other areas the conserving zoning plan is a hindrance. With the EP such conserving rules will still be possible. However, open standards (*open normen*) will also be possible where desired. Such standards are formulated more generally, allowing for more room for interpretation and adjustment to different situations (e.g., a rule can prescribe that there needs to be ‘sufficient parking spaces’, instead of a specific or quantified amount). Again, whether and to what extent there should be open standards depends on the wishes of the municipal council.

Project decision

A project decision (*projectbesluit*) is a formal decision that can be made by the national and provincial governments, and the water boards.⁵² It is a tool which allows these governments to execute a plan (project) that doesn’t fit in the EP and serves the public interest (e.g., provincial or national infrastructure projects) (Ministry of I&KR, 2019). The project decision cannot be used by municipalities. However, municipalities can make use of parts of the ‘project procedure’ of the project decision⁵³, for realising complex projects that serve the public interest and have several solutions or alternatives (Ministry of I&KR, 2019). Part of this procedure is early-stage participation and the obligation to state reasons. Following this procedure leads to a change in the rules of the EP. Although the rules in the EP can also be changed by the municipal council, and can be circumvented by a permit, the project procedure has the advantage that it allows for a quicker (i.e., 6 months) verdict from the Administrative Jurisdiction Division of the Council of State—the highest public law court.⁵⁴

⁵² EPA art. 5.44

⁵³ EPA art. 5.47, 5.48, 5.49 and 5.51

⁵⁴ EPA art. 16.87



Figure 4.4. ACW scores for the Environmental Plan. See appendix 4.4 for arguments.

4.5 ENVIRONMENTAL PERMIT

In the EPA there is one permit for activities with (possible) consequences for the physical living environment: the environmental permit (*omgevingsvergunning*). For this instrument the government (in the case of this thesis, the municipal government) checks whether certain activities can be performed, and if so, under which conditions (Oldenziel & De Vos, 2018). Initiators of activities (*Initiatiefnemers*) request their permit(s) at one desk (at the city hall or online) under one competent authority (the executive branch of the municipality, i.e., the mayor and aldermen) (VNG, n.d.).⁵⁵ The municipality then has eight weeks to decide if the permit will be granted, no matter the complexity of the activity or project⁵⁶ (instead of a possible eight or 26 weeks under the current system), with a possible one time extension of six weeks⁵⁷. Unlike under the current planning system, if this period has passed without the municipality making a decision, the initiator does not automatically get his or her permit. Instead, a fine has to be paid by the competent authority.⁵⁸

EPA article 5.1(1) states that it is forbidden to perform – among other things – an **‘environmental plan-activity’** (*omgevingsplanactiviteit*, hereafter EP-activity), unless it is allowed by an order in council. An EP-activity is:

- an activity about which the EP states that it is not allowed to be performed without an environmental permit, and is (i.e., an external EP-activity) or is not prohibited by the EP;
- another activity which is prohibited by the EP.⁵⁹

When assessing a permit request the municipality has to consult the assessment rules, as partially laid down in the EP, to check to what extent an initiative is permissible. The assessment rules can also be in the shape of open standards, which provide the municipality with more discretion based on specific circumstances for each case (ER, 2018, p.102). Of course, it is up to the municipal council to decide to what extent they want to have open standards. Moreover, not all assessment rules are decided locally; some are also laid down in an order by council.

⁵⁵ EPA art. 16.54

⁵⁶ EPA art. 16.64(1)

⁵⁷ EPA art. 16.64(2)

⁵⁸ General Administrative Law Act (hereafter: GALA) section 4.1.3.2

⁵⁹ EPA appendix A (definitions)

DSO

Under the EPA permit requests can be made physically in a city hall or online in the DSO (*Digitaal Stelsel Omgevingswet*, or Digital System EPA). It can also be decided that some permit requests can only be made in the DSO.⁶⁰ The DSO is a national service, which at least provides certain information on the physical living environment⁶¹ (e.g., rules from the EP or other rules, policy from the EP, environmental norms, etc. for the different locations nation-wide), and a way through which a permit (or other formal decision) can be requested, among other things⁶². Although the information provided in the DSO will ultimately concern the living environment, the types of information that can be made available is only limited by other laws (e.g., privacy law). As the system is national, it is managed by a ministry and not by municipalities (although other administrative bodies than the ministry can provide input for the system).

Although a preliminary version of the DSO is already online (see omgevingsloket.nl) through which users can, for example, check if a permit is needed for a certain activity, the DSO under the EPA is supposed to become much more advanced, as mentioned by the interviewees. For example, if a permit is needed then the request will be forwarded to the municipality which will then assess this request. However, it will also be possible to do the assessment within the DSO for smaller permits (Interviewee A). Another option is that during a permit request one can draw up a design in 3D and the DSO then checks which permits are needed for that design (Interviewee B). Interviewees A, B and C mentioned that the DSO provides opportunity for saving time by making more activities 'permit-free'. That is, under the EPA (with its DSO and little time to assess the permit) the municipal council is encouraged to make EP's and permit assessment rules less strict by allowing more activities for which a permit is not needed. Interviewee A advises municipalities: "*[...] probeer je proces na de aanvraag zo in te richten dat zo min mogelijk ambtelijke capaciteit hoeft bezig te zijn met dit soort kleine producten. Zoveel mogelijk digital en vergunningvrij aanbieden*" [*...*] try to arrange your process after the permit request in such a way that as little administrative capacity [(i.e., employees)] is busy with [*...*] small products. Do as much as possible digitally and permit-free]. He added that another contribution to this is that municipalities will receive fewer financial resources under the EPA.

⁶⁰ EPA art. 16.1(3)

⁶¹ EPA art. 20.20(a)

⁶² EPA art. 20.20(b)

Another consequence of the DSO is that policy and rules must have an explicit spatial link for the DSO to function: a user must be able to click on the map and have local rules show up. Although this is challenging, it does provide more clarity for the user (e.g., the user does not have to find out at which governmental layer or administrative body he or she has to complain or request a permit from: this information is provided at once) (Interviewee C). Moreover, Interviewee C states that, because of this explicit spatial link, it requires policy and rules to be written in such a way that it is possible to make this link, and “[m]ede door dat digitale stelsel worden we met z’n allen gedwongen om samenhang te creëren” [in part because of the digital system we are forced to create coherence].

Preliminary phase

A ministerial ruling provides rules on what information the person who requests a permit has to hand over to the municipality.⁶³ This also concerns information about participation by and consultation with third parties.⁶⁴ Moreover, the municipal council can appoint activities for which such participation and consultation is mandatory before an environmental permit request for an external EP-activity can be made.⁶⁵ This means that participation is done before the permit request is made (i.e., during the preliminary phase, or *voortraject*). Although, as previously mentioned, there is still a comment and review procedure for permit requests, participation during the preliminary phase is intended to decrease the amount of comments after the request has been made (Interviewees A, B and C). After all, these comments should ideally already have been coined and discussed during the preliminary (participation) phase. Although residents can provide their input on plans or initiatives during the preliminary phase before the permit is requested, they can still make a formal objection after that under the regular procedure of the GALA. Of course, for small requests (e.g., for felling a small tree) informing one’s neighbours (as opposed to deliberating and consulting them) may be considered enough, depending on the municipality (Interviewee C). However, for this very same case, the municipality of Haarlemmermeer prescribes a *‘burenakkoord’* (neighbours’ agreement, i.e., a written agreement with your neighbours). Importantly, for a resident’s initiative or permit request, the responsibility to organise participation (in whatever shape or form that may be) lies with the initiator. For larger and more impactful initiatives or projects the

⁶³ EPA art. 16.55(2)

⁶⁴ EPA art. 16.55(6)

⁶⁵ EPA art. 16.55(7)

municipality will likely facilitate participation, as it must uphold the principles of good governance (in this case the principle of due diligence (*zorgvuldigheidsbeginsel*)).



Effect of institutions on adaptive capacity	Score
Positive effect	+2
Slightly positive effect	+1
Neutral	0
Slightly negative effect	-1
Negative effect	-2

Figure 4.5. ACW scores for the Environmental Permit and related tools. See appendix 4.5 for arguments.

5 DISCUSSION & CONCLUSION

This study has aimed to develop a deeper understanding of how – mainly formal – institutions create adaptive capacity in a socio-spatial system for the Dutch context. Three questions that supported the primary research question have been posed, of which the first one has already been answered in the previous chapter. The other two questions will now be discussed. After that the main research question will be answered.

5.1 SECONDARY RESEARCH QUESTIONS

What is the role of participation in the EPA in relation to its different tools?

During this research the focus has been mainly on the formal institutions, including the institutionalised tools, of the EPA. As has been shown in figure 4.1 through figure 4.5 these contribute to the adaptive capacity. However, it is clear from the literature that informal rules also strongly affect the adaptive capacity. In the context of this research topic, such informal institutions mainly come to the fore in participation processes, which were not researched directly. Nevertheless, given the large role of participation in the EPA this cannot simply be brushed aside.

For all of the tools and instruments that were discussed *ex ante* participation is obligatory. Paradoxically, in the EPA very little is said about participation substantively, despite its large role. This is because there is a lot of discretion for municipalities in terms of how demanding they are towards people requesting a permit (as it is mainly them who have to organise this participation) or towards themselves (as municipalities have to organise participation for the other tools: EV, programme, EP, etc.). Formally there are little requirements for participation, but from the interviews it became clear that already for the felling of a tree there can be different perspectives as to what type of participation suffices. Legally the new planning system is much more coherent than the collection of 26 separate laws that have been evolving over the past few decades under the previous (current) system. In practice, however, we will still see a lot of variation among municipalities when it comes to participation. After all, it is up to them how they will handle the participation for different tools and different permit requests. Because of that only generalised statements can be made on the influence of participation processes and how they are designed (where informal institutions play the main role) on adaptive capacity.

For example, the rules on the formally institutionalised tools and instruments of the EPA exhibit little ‘single loop learning’ and ‘double loop learning’. However, it can be expected that during the participation processes (that is, in practice) these criteria of adaptive capacity play a much larger role, as they pertain to and depend on how the formal processes are interpreted, put into practice, improve over time and so on.

How do the different tools of the EPA and their participatory qualities create adaptive capacity?

In section 2.4, while making use of the literature, it has already been established what the dimensions of adaptive capacity are and how their 22 indicators create adaptive capacity in the context of this research focus (i.e., the EPA). This secondary research question can, thus, to a large extent only be answered in a summarising and reductionist manner. Hopefully, however, this will highlight the different roles of the respective instruments in the policy cycle, after which they will be discussed holistically when answering the main research question.

1. General provisions

The general provisions and rules of the EPA provide a basis for the other rules, tasks and competences (including the tools and instruments) of the law. This way different legal principles are (or should be) warranted. These form the red thread through the EPA, such as the aims of the law in article 1.3. Therefore, they also play an important role in creating adaptive capacity by themselves, but also as they “return” in the other tools.

First of all, the EPA has strong authority, because it is formulated after years of political deliberation and research in a strongly democratic environment. Principles such as transparency and accountability (note also the duties to care) also play a large role in the EPA, in part because of the democratic context in which it was written up. These properties can be seen in the EPA’s various tools as well.

2. Environmental Vision

The EV is a visioning tool, connecting the concerns and themes of the present with the future (visionary leadership). The EV allows for input, through participation, from many different types of actors, representing multiple parts of the CAS (i.e., the municipality). This representation can also be seen in the process by which the EV is formulated by the elected members of the municipal council.

So while participants carry some responsibility, ultimately it is the municipal council that is accountable. This, in turn, can be seen in the municipality's obligation to state reasons regarding input of the participation phase.

In short, the EV mainly creates adaptive capacity by connecting timescales and setting aims, broadly determining (steering) the trajectory of the municipality towards the future with input from a broad range of participants.

3. Programme

The Programme contains more detailed policy aims by sector or by area. Specific targets can be set for which environmental norms and accompanying measures are determined. As a kind of extension of the EV, the programme has a lot in common in terms of adaptive capacity creation: there is responsiveness (obligation to state reasons), authority (the Programme is a legitimate form of power), and the Programme is – to a lesser extent – a visioning tool. However, because Programmes can contain measures they also provide flexibility accommodating rules.

The Programme, then, contributes to adaptive capacity in much the same way as the EV, but with more concrete future aims and, in the case of environmental norms, by setting minimum standards of “well-being” for the system (municipality).

4. Environmental Plan

The rules of the EP determine what is and is not allowed and, if applicable, in which location. In these rules the aims and general provisions of the law can be seen clearly: there are different options for flexible rules (e.g., open norms, custom rules, project decision procedure), and the EP is easily navigable and accessible, for a large part due to the fact that a broad set of rules concerning the physical living environment are included in the EP. This navigability, in turn, adds to its transparency. Moreover, participation – again – plays an important role and increases the responsiveness of the EP. With the obligation to state reasons there lies also an important role for the accountable, competent authority; the municipal council.

Concretely, the EP primarily contributes to the adaptive capacity of the system by providing flexibility and means to alter the (activities in) the socio-spatial environment, with influence from the agents of the system themselves through participation.

5. Environmental Permit

The environmental permit is required to perform activities in the municipality that are not permit-free. Participation during the preliminary phase is required. This already allocates responsibility and accountability: the person who requests organises participation, while the municipality (executive) handles and assesses the permit request. An important tool here is the DSO, through which rules, policies and other data can be consulted and requests can be made and assessed quickly. Moreover, all requests must be handled quickly anyway (i.e., within eight weeks), no matter the complexity of the request. These factors create flexibility. Furthermore, the DSO and the uniform procedure of assessing the request contribute to the navigability of this tool.

In a nutshell, the permit and its main associated or supporting tool – the DSO – create adaptive capacity by creating more flexibility and easily allowing for quicker spatial interventions and activities, through a procedure marked by participation and navigability.

5.2 MAIN RESEARCH QUESTION

Now that the secondary research questions have been answered, the main one can now be discussed holistically (i.e., considering the rules, tools and instruments conjointly as part of one planning system) as opposed to separately during discussing the secondary research questions. The main research question is as follows:

How does the Dutch Environmental Planning Act (2021) provide conditions for adaptive capacity in Dutch municipalities?

The EPA and its four orders in council provide a new and comprehensive planning system for the physical living environment. The separate parts of the EPA's policy cycle each fulfil a different role, and therefore also cannot all be expected to contribute equally to the adaptive capacity of the socio-spatial system that is the municipality. Strengths in one part of the planning system (e.g., visionary leadership in the EV) compensate the weaknesses in another part or other parts. This is also where the communicative function of the ACW comes to the fore: if portrayed next to each other, the ACW's for the different tools show that their weak criteria (i.e., low scores) in grey, yellow, orange or red are green in other ACW's (see figures 4.1 – 4.5). Moreover, the general rules and provisions of the EPA provide minimum (functioning) standards to all the tools collectively. This leads to a decent score of

the ACW for the EPA as a whole (figure 5.1, see also appendix 5.1), whereas separately some tools show many weaknesses regarding various criteria of adaptive capacity.

When looking at the individual scores next to each other (see appendix 5.1) it becomes clear that the different instruments indeed supplement each other in several criteria. The EV is a visioning tool containing broad policy goals and, thus, does not provide rules (e.g., relational rules or flexibility accommodating rules). The other tools that do work with or based on such rules score well on these two criteria (i.e., programme, the EP and permit). Because the different tools have different functions, some criteria were not applicable at times. For example, the permit is not a visioning tool so it cannot be expected that it scores well. Instead, this is applied to the EV, among other tools. The qualities of the general provisions, providing the basic principles of the EPA, can be seen to return in all other tools, to an extent. The advisory committee (variety & multi-actor criteria), for example, also applies to other tools. The same is true for authority.

The EPA can be said to be constructed as an integral and comprehensive law, comprising all aspects of a basic planning policy cycle (preparation and a long-term view, working out policy in more detail, implementation and rule-making, spatial interventions and enforcement, and, finally, monitoring). Therefore, when regarding the EPA as a whole instead of as a collection of separate tools, it shows that all relevant aspects (that is, relevant to the planning system and policy cycle) have been taken into account. For this reason, the score for adaptive capacity creation of the EPA is quite high. In other words, this is also how the EPA creates adaptive capacity in municipalities: by making tools for all aspects of the policy cycle, and optimising those tools for their specific tasks and purposes. Elaborating on this, these tools and rules are optimised by taking into account principles that contribute to adaptive capacity: providing long-term vision, involving different types of actors and allowing them to provide input, creating rules that give room to manoeuvre for municipalities but also to initiators of activities and projects, providing a variety of tools to change or deviate from the rules, and so on.



Effect of institutions on adaptive capacity	Aggregated scores of the criteria for the general provisions and rules, and tools and instruments.
Positive effect	+1.01 to +2.00
Slightly positive effect	+0.01 to +1.00
Neutral or no effect	0.00
Slightly negative effect	-0.01 to -1.00
Negative effect	-1.01 to -2.00

Figure 5.1. Adaptive Capacity Wheel of the EPA. See appendix 5.1 for the scores per criteria.

However, the EPA scores poorly on the learning capacity dimension and on providing and promoting relational rules and equity. Relational rules are allowed, but because they are not mandated in the formal institutions (which were mainly the research focus), the EPA scores poorly. It may well be that certain municipalities strongly opt for relational rules and urban codes. When it comes to equity and learning capacity, this can be explained by the fact that these aspects of adaptive capacity mainly can be found in informal institutions (i.e., during participation, practice and the outcomes of policy), which, again, are not the main research focus.

To conclude, the Environmental Planning Act has a foundation of (functioning) standards that provides adaptive capacity through general rules and provisions (see section 4.1), and the different parts (or tools) of the policy cycle – while benefitting from this foundation – supplement each other (see sections 4.2 – 4.5), resulting in a planning system that holistically creates adaptive capacity for the living environment (see figure 5.1).

5.3 THEORETICAL CONTRIBUTION

Gupta et al.'s (2010) ACW has been adapted to be more applicable to the field of spatial planning, by using insights from complexity science in planning. These insights are mostly focussed on specific parts of the policy cycle, such as flexible plans and adjustable initiatives (Van Buuren et al., 2013), relational rules (Alexander et al., 2012), and specific rules that promote organic spatial developments and recognise long-term uncertainty (Rauws et al., 2014). By adapting the original ACW, while incorporating the above (and other) insights, and applying it to the EPA, it has become apparent that it is not specific parts of the policy cycle that are of importance for adaptive capacity creation. Instead, all parts of the policy cycle have a role to play, and can be employed for adaptive capacity creation. This more holistic perspective has until now been lacking in the adaptive planning literature.

5.4 RECOMMENDATIONS

5.4.1 IMPROVING THE ADAPTIVE CAPACITY

As mentioned in this thesis participation is a core theme of the EPA, while little is said as to how it should be organised. This gives the municipalities flexibility as they can then decide which to which criteria participation processes should meet. However, this brings with it the risk that municipalities will decide to choose the minimum standards required for participation according to basic legal principles (duty to care, due diligence, principles of good governance, etc.), instead of going 'the extra

mile' for proper participation (e.g., see Innes & Booher, 2004) which improves residents' social capital and the social cohesion in the system. In the long-term this will benefit the adaptive capacity of the system as a whole (see section 2.3). Raising the bar, or rather, setting the bar, for the 'minimum' participation requirements also contributes positively to another weakness of the EPA: equity. After all, in the EPA all residents are treated the same when it comes to participation, and it is up to the political intent and policy of the municipality if they want to give certain (vulnerable or disadvantaged) groups a leg up.

Another point concerns the financial and human resources. Despite its strong suits, the EPA can also be considered a thinly veiled austerity and 'pro-small government' measure. Because certain administrative tasks will be required to be sped-up or transferred to the DSO, and funding will decrease, eventually less administrative capacity will be needed. On the one hand, this is efficient. On the other hand, this may lead to an even further increase in permit-free activities (which leads to less legal certainty for neighbours and/or stakeholders) and in a shift in responsibility from the government towards the citizens. Although there are pros and cons for both sides, it is recommended that municipalities remember their own responsibilities and tasks towards their citizens first and do their best to uphold these.

5.4.2 FUTURE RESEARCH

As has been mentioned before, some criteria of adaptive capacity (e.g., single and double loop learning, discussing doubts) mainly come to the fore in practice (policies and measures) and participatory processes. This side of the EPA was not the main focus of this research. To gain a more complete picture of the EPA's adaptive capacity it is important that this side is also researched.

Another way in which this research can be extended is by repeating the analysis of the formal institutions and the subsequent scoring of the criteria. In their research protocol for the ACW, Gupta et al. (2010) note the importance of having several researcher to review the data and do the scoring to increase the robustness of the resulting ACW.

6 REFLECTION

Getting towards the end of the writing process of this thesis, it is time for reflection. The ACW will be discussed first, as it goes to the core of this research. Other aspects relate to how different parts of the writing process progressed.

6.1 METHODOLOGICAL REFLECTION

Adaptive Capacity Wheel

The ACW by Gupta et al. (2010) is a comprehensive tool, by which many facets of the adaptive capacity of institutions can be examined. However, the ACW is more geared towards climate adaptivity and coping with climate events. Also, it focusses on both formal and informal institutions. Because of this a few adjustments had to be made to make the ACW applicable to this research topic. This proved to be helpful, as by doing this one internalises what ACW means in this context. However, even after the adjustments it became apparent that quite a few criteria are still difficult to apply to another research context with a focus on mainly formal institutions. This is partially why there are a lot of criteria scored with 'not applicable' (see appendices 4.1 through 4.5). In hindsight, extra adjustments and more focus on planning literature may have been useful. Although this would result in a largely different ACW compared to the original ACW, this does not make the ACW less useful. After all, the research protocol is sound, and this would need no adjustments.

Data collection

Data was gathered by doing interviews, and reading the EPA and documents on the EPA. As is mentioned in chapter 3, the research focus moved away from participation. Although this did not compromise the data that was gathered on the new research focus, it did make some data redundant. This is especially true for the 4th interview. Fortunately, due to some circumstances the interviewee was late and the interview could not be performed fully. Moreover, the interviewee did not entirely possess the information that I had hoped for. In part this was an error in judgement from myself. In hindsight, this interview should have been cancelled in advance, although it would not have been necessary to find a replacement. Although this was a bit of a setback, the interviews were still very enjoyable to do.

6.2 WRITING PROCESS

The progression of the writing process depends on having a plan and knowing what to write about. This, of course, sounds harder than it is. And instrumental to this is having someone with whom you can talk about it, which has mainly been my supervisor. The conversations have been very helpful, although (or perhaps because) there was not always complete agreement. The difficulties, however, start with finding a research topic that is actually researchable (after all, there are many interesting topics, but only a small part can be properly researched in my opinion). Once a researchable topic and a research focus was found, writing went much quicker. All in all, it cost much more time than expected, and although I didn't feel that I fell behind compared to my peers, in the end there was somehow still a lot to catch up. Perhaps the problem lies also with my peers and me comparing my own progress with them.

Nevertheless, my personal aims while writing this thesis (wanting to learn about the complexity perspective, complex adaptive systems and the new Environmental Planning Act) have been fulfilled.

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APPENDICES

- 3.1** Interview guides
- 3.2** Overview interviewees
- 3.3-6** Transcripts interviews 1-4
- 3.7** List of sampled documents

- 4.1** ACW scores and arguments General provisions
- 4.2** ACW scores and arguments Environmental Vision
- 4.3** ACW scores and arguments Programme
- 4.4** ACW scores and arguments Environmental Plan
- 4.5** ACW scores and arguments Environmental Permit

- 5.1** ACW scores for all criteria and the average

APPENDIX 3.7 LIST OF SAMPLED DOCUMENTS

Legal texts:⁶⁶

- *Invoeringswet Omgevingswet* / Integrated version EPA with amendments as a result of Draft implementation act EPA (incl. 1st and 2nd notes of changes and amendments). Version of 17 May 2019. 139 pages. Available on <https://www.omgevingswetportaal.nl/wet-en-regelgeving/documenten/publicaties/2019/02/06/geconsolideerde-versie-omgevingswet-met-wijzigingen-agv-wetsvoorstel-invoeringswet>
- *Omgevingsbesluit* / Environmental Decree (AMvB / Order in Council). Version of 31 August 2018. 417 pages. Available on <https://zoek.officielebekendmakingen.nl/stb-2018-290.html>
- *Besluit kwaliteit leefomgeving* / Decree quality living environment (AMvB / Order in Council). Version of 31 August 2018. 927 pages. Available on <https://zoek.officielebekendmakingen.nl/stb-2018-292.html>
- *Besluit activiteiten leefomgeving* / Decree activities living environment (AMvB / Order in Council). Version of 31 August 2018. 1485 pages. Available on <https://zoek.officielebekendmakingen.nl/stb-2018-293.html#d17e80>
- *Besluit bouwwerken leefomgeving* / Decree constructions living environment (AMvB / Order in Council). Version of 31 August 2018. 532 pages. Available on <https://zoek.officielebekendmakingen.nl/stb-2018-291.html>

Other documents that were sampled were the many official informational/educational documents from the state government (e.g., Ministry of Environment and Infrastructure) about the different rules and tools in the EPA. As well as the Orders in Council, these were consulted for the purpose of clarification of the rules of functioning of specific parts of the EPA (i.e., the implementation act, which was the main research focus), as explained in chapter 3.

⁶⁶ The Orders in Council were not coded or analysed in detail.

APPENDIX 4.1 ACW SCORES AND ARGUMENTS GENERAL PROVISIONS

Dimension	Criterion	Description	Score
<i>Variety</i>	Variety of problem frames	+ The advisory committee can provide advice to the competent authority on plans, projects and permit requests without a conflict of interest.	1
	Multi-actor, multi-level, multi-sector	+ Involvement of an advisory committee (see above).	1
	Diversity of solutions		n/a
	Redundancy (duplication)	++ Possible to cooperate and adjust and transfer tasks and competences between administrative bodies. ++ Rights of way and Expropriation function as a back-up to implement measures in the public interest that are otherwise not possible.	2
<i>Learning capacity</i>	Single loop learning		n/a
	Double loop learning		n/a
	Discuss doubts		n/a
	Institutional memory		n/a
<i>Autonomy</i>	Continuous access to information		n/a
	Flexibility accommodating rules	+ Experiments can be started relatively easily.	1
	Relational rules	+ Activities and rules must adhere to the duties to care and prohibitions.	1
	Navigability		n/a
<i>Leadership</i>	Visionary		n/a
<i>Resources</i>	Authority	++ The EPA and its tools and instruments are strongly embedded in constitutional laws and are strongly legitimised by the democratic system in which it is shaped.	2
	Human resources		n/a
	Financial resources		n/a
<i>Fair governance</i>	Legitimacy	++ Publicly supported and accepted aims of the law in the public interest.	2
	Equity		n/a
	Responsiveness	+ Publicly accessible meetings and publications of the advisory committee.	1
	Accountability	+ General duty to care (responsibility assigned but not to specific actors) + General prohibition and prohibition of 'substantial negative effects' (idem dito)	1

APPENDIX 4.2 ACW SCORES AND ARGUMENTS ENVIRONMENTAL VISION

Dimension	Criterion	Description	Score
<i>Variety</i>	Variety of problem frames	+ The EV is a (political) policy product in which a broad variety of themes and subjects related to the living environment are described.	1
	Multi-actor, multi-level, multi-sector	++ Through participation all types of actors from different sectors are involved, to which the municipality responds. + Although the EV is self-binding for the municipal council only, article 2.2(1) mandates that it should take into account and, if necessary, coordinate with other administrative bodies of other governmental layers.	2
	Diversity of solutions		n/a
	Redundancy		n/a
<i>Learning capacity</i>	Single loop learning	- The rules concerning the EV are formally set in stone and do not include formal rules spurring on change in underlying assumptions. +/- Policy aims are set for the future, which limits manoeuvrability. However, these aims are very broad and flexible, which makes it more resistant to uncertainties.	n/a
	Double loop learning		-1
	Discuss doubts		0
	Institutional memory		n/a
<i>Autonomy</i>	Continuous access to information	+ The policy of the EV is publicly available.	1
	Flexibility		n/a
	accommodating rules		n/a
	Relational rules		n/a
	Navigability	+ The participation process differs for each municipality, but should be accessible, public and announced. What is done with the input is published, including motivations.	1
<i>Leadership</i>	Visionary	++ The EV is a strong visioning tool which connects the present with future developments.	2
<i>Resources</i>	Authority	++ EV is determined by the democratically elected municipal council and embedded in the EPA.	2
	Human resources		n/a
	Financial resources		n/a
<i>Fair governance</i>	Legitimacy		n/a
	Equity	+/- The TFEU principles protect residents and their environment, but do not take unequal conditions and circumstances into account.	0
	Responsiveness	++ The obligation to state reasons provides transparency and a response regarding the participation phase prior to the EV.	2
	Accountability	+ The municipal council is responsible for the EV, no other actors are explicitly involved or accountable.	1

APPENDIX 4.3 ACW SCORES AND ARGUMENTS PROGRAMME

Dimension	Criterion	Description	Score
<i>Variety</i>	Variety of problem frames	+/- The executive branch of the municipal government is responsible which limits variety, however, there is still input from participation to be taken into account.	0
	Multi-actor, multi-level, multi-sector	+ The executive branch can in some cases opt to cooperate on Programmes with other governments. + In the participation phase there are many different actors that can get involved, however the subjects (and thus types of actors) are less broad than in the EV.	1
	Diversity of solutions	+/- The Programme does not limit possible measures, but also does not prescribe them.	0
	Redundancy (duplication)	++ If an environmental norm cannot be met, measures must be taken. + It can be determined by order in council that a programme is to be formulated by two or more administrative bodies together.	2
<i>Learning capacity</i>	Single loop learning	+/- Adaptation of measures to reach environmental norms may lead to learning and improvement, but is not formally organised.	0
	Double loop learning	- The rules regarding the Programme are formally set in stone and do not include formal rules spurring on change in underlying assumptions.	-1
	Discuss doubts	+ Programmes can be (or rather, must be) adjusted if the measures are insufficient to reach environmental norms.	1
	Institutional memory	++ Monitoring of the environment in regard to environmental norms is mandatory.	2
<i>Autonomy</i>	Continuous access to information	+ The policy of the Programme is publicly available. +/- Environmental status in relation to environmental norms can be made public	1
	Flexibility accommodating rules	+ The programmatic approach allows for tailor-made environmental norms for different locations. ++ Programmes can be employed taking into account specific projects and fitting measures, instead of the other way around.	2
	Relational rules		n/a
	Navigability	+ The participation process differs for each municipality, but should be accessible, public and announced. What is done with the input is published, including motivations.	1
<i>Leadership</i>	Visionary	+ The Programme is a more detailed and focussed extension of the EV, and also is a visioning tool but to a lesser extent than the EV.	1
<i>Resources</i>	Authority	++ The Programme, programmatic approach and environmental standards are all legitimate forms of power under the EPA, strengthened by participation.	2
	Human resources		n/a
	Financial resources		n/a
<i>Fair governance</i>	Legitimacy		n/a
	Equity	+ The Programme allows for deviation from the local rules to make development possible in locations with otherwise limited opportunities.	1
	Responsiveness	++ The obligation to state reasons provides transparency and a response regarding the participation phase prior to the Programme.	2
	Accountability	++ An environmental norms always comes with an obligation to reach or maintain this norm. The municipality is responsible.	2

APPENDIX 4.4 ACW SCORES AND ARGUMENTS ENVIRONMENTAL PLAN

Dimension	Criterion	Description	Score
<i>Variety</i>	Variety of problem frames	+ Although there is participation and the EP is determined by a political entity, the scope is limited by the EV and programmes.	1
	Multi-actor, multi-level, multi-sector	+ During the participation phase many actors can get involved. However, no other governments are involved directly.	1
	Diversity of solutions	++ To enable a specific function or activity, or to deviate from the rules in the EP the municipality can alter the EP rules, use a project decision (if applicable) or a permit.	2
	Redundancy		n/a
<i>Learning capacity</i>	Single loop learning	+/- There are no formal rules which spur on or inhibit learning or improvement or routines concerning formulating the EP.	0
	Double loop		n/a
	Discuss doubts	+ Custom rules allow for deviation from nat'l and provincial general rules in case of unforeseen situations and ambitions (& certain other reasons). + There is no obligation to demonstrate that permitted (spatial) activities, functions, etc. will be realised within a specific timescale.	1
	Institutional memory	++ The process leading up to the EP is announced beforehand, accessible and relatively straightforward.	2
<i>Autonomy</i>	Continuous access to information	+ The EP is publicly available.	1
	Flexibility accommodating rules	+ Because there is one EP for the entire municipality, rules may be formulated more generally and in open norms so as to be applicable in varying locations. + There is no obligation to demonstrate that permitted spatial activities and function will be realised within a specific time-frame. + The project decision procedure can be used by municipalities to deviate from rules in the EP. ++ Custom rules allow for deviation from national and provincial general rules in the case of unforeseen situations, special circumstances, local circumstances or because of municipal ambitions. + Permits can be made mandatory for certain activities in the EP, increasing the steering options and discretion for the municipality.	2
	Relational rules	+/- The EPA allows for relat'l rules, but does not formally mandate them or spur municipalities on to include them. It's up to municipality's discretion.	0
	Navigability	+ The EP can contain fewer spatial planning rules, making it more easily comprehensible. ++ All municipal rules related to the physical living environment are included in this one document (EP), making these rules more accessible, navigable and integral.	2
<i>Leadership</i>	Visionary	- The EP is not a visioning tool and does not include future aims (apart from environmental norms in some cases). + Custom rules allow for deviation from national and provincial general rules in case of unforeseen situations and ambitions (and certain other reasons).	0
<i>Resources</i>	Authority	++ The EP is a legitimate and recognised form of power embedded in the EPA.	2
	Human resources		n/a
	Financial		n/a

<i>Fair governance</i>	Legitimacy		n/a
	Equity		n/a
	Responsiveness	++ The obligation to state reasons provides transparency and a response regarding the participation phase prior to the EP. + If the municipal council intends to determine or adjust the EP it has to give notice of this in advance.	2
	Accountability	++ The municipal council determines the EP.	2

APPENDIX 4.5 ACW SCORES AND ARGUMENTS ENVIRONMENTAL PERMIT

Dimension	Criterion	Description	Score
<i>Variety</i>	Variety of problem frames	+ Participation during the preliminary phase (and review and comment afterwards) allows for input from different parties (including the advisory committee).	1
	Multi-actor, multi-level, multi-sector	+ Participation allows for the involvement of different parties prior to the permit request. The variety of parties depends on the nature of the permit request.	1
	Diversity of solutions	+ The EPA provides different tools to make activities possible, especially for governments. The permit is one of them.	1
	Redundancy (duplication)	+/- Initiators are responsible for participation, the municipality is responsible for handling the permit request and oversight during participation, especially for larger requests. There is little shared responsibility.	0
<i>Learning capacity</i>	Single loop learning	+/- Assessment criteria for permit requests (including those in the EP) can be adjusted, but these adjustments are not explicitly encouraged.	0
	Double loop Discuss doubts	+ The assessment criteria for permit requests will not be mere checklists. There will be some room to manoeuvre during assessment so that demands can be refined and tightened up depending on the circumstances.	n/a
	Institutional memory		1
<i>Autonomy</i>	Continuous access to information	++ The DSO is able to provide any type of information on the physical living environment, if it's allowed within Dutch law. ++ The DSO will be able to assess complex permit requests (e.g., with 3D models) and will provide information for which activity a permit is needed.	n/a
	Flexibility accommodating rules	++ Permit requests will be handled much quicker because of the DSO and the shorter procedure, allowing for quicker spatial interventions and implementation of activities. + The assessment criteria for permit requests will not be mere checklists. There will be some room to manoeuvre during assessment so that demands can be refined and tightened up depending on the circumstances.	2
	Relational rules		2
	Navigability	++ There is only one permit and one public procedure for any activity. Permission for several different activities can be asked under one permit. ++ The permit can be requested (and granted) online through a simple procedure. - It can be decided that a permit for certain activities can only be requested in the DSO and not in person. + All rules and policies that are applicable to different locations can be found in one place (DSO).	2
<i>Leadership</i>	Visionary		n/a
<i>Resources</i>	Authority	++ The environmental permit is a legitimate form of power, both for the party that grants it (municipality) and the party that uses it.	2

	Human resources	+ For more complex projects and permit requests the municipality takes on a larger role during the participation phase.	1
	Financial resources	+ In the fully developed DSO requesting and handling a permit can happen automatically/online, saving money in permit request fees for residents and businesses.	1
<i>Fair governance</i>	Legitimacy		n/a
	Equity	-- There is only one public procedure which takes eight(+6) weeks, even for very complex permits and projects. + As compensation for the above there is a preliminary phase with (possible more elaborate) participation. + Assessment rules for permit requests can come in the shape of open standards (i.e., more general), allowing the municipality to take specific circumstances into account.	0
	Responsiveness	++ There is participation during the preliminary phase during which stakeholders can provide input.	2
	Accountability	+ In principle, the initiator of an activity is responsible for organising the participation. For more complex situations it is expected that the municipality takes a facilitating role, but there are no clear guidelines. + The municipality (executive) is responsible for handling the permit requests. If they fail to handle a permit request in time a fine has to be paid.	1

APPENDIX 5.1 ACW SCORES FOR ALL CRITERIA AND THE AVERAGE

Dimension	Criterion	Gen.Pr.	EV	Progr.	EP	Permit	AVERAGE
<i>Variety</i>	Variety of problem frames	1	1	0	1	1	0.80
	Multi-actor, multi-level, multi-sector	1	2	1	1	1	1.20
	Diversity of solutions	n/a	n/a	0	2	1	1.00
	Redundancy (duplication)	2	n/a	2	n/a	0	1.33
<i>Learning capacity</i>	Single loop learning	n/a	n/a	0	0	0	0.00
	Double loop learning	n/a	-1	-1	n/a	n/a	-1.00
	Discuss doubts	n/a	0	1	1	1	0.75
	Institutional memory	n/a	n/a	2	2	n/a	2.00
<i>Autonomy</i>	Continuous access to information	n/a	1	1	1	2	1.25
	Flexibility accommodating rules	1	n/a	2	2	2	1.75
	Relational rules	1	n/a	n/a	0	n/a	0.50
	Navigability	n/a	1	1	2	2	1.50
<i>Leadership</i>	Visionary	n/a	2	1	0	n/a	1.00
<i>Resources</i>	Authority	2	2	2	2	2	2.00
	Human resources	n/a	n/a	n/a	n/a	1	1.00
	Financial resources	n/a	n/a	n/a	n/a	1	1.00
<i>Fair governance</i>	Legitimacy	2	n/a	n/a	n/a	n/a	2.00
	Equity	n/a	0	1	n/a	0	0.33
	Responsiveness	1	2	2	2	2	1.80
	Accountability	1	1	2	2	1	1.40
	Average:	1.33	1.00	1.06	1.29	1.13	1.08