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The benefits of self-governance for nature conservation: a study on active citizenship in the Netherlands

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Abstract
An increased involvement of citizens in the management of European green spaces raises questions about its contributions to nature conservation. In this research, we study the effects of different types of active citizenship in green space. Combining qualitative and quantitative methods, we look at the *benefits* of 50 *green self-governance practices* in which citizens aim to realize, manage or protect green space in the Netherlands. While most of these practices contribute to nature conservation (80%) and/or the conservation of cultural landscapes (50%), our analysis shows that the benefits of green self-governance are much broader. This includes so called 'co-benefits', social, cultural and economic benefits such as the use function of green for human activity (78%), environmental education (88%) and social cohesion (50%).

The benefits and co-benefits of green self-governance strongly depend on the type of practice. Using a typology of green self-governance, we show that a majority of practices focuses on direct benefits to nature conservation through hands-on activities and/or political actions. However, we also show that this focus is regularly combined with efforts to realize co-benefits. Practices with an explicit focus on co-benefits often also produce benefits - and vice-versa. In this way, co-benefits can provide a first step towards the realization of more direct benefits to nature conservation. Even so, there are also tensions between benefits and co-benefits, for example when an increase of recreation negatively affects biodiversity values or when 'wild' nature is being replaced by a cultivated garden. Relating to co-benefits can be an effective strategy for governments or environmental NGO's, but we have to be aware that the benefits generated by green self-governance are generally of a much smaller scale than those realized by 'traditional' managers of green space such as authorities.

Keywords
Nature conservation, governance, biodiversity, active citizenship, co-benefits, self-governance

Introduction

Green self-governance and nature conservation
While in most EU-countries the management and protection of green space traditionally was a task of authorities, private landowners and large environmental NGOs, recent years show an increased involvement of citizens and local NGOs (Rosol, 2010; Van der Jagt, Elands, Ambrose-Oji, Gerőházi, & Steen Møller, 2016). This trend towards *active citizenship* results in a more important and more autonomous role for citizens in the management and protection of nature and biodiversity values (Paloniemi et al., 2015). This is reflected in forms of co-governance where citizens and authorities work together as equal partners (Olsson, Folke, & Berkes, 2004) as well as in the manifestation of many bottom-up initiatives with varying degrees of autonomy for citizens (Van der Jagt et al., 2016).

Research also highlights the need for authorities to adapt their green space governance approach from delivering services towards facilitating and regulating delivery by others (Rosol, 2010). Authorities increasingly see the involvement of stakeholders as important for sustainable and legitimate governance of green spaces (Suškevičs, Tillemann, & Külvik, 2013). Declining management budgets and encroachment have put pressure on the quantity and quality of many green areas, which has spurred an

interest in the potential role of citizens in managing green space (Perkins, 2010). This shift in governance might have important implications for the protection of nature, as the accomplishment of policy objectives is now also dependant on the commitment and capabilities of citizens involved in governance and management of green spaces.

In this context, it is relevant to discuss the effects of active citizenship in the governance and management of green space. This is particularly relevant for those forms of active citizenship that operate largely autonomously from governments. These bottom-up initiatives are not based on government aims or interventions, but inspired by the motivations of people and communities (Van Dam, 2016). We refer to this as *green self-governance,* forms of governance where active citizens play a major role in realizing, protecting and/or managing public green space and do so with some degree of autonomy. Based on fieldwork in the Netherlands, we discuss the effects and implications of green self-governance in the management and conservation of nature, biodiversity, landscape and urban green, which we collectively define as *green spaces*. This is a deliberately broad definition of 'green', which recognizes that there are many different interactions between nature and culture as well as many different views of what nature is (Elands & Van Koppen, 2012). With this, we focus on large-scale protected reserves as well as small patches of urban green, as long as these spaces are of interest for self-governing citizens. With our focus on self-governance, we explicitly do not focus on traditional forms of volunteering and participation where citizens do not set their own objectives.

The effects of green self-governance

Green spaces provide many environmental and social services (Lovell & Taylor, 2013). Even so, recent decades have seen a worldwide decline in biodiversity values and the ecosystem services provided by green (Torkar & McGregor, 2012). Following current shifts in green space governance, it is an important question what the effects of green self-governance are in this context. In other words: what do the activities of European active citizens in the management and conservation of green space mean for nature conservation and the ecosystem services associated with green space?

Existing research on the effects of self-governance is rather scattered. While it is highlighted that green self-governance can potentially contribute towards a diversity of ecological, social, and economic values (reference removed for anonymous review), there is often a lack of evidence on the actual effects that can be attributed to the involvement of citizens in green space governance (Fors, Molin, Murphy, & Konijnendijk van den Bosch, 2015; Lawrence & Ambrose-Oji, 2015). The few studies that focus on effects are generally based on a limited number of cases. A notable exception to this is a recent study by Dennis and James (2016), who highlight a positive correlation between the involvement of citizens in urban green space management and urban biodiversity values on the basis of a study of 10 cases.

Effects can be understood as intended or unintended changes that result directly or indirectly from an intervention (OECD, 2002). In ecological literature, the term *benefits* is popular to discuss positive changes resulting from interventions (e.g. Garaita & Arizaga, 2015). This term is generally used to discuss physical effects realized in the natural environment: increase in biodiversity values, conservation of a landscape, etc. However, green self-governance can also have social, cultural and economic effects related to e.g. learning and education (Bendt, Barthel, & Colding, 2013); social cohesion and strengthening of social networks (Krasny, Russ, Tidball, & Elmqvist, 2014); and recreation and leisure activities (ibid.). These so-called *'co-benefits'* (Bain et al., 2016; Raymond et al., 2017) are often an important motivation for citizens to act for the benefit of the environment (Bain et al., 2016; Van der Jagt et al., 2016). Also considering that authorities increasingly need to balance conservation objectives with economic and social interests (Beunen & de Vries, 2011), we include the co-benefits of green self-governance in our analysis of effects.

In this paper, we focus on what is often called the *outcomes* of green self-governance. For OECD (2002), outcomes are seen as observable or measurable changes that occur over the short and medium-terms. These outcomes are consequences of the activities that are undertaken in green self-governance activities (Howe & Milner-Gulland, 2012; Lawrence & Ambrose-Oji, 2015). As we will explain in the methodology section, we consider the study of long-term impacts beyond the scope of this study.

Diversity in practices, diversity in effects

Individual initiatives of green self-governance can be considered as specific (reference removed for anonymous review). Through engaging in such practices, people interact with the material world (Orlikowski, 2007). A practice consists of an organized set of activities (Schatzki, 2012) that gain meaning though associated discourses (Arts, Behagel, Bommel, Koning, & Turnhout, 2013). A practice is performed towards an end (Schatzki, 2010) - people want to realize certain *effects* through engaging in practices, as highlighted through the objectives which they formulate (reference removed for anonymous review).

Green self-governance practices can be very diverse, varying from e.g. citizens maintaining a neighbourhood garden; citizens protesting against the development of infrastructure in green space;

citizens creating nesting spaces for birds in the city; to the development of an ecological corridor by citizens (reference removed for anonymous review). These effects of green self-governance are therefore very much context dependent and will differ for different types of green self-governance practices. Consequently, to understand actual effects, we need to distinguish between different types of green self-governance. To do so, we will develop a typology of green self-governance practices in this paper.

Research questions
We can conclude from the above that it is important to understand both the nature and the diversity of effects created by green self-governance practices, as these practices can influence the conservation of nature and landscape as well as produce or influence social, cultural and economic values. When we discuss the potential of green self-governance to contribute towards benefits and co-benefits, it is also relevant to study to what extent these practices are successful in accomplishing their objectives. For these purposes, we have formulated the following research questions:

- What are the effects of green self-governance practices in terms of benefits and co-benefits?
- How do the objectives of green self-governance practices relate to the actual effects?
- What effects are produced by different ideal types of green self-governance?

Methods

Analytical framework for studying practices
As we aim at analysing both the effects and nature of diverse green self-governance practices, our analytical framework needs to specify these concepts. It has been stressed that one needs to understand practices through engaging with them in the field (Schmidt, 2017). We therefore do not ex-ante delineate the boundaries of green self-governance practices, but rather look at specific elements of these practices in order to collect relevant data. As practices can be compared on different elements (Shove, Pantzar, & Watson, 2012), this makes it possible to comparatively analyse green self-governance practices on relevant aspects which allows us to create a typology.

Inspired by practice theory (Schatzki, 2012) and the Policy Arrangement Approach (PAA; Arts & Leroy, 2006), we use the dimensions *activities*, *discourse*, *actors*, *rules* and *resources* to scrutinize relevant elements of *green self-governance practices*. The PAA allows us to study the contents and organization of practices, while practice theory lets us scrutinize human activity (reference removed for anonymous review). With our study of *activities,* we scrutinize the actions that practitioners employ in order to realize their objectives. Our study of *discourse* focuses on the vocabulary that is part of a practice, including the objectives of practitioners (Buizer, 2008). With the *actor*-dimension, we study the role of individuals and organizations involved in green self-governance practices (Arts & Leroy, 2006). Our study of *rules* focuses on the possibilities and barriers for actors to act (Arts & Leroy, 2006). Important rules are the Natura 2000 and NNN[1] networks. Finally, *resources* encompass attributes, skills, financial- and material means or tools that actors can mobilize (Arts and Leroy, 2006).

Data collection and analysis of effects
We have employed a layered approach to data collection and analysis, consisting of a broad inventory followed by an in-depth analysis of a stratified subsample. We started with a broad inventory across the Netherlands in order to collect a large number of green self-governance practices (n=264). These practices were collected via literature research, contacts with experts in the field, a web search and a call on social media. In a prior publication (reference removed for anonymous review), we used a combination of qualitative and quantitative methods to describe and comparatively analyse these 264 practices with a focus on the above analytical dimensions. In this paper, we expand this analysis by presenting a typology of green self-governance practices. This typology includes 9 main forms of green self-governance and was developed in an iterative process in close cooperation with an advisory board of experts and practitioners in Dutch nature conservation and governance.

Next, for our research into effects, we deepened our study with a detailed qualitative analysis of a subsample of the inventory (n=50). These 50 practices were selected via a stratified sample on basis of our typology with the explicit aim to include a large diversity of practices. For each ideal type which we distinguish, at least 4 practices have been included in this study. These practices were selected half randomly (drawn without referring to the typology) and half non-randomly (purposively selected to fit specific ideal types) to make sure that sufficient practices of each type were included, but to prevent a selection fully biased by the typology. The selected practices were included in a large database. First, all data that could be collected through a web search and analysis of relevant documents was coded in this database according to our analytical framework. As a second step, we conducted a telephone interview with a person involved in the self-governance practice.

[1] The Dutch network of protected nature reserves

Contact for these interviews was generally established via email or telephone, depending on available contact information. The telephone interviews generally lasted between 25 and 40 minutes and played an important role in collecting additional information. Questionnaires for these interviews were tailor-made for each specific practice in order to fill the knowledge gaps in priorly collected data. However, since all questionnaires were constructed on basis of our analytical framework, they were largely similar. An important part of each interview was also an extensive discussion of the effects of the specific practice. In order to gain a more critical insight into these effects, we have discussed with respondents how the situation was before the practice had been established and what has changed over time as a result of their work. In this way, we could get a better insight into the nature of effects and make an estimation of the relative magnitude of effects, based on a comparison between different practices. Comparing the objectives with these effects also allowed us to estimate the extent to which aims have been realized.

Like Lawrence and Ambrose-Oji (2015), we will primarily focus on an analysis of outcomes when discussing the effects of green self-governance. Considering that a large part of this analysis is based on interviewing, the effects which we discuss are physical and social outcomes as they are *experienced* by respondents – they have usually not been monitored over time for practical reasons, although citizens sometimes collected data on e.g. bird diversity or visitor numbers. As our discussion of effects is mostly based on perceptions of stakeholders, we understand these effects to be *perceived effects* (see also Carrus et al., 2015). Although our data could eventually provide a starting point for studying long-term impacts, we therefore do not consider it feasible to study trends and effects that manifest over the course of decades within our methodology.

Results

The effects of green self-governance
Respondents across the practices which we investigated have mentioned a large number of benefits and co-benefits. Below, we will elaborate on the main effects and provide illustrations from our analysis.

Nature protection and biodiversity values
A large majority of green self-governance practices (80%) contributes towards an increase in green space quality and quantity or towards protecting existing green against threats. While there are a few practices in which a negative impact on biodiversity values is suspected (e.g. by increasing recreation or cultivation of 'wild' nature), green self-governance practices are largely perceived as realizing positive effects for the conservation of nature, for biodiversity and for the protection of certain species. Even so, activities that are beneficial to a certain species will have a negative impact on others, and this does not mean that 80% of practices contribute towards 'green' policy objectives.

We distinguish between the following 3 types of effects:

- *The development of new green space:* examples of this include the creation of a 7 ha ecological wetland corridor on former agricultural grassland. A small example includes the creation of a vegetable garden on a formerly paved square.

- *Improvement of the ecological quality of existing green:* in one practice, citizens changed a 1.5 ha grassland into a diverse biotope with pools and small landscape-elements, attracting new species and increasing biodiversity.

- *Protection of green against external threats:* in one practice, citizens won a court case preventing the development of a sea-terminal on a beach bordering a Natura 2000 area. Other examples include successful protection against development of housing, infrastructure or industry.

Protection of cultural landscapes
Many practices in rural areas realize benefits for the conservation and restoration of cultural landscapes such as grasslands, heathlands and meadows, as well as for humanmade landscape elements such as hedges, pollarding willows and ditches. This produces positive environmental outcomes but can also incur co-benefits in terms of restoring or conserving (local) cultural history. These effects are seen in 50% of green self-governance practices, generally not in urban contexts. In rural areas, they are usually combined with biodiversity-related benefits, highlighting that a combined focus on biodiversity values and conservation of the cultural landscape can lead to mutual benefits in the rural landscape. Again, this is notwithstanding possible tensions and negative impacts that might become visible in some instances. We distinguish between the following 2 types of effects:

- *Conservation of the cultural landscape:* in one practice, citizens bought and restored a historical meadow of 6.5 hectare with wet grasslands, reed, hedges and fruit trees. In another, citizens restored the historical, small-scale landscape of the middle ages in 2 areas totalling 13 hectares.

- *Conservation of humanmade landscape elements:* an example of this is the creation and restoration of hedges and wooded banks in one practice. In another practice, volunteers contributed to the conservation of dikes and local tree varieties.

Use of green

This category of effects encompasses co-benefits related to the use function of green for people. Such benefits are identified in 78% of green self-governance practices, highlighting that green self-governance can also realize additional values for recreation and amenity. These effects are usually combined with a realization of benefits, although the nature of 'use effects', as described below, makes it safe to assume that these are not always mutually reinforcing each other. We distinguish three sorts of effects:

- *Accessibility of green:* in one practice, a previously closed area of 6.5 ha was opened up for the public when citizens created a hiking path through the area, attracting many visitors.

- *Facilities for recreation and activities*: in one practice, 'natural' playground equipment was installed so that children could play in a 1 ha forest-area. In another practice, benches where placed for recreants to rest.

- *Improving amenity of the direct living environment:* in one practice, citizens took over the management of a 0,1 ha green space from the municipality. According to involved citizens, their living surroundings now look better.

Environmental awareness and mobilization

Co-benefits related to environmental awareness and mobilization are mentioned in 88% of green self-governance practices. Many practices actively involve people in green space-related activities and bring people into contact with their green environment. While the actual effects of e.g. educational courses on the environmental awareness of children are sometimes difficult to assess, this indicates that many respondents perceive green self-governance as an engine for developing environmental awareness and for spreading knowledge about the green environment. We distinguish three sorts of effects on this:

- *Interest and appreciation for the green environment:* a respondent in one practice where volunteers maintain a 8 ha wildlife garden tells that people who visited the area 20 years ago now visit it with their own children.

- *The development of knowledge and skills:* in one practice, environmental education was provided to almost 3000 children in a single year. With this, it is considered likely that there is a contribution to environmental knowledge in children.

- *Mobilization and activation:* in one practice, the initiator has motivated 7 other families in his neighbourhood to become active in the management of local green space.

Social cohesion

Positive effects related to social cohesion are mentioned in 50% of green self-governance practices, more often in an urban environment. One respondent explained that this was a very logical effect, as through his engagement in green self-governance he came into contact with different people. When social cohesion is mentioned as an effect, the view is generally quite positive. Even so, it is not unimaginable that there might also be exclusionary mechanisms between 'insiders' and 'outsiders' or a rise in conflict when active citizens come into conflict with other groups. While this is rarely mentioned, we found examples of both in 1 practice. We distinguish between the following 3 types of effects:

- *Social contacts and relations:* in one practice, an urban green space created by citizens has become a meeting place for people in the neighbourhood. In another practice, a respondent told that the involved citizens have become good friends over the years.

- *Social activation:* in one practice, a lot of volunteers are people who have disabilities or psychological problems. Through working in green space, these people become more socially active.

- *Integration between different social groups:* in one practice citizens created an urban green space where, through volunteering, native citizens and immigrants come into contact with one another.

Other co-benefits

While less frequently mentioned, there are also other co-benefits that are linked to green self-governance. While not of application to most green self-governance practices, these co-benefits can be important effects of specific practices.

- *Food production:* the production of food, fruits, nuts, herbs and vegetables via practices of green self-governance is visible in a number of practices. For example, citizens have created a garden which produces fruits, nuts and vegetables in one practice.

- *Employment and income:* significant effects related to employment and income are rare in our analysis. An example of this is that in one practice, a part-time coordinator has been employed to supervise activities.

- *Health and wellbeing:* these effects are rarely mentioned. While they might exist, they are not recognized by most respondents. In one practice, a respondent notes the positive health-effects of green space and hypothesizes his own contribution to this.

Success and failure
In Table 1, we compare the objectives that were formulated in the different practices with the effects that have been identified. This table summarizes our analysis on the effects and objectives of green self-governance. This analysis shows that in most practices, at least some level of success has been achieved in realizing intended outcomes. To illustrate: 74% of all practices has formulated objectives related to nature protection and biodiversity values. In 66% of all practices, (some of) these intended effects have been realized, while 8% is unsuccessful in this. On top of the 66%, 14% of all practices did not explicitly aim for effects on nature protection and biodiversity values, but realized outcomes anyway. This adds up to a total of 80% of all practices realizing effects of this type.

A remarkable finding from this analysis is thus that many practices also realize *unintended effects.* We see such unintended effects for almost all the categories which we distinguish, most prominently for the co-benefits. While the objectives still provide an indication of possible effects, especially the co-benefits are realized more frequently than one would perhaps expect on basis of objectives. In this, there appears to be a large potential for green self-governance practices to realize broader effects than intended, with different categories of effects potentially reinforcing each other. Even so, we have to be aware that benefits and co-benefits do not always align with each other, as highlighted in our general analysis of effects above.

While Table 1 shows that many objectives formulated in green self-governance practices have been realized with some level of success, the above presentation deserves a nuanced view. In this table, 'success' means that a practice is perceived as having contributed towards an objective, but not necessarily that an objective has been fully realized. A detailed analysis of the causes for and the extent of success and failure would require in-depth case study research beyond the scope of this study. Even so, while the extent of success and failure is often multi-interpretable, table 1 shows that a significant difference between the 'original' and 'current' situation is identified for almost all practices. With this, our analysis does highlight a large potential for green self-governance to realize at least some of the intended outcomes.

The effects of different types of green self-governance
Based on the results of our inventory, we have developed a typology of green self-governance practices. The activities are important means through which effects are realized. We therefore first distinguish between practices mostly focusing on physical activities (management and maintenance, planting/realizing new green) and those mainly employing political activities (protest, deliberation/cooperation). Secondly, within practices focused on physical activities, we make a distinction between practices through which citizens mainly aim to realize benefits and those in which the focus is primarily on the realization of co-benefits. Inspired by Elands and Van Koppen (2012), we see three clusters of green self-governance practices:

(1) *green politics*: practices in this cluster are primarily focused on benefits through political activities. Via these activities, they aim to influence policy and management in order to realize their objectives.

(2) *nature management and development*: practices in this cluster are primarily focused on benefits through hands on physical activities in order to manage and protect green.

(3) *use of green*: practices in this cluster are primarily focused on co-benefits through hands on physical activities. While there is management and improvement of green space, this is often with a lesser focus on biodiversity values and with more emphasis on the social.

Within each of these clusters, we distinguish a number of ideal types that show coherence on certain characteristics. They are empirically recognizable, but no two practices are exactly the same as each has some unique characteristics. We will deal with each cluster subsequently. Appendix A includes the most important quantitative data on these types while Appendix B includes a more elaborate discussion of ideal types with concrete examples of practices and their effects.

(1) **Green politics**: Within this cluster, we distinguish two ideal types. *Political practices* are primarily focused on political activities in order to influence policy and management of green space. The effects which they realize depend heavily on the success or failure of political activities. *Expanded political practices* are also focused on policy-related objectives, but in these practices physical activities are strategically employed to support political activities. The potentially most important effects of these practices are usually outcomes of political activities, but physical activities might also realize small-scale effects.

(2) **Nature management and development**: We distinguish four ideal types within this cluster. Practices of *nature management* are primarily focused on management and small scale reshaping of existing green. These practices often realize important benefits related to conservation of green space. Practices of *nature development* are specifically focused on creating new green space ('green for grey'). Significant benefits can be expected whenever the groups involved in these practices are successful in accomplishing their objectives. *Species protection* concerns practices with a specific focus on management on the behalf of certain (families of) species of plants or animals. These practices often positively contribute to the populations of said species. Practices of *green with societal theme* border on the 'use of green' cluster and combine objectives on benefits and co-benefits. These practices often contribute to benefits as well as co-benefits such as education, wellbeing and recreation.

(3) **Use of green**: We distinguish two ideal types within this cluster. *Neighbourhood green* concerns small-scale practices in the living surroundings of those involved, often combining objectives on greening this environment with an important focus on co-benefits. These practices often contribute to small scale local greening, recreation, education, social cohesion and food production. The objectives of practices of *experiencing green* mostly focus on recreation and improving environmental awareness. These practices often contribute to the accessibility of green space and to environmental education. The benefits of these practices are small, if at all positive.

Finally, we distinguish one ideal type that, to some extent, spans all three clusters: a *broad* type. These are large, often long-existing practices that combine many activities and objectives. The actors involved in these practices are often subdivided into several working groups that focus on specific tasks. The effects which these groups realize are often perceived as significant and can be very diverse.

In Table 2, we summarize our analysis of different types of green self-governance for an estimation of the relative scope and importance of effects of green self-governance practices. With this, we highlight the most important benefits and co-benefits for each type of green self-governance, but also highlight the relevance of different ideal types for these different effects. Our assessment of the magnitude of these effects is based on an interpretation of respondents' perceptions as well as on our own comparison between the 'starting' and actual situation across types. White indicates that effects of this nature are generally not realized or only to a small extent, while black highlights that effects are usually realized and relatively large.

Confirming our earlier analysis, table 2 very much highlights that the effects of different types of green self-governance can be very different. Types within the cluster 'nature management and development' and *broad* practices generally realize large effects on nature conservation and biodiversity values, while especially the types *nature management* and *broad* are important for cultural landscapes. Depending on their success, *Political* and *broadened political* practices can realize important benefits, especially in the protection of against external threats. Co-benefits related to the use of green are visible across all clusters, but most prominent for *neighbourhood green, experiencing green, green with societal theme* and *nature development.* Effects on environmental awareness and mobilization span almost all types, but especially relevant in *green with societal theme, experiencing green, political, broadened political* and *broad types.* Social cohesion effects are strongest for *neighbourhood green* and *green with societal theme.*

Discussion

The effects of green self-governance

This study shows that green self-governance practices realize a wide range of effects. Even so, as the examples in our analysis and Appendix B show, the size of most practices is rather limited they generally affect up to a couple of hectares of land or provide co-benefits to up to several hundreds of people (reference removed for anonymous review). The large number of green self-governance practices which we have found indicates that green self-governance can provide additional value to traditional protection efforts by governments and NGOs. In some findings, our study confirms results from previous case studies, but now based on a more extensive sample. In other findings, we expand upon existing knowledge and provide much needed data for a more clear overview of the effects of self-governance in nature conservation.

Our study of effects highlights that green self-governance indeed contributes to the conservation, protection and management of green space in The Netherlands. While other research has also demonstrated that active citizens can positively contribute towards nature conservation and biodiversity values (Bendt et al., 2013; Dennis & James, 2016; Lawrence & Ambrose-Oji, 2015), we show this for a large majority of green self-governance practices. We also highlight that many rural practices realize benefits on the conservation and restoration of cultural landscapes. Compared to more 'generic' management, citizens might attribute more value to the specific cultural meaning of places, trees and landscape elements, contributing to a 'localisation' of green space management (Elands & Van Koppen, 2012). In addition, many green self-governance practices focus on urban green spaces, where existing policy often has limited attention for biodiversity. With this, green self-governance is also positive to diversify management, resulting in more heterogeneous green spaces. Through adding additional actors and management practices, such a diversification contributes to the long term resilience of socio-ecological systems (reference removed for anonymous review).

Green self-governance also contributes to the accessibility of green, to recreation and to improving the amenity of people's living environment. While some studies highlight that active citizenship can lead to an increase in usage of green spaces (see Fors et al., 2015, p.10), these studies focus mostly on recreation and/or place attachment. We show that the 'use' effects of green self-governance are broader and that these effects can be seen in most practices. Important in this context is also the production of food. As highlighted in other studies, there is an increasing amount of urban agriculture-practices involving citizens (Van der Jagt et al., 2017). We see a number of such practices in our study, but also food production by citizens outside of city limits – often via fruit trees.

In almost 90% of practices, respondents report effects on stimulating environmental awareness and involvement. The link between green self-governance and environmental learning has been made before (Bendt et al., 2013). As we highlight, this link is established in a lot of practices. In addition, our findings on social cohesion correspond with other research in urban studies that highlights a correlation between active citizenship and an increase in social cohesion (Veen, 2015). Our study confirms this outcome, but also expands this result to more rural contexts.

A cautious optimism

The effects of green self-governance will currently be of a different order of magnitude than those realized through management by large NGOs and authorities, who manage over 700.000 hectares of nature in the Netherlands. While the above paragraph might sound very positive, we should be careful not to be too optimistic. Not only are most practices of green self-governance small scale, the effects might also not be positive for everyone. An increase in recreational opportunities might be beneficial for citizens and entrepreneurs, but not necessarily contribute towards higher biodiversity values. People neighbouring a green space might also not be happy when more people visit it or when their view changes, even if biodiversity values would increase. Contradicting objectives between citizens and authorities might also lead to conflict (Eizaguirre, Pradel, Terrones, Martinez-Celorrio, & García, 2012). And even when the activities of citizens might be in the interest of biodiversity values, they might conflict with e.g. business opportunities or infrastructure development.

While citizens can realize important effects, the trend towards active citizenship is often linked to a decreasing role for authorities in management and funding (Perkins, 2010; Rosol, 2010). On basis of our research, we cannot assess how this increasing role of citizens and decreasing role of authorities play out vis-à-vis one another for the benefit of nature conservation. Whether the current shift towards active citizenship is actually beneficial for the management and protection of green space in Europe as compared to a situation in which authorities would retain their responsibilities is therefore still up for debate. After all, we should not forget that local, regional, national and international authorities retain a central role in the management of green space and protection of nature (reference removed for anonymous review; Selin & Van Deveer, 2015). While the involvement of citizens in green space governance has been growing over years, authorities still hold formal responsibilities for safeguarding policy objectives, e.g. related to Natura 2000 (Beunen & de Vries, 2011). While almost all practices of green self-governance in our study realize positive effects, we emphasize that 'traditional' forms of management are still of vital importance in European nature conservation.

Co-benefits as a stepping stone towards benefits

Our analysis highlights that benefits and co-benefits of green self-governance are often realized together. As Bain et al. (2016) highlight, co-benefits can motivate people to act for the benefit of the environment. This is very clear in many practices which we studied: objectives related to nature protection and cultural landscapes are often combined with objectives related to environmental education, social cohesion and other co-benefits. For citizens not interested in benefits, these co-benefits can still provide an important motivation to engage in certain activities which benefit the environment (Bain et al., 2016). In this, co-benefits can act as a first step towards the realization of benefits. Co-benefits can also have a positive effect on nature conservation in an indirect way. By facilitating or stimulating human-nature interactions, green self-governance may contribute to support and willingness to pay for green space protection in the

long term (see Soga & Gaston, 2016). Conversely, many co-benefits are realized as unintended effects in line with efforts to realize benefits. Thus, actions that citizens take for the environment can also produce important social, cultural and economic values.

A simultaneous focus on both co-benefits and benefits can be beneficial for better understanding the nature of effects as well as in highlighting trade-offs and tensions. After all, while benefits and co-benefits go together in most practices, this is not always the case. While our study lacks the in-depth focus of case study research, a number of tensions becomes visible in our analysis, e.g. between benefits related biodiversity values and co-benefits related to the use of green. All of this underpins a need to look beyond the direct environmental effects of green self-governance practices, but to rather assess these environmental effects in relation to broader social, cultural and economic systems (Raymond et al., 2017).

Managing the diversity of effects and practices
Our study highlights that practices of green self-governance are diverse. This makes it difficult to address all practices of green self-governance with generic policy. Even so, the typology which we present in this paper provides an important tool to gain a better insight into the possible effects of various types of green self-governance practices. This can help to assess practices of green self-governance on their possible benefits and co-benefits. Most practices in the 'nature management and development' cluster, as well as 'broad' practices, have a potential to realize significant benefits for protection of biodiversity and cultural landscapes. When authorities or environmental NGOs are looking for cooperation in the management or protection of green space, these groups are often obvious partners – although they will not necessarily have similar objectives. Meanwhile, initiatives in the 'use of green' cluster contribute relatively little to nature protection, but can potentially play an important role in realizing co-benefits.

The management implications of practices in the 'green politics cluster' are more tricky: while they have a potential to realize large benefits, this is not at all a given as the effects which they realize are often indirect effects deriving from the mobilization of other actors. Their objectives might contradict those of authorities and highlight tensions between nature conservation and other interests, like infrastructure, housing or industry. While authorities might prefer to deal with practices of green self-governance that align with their objectives and contribute to existing policy (Van Dam, Duineveld, & During, 2015), those groups fulfil an important political and democratic role in nature management by critically reflecting on policy and management and highlighting important societal issues in nature conservation and spatial planning (reference removed for anonymous review).

Reflection and directions for future research
So far, research into the effects of green self-governance has been dominated by case study research. In this context, our work provides an important step towards a more comprehensive overview of these effects, albeit on a somewhat more superficial level. Our study is lacking an explicit time dimension as a consequence of our scope and methodology. While a longitudinal analysis of effects is not yet feasible within our research methodology, the intention is to use our work as starting point for a monitoring over time by revisiting the studied practices. This can greatly contribute to a general insight in the long-term effects of green self-governance. In connection with this work, in-depth case study research still has a very important position for gaining a better understanding of certain effects and phenomena of interest.

Conclusions
Our research shows that many green self-governance practices realize a wide variety of effects. We have identified five types of effects that are most important: a contribution to nature conservation and biodiversity; the conservation of cultural landscapes; amenity and recreation; environmental education; and social cohesion. As many of these practices contribute to the management, protection and realization of green space, authorities and nature conservationists would do well to pay attention to the potential benefits offered by active citizenship. Even so, the effects of green self-governance practices are usually much broader. While co-benefits might not directly improve biodiversity values or natural values, there is often a close link between the realization of benefits and co-benefits in green self-governance practices. In addition, increased environmental awareness and use of natural areas could increase public support for governmental protection schemes. For governments or NGO's, this offers opportunities: relating to co-benefits as a way of motivating citizens can provide a stepping stone towards the realization of ecological benefits.

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Table 1: effects versus objectives of the 50 practices[2]

	% OBJECTIVES (N=50)	% failure (N=50)	% success (N=50)	% unintended effects (N=50)	**% EFFECTS (N=50)**
Nature protection and biodiversity values	**74**	*8*	*66*	*14*	**80**
Protection of cultural landscapes	**48**	8	40	10	**50**
Use of green	**62**	10	52	24	**78**
Environmental awareness and mobilization	**56**	2	54	34	**88**
Social cohesion	**20**	8	12	36	**50**

Table 2: effects of different types of green self-governance

	Nature protection and biodiversity values			*Cultural landscape*		*Use of green*			*Awareness & mobilization*			*Social cohesion*		
	DEV	IMP	PRO	LSC	ELE	ACC	REC	AME	INT	KNO	MOB	CON	ACT	INT
NATURE MANAGEMENT AND DEVELOPMENT														
Nature management														
Nature development														
Species protection														
Green with societal theme														
USE OF GREEN														
Neighbourhood green														
Experiencing green														
GREEN POLITICS														
Political[3]														
Broadened[3] political														
BROAD														
Broad														
White = no/little effects, grey = effects, black = strong effects														

Nature protection and biodiversity values *(80%):* DEV = development of new green; BIO = biodiversity and species protection; IMP = Improvement of the ecological quality of existing green; PRO = Protection of green against external threats. **Cultural landscape** *(50%):* LSC = Conservation of the cultural landscape; ELE = Conservation of humanmade landscape elements. **Use of green** *(78%):* ACC = Accessibility of green; REC = Facilities for recreation and activities; AME = Improving amenity of the direct living environment. **Environmental awareness and mobilization** *(88%):* INT = Interest and appreciation for the green environment; KNO = The development of knowledge and skills; MOB = Mobilization and activation. **Social cohesion** *(50%):* CON = Social contacts and relations; ACT = Social activation; INT = Integration between different social groups.

[2] *The column 'objectives' highlights that the percentages of practices in which there was an explicit aim for this type of effect. The column 'success' highlights the percentage of all practices that aimed to realize an effect of this type and succeeded to do so, while the column of failure highlights the percentage of all practices that did not realize an intended effect. The category unintended effects highlights practices that did not explicitly aim for a type of effect but did realize it. The total percentage for effects is thus the sum of all practices successfully aiming for the effect + the percentages of practices unintendedly realizing it.*

[3] Benefits strongly dependent on realization of objectives through political activities