Greening private gardens

A formative evaluation of the effectiveness of Steenbreek as a steering mechanism

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Number of words: 6932
Submission date: 28-06-2019

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Summary

Gardens with much vegetation create many benefits for people and the environment. Unfortunately, gardens in the Netherlands are increasingly paved. In order to stimulate citizens to green their gardens, different types of steering mechanisms are available. An interesting, relatively new mechanism is 'Steenbreek'. Stichting Steenbreek is a foundation that municipalities can subscribe to for support in organising different activities. Those activities are designed to enthuse citizens to replace paving in their gardens by plants. Little is known of the effectiveness of such mechanisms on private space.

The aim of this thesis is to evaluate the effectiveness of using Steenbreek as a steering mechanisms for greening gardens. Effectiveness is looked at from a goal-attainment perspective, focussing on the views of participating municipalities. The research question is: to what extent is participating in Steenbreek effective as a steering mechanism for municipalities to alter citizens' behaviour towards greening private gardens? This question is answered by researching the experiences of municipalities in the Netherlands through an online survey.

The initiative is evaluated as being overall partially effective as a steering mechanism. Municipalities are generally satisfied with the type of activities they can organise, but are sometimes finding it difficult to organise a sufficient amount of such activities. Behaviour change is happening in a positive manner, but is often viewed as being too slow. Some recommendations for tackling these issues are given, including increasing municipalities planning capacity, engaging local organisations more and taking the psychological factor of behaviour change into account.

1. Introduction

Life in urban areas is strongly influenced by the impacts of climate change. Climate issues that these areas often deal with are flooding, water scarcity, droughts and heat. The replacement of vegetation by artificial materials negatively affects temperature and precipitation issues in both cities and towns. Green infrastructure can mitigate such climate change issues. Green infrastructure comprises of any natural area in an urban area, including private gardens (European Environment Agency, 2012). People can also benefit directly from vegetation in their garden themselves. Green areas provide shade, privacy and noise reduction (Lin et. al, 2017). Living environments with many plants positively affect human health, biodiversity and uptake of water in soil. Since 70% of Dutch citizens own a garden and approximately 40% of urban space in Dutch cities is owned privately, there is a large potential for climate mitigation through private green infrastructure in the Netherlands (Hommes et al., 2016).

Unfortunately, there is a trend in Dutch neighbourhoods of replacing plants by paving (Linssen, 2011; Linssen & Hamstra, 2002; Linssen & Vermeire, 2008, as cited in Kullberg, 2016). Governmental actors can stimulate citizen action through different steering mechanisms; e.g. regulation, economic incentives and information (Mickwitz, 2003; Van der Steen et. al, 2016). In this spectrum of mechanisms voluntary approaches, where actors are stimulated but not obliged to act more sustainable, are on the rise (Alberini & Segerson, 2002). Non-governmental actors such as civil society organisations and citizens are becoming increasingly involved in the management of green infrastructure. This results in more participatory approaches. Different types of resulting participatory governance may eventually lead to more effective management of urban green spaces (Van der Jagt, 2016). Even though there is much scientific knowledge on the effectiveness of steering mechanisms on public space (Potz et. al., 2012), little is known on its effectiveness on private gardens (Hommes et. al, 2016).

A good example of a participatory and voluntary approach regarding private gardens is 'Steenbreek'. 'Operation Steenbreek' is a relatively new initiative, established in 2015 with the goal of enthusing everybody in the Netherlands to green their living environment. Since 2019, they have continued their mission as 'Stichting Steenbreek'. When a governmental organization -often a municipality- chooses to participate, they pay the foundation for guidance and participation in Steenbreek activities. These activities are in turn designed to stimulate citizen's enthusiasm by sharing knowledge about environmentally friendly gardening (Stichting Steenbreek, 2019a). Examples of such activities are giving out plants and Steenbreek pamphlets or doing a garden make-over. The initiative seems to be growing rapidly in popularity among Dutch municipalities, since 2015 almost a 130 municipalities have subscribed (Stichting Steenbreek, 2019b). It is also a relatively new initiative and there is not a lot of scientific literature about its workings. An evaluation can help in understanding a new environmental policy instrument like Steenbreek (Mickwitz, 2003). This scientific understanding can help in improving steering mechanisms like Steenbreek in the future, causing more citizens to receive the benefits of green gardens.

The aim of this thesis is to evaluate to what extent Steenbreek is effective for municipalities in changing citizen behaviour towards greening their gardens and to identify possible explanatory factors predicting its effectiveness. The research question guiding this thesis is: to what extent is participating in Steenbreek effective as a steering mechanism for municipalities to alter citizens' behaviour towards greening private gardens? The evaluation is formative, meaning that it aims to facilitate learning and improvement, providing insights for rethinking the way in which municipalities use mechanisms like Steenbreek. So, apart from determining the level of effectiveness, the thesis

looks at why this level of effectiveness applies and how it can be increased. The evaluation is performed ex nunc, meaning that it addresses an ongoing measure (Vedung, 2006).

The remainder of this thesis consists of five chapters. First, a chapter describing the theory used to answer the research question, resulting in a conceptual- and analytical framework. Then, a chapter explaining how data was collected and analysed. Third, a chapter follows describing the results. After describing the results, they are interpreted in the chapter 'Discussion'. In this chapter, also the implications and limitations of the thesis are expressed. Lastly, the research question is answered and a take-home message is provided in the conclusion. Added to this thesis are a reference list and an annex containing details of the used method.

2. Theory

Since there is not a lot of scientific literature on steering mechanisms for private space like Steenbreek, this thesis links to different existing bodies of literature. The used literature in this thesis mainly regards the effectiveness of policies and the characteristics of steering mechanisms in general. It is connected to fit the context of Steenbreek in order to be able to say something about mechanisms for private space.

2.1 Conceptual framework

This evaluation will be based on the concept of effectiveness. Effectiveness is one of the most mentioned criteria for performing evaluations in scientific literature (Huitema et. al, 2011). Since this thesis evaluates how effective Steenbreek is for municipalities, their intentions of using it should be taken into consideration. The most well-known way of looking at effectiveness is in terms of goal-attainment. Within the goal-attainment rationale, effectiveness is evaluated on whether the policy goals have been achieved and whether this can be attributed to the policy (Huitema et. al, 2011; Mickwitz, 2003). Vaz et al. (2001) describe effectiveness using objectives, outcomes and outputs as key concepts. Here, the objective is the goal of a measure, outputs are the tangible results of a measure and outcomes are the responses of target groups to these outputs. This way, measures can be evaluated by analysing to what extent the observed outputs and outcomes are in line with its objectives. Mickwitz (2003) and Lockwood (2010) describe these concepts is a similar way.

The concepts objective, output and outcome fit the context of Steenbreek. The objectives are the goals of the participating municipalities for using Steenbreek, the outputs are the Steenbreek activities that are being organised in the participating municipalities and the outcomes are the changes in citizens' behaviour towards greening their gardens in those municipalities. This leads to two types of measurable effectiveness; output- and outcome effectiveness. Output effectiveness can be defined as the extent to which the organised Steenbreek activities in a municipality meet the goals of that municipality in terms of activity organisation. Outcome effectiveness can be defined as the extent to which the change in citizens' behaviour towards greening their garden in a municipality meets the goals of that municipality in terms of behaviour change.
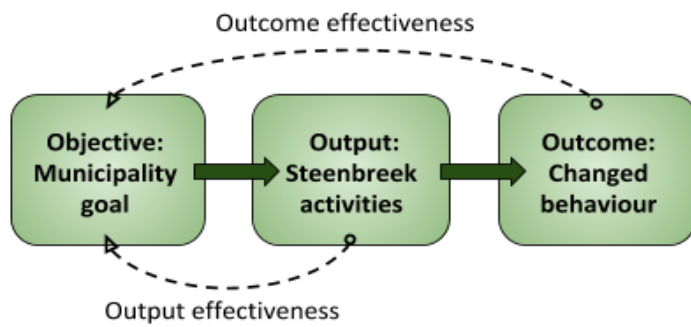
Figure 1: Conceptual framework

In Figure 1 the output effectiveness influences the outcome effectiveness. If the organised activities - which are meant to steer people's behaviour- are in line with the municipalities' aims, it would make sense that the behaviour change itself is more likely to meet the municipalities' aims as well. By investigating both types of effectiveness, the results of the evaluation can show where in the process effectiveness is being prohibited or sustained. This contributes to the evaluations formative aim of giving insights for possible improvement.

The discussed concepts relate to the effectiveness of the policy process itself. When looking at the relation between that process and the context in which it is implemented, Vaz et al. (2001) also discuss the concept of impact. Impacts are effects of the outcomes on the outside world, e.g. on human health or the environment. In the context of Steenbreek, these would be the effects of changed behaviour of people towards greening their garden on the environment. Examples of possible impacts are in line with the benefits discussed in the introduction, e.g. climate adaptation. In the scope and timeline of this thesis, it is not sensible to analyse this. It would however be helpful to take the concept into consideration when doing the evaluation in order to stay aware of the perceived long-term effects of greening gardens.

Since this evaluation uses the goal-attainment rationale of effectiveness, it is important to take into account some critical notes on this rationale. Mickwitz (2003) writes that using the idea of goal-attainment can cause evaluators to disregard unintended effects. He also recommends evaluators to take into account that observed effects might not always be due to the evaluated measure (Mickwitz, 2003). These critical notes are accounted for in the method, which is explained in further detail in the methods chapter.

2.2 Analytical framework
In order to operationalise the concepts of output- and outcome effectiveness, measurable indicators are used. Since the evaluation is formative, it would be helpful if the used indicators for effectiveness are not too broad. With specific indicators, it is easier to trace the eventual found level of effectiveness back to where strong and/or weak points of the objective to output to outcome process lie. Scerry and James (2010) argue that quantitative indicators should be combined more with qualitative ones when looking at sustainability initiatives.

In order to create specific indicators consisting of both quantitative and qualitative aspects, output- and outcome effectiveness can be divided each into one quantitative- and one qualitative indicator. The quantitative indicator of output effectiveness should address the quantity of activities. This indicator is named 'output amount' and refers to the number of organised Steenbreek activities. The qualitative indicator of output effectiveness should address the quality of activities. This indicator is named 'output type' and refers to the characteristics of the organised Steenbreek activities. Steenbreek activities in this thesis are defined as activities organised by municipalities using Steenbreek principles and their name. The quantitative indicator of outcome effectiveness

should quantify the behaviour change in citizens towards greening their garden. This indicator is named 'outcome pace' and refers to the speed at which citizens alter their behaviour. The qualitative indicator should address the quality of behaviour change. This indicator is named 'outcome way' and refers to the kind of behaviour change that is taking place with regards to greening gardens.

In the figures 2.1 and 2.2, each aspect of both output- and outcome effectiveness is defined by descriptions for respectively low, medium and high effectiveness. Since this thesis looks at goal-attainment effectiveness, the indicators relate all described aspects to the extent to which it meets the municipalities' goals for that aspect. An indicator for low effectiveness would be that the output and/or outcome aspect does not meet the objective at all. An indicator for medium effectiveness would be that the output and/or outcome aspect meets the objective partially. An indicator for high effectiveness would be that the output and/or outcome aspect largely meets the objective. As further explained in the methods section, a scale of 0-100 is used to determine the level of effectiveness.

Output effectiveness	Low effectiveness	Medium effectiveness	High effectiveness
Amount	The amount of Steenbreek activities organised does not meet the municipalities' goal.	The amount of Steenbreek activities organised partially meets the municipalities' goal.	The amount of Steenbreek activities organised largely meets the municipalities' goal.
Type	The types of Steenbreek activities organised do not meet the municipalities' goal.	The types of Steenbreek activities organised partially meet the municipalities' goal.	The types of Steenbreek activities organised largely meet the municipalities' goal.

Figure 2.1: Analytical framework output effectiveness.

Outcome effectiveness	Low effectiveness	Medium effectiveness	High effectiveness
Pace	Citizens' behaviour towards greening their garden is changing at a pace that does not meet the municipalities' goal.	Citizens' behaviour towards greening their garden is changing at a pace that partially meets the municipalities' goal.	Citizens' behaviour towards greening their garden is changing at a pace that largely meets the municipalities' goal.
Way	Citizens' behaviour towards greening their garden is changing in a way that does not meet the municipalities' goal.	Citizens' behaviour towards greening their garden is changing in a way that partially meets the municipalities' goal.	Citizens' behaviour towards greening their garden is changing in a way that largely meets the municipalities' goal.

Figure 2.2: Analytical framework outcome effectiveness

3. Methods

3.1 Data collection

In order to decide which indicators apply, municipalities were asked about their goals and experiences with regards to Steenbreek. This was done using an online survey send to them by email. This survey was made using the programme Survey Monkey. A disadvantage of online surveys is the risk of a low response rate (Bryman, 2016). In order to get enough data for analysis, the survey link was mailed to all relevant e-mail addresses that could be found on websites of participating municipalities. The survey itself was made in such a way that it did not consist of too many long or complex questions, since this might have negatively affected the response rate. Also, a reminder e-mail was sent to municipalities that had not responded a week prior to the survey closing. Instructions in the e-mail were made as clear as possible, since this can also help in getting more responses (Bryman, 2016). Surveys are low in cost, convenient for participants and can be distributed in large quantities at the same time. Keeping in mind the amount of participating municipalities and the scope and timeline of this thesis, surveys are a feasible way to collect relevant data. Surveys also eliminate the possibility for the interviewer to influence the answers through their characteristics or changes in the way questions are being asked (Bryman, 2016).

Of the 75 municipalities the survey was sent to, 26 responded. This indicates a response rate of approximately 35%. According to research by Nulty (2008), the average response rates for online survey are between 20% and 40%. Even though the response rate falls within this range, a higher response rate is preferred in order to eliminate so-called 'non-response' bias (Shih & Fan, 2008). However, if possible limitations of lower response rates are taken into account, a 35% response rate can be sufficient (Bryman, 2016). Possible limitations of this response rate are elaborated upon in the discussion chapter.

The survey started with three open questions about the name of the municipality, the length of participation and the overall goal(s) of the municipality for participating in Steenbreek. The reason for asking about participation time is that the municipalities that have only just started using the mechanism might not have had enough time to see any outcomes yet. Being aware of a short participation time can help analysing the given answers. The middle part of the survey contained questions regarding the indicators of outcome- and output effectiveness. They could be answered by the participant by means of a slide bar going from 0 to 100. These questions were followed up by asking for further explanation of the participant's choice. The survey ended with an open question on possible impacts on the environment that have been observed in the municipality. The English version of the survey is attached to this thesis in the annex.

The municipalities' answers on the slide bar questions helped to determine what indicators in the analytical framework fit the experiences of the municipalities the best. This led to a conclusion on the level of overall effectiveness. Apart from determining the level of effectiveness, this thesis aims to facilitate learning and improvement. The municipalities' answers on the follow-up questions helped in determining why Steenbreek has a respectively low, medium or high level of effectiveness. This combined with the answers on the question about possible impacts helped in creating a better understanding of the workings of initiatives like Steenbreek. That understanding resulted in recommendations for improving Steenbreek as a steering mechanism for greening private gardens. The research question was then answered by stating what level of effectiveness was found, why this is the case and how it can be improved.

The survey questions take into account some of the critical notes on the goal-attainment rationale by asking about unintended effects and possible factors causing the observed effects. By

asking how outputs and outcomes differed from the goal, some insight was gained into the unintended effects. By following up each question by asking why participating municipalities think certain outputs and outcomes happened or did not happen, some insight was also gained into other factors influencing those outputs and outcomes.

3.2 Data analysis

The slide bar answers, which resulted in quantitative data, were transferred from Survey Monkey to SPSS to carry out some basic statistics. These results can be seen in the form of box plots in the 'Results' chapter. The answers to the open and/or follow-up questions, which resulted in qualitative data, were analysed using coding in NVIVO to find explanatory factors for why respondents evaluated the effectiveness in a certain way. This helped to further deepen the understanding of the answers given on the multiple choice questions. The analysis of the qualitative data was done using both deductive and inductive analysis.

In inductive analysis codes are derived from the data, which helps in avoiding early interpretation. In deductive coding codes are retrieved from the theory and therefore known beforehand. Combinations of inductive and deductive approaches are also possible (Rivas, 2012). Different types of coding are; open-, axial- and selective coding. Open coding is an interpretive process in which the data is broken down into codes. In axial coding, these categories are related to each other to create relationships. Selective coding is a process in which all categories are related around one central core category (Corbin & Straus, 1990). The phases open- and axial coding were applied in this data analysis, as explained in the following section.

The first part of the coding process was deductive, since the data was broken down into categories based on the concepts from the conceptual framework and their aspects; output effectiveness, outcome effectiveness and impacts. These categories directly link to the analytical framework. After deductive coding helped in ordering the data, open inductive coding was used to form different codes within the main categories. These resulting codes were made using so called 'constant comparison' and memos (Corbin & Straus, 1990). If certain terms occurred often or seemed related to each other, they were grouped together. These codes were then related to each other using axial coding, meaning that relationships between relating codes were created. This helped in finding explanations as to why output- and outcome effectiveness were evaluated by the municipalities in the way they were. The central core category around which the codes were formed during the initial deductive coding is effectiveness, consisting of both output- and outcome effectiveness. Therefore, selective coding afterwards was not necessary anymore.

The method is reliable since sending this survey to participating municipalities and interpreting them through the analytical framework and described method can be repeated. The multiple choice questions and analytical framework prevented any interpretation to be based too much on a researchers own preconceived ideas. In terms of validity, the results on the effectiveness of Steenbreek can also be used in studying the workings of other likewise measures.

3.3 Ethics

When using surveys as a data collection method, it is important to take into account different ethical principles. Four main areas of ethical principles can be identified; harm to participants, lack of informed consent, invasion of privacy and deception (Diener & Crandall, 1978, as cited in Bryman, 2016). In this section, I will explain how the data collection and analysis process was organised in such a way that it took these ethical principles into account. The survey asked the participants to

report on their municipalities' progress of greening gardens. As a result, it is very unlikely that this caused them any physical and/or mental harm. In order to achieve informed consent and avoid deception, participants were provided with a short explanation of what the thesis entails and a question asking if they were willing to participate before the survey itself started. In order to avoid invasion of privacy, the participants were informed that their identity would be kept anonymous. The names of the municipalities are also not named in the thesis itself. The collected data has been stored on a laptop and will not be shared outside of the thesis. The eventual thesis will be sent to interested municipalities that participated in the research and the organisation of Stichting Steenbreek itself.

4. Results

In this chapter, the trends and patterns found in the analysis of the data are described. From this data, the level of goal-attainment effectiveness can be determined. The data will also help in finding explanatory factors for the municipalities choice in their evaluated level of effectiveness. In the discussion chapter, these findings will be interpreted further.

From the municipalities' answers regarding the overall goals of participation mostly increasing awareness was mentioned. As an outcome, municipalities often want their citizens to become aware that: 1) there are climate issues and 2) they can do something about it themselves, namely greening their garden. When this awareness eventually leads to the action of garden greening, the goal is that this action will have both environmental and social impacts. In terms of environmental benefits, predominantly biodiversity and water issues are mentioned by respondents. Social benefits are mentioned less often overall and mostly regard health and heat stress.

Figure 3 shows box plots regarding the evaluated levels of effectiveness. These box plots are based on the answers of municipalities on respectively question 4a, 5a, 6a and 7a of the survey. There the effectiveness is evaluated on a scale of 0 to 100. These scores can be translated into levels of effectiveness in the analytical framework by looking at both the mean and the placement of the boxes. Box plots divide all given scores into quartiles, represented in the plot by horizontal stripes. The second quartile is the most important here, since it lies exactly in the middle of all given values. The higher this middle horizontal stripe is in the plot, the more high scores have been given.
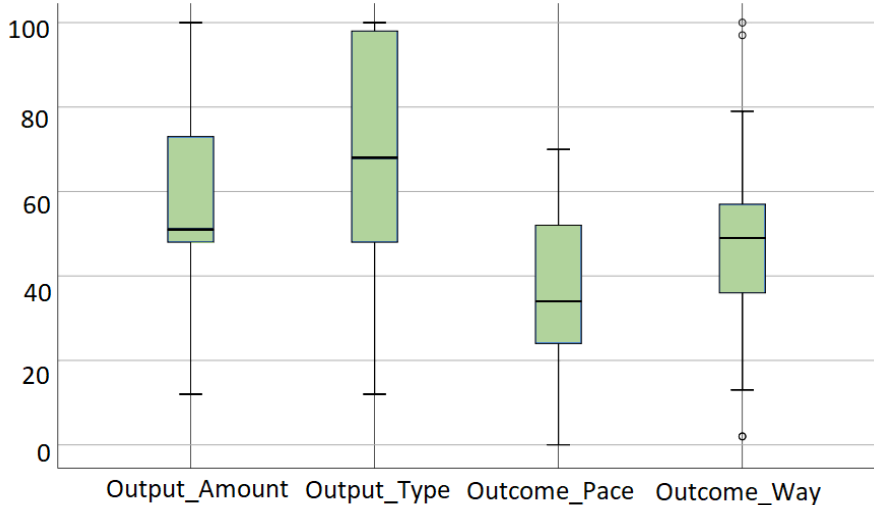

Figure 3: Box plots regarding the level of effectiveness as evaluated by municipalities.

The box of the amount of organised activities or 'Output_Amount' is positioned approximately in the middle of the scale, from the values 49 to 72. It was given an average score of 53. On a scale of 0 to 100, this indicates a medium level of effectiveness; the amount of Steenbreek activities organised partially meets the municipalities' goals. The box of the type of organised activities or 'Output_Type' is positioned quite high, from the values 47 to 98. It was given an average score of 69. On a scale of 0 to 100, this indicates a high level of effectiveness; the types of Steenbreek activities organised largely meet the municipalities' goals. The box of the pace in which citizens behaviour changes or 'Outcome_Pace' is positioned quite low on the scale, from the values 23 to 52. It was given an average score of 37. On a scale of 0 to 100, this indicates a low level of effectiveness; citizens behaviour towards greening their garden is changing at a pace that does not meet the municipalities' goal. The box of the way in which citizens behaviour is changing or 'Outcome-Way' is positioned approximately in the middle of the scale, between the values 36 to 57. It was given a mean score of 47. On a scale of 0 to 100, this indicates a medium level of effectiveness; citizens behaviour towards greening their garden is changing in a way that partially meets the municipalities' goal. In the following sections of this chapter, the found data for each aspect is discussed in more detail. This serves to explain the established level of effectiveness. In the last section, the municipalities responses relating to the impact of Steenbreek will be described.

4.1 Output effectiveness

4.1.1 Output amount

This section outlines the arguments provided for why output amount was rated to have medium effectiveness. Many respondents stated that they managed to organise multiple Steenbreek activities each year, but that the amount of organised activities was less than their goal. The main explanatory factors that could be found in the answers regard the nodes capacity, time and support.

A lack of capacity in the municipality is the most mentioned reason for the amount of Steenbreek activities not meeting their goal. In many municipalities, there are other issues taking up capacity. Steenbreek initiatives and ambitions are then not realised due to financial resources and manpower being used on other tasks. As one respondent put it; "the municipality lacks the capacity to roll out the campaign well''. Time is related to the issue of capacity since time spent on one task cannot be used on executing Steenbreek activities. Meanwhile, this factor also has a different interpretation. Some municipalities are still in the start-up phase of Steenbreek participation. They mention that it takes a while before activities start to actually take place, sometimes longer than they expected. When much time and energy is put into organizing many activities however, the activities start to take off and citizens become enthusiastic. Five respondents participated less than a year, six participated for one year, ten for two years and five for three years. There seemed to be no correlation between the way in which the municipalities evaluated the level of effectiveness and the participation time.

In terms of support from Stichting Steenbreek itself, there are two trends that emerge from the data. On the one hand, many respondents mention that they do not experience much support from the foundation when it comes to organising many activities. They often incorporate some Steenbreek elements in already existing activities. On the other hand, municipalities see that the publicity that comes with the term 'Steenbreek' helps in organising a larger amount of successful activities.

4.1.2 Output type

This section outlines the arguments provided for why output type was rated to have high effectiveness. Municipalities are generally satisfied with the type of organised activities. It seems that they are quite free to design the activities in the way they intent to. There are however some critical points made. Explanatory factors for this judgement are related to the nodes capacity, outreach and structure.

Capacity was again mentioned as a reason why it is hard for municipalities to set up the type of activities they want. However, it was mentioned significantly less here than in the explanation for the amount of activities. The main emerging trend is that the outreach of the activities matters a lot. Activities are mainly focussed on sharing knowledge about sustainable gardening and sometimes consist of small actions such as handing out plants. These activities are very effective in reaching and enthusing citizens that are already interested in the topic due to their easy accessibility. It is however hard for municipalities to reach citizens that are not inclined to the idea of sustainable gardening through these types of activities. In the municipalities experience, these are often also the people with the most paving in their garden; ''people who are interested in gardening, greenery, plants, animals etc. will come to us. But it is very difficult to reach the group that has paved gardens''.

Something that many respondents say can increase the output type effectiveness is to organize activities in a more structured way. A couple of loose activities organised by the municipality alone are seen as not targeting citizens enough. It was often stated that by for example engaging different actors such as professional gardeners, school governing bodies and different civil society organisations more, a network can be created in which the activities are organised.

4.2 Outcome effectiveness

4.2.1 Outcome pace

This section outlines the arguments provided for why outcome pace was rated to have low effectiveness. Respondents often recognized that behaviour change is not entirely in the control of the municipality or Stichting Steenbreek themselves. Many exterior factors were given as to why citizens behaviour changed a lot slower than the goal. The main explanatory factors regard the nodes convenience, knowledge, outreach and time.

According to some of the respondents, it can be hard to convince people that a sustainable garden can also be easy to maintain; "It is difficult to convince people that a green garden can also be low-maintenance". Citizens are then more inclined to pave their garden for convenience. If these citizens choose to put more plants in their garden, this is probably at a time when they have to alter their garden anyway. Knowledge of different alternatives for easy gardening and the urgency of greening private gardens also plays a role in the pace of citizen behaviour change. Citizens do not change their behaviour quickly enough because they are not familiar with the alternatives of a paved garden and do not see the urgency of them acting. Just as in the aspect output type, outreach also plays a role here. The behaviour change is not always going as planned often because the targeted people are the ones who are already inclined towards greening their garden. The people with a fully paved garden are harder to reach. Respondents recognize that behaviour change takes time and does not happen after organizing a few activities.

4.2.2 Outcome way

This section outlines the arguments provided for why outcome way was rated to have medium effectiveness. Municipalities are generally content with the way in which citizens are changing their behaviour towards greening their garden. There are however some aspects that could be better. The explanatory factors regard the nodes familiarity, size and urgency.

In the participating municipalities, the familiarity of citizens with the idea of Steenbreek seems to be increasing. One municipality even saw an increase in the turnover of local garden centres. This familiarity is a sign that awareness, an important goal that municipalities have for participating, is increasing. This awareness has not led to significant action yet. Respondents say that there are many small changes taking place. Many citizens are replacing some paving by plants, but major changes in garden layout have not been observed. The size of the change does therefore not meet the goal entirely. However, it is stated that ''the idea of 'many small ones make a big one' is easy to explain'' and the slogan 'tile out, plant in' also seems to work well when explaining Steenbreek to the public. In order to see changes to a larger extent, citizens will need to see the urgency of greening private gardens more. Citizens prioritize other issues and have not experienced high-impact climate change events yet. In municipalities that are situated in the vicinity of much green space (e.g. the Veluwe National Park), citizens also seem to prioritize green in their own gardens less.

4.3 Impact

Municipalities mention improved awareness of the need for greening gardens, climate adaptation and social benefits most often as possible positive effects of Steenbreek. The first step is awareness leading to action. This action -greening private gardens- can then lead to the eventual impacts; climate adaptation and social benefits. Especially the fact that many citizens seem to know about Steenbreek is beneficial for creating this initial awareness. Many municipalities reported that some aspects of the initiative can be improved in order for Steenbreek to become more successful. Up scaling through creating a stronger network of initiatives was mentioned several times as a possible strategy for increasing the positive impacts of Steenbreek.

5. Discussion

In this chapter the described results are further interpreted. Then the implications of the findings are discussed using scientific literature. Lastly, limitations of the thesis are critically discussed.

5.1 Interpretation

The results show that the different types of effectiveness are evaluated two times with a medium level for output amount and outcome way, one time a low level for outcome pace and one time a high level of effectiveness for output type. When combining all the scores of the different aspects, an average score of 52 for overall effectiveness is observed. This can be interpreted as a medium level of overall goal-attainment effectiveness. Figure 4 contains a visualisation of the main findings concerning the workings of Steenbreek with regards to goal-attainment effectiveness.
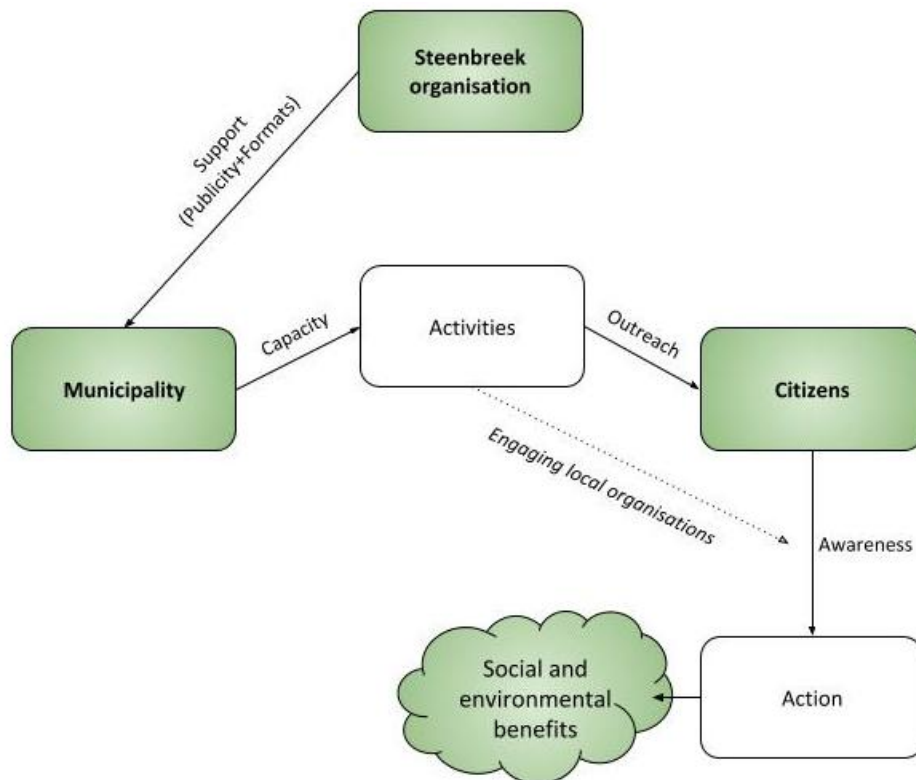
Figure 4: Visualisation of the main findings showing the interaction of actors (represented in the green rectangles), their results in terms of output (activities) and outcome (awareness to action), and the eventual impacts (the benefits).

The organisation of Stichting Steenbreek supports the participating municipalities by offering them to use their experience and knowledge and the name brand 'Steenbreek' for publicity. This support could, as stated earlier, be expanded with some more structured formats on organising activities. The municipality needs capacity to put into organising the activities themselves. Capacity is not optimal at this moment and is a barrier for organising the wanted amount and type of activities. It is important that the organised activities are designed to reach not only the already interested, but also the people not inclined towards greening their garden. In order to reach deeper into the local communities, local organisations can be involved more in the planning and/or target audience of the activities. Eventually the main goal is often that citizens become aware of climate issues and how they can green their gardens to help solve them. This awareness then needs to be put into action, which is a difficult thing to achieve due to issues like citizens prioritizing convenience and not recognizing the urgency of them acting. Municipalities seem to agree on the idea that if these actions are eventually accomplished by many citizens throughout the Netherlands, they will lead to environmental and social benefits.

5.2 Implications

As stated in the introduction of this thesis, little was known on the effectiveness of voluntary steering mechanisms like Steenbreek on private gardens. This section will explain how the findings described above link to different bodies of scientific literature related to such mechanisms for sustainable development. The findings seem to build further on existing research regarding the barriers and drivers of different types of steering mechanisms, especially when talking about capacity, publicity, engaging local organisations and the nature of behaviour change;

Capacity of governing bodies is already known as a barrier for sustainable development in general (Göcmen & LaGro, 2016). This has now been found to apply to steering mechanisms for private space, such as Steenbreek, as well. In the context of Steenbreek, this barrier concerns the municipal capacity for planning activities, and ultimately creating output. When it comes to publicity, Evison & Read (2001) write that it is key for changing citizens behaviour in local government settings to use quality materials, different types of media and to convey a clear message. The findings of this thesis can build on this since it found that using a catchy name and slogan seems to help in explaining the main idea of an initiative, creating familiarity and awareness of the benefits of an initiative. In the context of greening gardens, municipalities can achieve this publicity through using the Steenbreek branding, their message and materials.

The findings also underline that, even in the context of voluntary mechanisms regarding private space, it beneficial for an initiative to climb the so called 'participation ladder' by engaging local actors more. The participation ladder is a concept explained by Cornwall (2008) as a sequence of degrees of participation organised in an often normative way, from 'bad' to 'good' participation. Many different typologies of this ladder have been made in scientific literature already. In the typology mentioned by Cornwall two types that fit the initiative Steenbreek are functional- and interactive participation, with interactive being the 'better', more active type of participation. When activities are organised by a municipality aimed towards activating their citizens to achieve the goal of garden greening, a more functional type of participation is taking place. This entails that citizen activation is seen as a means to achieve certain municipality objectives. When other local organisations are incorporated in the activity planning, a more interactive participation takes place (Cornwall, 2008).

Going from citizen awareness to action is a difficult thing to accomplish. Local climate change action plans, such as using Steenbreek for greening gardens, generally bring about a high level of awareness, but are relatively limited in bringing about actual action (Tang et. al., 2010). Giving people objective information on why they should change their behaviour is often seen as the solution to the problem, but is in reality unlikely to have a significant impact on behaviour. This is because citizens often see climate issues on a more local scale at which social values and situational factors such as income and education play a large role (Barr, 2003). Likewise aspects such as convenience, urgency and knowledge were identified in this thesis. This is not something that municipalities or the Steenbreek organisation itself can influence directly since it deals with the more psychological aspects of behaviour change.

The findings of this thesis can be used as a starting point for determining different drivers and barriers commonly found in these types of approaches. The observed explanatory factors specifically concern Steenbreek, but can be used as an initial step towards explaining other activity planning or behaviour changing processes, not only when it comes to greening gardens. Right now, Steenbreek is evaluated with a medium level of goal-attainment effectiveness. This could be improved by both the Steenbreek organisation and the participating municipalities themselves. The findings already describe some quite specific possibilities for improving the way in which Steenbreek is used for greening gardens. Both Stichting Steenbreek and municipalities can use the findings on what is already working well and what aspects can be further improved.

5.3 Limitations

An evaluation like this can make a judgement about a steering mechanism through collecting data and analysing it in a scientific manner. The goal in the design of data collection and analysis is to be

as objective as possible. However, complete objectivity is -especially in qualitative research- difficult to achieve. Aspects in which personal bias could have had an effect on the thesis are the indicators, data analysis, and the choices made in demarcating the thesis topic. Different indicators of effectiveness are currently weighed the same. This left little freedom to take into account that some municipalities might for example prefer the way in which behaviour changes over the pace at which it changes to match their objectives. In the data interpretation, preconceived ideas related to the topic could have had an influence on the outcome. As for the choices made in demarcating the thesis, I have chosen for a focus on municipalities' experiences regarding goal-attainment effectiveness. Even though this choice is substantiated, different outcomes of the evaluation could have occurred when focussing on a different type of effectiveness or a different criteria such as legitimacy or efficiency.

Apart from the influences of the researcher on the outcome, respondents biases also play a role. Since only a part of the total amount of participating municipalities participated in the data collection for this thesis, the outcome does not give a complete perspective. For example, only views of participating municipalities are taken into account. There might be some municipalities that are aware of Steenbreek but have certain reasons not to participate. These reasons could have been interesting to incorporate and can be a starting point for future research. Even though the outcome does not take every municipalities experience into account, the response rate is high enough to state that the findings are relevant. In spite of the discussed limitations, some clear patterns and trends have been found in the responses of 26 different participating municipalities.

Conclusion

The research question of this thesis is: to what extent is participating in Steenbreek effective as a steering mechanism for municipalities to alter citizens' behaviour towards greening private gardens? The evaluation focussed on goal-attainment effectiveness with the eventual aim of identifying possible explanatory factors for effectiveness in participatory and voluntary steering mechanisms. The analyses of the responses from these municipalities to the survey resulted in the following main findings;

Participatory and voluntary steering mechanisms like Steenbreek are highly effective in terms of creating the preferred type of output. Governmental organisations, in this case municipalities, are free in setting up the output according to their own goals. It does remain difficult to reach the less interested citizens. Mechanisms like this are partially effective when it comes to creating the desired amount of output and way in which the outcomes occur. Many municipalities are quite satisfied with the amount of output and would like to do more, but this is often restricted by governmental capacity. This type of mechanism performs well when it comes to publicity and creating awareness. Transforming this awareness into considerable citizen action is a challenge however. The initiative is not very effective in terms of the pace in which outcomes occur. In the context of sustainability, behaviour change can happen quite slowly due to factors like convenience and a lack of urgency.

Things that could be done to increase the overall level of goal-attainment effectiveness of steering mechanisms like Steenbreek are increasing governmental planning capacity, engaging local organisations in the transformation from awareness to action and taking the psychological factor of behaviour change into account. When initiatives like Steenbreek manage to transform the created awareness of sustainability issues into action on a large scale, environmental and social benefits will likely occur. Just like the key message of Stichting Steenbreek suggests, many small changes eventually do add up to one large change.

Acknowledgements

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Annex: Survey

1) What is the name of your municipality?

2) How long has this municipality been participating in Stichting Steenbreek?

3) What are this municipalities' overall goal for participating in Stichting Steenbreek?

4a) The amount of Steenbreek activities organised in this municipality since the start of Steenbreek participation:

0- Does not meet the municipality's goal at all

100- Completely meets the municipality's goal

50- Partially meets the municipality's goal

4b) In what way does the amount of activities differ from/meet your goal?
4c) Why is this the case?

5a) The type of Steenbreek activities organised in this municipality since the start of participation:

0- Does not meet the municipality's goal at all

100- Completely meets the municipality's goal

50- Partially meets the municipality's goal

5b) In what way does the type of activities differ from/meet your goal?
5c) Why is this the case?

6a) The pace in which citizens' behaviour towards greening their gardens changes in this municipality since the start of Steenbreek participation:

0 - Does not meet the municipality's goal at all

100- Completely meets the municipality's goal

50- Partially meets the municipality's goal

6b) In what way does the pace of behaviour change differ from/meet your goal?
6c) Why is this the case?

7a) The way in which citizens' behaviour towards greening their gardens changes in this municipality since the start of Steenbreek participation:

0- Does not meet the
municipality's goal at all

100- Completely meets
the municipality's goal

50- Partially meets the
municipality's goal

7b) In what way does the way in which behaviour changes differ from/meet your goal?
7c) Why is this the case?

8) In what way do you think participating in Stichting Steenbreek has an impact on the environment?