

# Nature and the local expenditures

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# Abstract

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Planning for nature in the Netherlands will become more important in the future to battle climate change. It is already known that nature areas have a positive influence on the ecology of areas. However, it could also be possible for nature to have a positive effect on local expenditures. Therefore, this research aims to research the effect of nature areas and their visitors on local expenditures and differences between managed nature and new nature. A survey has been used to collect the data for this research. The results showed that approximately 1/3 of the participants visited facilities when visiting nature areas, spending on average 7.75 euro. Showing that nature areas can positively influence the local expenditures. However, there are no significant differences between managed nature and new nature regarding their local expenditures.

**Keywords:** Nature areas, managed nature, new nature, local expenditures



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# 1: Introduction

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## 1.1: Background

### 1.1.1: *The future*

The Netherlands will face huge challenges regarding climate change (WUR 1, 2019). The Netherlands has to face weather extremes, a rising temperature and sea level. These threatening changes need to be dealt with, otherwise it can be fatal for the Netherlands. Using and creating nature can be a solution to adapt to climate change. This means that nature and planning for nature in the Netherlands will only get more important in the future.

### 1.1.2: *Ecological influence*

The focus of planning for nature is often on the restoration and preservation of the ecology. In the past, nature was often managed actively by humans resulting in managed nature. However, at this moment new nature and new wilderness are important concepts in planning for nature in the Netherlands (Bulken et al. 2016; Van den Berg & Koole, 2006). This shift means that there are roughly two different kinds of nature in the Netherlands, managed nature and new nature. The aforementioned concepts have been developed and implemented to restore the ecology of areas in the Netherlands.

### 1.1.3: *Economic influence.*

Nature will not only have an influence on the ecology. It will also have influence on the local economy. Following the Planbureau voor de leefomgeving (2019) nature can yield extra earnings with products like wood, fish and cane. Furthermore, it can make a rural area more attractive and healthy to live in. Another way nature can influence the local expenditures is to create possibilities for nature-based tourism. Following the European commission (2013) nature areas are important for attracting tourists and supporting the local economy. In addition, Hein (2011) states that high economic returns can be generated from nature areas. It can be concluded that nature areas can have a positive influence on the local economy and expenditures. However, little academic research has been done into the role of visitors in this field. Therefore, this research focuses on local expenditures of nature areas from the perspective of visitors of nature.

In addition, the positive influence of nature areas might be used by depopulating municipalities to their advantage. For example in the province of Groningen. At this moment, 15 of the 23 municipalities of Groningen have a depopulation problem, especially in the northern and eastern parts of the province Groningen (CBS, 2018; DVHN, 2018). Depopulation of rural areas lead to problems for the liveability of the areas such as empty houses, deteriorating neighbourhoods and services and facilities cannot be kept up (Ubels et al, 2019). The development of nature areas in these municipalities might have a positive influence, it could improve the local expenditures and make the area interesting to live in.



## 1.2: Research problem

This research focuses on nature areas and what effect visitors of nature areas (might) have on the local expenditures. The research will focus on if and how visitors will influence the local expenditures, to see if the nature areas can have an effect on the local expenditures. If so, it could be interesting to realise nature in areas which are dealing with depopulation.

In addition, the two different types of nature will be compared to see if there are differences between their influence on local expenditures and visitors. This could show, from an economic perspective, which nature area is more interesting to realise.

To research the aforementioned, the following research question has been formulated: “Does the realisation of nature areas (managed and new nature) affect the local expenditures in local areas of the Netherlands and are there differences between the two types of nature?”.

In order to answer the main question, the following secondary questions have been formulated:

- What kind of facilities would visitors like to have in and surrounding a nature area?
- What are the expenditures of visitors of nature areas in the local areas?
- Is there a difference between managed nature and new nature regarding their visitors and their influence on the local expenditures?

## 1.3: Thesis structure

The following section (2) will discuss the important theories and concepts for this research. In section 3 the methodology is discussed. Section 4 will focus on the results of this research and section 5 contains the conclusion of this research.



## 2: Theoretical framework

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### 2.1: Theoretical framework

#### 2.1.1: Nature development

One of the main discourses in the Netherlands for nature development is the concept of ecological restoration. Van den Berg & Koole (2006) state that ecological restoration has been set as the new standard in nature management. Ecological restoration is human intervention to protect and restore nature which is in danger of being destroyed or is already destroyed because of humans (Van den Berg & Koole, 2006). Ecological restoration is often put in place with the help of rewilding, which is known in the Netherlands as “new nature” (Bulken et al. 2016). New nature is a way to accomplish the ecological restoration of an area. Bulken et al. (2016) and Van den Berg & Koole (2006) agree that new nature is giving back land to nature and creating a “wild” landscape to restore the ecological processes. They also agree that new nature is created through passive management strategies and (almost) no human interruptions in the maintenance of nature. In this research new nature is seen as creating a wild as possible landscape with as little as possible human interventions.

However, Van den Berg & Koole (2006) also discuss another method for accomplishing ecological restoration: managed natural landscapes. Following Van den Berg & Koole (2006) managed natural landscapes are the opposite of new nature because they make use of active nature management strategies (such as mowing and cutting), resulting in managed nature.

Van den Berg & Koole (2006) looked at the preferences of people for managed and new nature. Their research showed that the following people have a low preference for wild nature: people with low levels of income & education, older people and farmers. On the other side, people with high levels of income & education, people with preference for green political parties and younger people show a high preference for wild nature. This shows that it is likely that the different nature areas have different visitors. This could affect the extent to which the different types of nature influence the local expenditures.

#### 2.1.2: Economic influence

As already discussed, new nature and managed nature are realised for ecological restoration. However, these areas do not only have benefits for ecological restoration. Nature areas can also have economic benefits. Hein (2011) his research focussed on the Hoge Veluwe and found 8 different ways that nature areas can have economic benefits: Wood production, supply of game, groundwater infiltration, carbon sequestration, air pollution removal, recreation, recreational hunting and biodiversity conservation. He showed that the economic benefit of nature areas can generate 3 times more than agriculture land. In addition, Hein (2011) states that nature parks support the local tourism industry, especially the hotel and restaurant industry surrounding the nature area. These facilities can generate money for the local economy. This is in case of the Hoge Veluwe, however it might be possible for other nature areas too. It is stated by Bulken et al (2016) that new nature developments in the Millingerwaard caused a rise in ecotourism, followed by the need to establish cafes in the area. Hein (2011) and Bulken et al (2016) show that it is possible for visitors of nature areas to influence the local expenditures by visiting facilities. This research will look deeper into this theory.



In addition, it is important to discuss economic distributive effects. Following Meijers et al. (2012) these occur when an area is growing faster or at the cost of another area. It is possible for economic distributive effects to occur in nature areas and local expenditures. It can be expected that the people who spend money at the facilities in vicinity of nature areas, will spend no or less money at facilities somewhere else. Here the distributive effect occurs, because spending this money in vicinity of nature areas is done at expense of other areas and their facilities. So it is possible that local expenditures in vicinity of the nature areas are positive, however they could have a more negative effect (less expenditures) for other areas. It is good to keep this in mind, however this research will not focus further into the distributive effects

### *2.1.3: Ecotourism*

As the case of Millingerwaard shows, it is possible for nature areas to cause an increase in ecotourism or create a basis for tourism and increase the demand for facilities. Ecotourism is part of the subset of nature-based tourism (Line & Costen, 2017). Following Nyaupane et al. (2004) nature-based tourism is based on the enjoyment of undisturbed nature, escaping daily stress and getting in touch with nature with the help of activities such as hiking, watching animals and nature landscapes. Line & Costen (2017) agree and stress that it is both about the living and non-living part of nature. The above discussed literature shows the reasons why people participate in ecotourism. These reasons attract the people to nature areas, who subsequently might spend money on the local economy while visiting.

### *2.1.4: Depopulation*

Another important concept is the depopulation of rural areas. Westhoek (2006) states that depopulation in rural areas of Europe has already been taking place for decades. Ubels et al. (2019) agree with this and state that this is also the case in peripheral rural areas of the Netherlands. This depopulation will result in empty houses, deteriorating living areas, no support for facilities and decreasing community funding, resulting in problems for the liveability (Ubels et al. 2019).



## 2.2: Conceptual framework

One of the main discourses in the Netherlands for nature development is ecological restoration to protect and restore nature in the Netherlands. Two types of nature have been discussed to accomplish ecological restoration: managed nature and new nature. The realisation of such nature areas are expected to result in nature-based tourism. This nature-based tourism will result in visitors visiting local facilities and therefore influencing the local expenditures. It is expected that this in the end will have an effect on the local economy of the area. In addition, differences between managed nature and new nature are expected regarding the local expenditures and effect on local economy. The conceptual framework is displayed below (figure 1).

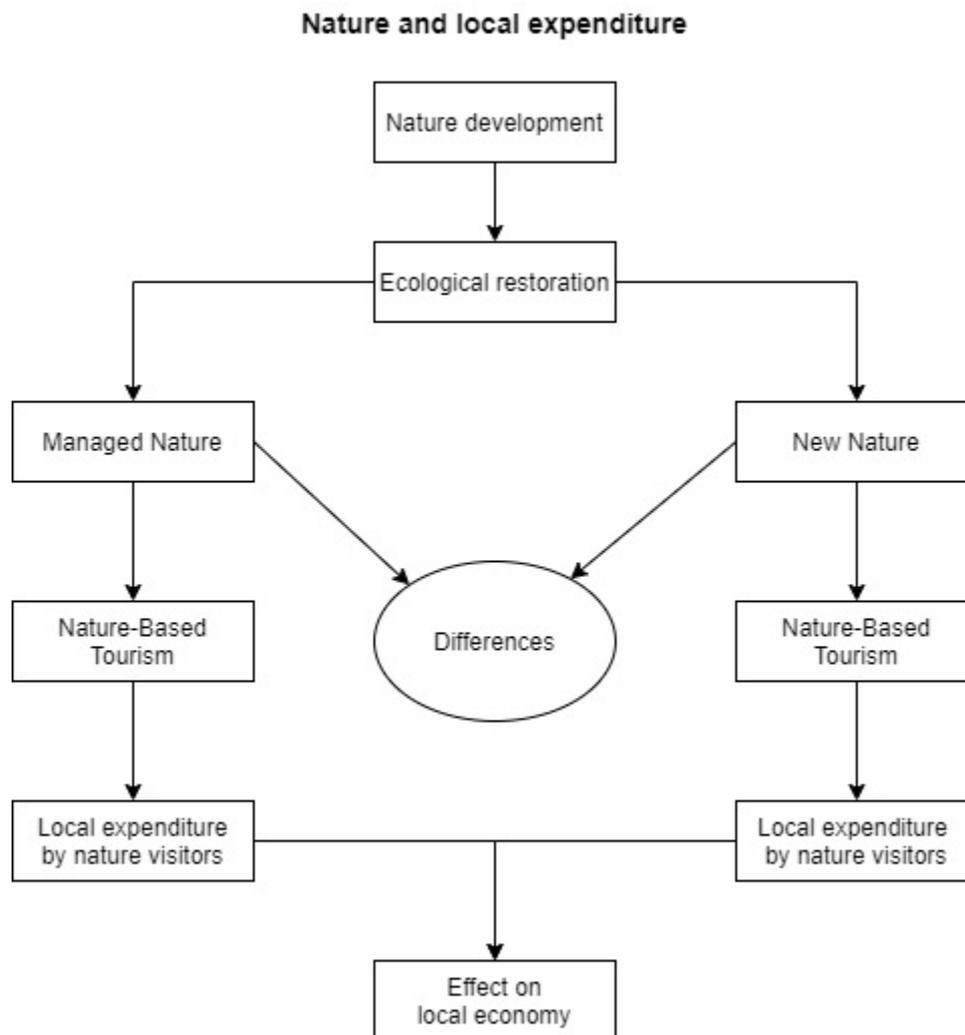


Figure 1: Conceptual framework.

## 2.3: Hypotheses

### 2.3.1: Former research

Hein (2011) showed that nature areas can have multiple different economic benefits, up to a value that can be 3 times more than agriculture land. It is stated that nature can support the local tourism industry, especially the hotel and restaurant industry. In the case of the Millingerwaard area, where new nature was realised, there was a rise in eco-tourism which resulted in the establishment of new cafes in the area (Bulken et al. 2016). This shows that nature areas, with the help of facilities, can generate earnings for the local economy and influence the local expenditures. Regarding the difference between managed nature and new nature, Van den Berg & Koole (2006) showed that there are differences between people and their preference for wild nature.

### 2.3.2: Hypotheses

As the literature showed, nature areas can have an effect on the local expenditures by visitors visiting facilities in the vicinity of the nature areas. Therefore, it is expected that visitors of nature areas will have influence on the local expenditures. They will have an influence on the local expenditures by making use of facilities in and around the nature areas. Therefore, spending money into the local economy.

Based on the research of Van den Berg & Koole (2006) it is also expected that there will be differences between managed nature and new nature, regarding their local expenditures and visitors. It is expected that new nature areas will attract people with higher education and income which will result in more money spent on the facilities by new nature visitors. It is also expected that characteristics (such as age and gender) will be different per type of nature area.



## 3: Methodology

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### 3.1: Data research method

Based on the research question and possible data collection methods considered, a survey with structured questions focused on visitors of nature areas has been selected as data collection instrument. Information about the behaviour and attitudes of visitors, regarding their local expenditures, is needed. The purpose of this survey is to collect data about the behaviour and attitudes of nature area visitors. As described by McLafferty (2016), the goal of a survey in general is to collect information and data about behaviours and attitudes of people. This makes a survey suitable as data collection instrument for this research. Moreover, using a survey makes it possible to collect a lot of data without being too time-consuming.

Secondary data is not used for this research because there is no dataset for this specific research.

Secondly, observations are not suitable as a data collection method for this research. Observations need participants to be observed for a longer time to see their influence on local expenditures while visiting nature areas. Or the observer needs to be lucky to overhear conversations containing the needed information. It is not possible to ask participants questions, otherwise the research is compromised, making the results untrustworthy. This shows that using observations would be too time-consuming and depending on luck. Therefore observation has not been chosen as data collection method.

Lastly, interviewing is not suitable as data collection method for this research. The data that will be collected is clear cut and requires short answers, making probing the participants not needed. Therefore using interviews would be a lengthy and too time-consuming option for both the researcher and participant.



## 3.2: Collection of the data

### 3.2.1: Participants and collection

To collect the data for this research, visitors of the two different nature types will be surveyed. Based on the literature there are roughly two types of nature in the Netherlands. The first type are nature areas where nature is allowed to grow freely, also known as new nature. The second type are nature areas where nature is actively managed, called managed nature. In addition, Staatsbosbeheer has been contacted about the different nature areas. They say that nature will always have some sort of maintenance and management because nature areas are planned for. However, there are still two types. The first type of management is to let nature be and look as natural and wild as possible. Animals take care of the terrain (grazing), flora is allowed to grow spontaneous and freely. Resulting in new nature. The other type is actively managing nature. Cutting down trees to thin down the forest and mowing with machines. Based on the literature and Staatsbosbeheer, a distinction can be made between new nature and managed nature.

The original plan to collect data was to spread the survey physically in one managed nature area and one new nature area. So visitors of both nature types would be targeted and a distinction between managed and new nature could be made. However, due to the situation surrounding the Coronavirus this was not allowed and possible to do anymore. So another way to collect the data was needed.

The participants for this research are still visitors of nature areas. They visit nature on purpose and could influence the local expenditures with their visit, because they could make use of different facilities when visiting nature areas and spending money on them. They could for example go out for a drink after their stroll through nature. However, the participants will no longer be recruited on the physical locations, they will be recruited online. Because of this change, the focus of finding participants is no longer on the two specific nature areas, but moved to a wider focus. This is because finding visitors of two specific nature areas online could prove to be difficult, risking the chance that too few participants can complete the survey, what could result in an unreliable dataset. Therefore, finding the participants was no longer restricted to two specific nature areas. The focus changed to visitors of nature areas in general. To make sure that the focus is still on visitors of nature areas, participants needed to fill in which nature area they recently visited. Knowing which nature area they recently visited made it possible to distinct between nature area types, whether they are managed nature or new nature. This distinction is made so that managed nature and new nature can be compared to each other, to see if there are differences between them regarding their visitors and local expenditures.

To recruit the participants the survey has been published in multiple Facebook groups and online fora, trying to reach as many different kinds of people who visit nature. Regarding the circumstances surrounding the Coronavirus, this is seen as the best solution to be possible to conduct the survey and collect data. However, in normal circumstances this option would not have had the preference.

As discussed in chapter 3.1, a survey would be the most suitable data collection method. Therefore, a survey has been created to collect the data. The survey is attached in Appendix 1.



### 3.3: Data analyse

After the data had been collected it needed to be analysed to interpret the data and answer the secondary questions to answer the research question. Before the data could be analysed it needed to be coded. This made it possible to analyse the data. The answers to open questions had been grouped into categories and these categories had been coded by numbering. The answers of closed questions were also coded by numbering.

After the dataset had been coded, it was put into SPSS. To analyse the data, both descriptive statistics and statistical testing had been used. Descriptive statistics were used to get a general overview of the dataset and give general information about the data. Statistical testing will be used to see if there are differences between visitors of managed nature and new nature areas, their influence on the local expenditures and if these differences are significant.



### 3.4: Reliability, validity and positionality

#### 3.4.1: Reliability

In the methodology, the structure of this research has been discussed: the needed data collection instrument, the needed participants and where to collect the data. So it is possible to repeat this research in the same circumstances. However, it might be possible that there will be some slight differences in the results, if this research would be repeated. It could be that respondents have visited another nature area, if a second research took place later. However, it can be expected that the main results would remain largely the same. Because the main results showed majorities in answers to the survey. It is not expected that all of the sudden most people change their habits when visiting nature areas, resulting in different answers to the survey and in the end different main results of this research. So it can be expected that the main results would remain the same if this research would be repeated.

#### 3.4.2: Validity

To achieve validity it was tried to collect the right data, participants and enough data. A survey has especially been designed for this specific research, so that the needed data could be collected. In addition, the questions were tried to keep as clear as possible, to keep misinterpretation of questions as low as possible. Enough data is needed to be able to test the data. The dataset of this research consisted out of 169 participants and each nature type consisted out of more than 60 participants. It is believed that this amount is enough for this research to do statistical testing and say something relevant about the data. To conclude, visitors of nature areas were the needed participants for this research. To make sure the participants visited nature, they needed to fill in their recently visited nature area. Participants who did not visited nature were removed from the dataset. However, the participants of this research had been collected digital. This could lead to a certain selection bias, because the people who are active online would be over represented in this dataset. However, certain characteristics of the dataset show similarities with other researches. Therefore, it can be believed that this selection bias did not result in an unreliable set. So the combination of the designed survey, amount of data and participants made that the research measured what needed to be measured.

#### 3.4.3: Positionality

When conducting an online research, the positionality of a researcher is still present. Therefore, it needs to be discussed. When approaching different online fora and Facebook groups to publish the survey, they were informed about the researcher and the research. This was done as politely as possible to keep the positionality between researcher and participant equal. When it was allowed to publish the survey onto the online fora or Facebook group, a message was written to inform the members of the groups about the research. This message contained information about the researcher, why the survey is conducted and asked politely if they were willing to fill in the survey. This was done to inform the possible participants, so that they could decide on their own if they wanted to volunteer in this research or not. In addition, only some general and global information was given about the research to inform the participants about the research. The information was global and general to make sure that the participants were not prejudiced about the research. Prejudices could lead to other answers on the survey than normal, making the dataset not representative.



## 4: Results

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### 4.1: Dataset

The survey has been spread over several different Facebook groups and an online nature forum, resulting in 203 responses. Some of the surveys had been excluded because participants filled in they did not visit nature, visited nature outside of the Netherlands or the answers were vague. These have been excluded from the dataset, which made that the dataset existed out of 169 participants. 67 (39,6%) participants are male, the average age sits in the category 30-39 years old and 66 (39,1%) participants visited new nature. Appendix 2 shows where the participants are from.

Other surveys regarding nature visits are used to see if these main characterises are representative. Regarding the gender of participants: in the research of WUR 2 (2019) 52% was male, in research of NBTC-NIPO (2017) 48% was male, in research A of WUR 3 (2009) 62% was male and in research B 53% was male. This shows that there is a difference in the gender percentages. However this research has a higher female percentage. Reason for this could be the fact that Facebook has been used to spread surveys. Regarding the age of participants, different categories were used so it is hard to compare them to each other. However, in the 3 other discussed researches, the category in which 30-39 sits, is represented with 22% or more in each research.



#### 4.2: Visitors and facilities

It is expected that the results will show that visitors of nature areas will visit facilities when visiting nature areas, especially hotels, restaurant and cafes. This expectation is based on the literature of Hein (2011) and Bulkens et al (2016). Hein (2011) stated that nature areas can have economic benefits. One of these benefits is that nature areas can support the local tourism industry close to the nature areas, especially restaurants and hotels. In addition, Bulkens et al (2016) showed that the transformation of the Millingerwaard to new nature resulted in demand for cafes. This shows that a demand for facilities can be expected.

With the help of the survey, this research looked at the visitors of nature areas and their behaviour regarding visiting facilities. Making use of facilities is the way in which visitors of nature areas can influence the local expenditures.

In Appendix 3A the facilities are shown which have been visited by participants. 34,9% of the participants did visit a facility after they visited nature. In addition, Hein (2011) stated that especially hotels and restaurants would be visited. Restaurants are the second most visited facilities with 11,2% of the participants. However, none of the respondents visited a hotel. In the nature research of NBTC-NIPO (2017), 25% of the respondents visited food service industry facilities when visiting nature. In this research, the food service industry accounted for 25,4%. This shows similarities.

The same situation occurs for the wanted facilities. These are shown in Appendix 3B. 35,5% of the participants want to visit a facility which is absent at this moment. Just like in the visited facilities, restaurants are the second most wanted facility and none of the respondents wants to visit a hotel. In Appendix 3C, the link between visited facilities and visiting nature areas is shown. 16,6% of the participants did only visit the facility because they visited the nature area.

As expected on basis of the literature, visitors of nature areas will visit facilities. However, not all of them visited facilities, just over 1/3 of the participants visited facilities. Some nature areas are visited by a lot of people, if 1/3 of these visitors visit facilities it could have a serious influence on the local expenditures. As which will be discussed more in depth in chapter 4.3



### 4.3: Visitors and their local expenditures

It is expected that the results will show that visitors of nature areas can influence the local expenditures by spending money on the facilities. As already discussed, a demand for facilities by visitors can be expected in the vicinity of nature areas (Hein, L. 2011; Bulkens et al, 2016). The results of 4.2 reveal that 1/3 of the participants visited facilities and 1/3 wants to visit a at this moment absent facilities when visiting nature areas. This shows that there is a certain demand for facilities by visitors of nature areas. This chapter will look deeper into the amount of money that has been spent by the participants on facilities.

In 2018, the expenditures of leisure activities were researched by PleasureWorld NRIT et al (2018) on basis of the CVTO of 2015. They looked into the expenditures of out-of-home activities in global, which showed that on average 13,26 euro was spent per person per out-of-home activity. However, they focused on all the out-of-home activities combined, and not on specific activities separately. This research focuses on nature visitors and their expenditures specifically. Therefore, adding to the literature some specific information about the out-of-home activity of visiting nature.

The amount of money spent on the facilities has been summed up (including those who spent 0 euro) and has been averaged (appendix 4A) to see what visitors on average spent on facilities when visiting nature areas. The result of this sum is that the participants spent 7,75 euro on average.

In order to see if this average amount is representative, it will be compared with other nature research in which the spending behaviour of visitors has been researched. Natuurmonumenten (2016) researched the nature areas of Limburg. Their research showed that the visitors of these nature areas spent on average 8,40 euro. Another research focused on the nature and recreation areas of Zuid-Holland, showed that their visitors on average spent 7,40 euro (NBTC-NIPO, 2017). To compare these amounts with the one of this research, the statistical test “one-sample t-test” will be used. In which 8,40 and 7,40 will be used as test values. Resulting in the following H0: “*the average money spent in this research is equal to 8,40/7,40 (from the other researches)*”. In appendix 4B and 4C both the one-sample t-tests are shown. Both do not deviate significantly, which means that the H0 can be assumed to be correct. Therefore, it is plausible that 7,75 correlates with amounts of other research and can be seen as representative.

In addition, nature areas in the Netherlands attract a lot of visitors. 24 million visits in Limburg, 48,8 million in Zuid-Holland and 21 million in Overijssel (Natuurmonumenten, 2016; NBTC-NIPO, 2017; Stenter, 2019). Knowing that nature areas are often visited by people, combined with the results that approximately 1/3 of the visitors visit facilities and spending on average 7,75 euro, shows that nature areas can have a positive influence on the local expenditures and therefore the local economy. That nature areas can have a positive economic influence is confirmed by the Province of Overijssel in which visitors of the nature areas spent around 160 million euro on the local economy (Stenter, 2019).



#### 4.4: Differences managed nature and new wild nature

As already discussed, nature areas can have a positive influence on the local expenditures with the help of visitors. In addition, as discussed in the theoretical framework there are roughly two types of nature in the Netherlands: managed nature and new nature. It is interesting to compare these two nature types, to see if there are differences regarding their influence on the local expenditures. If there is a difference, it could be interesting to realise the one with the most potential economic benefit, as this could benefit the area the best.

Based on the research of Van den Berg & Koole (2006) it is expected that there will be differences between managed nature and new nature. They researched the preferences of people for the two different nature types. The research showed that the following people showed low preference for wild nature: farmers, older respondents, and respondents with low levels of income and education. On the other side, the following people showed high preference for wild nature: members of green political parties, younger respondents, and respondents with high levels of income and education. This shows that differences between the nature types are expected.

Statistical testing will be used on the visited facilities, wanted facilities and money spent, to see if there is a difference regarding their local expenditures. In addition, statistical testing will be used on characteristic of the participants of the different nature areas, to see if the visitors of the two nature types differ.

First of all, the visited facilities will be compared. To compare these, a chi-square test has been used with the following H0: *“There is no difference between managed nature and new nature in the visited facilities”*. As the test shows in appendix 5A, the result is not significant. Therefore, the H0 can be assumed right. So it is plausible that there are no differences in visited facilities between managed and new nature.

For the wanted facilities, a chi-square test will be used too. The H0 is: *“There is no difference between managed nature areas and new nature areas in the wanted facilities”*. Appendix 5B shows that the test is not significant, which makes that the H0 can be assumed to be correct. Therefore, it is plausible that there are no differences between the types of nature and the wanted facilities.

To conclude the potential local expenditures, an independent sample t-test will be run with the following H0: *“There is no difference between managed nature and new nature in the average amount of money spent on facilities”*. There is no significant difference (appendix 5C), H0 can be assumed correct. So it is plausible that there is no difference in the amount of money spend between the two types of nature.

These results show no difference between nature type and local expenditures. This might have to do with the characteristics of the visitors, which will be compared below.

First gender and age will be compared and tested. Gender is tested with chi-square and the following H0: *“There is no difference between managed nature and new nature in the gender of visitors”*. The H0 of age is *“There is no difference between managed nature and new nature in the age of visitors”*. This will be tested with the Mann-Whitney test. Both the outcomes are not significant as shown in appendix 5D and 5E. So both H0's can be assumed to be correct. Making it plausible there are no differences in gender and age.



Lastly, travel time and reason for visit will be compared. Travel time will be tested with an independent sample t-test and the H0: *“There is no difference between managed nature and new nature in the average travel time”*. Reason for visit will be tested with Chi-square test and the H0: *“There is no difference between managed nature and new nature in the reason of visiting”*. Appendix 5F and 5G show no significance and H0 can be assumed correct. So it is plausible that there are no differences.

The characteristics of the visitors of the two types of nature do not differ. This could explain why there is no difference between the nature types and local expenditures. The results show the opposite from what was expected on basis of the literature of Van den Berg & Koole (2006). There are no differences between managed nature and new nature regarding the main characteristics of visitors and the influence they have on the local expenditures. This might be explained by the fact that Van den Berg & Koole (2006) looked at preferences of people for types of nature, but not at what kind of nature they actually visit. So it might be that people have different preferences, but do not visit nature accordingly to these preferences.



# 5: Conclusion

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## 5.1: Conclusion

The purpose of this research was to find out if nature areas do not only have ecological influence but if they also have an influence on the local expenditures. This was researched with the help of the following research question: “Does the realisation of nature areas (managed and new nature) affect the local expenditures in local areas of the Netherlands and are there differences between the two types of nature?”.

With the help of a survey, data has been collected to answer the research question. The results show that approximately 1/3 of the nature visitors visit a facility before or after their nature visit. In addition, the average amount of money spent per visitor is 7,75 euro. Based on these results and as expected in the hypothesis, it can be concluded that it is possible for nature areas to affect the local expenditures in a positive way.

In addition, managed nature and new nature have been compared. They have been compared regarding the main characteristics of visitors (gender, age, reason for visiting and travel time) and the local expenditures (visited facilities, wanted facilities and money spent). The statistical tests showed no significant differences. So it can be concluded that there are no differences between managed and new nature. This outcome differs from what was expected in the hypothesis. This might have to do with the fact that the hypothesis was based on literature about the preferences of people for nature types, but not their actual visit habits. People might have preferences, but do not behave accordingly.

To conclude: Nature areas can affect the local expenditures in a positive way by visitors visiting facilities and spending money on them. However, there are no significant differences between the nature types regarding their local expenditures and characteristics of visitors.



## 5.2: Discussion

First of all, it is important to state that this research has been conducted during the coronavirus. It is possible that the situation and measures regarding the coronavirus could have had an influence on the research. For example, it is possible that people were not allowed to visit facilities after visiting nature or did not even visit nature because of the situation. In addition, data needed to be collected online instead of the preferred physical method. However, the results of this research have been compared to other researches, which had been conducted before the coronavirus. The results of this research showed similarities with the other researches and can therefore be seen as representative.

Secondly, when conducted the survey online one problem occurred. The new nature participants lagged behind. Due to time constraints, it was not possible to wait until enough new nature participants filled in the survey. Therefore, the survey had been spread in Facebook groups closer to new nature areas. This made that enough new nature participants filled in the survey. However, it could be possible that this have had an influence on the data.

Finally, it is important to state that the amount of facilities in the vicinity of nature areas can differ per area. It might be that in some nature areas no facilities are close-by, while other areas might have a lot of facilities. The amount of facilities can influence the local expenditures. Depending on the locations of the participants, it could have had an influence on the results of this research. However, as discussed in the results, the average amount of money spent on the facilities was representative.



### 5.3: Recommendations

Based on this research there are some subjects that need extra research. This research showed that it is possible for nature areas to affect the local expenditures positively. This combined with the positive effect on ecology and liveability could help battle rural areas against depopulation. However, the influence of the effects need to be researched more.

It might also be interesting to look into preferences for nature and people their actual visit habits. Combining both characteristics of areas of preference and visited nature, could make for more interesting nature areas to visit. Which could in the end result in more local expenditures, as the area becomes more interesting to visit.

Finally, it might be interesting to look into the local expenditures of nature areas in the different provinces of the Netherlands. To see if there are any differences between the provinces regarding the local expenditures. This could show weak points of the different provinces and a possibility to improve them with the knowledge of other provinces.



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# Appendices

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## Appendix 1: Survey

Dear Participant,

At this moment I am writing my bachelor thesis for the study “spatial planning and design” at the University of Groningen. For my thesis I am doing research into nature areas and the effect on the local economy. The purpose of this survey is to collect data. Filling in this survey will take approximately 5 minutes. Participating in this survey is anonymous and the data will be handled with care. It is possible to stop with the survey at any given time.

For further questions, please contact me: [H.Hanekamp@student.rug.nl](mailto:H.Hanekamp@student.rug.nl)

Thanks in advance,  
Marc Hanekamp

### Questions

1. What is your Gender?

- Male
- Female
- Other

2. What is your age?

- 18 years or younger
- 19-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-69 years
- 70 years or older

3. What is your zip code (only the 4 digits)?

.....

4. Which nature area have you recently visited?

.....

5. What was the main reason for visiting this nature area?

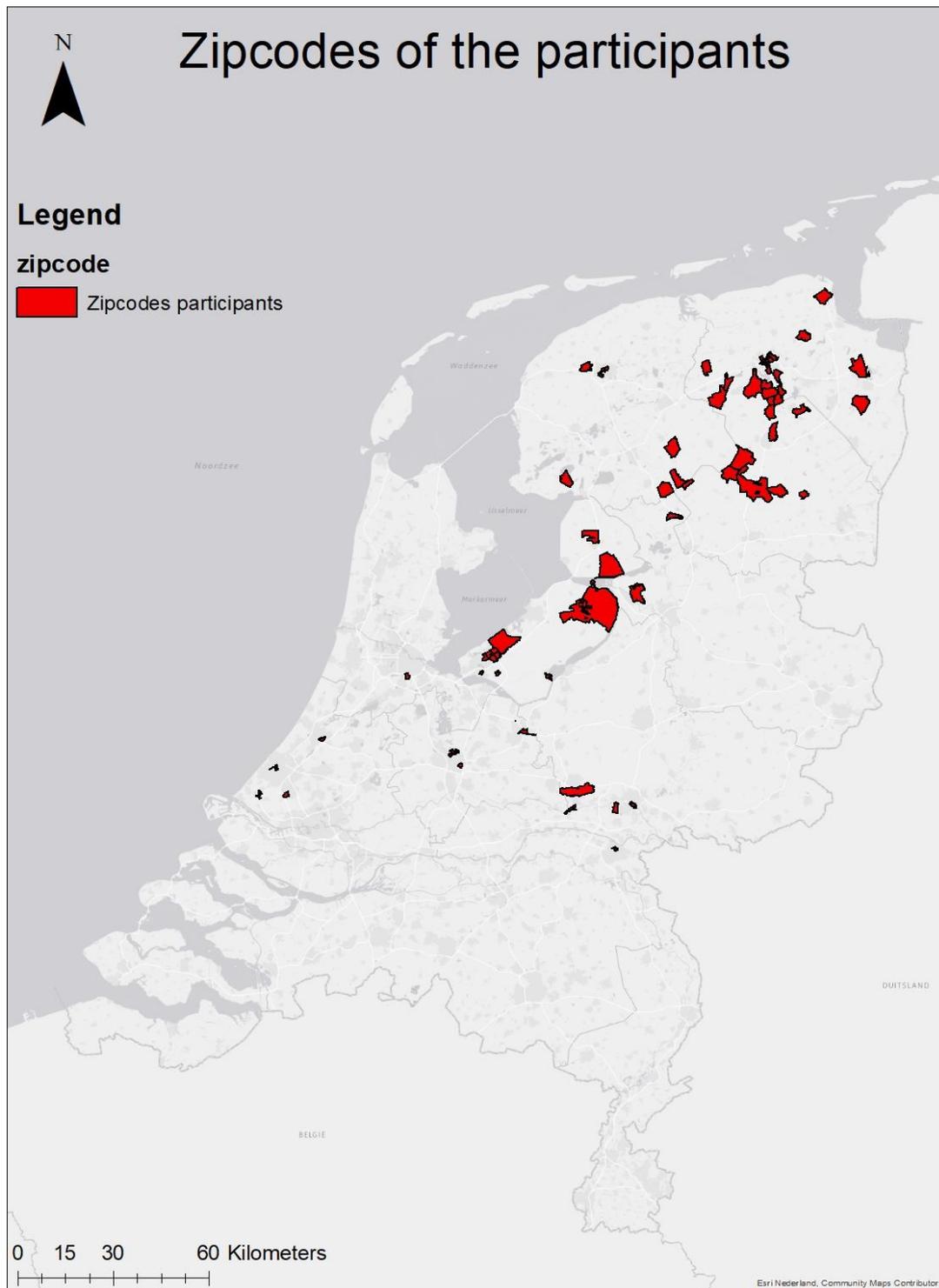
.....



6. What facilities or services did you visit before or after visiting this nature area (on the same day)? Multiple answers possible
- None
  - Café or bar
  - Thee or coffee house
  - Restaurant
  - Hotel
  - Supermarket
  - Shoplocation, for example clothing or other products
  - Other, namely:.....
7. Is this visit to facilities and services linked to visiting the nature area?
- Not applicable
  - Yes, I only visited this facility/service because I visited this nature area
  - No, I would have visited this facility/services even if I did not go to the nature area
8. How much money (approximately ) did you spend on these facilities and services you visited after visiting the nature area? In Euro's. (In case you did not visit any facilities/service, please fill in 0 euro's)
- .....
9. What facilities and services, which are not present at this moment in vicinity of the nature area, would you like to visit after visiting the nature are? Multiple answers possible
- None
  - Café or bar
  - Coffee or thee house
  - Restaurant
  - Hotel
  - Supermarket
  - Shoplocation, for example clothing or other products
  - Other, namely:.....



## Appendix 2: Zip codes participants



## Appendix 3A: Visited facilities

### \$Visitedfacilities Frequencies

		Responses		Percent of Cases
		N	Percent	
The facilities that visitors really vist <sup>a</sup>	NoneA	110	59,5%	65,1%
	CafebarA	10	5,4%	5,9%
	CoffeetheeA	14	7,6%	8,3%
	RestaurantA	19	10,3%	11,2%
	SupermarketA	22	11,9%	13,0%
	OtherA	10	5,4%	5,9%
Total		185	100,0%	109,5%

a. Dichotomy group tabulated at value 1.

## Appendix 3B: Wanted facilities

### \$Wantedfacilities Frequencies

		Responses		Percent of Cases
		N	Percent	
Facilities wanted by visitors <sup>a</sup>	NoneB	109	55,3%	64,5%
	CafebarB	13	6,6%	7,7%
	CoffeetheeB	50	25,4%	29,6%
	RestaurantB	21	10,7%	12,4%
	SupermarketB	1	0,5%	0,6%
	ShoplocationB	1	0,5%	0,6%
	OtherB	2	1,0%	1,2%
Total		197	100,0%	116,6%

a. Dichotomy group tabulated at value 1.

## Appendix 3C: Link visiting nature and facilities

### visit facilities linked to visit nature areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not applicable	118	69,8	69,8	69,8
	Yes, visited facility only because i went to the nature area	28	16,6	16,6	86,4
	No, would have visited facility even when i did not visit the nature area	23	13,6	13,6	100,0
	Total	169	100,0	100,0	



## Appendix 4A: Mean amount of money spent

### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
money spend on facilities in euro's	169	,00	100,00	7,7518	16,09774
Valid N (listwise)	169				

## Appendix 4B: One sample t-test, test value 8,40

### T-Test

#### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
money spend on facilities in euro's	169	7,7518	16,09774	1,23829

#### One-Sample Test

Test Value = 8.40

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
money spend on facilities in euro's	-,523	168	,601	-,64822	-3,0928	1,7964

## Appendix 4C: One sample t-test, test value 7,40

### T-Test

#### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
money spend on facilities in euro's	169	7,7518	16,09774	1,23829

#### One-Sample Test

Test Value = 7.40

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
money spend on facilities in euro's	,284	168	,777	,35178	-2,0928	2,7964



### Appendix 5A: Chi-Square test visited facilities

Hotel and shoplocation missing because they have been filled in 0 times.

		type of nature visited			
		new/wild nature		Managed Natuur	
		Count	Column N %	Count	Column N %
facilities visited by participants	NoneA	44	66,7%	66	64,1%
	CafebarA	4	6,1%	6	5,8%
	CoffeetheeA	3	4,5%	11	10,7%
	RestaurantA	6	9,1%	13	12,6%
	SupermarketA	11	16,7%	11	10,7%
	OtherA	6	9,1%	4	3,9%

#### Pearson Chi-Square Tests

		type of nature visited
facilities visited by participants	Chi-square	5,850
	df	6
	Sig.	,440

Results are based on nonempty rows and columns in each innermost subtable.

### Appendix 5B: Chi-Square test wanted facilities

Hotel, supermarket, shoplocation and other missing because they have been filled in 0 or 1 time for both managed nature and new nature.

		type of nature visited			
		new/wild nature		Managed Natuur	
		Count	Column N %	Count	Column N %
Facilities absent and wanted by participants	NoneB	40	61,5%	69	67,0%
	CafebarB	8	12,3%	5	4,9%
	CoffeetheeB	22	33,8%	28	27,2%
	RestaurantB	8	12,3%	13	12,6%

#### Pearson Chi-Square Tests

		type of nature visited
Facilities absent and wanted by participants	Chi-square	4,470
	df	4
	Sig.	,346

Results are based on nonempty rows and columns in each innermost subtable.

### Appendix 5C: Independent sample t-test mean amount of money spend

#### Group Statistics

		type of nature visited	N	Mean	Std. Deviation	Std. Error Mean
money spend on facilities in euro's	new/wild nature		66	6,4783	15,16398	1,86656
	Managed Natuur		103	8,5678	16,69006	1,64452

#### Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
money spend on facilities in euro's	Equal variances assumed	1,562	,213	-.822	167	,412	-2,08943	2,54060	-7,10527	2,92640
	Equal variances not assumed			-.840	148,179	,402	-2,08943	2,48767	-7,00532	2,82645

## Appendix 5D: Chi-Square test gender

Gender of respondent \* type of nature visited  
Crosstabulation

Count		type of nature visited		Total
		new/wild nature	Managed Natuur	
Gender of respondent	male	22	45	67
	female	44	58	102
Total		66	103	169

### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,803 <sup>a</sup>	1	,179		
Continuity Correction <sup>b</sup>	1,396	1	,237		
Likelihood Ratio	1,819	1	,177		
Fisher's Exact Test				,200	,118
Linear-by-Linear Association	1,792	1	,181		
N of Valid Cases	169				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 26,17.

b. Computed only for a 2x2 table

## Appendix 5E: Mann-Whitney test age

### Nonparametric Tests

#### Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Age respondent is the same across categories of type of nature visited.	Independent-Samples Mann-Whitney U Test	,286	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is ,050.

## Appendix 5F: Independent sample t-test travel time

### T-Test

#### Group Statistics

	type of nature visited	N	Mean	Std. Deviation	Std. Error
					Mean
traveltime by car in minutes	new/wild nature	66	20,95	27,630	3,401
	Managed Natuur	103	29,89	32,493	3,202

#### Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
traveltime by car in minutes	Equal variances assumed	8,933	,003	-1,847	167	,066	-8,939	4,839	-18,493	,615
	Equal variances not assumed			-1,914	154,122	,058	-8,939	4,671	-18,166	,289



## Appendix 5G: Chi-Square test reason for visiting nature:

main reason for visiting nature area \* type of nature visited Crosstabulation

			type of nature visited		Total
			new/wild nature	Managed Natuur	
main reason for visiting nature area	walk/stroll	Count	21	46	67
		Expected Count	25,9	41,1	67,0
	walking the dog	Count	8	3	11
		Expected Count	4,3	6,7	11,0
	flora en fauna	Count	7	11	18
		Expected Count	7,0	11,0	18,0
	recreation and relax	Count	20	23	43
		Expected Count	16,6	26,4	43,0
	Sports (Cycling, running etc)	Count	3	8	11
		Expected Count	4,3	6,7	11,0
	Peace and rest	Count	6	12	18
		Expected Count	7,0	11,0	18,0
Total		Count	65	103	168
		Expected Count	65,0	103,0	168,0

### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8,828 <sup>a</sup>	5	,116
Likelihood Ratio	8,749	5	,120
Linear-by-Linear Association	,132	1	,717
N of Valid Cases	168		

a. 2 cells (16,7%) have expected count less than 5. The minimum expected count is 4,26.