The interaction and co-creation of knowledge between farmers and policymakers & knowledge institutions within the KLIMAP project

What lessons can be learned to further improve the upscaling process

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Resume

Innovation is vital in developing a climate robust way of agriculture. But solely innovation is not enough. That innovation must also be available for upscaling to other regions. The innovations need to be approachable, understandable, and affordable for the farmers that will have to implement them. Therefore, farmers and other agricultural institutions play a big role in the implementation of innovation. This research wants to find out how the interaction and co-creation of knowledge between the farmers and policymakers & knowledge institutions within the KLIMAP project is. This is done by conducting online interviews with policymakers from various levels of government, researchers from knowledge institutions and a farmer. The result would be that the interaction and co-creation of knowledge between van de Borne and knowledge institutions & policymakers within Klimap casus de Reusel are going well. Van de Borne is seen as a forerunner and the hope is that other farmers are learning from him. But the other farmers are not involved in the co-creation of knowledge. Therefore more focus on the involvement of the other farmers is needed. Van de Borne tries to involve the other farmers more with his precision academy. This is an opportunity for the knowledge institutions and policymakers to support those efforts.

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1. Introduction

The extreme drought of the 2018 summer and the extraordinary drought of the 2019 and 2020 summers might give a glimpse of what climate change has to bring for future agricultural practices. Especially for the high sand grounds in the Netherlands. Due to the high sand ground, the water drains away before it can supplement the groundwater level (Provincie Gelderland, 2010). The Dutch water system is built around the idea that water needs to be carried away as soon as possible. Worsening the supplementation of the groundwater level. The water system is built this way because the Netherlands is a delta, therefore the Netherlands is not used to water shortage but used to water abundance (Hack-ten Broeke, 2021). The drought of the recent summers helped realise that water retention is becoming increasingly important. For more water retention, change is required in the Dutch water system. For change to happen in the water system, innovation and new policies are necessary. The agricultural sector in the Netherlands requires and uses a lot of water. As a result, the agricultural sector is vulnerable to drought and needs to change (LEI Wageningen UR, 2015). To innovate in the agricultural sector and find a sustainable and profitable way of agriculture, the Klimap project has started casus De Reusel (located in the province of Noord-Brabant in the Netherlands). Reusel has been chosen because the Water Authority Rijn en IJssel combined with some local farmers requested assistance in the climate-proof development of the estate (KLIMAP, 2021).

Innovation is vital in developing a climate robust way of agriculture. But solely innovation is not enough. That innovation must also be available for upscaling to other regions. The innovations need to be approachable, understandable, and affordable for the farmers that will have to implement them. Therefore, farmers and other agricultural institutions play a big role in the implementation of innovation. This research tries to learn about the interaction and co-creation of knowledge between farmers and policymakers & knowledge institutions. This research has taken three main actors: farmers, policymakers and knowledge institutions. These three actors have been chosen because as already mentioned farmers play an important role in the success that a policy potentially has. Policymakers are responsible for the policies they create so naturally, they are important and influential in the decision-making around a potential policy. The knowledge institutions are important generators for innovations and for the knowledge policymakers use to make policies.

1.2 Research goal

This research is a qualitative research that has its focuses on the practical side. The research aims to narrow the gap between the farmers and the policymakers & knowledge institutions by interviewing actors and analyzing the interviews. Therefore, creating more insights into the transferability of knowledge between the actors. Reducing the gap between farmers and policymakers & knowledge institutions increases the long-term durability of a policy. It also increases the chance of a succeeding policy (Wesseler & Brinkman, 2002). The results of this research can be used to improve policies that rely on mutual practicality between farmers, policymakers & knowledge institutions. This research will hopefully also create insights into

the process of co-creation of knowledge between farmers, policymakers & knowledge institutions.

1.3 Relevance

The societal relevance of this research is that when the complex relationship between the farmers, policymakers and the knowledge institutions is understood better, policies and innovations can be made more approachable. A more approachable policy or innovation lowers the threshold for farmers to participate (Wright, 2012, p. 1727). A better understanding of the complex relationship can lead to more understanding for and from all actors. This can create more trust between the actors which can lead to an increase in the chance of a policy or innovation succeeding (Wang et al., 2018, p. 3385). An increase in the trust between the actors can also support potential future partnerships. Another societal relevance is that when the actors have a better understanding of the relation, the policies and innovations can be better focused on the needs of the actors (Wright, 2012, p. 1727). For example, during innovation and policymaking, the knowledge institutions and policymakers can keep in mind that their policy or innovation needs to be economically profitable for the farmer to be able to adapt it.

The scientific relevance of this research is that when the complex relationship between farmers and policymakers & knowledge institutions is understood better. It can be helpful with the upscaling process. A better understanding of the relationship can help understand why some policies and innovations succeed while others do not (Wang et al., 2018, p. 3385). For many countries the problem is not simply one of getting university research to address issues of relevance, it is also one of providing the necessary linkages with users which would stimulate relevant research (Francis et al., 2016). A better understanding of the relationship between farmers, policymakers & knowledge institutions would increase those linkages and therefore increase the possibility for co-creation of knowledge. Increasing the chance of a policy or innovation to succeed (Francis et al., 2016).

1.4 Research questions

To realize the research goal of this study, a research question is created:

- How does the interaction and co-creation of knowledge occur between the farmers and policymakers & knowledge institutions within the KLIMAP project?

To answer this main research question, these sub-questions are created:

- What is the relation between the farmer and the policymaker and does this relation provide an opportunity for the co-creation of knowledge?
- What is the relation between the farmer and the knowledge institution and does this relation provide an opportunity for the co-creation of knowledge?
- What is being done by the policymakers & the knowledge institutions to reach and inform the farmers?
- What is being done by the farmers to reach & inform the policymakers and the knowledge institutions?

2. Theoretical Framework

2.1 Scientific relevant theories

The co-creation of knowledge

The co-creation of knowledge as a methodological approach aims to solve societal problems, it is often used in transdisciplinary research. The process of the approach consists of three fundamental steps. In those steps, academia and stakeholders are involved. These three steps are co-design of knowledge, co-production of knowledge, and co-dissemination of knowledge (Mauser et al., 2013). As shown in figure 1 the process of co-creation that spreads up into three different phases: Problem identification and structuring, dealing with the problem, and implementation. These different phases can be evaluated (Pohl & Hadorn, 2007). In the first phase (problem identification and structuring of the societal issue) the societal issue is structured, thereby creating a common understanding of the problem. Making it clear to every participant what the goal of the research is. The second phase (dealing with the problem) is about how the actual research is being done, how the collaboration is going, what processes are working, and what methods aren't working. The third phase (implementation) is the transitioning of the research results toward a policy (Schuck-Zöller et al., 2017). The process of co-creation can deliver three types of products: output, outcome, and impact (OECD, 2006). The output is the direct results of the research and consists (partly) of the co-created knowledge. The outcome is how that output is used for policy and the likelihood that that policy achieves its goals in the short- and medium-term. The impact is the effects that policy has, positive and negative, direct or indirect, intended or unintended (Schuck-Zöller et al., 2017).

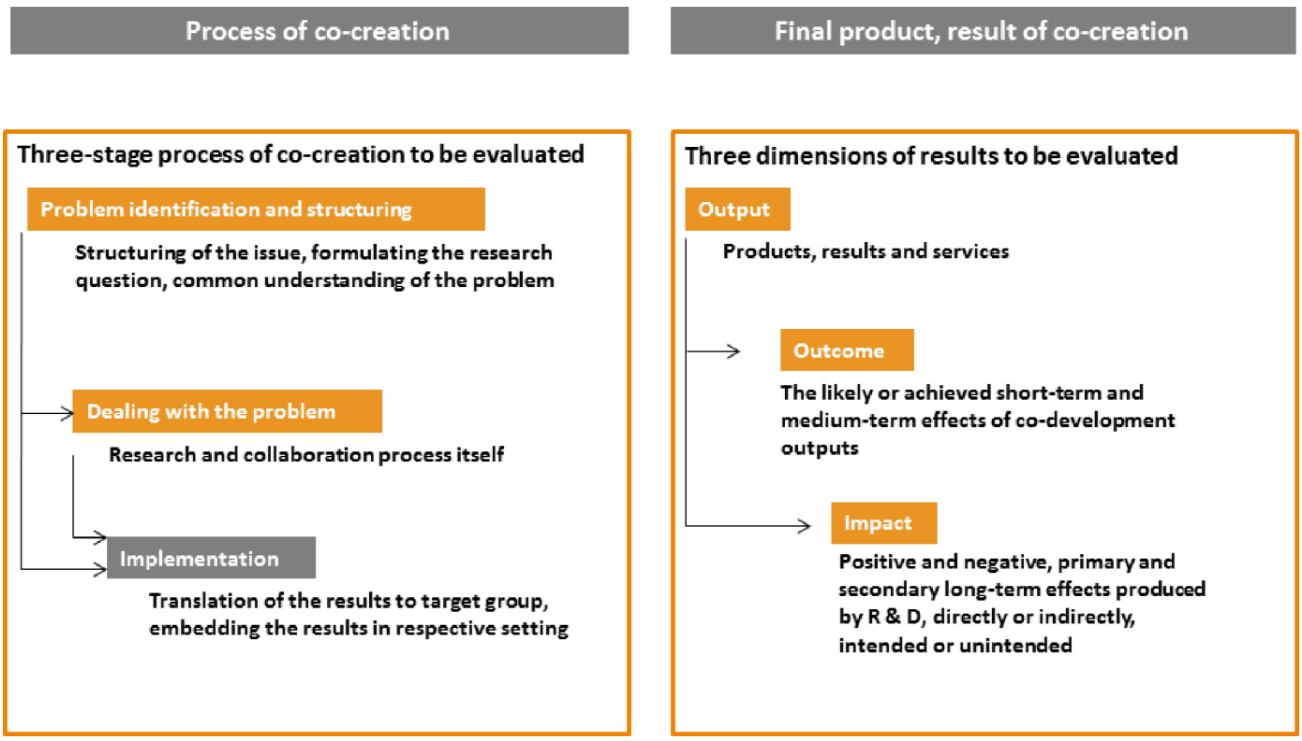

Figure 1: Source (Schuck-Zöller et al., 2017, p. 308)

Relation between policymakers and farmers

All over the world policies, plans and strategies are made by policymakers to help communities adapt to the impacts of climate change. Due to the uncertainties in the impact of climate change, developing climate policies is a very complex process. Currently, there is a gap between the information needed to develop & guide policy and the scientific information (Donatti et al., 2016). Most countries have developed policies to reduce the impact of climate change. Unfortunately, most of these policies lack the identification of specific plans for farmers to adapt to climate change (Tribbia & Moser, 2008). Agricultural production is crucial and there is a need for urgent action on this front. This situation can be the result of the lack of information or the lack of use of available information by policymakers. This includes the lack of information on adaptation measures, lack of institutional capacity, lack of financial support, lack of coordination between government, scientific groups, and farmers, and the lack of specific information on climate change impacts at the local level (Donatti et al., 2016). According to research done by Donatti et al (2016), the lack of technical information on the expected impacts of climate change on farmers and farming systems. Combined with the lack of knowledge about available adaptation measures for farmers were generally the biggest barriers for policymakers in South- and Middle America. The policymakers indicated the availability of information on maps such as the local change in water availability, locally projected temperature changes, the location of the most vulnerable farmers, and the impact on local animal productivity and crop yields. Is seen as lacking availability and is crucial for making policy for local farmer adaptation towards climate change impacts.

Looking into research closer to the Netherlands, in England farmers are a very important stakeholder group. They manage 70% of England's land. So their decisions are crucial for a policy outcome. Therefore it is important to understand and recognize the viewpoints of farmers on agricultural policies. The input of farmers can also deliver successful outcomes when new policies are being created. Thus it is important that policymakers and farmers work together to reach the goal of sustainable agriculture and that they are working with each other rather than working against each other (Phoenix et al., 2019).

Relation between Knowledge institutions and farmers

Agriculture systems require a transformation to ensure sustainability in global food production and global food security. For this transformation, innovation is necessary. Knowledge institutions are contributing by designing new agricultural technologies. These new technologies help provide the farmer with new ways of visualizing and measuring the impact of various farm practices. The new digital technologies contribute to the connectivity among the participants of the food chain. Digital agriculture services combined with ecological farming practices help farmers deliver greater efficiency in farm resource utilization (Gangwar et al., 2020). Increasing the ability to connect with knowledge institutions is necessary for farmers to improve their productivity and efficiency. This is a development challenge in most countries as farmers struggle to ensure their socio-economic well-being and struggle with finding a successor. Technological interventions combined with ecological farming practices are long-term benefitting communities, the environment, the economy and the ecosystem (Gangwar et al., 2020).

There is growing evidence that suggests that ecological intensification of farming can help safeguard food production, with accompanying environmental benefits (Kleijn et al., 2019). Unfortunately, farmers rarely adopt this approach, European farmers have, generally speaking, little interest in ecological intensification. The attitude of European farmers towards biodiversity and service-enhancing practices showed that farmers favour practices that interfere little with normal farming operations (Bailey et al., 2015). For scientific studies to be more appealing to farmers, scientists need to address more practical knowledge. Knowledge about the cost and benefits that are relevant for farmers. Additionally measuring variables and parameters such as yield productivity, yield quality, yield stability, and commercial grading should be included in the research so that the farmers have an overview (Kleijn et al., 2019). The potential costs should also be kept in mind by the researchers, direct cost and opportunity cost.

Another knowledge gap between science and farmers is the limited spatio-temporal scope of the evidence that is available. Most studies investigate and examine a single crop field in 1 or 2 years. That is a spatio-temporal scope too short to be relevant for farmers, the number of studies that have spatio-temporal scopes that are relevant for farmers is very rare (Kleijn et al., 2019). An occurring problem is that populations of service-providing species need time to build up before they are measurable. This leads to a time lag between the implementation and manifestation of ecosystem service benefits.

Farmer behaviour studies show that short-term economic benefits increase the chance that biodiversity-enhancing practices get adopted. However, benefits alone do not guarantee the uptake of management practices (Garibaldi et al., 2017). Farmers could decide to not follow scientific evidence because of the uncertainty about the relevance of recommendations. Scientific studies often have recommendations for their specific farms with their specific conditions. For a farmer, it is then unsure what happens if he uses the recommendation on a different soil type (Sheriff, 2005).

The rise of available information means that, in theory, there is access to knowledge about any question you can ask. However, the amount of misinformation also has increased. And therefore the challenge in deciding which information is correct. Historically farmers have relied on, in person, advice from traditional experts about agricultural innovations. But nowadays farmers increasingly go online for information, they consult farmer social media ‘influencers’. However, online information is often not the main influencing factor for changes. Most farmers consult peer farmers to learn about new methods, instead of the traditional experts. The traditional experts are losing trust, especially researchers from knowledge institutions and government institutions. The reason for this decline in trust is that farmers believe that the researchers were not empathetic toward farmers’ needs (Rust et al., 2021).

When farmers face key decisions, economics are not the only considerations they make. The decisions are also based on previous experiences, the farmer's familiarity with the required technology, his interactions with peers and (informal) advisers, the labour requirements, and the perceived risks. For scientists, it is therefore important to keep all these factors in mind when they write and make recommendations for policies and practices (Kleijn et al., 2019).

In the research of Šūmane et al. (2018), successful learning and integrating knowledge by farmers from knowledge institutions is tied to personal curiosity, personal willingness to learn, social networking, farmers' organisations, and the support of governance structures. This co-creation of knowledge by farmers and knowledge institutions is both done by formal and informal sources. Networking and exchanging knowledge make knowledge more flexible. The role informal knowledge has in these processes is the transfer and adoption being mediated by the farmers and then combined with the already existing local knowledge. The already existing agricultural knowledge systems and agricultural policymakers still have to increase the acknowledgement and recognition of the value informal knowledge has. Making more use of a farmer's informal knowledge would also support the goal of creating a knowledge-based society (Šūmane et al., 2018).

Early innovators tend to be higher educated, providing an example for less formally educated farmers. Higher educated farmers are more capable to copy innovators, increasing the diffusion of innovation within the area. The level of education does not appear to affect the timing of the introduction of an innovation. But it does influence the diffusion of that innovation. Farmers informally learn from other farmers. So farmers that acquired formal education can inform and educate other farmers informally. Allowing whole sites to benefit from the education of a few farmers (Weir & Knight, 2000). According to research from Strauss (2016) based on interviews with farmers in Salzburg, informal knowledge and learning done by farmers is key to finding new pathways in farming. The informal networks farmers have are used to enable farmers to engage in co-operations, gain skills and collaborate. The formal agricultural knowledge system, that currently is in place, does not address the informal knowledge needs farmers have. Therefore, encouraging social learning processes from different groups in informal settings could strengthen the endurance of farms.

To integrate informal knowledge, innovation, and other ways of learning done by the farmer. The research of Šūmane et al. (2018) suggests areas where formal knowledge institutions, farmers, and agricultural policymakers can meet and share ideas and opinions.

· Facilitating connections thereby increasing knowledge exchanges between the various stakeholders. Increasing the opportunities for joint learning. This could be an event with the experts in the relevant field meeting the local farmers.

· To support local-level initiatives by the farmers, especially the initiatives that are beneficial for the usage of already existing local (informal) knowledge. This could be done by stimulating cooperation, stimulating networking, exchanges of experiences, etc.

· Training farmers in soft skills like networking, finding collaboration, and investing in joint learning with other farmers.

· Financial support for organisational expenses for the learning of networking and other soft skills. Make sure that applying for such funds is simple and making sure it has transparent guidelines. Preventing some sort of bureaucracy.

2.2 Conceptual model

In this conceptual model, there are multiple steps. The farmers influence informal knowledge. Institutions of knowledge and policymakers influence formal knowledge. Informal and formal knowledge is the basis for the co-creation of knowledge indirectly by the farmers, institutions of knowledge, and policymakers. This in term leads to an opportunity to create more sustainable farming policies. When sustainable farming policies are introduced and influenced by all the actors the chance of successfully upscaling innovations is greatly increased. This is compared to a situation wherein the farmers are neglected or the knowledge institutions have the upper hand in the negotiations. The same can be said when the policymakers have a similar advantage. When farmers are included in the process, the societal support increases and thereby the success chance of the policy and the upscaling process increases.

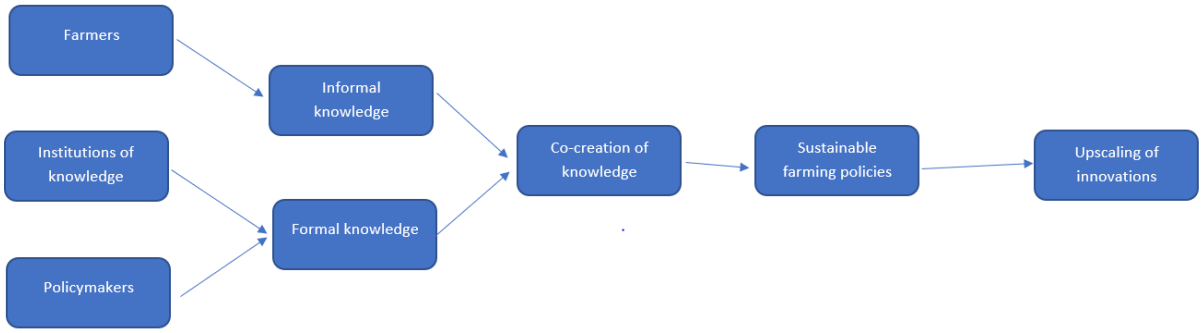

Figure 2: Conceptual model

In this conceptual model, there are a few important terms that require a definition. These terms are farmers, institutions of knowledge and policymakers. These definitions have been established by means of a literature study. In this research, a farmer is defined as a person who makes a living out of agricultural and/or livestock practices on a farm. The institutions of knowledge are defined as institutions that do research and from that research, collect information from which knowledge may be obtained. They generate knowledge. The policymaker is defined as a person responsible for making a policy or influencing the process which leads to the creation of a policy.

3. Methodology

This research is a case study of the Klimap project de Reusel that takes place between April 2021 and June 2022.

3.1 Data collection

This is a qualitative in-depth research. The research process is inductive and for collecting data qualitative methods will be used. It has been chosen for a qualitative approach because this method is good for the research of a specific situation. The specific situation in this research is the Casus Reusel from the Klimap project. The results of this research can be used for follow-up studies in other cases of the Klimap project. In this research, the focus lies on Reusel to map the interaction and co-creation of knowledge between farmers and policymakers & knowledge institutions.

The first step in this research is a literature review to understand what knowledge is already present on this topic. The literature review is also used to create a research framework. Due to the Covid-19 virus and as a result of the lockdown, visiting the library is restricted. That is why the literature review is done mostly online. The literature analysis will be done online via google scholar by searching for relevant theories. The literature analysis will be an ongoing iterative process.

Interviews are the primary data source of this research. These interviews will be semi-structured. Chosen is for semi-structured interviews because they offer more possibilities than surveys. In a semi-structured interview, there is room for open questions, which is not possible in a survey. Another advantage of the semi-structured interview is that the interviewer can choose the order of questions during the interview. This allows for a more natural conversation in the interview. The semi-structured interview also provides an opportunity to ask more detailed questions during the interview when the interviewee brings up relevant subjects. The semi-structured interview gives room to dive deeper into the answer of the interviewee, thus creating a better understanding of the answer. The interviews are to be taken online via skype or zoom. This is due to the Covid-19 virus measures.

In this research 7 interviews have been carried out with various stakeholders. The first interview was conducted on 21 October 2021 with an employee of Jacob van de Borne potatoes. Van de Borne focuses on precision farming and sustainable soil management. The company is committed to increasing the co-operation between farmers in the local region. And they also experiment with possible innovations for a more sustainable way of farming.

The second interview took place on 25 October. The interviewee works for the water board de Dommel as a policymaker. She is a policymaker for innovation in water systems and takes part in Klimap on behalf of the water board de Dommel.

The third interview took place on 23 March. The interviewee works for water board de Dommel as an planvormer rural area. A planvormer is the point of contact for individuals and governments. For people that already have a plan ready or want to make a plan that is correlated to the water board.

The fourth interview took place on 31 March. The interviewee works for the province Noord-Brabant. She works in the ondersteuningsnetwerk transitie landbouw depart, which roughly translates to support network transition agriculture. The support network focuses on the development of rural areas. The support network is a liaison between the farmers and the policymakers of the municipality & province. Their goal is to facilitate the agricultural transition.

The fifth interview took place on 6 April. The interviewee works for municipality Reusel-de Mierden as a policymaker on spatial development and as a property coach. In his role as property coach, he works with mainly farmers. Farmers that have plans to expand or to quit. He advises those farmers and helps with realizing their plans.

The sixth interview took place on 26 April. The interviewee works for Wageningen Environmental Research (wur). He is specialized in soil physics and agrohydrology. Within the Klimap project, he works in the working group Proeftuinen.

The seventh interview took place on 7 June. The interviewee works for Wageningen Environmental Research. He is specialized in exploring and designing a climate-adaptive and nature-inclusive vision for the future of the Netherlands. In Klimap he works within workgroup Ontwikkelpaden.

The contact person on behalf of the province of North Brabant was approached for an interview. but he had not visited Reusel yet. The project was vaguely familiar to him so interviewing was too early according to him.

Because the interviews are online, some different preparations are needed than normal. For example, the connection can be an issue and create some difficulties in understanding each other. The questions are adjusted to this, they are a bit short and have to be pronounced clearly. In preparation for the interview, questions for the interviews are concluded from the literature review. The interviews will be taken with three different groups within the Klimap project in Reusel: farmers, policymakers and knowledge institutes. The interviewees will be contacted via the Klimap project in Reusel.

The interviews are going to be recorded to subsequently be transcribed. Another benefit of the fact that the interviews are being recorded is that peers can relisten the interviews. This allows them to control for researchers' bias. In this research different sources of information are being consulted such as government policies. The aim is to make use of triangulation and therefore collect a diverse amount of data.

For validity, the interviews are prepared based on the executed literature research. The goal of this literature research is to use the most recent scientific literature so that the research is as relevant as possible. Interviews that could not be recorded are not going to be used in the conclusion or results. Before the interview starts the interviewer will give a detailed explanation about the interview, the goal of the interview and what is going to happen with the recording. After the interview, the interviewer will ask the interviewee if there are any questions or uncertainties.

3.2 Data-analysis

The acquired data will be analysed. The transcripts are coded, open, axial and selective. This is done to create an overview that can be used for drafting conclusions. During the open coding, topics are derived from the transcript and labels are assigned to text fragments. As a result, it is made clear what the theme of every fragment is. With axial coding, codes (made with open coding) are being compared and similar codes connect. The result of this is that there are main themes. These main themes are used in the results and the conclusion. During the selective coding, themes are linked and a theory will be lined up. To do this coding the computer program ATLAS.TI will be used.

4. Results and Discussion

4.1 Introduction

For this research, seven people have been interviewed. The interview guides that were used for these interviews can be found in the appendix. There are two interview guides, one for an interview with a farmer. The other for an interview with a policymaker or an employee of a knowledge institution. The findings of the interviews are described per the research question, in this chapter.

4.2 What is the relation between the farmer and the policymaker and does this relation provide an opportunity for co-creation of knowledge?

At the lower levels of government, policymakers and farmers intertwine. "*I have colleagues who have a job at the water board and have an agricultural company on the side*" (Interview 2, 2022). Policymakers also work together with farmer collectives. These collaborations are often small practical situations such as field edges, pools, rows of trees, etc. So policymakers outsource small practical tasks, wherever possible, to farmers. And the farmers like to act on their own, whenever the policymakers take too long to approve a plan. They just start. There is a strong "we will arrange that" culture.

At other levels of government, there is a big contrast between farmers and the government. Farmers experience the government as unreliable. Most farmers do not believe in the capability of the government. *"Do farmers still have trust in the government? Most of them do not, I always use the phrase: there is nothing so fickle as the government."* (interview 5, 2022). The government is accused of being capricious. But that is not only due to the government. In the previous elections, a green party won in Brabant, they brought some legislation changes forward. Most people disagreed and then with the current elections voted for a different party, less green. The new government rolled back the plans of the previous government. Making the situation and legislation increasingly vague. This corresponds with results from the research done by Tribbia & Moser (2008). In this research, it became clear that most of the studied policies lack the identification of specific plans for farmers to adapt to climate change. Such situations create unclear legal recourse and make it difficult for farmers to act proactively. As a result of this, within foreseeable periods, all kinds of different regulations have been passed. This makes it hard for farmers to keep track of all the regulation changes. Some regulations demand that farmers invest, some of the investments return their profit in 10 years. So to do such an investment you need clarity that the regulations do not change within that 10 years. But as it is going now every 4 years a lot of changes. The lack of certainty and perspective makes it difficult for the farmer to do business in such an environment.

Another obstacle the farmer experience is a lack of clarity. When the government requires an abstract goal such as less emission or more water retention, it is often unclear to a farmer how to reach that abstract goal. "*They are all abstract goals of decreasing emissions, decreasing leaching and more water retention. But which actions, which steps do I have to take to ultimately achieve a decrease in leaching every year or increase the water-holding capacity*"

(interview 1, 2021). This creates more uncertainty and stress for the farmers. This corresponds to the study done by Kleijn et al. (2019). Wherein was concluded that scientists and policymakers need to address more practical knowledge for scientific studies to be more appealing to farmers.

Legislation is experienced as the biggest obstacle both by the farmers and the policymakers, the legislation is very strict and not flexible. Limiting the ability of policymakers to apply precision work. "*In most cases, it already is precision work. Because nothing is allowed within the current legislation*" (interview 5, 2022). This limits the ability of policymakers to help farmers and increases the contrast and frustration between farmers and policymakers. These findings comply with the warning done in the research done by Phoenix et al. (2019). In that research, it is stated that policymakers and farmers need to work together to prevent that they are working against each other causing frustrations and decreasing the chances of delivering a successful outcome or output.

Being a pilot study briefly relieves the pressure of the legislation. But that is only temporary. When the pilot study is finished, they have to comply with the rules again. According to interview 4 (2022) *"There's nothing worse than being a pilot. Because when the project is a pilot, the government does not have to look after the project for three to five years".* Escaping the pilot phase of research is difficult and for the farmers, it is demotivating to see nothing happening with the research they helped with. If farmers could have had more influence in the implementation phase of an agricultural pilot, it would increase the chance of a succeeding policy (Wesseler & Brinkman, 2002).

The Reusel area is close to the Belgium border, a lot of the farmers even have land in Belgium. In Belgium, the legislation is less strict. Methods that work in Belgium and that are good for the soil, are forbidden in the Netherlands. This increases the incomprehension that farmers have for the government. "*But because we see that in Belgium other things are allowed. Methods that are better for nature, the soil and the environment. Unfortunately, these methods are banned in the Netherlands. And such methods are only increasingly banned if the nitrates directive and the current plans persevere"* (interview 1, 2021). The incomprehension and lack of trust farmers have for the government complicate the ability to work together. Therefore making it difficult to even take the first steps for the co-creation of knowledge. So to start the first steps of the co-creation process, the trust must be restored and the incomprehension diminished.

As a result of the first research question, it became clear that the relationship between the policymaker and the farmer does not provide an opportunity for the co-creation of knowledge. Farmers do not trust the government, the farmers struggle with the inconstancy the government sometimes shows and struggle with the strict legislation. Policymakers as well suffer from the strict legislation, they have no room to help the farmers.

4.3 What is the relation between the farmer and the knowledge institution and does this relation provide an opportunity for the co-creation of knowledge?

During the interviews, it became clear that van de Borne has a lot of contact and collaboration with the University of Wageningen. For ten years he has had a lot of contact with the wur, due to the making sense farming plot project. He is in several projects with the wur about the future of cultivation and closing cycles. This was expected because the design of Klimap casus Reusel van de Borne plays an important role. Therefore van de Borne is involved in the first phase (problem identification) of the co-creation of knowledge. In the second phase (dealing with the problem), van de Borne participates in executing and implementing the research results, which is the third phase. Therefore van de Borne is involved in the phases required for the co-creation of knowledge described in the research of Schuck-Zöller et al. (2017). So this relation provides an opportunity for the co-creation of knowledge.

The situation is a bit different for a more 'normal' farmer. Van de Borne is a big company with some well-educated employees. According to interview 6 (2022), those smaller farmers do not contact the knowledge institutions. "*But I have not yet experienced farmers coming to us for advice. That they have a problem and ask us if we can solve that problem ".* And whenever research takes place on a parcel of a smaller farmer. He barely gets involved, ignoring the farmer in the first step of the co-creation of knowledge. Whereas van de Borne influences the ongoing research. The more normal farmer only has a few practical adjustments to influence. "*Then the farmer has a requirement that he must be able to mill or plough. So our research equipment should not form an obstacle for the farmer. So in that way, he still has some influence but not otherwise"* (interview 6, 2022). The 'normal' farmer is thus not participating in the second phase of co-creation of knowledge. One of the reasons that those smaller farmers barely get involved is because the farmer mostly has practical and informal knowledge and less formal knowledge. The researchers often try to explain the research to the farmers, but most of the time the research is more theoretical formal knowledge and not immediately operable. "*We try to explain that to a farmer or entrepreneur. But for him or her, it is often a whole new way of looking at the situation. That is a piece of work that is not yet ready to be used in the practice. The farmer cannot use the acquired knowledge immediately"* (interview 6, 2022). Therefore the farmer is not immediately helped with the acquired knowledge. So it is not that interesting for the farmer. It seems to be the case that the farmer has informal knowledge and the researcher from the knowledge institution's formal knowledge. And adding the informal knowledge with the formal knowledge and vice versa seems not to be the case. This is in line with the research done by Šūmane et al. (2018), therein was stated that there is a need to increase the acknowledgement and recognition of the value informal knowledge has. Increasing the use of farmers' informal knowledge supports the goal of creating a knowledge-based society.

Another reason the smaller farmer barely gets involved is that there is a significant knowledge difference. *"On specific topics, the water board and the knowledge institution have significant information and knowledge dissimilarity. You cannot expect the farmers to acquire and study all that information. Even if you want to transfer all that knowledge and insight, then the farmers*

lose way too much time, so to speak, to take all that information in" (interview 3, 2022). This knowledge difference creates a gap between the farmer and the knowledge institution. This knowledge difference is also not easy to reduce. Although the universities publish a lot of information online that everybody can read, not all farmers have the time to catch up to all that information. The information universities publish contains a lot of jargon, making it difficult to read for the farmer to read. Furthermore, there is a lot of information in the research that is not interesting for the farmer, such as the methodology or data collection. According to interview 3 (2022) *"Please, do not send a scientific report towards a farmer. Because the methodology, data collection, etc. are not interesting for the farmer. The farmer goes to the conclusion and then he thinks: there is just a follow-up research question in it".* This makes the scientific reports not easy to read and not so easy to understand for farmers. Van de Borne has some highly educated people employed that are accustomed to scientific reports and scientific research. Reducing the gap between the van de Borne farm and the knowledge institution. Currently, most farmers do not have a degree in a study from a university of applied science or university. This is in line with research done by Kundu et al. (2013) in Bangladesh. The research shows that respondents with lower levels of education, medium level of economic motivation and risk orientation cause a high knowledge gap. But their successors increasingly have. It is more common nowadays that the successors have studied a HAS-level study, sometimes even a university-level study. These successors are more accustomed to scientific reports and scientific research. Potentially reducing the knowledge difference and reducing the gap between the knowledge institutions and farmers.

As a result of the second research question, it became clear that the relationship between van de Borne and the knowledge institution provides an opportunity for the co-creation of knowledge. In all the three phases of co-creation of knowledge van de Borne is involved. Van de Borne is involved with the structuring of the societal issue. He is involved with the actual ongoing research and is involved in transitioning the research towards a policy. Van de Borne is seen as a forerunner that can help convince other farmers. All this does not apply to the normal farmer, he barely gets involved in all three phases of co-creation of knowledge.

4.4 What is being done by the policymakers & the knowledge institutions to reach and inform the farmers?

As a spokesman for the municipality interviewee 5 stood in local booths. He there introduced himself and what he can do for a farmer. He offered a so-called "keukentafel gesprek" which roughly translates to kitchen table conversation. In such an informal conversation he spoke with local farmers at their farms. He spoke about the situation of the farmer and his future plans. Trying to uncover how the farmer sees his own future and the future of his business. *"In that process, we try to give some helping hand. But it comes down to the initiative of the farmer himself. The farmer self should consider what he wants to do within the current legislation and what he wants to do in the future with his company. And that's actually the most important thing you have to learn in those conversations"* (interview 5, 2022). During these conversations, he tries to give a helping hand to the farmer and tries to connect them to a policymaker or knowledge institution that can help him achieve his plans. These conversations are paid for by the government. Such a conversation is a moment for the policymaker and farmer to exchange formal and informal knowledge. It is not the co-creation of knowledge because they are not generating new knowledge. But in the conversations, the farmer can

give feedback about policies that work or do not work. Such collaboration can be seen as the first step towards restoring the trust and decreasing the incomprehension farmers have for the government. Bringing the farmers closer to the policymakers and the knowledge institutions, hoping that successful collaboration leads to more collaborations in the future.

The municipality tries to anticipate and facilitate. And via that method help the farmers. The point of view of the municipality is that *"I think you should let those enthusiastic people do their work. And that we as municipality should do our best to facilitate and to ensure that they can function as an example"* (interview 5, 2022). The municipality tries to accommodate the forerunners so that other farmers can learn from the forerunners. In this way it tries to reach the farmers. The course of action the municipality chooses to take corresponds with the advice given in the research done by Kleijn et al. (2019). In this research, it is recommended that researchers and policymakers keep in mind that when farmers face key decisions, economics is not the only factor they consider. Taken into consideration are also his interactions with peers and (informal) advisers, the labour requirements, and the perceived risks. The municipality does not only tries to reach and inform farmers, she also tries to inform the other residents of the situation farmers are in. One thing the municipality was to organize a playlet about the farmers. To lure that discussion and make the people aware of the situation farmers are in**.** The municipality did this to increase the awareness of its residents. The playlet denounced some serious topics and tried to make the spectators aware that they also have a responsibility for the situation the farmer is in.

Interviewee 4 works as a spokesperson of the province and works with policymakers, knowledge institutions and farmers. She tries to use the knowledge she gathered during conversations with farmers as feedback to other policymakers. So that policy can joint better with farmers. She also tries to make the often difficult-to-read reports more accessible. "*If we know that it is important then we ask ourselves: how can we make it easier to read and draw attention towards it. We also try to discuss with policymakers over the things we discover from our practical experience*" (interview 4, 2022). Whenever she notices that within a policy or research farmers are not well implemented or involved. She can let her voice be heard, she can insist that more information is provided. And possibly roll up her sleeves to organize such a moment herself. She works a bit as an intermediary between the farmers and policymakers. She tries to bring the actors together and in a way tries to connect the informal knowledge (from the farmers) with the formal knowledge (from the policymakers). By doing this she is increasing the acknowledgement and recognition of the value informal knowledge has for agricultural policymakers (Šūmane et al., 2018). This can increase the integration of informal and formal knowledge. As seen in the conceptual model this increase in integration can lead to the co-creation of knowledge.

The water board tries to collaborate with farmers on certain projects. An example of such a combined project is the project Norrit and Yakult. By working together with the farmers the water board also gathers information. The water board and the municipality are in preparation for the coming 'omgevingswet'. This new law will make it possible to create a more area-oriented approach. *"That is why there is now a focus on an area-oriented approach. If even more input and even more measures are taken specifically to those specific areas to try to look for new opportunities. So, more focus on precision work"* (interview 3, 2022). This new more area-oriented approach gives the policymaker a tool to deliver policies that are less rigid compared to the current legislation. So that it can give more options to fulfil the needs of the

area and the farmer. As well it gives the policymaker a tool to work together with the farmers to co-create an area development plan and to co-create a future vision. And as seen in the conceptual model the co-created plans and policies, such as the co-created development plan and the co-created future vision, can lead to an opportunity to create more sustainable farming policies. When sustainable farming policies are introduced and influenced by all the involved actors the chance of successfully upscaling innovations is greatly increased (Phoenix et al., 2019).

Within Klimap the knowledge institutions are involved in the development paths. The development path concept is focused on long-term adaptation and long-term frontward thinking. The concept is about transformative thinking, the ability to imagine other visions of the future. In this process, the knowledge institutions work mostly together with policymakers and not with farmers. One of the reasons that there is not much collaboration between farmers and the knowledge institutions on this subject is that the researchers perceived that the concept is abstract and therefore for some people difficult to work with. The researchers from the knowledge institutions noticed that in practice, most of the policymakers they spoke with about the concept had some difficulty with it. Most policymakers are thinking from the present legislation, present business forms and present processes. And that the need or enthusiasm to stretch one's thinking is not always there or does not seem to be there yet. "*If the concept experiences difficulty getting across the minds of policymakers, then maybe we should assay it there first"* (interview 7, 2022). So the focus of the researchers from the knowledge institutions on the development-path-concept is firstly on the policymakers.

The researchers have tried to discuss the concept with farmers in another klimap casus. But the reaction of the farmers was not enthusiastic, the researcher noticed that it stagnated the process. The focus of the farmers they spoke to was more on the practical side of things. Focusing on the current situation and the current legislation. How to optimize their business and their business processes, how does it help then here and now? Therefore not so open to discussing the possible futures, such as new crops, new business models and rehydrating plots. According to interview 7 (2022) "*On the one hand, this has to do with the fact that we think that their minds are not ready for it. To look so far ahead and blow out so wide".* Therefore it is the question of whether the farmers are the right audience to discuss the development paths with. The development paths are theoretical and abstract. So what does it add for whom is the question that the researchers ask themselves, could it help the farmers? *"Maybe not now in their thinking process. At least we haven't found the right process form yet. And then the question for us is, could it help us in our research if it only leads to resistance and incomprehension from the farmers"* (interview 7, 2022) With that question in mind the researchers from the knowledge institutions have not yet invested heavily in contact with the farmers surrounding this concept. Also because the researchers noticed that it was difficult to get the policymakers in the province, the water board and the municipality on board with this way of thinking, within klimap. But he doesn't rule out the possibility that they will still do that in some cases. *"for the time being, less focus on the development paths and if we are going to increase that focus, that is still the subject of discussion. Does it add something to the interaction with farmers? Or does the opposite happen"* (interview 7, 2022).

Within klimap, the wur researchers are also involved in small-scale experiments. In such situations, the researchers of the knowledge institution organized a meeting for the farmers that are part of the research area. But out of the 30 farmers, 10 showed up. *"You soon realize*

that certain entrepreneurs are more interested in such research activities. Other farmers are not so interested in change, they say: my grandfather did it like this and therefore I will too. " (interview 5, 2022). This indicates that there is a duality within the farmers. Some are willing to change and others are holding onto tradition. The farmers that are holding onto tradition are more difficult to reach for knowledge institutions. This conforms with the findings in research done by Rust et al. (2021) in the UK & Hungary. Likewise in that research, it became clear that the traditional experts are losing trust. Especially researchers from knowledge institutions and government institutions. Farmers are now increasingly acquiring information from the internet and learning from peer farmers instead of the traditional experts.

As a result of the third research question, it became clear that the policymakers are located at different levels of government. But at all levels, there are some efforts made to reach and inform farmers. This happens in various ways. There have also been efforts made trying to inform the local population of the situation farmers are in. The knowledge institutions are with the development paths not that active in trying to reach and inform farmers. That is due to multiple reasons such as farmers not being that interested in the development path concept. And that the researchers are experiencing difficulties with introducing the concept to certain policymakers. Therefore focusing first on the policymakers and thereafter focusing on the farmers.

4.5 What are farmers doing to reach & inform the policymakers and the knowledge institutions?

During the interviews, it became clear that farmers reach out to policymakers when they have a problem. Especially towards the water board, according to interview 2 (2022) *"If there is something correlated to water nuisance, the farmers will call us. The farmer farms on soil that is difficult to farm. Consequently when they experience water issues such as drought or too much precipitation. Then they vocalize their complaints. Especially when it is too wet".* They tend to call especially when their land gets too wet. They call for practical assistance from the water board as well as advice and knowledge. The municipality recognizes the knowledge gap between the water board and the farmers and therefore has spokespersons that can advise and help farmers. In return for this advice and information, the farmers can give practical feedback to the policymaker about the given advice and the effectiveness of a policy. This corresponds to the conceptual model where the farmer supplies informal knowledge and the policymaker the formal knowledge. Where combined co-creation of knowledge can take place. Farmers are increasingly approaching these policymakers, increasing the possibility to exchange information. These are examples of individual farmers that try to reach out to policymakers. Even though the number of farmers that approach policymakers is increasing, it's not the majority of farmers yet.

The farmers in the Reusel area have created a collective. *"We have one farmer collective. That is around Jacob van de Borne. That is, together with klimap and the farm of the future, actively networking and seeking to work together with various agricultural branches"* (interview 5, 2022). In this collective farmers share information and knowledge via study groups. These study groups are significant in size. There are different subgroups within the study groups,

especially around livestock farming and pig farming. In the South of the Netherlands around 160 arable farmers are in innovative study groups. The goal of the study group is to learn from forerunner farmers such as van de Borne. 10 different forerunner farmers start to try a method. In that, process the forerunners invite researchers and policymakers to join in to help tackle challenges that the forerunners have found. In the research from Strauss (2016) in Salzburg, roughly the same result was found. In Salzburg, the collectives farmers had created were used to enable farmers to engage in co-operations, gain skills and collaborate.

in addition to experimenting with new methods, the forerunners are trying to create an incentive for farmers to ask questions to policymakers and researchers. "*The question is how can you create an incentive for agricultural entrepreneurs to get started and start asking questions towards each other and outwards. A question such as, this is my problem, who can help me? Maybe there is a civil servant in the local municipality that can help or maybe a researcher in Wageningen at the wur. But now it's always the other way around, from the outside a monster approaches a farmer. A monster that seems to know how everything works and the farmer is startled"* (interview 1, 2021). With this process, questions emerge from the bottom-up instead of the usual top-down method. This different method is aimed at acquiring more practical knowledge that the farmer can immediately use at his farm. In the later part of the quote, the interviewee speaks of a so-called monster approaching the farmer. For a farmer, it might be overwhelming when a researcher, with significant more formal knowledge, comes to the farm for an experiment on a subject the farmer might not understand fully. Creating a gap between the researcher and the farmer. This method tries to decrease that gap. Because when the farmer finds a policymaker or researcher from a knowledge institution that can help him, the farmer already knows a significant amount about his problem. And the farmer invites the policymaker or researcher from the knowledge institution instead of being approached for an experiment, reducing the possible tension for the farmer. With these processes, the method tries to decrease the gap between the farmer and the researcher.

According to interview 5 (2022) "*If a farmer can explain why he finds something interesting, then his neighbour is more likely to get engaged. Then when I tell a monotonous and complicated story".* Farmers tend to learn more from each other, this is in line with the findings in the research done by Weir & Knight (2000). Farmers are also more likely to copy methods from other farmers that successfully implemented that method. Compared to when a researcher from a knowledge institution informs a farmer about a new method. A peer farmer who successfully implemented that method can tell the farmer about the workload, yield difference, time required, etc. All based on experience regionally produced by the farmer. Whilst when a researcher introduces a method it is most of the time based on data gathered based on an experiment somewhere else or generated with data.

Van de Borne started this winter with the precision academy for farmers. This academy consists of three steps. The first step is an e-learning course, consisting of 10 lessons. To understand precision farming and what it can mean for climate, yield and soil. The second step is an online webinar. In this webinar, the participants can now ask a question and form an goal. The third step is to combine the participants that have a question with a policymaker, researcher or private company that has relevant expertise. Trying to associate farmers with policymakers and researchers. What van de Borne is trying to do corresponds to the conceptual model of this research. He tries to bring the informal knowledge together with the

formal knowledge. Stimulating the process where co-creation of knowledge can occur, hoping that a policy that has been developed in this way will better fit the needs of all participants.

As a result of the fourth research question, it became clear that at first glance, it looks like farmers are not very active in trying to reach and inform policymakers & knowledge institutions. But that is not the case. They take a different approach, they gather in a collective and try to approach the policymakers and knowledge institutions with a well-founded question. Working from a bottom-up approach while trying to learn from each other. Sharing information and data about the useability of a method.

5. Conclusion

In this research, an answer has been sought to the question: How does the interaction and co-creation of knowledge occur between the farmers and policymakers & knowledge institutions within the KLIMAP project? To answer this question, a qualitative research has been carried out in Klimap casus Reusel.

At the start of this research, a literature review has been carried out. In this research, it became clear that the co-creation of knowledge consists of three fundamental steps. In those steps, academia and stakeholders are involved. These three steps are co-design of knowledge, co-production of knowledge, and co-dissemination of knowledge (Mauser et al., 2013). The process of co-creation spreads up into three different phases: Problem identification and structuring, dealing with the problem, and implementation (Pohl & Hadorn, 2007). The first phase is problem identification and structuring. In the klimap casus Reusel, the farmers are not involved in this process by the knowledge institution & policymakers for various reasons. An exception to this is the farm of Jacob van de Borne. He was involved in the problem identification and structuring process.

The second phase is dealing with the problem. Farmers are not included in this phase. They do not influence how the actual research is being done, how the collaboration is going, what processes are working, and what methods aren't working. Afresh, van de Borne is an exception. On his farm, multiple experiments are conducted in cooperation with knowledge institutions.

The third phase (implementation) is the transitioning of the research results toward a policy (Schuck-Zöller et al., 2017). The farmers are not involved in this phase, van de Borne is. The co-creation of knowledge between van de Borne and policymakers & knowledge institutions is going well. The co-creation of knowledge between the other farmers and the policymakers & knowledge institutions is not going well. The policymakers & knowledge institutions see van de Borne as a forerunner and hope that the other farmers are learning from him. However van de Borne is not the typical farmer, he has a big company with some well-educated people employed. The typical farmer is expected to learn from van de Borne and is often less highly educated and has a smaller company. So there might be a gap between the 'normal' farmer and van de Borne. Therefore it is important to understand and recognize the viewpoints of those farmers on agricultural policies. The input of farmers can also deliver successful outcomes when new policies are being created (Phoenix et al., 2019).

During one of the interviews, the interviewee named the pilot paradox. In the research about the pilot paradox. They advise to, during your pilot, start thinking more carefully about the course and the continuation. Involve parties for this or have them join in. Also, include the critics in your pilot so that you know where things get stuck if you want to continue later (van Buuren, et al., 2018). I would suggest the same advice for the project. Including the farmers that should learn from the forerunner more in the project. The forerunner van de Borne tries to connect to other farmers and share his data and knowledge in his precision academy. This is a nice opportunity for the policymakers and knowledge institutions to join the efforts of van de Borne.

When farmers face decisions, their decisions are based on previous experiences, the farmer's familiarity with the required technology, his interactions with peers and (informal) advisers, the labour requirements, and the perceived risks. (Kleijn et al., 2019). So by involving the farmers more during the project with the frontrunner, the farmer gets more familiar with the labour requirements, the required technology, advisers and peers. The research of Šūmane et al. (2018) has some suggestions on how to involve farmers and let them meet and share ideas and opinions with policymakers, forerunners and knowledge institutions.

· Facilitating, policymakers & knowledge institutions could facilitate meetings with the farmers to show the process and the progress at the forerunners farm. They could also facilitate information about the precision academy and introduce the academy. Knowledge institutions can also provide information on how to teach.

· Training, the forerunner and the policymakers & knowledge institutions can help farmers learn soft skills such as networking, finding collaboration and investing at the precision academy. The policymakers & knowledge institutions can supply equipment or knowledge.

· Financial support from the policymakers & knowledge institutions for organisational costs of the precision academy. Make sure that applying for such funds is straightforward and make sure it has transparent guidelines. Averting bureaucracy.

A short answer to the question '*How does the interaction and co-creation of knowledge occur between the farmers and policymakers & knowledge institutions within the KLIMAP project?'*. Would be that the interaction and co-creation of knowledge between van de Borne and knowledge institutions & policymakers within Klimap casus de Reusel are going well. Van de Borne is seen as a forerunner and the hope is that other farmers are learning from him. But the other farmers are not involved in the co-creation of knowledge. Therefore more focus on the involvement of the other farmers. Van de Borne tries to involve the other farmers more with his precision academy. This is an opportunity for the knowledge institutions and policymakers to join and boost the precision academy.

6. Reflection and Recommendations

Most of this research took place during the covid-19 lockdown. Therefore all interviews have been taken online. As a result, the researcher did not go to the casus area of Reusel. The researcher would advise going to see the research area at least once. It would help to get to understand the area better.

Due to the time limit of this research, only 7 interviews have been done. To get a better representation of the involved parties more interviews would have been better. Klimap has various ‘tracks’ that focus on different aspects of climate adaptation. In this research, a researcher in the ‘track’ development paths has been interviewed. For a better understanding of the situation interviews with researchers from multiple tracks is advised. Furthermore, the knowledge institutions are represented by two interviewees that work for the University of Wageningen. Due to a lack of time no other knowledge institution such as the Radboud University or the HAS University of Applied Sciences has been involved.

It was challenging to get to interview farmers. Farmers are often busy so they do not have much time for an hour-long interview. That is why in this research people that work a lot with farmers were questioned about farmers. To get a better idea of the view of farmers in follow-up research it would be interesting to focus more on the ideas of farmers.

The researcher recommends follow-up research with a larger number of respondents to draw firm conclusions. With an emphasis on trying to get more interviews with farmers. in addition, it seems that the age of the farmer and willingness to participate in research correlate, the researcher suggests quantitative research to verify this finding. Another interesting follow-up research could be research on the effect that less rigid legislation might have on the success of a pilot turning into a policy or method. During the interviews, it became clear that the farmers do not trust the government. As follow-up research, it could be researched what can be done to increase farmer trust in the government.

The researcher recommends for farmers be more vocal in their displeasure. If you do not agree with something or need help or assistance, contact your municipality or search for spokespersons within the province. They can help with elucidating the situation and help you or connect you to a company, policymakers, subsidy or knowledge institution. For the policymaker, it is recommended that they should keep organizing events such as a playlet. A social event where the farmer, the policymakers and other people living in the area can meet and experience and/or discuss the situation the farmers are in. Increasing the comprehension of the people for the farmers and the comprehension the farmers have for policymakers. For the knowledge institution, it is recommended that when the research has finished the process of knowledge diffusion has not stopped. Therefore the process of making obtained knowledge more practical should be explored more. Translating knowledge into practice could make the effect of newly developed knowledge more useful and more widespread.

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Appendix

Interview Guide

Questions for the Farmers.

Do you have contact with policymakers?
Do you have contact with universities?
How would you describe the relationship you have with policymakers?
How would you describe the relationship you have with universities and other researchers?
To what extent do you feel involved in the research?
What are policymakers doing to inform and involve you?
What are universities and other researchers doing to inform and involve you?
Are you actively searching for information and contact with policymakers and universities?
To what extent are policymakers making clear to you what their future vision is"?
Is there something like a farmer's collective in your region? Where farmers can share information or teamwise approach policymakers/universities.
Are the policymakers approachable according to you?
If not, what measures could policymakers take to make them more approachable for you?
If yes, how approachable?
Are the researchers from the universities approachable according to you?
If not, what measure could the universities take to make them more approachable for you?
What does the future of farming look like according to you?
What are you doing to reach that future?
Do you feel involved as a farmer by the municipality and province?

Questions for the policymakers and the knowledge institutions

Do you have direct contact with farmers?
If not, does someone else in your organisation have direct contact with farmers?
If not, why not?
If yes, what type and density of contact?
What are you doing to reach the farmer?
In which research processes are farmers not involved?
Do you try to make the future vision of your institution accessible and suitable for the farmer?
Is the minimal use of jargon in policy documents taken into account so that they are easy to read?
How do you think the farmer's attitude is?
Where can the farmer improve itself according to you?
Where do you think you can improve to reach the farmer?
What does the future of farming look like, according to you?
What are you doing to reach that future?