

Credits to Food Forests

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Abstract

This paper explores the perceptions of Dutch food forest owners towards carbon credits as a way to make their food forest more sustainable. Food forests deal with a finance gap of large start-up costs and low revenue in the first years, therefore additional income streams are often needed. In the last decades, the voluntary carbon market has been established to facilitate the exchange of carbon credits, which represent carbon avoided or removed. Selling a credit of the sequestered carbon in a food forest on the voluntary carbon market could be a way to generate more finance for food forest projects. There is however no insight into the perceptions of food forest owners towards the carbon market. Such perceptions are important, because they indicate to what extent food forest owners might want to enter the carbon market.

Through literature review, questionnaire and interviews, this research has found that food forest owners are somewhat positive towards carbon credits, whilst also holding that carbon sequestration is secondary to food forest health. Owners favour a simple, transparent and local market, that creates a reasonable compensation. They have concerns about the complexity of the carbon market, how much carbon is stored and income is earned, and the ability of the carbon market to create positive change. Whilst these worries cannot be adequately answered at this moment, they could be overcome to some extent by maintaining a critical eye on the progression of the market. The findings of this paper are limited by the research population and the nascent status of Dutch food forest research, but they can serve as a starting point of further exploration.

Keywords: Food Forests, Carbon Credits, Perceptions, Finance Gap, Sustainability

Introduction

Agriculture is of great importance to human society. Through it, most of the food is produced to sustain the more than 8 billion people on Earth (OECD, n.d.). Around one-quarter of all people work as farmers, the great majority of which live in the Global South (Roser, 2023). Together, they farm on about half of the world's land area, making agriculture land one of the largest terrestrial biomes (Ritchie & Roser, 2024). Because of its land-use, the environmental impacts of agriculture are significant (Ritchie et al., 2022). According to the Food and Agriculture Organization of the United Nations (FAO) and Organisation for Economic Co-operation and Development (OECD) (2023), agricultural production is a large contributor to freshwater stress, soil degradation, deforestation, emissions of greenhouse gases (GHG), and biodiversity loss. This impact is highest in industrial agricultural systems (Woodhouse, 2010). Industrial agriculture could be defined as “modes of farming that are analogous to industrial processes in their scale and task segregation, and seek to derive productivity gains from specialization and intensification of production” (IPES-Food, 2016). Industrial farming systems require large amounts of fossil fuels for fuel, fertilizer, and pesticides; the monocultures erode biodiversity; soil is compacted and polluted by machinery and chemicals, and the water is consumed at unsustainable rates by livestock and water-intensive plant varieties (FAO & OECD, 2023; Hathaway, 2015; Horrigan et al., 2002). Altogether, industrial agriculture and in extension the current agricultural system are unsustainable (Pretty, 2007). To decrease the agricultural impact requires to either drastically improve the system or shift away from industrial agriculture (Hathaway, 2015).

The Dutch agriculture is highly industrialized. Industrial farming in the Netherlands is renowned for its output, productivity, and efficiency (Viviano & Locatelli, 2017). The country is one of the leading agricultural exporters in monetary value in the world, while having relatively little land and employing only two percent of the working population in agriculture (CBS, 2020). The downsides of this productivity have become clear over the last years. Only 26 percent of Dutch nature is in a 'viable' state of conservation (Berkhout et al., 2023). The water quality is poor in eighty percent of Dutch waterways, largely due to fertilizer and pesticide run-off (De Lange, 2023; NOS, 2023). The Dutch agricultural sector is also responsible for about 26 percent of domestic GHG emissions (CBS, 2023). Environmentally, the need for more sustainable agriculture is becoming more and more apparent. Over the last few years, the government has set out to reach environmental targets, established by itself and the EU (LNV, 2019). This directive was a tough pill for farmers, who are already under pressure by small margins, high

debts and global competition, and they protested in large numbers (Tullis, 2024). In short, the system is failing environmentally, socially, and financially. Bos et al. (2023) from Wageningen University and Research have concluded among others things that to bring agriculture, society and environment in line, the Netherlands is to move towards a system that intertwines nature and agriculture.

Food Forests

One such way of farming is food forestry (Roodhof, 2024). A food forest (FF) is a “multi-strata ecosystem[s] using mostly edible, perennial plants”, mimicking a natural forest (Albrecht & Wiek, 2021,). A perennial nature of the plants means they grow for more than one year, as opposed to annual plants, like wheat, corn or soybeans. The crop plants in FFs are layered, in the same manner as a natural forest. The FF system is designed to produce both food for humans, and have a high degree of biodiversity and ecosystem services (Roodhof, 2024). FFs are becoming more popular in the Netherlands, but are still in a starting phase and are not yet producing on a large scale. FFs can be part of the transition to more sustainable agriculture in the Netherlands, but currently, food forest owners (FFOs) and entrants into food forestry face various barriers in trying to grow their projects. Albrecht and Wiek (2021a), Zweerus (2022) and Mogot et al. (2020), all identify the economic sustainability of FFs to be one of the key barriers.

Financing for Food Forests

Albrecht and Wiek (2021b) have conducted research to the successful implementation of FFs. For the initialisation phase of a FF project, three factors are identified: (1) motivated entrepreneurs, (2) accessing land, and (3) securing start-up funds. Both the second and third factor can be financially challenging. They require large investments, a barrier for starting FF entrepreneurs. This hurdle is expanded by the gap between initial investment and revenue from produce, because the perennial species need at least a few seasons to become productive (Crusio et al., 2023). Mogot et al. (2020) provide the following graph of FF monetary (geld) revenue (opbrengst) and costs (investeren) over time (tijd):

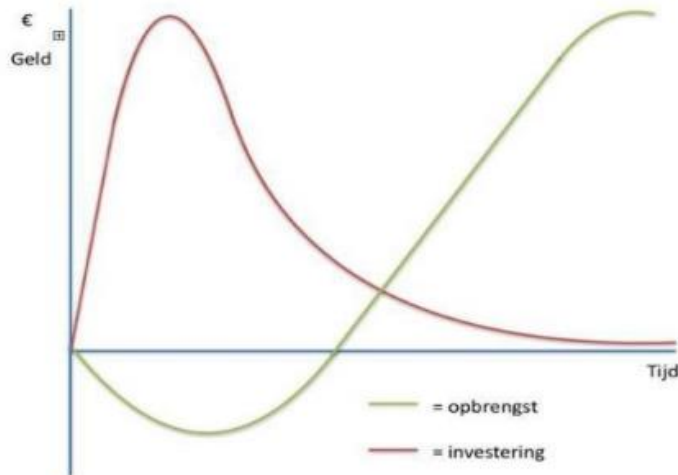


Figure 1: Costs and revenue of a hypothetical FF over time (Mogot et al., 2020)

In the first years, FFOs need to bear a significant cost, which is to be carried by other revenue streams than the premature production species. Mogot et al. (2020) also provide an overview of possible revenue opportunities for these early stages. One of the sources they highlight is carbon sequestration and the possibility of selling carbon credits for revenue.

Carbon Credits as Income

In recent decades, a market has been formed around carbon. This voluntary carbon market facilitates the flow of capital of those who generate carbon dioxide (CO₂) emissions to those who are involved in initiatives to avoid CO₂ emissions or reduce CO₂ from the atmosphere. Transactions are executed through carbon credits. A credit, representing one tonne of CO₂ avoided or reduced, is sold by a provider to a buyer, often through an intermediary broker. Because FFs have a large potential to sequester carbon, the selling of carbon credits could represent a significant new revenue stream (Toensmeier, 2017). This revenue is especially relevant for the early stages of a FF, because plants start sequestering carbon from the start and future sequestration can be calculated. Income from credits can thus be immediately generated. The revenue from carbon credits could therefore lead to more economic sustainability for FFs, making the transition to FF-based business models more attractive. As of the moment of writing, carbon credits are yet to be sold for FFs, but first explorations have been started (Van Der Wal, 2024).

Carbon Credit Adoption by Foresters

The possibility of carbon credits being an effective solution is dependent, among other things, on the willingness of possible providers to participate in carbon markets. Research has been done to understand attitudes of forest landowners in the US towards the carbon markets (Markowski-Lindsay et al., 2011; Soto et al., 2016; Sharma and Kreye 2022). There is however a research gap both for the Dutch context and the owners of FFs. The research gap became apparent through the lack of results when searching for 'food forest' in conjunction with 'carbon' or 'carbon credits' on library search engines SmartCat, Scopus and Google Scholar.

Research Question

This research is aimed to explore Dutch FFOs' perceptions of carbon credits. It investigates the perceived drivers and barriers for FFOs, because these perceptions determine whether FFOs will adopt carbon credits. The analysis is done with regard to the sustainability of FFs. Sustainability is considered in this study to consist of economic, environmental and social dimensions (Purvis et al., 2018). Furthermore, the research question is approached through subquestions that inquire about the general sentiment, drivers, barriers, and uses, because these topics together create a broad view of the research question.

How do food forest owners in the Netherlands perceive the issuance of carbon credits to ensure sustainability of their food forest?

1. What is the general sentiment of food forest owners towards carbon credits?
2. What are the perceived drivers?
3. What are the perceived barriers?
4. In what ways would carbon credits be used by food forest owners?

Thesis outline

The literature review will explore FFs and carbon credits further. Following, the methodology will lay out the research approach. The results will be presented and discussed in the subsequent sections. The limitations to these results are considered, and include the research population and the limited amount of research on Dutch FFs.

Literature Review

The literature review aims to give an overview of the definitions and background of food forestry and carbon credits.

Food Forests: Definition and Benefits

FFs are not just a phenomenon of the Netherlands, but are also prevalent in different countries. In English-speaking countries, it is often referred to as forest gardens (Crawford, 2010). 'Forest garden' and 'food forest' can be used interchangeably. In this paper, the term 'food forest' is used, because it is the most common term in the Netherlands. Food forestry is a type of agroforestry, which is an umbrella term for an agricultural system that involves a combination of trees, crops and/or animals (Groot & Veen, 2017). A FF is an agroforestry system that customarily only utilizes plants. In the Netherlands, the definition of a FF is set by the Green Deal Voedselbossen (2017), and includes the following aspects: a productive forest-like ecosystem, minimally 0.5 hectares in size, with high diversity of mostly perennial plants, three layers of plant growth next to a canopy layer, a rich soil life and a yield for humans. Most of the plant species used in a FF are at least partially edible, which can include the high canopy trees, smaller trees, shrubs, herbs, root crops and climbers, as shown in Figure 2 (Crawford 2010; Schafer et al. 2019).

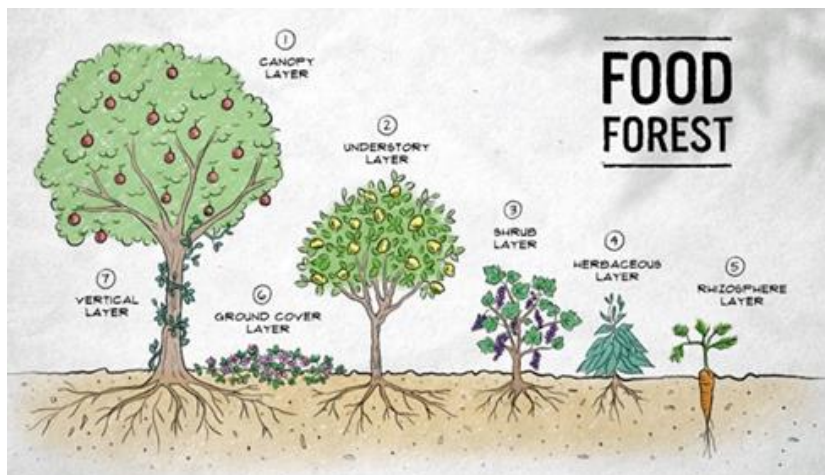


Figure 2: The layers of a FF (Gardening Australia, 2020)

Positive interactions between species are maximized, while nutrient waste and other negative processes are minimized (Crawford, 2010; Whitefield, 2002). Furthermore, FFs require little to no external inputs, such as fertilizer, pesticides or mechanical interference (Crawford, 2010). In short, FFs, by mimicking natural ecosystems, aim at productivity by minimizing input and maximizing output.

While the FF definition provides a groundwork for food forestry operations, the practical application is not clear-cut. Roodhof (2024) establishes that FFs in the Netherlands “are incredibly diverse and versatile in terms of goal or orientation”. Many FFs are non-profit or for personal use, owing to the fact that many FFs are experimental in nature and not meant to earn money primarily (Roodhof, 2024). The benefits of FFs also range widely and can be linked to at least nine Sustainable Development Goals (SDGs). The SDGs are based on The 2030 Agenda for Sustainable Development, adopted by the United Nations in 2015 (UN Department of Economic and Social Affairs, 2023). They provide “a shared blueprint for peace and prosperity for people and the planet, now and into the future.” (UN Department of Economic and Social Affairs, 2023). Below is a mapping of FFs impact to the relevant SDGs (2, 3, 4, 6, 8, 11, 12, 13, 15) and their targets:

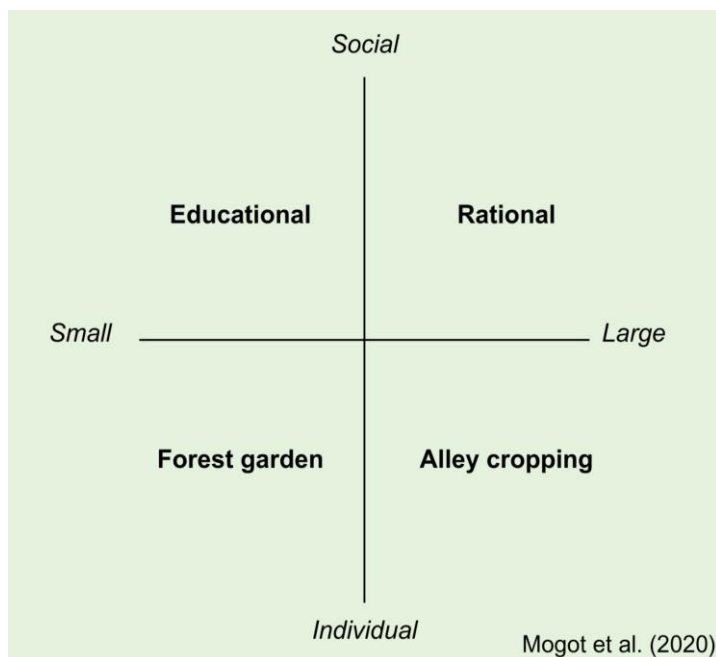
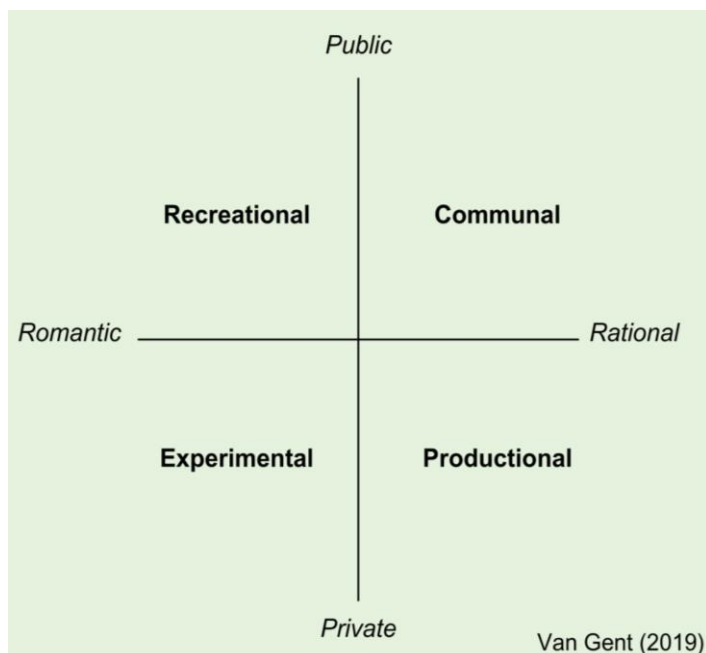
Sustainable Development Goal	Relevant Targets	Food Forest Potential
Goal 2: Zero Hunger	2.3: Sustainable Food Production And Resilient Agricultural Practices 2.4: Maintain The Genetic Diversity In Food Production	<p>“Agroforestry increases crop resilience to several likely climate change effects, such as drought or higher temperatures, because it enhances water infiltration and storage while reducing evaporation and temperature extremes” (Waldron et al., 2017, p.2)</p> <p>“[...] agroforestry systems substantially increase functional diversity and overall biodiversity within landscapes.” (Santos et al., 2022, p.1)</p> <p>“The average species richness of woody and herbaceous plants in food forests is high compared to arable land and forests.” (Wendel et al., 2023, p.6)</p>
Goal 3: Good Health and Well-Being	3.4: Reduce Mortality From Non-Communicable Diseases And Promote Mental Health 3.9: Reduce Illnesses And Death From Hazardous Chemicals And Pollution	<p>“A food forest supports health and well-being for people” (Park et al., 2017, p.288)</p> <p>“They can be [...] providing many social benefits including healthy food alternatives [...] and even health benefits like stress reduction.” (Johnston et al., 2014, p.10)</p>
Goal 4: Quality Education	4.7: Education For Sustainable Development And Global Citizenship	<p>“[F]ood forests in schools would provide greater ecosystem services as compared to raised bed school gardens, while upholding food production and enhancing opportunities for education for sustainable development.” (Leni-Konig, 2020, p.91)</p> <p>“[...] forest gardens have the potential to be places where children can connect emotionally and cognitively to other organisms.” (Askerlund & Almers, 2016)</p>

Goal 6: Clean Water and Sanitation	<p>6.3: Improve Water Quality, Wastewater Treatment And Safe Reuse</p> <p>6.4: Increase Water-Use Efficiency And Ensure Freshwater Supplies</p> <p>6.5: Protect And Restore Water-Related Ecosystems</p>	<p>“Forests help maintain high water quality, influence the volume of available water, and regulate surface and groundwater flows” (FAO, 2024)</p> <p>“The most sustainable and best quality fresh water sources in the world originate in forest ecosystems” (Neary et al., 2009, p.2269)</p> <p>“Forests can also protect water bodies and watercourses by trapping sediments and pollutants in runoff waters from upslope land use.” (Climate-ADAPT, 2023)</p>
Goal 8: Decent Work and Economic Growth	<p>8.3: Promote Policies To Support Job Creation And Growing Enterprises</p> <p>8.4: Improve Resource Efficiency In Consumption And Production</p>	<p>“Forestry could have a positive role in the economic stabilization efforts, particularly through job creation and the rebuilding of the natural capital base.” (Nair & Rutt, 2009, p.3)</p>
Goal 11: Sustainable Cities and Communities	<p>11.6: Reduce The Environmental Impact Of Cities</p> <p>11.7: Provide Access To Safe And Inclusive Green And Public Spaces</p>	<p>“Forests and trees in cities [...] can make important contributions to the planning, design and management of sustainable, resilient urban landscapes. They can help make cities more pleasant, attractive and healthy places in which to live, as well as safer, wealthier and more diverse.” (Salbitano et al., 2016)</p>
Goal 12: Responsible Consumption and Production	<p>12.2: Sustainable Management And Use Of Natural Resources</p> <p>12.8: Promote Universal Understanding Of Sustainable Lifestyles</p>	<p>“[...] food forests are designed to increase net primary productivity by having little to no energy inputs such as; no additional nutrients added to the system, no soil interference and minimal food forest management practices used” (Schafer et al., 2019, p.1)</p> <p>“It [the FF] promotes responsible harvesting and shared care among citizens, thereby increasing their engagement with the neighborhood community, the public space, the green infrastructures, and nature.” (Riolo, 2019, p.10-11)</p>
Goal 13: Climate Action	<p>13.1: Strengthen Resilience And Adaptive Capacity To Climate Related Disasters</p> <p>13.2: Integrate Climate Change Measures Into Policies And Planning</p>	<p>“Trees generally survive extreme weather events better than annual crops, which can make them more reliable food sources in the face of increased regularity of these events due to climate change.” (Ickowitz et al., 2022, p.634)</p> <p>“[...] systems with trees have greater climate mitigation impact.” (Toensmeier, 2017, p.440)</p>

Goal 15: Life on Land	15.1: Conserve And Restore Terrestrial And Freshwater Ecosystems 15.2: End Deforestation And Restore Degraded Forests 15.3: End Desertification And Restore Degraded Land 15.5: Protect Biodiversity And Natural Habitats 15.6: Promote Access To Genetic Resources And Fair Sharing Of The Benefits 15.8: Finance And Incentivize Sustainable Forest Management	“Trees link local to regional and global water cycles through their modification of infiltration, water use, hydraulic redistribution of soil water and their roles in rainfall recycling” (Van Noordwijk et al., 2019, p.301) “The low input and low maintenance in food forests create environments that can build a natural resilience and high adaptive capacity to climate change through enhanced biodiversity and a strong soil structure.” (Nytofte & Henriksen, 2019, p.2)
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Different types of FFs are difficult to classify, because each forest has unique characteristics and local conditions. A rough classification can be done by multiple orientations. Van Gent (2019) distinguishes between two scales for entrepreneurial FF: romantic-rational orientation and public-private land. The first scale, the romantic orientation of plants has a high number of different plants growing in a mingled fashion, while a rational orientation has fewer plants (although much more than a monoculture) growing in clear lanes. Rational design reduces complexity, making harvesting and scaling easier. A romantic orientation is more suitable for cultural services. The second scale is the public-private ownership of the land. Land can either be leased or owned. FFs consist largely of perennial plants, thus securing land for decades or even centuries is of importance. Public land used through a lease is seen as less stable than privately owned land.

Mogot et al. (2020) identifies two other factors: scale and orientation of use. Scale refers to whether a FF is above or below 2 hectares in size, as this is the limit of 1 person’s labour in management. Orientation of use could either be individual or social. Individually oriented FFs are aimed at creating a profit or personal benefits to the owner, while FFs with a social orientation are meant to create benefits to the community. Whilst Mogot et al. (2020) conceptualize the factors distinctly separated, a scale would be a more appropriate representation, considering that a scale is also dependent on the labourer’s skills in the work and that a social orientation is often not clear-cut between individual and social value. The two conceptualisations yield the following visualisations:



Currently, FF in the Netherlands is still mostly small and romantic, so situated on the left side of the spectrum of both visualisations. The general direction is towards larger and more rational FFs to improve the productive capacity. Food Forest Schijndel, started in 2017, is one example of such a transition. A collaboration between Stichting Voedselbosbouw Nederland, Groen Ontwikkelfonds Brabant and HAS Hogeschool established this FF of 20 hectares. Its goal is to provide insight into the scalability and productivity of FFs (De Volkskrant, 2019).

One important overarching dimension, mentioned briefly in the introduction, is the age of a FF. A FF becomes somewhat productive after eight to ten years (Crusio et al., 2023). Roodhof (2024) has established that only about ten percent of FFs in the Netherlands are at that stage, roughly ten individual FFs in absolute terms. There is a larger amount that will reach productivity in the coming years, but general food forestry in the Netherlands is still in an emerging stage. Critical questions regarding the productivity and workability of FFs will only be answered when the existing FFs mature further. Because such questions cannot yet be answered, the general landscape of institutions, governments, banks, investors, and retailers, are still hesitant in most cases to support FFs (Zweerus, 2022), contributing to the aforementioned finance gap.

Ecosystem Services and Payment

Carbon sequestration is an ecosystem service. Ecosystem services (ES) include the services that the ecosystem provides from humanity. They were first coined by the Millennium Ecosystem Assessment (MEA, 2005). There are four different types of ecosystem services (Ibid):

1. **Provisioning:** food, water, timber, fibres
2. **Regulating:** climate, diseases, floods, water quality, *carbon sequestration*
3. **Supporting:** nutrient cycling, photosynthesis, soil formation, oxygen creation
4. **Cultural:** recreational, spiritual, and aesthetic values

ES influence human well-being through health, access to materials and security, and humans are deeply dependent on the ecosystem (Guo et al., 2010). Our dependence has led to considerable pressures on ecosystem services, also through agriculture, as discussed in the previous section (IPBES, 2019).

One suggested mechanism for incentivizing sustainable use of ecosystems is payment for ecosystem services (PES). Tacconi (2012) proposes the following definition: “a PES scheme is a transparent system for the additional provision of environmental services through conditional payments to voluntary providers”. This could be for a myriad of different ecosystem processes such as water retention, biodiversity conservation or carbon sequestration. The monetisation of the ecosystem services is meant to make the financial benefits of ES visible and thus financially accountable (Salzman et al., 2018). Through this system, providers of ES would be incentivized for their positive activities. Broadly, there are three different PES mechanisms (Salzman et al., 2018):

1. **Government-financed PES:** Government funds projects or organizations that maintain or enhance ES. In the Netherlands, one could think of Staatsbosbeheer or the Waterschappen.
2. **Compliance PES:** Legally obligated parties compensate other parties that maintain or enhance comparable ES to the extent that they are required by regulation. In Europe for example, large companies are subject to the European Emissions Trading System (EU ETS) (Kuys, 2024). They are required by law to participate.
3. **User-financed PES:** Users of ES (individuals, companies, governments) voluntarily pay projects that maintain or enhance ES. For example, someone could compensate for the emissions from their flight by paying money for planting trees (Trees for All, 2024).

Both compliance and user-financed PES schemes are aimed at installing markets, whilst government-financed PES does not necessarily do so. For carbon markets, the EU ETS and the voluntary carbon market are relevant in the Dutch context.

Carbon Markets and Credits

The distinction between the compliance and voluntary market for carbon is important to make. On the one hand, there is the compliance market, where companies get or buy a certain amount of emission rights (AFM, 2023). Companies with a surplus of rights can trade with those who have a deficit. This market is installed and managed by national governments or supranational entities, such as the EU ETS. The amount of emission rights is capped. On the other hand, the voluntary carbon market is where parties can offset or compensate their emission by their own decision. Carbon credits are created through projects that reduce or remove carbon emissions and are bought by parties that want to reduce their net carbon footprint (AFM, 2023). Projects can reduce (installing solar panels, preventing deforestation or distributing cleaner cookstoves) or remove emissions (afforestation, reforestation or wetland storage), both are counted equally. There is no limit on the amount of carbon credits that can be generated. For this research, carbon credits created on the voluntary carbon market are relevant.

The voluntary carbon market (VCM) finds its origin in the Kyoto Protocol of 1997 (AFM, 2023; Hepburn, 2007). The Clean Development Mechanism (CDM) in the Kyoto Protocol was meant to assemble financing of ‘developed’ countries for reduction projects in ‘developing’ countries. It failed to deliver on its promises however and was abandoned in 2012 (Faecks, 2023). In response to the flaws of the CDM, the VCM emerged, led by the private sector (AFM, 2023; Faecks, 2023). It consists of four participant groups (Neufeld, 2023):

1. **Project developers:** generate carbon credits by removing or reducing carbon emissions.
2. **Standard bodies:** certify and accredit the carbon credits.
3. **Brokers:** facilitate trading of carbon credits between projects and end buyers.
4. **End buyers:** seek to buy carbon credits to offset their emissions.

The VCM is largely unregulated, which makes it more flexible and adaptable than compliance markets. These strengths can also have drawbacks, because quality, accreditation and sales of credits are not controlled, and are thus not always trustworthy. In 2023, the

credibility of the VCM took a hit after a large majority of credits of a leading carbon standard, Verra, were revealed to be inaccurate (Greenfield, 2023). The claims made by large companies about “carbon neutrality” were thus also void. In order to avoid such situations and make the market more reliable, the European Union has announced regulations for the VCM (European Commission, 2023). They aim to stimulate the VCM by pursuing carbon credits of high-value through monitoring and verifying. Their initiative is aimed at carbon removal projects to balance the unavoidable GHG emissions for the net-zero goals. High-quality carbon removals need to meet the following standards (European Commission, 2024):

- **Quantification:** carbon removals need to be accurately measured.
- **Additionality:** carbon removals need to be additional. That means it would not have happened in a scenario without the funding.
- **Long-term storage:** carbon removals need to be stored for a longer period of time. Depending on the project, this could range between five and two hundred years.
- **Environmental sustainability:** carbon removals need to contribute to wider sustainability objectives.

Nevertheless, one can question the effectiveness of the carbon markets on several fronts. Pearse and Böhm (2015) make a ‘strong’ argument that compliance carbon markets should not play a significant role in climate policy and emission reduction scenarios. They point out that:

“The political economy of carbon trading is such that organized industry lobbies representing both industrial and financial sectors have enormous power to secure schemes that bolster existing emissions-intensive accumulation processes rather than disrupt them. This is compounded by an ongoing utopian faith in market mechanisms and technocratic decision-making within the state and expert elite. We conclude that a return to direct regulatory measures as the central means for change is a more fruitful focus for pragmatic state and expert policymakers” (Pearse and Böhm, 2015).

Pande (2024) makes a critical judgment more tailored to the VCM:

“The existing voluntary credit market may offer some brief opportunities for profit, and it may allow firms to purchase credits of uncertain quality that genuinely allow them to achieve carbon neutrality or simply to create the illusion of carbon neutrality—but it does not fulfil the purpose of

a carbon trading market, which is to set an optimal price that will enable swift reductions in emissions, at the lowest possible cost". (Pande, 2024)

In short, one could seriously doubt the environmental benefits of the voluntary carbon market. At the same time, proponents of the VCM are hopeful that the flaws of the voluntary carbon market system are unavoidable initiation challenges that can be properly resolved (Miltenberger et al., 2021). Their vision is one of an unfolding incorporation of externalities into the economic system. A critical evaluation of the progress of the VCM and the economy will have to show the results. For now, it is clear that the voluntary carbon trading mechanism, with its flaws, creates a possible avenue for FFs. This paper creates more understanding of the perceptions FFOs have in this regard.

Food Forests and Carbon Credits

The potential of FFs to store carbon is expected to be significant (Schafer et al., 2019). In order to calculate the amount of carbon a FF will store, a reference forest (RF) in relative proximity of the FF has to be selected (Van der Wal, 2024). The RF is to have similar conditions as the FF. The amount of carbon in the soil, referred to as soil organic matter (SOM), is measured by taking soil samples. The above-ground carbon, stored in plants, is harder to measure, because it would require the cutting down of the trees or plants (Meyer, 2023). An estimation is therefore made by using Light Detection and Ranging (LIDAR) satellite measurement. The satellite measurements are then used in a model to determine the above-ground carbon storage. When the amount of carbon stored in both the RF and FF is estimated, these figures can be used to calculate the carbon storage potential of the FF. The carbon storage potential can then be converted to carbon credits to be sold. Calculations and measurements are done by the standard bodies or certifiers in association with the FFOs.

Methodology

Type of research

This research project applies a mixed-methods approach. This approach allows for exploration of the research question from different angles, creating a broader picture. By gaining an overview this way, future research is better informed. Three distinct methods were used:

1. Literature review
2. Questionnaire
3. Interviews

Data collection and characteristics

The literature review is meant to give context to the questionnaire and interview. The literature data collection was done throughout the duration of the research project. It aimed to collect important insights of FFs and carbon credits and summarize them appropriately for reader and researcher. The data collection was done through the library search engines SmartCat, Scopus and Google Scholar, and by searching directly on search engines Ecosia and Google. Relevant search terms include 'food forest(s)', 'carbon (credits/market)', 'adoption', 'forests', 'financing', 'PES', 'agroforestry', 'Netherlands', and 'sustainability'. The findings of the literature review have been discussed in the appropriate section and are not directly discussed in the Results.

The second part is a questionnaire, consisting of open and closed questions, to inquire about the perceptions of FFOs on carbon credits. It is conducted to sketch a starting picture of the FFOs' perceptions. The survey is in Dutch, because this allows Dutch FFOs to answer in their first language and avoid potential language barriers in answering the survey questions. The list of questions and the corresponding data for FFOs can be found in Appendix A. The survey was opened on the 25th of April and closed 2 weeks later, gathering 29 responses, of which 28 were valid. One response was deemed invalid, because it did not include any answers. The data included 16 FFOs, 2 of which had different roles and thus answered 'Else, namely'. Because of the survey logic, they did not answer questions about their FF, but their other answers are included in this research. The questionnaire was distributed after an online-seminar of Voedsel uit het Bos and subsequently through a follow-up email and a LinkedIn post. The last question of the survey asked the participants to leave an email address in case they would be willing to participate in an in-depth interview. This final question is not included in the Appendix for privacy reasons.

The third part consists of in-depth interviews, elaborating also on the perceptions and thoughts found with the questionnaire. The interviews were conducted in a semi-structured manner. The Dutch interview guide can be found in Appendix B. The interviews were recorded if the participant agreed to it. Participants read and confirmed the agreement of participation, in which the research aim, confidentiality and research procedures were stated. In total, 6 interviews were held, 5 online and 1 in person. All participants of the interview also filled in the survey. The audio from the interviews was transcribed and analysed by coding themes.

Research collaboration

This research was conducted in collaboration with the association Voedsel uit het Bos (Food from the Forest). The organisation has been around since 2016, and became an association with members at the end of 2023. They aim to promote the food forestry movement in the Netherlands through community building, courses, a platform, and a podcast (Food From The Forest, n.d.). Their interest in carbon credits for FFs has inspired this research, and the members of their association form the basis of the participant pool.

Ethical considerations

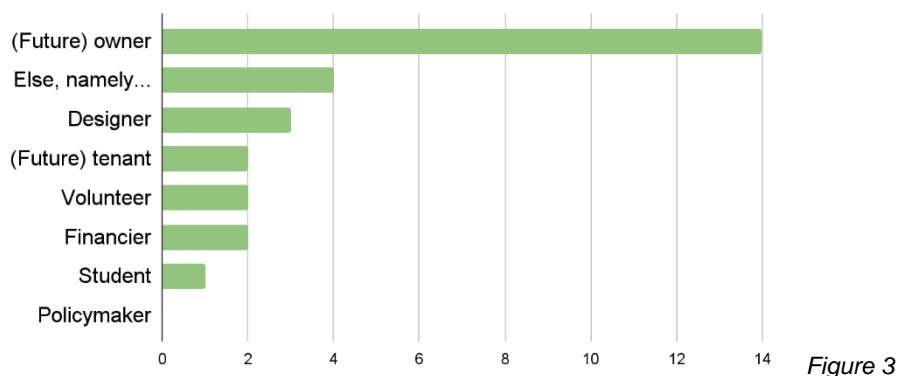
This research was conducted with the approval of a University of Groningen supervisor. It applies a voluntary participation approach, which means that participants can opt in and out of the study at any time. The participants were informed about the purpose and aims of this research before they consented to participation. The collected data was treated confidentially, and anonymized if it was shared. There was no known potential of harm associated with this research. Afterwards, the results of this research are to be shared with the participants if they so indicated.

Results

The answers to the survey included FFOs and other interested individuals. The total population of the survey is laid out in Figure 3.

Role of participants in FFs

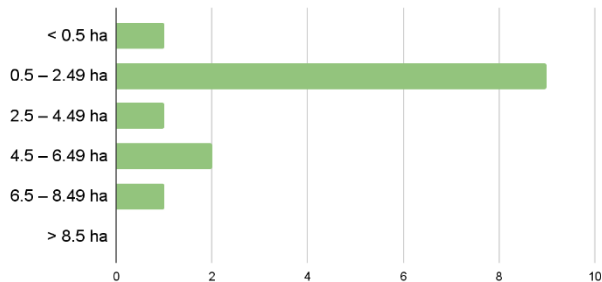
N = 28



The data of the FFOs has been used for the coming analysis. Various descriptive statistics of their FFs have been collected, as can be seen in Figures 4 to 7.

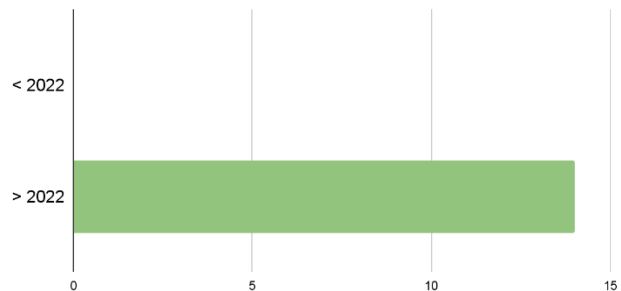
Size of FF

N = 14



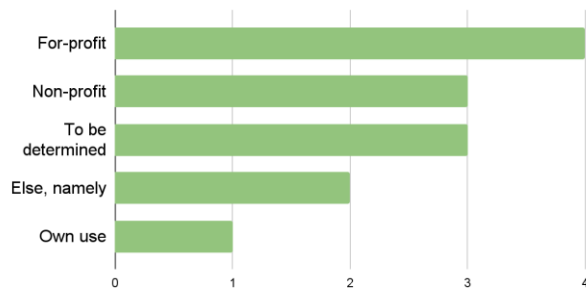
Start date of FF

N = 14



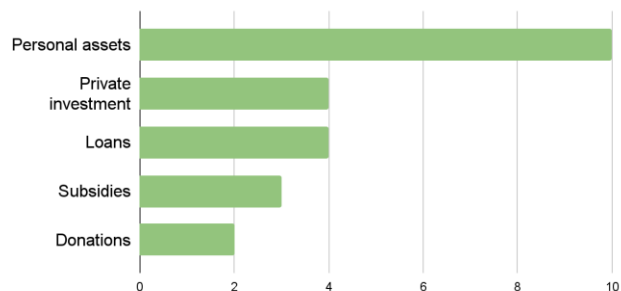
Business model

N = 13



Means of financing

Multiple answers possible (N = 14, N* = 23)



The size of most FFs (9/14) in the data is on the low end, between 0.5 and 2.49 ha. One FF was below the Dutch defined standard of 0.5 ha, but the answers of this FFO are still taken into account, because this is also done in other relevant literature (Roodhof, 2024). All FFs have been started in 2022 or later. This means the FFs are at longest two years old. For the business model, there is a somewhat even distribution, tending slightly to for-profit models (4/13). Personal assets have been employed most often (10/23) to finance the FFs.

The survey and the subsequent interviews have yielded many insights towards the research question. The research question aimed to inquire about the perceptions of FFOs towards carbon credits to ensure sustainability of their FF. In order to clarify the research question in the Discussion, the four subquestions (sentiment, drivers, barriers, uses) are discussed in the rest of the Results.

Sentiment

The general sentiment of FFOs towards carbon credits tends to be positive. As displayed in Figures 8 to 10, the survey showed that most FFOs have a 'somewhat positive' feeling towards carbon credits in general, as well as more specifically for FFs and their own FF. In this regard, it is also relevant that FFOs are not too sure about their knowledge of carbon credits as a group, as shown in Figure 11. This is not to be taken as a reflection of their actual knowledge on carbon credits, but rather as an indication of their familiarity with carbon credits. Carbon credits are a new possible revenue stream for FFs, to which the owners generally feel positive.

About 75 percent of FFOs reported that they need additional revenue streams to ensure the continuance of their FF in the coming years. All FFs of respondents were started in 2022 or later, thus the finance gap is still to be bridged for them. The need for more finance also became apparent in the interviews. Because their FFs already have a diversity of income sources, they welcome carbon credits as an additional one. Some participants indicated though that they would rather wait on collecting the money from carbon credits, because they expect the market to develop still:

"I have the feeling that it could crumble just like that. I have no confidence in that small voluntary market yet. [...] Which is really a shame, because I would like to have the money now." - P1

Sentiment towards carbon market and carbon credits in general

N = 14

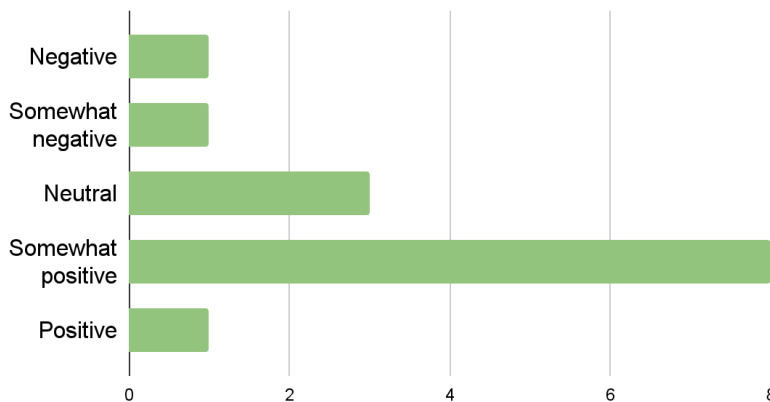


Figure 8

Sentiment towards carbon credits of FFs

N = 14

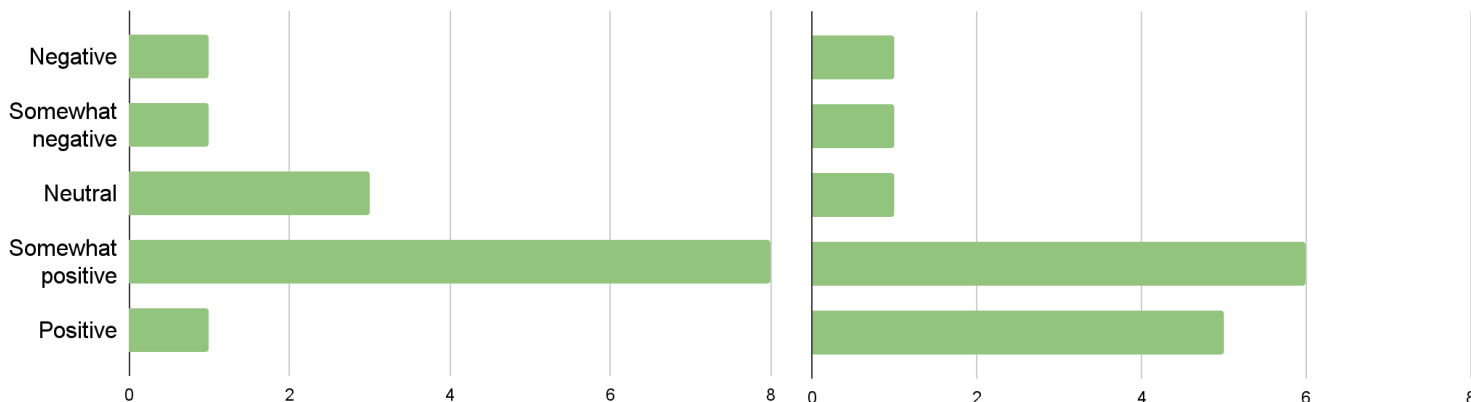


Figure 9

Sentiment towards carbon credits of own FF

N = 12

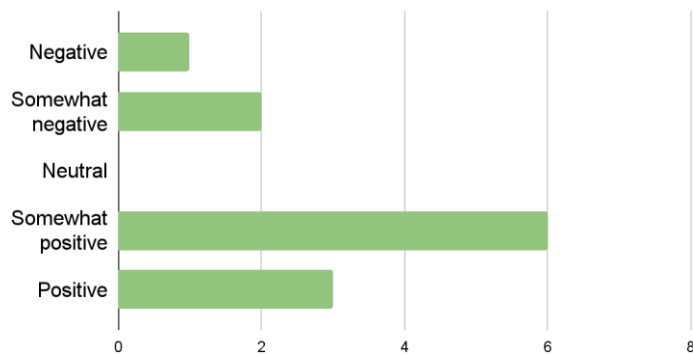


Figure 10

Enough knowledge of carbon market and carbon credits

N = 14

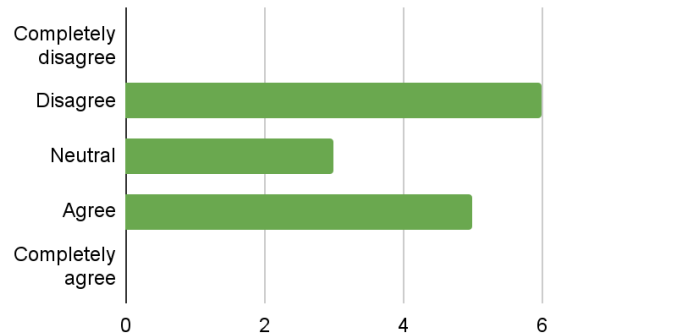


Figure 11

As discussed in the Literature Review, the EU is regulating the market in the near future, possibly influencing the market positively for FFs. However, there are some doubts about waiting for such changes in the market:

“Intuitively, I would say to especially not wait for governmental institutions. Because before you know it, you are waiting six years.” - P6

In general, the participants tend to emphasize the reality of needing money now and collecting the income for carbon credits if there is little financial space to wait.

Another theme that emerged from the interviews was that carbon credits should be of secondary importance. The focus should be on healthy food and a healthy soil. Carbon sequestration should be secondary, a service that is the product of a healthy FF. This is clear in the attitudes of several participants:

“CO2 capture is not a primary goal for us. The primary goal is to set up the [FF] system and to provide healthy food.” - P3

“I believe much more in producing healthy food. [...] And the derivative of that is that when there are a lot of nutrients in the food, there is also a lot of carbon sequestered in the soil.” - P4

Selling carbon credits is a nice way to get financing, but it should not be the focus. In case carbon sequestration is primary, the health of the land and the FF suffer:

“[...] there are a lot of cases where they plant things. But they plant the wrong trees. [...] In the end, after the logging, the land is worse off than before.” - P5

“If I would make different decisions for my land for the sake of selling carbon credits. If I said, ‘I plant this fast-growing tree. It’s nice for the carbon credits’, but not really for a food forest. In that case, I would cross a line.” - P1

The participants also expressed that they believe that a broad, long-term perspective is needed. They see the carbon market as a possible stepping stone towards a society that values the ecosystem and its services properly. Because of the finance provided for carbon sequestration or other ecosystem services of FFs, FFs will be stimulated economically, leading to more FFs, hopefully. They can play a bigger part in creating more awareness for the ecosystem and nature. The ultimate goal is to make more people aware of and grateful for the value of the ecosystem, according to many (4/6) of the participants. They are all highly cognisant of the importance of the ecosystem and also motivated by it, but such motivation can only bring a movement so far:

“When all people are intrinsically motivated to make the right decisions for biodiversity, sustainability and water retention, and thus not use pesticides and not use fertilizers, then we have arrived. [...] Then it is all [carbon market] redundant. [...] But that’s a utopia, of course.” - P6

They stress that the economic system needs to be aligned with the ecosystem. Carbon credits could be a way in their perception, if they are used as a means and not an end.

Drivers

Several factors positively influence FFOs' outlook on carbon credits. Some factors already exist in the VCM currently, others could be seen as possible avenues for future improvements.

Economical for ecological value

One of the most significant drivers for FFOs is the ability to get economic value for the ecological values their FFs provide. The economic system we currently have only appreciates the goods and services provided for humans:

"[...] A food forest delivers value directly in the form of food, but delivers value indirectly in the form of ecosystem services, and those hold no price currently." - P3

In the case of FFs, the economic equation is not so favourable, because a FF only starts producing goods after high investment and relatively long periods. In the current economy, the 'business' model of FFs is thus difficult, but such account does not acknowledge the value of the ecosystem. FFOs would like to be directly compensated for the contribution their FFs deliver for the ecosystem by the economic system. Carbon credits can fulfil this to some extent.

Direct, local engagement

The survey showed that FFOs are generally positive about carbon credits as a way to create a relationship between buyers and sellers, as shown in Figure 12. The participants of the interviews were optimistic about such a relationship as well. They nuanced this position by highlighting the importance of a direct and local connection to buyers of their FF's carbon credits:

"The more direct the engagement is, the more effort everyone is putting in to make it a success." - P4

They envision that the buyers could visit their FFs or get a taste of the produce. This would spread awareness and expand the social benefit of their FFs. Additionally, it would be easier for FFOs to judge the sustainability efforts of their carbon credits buyers. Primarily, FFOs want to have a local system of exchange of their carbon credits.

Sentiment of seller-buyer relationship through carbon credits

N = 14

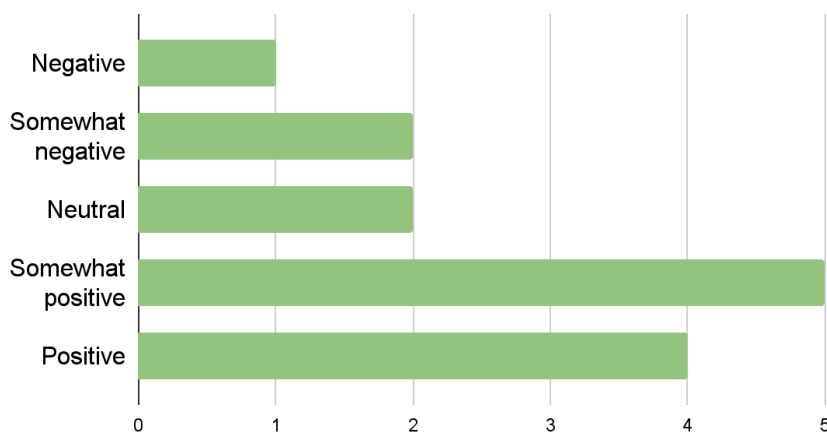


Figure 12

Volume

It stands to be obvious that FFOs would like to get as much money from carbon credits as possible. Still, there is some nuance to be made. The amount of money received for carbon credits should be worthwhile for the FFOs. As of now, some FFOs (3/6) feel that their FF is too small or that it would take too much effort to certify their credits. Sometimes it's easier to get money from Trees for All without getting certification for carbon sequestration. However, when there is more money in carbon credits, FFOs may opt for that route:

“But one client [FFO] has called off that subsidy. Because Trees for All states that you cannot sell your carbon credits any more. [...] If you look into it carefully, you will be better off with carbon credits.” - P6

In the end, it is important to FFOs that carbon credits are accessible, and the income is worth the effort.

Simple, robust system

The last theme was the need for a straightforward and accessible system. The open survey questions showed that an open, transparent, and understandable system is needed by FFOs. This is also a benefit of a local system in the eyes of many interviewed FFOs (4/6). It is easier to observe how carbon credits are used in a smaller context. Some participants (2/6) of the interviews indicated that they rather not deal with checking the buyers themselves and leave

the oversight to the certifiers. In that case, the certifiers and brokers need to be transparent about who they involve in their trades and certifications, and what kind of standards are used.

Interviewed FFOs (2/6) also suggested that some flexibility in the system would be beneficial, as this would allow all participants in the market to respond to new circumstances. This would mean 'short' programme durations, around ten to twenty years. On the other hand, a longer duration might also be helpful, because it could serve as a way to ensure the land remains a FF:

"[...] because I sold carbon credits, that land cannot be ploughed over. It is actually sort of an extra insurance, that is how I see it, that ensures it keeps the allocation [a FF] it has." - P1

In general, a simple system drives FFOs to have a more favourable perception of the carbon market.

Barriers

Various factors pose a barrier for FFOs in regard to utilizing carbon credits. These elements can be seen as negatively impacting FFOs' perceptions on the carbon market and carbon credits.

Yield uncertainty

A barrier is the yield of the carbon system, both financially and in terms of carbon sequestration. Related to the former, it became clear from the interviews that there are still doubts and uncertainties about the amount of financial compensation that will be received. Because the amount of carbon credits is calculated in reference to a nearby forest, some FFOs will not get much for carbon credits, because the reference forest is quite low in SOM:

"Because a forest is just very poor [in SOM]. The problem with the carbon credits are those reference forests. You are referencing to a forest that is very poor. And so I expect to get a low amount right now." - P1

In regard to the amount of carbon sequestration, there is some reluctance about the actual amount of carbon stored:

"Essentially, if you really want to be honest about the carbon sequestration of your food forest, then it is just the question. It is just the question if they [FFs] really do. [...] I know there are all

these calculation methods. [...] That is nice for the calculations, but tells nothing about the reality.” - P4

The worry is that many FFs are built on the notion that nature will take care of itself, and that this does not reflect the reality. Because the FF is left to itself after planting, the plants will suffer and not store as much carbon as expected or calculated. At the same time, there is also an expectation with FFOs that FFs will surpass the carbon sequestration potential of the reference forests. In short, there is uncertainty about the amount of money received for carbon credits and about the amount of carbon sequestered.

Complicated system

The survey already showed that there are concerns over the complexity of the VCM. The market is perceived by participants to be untransparent and susceptible to fraud. It is not really clear how projects are certified, and there are no universal standards as of now. The different participant groups in the market make the processes and transactions rather complex and costly:

“[...] the more links between something, the more complicated it can become sometimes. And the more it is about those links staying alive, instead of serving the important matters.” - P4

This is the flip side of the simple system driver, discussed in the previous section. If FFOs cannot confidently assess the credibility of the VCM, they will perceive it more unfavourably.

No positive change

It was voiced both in the survey and in the interviews that FFOs feel conflicted about supporting a polluting industry with their carbon credits. The possibility of offsetting their emissions is a wrong impulse for the industry, because they can keep emitting GHG, while claiming to be carbon-neutral:

“I think that this will never be a fundamental shift.” - P4

“I find the danger of the whole carbon credit market that the impulse to make the big decisions, politically and administratively, are a little diverted, distracted and compensated.” - P2

A term often used by participants in this context was ‘greenwashing’. Greenwashing is defined as: ‘the intersection of two firm behaviours: poor environmental performance and positive communication about environmental performance’ (De Freitas Netto et al., 2020). FFOs are

apprehensive that the system allows large businesses to more easily greenwash their services, and that FFs will enable that practice.

Furthermore, some interviewed FFOs (2/6) maintained that they were unsure if putting a value on the ecosystem was the correct course of action. They worried that the economic value will become more important than the intrinsic value of nature, and that this will ultimately lead to fewer benefits for the ecosystem. Many (4/6) stated their doubts about the ability of the current economic system to solve the ecosystem problems. There was however also a strong pragmatism to be noticed across the participants, who recognize the financial reality in the current system and strive to produce a transition to a more sustainable society through their actions. These two aspects can be seen in Figures 13 and 14.

Selling ES helps the sustainability transition

N = 15

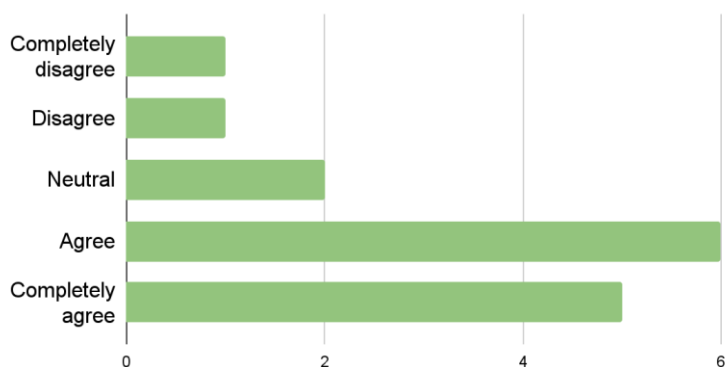


Figure 13

Importance of ES

N = 15

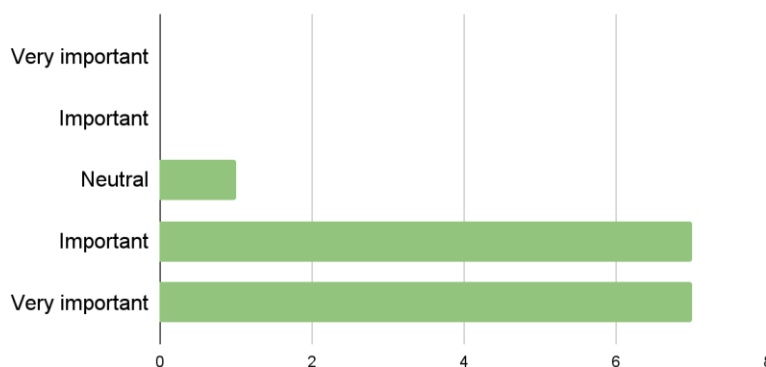


Figure 14

In short, FFOs feel uneasy about enabling polluters and putting a price tag on nature, but are rather positive about its ability to bring about a transition.

Uses

The last subquestion is meant to explore what uses FFOs would employ for the money for carbon credits. In the survey, FFOs (6/15) indicated that they mainly plan on using the money from carbon credits on plants, see Figure 15 for the distribution. In the 'Else, namely'-category, a few people said that they would utilize the carbon credits income for everyday activities. A few other participants (2/15) expressed that they would use the money on buying

more land. One interview participant thought that financing land through carbon credits was unpromising:

“[...] seeking money for land is impractical, it is too much money.” - P6

Many participants (8/12) specified as well that they did not know yet if carbon credits would cover their preferred spending, as shown in Figure 16. From the interviews, it became clear that FFOs do not see the income from carbon credits fundamentally different from other income sources. They plan on incorporating carbon credits into their already diverse revenue streams:

“I have a diverse business with diverse sources. And there it [CCs] is just in the mix.” - P1

Usage of income from carbon credits

N = 15

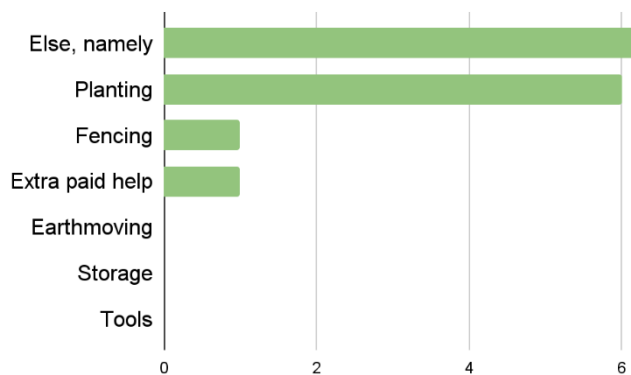


Figure 15

Sufficient coverage of carbon credit income

N = 12

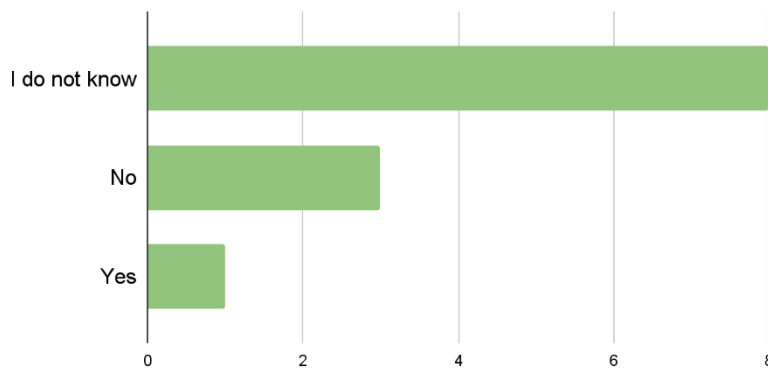


Figure 16

Discussion

In this section, the findings will be analysed. The data yielded various themes about sentiment, drivers, barriers and uses.

FFOs are generally quite positive about the prospect of income through carbon credits. They do stress that carbon sequestration should be of secondary importance to healthy food and soil. A long-term perspective should be taken, according to FFOs, reflecting that carbon credits are just a stepping stone towards more FFs and consequently to more awareness of the value of the ecosystem. This is in line with Miltenberger et al. (2021), who call the VCM a “necessary stepping stone to the goals of climate action”.

The drivers that make FFOs perceive the carbon market favourably are threefold. Firstly, local credit exchanges and interactions that create direct engagement are preferred. Secondly, the income from carbon credits should be worthwhile and better comparatively to other uses. Lastly, the system is to be simple, transparent and understandable. Wade and Moseley (2011), conducting research into forest owners attitudes, have similar findings to the second and third themes. They find that “family forest owners are most likely to enroll if programs are lucrative and flexible [...]” (Wade & Moseley, 2011). Their research suggests that creating understanding of the VCM through education could create more positive attitudes.

Barriers to the carbon market are also separated in three themes according to FFOs. Starting, there is uncertainty about the yield, both in terms of the amount of money and the amount of carbon that will be sequestered. Second, FFOs sometimes perceive the VCM as complicated and opaque. Finally and most importantly, reluctance is voiced over the fact that FF carbon credits might enable the status quo and greenwashing. There are also concerns if putting a financial value on nature is the correct course of action. In short, FFOs worry that carbon credits might not lead to a positive change. The three barriers have been noted by St-Laurent et al. (2017) as well, where the categories are named ‘Deficiencies of carbon markets’, ‘Limited economic benefits’, and ‘Uncertain climate effectiveness’.

FFOs mainly plan on using the income from carbon credits on planting material and possibly on buying more land. There is however quite some uncertainty about the ability of

carbon credits to cover such expenses. This uncertainty about income is also reflected in the literature about forest owners in the US (Miller et al. 2012; Wade & Moseley, 2011).

Having answered the subquestions, the research question can be brought back to focus:

How do food forest owners in the Netherlands perceive the issuance of carbon credits to ensure sustainability of their food forest?

It has become clear that FFOs perceive carbon credits somewhat positively. Carbon credits can contribute most notably to the financial sustainability of FFs, making their business models more viable. Socially, FFOs expect that, because the business model is secured better, more FFs will be established and maintained. Moreover, more people will therefore have the opportunity to engage with FFs and the ecosystem. The main concerns center around the theme of ecological sustainability. FFOs worry that carbon credits will not generate a net positive effect and that they will preserve the status quo of environmental pollution. Additionally, there is doubt if the financialization of nature will actually protect the ecosystem.

Interpretations

A general pattern emerging from the findings is that FFOs are not yet very familiar with carbon credits. This is understandable, because food forestry is an emerging phenomenon and thus intersections with other fields and markets are just forming. On top of that, the FFOs in this research had all started their FF in 2022 or later. They are still relatively new to food forestry and have to develop their FF further, for example by determining their business model. It has been indicated, though not determined, that unfamiliarity can adversely influence interest in carbon credits of forest landowners (Kilgore et al., 2008; Miller et al., 2012). In the case of FFOs, a lack of knowledge is therefore to be kept in mind as a limiting factor.

The shown inclination of FFOs towards a local system is quite plausible in light of the wish for a simple and understandable system. Having a local exchange of carbon credits makes it possible to observe more directly where the carbon credits end up and how they are used. Trading credits within the region also gives more possibilities of fostering connections between project and buyers, possibly creating more social benefits as well. Other studies have given some indication that firms also prefer to trade credits locally (Yu & Xu, 2023). Lou et al. (2023) remark that “companies driven by values and market competitiveness demonstrated a

willingness to invest in high-cost projects that provide significant local co-benefits.” A collaboration between such firms and FFs seems to be most promising.

Lastly, FFOs mostly see the VCM as a stepping stone and intermediate phase towards a sustainable society. This is commensurate with the current consensus that “carbon offsetting should be considered an interim and supplementary measure and be carefully managed to ensure that it is complementary to—rather than replaces—other forms of public and private climate action.” (Trouwloon et al., 2023). In this sense, FFOs have to be careful to regularly evaluate their position within the VCM and decide if their position is still in line with their own goals. When the VCM is obstructing the transition to a low-emission world, it might be time for FFOs to re-examine their participation in the VCM. The European legislation might also play an important role in securing a correct relationship between the VCM and the societal transition towards sustainability in this regard.

Implications

With both climate crisis and agricultural breakdown around the corner, the need for sustainable agriculture becomes clear. FF can contribute to this end, and serve as an example, but the movement is still emerging and economically insecure. Through carbon credits, FFOs can get some of the finance that they need to bring about their FFs. This research can serve as an indication of the important themes surrounding entry and participation of FFOs in the VCM. The somewhat positive sentiment among FFOs implies that entry in the VCM is worth trying. Concretely, the findings indicated that Voedsel uit het Bos and its members could thus start entering the VCM. The found drivers suggest that further entrance preferably is to be on a local scale, with a reasonable compensation in an understandable manner. Creating more knowledge about the VCM is probably valuable in this regard. Following the established barriers, it would be prudent to create more certainty around the revenue obtained from carbon credits and the amount of carbon sequestered by FFs. Further research, experimentation, and experience will serve this end. If this is coupled with knowledge sharing, the carbon market system could also be made more transparent to FFOs. In any case, the findings indicate the value of ensuring the VCM is robustly designed and that the market functions in a simple and transparent way. Most importantly, the value of nature and the ecosystem should be kept of principal interest when engaging with carbon markets. This ensures the essential health of the FF, while working on the financial health.

The research findings also imply the further emergence of FFs as a serious movement that can deliver on all the fields of sustainability. It creates further opportunities for FFs to contribute locally to the solutions of global problems. The links and benefits to the SDGs have become clear in the Literature Review, but for FFs to support the achievement of the SDGs, the sustainability of FFs themselves needs to be secured on ecological, social, and financial fronts. This study shows that FFOs are willing to working on their financial stability through carbon credits.

Limitations

The research population is a limiting factor to this study. Firstly, all the participants are in some way related to the Voedsel uit het Bos organisation. This is possibly a limiting factor, because it preselects the type of participant to some extent. Secondly, almost all the FFOs started their FFs in 2022 or later. Roodhof (2024) made a comprehensive mapping of FFOs, showing a primary weight of start dates between 2016 and 2020. This could mean that this research is unreflective of the general FFO population, because owners of older FFs might have differing needs and perceptions. Thirdly, surveys are known to have low-response rates, which is also the case for this research (Goodfellow, 2023). The survey gathered 28 valid responses, of which 16 were from FFOs. Relating once more to Roodhof (2024), a response rate of a hundred would have been possible and more valid. Voedsel uit het Bos has recorded 396 FFs at the time of writing, so the study is also only to some extent applicable to their members (Food From The Forest, n.d.). Nevertheless, this research could serve as a relevant first mapping of themes to be further explored and elaborated upon.

The nascent status of food forestry research serves as a somewhat limiting factor as well. Whilst FFs are gaining in popularity and attention, further research is needed to explore some key areas, such as yield, social factors, and ecological features. Determined from the literature review, most research has been done in the last five years, with the most comprehensive investigations done in the last couple of years. It is also noteworthy that much of the research into the social aspects of FFs in the Netherlands is done in bachelor and master theses. The Nationaal Monitoringsprogramma Voedselbossen (National Monitor Program Food Forests) is aimed at creating a more extensive overview of FF aspects in the Netherlands, such as food production, biodiversity, water, social indicators and carbon sequestration. The program is active for three years now, having just published its first findings in a three-year overview publication. Their conclusions are still somewhat hesitant, and the following seven years of the

program will yield more conclusive evidence. All in all, a more complete picture of the Dutch food forestry landscape is to be formed in the coming years. Such information could have informed this research more thoroughly.

Further research

This study can serve as a starting point in further investigations surrounding carbon credits or perceptions of FFOs. An interesting point of inquiry is the motivations and values of FFOs. Some thought has been given to this subject, also in Belgium, but a thorough overview of Dutch FFOs' motivations is yet to be done (Daems, 2022). Such research could also be linked to different perceptions, perspectives, and visions from FFs, thereby gaining more overview of the driving factors in the FF movement. Those insights could also be used to link to the themes identified within this research.

Another interesting avenue to explore would be other emerging ES markets. In the coming years, markets for biodiversity and water could be rolled out, creating additional income possibilities for FFs. Interactions and perceptions of those markets could also be investigated and then compared to the findings in this study. Such comparison might indicate if a shift in perceptions followed from experiences on the carbon market. Furthermore, this research has shown that FFOs prioritize the health of their FF system, and because biodiversity and water are more integral to that goal, it might also be that FFOs feel quite different to such markets than to the carbon market.

The research has investigated the perceptions of FFOs, but it has not shed light on the perceptions of end buyers towards FFs and their credits. Such research still needs to be done in order to gain a better picture of the eventual interactions in the voluntary carbon market. In this sphere, it might also be interesting to see how buyers evaluate the range of sustainability benefits FFs provide.

Conclusion

This research aimed to explore the perceptions of FFOs regarding carbon credits as a means to ensure sustainability of their FFs. Based on literature review, questionnaire and interviews, it has been shown that FFOs are generally positive towards carbon credits to make their FFs more financially sustainable. They prefer to participate in a simple, local system that provides proper compensation for carbon sequestration. Some worries exist about financialization of nature and the ability of carbon credits to induce positive change. It is important for FFOs to regularly reflect if the carbon market is still in line with their priorities and goals. Consequently, remaining flexible in the carbon market might be of value to FFOs, because it allows for adjustment according to reflection.

A goal of this research was to find out if FFOs would be willing to participate in a carbon market. Whilst certainly some doubts and negative sentiment existed, a more negative general opinion towards the carbon market could have been expected. The recent scandals and market failures could have made FFOs more weary than in actuality. On the other hand, it could be the case that the survey mainly attracted positive views, because interested people might be more willing to participate in research surrounding carbon credits. Alternatively, because the FF movement still mainly consists of innovators or early adopters, the group could generally be more willing to try new concepts.

This research creates more insight into the social and financial considerations of FFOs. It contributes to augmenting the knowledge of the financial aspects of FFs, specifically also in terms of market entry of FFs. FFs can only succeed in the current economic system if owners manage to jump the finance gap. If the leap is successfully taken, FFs will most likely make a significant contribution to curbing our agricultural crisis and all its extensions.

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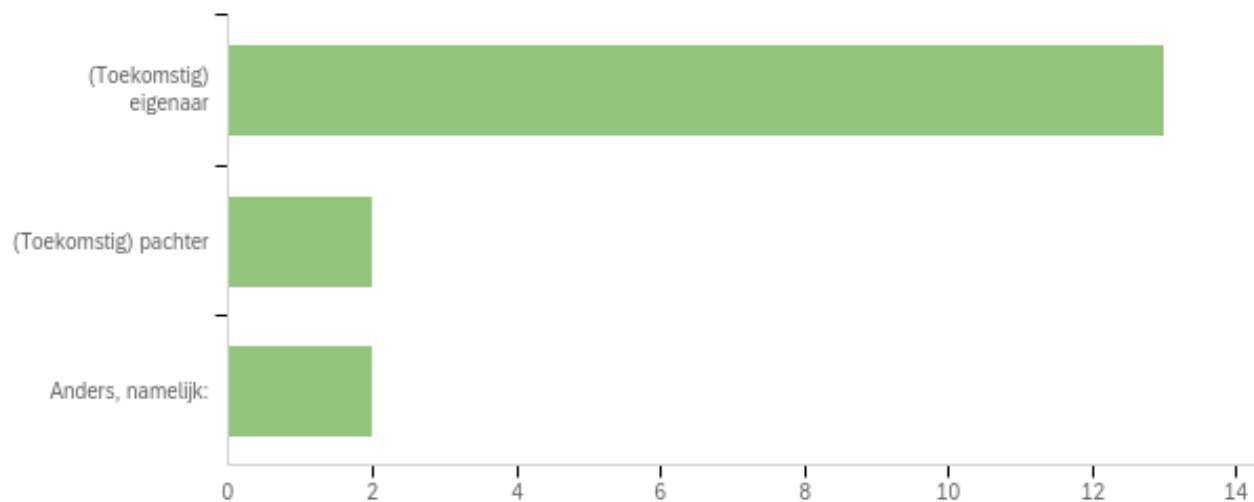
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Appendix

Appendix A: Survey Questions and Results (FFOs)

Q2 - Wat is uw rol met betrekking tot voedselbossen?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Wat is uw rol mbt voedselbossen? - Selected Choice	1.00	8.00	1.94	2.24	5.00	17

#	Answer	%	Count
1	(Toekomstig) eigenaar	76.47%	13
2	(Toekomstig) pachter	11.76%	2
8	Anders, namelijk:	11.76%	2
	Total	100%	17

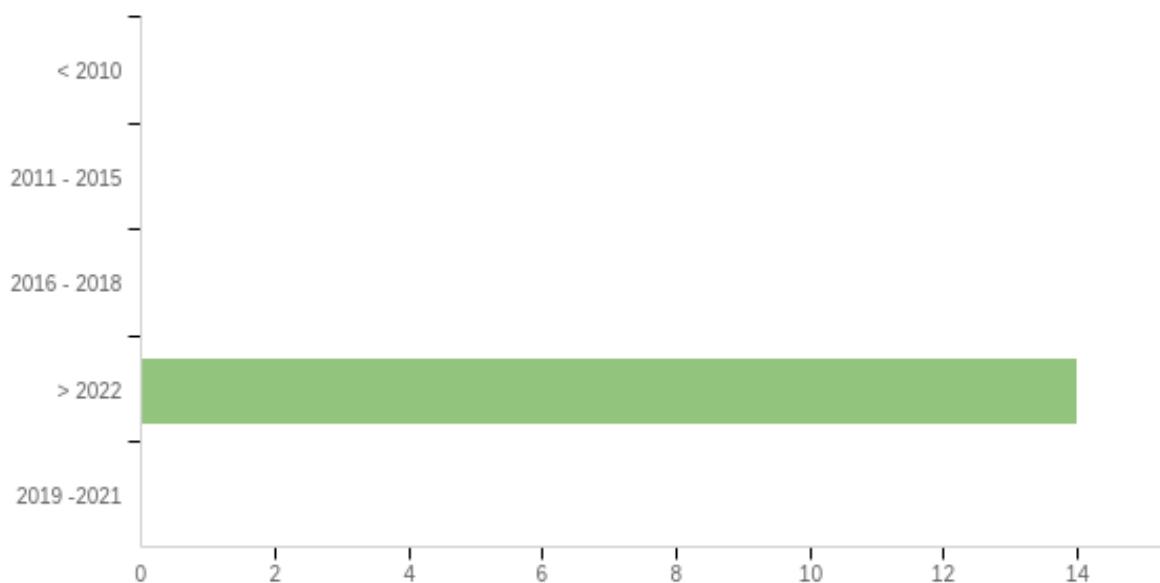
Q1_8_TEXT - Anders, namelijk:

Anders, namelijk: - tekst

ontwerper, adviseur, voedselbosbeheerder

eigenaar, ontwerper, docent

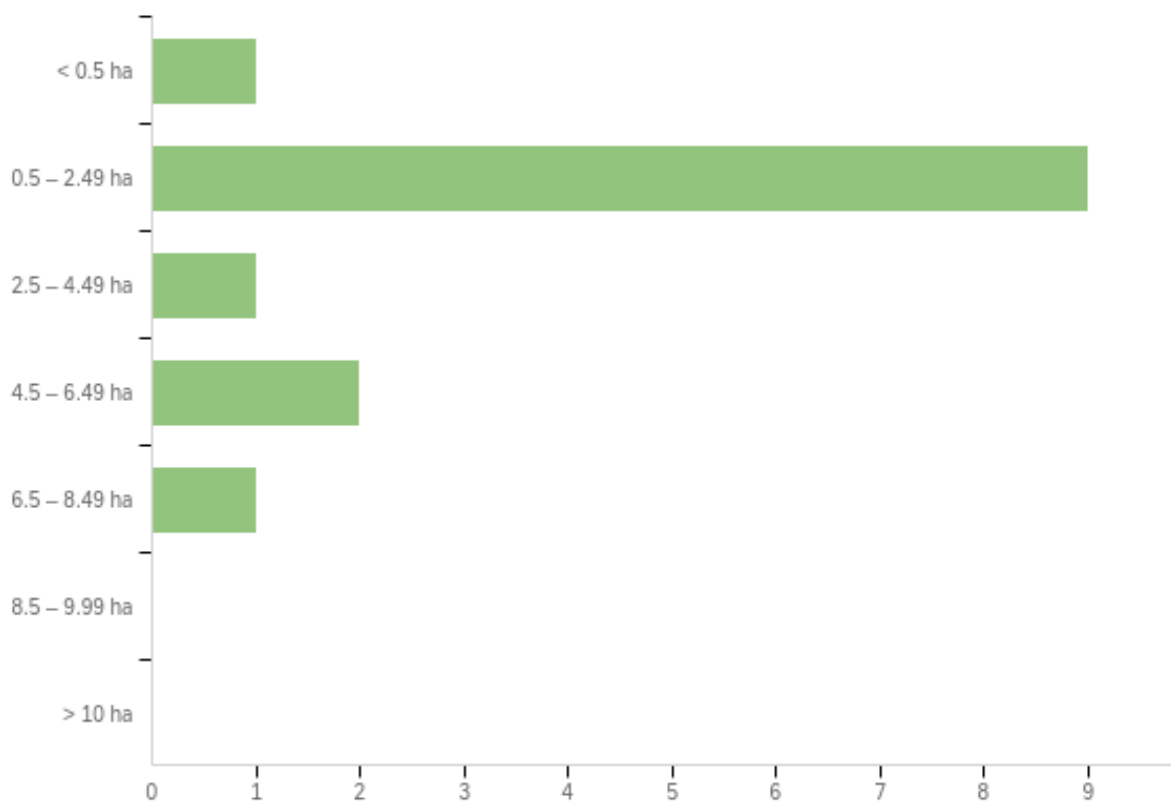
Q4 - Wanneer bent u uw voedselbos gestart?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Wanneer bent u uw voedselbos gestart?	5.00	5.00	5.00	0.00	0.00	14

#	Answer	%	Count
2	< 2010	0.00%	0
3	2011 - 2015	0.00%	0
4	2016 - 2018	0.00%	0
5	> 2022	100.00%	14
6	2019 - 2021	0.00%	0
	Total	100%	14

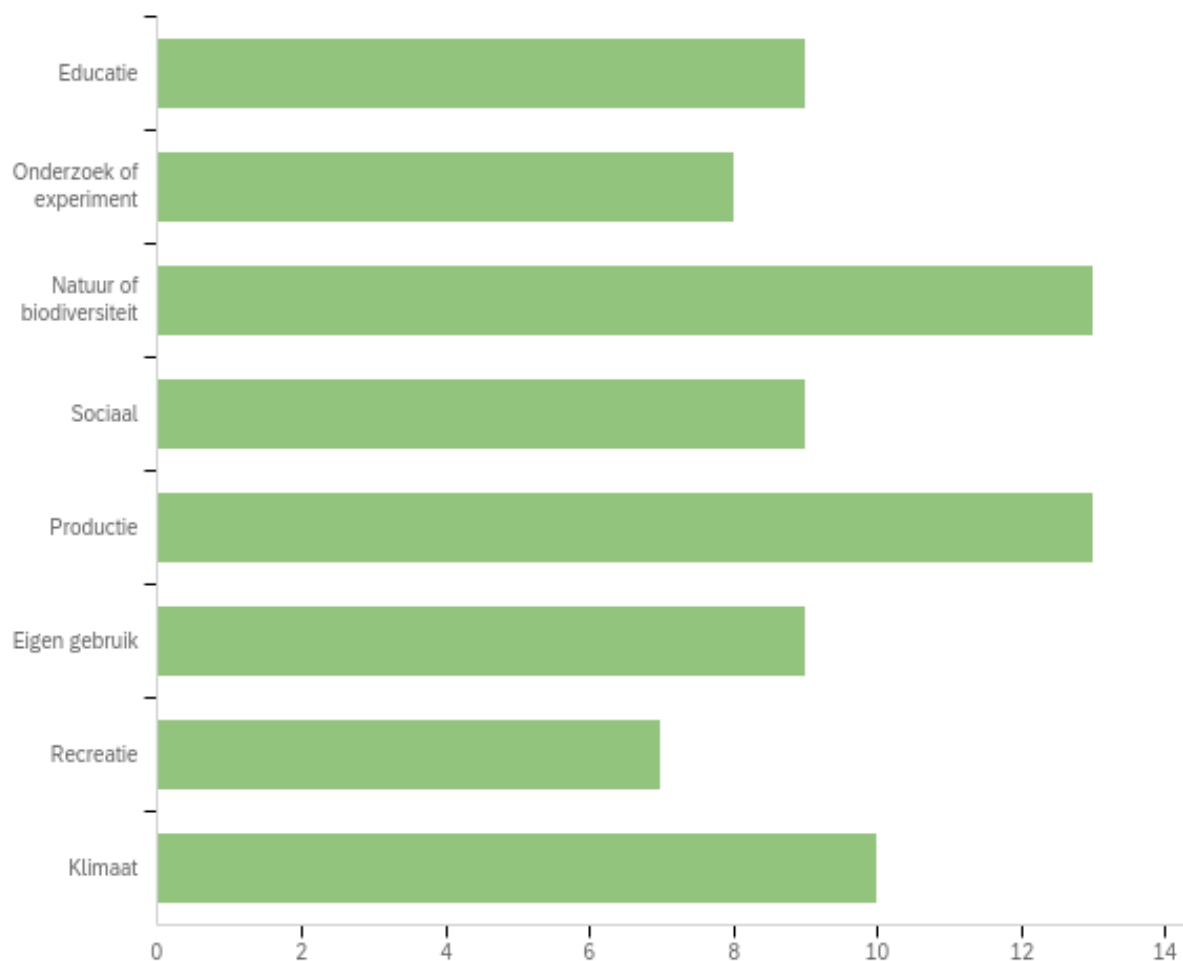
Q5 - Hoe groot is uw voedselbos?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hoe groot is uw voedselbos?	1.00	5.00	2.50	1.05	1.11	14

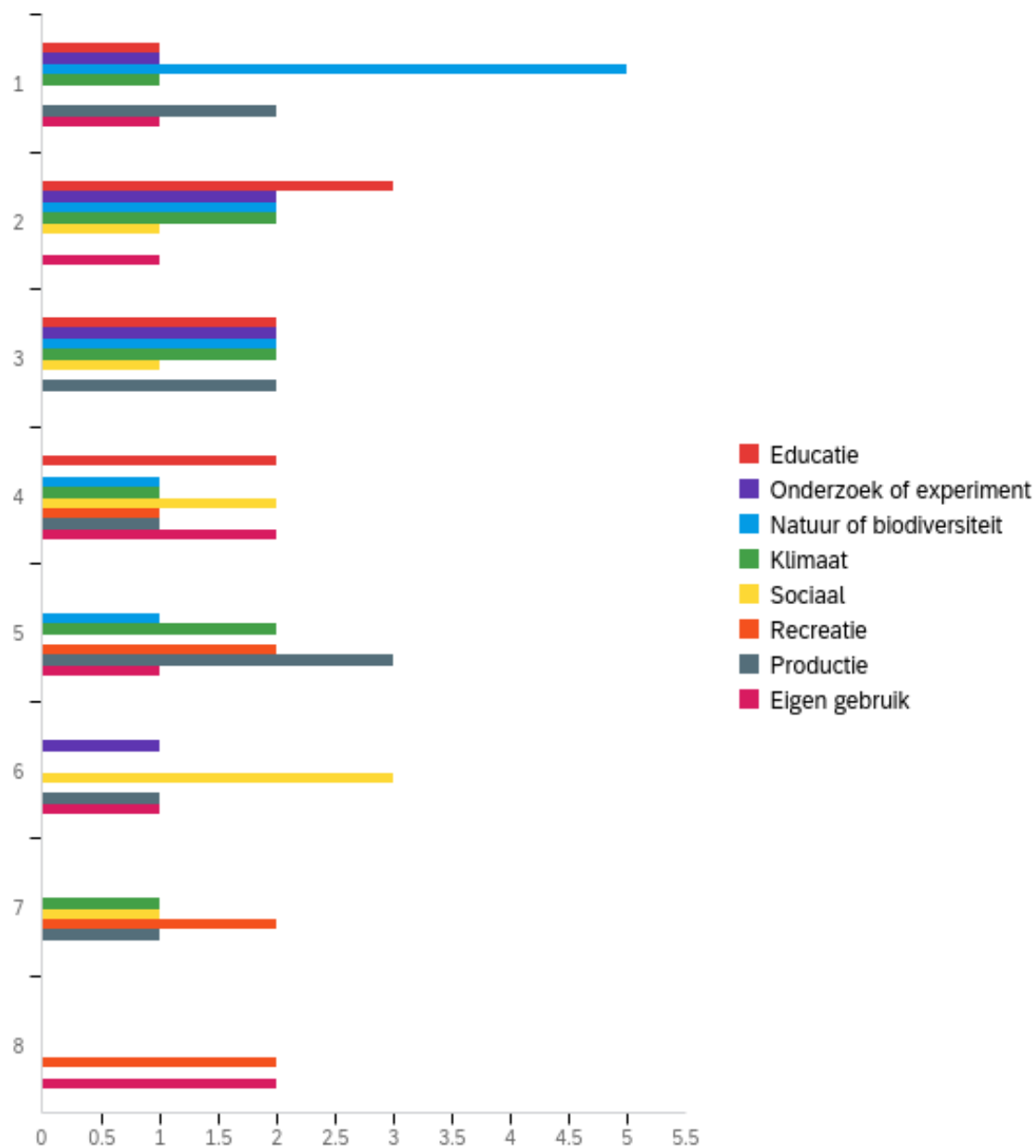
#	Answer	%	Count
1	< 0.5 ha	7.14%	1
2	0.5 - 2.49 ha	64.29%	9
3	2.5 - 4.49 ha	7.14%	1
4	4.5 - 6.49 ha	14.29%	2
5	6.5 - 8.49 ha	7.14%	1
6	8.5 - 9.99 ha	0.00%	0
7	> 10 ha	0.00%	0
	Total	100%	14

Q6 - Welk doel heeft uw voedselbos? Meerdere antwoorden mogelijk.



#	Answer	%	Count
1	Educatie	11.54%	9
2	Onderzoek of experiment	10.26%	8
3	Natuur of biodiversiteit	16.67%	13
4	Sociaal	11.54%	9
5	Productie	16.67%	13
6	Eigen gebruik	11.54%	9
7	Recreatie	8.97%	7
8	Klimaat	12.82%	10
	Total	100%	78

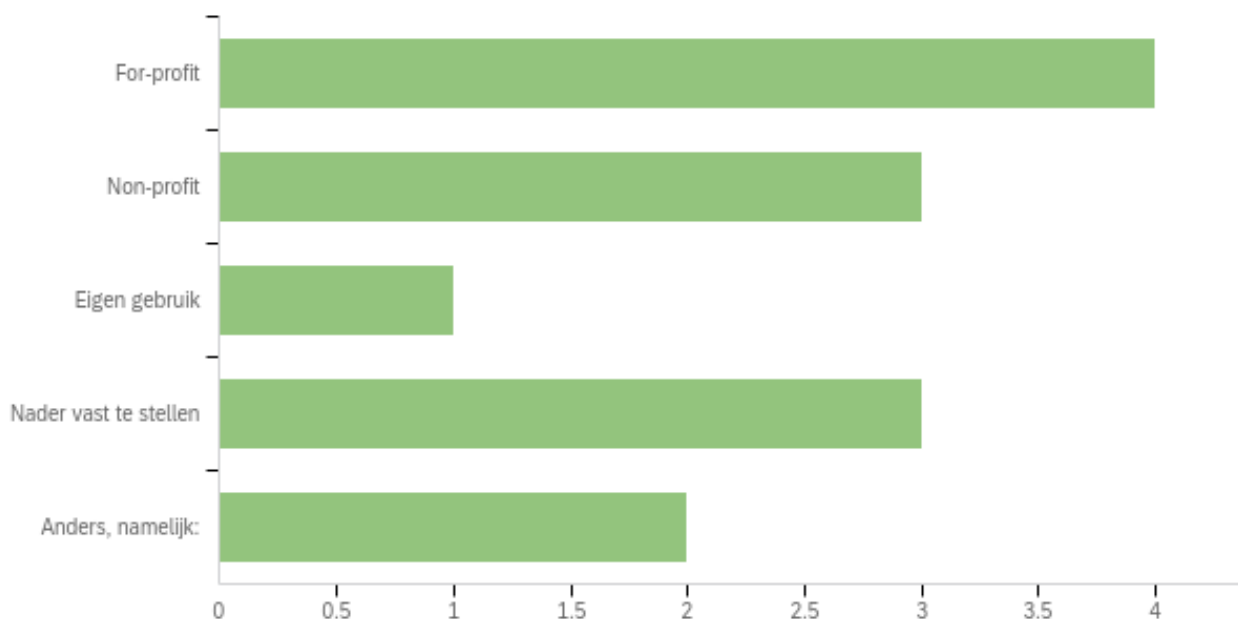
Q7 - Sorteert de doelen naar belang voor uw voedselbos. U kunt de balkjes verslepen.



#	Question	1	2	3	4	5	6	7	8	Total
1	Educatie	12.50%	37.50%	25.00%	25.00%	0.00%	0.00%	0.00%	0.00%	8
2	Onderzoek of	16.67%	33.33%	33.33%	0.00%	0.00%	16.67%	0.00%	0.00%	6

	experiment	7 %																
3	Natuur of biodiversiteit	45.45 %	5	18.18 %	2	18.18 %	2	9.09 %	1	9.09 %	1	0.00 %	0	0.00 %	0	0.00 %	0	11
4	Klimaat	11.11 %	1	22.22 %	2	22.22 %	2	11.11 %	1	22.22 %	2	0.00 %	0	11.11 %	1	0.00 %	0	9
5	Sociaal	0.00 %	0	12.50 %	1	12.50 %	1	25.00 %	2	0.00 %	0	37.50 %	3	12.50 %	1	0.00 %	0	8
6	Recreatie	0.00 %	0	0.00 %	0	0.00 %	0	14.29 %	1	28.57 %	2	0.00 %	0	28.57 %	2	28.57 %	2	7
7	Productie	20.00 %	2	0.00 %	0	20.00 %	2	10.00 %	1	30.00 %	3	10.00 %	1	10.00 %	1	0.00 %	0	10
8	Eigen gebruik	12.50 %	1	12.50 %	1	0.00 %	0	25.00 %	2	12.50 %	1	12.50 %	1	0.00 %	0	25.00 %	2	8

Q8 - Wat is uw business model?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Wat is uw business model? - Selected Choice	1.00	5.00	2.69	1.49	2.21	13

#	Answer	%	Count
1	For-profit	30.77%	4
2	Non-profit	23.08%	3
3	Eigen gebruik	7.69%	1
4	Nader vast te stellen	23.08%	3
5	Anders, namelijk:	15.38%	2
	Total	100%	13

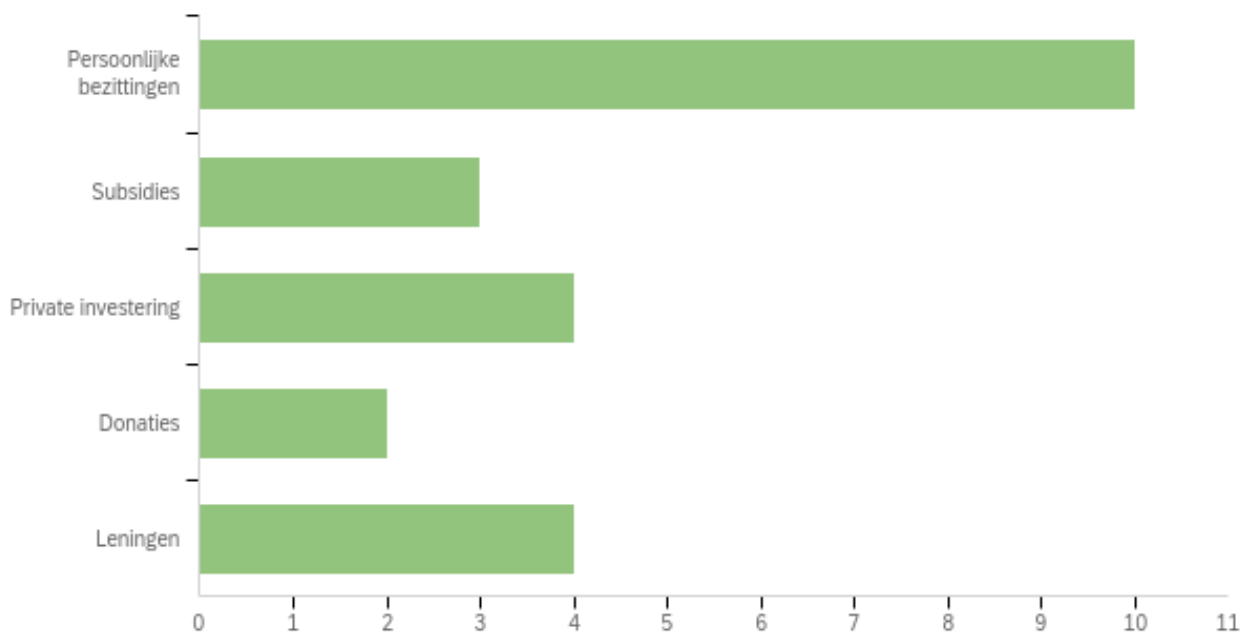
Q7_5_TEXT - Anders, namelijk:

Anders, namelijk: - tekst

nog geen business model, moet nog starten met een voedselbos

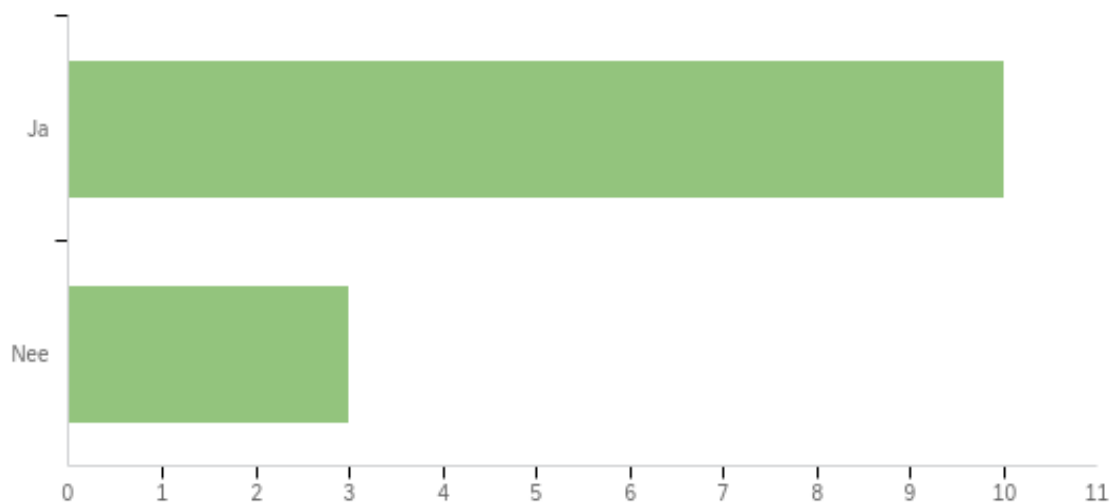
Vraag 1 verkeerd beantwoord. Nog geen voedselbos. Wel op zoek. Kennis rond oogst verwerking ontwikkelen en valideren door overdracht

Q8 - Hoe is uw voedselbos gefinancierd? Meerdere antwoorden mogelijk.



#	Answer	%	Count
1	Persoonlijke bezittingen	43.48%	10
2	Subsidies	13.04%	3
3	Private investering	17.39%	4
4	Donaties	8.70%	2
5	Leningen	17.39%	4
	Total	100%	23

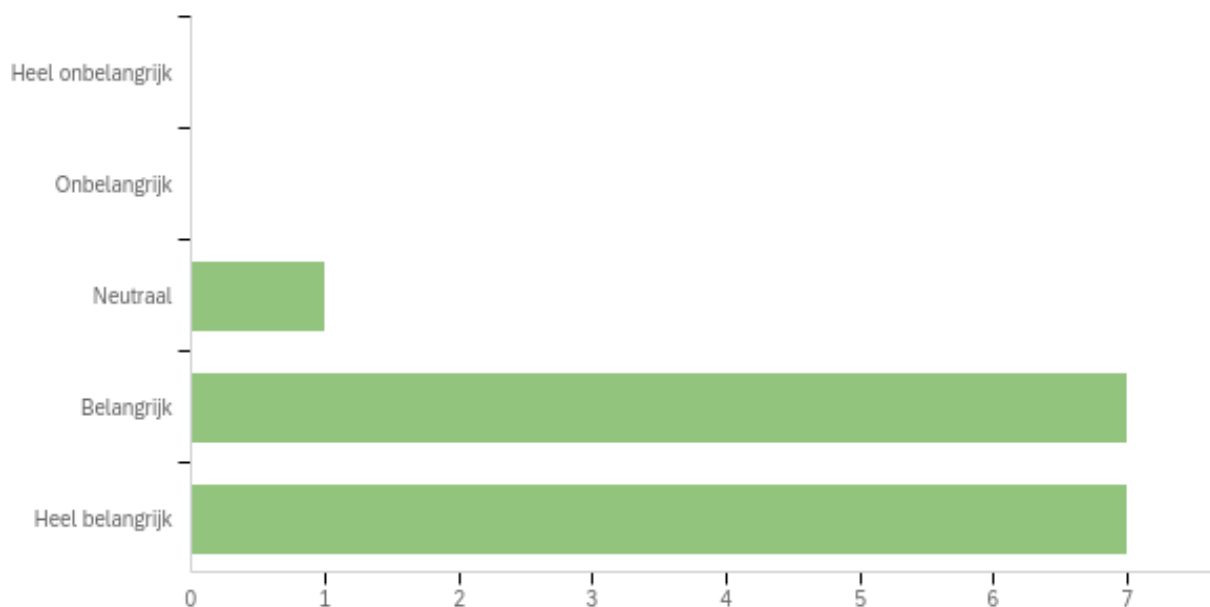
Q10 - Heeft u meer inkomstenbronnen nodig om het voortbestaan van uw voedselbos te garanderen in de komende jaren?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Heeft u meer inkomstenbronnen nodig om het voortbestaan van uw voedselbos te garanderen in de komende jaren?	1.00	2.00	1.23	0.42	0.18	13

#	Answer	%	Count
1	Ja	76.92%	10
2	Nee	23.08%	3
	Total	100%	13

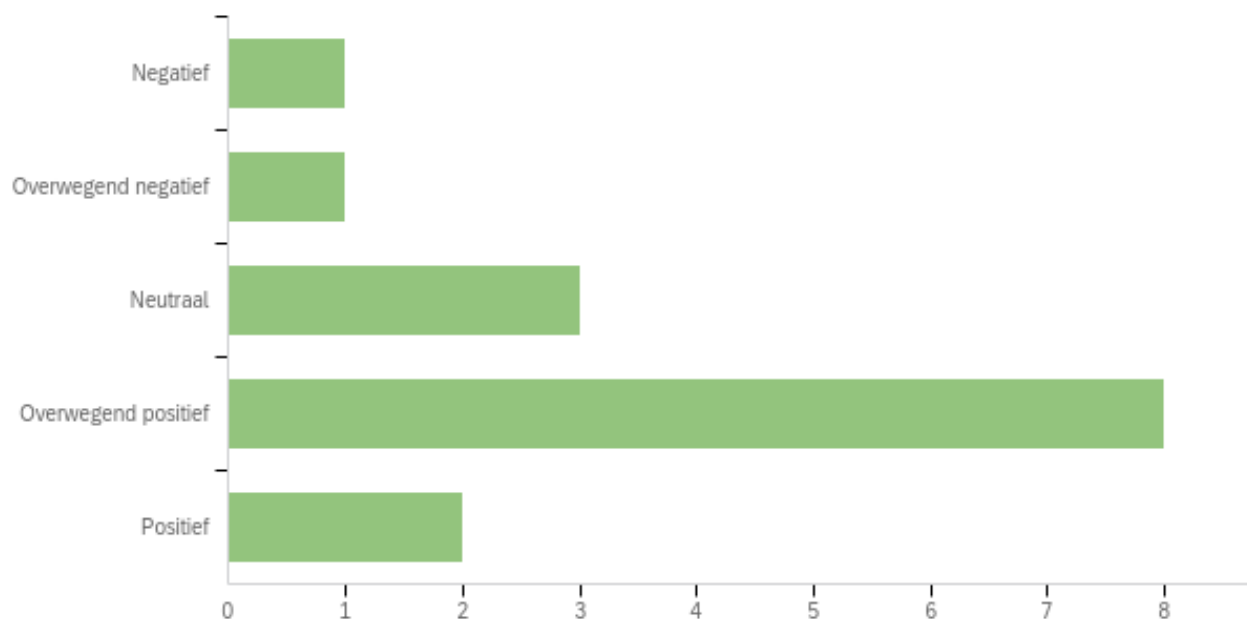
Q12 - Hoe belangrijk vindt u ecosysteemdiensten?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hoe belangrijk vindt u ecosysteemdiensten?	3.00	5.00	4.40	0.61	0.37	15

#	Answer	%	Count
1	Heel onbelangrijk	0.00%	0
2	Onbelangrijk	0.00%	0
3	Neutraal	6.67%	1
4	Belangrijk	46.67%	7
5	Heel belangrijk	46.67%	7
	Total	100%	15

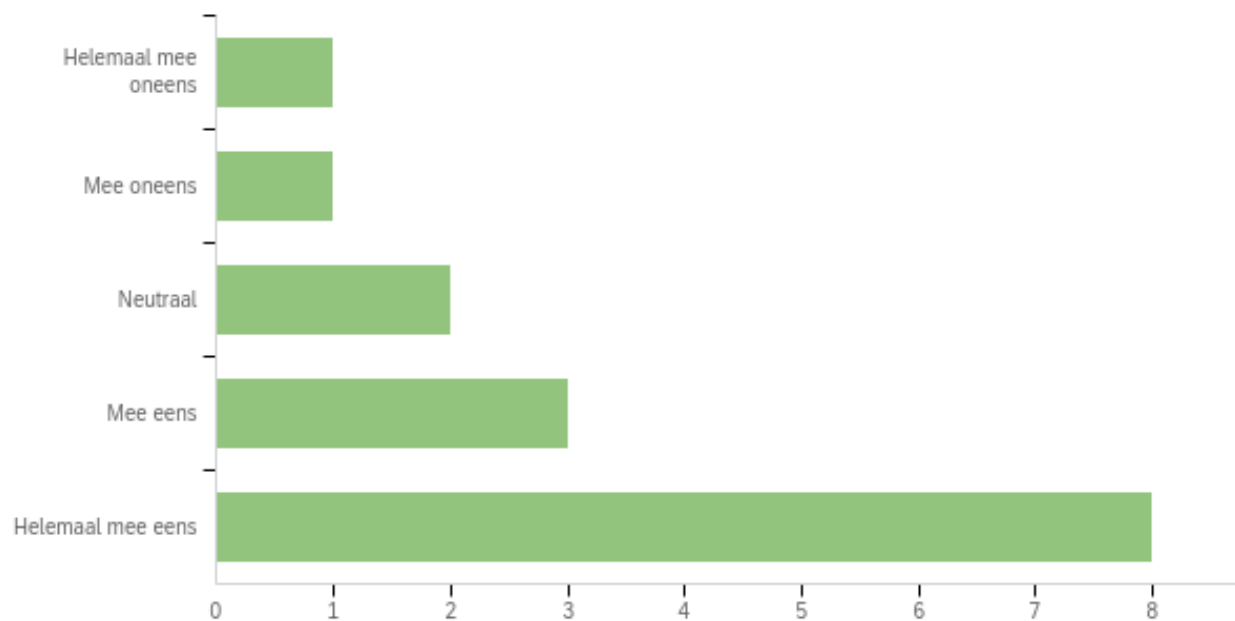
Q13 - Hoe staat u tegenover het vermarkten van ecosysteemdiensten?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hoe staat u tegenover het vermarkten van ecosysteemdiensten?	1.00	5.00	3.60	1.02	1.04	15

#	Answer	%	Count
1	Negatief	6.67%	1
2	Overwegend negatief	6.67%	1
3	Neutraal	20.00%	3
4	Overwegend positief	53.33%	8
5	Positief	13.33%	2
	Total	100%	15

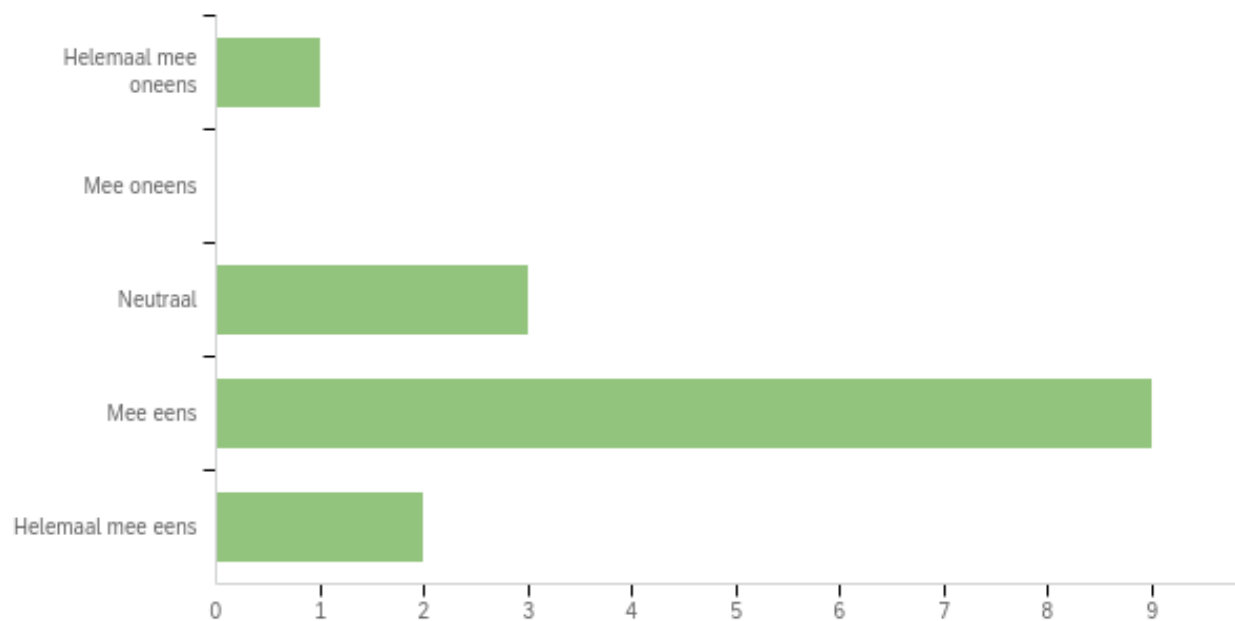
Q47 - Ik maak mij zorgen over het ecosysteem en het voortbestaan van haar diensten.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Ik maak mij zorgen over het ecosysteem en het voortbestaan van haar diensten.	1.00	5.00	4.07	1.24	1.53	15

#	Answer	%	Count
1	Helemaal mee oneens	6.67%	1
2	Mee oneens	6.67%	1
3	Neutraal	13.33%	2
4	Mee eens	20.00%	3
5	Helemaal mee eens	53.33%	8
	Total	100%	15

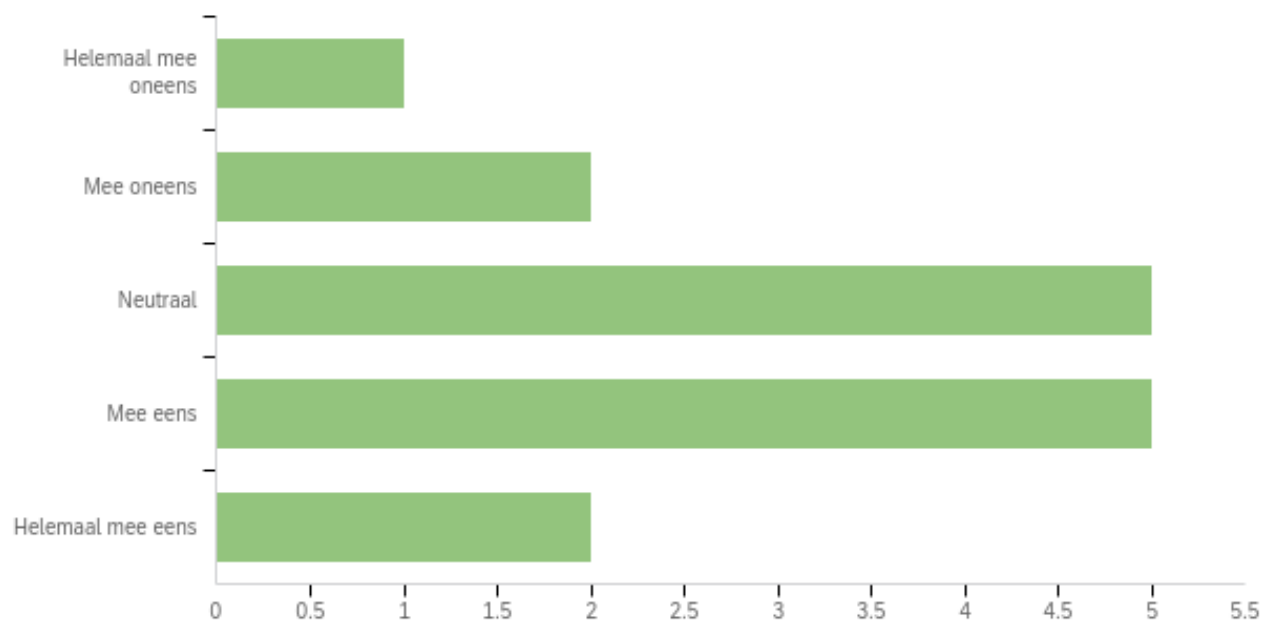
Q16 - Vermarkten van ecosystemendiensten draagt bij aan het beschermen en bevorderen van het ecosysteem.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Vermarkten van ecosystemendiensten draagt bij aan het beschermen en bevorderen van het ecosysteem.	1.00	5.00	3.73	0.93	0.86	15

#	Answer	%	Count
1	Helemaal mee oneens	6.67%	1
2	Mee oneens	0.00%	0
3	Neutraal	20.00%	3
4	Mee eens	60.00%	9
5	Helemaal mee eens	13.33%	2
	Total	100%	15

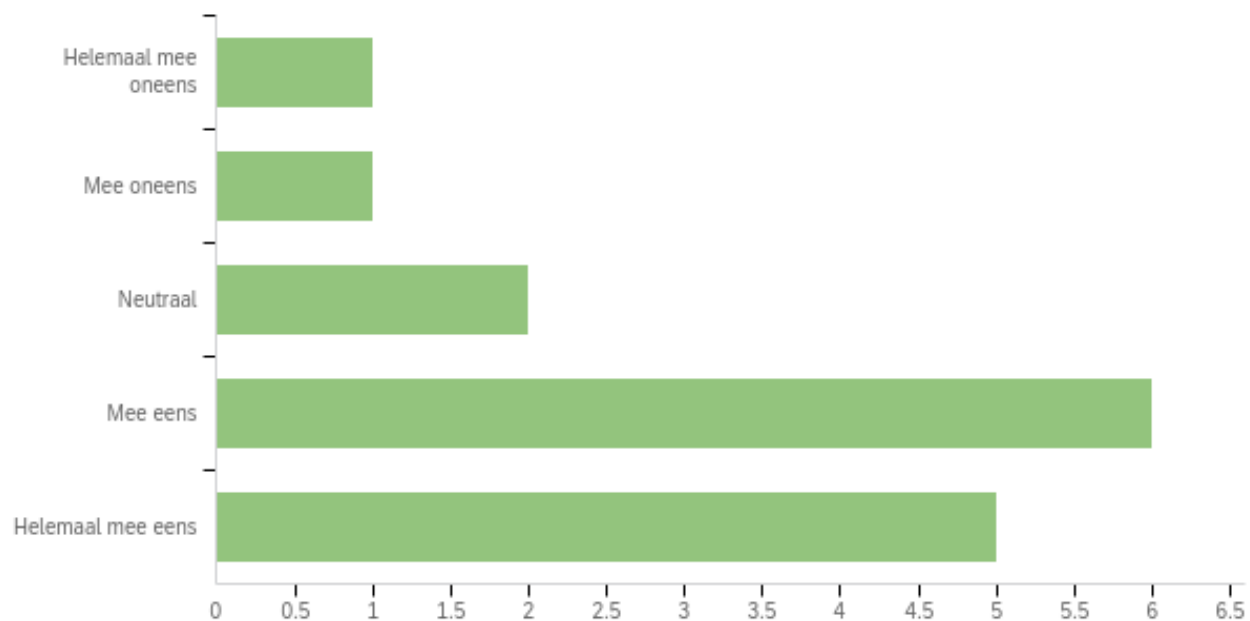
Q17 - Natuur kan worden gevat in een geldwaarde.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Natuur kan worden gevat in een geldwaarde.	1.00	5.00	3.33	1.07	1.16	15

#	Answer	%	Count
1	Helemaal mee oneens	6.67%	1
2	Mee oneens	13.33%	2
3	Neutraal	33.33%	5
4	Mee eens	33.33%	5
5	Helemaal mee eens	13.33%	2
	Total	100%	15

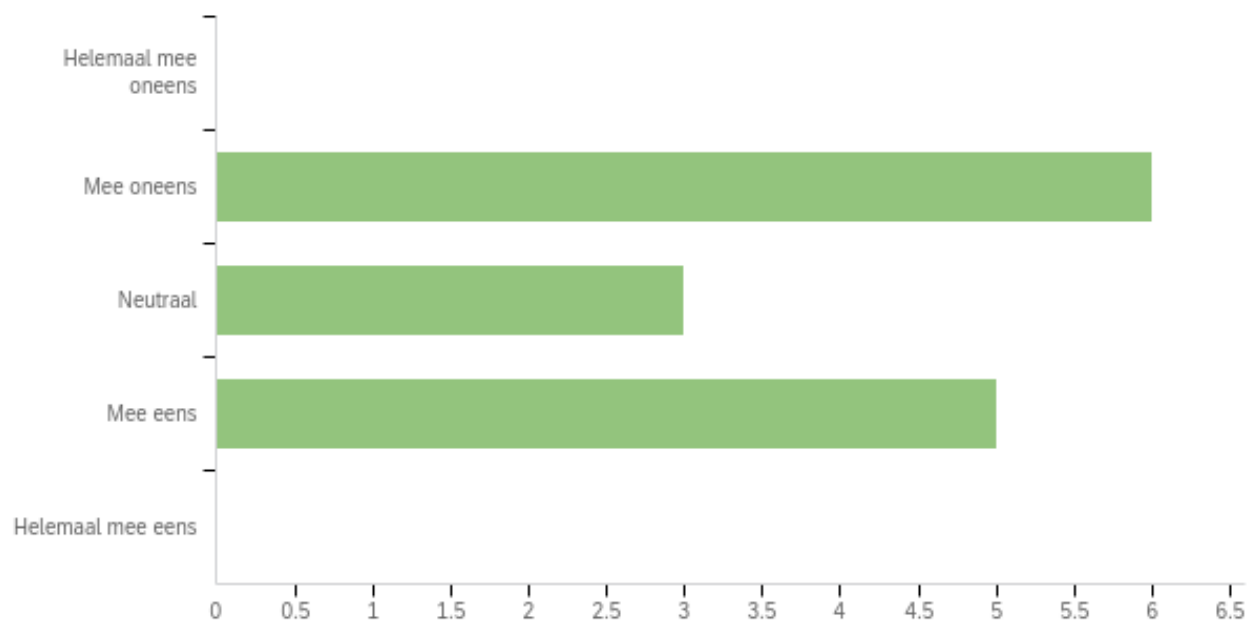
Q18 - Vermarkten van ecosysteemdiensten draagt bij aan een transitie naar een duurzame samenleving.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Vermarkten van ecosysteemdiensten draagt bij aan een transitie naar een duurzame samenleving.	1.00	5.00	3.87	1.15	1.32	15

#	Answer	%	Count
1	Helemaal mee oneens	6.67%	1
2	Mee oneens	6.67%	1
3	Neutraal	13.33%	2
4	Mee eens	40.00%	6
5	Helemaal mee eens	33.33%	5
	Total	100%	15

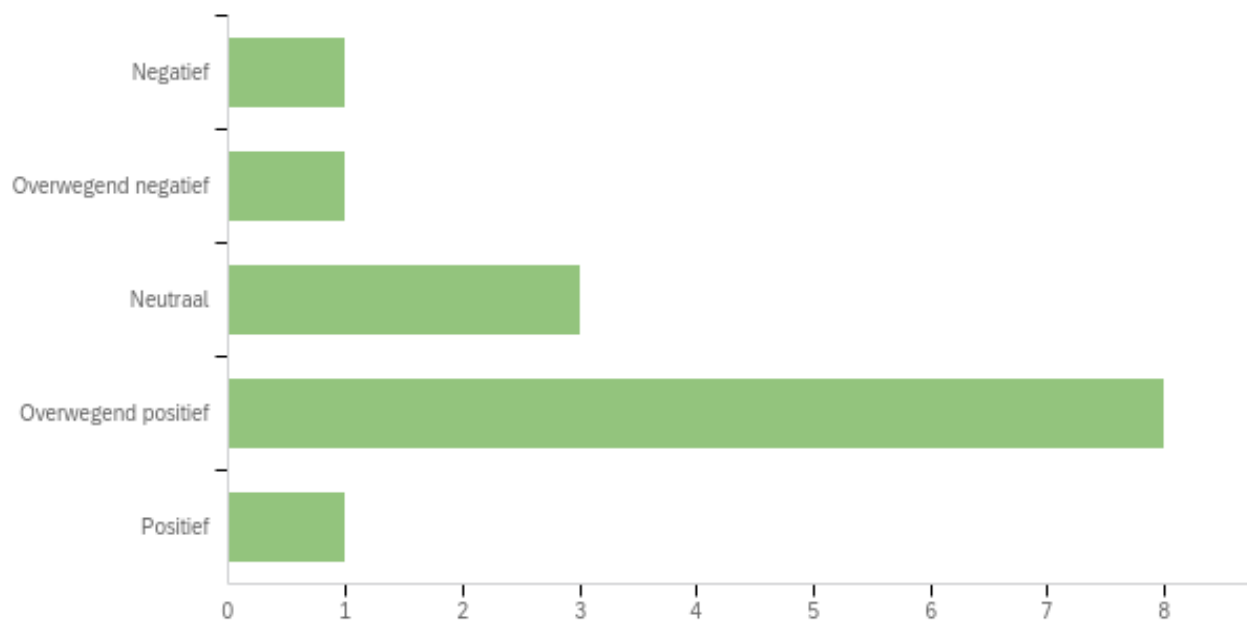
Q20 - In hoeverre bent u het eens met de volgende stelling: Ik heb voldoende kennis van de carbon markt en carbon credits voor mijn gevoel.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	In hoeverre bent u het eens met de volgende stelling: Ik heb voldoende kennis van de carbon markt en carbon credits voor mijn gevoel.	2.00	4.00	2.93	0.88	0.78	14

#	Answer	%	Count
1	Helemaal mee oneens	0.00%	0
2	Mee oneens	42.86%	6
3	Neutraal	21.43%	3
4	Mee eens	35.71%	5
5	Helemaal mee eens	0.00%	0
	Total	100%	14

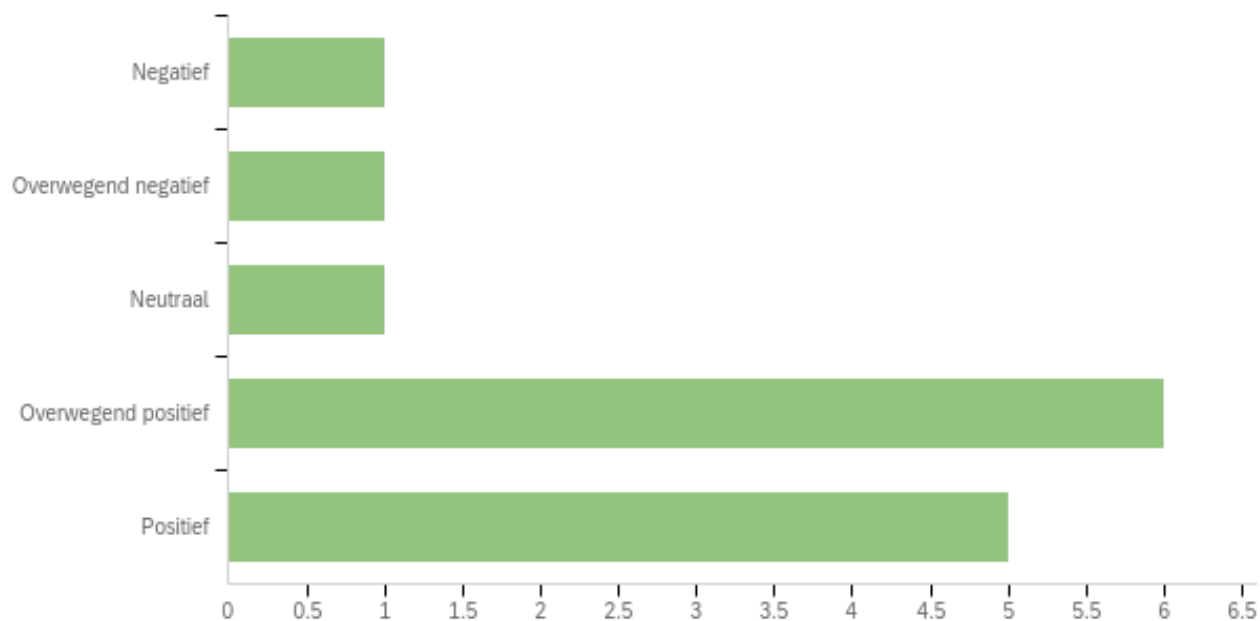
Q21 - Hoe staat u tegenover de carbon markt en carbon credits in het algemeen?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hoe staat u tegenover de carbon markt en carbon credits in het algemeen?	1.00	5.00	3.50	0.98	0.96	14

#	Answer	%	Count
1	Negatief	7.14%	1
2	Overwegend negatief	7.14%	1
3	Neutraal	21.43%	3
4	Overwegend positief	57.14%	8
5	Positief	7.14%	1
	Total	100%	14

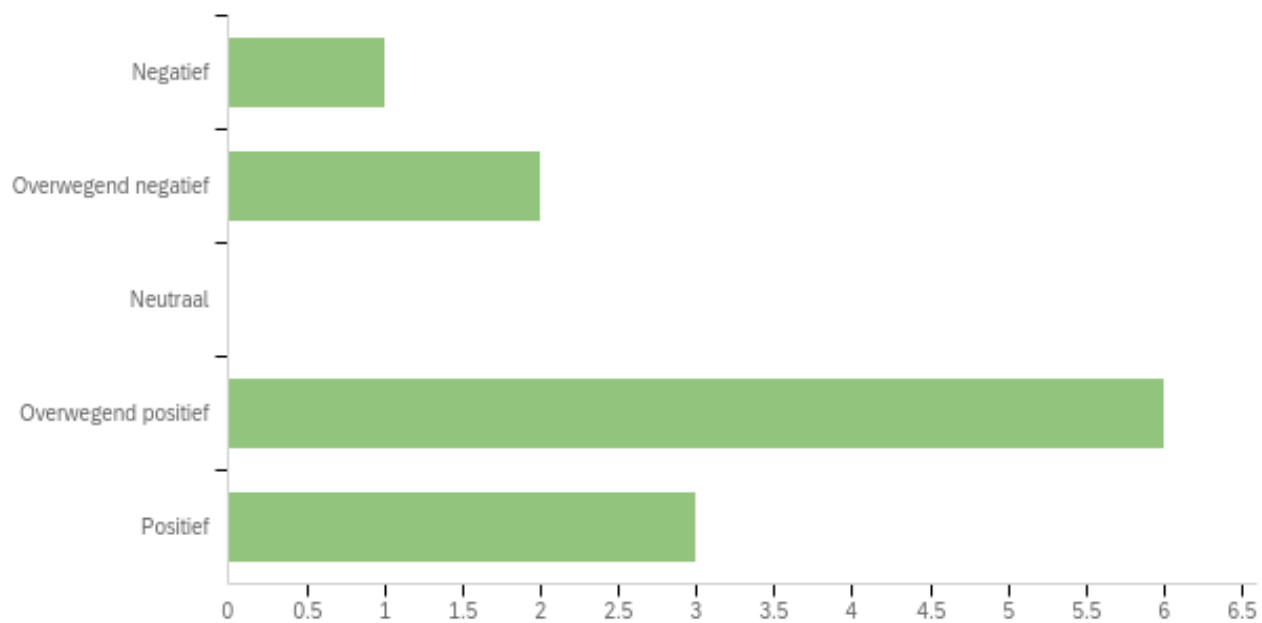
Q22 - Hoe staat u tegenover het aanbieden van carbon credits van voedselbossen?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hoe staat u tegenover het aanbieden van carbon credits van voedselbossen?	1.00	5.00	3.93	1.16	1.35	14

#	Answer	%	Count
1	Negatief	7.14%	1
2	Overwegend negatief	7.14%	1
3	Neutraal	7.14%	1
4	Overwegend positief	42.86%	6
5	Positief	35.71%	5
	Total	100%	14

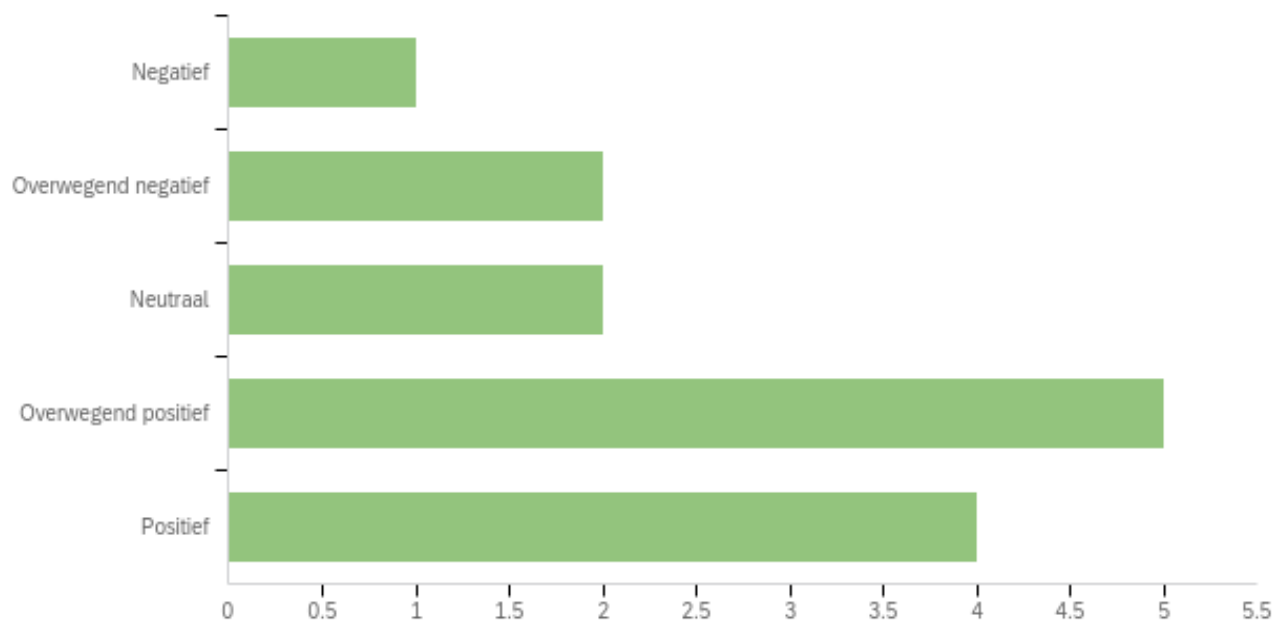
Q23 - Hoe staat u tegenover carbon credits om uw voedselbos te financieren?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hoe staat u tegenover carbon credits om uw voedselbos te financieren?	1.00	5.00	3.67	1.25	1.56	12

#	Answer	%	Count
1	Negatief	8.33%	1
2	Overwegend negatief	16.67%	2
3	Neutraal	0.00%	0
4	Overwegend positief	50.00%	6
5	Positief	25.00%	3
	Total	100%	12

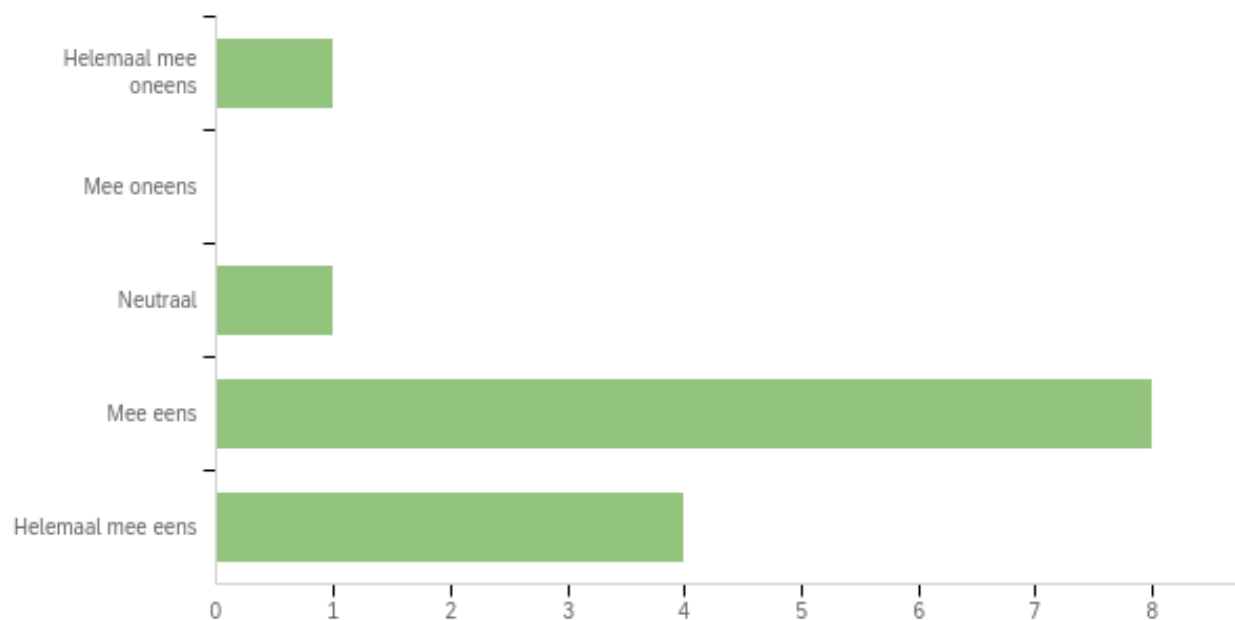
Q33 - Hoe staat u tegenover carbon credits als manier om een relatie tussen koper en afnemer aan te gaan?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Hoe staat u tegenover carbon credits als manier om een relatie tussen koper en afnemer aan te gaan?	1.00	5.00	3.64	1.23	1.52	14

#	Answer	%	Count
1	Negatief	7.14%	1
2	Overwegend negatief	14.29%	2
3	Neutraal	14.29%	2
4	Overwegend positief	35.71%	5
5	Positief	28.57%	4
	Total	100%	14

Q25 - In hoeverre bent u het eens met de volgende stelling: Carbon credits zijn een goede manier voor voedselbossen om aanvullende financiering te krijgen.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	In hoeverre bent u het eens met de volgende stelling: Carbon credits zijn een goede manier voor voedselbossen om aanvullende financiering te krijgen.	1.00	5.00	4.00	1.00	1.00	14

#	Answer	%	Count
1	Helemaal mee oneens	7.14%	1
2	Mee oneens	0.00%	0
3	Neutraal	7.14%	1
4	Mee eens	57.14%	8
5	Helemaal mee eens	28.57%	4
	Total	100%	14

Q27 - Wat pleit voor u tegen de carbon markt en carbon credits?

Wat pleit voor u tegen de carbon markt en carbon credits?

Net als bomen planten voor compensatie vliegen, beter kan je stoppen met vliegen. Het voelt als afschuiven en uitstellen verantwoordelijkheid!

Green washing Waarde ecosysteem diensten zijn moeilijk te bepalen.

Beperkte intrinsieke motivatie bij vervuilende partijen om werkelijk te verbeteren

Greenwashing. Zolang de carbon markt er is zijn er meer bedrijven die uitstoten dan opslaan. Ik zou graag de carbon markt overbodig zien, maar dat gaat nooit gebeuren helaas. Carbon is maar 1 van de vele ecosystemediensten. De andere mogen ook vermarkt worden, omdat deze net zo belangrijk zijn. Alles hangt samen.

Nu niet duidelijk wat er precies gebeurt.

We focussen ons alleen op co2 wat echt een veel te smalle bandbreedte is. Daarnaast is het volledig afhankelijk van de gezondheid van het ecosysteem hoeveel koolstof er wordt opgeslagen. Meeste voedselbossen zijn niet heel gezond en leggen nauwelijks koolstof vast

teveel gedoe.. het is toch het organiseren van wantrouwen

Transparantie, meetbaarheid. Normen die verkeerd geïnterpreteerd worden. Complex om te vergelijken de carbon norm per voedselbos.

Risico dat economische wetmatigheden de biologische en natuurlijke 'ziel' eruit 'moorden' doordat de geldverwerving via natuurlijke commons blinde vlekken/corrupte waarden kan genereren. En zo uiteindelijk 'het paard achter de wagen wordt gespannen

Compensatie geen echte oplossing. Systeem vraagt om lange termijn commitment en voelt daardoor kwetsbaar Koolstof slechts deel van de ecoproblematiek.

Dat de natuur dus een financiële waarde krijgt, maar dat is helaas anno 2024 heel normaal

Bang voor misbruik. Daarnaast ook het feit dat ik mijn eigen carbon footprint al compenseer met het aanleggen van een vb, voelt niet goed er dan extra geld voor te vragen

Luiheid

Q28 - Wat pleit voor u voor de carbon markt en carbon credits?

Wat pleit voor u voor de carbon markt en carbon credits?

Geen. Natuur is niet te koop en we moeten niets meer afkopen en uitstellen

Ecosysteemdiensten krijgen een waarde in geld waardoor meer mensen ecosysteemdiensten meer/beter gaan waarderen.

Toename van het begrip van de waarde van ecosysteemdiensten Mogelijkheid om investeringsgat bij aanleg te overbruggen

Uitstoot wordt aan banden gelegd. Belang van ecosysteemdiensten krijgt meer aandacht, ook van vervuilers. Geld verdienen is een sterke motivator om keuzes te maken, dus het beweegt veel mensen om de juiste keuzes te maken (al is dat niet de juiste reden, maar hopelijk volgt inzicht later)

Met goede regelgeving en controles, zou het goed kunnen werken.

extra manier van financieren

het is een goede manier om de transitie te financieren

Wanneer de eenduidige algemeen geldende normen goed gehanteerd wordt carbon credits een goed onderbouwd communicatie middel voor impact meeting.

Realiseerbaar maken om als groendoener je tijd en energie hierin te steken zonder dat je daarmee 'je inkomen verliest'. (persoonlijk nam ik voorlopig een jaar zonder inkomen op in de hoop dat ik vlgd jaar ergens geld mee kan verdienen met het VB dat ik nu verder uitbouw en ontwikkel. Dat hou ik geen 2 jaar vol...groot risico/ financierl...langere teemijn etc.)

Natuur wordt meer geincludeerd in economisch systeem.

- bewustwording - dat bedrijven gedwongen worden hun gedrag te veranderen - (nieuwe mogelijkheden/kansen voor natuur

Goede manier om aanleg vb verder te stimuleren en anderen in contact te brengen met vb

Financiële prikkels

Q29 - Welke voorwaarden zou u eventueel stellen voor het verkopen van carbon credits voor uw voedselbos?

Welke voorwaarden zou u eventueel stellen voor het verkopen van carbon credits voor uw voedselbos?

Ik doe er sowieso niet aan mee. Wil dat geld niet.

Criteria over duurzaamheid aan de koper en verkoper

Directe afstemming met de afnemende partij over doelstellingen en werkelijke verbeteringen

Duidelijkheid voor beide partijen.

dat er een relatie ontstaat met de koper

Ik heb nog een te slecht beeld over hoe de carbon credits tot stand komen en hoe ze vermarkt worden. En welke transacties dan plaatsvinden. O.a worden deze jaarlijks verrekend of eenmalig?

Het is vooralsnog een pioniers situatie...dus moeilijk te zeggen.

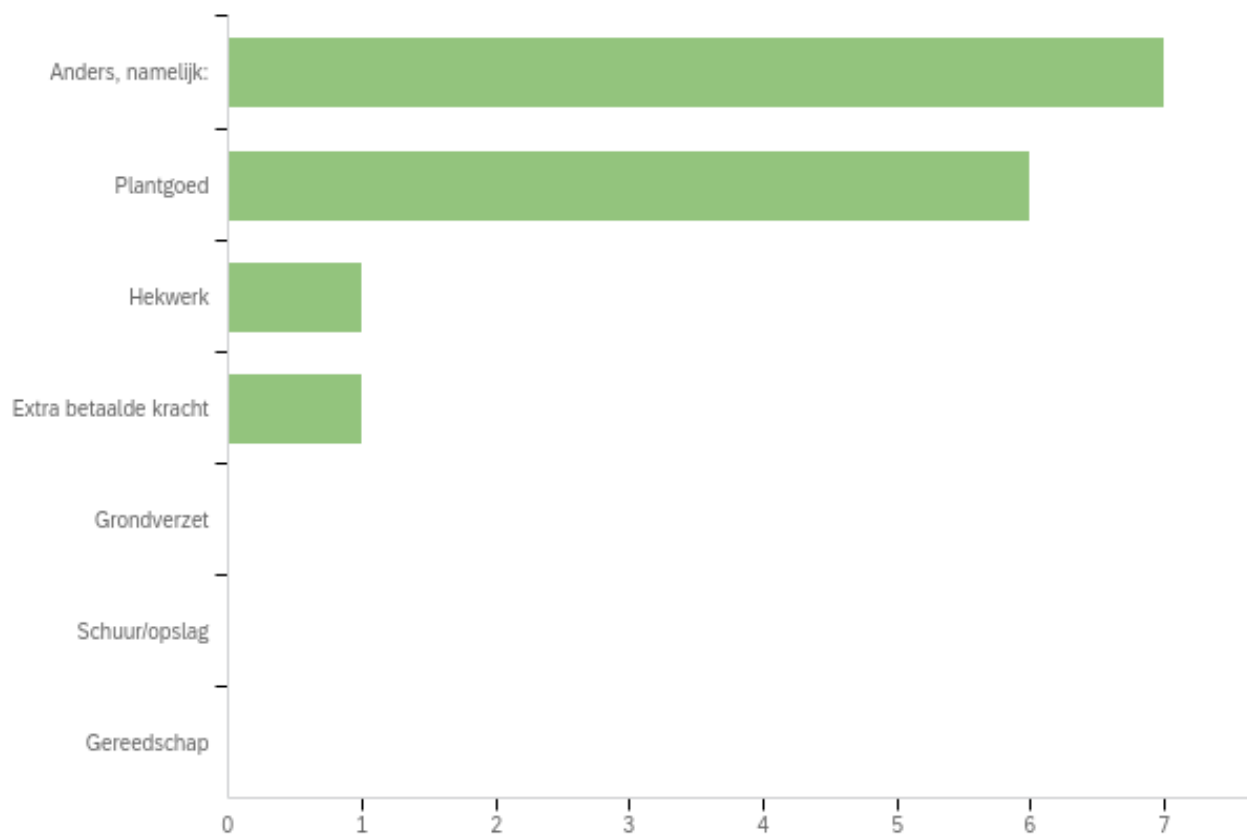
Bedrijf moet al bezig zijn met transitie naar groen. Deel van credits verkoopbaar omdat eigen co2 verbruik er ook afgehaald moet worden (welk deel hiervan wordt via bedrijven al gecompenseerd strks?)

Ik vind naar aanleiding van vanmiddag (presentatie carbon credits) een heel goed idee om de kopers uit te nodigen om mee te doen met een jaarlijkse natuurwerkdag. Het is goed om de relatie te verdiepen, naast alleen het geld en zo inzage te geven wat de koper mogelijk maakt

Ik wil zeker weten dat het geen greenwashing is

Lokaal verkopen en pas als co2 werkelijk is opgeslagen.

Q31 - Aan welke aspecten van uw voedselbos zou u het geld van de carbon credits besteden?



#	Answer	%	Count
2	Plantgoed	40.00%	6
5	Hekwerk	6.67%	1
6	Grondverzet	0.00%	0
7	Schuur/opslag	0.00%	0
8	Gereedschap	0.00%	0
9	Anders, namelijk:	46.67%	7
10	Extra betaalde kracht	6.67%	1
	Total	100%	15

Q16_9_TEXT - Anders, namelijk:

Anders, namelijk: - tekst

Niets want neem het geld niet aan

Beheer en instandhouding ecosysteemdiensten

Nog niet in beeld. Ik heb nog geen kavel.

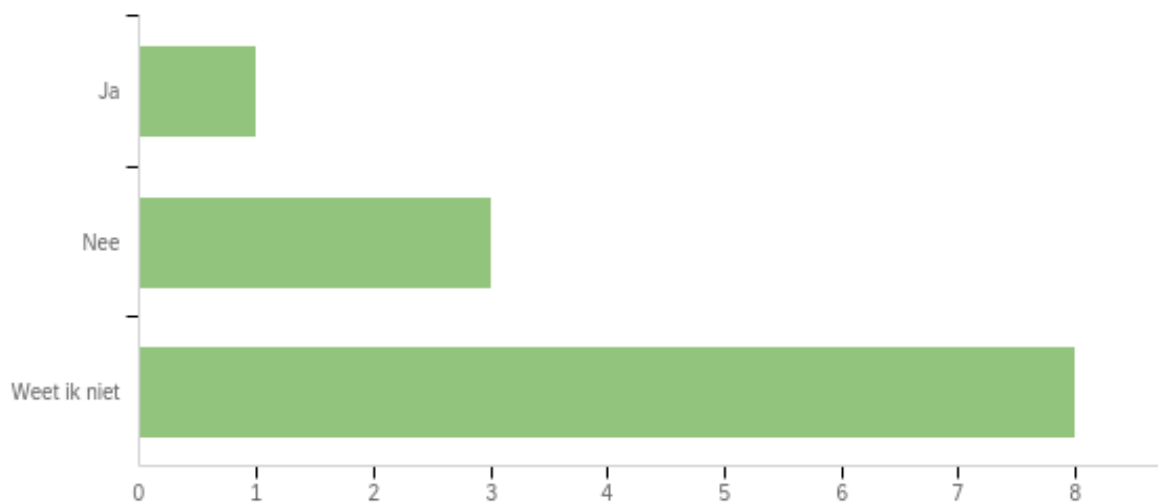
Financieren (deel) van het realiseren day to day...

Kan van alles zijn

aankoop nieuwe gronden!!

Meer landbouwgrond aankopen en omzetten

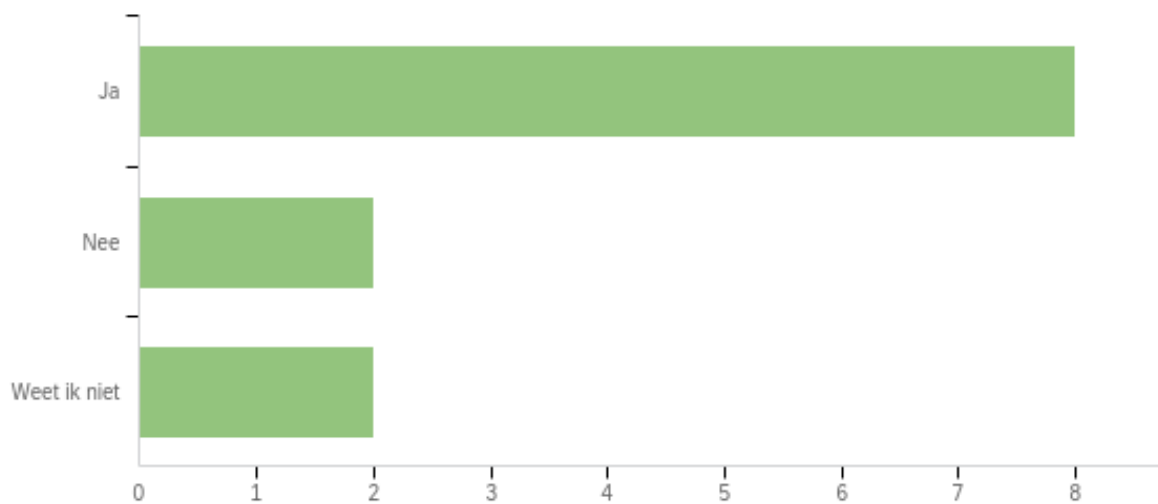
Q32 - Zouden carbon credits u in staat stellen deze activiteit(en) volledig te bekostigen?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Zouden carbon credits u in staat stellen deze activiteit(en) volledig te bekostigen?	1.00	3.00	2.58	0.64	0.41	12

#	Answer	%	Count
1	Ja	8.33%	1
2	Nee	25.00%	3
3	Weet ik niet	66.67%	8
	Total	100%	12

Q33 - Vindt u inkomsten uit carbon credits een goede manier om deze activiteit(en) te bekostigen?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Vindt u inkomsten uit carbon credits een goede manier om deze activiteit(en) te bekostigen?	1.00	3.00	1.50	0.76	0.58	12

#	Answer	%	Count
1	Ja	66.67%	8
2	Nee	16.67%	2
3	Weet ik niet	16.67%	2
	Total	100%	12

Q34 - Wat heeft u eventueel nodig van de vereniging (Voedsel uit het Bos) omtrent ecosysteemdiensten en carbon credits?

Wat heeft u eventueel nodig van de vereniging (Voedsel uit het Bos) omtrent ecosysteemdiensten en carbon credits?

Niets, prima om over te spreken maar mijn overtuiging nu is dat ik tegen ben

Formats/sheets voor berekeningen, gecertificeerd intermediairen tussen aanbieders en afnemers, betrekken experts. Het is een vereniging dus de leden zullen ook werk moeten verzetten.

Hulp om theorie naar praktijk te vertalen. Jullie hebben al een pilot lopen, Klasse. Misschien kunnen er meer projecten geholpen worden om carbon credits daadwerkelijk te verkopen.

Zoals ik aan het begin al meldde, ik moet nog beginnen met een voedselbos. Tz.t. graag hulp bij wat ik het beste kan doen gezien de huidige regelgeving.

-

kennis en hulp bij het organiseren van zo'n verkoopdeal

Verdieping over hoe carbon credits betekend worden. O.a. de relatie per grondsoort.

Toegankelijk begrijpelijk en breed gedeeld systematisering om legaal te certificeren. Er zijn nu best initiatieven (oncra?) Die ik zelf nu eerst beter moet onderzoeken voordat ik hier meer over kan oordelen.

Vervolg geven aan deze webinar en/of informatie geven hoe je vervolgens het proces moet oppakken, heel concreet.

Mensen die kunnen verkopen, dat kan ik namelijk niet;-)

Geen idee

Easy onboarding

Appendix B: Interview Questions

Introductie

Dankuwel voor het meedoen aan dit onderzoek. We zullen uw ideeën en percepties op carbon credits voor voedselbossen gaan bespreken. Voordat we beginnen, wil ik nog zeggen dat het u vrij staat vragen over te slaan of te stoppen of te pauzeren op enig moment. Dit interview is vertrouwelijk en zal alleen worden gebruikt voor dit onderzoek. Het zou fijn zijn om het interview op te kunnen nemen, is dat oké?

Interviewvragen

Zou u wat meer kunnen vertellen over uw voedselbos?
Wat is uw plan om de kosten te financieren?
Hoe passen carbon credits in dat plan?
U hebt aangegeven in de enquête dat u ... en ... en ... de belangrijkste doelen zijn voor uw voedselbos. Hoe denk u dat carbon credits daarbij passen?
Hoe staat u tegenover het beprijzen van iets als koolstofopslag?
Welke voordelen ziet u van het verkopen van carbon credits?
Welke bezwaren hebt u bij het verkopen van carbon credits?
Zou u een relatie aan willen gaan met de koper? Hoe zou die er idealiter voor jou uitzien?
Zou u het geld uit carbon credits anders gebruiken dan geld uit andere bronnen? Waarom?
Wat zijn uw gedachtes bij de carbon markt?
Hoe denkt u over de misstanden die hebben plaatsgevonden bij carbon credits certificeerders?
Hoeveel vertrouwen hebt u in het marktproces op dit moment? En op termijn?
Hoe denkt u over regulatie op de carbon markt?
Denkt u dat carbon credits uw voedselbos duurzamer maken? Op welke manier?
Zou u nog iets willen toevoegen?