

Head-scratchers and Heart-crackers in Circular Agriculture

Capita Selecta RSO

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Introduction

Motive

Circular agriculture is the future according to the Dutch Minister of Agriculture, Nature and Food Quality (LNV) – Carola Schouten – who has declared in September 2018 that her vision for the Dutch agriculture as “The Netherlands will be a front runner in circular agriculture by 2020”. The executive board president of Wageningen University; Louise Fresco has recently announced a paradigm shift in agricultural science from improvement of productivity towards improvement of circularity. Many stakeholders are working on this transition. Nevertheless, there are different views, and narratives on what the concept of circular agriculture entails. How to bring it into practice? What the goals are to which we intend to contribute through this change in agricultural practices, and what the obstacles are and the side effects. Understanding the diversity perspectives of stakeholders can help to understand where concessions have to be made and where agreement is already there. Additionally, it helps to identify ‘the elephants in the room’, or the topics which are not brought up or mentioned by certain players, which may lead to a stagnation in a transition towards circular agriculture. To bring forward a change in the Dutch agricultural sector different stakeholders need to collaborate, and therefore understand each other. Research needs to be done on the different perspectives to be able to bring stakeholders closer together.

Objectives

The aim of this research is to do a document and media analysis on visions and statements by stakeholders around circular farming. The stakeholders that will be considered in this research are the ones who are considered highly influential, crucial in the process, but also the frontrunners are subject of interest. Only publicly available material will be analyzed. This will be done by firstly doing a research on content of text which give us information on perspectives that are existent in the field. It is impossible to assess all issues which play a role in the public discussion, for a systemic transformation entails many details. Therefore the (written or spoken) text will be analyzed to find answers to a subset of research questions.

The main research question which I attempt to answer in this research is:

“How do different stakeholders interpret the concept of circular farming in their public narratives?”

Narratives can be seen as the stories that are told, in this case, around the societal transformation towards circular agriculture. For every stakeholder, the story is different, the plot is different, the roles of different characters are different, the good and the bad are different. This is why to understand a stakeholders’ position we need to understand their story.

In order to find the most meaningful results, some sub questions are formulated on which it is expected that little consensus can be found up to the present moment. Some of the aspects which will be

researched are interpretable in multiple ways, and therefore lead to diversity in perceptions. Other topics are linked to different interests or world views and therefore lead to a lack of consensus. The aim of the research is to find out how different the standpoints really are. The (written or spoken) text will be analyzed around the following leading questions;

1. Why is there a need for circularity in agriculture to according to the stakeholders? And what is the expected impact?
2. According to the different stakeholders, which elements have to circulate in circular agriculture?
3. On what scales do cycles have to be closed?
4. In the eyes of a stakeholder, does this agricultural transition result in growing, and/or shrinking of (parts of) the economy?

To finalize the research, additional topics will be presented from the literature and media analysis that appear to be of significant in the debate on circular agriculture in the Netherlands. The aim is to sketch a rough picture of the issues that are being discussed, this will enable the reader to deepen his or her understanding of this debate and possibly inspire him or her for further research questions on circular agriculture.

Method

The categorical-content approach in narrative analysis, or in other words qualitative content analysis is used in this research. Narrative analysis is applied because it is an interpretative method which “deals with the particular and the specific, rather than the collective and the statistical”.¹ It is important to look at meaning behind the words, and not only at the words themselves. Additionally, it enables the researcher to shed light on the voices that are less prominent. In this way, I intend to look at the discussion around circular farming not only from the perspective of the most powerful stakeholders, that produce the highest quantity of publications and media on the topic, but also from the perspective of the ones who might have controversial ideas which are less spread over the internet, or ideas that have a deeper layer and are not stated explicitly. Narrative analysis also gives space to look for the way stories are told, and the context in which things are said.² This is useful in order to get a better understanding on what spokespersons actually mean with their words, or why they present them in a certain way. This is useful when exploring stakeholder’s positions. Peoples roles, and their relations to other people, or certain moments in time might influence narratives. And that is why the exploration of narratives gives us a good understanding about how people stand in this societal discussion.

In this research a coding frame has been used, in which each section of the frame represents a sub-question of this research (as presented in the introduction). The material has been analyzed in an interpretative way, identifying pieces of text which directly or indirectly answer the questions in the scheme from the perspective of the spokesperson. In this way, the position of the spokesperson towards the subject of the question is extracted. In the analysis, I will give myself some freedom to provide some background information or context in which the texts and spoken words are said to

¹ Boréus, K., & Bergström, G. (2017). *Analyzing text and discourse: Eight approaches for the social sciences*. Sage.

² IDEM

identify possible drivers which lead people to position themselves in a certain way towards a topic. Additionally, I have added a category in the coding frame where I noted pieces of (spoken) text that attracted my attention. This category is meant to identify aspects of the societal discussion around circular farming which seem to be largely debated, controversial, or unclear. This has been analyzed in the last chapter of this research with the goal to formulate some additional questions on the topic of circular farming for further research.

The selection of stakeholders from whom media would be analyzed was done by searching for the groups mentioned by the Minister of LNV herself in her vision. These are primary producers, input delivering firms, investors (banks), outlet corporations and retail, large consumers like restaurant firms, and regular Dutch citizens as consumers. She also mentions the role of environmental organizations, and education and research institutes in her vision. Within these categories of stakeholders, I have searched individuals or organizations who produced publicly available, written or spoken text related to the circular farming discussion in the Netherlands. Some groups or organizations have produced documents or website pages stating their visions, while other stakeholders are represented on basis of their responses on interviews on TV shows or information videos. The analyzed texts were narrowed down to the material that is available in internet, and that had been written or spoken in the years 2018 and 2019. This is not a quantitative analysis, therefore not only the stakeholders that have published much, or arguments and visions that have been used much are presented. The idea was to get an idea of what different perspectives are out there, even if it is one of a small or marginalized group, or an individual. Also, I did not intend to generalize some statements of individuals over a whole group of stakeholders, for I understand there is a large diversity among individuals. This diversity is important in groups like farmers, since there are frontrunners, and conservative farmers and many other categories could be imagined. For science it is also very important to keep diversity into account and not generalize over the whole field or institutes. When consensus amongst all scientists is assumed, there is a risk that this perspective is perceived as an ultimate truth. This can mislead the discussion, for science is meant to be falsifiable, and dynamic. However some similarities amongst academics from the same institute could also be an object of analysis. For organizations, who published something under the name of the organization I did generalize the view on the whole organization.

Analysis

What is the need for circularity in agriculture, and what is the desired impact?

A shift to circular agriculture is advocated by many persons and organizations in the Dutch society, and there are many visions on what it entails. However, the need that it serves also varies in the eye of the beholder. In this part of this text I will bring forward the diversity of viewpoints on this matter, and I will identify some of the most frequently mentioned reasons why circular agriculture is needed.

A perspective on future-proof food systems stands central in many argumentation lines. As Executive Board president Louise Fresco mentions in the Mansholt lecture 2019, and introduction to Circularity in agricultural production paper;

“It is time for all of us to think about the long-term future of agricultural and food production. How can we develop a sustainable food and agriculture that is far better integrated within the world economy at large and meet the new needs of health, environment, climate and affordability?”³

Carola Schouten, Dutch Minister of Agriculture, emphasizes in her vision statement the responsibility we have towards the future. The many mouths to feed in the future is something that has to be taken very seriously, according to her.⁴⁵ Many other stakeholders use this as a main argument why we need to transform the food system. Albron wants circular agriculture to contribute to make food tastier, healthier, more sustainable and more economically accessible for everyone.⁶ Provision of safe, nutritious, and accessible food for future generations is also mentioned by Keulartz and Pekelharing from Bureau de Helling, spokespersons of COV, and Agrifirm.⁷⁸⁹ Depletion of finite resources is one of the main reasons why the future food security is threatened in a agri-food system as we have now. The Minister says in several sources that we have only one earth and limited resources, and she wants to reduce dependence on fossil fuels.¹⁰¹¹¹² According to Louise Vet from NIOO institute, biodiversity is one of our major prerequisites for future productivity; “For a healthy system biodiversity is needed, otherwise the system doesn’t work.”¹³

Soil is the basis, as almost everyone that speaks about circular agriculture agrees on, including LNV¹⁴, WUR¹⁵¹⁶, WWF¹⁷, Greenpeace¹⁸, Rabobank¹⁹, NAV²⁰ and Louis Bolk,²¹ amongst many others. It is one of the resources that is largely influencing resilience and productivity of agricultural systems, safe water and biodiversity. In the LNV vision the minister stated that soil quality is of utmost importance for buffering extreme weather conditions, water management, and productivity.²² Wijnand Sukkel, researcher at WUR explains that “we have been taking more than we have given back, and that we have to give more back to the soil”.²³

Damage to natural ecosystems and lifeforms is a concern, and a moral burden which is a main motivation to transform agriculture. NAV says that the current systems seems to have reached its expiration date.²⁴ The paper by de Boer and van Ittersum from WUR stated; that “over time, the unintended harmful side-effects of modern agricultural practices on the landscape and the environment gradually became unacceptable to European societies.... it is responsible for about a quarter of all greenhouse gases released by human activity, drives deforestation and loss of biodiversity, pollutes

³ de Boer, I. J., & van Ittersum, M. K. (2018). *Circularity in agricultural production*. Wageningen University & Research.

⁴ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁵ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁶ Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

⁷ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

⁸ Boerderij D. (2018, November 23). ABN Amro: Kasstroom hindert kringlooplandbouw.

⁹ Agrifirm. (2018, September 10). Keuze LNV voor kringlooplandbouw vraagt om uitwerking in de praktijk.

¹⁰ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

¹¹ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

¹² Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief

¹³ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

¹⁴ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

¹⁵ de Boer, I. J., & van Ittersum, M. K. (2018). *Circularity in agricultural production*. Wageningen University & Research.

¹⁶ Wageningen University and Research. (2017, December 18). Martin Scholten over kringlooplandbouw.

¹⁷ Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

¹⁸ Greenpeace Nederland. (2019, June 17). Realisatieplan Visie LNV mist urgente maatregelen

¹⁹ Rabobank. (2018, December 13). Landbouwbeleid op de schop: Van wedloop naar kringloop.

²⁰ NAV. (2019, April 6). En nu 'kringlooplandbouw' nog nader invullen!

²¹ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplandbouw in de praktijk.

²² Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

²³ Wageningen University and Research. (2018, December 06). Kringlooplandbouw: De rol van de bodem | WUR

²⁴ NAV. (2019, April 6). En nu 'kringlooplandbouw' nog nader invullen!

fresh and marine waters, and takes up 40% of the world's ice and desert-free land."²⁵ Keulartz and Pekelharing from Bureau de Helling say that current Dutch agriculture is a threat for climate, nature, the living environment and public health, and that we damage the ecosystem with it.²⁶ Greenpeace is upset that nature in rural areas is only a fraction of what it was half a century ago and about many other consequences of our current agricultural system as deforestation, greenhouse gas emissions, nutrient-, pesticide-, herbicide- and fine dust-driven pollution, as well as the strengthening of animal diseases.²⁷²⁸ The Minister of agriculture in her vision says that the way is which we produce food in getting out of balance.²⁹ Erisman and Verhoeven, in the advice from Louis Bolk Institute explain that circular farming is a way to produce food while being in balance, and having respect for the natural environment (soil, air, nature quality, landscape value, climate animal welfare).

Some argue that, in part, circular agriculture is a way to restore a feeling of pride and connection with the farmers, the land and with nature. Lousie Vet from NIOO says; "we want to be proud of the farmer, proud of the identity of the landscape that gets back nature, produces good food, and where can hear the birds and see the insects again."³⁰ Keulartz and Pekelharing from Bureau de Helling write that it is desirable that we can "be proud of Dutch agriculture and set an example, instead of being the dirtiest boy in the classroom."³¹ Many stakeholders, like LNV³² and Rabobank³³ amongst others, mention that it is very important that appreciation, support, and sufficient financial compensations for farmers is a condition for-, but should also be a result of circular agriculture. Other purposes that are considered important are animal welfare³⁴³⁵³⁶, landscape value³⁷³⁸, the contribution of circular agriculture to the Dutch economy³⁹, and other social services⁴⁰.

In conclusion, it is noticeable to me that some of the arguments for circular agriculture are more anthropocentric while others are rooted in the intrinsic value of the environment and all inhabitants of the Earth. The fact that biodiversity and ecosystems with all their benefits are indispensable for agriculture and food production in the future creates alignment between perspectives and can potentially lead to collaboration despite the differences in motivations between people. A topic that is widely shared amongst the majority of stakeholders is the importance of a healthy soil. This seems to be a point of attention around which consensus is found. It is also noticeable that there is a different tone in which stakeholders express themselves about the need for circular agriculture. Some have more detailed descriptions about the alarming situation in which we position ourselves at the moment, while others seem to briefly list more general arguments like taking care of the environment or securing future food production.

²⁵ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

²⁶ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

²⁷ Greenpeace Nederland. (2019, June 17). Realisatieplan Visie LNV mist urgente maatregelen

²⁸ Vries, H. A. (2019, June 4). Bioboeren zijn de pioniers van kringlooplandbouw: Behandel ze ook zo.

²⁹ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

³⁰ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

³¹ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

³² Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

³³ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

³⁴ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

³⁵ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

³⁶ WWF in Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

³⁷ NIOO at Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

³⁸ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

³⁹ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁴⁰ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplandbouw in de praktijk.

What cycles are we talking about with circular farming?

To describe aspects that are part of closing cycles in food systems, I decided to subdivide this task in several aspects in the following paragraphs. This division was done based on the descriptions on circularity that I found in the texts. Firstly, I focused at what elements stakeholders consider to constitute the cycles in circular agriculture. Then I looked if there was anything mentioned about the reduction of inputs. Where after I identified how stakeholders look at the aspect of reducing waste outputs and finally at what stakeholders have said about recycling waste.

Elements that constitute the cycles

The ministry points to nutrient cycles very centrally. A special focus is laid on feed-animal nutrient cycles in. The Minister of LNV has set a goal to close this cycle as much as possible in 2030. Besides this, cycles in the soil are also largely emphasized. Minerals and water that are extracted from the soil must be replenished through fertilization, and addition of water and organic matter⁴¹. This is supported by scientists from WUR (de Boer & van Ittersum; Sukkel), who have said that not all cycles have to be closed but nutrient cycles in soils must be, as nutrients have to be rebuilt in the long term.^{42,43} In the vision of LNV also cycles of food, waste streams, carbon, and energy are mentioned.⁴⁴ De Boer and van Ittersum from WUR describe circularity as optimization of systems, or reduction of resource consumption and emissions to the environment by closing the loop of materials and substances. Also, biomass is mentioned to take an important role in the cycle.^{45,46} Erisman and Verhoeven in Louis Bolk Institute's advice give a description of cycling elements which is in line with the above mentioned. Especially when it comes to soil cycles playing a central role. However, Erisman and Verhoeven emphasize the optimization of resource use efficiency on farm level. It is noticeable that besides these elements, they add some elements to the cycle from a more holistic perspective. Biodiversity, social aspects and economic aspects are considered elements of loops that need to be closed in circular agriculture⁴⁷. These aspects are not mentioned by the ministry or WUR, but not considered as part of the cycles. An additional by LTO is that humans in cities are also part of the cycle.⁴⁸ LTO also considers the soil to stand central, and describes products, resources and materials to part of the cycle.⁴⁹ Rabobank mentions nutrients and soil quality.⁵⁰ Agrifirm says that in circular agriculture, resources and products stay in the cycles as long and qualitatively as possible for optimal use of resources & biomass. Nutrient cycling is also emphasized by Agrifirm.⁵¹

Reduction of inputs

When looking at reduction of inputs the Minister of Agriculture mentions in her vision statement that there needs to be a decrease in energy consumption, and where needed renewable energy has to be used. She also mentions the end of synthetic fertilizer use, and decreasing antibiotics, pesticide and herbicide use. Precision agriculture, integrated pest management, and mechanical and ecological weed management are mentioned as means to realize this. Also minimizing bycatch in fisheries is mentioned

⁴¹ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁴² de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁴³ Wageningen University and Research. (2018, December 06). Kringlooplandbouw: De rol van de bodem | WUR

⁴⁴ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁴⁵ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁴⁶ Imke de Boer at Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁴⁷ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplandbouw in de praktijk.

⁴⁸ Farmer at Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁴⁹ Sonnema W. (13 juni 2019) Inbreng LTO Nederland inzake het rondetafelgesprek Realisatie LNV-visie

⁵⁰ Rabobank. (2018, December 13). Landbouwbeleid op de schop: Van wedloop naar kringloop.

⁵¹ Agrifirm. (2018, September 10). Keuze LNV voor kringlooplandbouw vraagt om uitwerking in de praktijk.

in this vision.⁵² In the Realization plan from the ministry, there is a focus on the reduction of these inputs. However, there are no strict regulations for a complete abandonment of these inputs in the near future.⁵³ In WUR's paper de Boer and van Ittersum mention land-use and water use as an important resources that need to be used as little as possible through optimization of production per unit.⁵⁴ De Boer mentions that there should be no chemical inputs in circular agriculture⁵⁵, but she also says that if synthetic fertilizers are produced with renewable energy, their use is not a problem and can be of use to optimize land use.⁵⁶ Also according to de Boer no feed inputs should be used that are produced solely for feed and animals may only be fed with by-products.⁵⁷ In the advice of Louis Bolk institute, reduction of inputs is the most important focus point if we desire to go circular. Land-based farming with little dependence on third parties like large input firms is preferred. They advocate to stop inputs of synthetic fertilizers, concentrate feed, and pesticides. Furthermore, they plead for a reduction monetary inputs, and environmental- and social costs. A key word used is *own resource use efficiency*.⁵⁸ Reduction of synthetic fertilizers and concentrate feed is also mentioned by farmer Rick Meulenbroeks⁵⁹. LTO supports reduction of the need for synthetic fertilizer by applying new regulatory pathways to make better use of manure.⁶⁰ COV mentions that optimization of animal feeding leads to the need for less input.⁶¹ Rabobank and Agrifirm just mention input reduction more general terms like being cautious with finite resources. Rabobank is especially interested in reductions of energy use through possibilities of decreasing transport.⁶² Greenpeace is firmly against any use of neonicotinoids and glyphosate, and criticizes the government for not acting stricter on these inputs with high risks of pollution.⁶³

Reducing waste

The next thinking step in circularity of agriculture is the reduction of excess outputs, in other words emissions or waste. The Minister emphasizes in her vision statement there has to be reduction of food waste, of waste streams in any food processing- or producing processes, a reduction in CO₂, and a reductions of water and energy waste.⁶⁴ In the WUR paper by de Boer and van Ittersum it is emphasized there should be no leakage of resources, like nitrogen, phosphorus, carbon and water, but also all the waste streams mentioned by the minister are mentioned⁶⁵ Martin Scholten, Director Animal Production systems at WUR, emphasizes circular agriculture is about reducing CO₂ emissions and that all biomass needs to be used for making food.⁶⁶ As mentioned before, Rabobank is also highly interested in reducing CO₂ outputs, but mainly through a reduction of input of course.⁶⁷ CLB has agreed to reduce food waste with 50% before 2030.⁶⁸

⁵² Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁵³ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief

⁵⁴ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁵⁵ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁵⁶ Dinther, M. V. (2019, June 17). Minister Schouten beweegt zich behoedzaam op groen mijnenveld: Nieuwe visie op kringlooplandbouw verre van baanbrekend

⁵⁷ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁵⁸ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplandbouw in de praktijk.

⁵⁹ Provincie Noord-Brabant. (2018, October 26). Kringlooplandbouw Brabant.

⁶⁰ LTO Nederland. (2019, March 8). Een gezonde bodem voor kringlooplandbouw.

⁶¹ Boerderij D. (2018, November 23). ABN Amro: Kasstroom hindert kringlooplandbouw.

⁶² Pakh Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁶³ Vries, H. A. (2019, June 4). Bioboeren zijn de pioniers van kringlooplandbouw: Behandel ze ook zo.

⁶⁴ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁶⁵ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁶⁶ Wageningen University and Research. (2017, December 18). Martin Scholten over kringlooplandbouw.

⁶⁷ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁶⁸ Roetert, B., CLB. (2019, April 10). Bijdrage aan realisatie van de LNV-visie.

Recycling

The last step in circular thinking is the recycling of unavoidable waste streams. First of all, it is hard to define unavoidable. Stakeholders have written about it in various ways, some being more specific than others. The Minister mentions rest streams that are now waste in the agri-food value chain.⁶⁹ This includes crop residues, food residues, processing residues, manure, compost, and (as mentioned later in the Realization plan) animal slaughter side streams.^{70,71} The minister is keen on investing in waste stream upgrading technologies.⁷² The goal of LNV is to increase the percentage of animal feed that comes from organic waste streams. Another ambition is to start investigating in innovations which enable reusing human excreta for fertilization.⁷³ Additionally the minister proposed to focus on the use of rest heat, and CO₂-catch in greenhouses.⁷⁴ The paper from WUR (de Boer and van Ittersum) clearly states that it is of crucial importance to critically prioritize the use of your organic by- and waste products in a specific order. Firstly, human consumption must be the number one application. Secondly, improving soil fertility is of high importance to maintain agricultural production efficient and circular. As mentioned before, most stakeholders agree with the indispensable role of the soil in circularly. Third, the waste streams can be upgraded by feeding them to animals and thereby producing animal protein. Only after this, energy production or other industrial purposes should have priority.⁷⁵ Although all of these applications of organic waste streams are also mentioned by the Minister, she does not follow the same prioritization scheme in her texts. Based on increased emphasis on recycling organic waste through animal production one could imply that this of highest priority to her.^{76,77} Amongst scientists of WUR (de Boer and van Ittersum), recycling phosphate from human excreta is also largely emphasized, for this is a finite resource.^{78,79} This could have influenced the minister to have included it in her realization plan. Some comments from farmer's unions are that NAV says that they agree with the idea of applying crop residues on land, however they will only do it if it doesn't lead to diseases.⁸⁰ LTO pleads for reusing manure on farmers' own land.⁸¹ COV emphasizes that the meat industry is optimal and efficient in the reuse of waste streams, and applauds manure refinery.⁸² The Rabobank mentions that circular agriculture can secure manure sales for livestock farmers by investing together in manure refinery to replace synthetic fertilizers.⁸³ Agrifirm mentions that circular agriculture is partly about recycling of rest streams and maximal upgrading and utilization of co-products. They also want to improve quality of manure, so it becomes more suitable for fertilization⁸⁴

In conclusion, it is clear that some stakeholders go more in detail about what has to circulate in circular agriculture than others. Most agree on nutrients to be central in circular agriculture. Moreover, biomass and carbon are seen as elements of the circles. Some are more practical, talking about specific waste

⁶⁹ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁷⁰ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁷¹ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁷² Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁷³ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁷⁴ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁷⁵ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁷⁶ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁷⁷ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁷⁸ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁷⁹ Dinther, M. V., & Smit, P. H. (2019, April 12). Voor succesvolle kringlooplandbouw moet de veestapel fors kleiner (maar veganisme is niet de oplossing).

⁸⁰ NAV. (2019, April 6). En nu 'kringlooplandbouw' nog nader invullen!

⁸¹ LTO Nederland. (2019, March 8). Een gezonde bodem voor kringlooplandbouw.

⁸² Boerderij D. (2018, November 23). ABN Amro: Kasstroom hindert kringlooplandbouw.

⁸³ Rabobank. (2018, December 13). Landbouwbeleid op de schop: Van wedloop naar kringloop.

⁸⁴ Agrifirm. (2018, September 10). Keuze LNV voor kringlooplandbouw vraagt om uitwerking in de praktijk.

streams. Yet others also include the non-material things, like social and economic aspects. In general, some stakeholders are emphasizing recycling of waste streams within the society while others are really keen on downscaling inputs on farm level, and thereby requiring less inputs in the first place. There is no complete alignment in what destinations should be prioritized for certain waste streams. The role of animals is especially a topic of debate. I foresee that conflict of interests could emerge on decisions around waste stream applications. Manure refinery is something that is proposed in order to create circular fertilization possibilities by some stakeholder. This would be done to reduce the need for synthetic fertilizers and increase efficiency of manure as a fertilizer. Reduction of CO₂ emissions is emphasized more by some stakeholders than by others, reduction of energy use and the use of renewables is proposed as solutions. However, there is not much clarity about the energy that will be needed to transport, recycle, or upcycle certain waste streams. Decreasing application of polluting agricultural inputs is part of the discussion too, some being more radical in the abandonment of these inputs than others. The diversity in perception on what actually constitutes the circles in circular agriculture makes the term hard to apply in a uniform way. Although there is some consensus on the things that are important in these circles, difficult discussions still remain on trade-offs and prioritization of certain flows or elements above others.

At what scale cycles have to be closed?

There are different ways in which we can imagine a circle of the elements. As was described in the previous chapter, these elements range from substances to money flows and social services varying according to the person who describes them. To concretize the abstract concept of cycles, one could say it is bringing things back to where they came from, or replacing them somehow. Yet in reality, it is unlikely that one molecule (or unit) of something, will end up exactly in the same place as it was before. When we are talking about circularity in agriculture it is important to understand from one another how far we think these elements should travel in order to go back to where they came from. We live in a global economy where often products and resources are transported enormous distances every day which enables us to diversify consumption and build economies on trade and processing industries. However, there are different views on how circularity fits into this picture, and whether cycles are to be closed on a local scale, or if it is possible to do this more globally. The scale at which we intend to close cycles is of large importance the way in which we envision circularity in agricultural production. Another question is whether the industrialization and upscaling of agriculture on farm level enables circularity, or whether this practice is something which needs to be reevaluated to reach a circular food system. The ambition to close cycles locally or on larger level, and how much transport of elements is desired, also influences the extent of specialization and amounts of inputs and outputs that are possible on farm level. This is why the question about scale both referring to the cycles and farms are related to one another. Some stakeholders are quite clear about what scales they believe are required in circular agriculture, while others leave it rather open. In this chapter I will explore what different stakeholders in Dutch agriculture have said about this topic.

Minister Schouten leaves this aspect of the story quite open in her vision statement. Yet, she also says that cycles have to be closed on the smallest scale possible, local, regional, national or international. However, she emphasizes especially the regional level. She believes collaborations between different partners in the food value chain and other societal groups that are involved in closing any of the cycles

are most effective on regional level. Additionally, she states that nature inclusivity in agriculture is most effectively organized on regional level.⁸⁵ Louise Vet from NIOO agrees with her, she seeks regional collaborations for improvement of biodiversity.⁸⁶ A general aspect of circular agriculture according to Schouten is shorter food value chains. She emphasizes that this is important because it brings consumer and producer closer together, and reduces transport side-effects.⁸⁷⁸⁸ In the realization plan it is mentioned that on-farm circularity will also be stimulated.⁸⁹ As a reason for her broad perspective she mentions that there are different kinds of entrepreneurs that work in different ways. Some are more locally oriented while others are more export oriented, and some will choose to scale up while other will diversify.^{90 91} Although she emphasizes regional level, she also mentions that the Netherlands will remain being an export oriented country, and that it will maintain its international market position through the increased value of sustainable products. This implies that products and money will still be circulating on a global scale. She also says that the Dutch consumer will keep consuming imported products in the future and therefore she pleads for focusing on improvement of circularity in foreign countries, and of circularity of the of processing imported commodities.⁹² Despite this, Schouten does also mention that she finds food sovereignty important.⁹³

Louise Fresco from WUR states in the opening of the report on Circularity of agricultural production that the international character of the global economy will most probably continue in the future as it is, and that self-sufficiency in Europe is unrealistic due to consumer habits. She mentions that we will continue to import, yet the question is how much.⁹⁴ Benefits of shortening food chains are mentioned further in the report by de Boer and van Ittersum. For instance, decreasing transport, creating a closer connection between producer and consumer and thereby additional appreciation of food, higher perceived quality, better transparency in agricultural production, and strengthening local economies. It is also explained that food sovereignty is sometimes considered to be beneficial to create independence of countries and to stimulate local knowledge development.⁹⁵⁹⁶ The main message delivered by WUR in the previously mentioned report is that the question of scale is context specific, and depends on agroecological and socioeconomic systems. The ecological impact of transport might sometimes be less than producing things locally. For the transport of nutrients, it is mentioned that it matters in what form they are transported, which influences its bulkiness and thereby the (environmental) profitability of transportation.⁹⁷⁹⁸ Furthermore, a point is made that closing cycles between farms and cities are inevitable in a circular agri-food system. The idea of mixed farming systems is also posed as a good idea to close cycles on farm level, however it should not be resembling historical Dutch agriculture, since this was not circular. It resulted in displacement of nutrients from one field to another.⁹⁹¹⁰⁰

⁸⁵ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁸⁶ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁸⁷ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁸⁸ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁸⁹ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁹⁰ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

⁹¹ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁹² Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

⁹³ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁹⁴ Louise fresco in de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁹⁵ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁹⁶ Dinther, M. V., & Smit, P. H. (2019, April 12). Voor succesvolle kringlooplandbouw moet de veestapel fors kleiner (maar veganisme is niet de oplossing).

⁹⁷ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

⁹⁸ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

⁹⁹ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

¹⁰⁰ Dinther, M. V. (2019, June 17). Minister Schouten beweegt zich behoedzaam op groen mijnenveld: Nieuwe visie op kringlooplandbouw verre van baanbrekend

It is noteworthy that larger firms and organizations mostly embrace the “openness” of the interpretation of scale in circular agriculture. Agrifirm for instance, says that there has to be collaboration amongst partners in the value chain on all scales: local, regional and global. For every sector optimal scale is different. And that excesses in some regions may be utilized to supply for scarcity on other regions.¹⁰¹ Rabobank states that the ministry wants to close cycles preferably on local and regional scales but keeps much free to own interpretation. Also, they say it is notable that there is no budget for this. Rabobank also states however, that reducing food-chain length helps to increase appreciation of the consumer and could enable farmers to get a better price for their products.¹⁰² It is also said to be a very important step to reduce CO2 emissions of the agri-food sector.¹⁰³ LTO stresses that for each sector different scales are logical (local, regional, often international), they request the minister to give them freedom to interpret circular agriculture in diverse ways.¹⁰⁴ Albron is enthusiastic about the minister’s optimism to export the concept of circular farming of the whole world, and says it can start in the Netherlands but expand to Europe and eventually over the whole world.¹⁰⁵ CLB expresses a critical side note about the idea of local food consumption, and reminds the minister that around 80 percent of food consumed by Dutch citizens is imported.¹⁰⁶ The idea of closing cycles on European scale is considered as a realistic middle way by some. Agrifirm is introducing a code for feed from EU origin.¹⁰⁷ Also some individual farmers say that national scale is too small, and that European level is more realistic to close feed-animal loops.¹⁰⁸ Other farmers, like Rick Meulenbroeks, who is transforming his farm into a nature inclusive farm, says that cycles should be closed on farm level or regional level.¹⁰⁹ The farmer Peter van Damme advises to have collaborations among neighboring farms.¹¹⁰

Closing cycles on farm level, and the avoidance of upscaling and industrial agriculture (leading to larger input and output streams) is forcefully urged by other groups in Dutch society. Erisman and Verhoeven (in the advice from Louis Bolk institute), some farmers in the organic sector, environmental organizations, and the sustainability-oriented research institute de Helling are strongly advocating for land-based, extensive farms. In their advice to the minister, Erisman and Verhoeven mention that farming systems should be land-based and independent of third parties. They say as well that the largest group of farmers is willing to go circular but is unable to get out of the “upscaling spiral”,¹¹¹ implying that circular agriculture is not possible in industrialized agriculture. On the other side, Rabobank mentions on their website that to be able to finance sustainable innovations on farm level, upscaling is often

¹⁰¹ Agrifirm. (2018, September 10). Keuze LNV voor kringlooplandbouw vraagt om uitwerking in de praktijk.

¹⁰² Rabobank. (2018, December 13). Landbouwbeleid op de schop: Van wedloop naar kringloop.

¹⁰³ Barbara Baartsma at Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

¹⁰⁴ Sonnema W. (13 juni 2019) Inbreng LTO Nederland inzake het rondetafelgesprek Realisatie LNV-visie

¹⁰⁵ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

¹⁰⁶ Roetert, B., CLB. (2019, April 10). Bijdrage aan realisatie van de LNV-visie.

¹⁰⁷ Agrifirm. (2018, September 10). Keuze LNV voor kringlooplandbouw vraagt om uitwerking in de praktijk.

¹⁰⁸ Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

¹⁰⁹ Provincie Noord-Brabant. (2018, October 26). Kringlooplandbouw Brabant.

¹¹⁰ NOS. (2019, June 17). Boeren blij met plannen kringlooplandbouw, maar vrezzen minder export.

¹¹¹ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplandbouw in de praktijk.

necessary.¹¹² A farmer representing Netwerk Biovegan pleads for on-farm cycles with use of nitrogen fixing plants and local consumption.¹¹³ Keulartz and Pekelharing from Bureau de Helling state that if the minister takes her own circular thinking seriously, there would be a change today from a national manure quota to a land-based quota (per farm). They say that in that way every farmer gets the opportunity to work on closing his or her own circles.¹¹⁴ And even a little bit more radically, Greenpeace pleads for breaking free from upscaling and efficiency in order to move to future proof ecological agriculture, and says this requires more support for farmers. They mention as well that costly end-of-pipe solutions do not solve the root of the problem, namely industrialized agriculture.¹¹⁵

Conclusion from the assembly of these different visions I perceive that the more traditionally environmentally oriented organizations and farmers are strongly pleading for smaller scale cycles, preferably on farm level, while larger organizations remain open to the idea that circular agriculture may include closing cycles on larger scales. LNV poses a more inclusive view, which is something that might be a political need to keep all stakeholders involved. Although it is clear that smaller-, and especially regional scales are preferred by the Minister of Agriculture, I noticed that in her Realization plan she emphasized more that the Netherlands will be maintaining its position as an export oriented country as compared to the Vision Statement she presented before. This is an aspect where her vision might have received the largest critique and needs to be handled diplomatically. As mentioned by some WUR scientists in the publication on circularity in agriculture, there are advantages of smaller scales, but from a realistic perspective it is assumed that fully local production and consumption is unlikely to happen. I would like to note it that remains unclear is how big the renewable energy supply available for transport will be in the future and how much the efficiency increases to do this. This will determine for a large part on what scale agri-food systems are able to be truly circular. In a sense, the question of scale is something that touches way further than just the agricultural sector. It would be a matter of reshaping the entire modern economy if we intend to close cycles on local scales. To me, this discussion in its root seems to be a discussion between a practical point of view and an idealist point of view. A discussion on whether the economic system in which we live needs to be drastically transformed for a sustainable future or not. And a discussion on what that change in the economy might mean for our lifestyles and welfare.

Growing or shrinking economies?

One aspect that makes the discussion about circular agriculture difficult sometimes, is that the interests of some stakeholders or groups in society do not always align with the concept of circularity. Because of the flexibility of the concept, many stakeholders describe circular agriculture in ways that benefit them. However, sometimes it is debatable whether this benefits the purpose of not overstepping the planetary boundaries. Some mention that parts of the agricultural sector need to shrink or become more

¹¹² Rabobank. (2018, December 13). Landbouwbeleid op de schop: Van wedloop naar kringloop.

¹¹³ Tweede Kamer. (2019, June 13). Hoorzitting / rondetafelgesprek: "Realisatie LNV-visie".

¹¹⁴ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

¹¹⁵ Vries, H. A. (2019, June 4). Bioboeren zijn de pioniers van kringlooplandbouw: Behandel ze ook zo.

extensive, others talk about the expansion of agricultural sectors, while others say that the Dutch agricultural economy should just continue the way it is. Others do not really mention anything about what parts of the economy needs to grow or shrink. Another discussion takes place on business models of Dutch agriculture, and how they can fit within the concept of circularity. There is even the question on whether the economy as a whole has to down-scale as a condition for circularity. Prioritizing some land-use practices above other (more economically profitable) ones. The statements out there are very diverse around these topics. Here I will attempt to present a peek into the discussion.

The Minister will stimulate new land-use systems by working on business models for agroforestry and food forests. She says that there will also soon be a new category of agricultural businesses coming up: integrated businesses, mentioning Herenboeren as an example.¹¹⁶ Keulartz and Pekelharing from Bureau de Helling suggest that we should replace monoculture with polyculture, and that organic agriculture needs to be stimulated.¹¹⁷ Imke de boer also says intercropping a key practice that needs to replace monocultures.¹¹⁸ Greenpeace is also very much in favor of organic agriculture, and says this is a sector that needs to be supported more.¹¹⁹ CLB says the retail sector will contribute to a sustainability transition by increasing organic products in the shelves, and says that this has already been really successful lately.¹²⁰

A hot topic is the question around the number of animals that should be in the Netherlands. De Boer and van Ittersum attempt to create some clarity around this issue. Their statement is that in a truly circular system, no land is used to produce feed unless no other food producing land-uses are possible in a certain area. This means that the only feed available for livestock production has to be derived from waste-streams that are useless for human consumption. With models of the food system, they have estimated that around one third of the animals that are currently in the country should stay to upgrade these waste streams if we see the Netherlands as a closed system. This means there needs to be a decrease in number of.¹²¹¹²²¹²³ Plant protein production, aquaculture and insect protein production are more circular ways to produce for our dietary needs in a circular system.¹²⁴

In her Vision statement of the Minister tries to adopt some of these principles but is not completely in line with the scientific view by de Boer and van Ittersum. Schouten focusses more on decreasing import of feed, and attempts to close feed-animal cycles more locally.¹²⁵¹²⁶ This approach is embraced by Agrifirm who has invested in researching possibilities to grow more plant protein on Dutch and European grounds (for animal feed), and has started a EU derived feed code on their products.¹²⁷ Also Barbara Baartsma from Rabobank stands behind the idea that feed needs to be produced closer to farms.¹²⁸

¹¹⁶ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹¹⁷ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

¹¹⁸ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

¹¹⁹ Greenpeace Nederland. (2019, June 17). Realisatieplan Visie LNV mist urgente maatregelen.

¹²⁰ Roetert, B., CLB. (2019, April 10). Bijdrage aan realisatie van de LNV-visie.

¹²¹ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

¹²² Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

¹²³ Dinther, M. V., & Smit, P. H. (2019, April 12). Voor succesvolle kringlooplandbouw moet de veestapel fors kleiner (maar veganisme is niet de oplossing).

¹²⁴ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

¹²⁵ Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

¹²⁶ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

¹²⁷ Agrifirm. (2018, September 10). Keuze LNV voor kringlooplandbouw vraagt om uitwerking in de praktijk.

¹²⁸ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplandbouw, hoe dan?

There is a lack of congruence between the scientists who say no arable land should be used for feed production, and the minister who wants to produce feed closer to home. However, Schouten does promote other types of protein production in the form of plants, algae, fungi, bacteria and insects.¹²⁹ As brought up by Bureau de Helling, Schouten mentions that it is better to start from the perspective of closing cycles rather than amount of animals in order to make the discussion more constructive, how many animals fit with closing cycles will differ per farmer. The authors from Bureau Helling agree, but state there are so many animals now that circular agriculture cannot even be initiated under these conditions.¹³⁰ In this article, the bureau brings up fierce statements on the topic of livestock numbers. For instance, that we cannot continue with a livestock production system that damages the environment and the climate just to help everyone getting an income. It is argued that the fact that a large number of farmers has to stop is tragic, but we cannot let that close our eyes for the fact that currently both intensive and extensive systems are far away from being circular. Therefore, it is proposed that subsidy-based remediation of farmers that have too many cows is the only solution, and that it should happen with an eye for who does and does not follow circularity demands. Since the current situation has been enabled by the government and the agricultural sector, it has to be solved together in a social way.¹³¹ An article in the Volkskrant criticizes the Minister by saying that according to her, steps have to be made in sustainability of livestock production systems, but when it's about the climate, the minister only talks about climate in the stables.¹³² Environmental organizations like Greenpeace comment on the Realization plan of the Ministry in ways like; "for the goals which the Minister attempts to realize with circular farming the answer is simple: ecological agriculture with less animals!"¹³³ It appears that from the position of the minister the answer is not as simple as for these environmentalist groups. As van Ittersum from WUR mentions; "we do not get all the pig-farmers after us when doing these kinds of statements. Minister Schouten does"¹³⁴. It must be noted that in the recently a budget has been made available by the Ministry two hundred million euros is made available for subsidized remediation of pig farms.¹³⁵

On the other side of the spectrum, the Minister agriculture has to deal with groups like representatives of the meat industry as COV. They claim that "animals are incredibly circular because nothing gets lost in the process of an animal, this brings new perspectives for a leading position on the international market". And that "Dutch meat value chains are largely export oriented because of the fact that the global demand for animal protein like meat and many co-products keeps growing strongly. This is a good reason to be able to attend international markets with products for which CSR, efficiency and circularity stand central. This to maintain the possibility to position '*meat made in Holland*' positively."¹³⁶ A representative of LTO mentioned that "people say that if we move animals to another country, then it is also not our problem anymore".¹³⁷ This mocking statement implies that the Netherlands, as a country produces more sustainably than elsewhere, and should therefore have the role of producing animal protein for the world. On the contrary, according to van Ittersum (WUR), Dutch land is very suitable for

¹²⁹ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹³⁰ Carola Schouten in Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

¹³¹ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

¹³² Dinther, M. V. (2019, June 17). Minister Schouten beweegt zich behoedzaam op groen mijnenveld: Nieuwe visie op kringlooplandbouw verre van baanbrekend

¹³³ Greenpeace Nederland. (2019, June 17). Realisatieplan Visie LNV mist urgente maatregelen.

¹³⁴ Dinther, M. V., & Smit, P. H. (2019, April 12). Voor succesvolle kringlooplandbouw moet de veestapel fors kleiner (maar veganisme is niet de oplossing).

¹³⁵ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹³⁶ Boerderij D. (2018, November 23). ABN Amro: Kasstroom hindert kringlooplandbouw.

¹³⁷ Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

arable farming and this should be the role of the Netherlands in a circular agricultural system.¹³⁸ CLB wants to actively contribute to this transition by stirring to a switch from 40:60 percent plant:animal protein ratio in the Dutch supermarkets towards a 60:40 percent plant:animal protein ratio.¹³⁹ A farmer from Netwerk biovegan says that for circular agriculture we need less animals and more plants.¹⁴⁰ Nature inclusive farmer Rick Meulenbroeks says that “growth is not always more cows”. He believes that as an agricultural sector we should grow in different dimensions than in numbers.¹⁴¹

It is a fact that currently livestock production contributes for a substantial part to the Dutch economy, and that the agricultural sector makes large amounts of revenues by exporting animal, and also non-animal products. Farmer Peter van Damme is afraid that if he and his colleagues have to produce more sustainably, products will become very expensive and foreign countries will not buy them anymore.¹⁴² The Minister of Agriculture does take these concerns into account in her Realisation plan, she says that “for all the largely export-oriented sectors in Dutch agriculture (horticulture, dairy, cattle farming, fisheries) circularity brings new opportunities. We will remain being an export-oriented country that needs to benefit from our sustainable and high-quality products.”¹⁴³ Pierre Benstsen from ABN Amro is skeptical, he says that sustainable production requires large investments, farmers cannot pay this with their current cashflow. And that additional money needs to go to the producers from higher product prices. But since the largest part is export, if there is no market for sustainability on the international market, our production will shrink and our export position will be under pressure.¹⁴⁴ The Rabobank has a similar vision; “our current success is based on export, while circular agriculture is based on short value chains and less impact on environment and biodiversity. It is still a question to what extent investments in circular agriculture increase costs and prices, and whether our competitive position is damaged by it or not....Giving Dutch products priority on our shelves will lead other countries to do the same by refusing our products, this has detrimental impact on our large scale export which is 80% of our production.”¹⁴⁵ This perspective is also shown by LTO who said that “the minister has be careful out with her plans. It is important to look from an international perspective if we take big steps. Otherwise we will lose from other countries because they do it differently. We can do it very sustainably, but if we praise ourselves out of the market, we are done.” Erisman and Verhoeven write in the advice from Louis Bolk Institute that they see these kinds of perspectives as the core of the problem. They say that “there is pressure on farmers to provide for continuously decreasing prices as a consequence of competitions between supermarkets, and a dependence on the international market with invisible clients and low prices for products because of an export-position that some people don’t want to lose”.¹⁴⁶

From a slightly different perspective, Aragon, farmer from Netwerk Biovegan says we don’t have to orient ourselves so much on export, it is possible but it needs to be environmentally friendly.¹⁴⁷ Change in the agricultural sector possibly requires a new perspective on economic systems. Carola Schouten states that “circular agriculture aims at an economic rationality that that can lead to friction with the

¹³⁸ Dinther, M. V., & Smit, P. H. (2019, April 12). Voor succesvolle kringlooplandbouw moet de veestapel fors kleiner (maar veganisme is niet de oplossing).

¹³⁹ Roetert, B., CLB. (2019, April 10). Bijdrage aan realisatie van de LNV-visie.

¹⁴⁰ Tweede Kamer. (2019, June 13). Hoorzitting / rondetafelgesprek: "Realisatie LNV-visie".

¹⁴¹ Provincie Noord-Brabant. (2018, October 26). Kringlooplandbouw Brabant.

¹⁴² NOS. (2019, June 17). Boeren blij met plannen kringlooplandbouw, maar vrezen minder export.

¹⁴³ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹⁴⁴ Boerderij D. (2018, November 23). ABN Amro: Kasstroom hindert kringlooplandbouw.

¹⁴⁵ Rabobank. (2018, December 13). Landbouwbeleid op de schop: Van wedloop naar kringloop.

¹⁴⁶ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplandbouw in de praktijk.

¹⁴⁷ Tweede Kamer. (2019, June 13). Hoorzitting / rondetafelgesprek: "Realisatie LNV-visie".

rationality that most entrepreneurs in the food system have to deal with. While a circular food system aims to retrieve higher economic value from a sparing way of utilizing natural resources. Large parts of the food economy are based on production that is as cheap as possible and reaches the highest possible production volumes.”¹⁴⁸ The advice paper from Louis Bolk Institute by Erisman and Verhoeven is in line with this point from the Minister. It states that the business model based on intensification stands in the way of circularity, and that focusing on maximal efficiency means that production needs to go down in order to bring it in balance with the desired state of the environment. The LBI writes that large input-delivering firms and investors push farmers towards upscaling and intensification. The advice is to reevaluate the business models, where farmers should diversify their income strategies and remain independent from capital of third parties.¹⁴⁹ In their paper on circular agriculture de Boer and van Ittersum from WUR state that it might be necessary to move away from an economic growth mindset to achieve circularity. The paper explains there are two main arguments to move away from economic growth. First, the planet has finite resources which means we cannot continue growing with an economy that is based on material consumption. This requires a reduction in this consumption if we do not want to cause catastrophic changes in Earth’s ecosystems, especially in first world countries. The second argument is that research has shown that when a certain level of wellbeing is reached, more material welfare does not make people happier.¹⁵⁰ Keulartz and Pekelharing from Bureau de Helling propose to change to a circular food system through a shift from measuring GDP to measuring ‘wellbeing indicators’ that cover a broader range of societal values than only monetary value.¹⁵¹

In conclusion, I think that the concept of circular agriculture brings about a very fundamental and fierce discussion. Some stakeholders seem to be alarmed and worried about their future revenues. Others see this as a moment where our priorities are shifting, and now is the chance bring forward innovative initiatives, move away from old business models and to move towards a new type of food system. What will happen to the position of the Netherlands within the global economy if we move to circular agriculture remains unclear. It probably also depends largely on what is going on in other countries, and how circularity plays a role there. As far as I have explored the topic I conclude that if the Dutch want to take circularity seriously, the character of their success on the international market needs to change. Also, the possibility that economic successes of the Netherlands could be a trade-off with environmental ambitions needs to be accepted to be able to take serious steps towards circularity. The role of the Minister of Agriculture is a very difficult one. On the one hand side she needs to maintain broad societal support, while on the other side there is a hard job in front of her that might have serious consequences for many stakeholders. The power she has to change the economic rationality of the Dutch culture is probably marginal, but by raising the discussion she is already doing a large contribution.

[Additional debates around circular agriculture](#)

The four topics that have been presented in this text so far give us a peek into the discussion that is being held on national level around circular agriculture as a reaction to the vision that was posed by the Minister of Agriculture. Nevertheless, the discussion entails a much broader scope of topics and debates than the ones that were touched upon in this research. To give the reader further insight, I will shortly mention some additional topics that are being debated in the texts that I have analyzed.

¹⁴⁸ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹⁴⁹ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplandbouw in de praktijk.

¹⁵⁰ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

¹⁵¹ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

Although indirectly this was touched upon in the chapter *'Growing or shrinking economies?'*, it is worthwhile pointing out that increasing diversity in natural and agricultural systems is mentioned by in the Vision of LNV¹⁵² and many more pieces. Louis Bolk Institute is keen on stopping the specialization trend of agricultural businesses.¹⁵³

There is also a request for more space for more diversity amongst farmer's approaches, this will facilitate knowledge generation and horizontal knowledge transfer between farmers. But generalist legislation blocks this diversity.¹⁵⁴ LTO proposes a new procedure for the manure regulations, where different categories of farms get different sets of rules.¹⁵⁶ Friesland Campina proposes a KPI system that allows for differences amongst farmers and is goal oriented, rather than a given protocol for sustainability.¹⁵⁷ In the Realization plan, the Minister responds to these requests by creating legislative flexibility for experimentation.¹⁵⁸

Systems thinking and more integrated approaches in science and education are considered important aspects of a transition towards circularity instead of optimization of segregated parts of the puzzle.¹⁵⁹ De Boer criticizes the concept of ecological footprint, because it is based on a linear system and does not include circular thinking. She states that a systems-lens is needed to evaluate sustainability of products in a circular way.¹⁶¹ Participatory and practice-oriented research are also key according to LBI. They state that independent advice, research and education ((from big capital) are important to facilitate a transformation of the system.¹⁶² According to Keulartz and Pekelharing from Bureau de Helling, legislation, science, banks, and business together reinforce the intensification paradigm. To change this, investments need to change, and political alliances need to be made to switch from agro-economic system.¹⁶³ Research on transition processes themselves are also of value when striving for such a systemic change.¹⁶⁴

Farmers have pointed out that there is a need for behavior change in the whole society, not only the farmers need to change.¹⁶⁵ CLB has the ambition to create more consumer awareness through creating more transparency of products in Dutch supermarkets with block-chain technologies.¹⁶⁶ LTO stresses that the monetary costs of improved environmental services cannot be pushed only on the farmers, and that this should be carried by all stakeholders in the agri-food value chain.¹⁶⁷ An interesting example of how this has already been put into practice is 'Deltaplan Biodiversiteitsherstel'. In this project, Louise Vett, from NIOO has initiated a collaboration among many stakeholders. Costs are shared to achieve ambitions of this project to restore biodiversity in rural areas of the Netherlands.¹⁶⁸ Another example of sharing costs and risks is pointed out by Albron; long term partnerships between producers and retail

¹⁵² Ministerie van landbouw, natuur en voedselkwaliteit. (2018, September 8). Visie Landbouw, Natuur En Voedsel: Waardevol En Verbonden.

¹⁵³ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplantbouw in de praktijk.

¹⁵⁴ Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

¹⁵⁵ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplantbouw in de praktijk.

¹⁵⁶ LTO Nederland. (2019, March 8). Een gezonde bodem voor kringlooplantbouw.

¹⁵⁷ Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

¹⁵⁸ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹⁵⁹ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

¹⁶⁰ Carola Schouten at Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplantbouw, hoe dan?

¹⁶¹ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

¹⁶² Erisman, J. W., & Verhoeven, F. (2019). Kringlooplantbouw in de praktijk.

¹⁶³ Keulartz, J., & Pekelharing, P. (2019, March 26). Landbouw op de schop

¹⁶⁴ Erisman, J. W., & Verhoeven, F. (2019). Kringlooplantbouw in de praktijk.

¹⁶⁵ Farmers at Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

¹⁶⁶ Roetert, B., CLB. (2019, April 10). Bijdrage aan realisatie van de LNV-visie.

¹⁶⁷ Sonnema W. (13 juni 2019) Inbreng LTO Nederland inzake het rondetafelgesprek Realisatie LNV-visie

¹⁶⁸ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplantbouw, hoe dan?

or large customers are beneficial to give producers security, and thereby strengthen their position in the market, allowing them to invest in innovations.¹⁶⁹ These partnerships in the food chain are becoming more popular, as CLB mentions in their advice to the minister. However, sometimes legislation stands in the way of raising sustainability standards collectively when agreed upon among partners in the food value-chain.¹⁷⁰

Another point of discussion is whether international trade agreements have the potential to facilitate the sustainability of other countries, or whether they form a threat for the income of our farmers if they are going to invest in circularity and raise the prices of their products.¹⁷¹ In their input for the Realization plan the Ministry, LTO asked for a better analysis on the international economic context and on how the transition to circular farming will affect the markets for farmers in the Netherlands.¹⁷² NAV wants to have import tariffs on plant protein to give European arable farmers the opportunity to develop these crops more in Europe. They propose a protection of the markets on European scale to improve circularity on the continent but want to secure a level-playing field within Europe.¹⁷³ The minister has reacted to these discussions in her Realization plan. There will be an evaluation of multilateral trade agreements, on whether they do or do not stimulate sustainable production, and if the agreements are facilitating a level-playing field for Dutch farmers.¹⁷⁴

Another issue on the debate is the use of synthetic fertilizers. Some plead for their complete abandonment while others say this is not possible or not necessary. Some farmers are afraid that abandonment of synthetic fertilizers will drastically decrease their yields¹⁷⁵. Others claim that it is also possible to farm without them.¹⁷⁶ Scientists De Boer and van Ittersum both say that a hundred percent emission-free agriculture is impossible, and therefore some fertilizer production is always needed to replenish the gap. Also synthetic fertilizers are land-sparing, and if they are produced with renewable energy it should not be a problem.¹⁷⁷¹⁷⁸ Farmer Aragon disagrees, he says we can fertilize our soils with nitrogen fixing plants.¹⁷⁹ Some stakeholders including Rabobank say there needs to be an improvement of circular fertilizers in order to be able to decrease synthetic fertilizer input.¹⁸⁰ The minister aims at reduction, she does not do any statements on the complete abandonment of synthetic fertilizers.¹⁸¹ It seems this discussion (traditionally organic vs. conventional) will probably remain an important one as circularity is further discovered.

Lastly it is noteworthy to mention that the minister wants to make a land strategy to facilitate starting farmers to gain easier access to land. Also, she will change biotechnology regulations to allow breeding techniques that were banned. She does not further elaborate on what types of regulations these are and what will exactly change.¹⁸² In their contribution to the realization plan, CLB asks for a rational

¹⁶⁹ Albron in Pakhuis de Zwijger. (2019, March 12). De Nieuwe Groene Revolutie #2: Boer zoekt verdienmodel.

¹⁷⁰ Roetert, B., CLB. (2019, April 10). Bijdrage aan realisatie van de LNV-visie.

¹⁷¹ Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplantbouw, hoe dan?

¹⁷² Sonnema W. (13 juni 2019) Inbreng LTO Nederland inzake het rondetafelgesprek Realisatie LNV-visie

¹⁷³ NAV. (2019, April 6). En nu 'kringlooplantbouw' nog nader invullen

¹⁷⁴ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹⁷⁵ Farmers at Pakhuis de Zwijger. (2019, February 12). De Nieuwe Groene Revolutie #1: Kringlooplantbouw, hoe dan?

¹⁷⁶ Provincie Noord-Brabant. (2018, October 26). Kringlooplantbouw Brabant.

¹⁷⁷ de Boer, I. J., & van Ittersum, M. K. (2018). Circularity in agricultural production. Wageningen University & Research.

¹⁷⁸ Dinther, M. V. (2019, June 17). Minister Schouten beweegt zich behoedzaam op groen mijnenveld: Nieuwe visie op kringlooplantbouw verre van baanbrekend

¹⁷⁹ Tweede Kamer. (2019, June 13). Hoorzitting / rondetafelgesprek: "Realisatie LNV-visie".

¹⁸⁰ Rabobank. (2018, December 13). Landbouwbeleid op de schop: Van wedloop naar kringloop.

¹⁸¹ Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

¹⁸² Ministerie van landbouw, natuur en voedselkwaliteit. (2019, June 17). Realisatieplan Visie LNV: Op Weg Met Nieuw Perspectief.

biotech regulation for techniques that were banned due to inaccurate, unscientific portrayal in the past.¹⁸³

These aspects of the discussion that are mentioned by stakeholders can all play an important role in shaping our future food system. These are all obtained from sources from the past year, it is likely that some of these discussions will evolve in the future and that there will be new topics on the table as well.

Conclusion

When it comes to the need for circularity in agriculture, some stakeholders have arguments that are more anthropocentric while other stakeholders are more driven by the intrinsic value of nature. However, ecosystem services are recognized by both types of stakeholders and therefore presents opportunities for collaboration. Many stakeholders express the importance of a healthy soils, this seems to be a broadly supported idea. The elements that constitute cycles in circular agriculture are not clearly defined and diversity in perceptions is found between stakeholders. Nutrients, and organic material streams are recognized most broadly. CO₂ is also broadly recognized to play a role in circular agriculture; however, some pay more attention to it than others. There are some stakeholders that stick to material cycles while others include monetary cycles and cycles including social services. Inclusion of human manure is a topic that is considered indispensable by some stakeholders, and interestingly also by scientific and political authorities. Not much consensus is found in the discussion of scales in which cycles need to be closed. However, it is commonly said that scales must be closed on the smallest possible scale. There is little clarity about what is perceived as possible, and this is also largely subjective. Regional scales are mentioned by several stakeholders, because it is a good size for project based innovative collaborations. The scale on which cycles are closed is interrelated to a large variety of factors which brings a high level of complexity to this discussion. The discrepancy between an economic growth paradigm and circularity in agricultural production is raised by many stakeholders. However, some people point out that the developments in the Dutch economy cannot be disconnected from global developments, and therefore these changes need to be evaluated wisely. In Dutch agriculture this discussion is closely related to livestock numbers. This is a hot topic of debate which is largely colored by interests. In general, it is good to say that these debates already existed long before the concept of circular agriculture became popular as a result of the Vision statement of the Minister of LNV, but currently they are brought on the table through the popularization of this concept. Although there is broad range of interpretations of the meaning and concretization of circular agriculture, it has led to increased attention for sustainability in agriculture. In my opinion, one of the properties of this concept is that it is broadly interpretable and therefore inclusive. It has the potential to bring sustainability to mainstream stakeholders of the agri-food sector. On the other hand, there is a risk that the concept starts getting used too flexibly and therefore loses its meaning. Despite this risk, one could say that the popularization of circular agriculture has led to a boost in discussions around sustainability of agri-food systems, and therefore has already facilitated a step forward.

¹⁸³ Roetert, B., CLB. (2019, April 10). Bijdrage aan realisatie van de LNV-visie.

Discussion

The analysis of the statements and opinions that were extracted from texts and media in the previous chapters gives us an insight into the debate on circular agriculture in the Netherlands. Some critical side notes have to be made on the process of the analysis itself.

First of all, due to time constraints, I have only researched a limited number of sources. These were selected on basis of a simple assessment. However, this could have been done in a more elaborate way. Some stakeholders that I took into account were also selected on basis of the fact that I knew about the existence of a certain document or was recommended to me by somebody. I must note that this could have potentially led to biases in my output. Even though this can be the case, in my work I have tried keep a balance between different stakeholders.

Besides my own selectivity of stakeholders, there may be biases in my work as a result of choices of other authors, interviewers or publishers. Many farmers that are interviewed on these topics in media are probably special in one way or another or are interested in this topic themselves. Therefore, I don't think that the farmers that were mentioned in this text are a representative sample of the Dutch farmer population. In order to get a better representativeness, interviews would be more suitable. Although it is also important to consider that farmers that appear on media probably also have more impact in society than the ones that don't.

Interviews would probably also give a more accurate result to answer the research questions because the things that were not written, or not found were not considered in this text. Also, it could be the case that some stakeholder did not even think of the question but has an opinion if you asked them the question. However, this method also has advantages because whether you mention something publicly or not does also gives information on how important it is to you. Also, some important stakeholders would probably not be available to interview.

This is a qualitative and interpretative research, which always goes hand in hand with the risk of subjectivity influencing too much what the outcomes are. I have tried as much as possible to write down everything that was directly or indirectly answering my research questions in the analyzed material. However, it is very possible that some relevant things were not added. Also, from the data that was gathered not everything was written in the analysis, so it is not really possible to deduce how strongly some things are emphasized by stakeholders objectively. However, it is debatable is quantity of statements is a measure for the strength at which something is emphasized.

I presented the content of what people have said but explored little into the underlying motivations of stakeholders. Although this is a hard task, it is important to understand why stakeholders position themselves in a certain way towards a topic. Research into what drives or moves a certain stakeholder would be meaningful in order to bring these stakeholders closer together.

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