MANAGING A TRANSITION TOWARDS A SUSTAINABLE AGRO-FOOD SYSTEM

THE CASE OF THE AGROAGENDA IN NORTHERN NETHERLANDS

RIK EWEG[1], VAN HALL LARENSTEIN UNIVERSITY OF APPLIED SCIENCES, THE NETHERLANDS.

Abstract

This paper analyses the initiative *AgroAgenda* in the northern Netherlands. The AgroAgenda is a platform in which multiple stakeholders together stimulate a circular, and nature-inclusive agro-food system in the Dutch provinces of Friesland, Groningen and Drenthe. Stakeholders come from, among others, provincial governments, farmers' and nature organizations, educational and research institutes and processing companies. They join forces to realize a system change, a transition, in the region, while promoting knowledge circulation, knowledge co-creation and joint learning. The platform, is a front runner of five national, comparable initiatives.

The AgroAgenda has the potential to lead to a more nature-inclusive and circular farming. Several of the 40 experiments have already led to good results. However, to bring about a real system change, more attention to innovations in governmental organizations (including law and regulations), policy, the value chains (division of margins, pricing and marketing) and the educational system are needed.

Keywords: transition management, circular agriculture, nature-inclusive agriculture, AgroAgenda

Introduction

Dutch and European policy

Loss of nature, water- and soil pollution, farmers struggling with low prices, carbon dioxide emissions, the Dutch agro-food system is confronted with major problems related to its impact on biodiversity, environment, climate and the future of family farms and rural areas. In the Netherlands, different missions for the agro-food sector are articulated by consumers, NGO's and ad-hoc civil initiatives and political parties (Ministry of Agriculture, Nature and Food, 2018, 2019, Socio-Economic Council, 2021). The missions address socio-cultural themes related to landscape, animal welfare and production systems and value chains. Furthermore, the missions comprise the task to reduce the environmental and climatic impact of agro-food systems and to close nutrient cycles. Soil-biodiversity is considered as one of the most important themes in these missions as it is the basis of agriculture (de Boer & van Ittersum, 2018). The biodiversity of the soil is an indicator for organic and an-organic contamination which has a direct impact on food and feed safety, it is an indicator for the soil-water system and influences natural and production eco-systems. The European Green Deal makes the missions even more important by adding concrete targets for use of pesticides, fertilizers nutrients cycles, fertilizer management and restoration of biodiversity in agricultural systems (European Commission, 2019).

Challenge for agricultural entrepreneurs

To meet all these demands, the challenge for agricultural entrepreneurs is now to transform their busines models. Most of Dutch farming systems are specialized on one product and

[1] The author is member of the support group AgroAgenda Northern Netherlands.

focused on mainly one value: optimization of production, for example, of meat, milk or potatoes. If the agricultural entrepreneurs want to meet the requirements of the societal missions mentioned above, they must create 'multiple values': values for society (such as nature or care), values for ecosystems (such as water storage) and values for their family (such as a sufficient income) (Porter & Kramer, 2011). However, this transition can't just depend on individual farms and enterprises. It needs a fundamental change in the agro-food system in the Netherlands, that is to say: not only new technologies are needed, but also alternative social arrangements, markets and policy structures (Geels & Schot, 2007, Klerkx & Rose, Loorbach et al., 2017). Multiple value creation thus requires coalitions and processes in which various stakeholders collaborate (Peterson, 2013).
Peterson (2013) describes these coalitions, alliances and processes as 'Multiple Stakeholder Coalitions'. He advocates 'vertical integration' by coalitions of stakeholders that collaborate in an open market. These coalitions might consist of actors from public governance, the private sector (processors, retailers etc.) and societal organizations.

Challenge for all stakeholders
Designing, developing and implementing the innovations that are needed to realize such a transition, requires so-called transformational knowledge, that integrates social/organizational and technological innovations (El Bilali, 2019).
What can this type of knowledge look like? Vogelezang et al. (Vogelezang et al., 2009) discern three types of knowledge processes that might lead to transformative knowledge: knowledge transfer, in which traditionally scientific (explicit) knowledge is shared with practitioners; knowledge-circulation, in which explicit and tacit knowledge are interactively exchanged and knowledge co-creation, in which new knowledge is developed in collaboration between researchers and practitioners. The latter approach is helpful in complex and uncertain environments, creates joint awareness of a problem and is often contextual. New knowledge is thus developed in a transdisciplinary approach, in which explicit knowledge of scholars is combined with the contextual (tacit) knowledge of practitioners (Peterson, 2009). Exchange of knowledge always means learning: El Bilali (2019) mentions learning as the most important process for innovation. He discerns learning-by-doing, learning-by-using, learning-by-interacting, single loop and double loop learning.

Research question of this paper
The AgroAgenda for the northern Netherlands aims at developing transformational knowledge and innovations that lead to a circular, nature-inclusive agro-food system. The platform, with multiple stakeholders, aims at promoting knowledge circulation, knowledge co-creation and joint learning among its participants. The AgroAgenda was originally initiated in 2013, In 2018 it was identified as an experimental area for circular agriculture by the Dutch Ministry of Agriculture, Nature and Food quality. The AgroAgenda doesn't follow the traditional linear approach of innovation, where scientists are the innovators who transfer their innovations to the practitioners that are supposed to adopt the innovations. Instead, the platform is explicitly built on a so called complex agricultural innovation system (AIS), as described by Douthwaite & Hoffecker (2017): central terms are co-creation, transdisciplinary, holistic perspective, responsive without a predefined agenda, multiple actor approach, aiming at institutional change and interventions based on relationships, trust and an open agenda.

The question in this paper is: does the platform meet the conditions to generate the transformative knowledge needed to lead to real changes in the region? To what extend has the initiative the potential to lead to real changes,, and which gaps remain to be filled.

The analysis of course takes into account Covid 19. The implementation of the initiative was hampered by the pandemic, as creating relationships and trust are prerequisites for a successful process. These aspects require face-to-face meetings, visits and workshops which were impossible in 2020 and 2021, which also hampered the AgroAgenda initiative.

Analysis of the AgroAgenda Northern Netherlands initiative

The case of the AgroAgenda is described systematically by its *drivers,* enough *inputs* (organization, time and money), effective *activities, desired outcomes* and *emerging impact*.

Drivers

The drivers to change in the Netherlands are strong. In a SWOT analysis of the Dutch agricultural sector of Wageningen University & Research (Berkhout et al., 2021) points out that, although in general environmental pressure by Dutch agriculture has decreased, this decrease is insufficient to reach the environmental objectives set. Targets were not yet achieved on the nutrients load of water, nitrogen deposition is still too high to achieve biodiversity targets and the average ammonia deposition still amounts to 60 kgs per hectare of agricultural land, the highest in the EU, except Malta (Berkhout et al., 2021). In 2019, the Dutch government reported to the Convention of Biodiversity, a treaty of the United Nations Environment Programme (UNEP), that the country will not meet most of its targets on biodiversity formulated for 2020, while its main measures are considered as 'partly effective'. The establishment of the national ecological network is foreseen in 2027 and the report refers to the intensification of agricultural production, the reclamation of semi-natural areas, the drainage of wet areas and the use of artificial fertilizers as main causes (Sanders et al., 2019). In 2018, the Dutch minister of Agriculture, Nature and Food released a policy document urging for a nature-inclusive, circular agricultural sector (Ministry of Agriculture, Nature and Food, 2018). From a transition's perspective these various challenges can be considered as stimuli on a landscape level urging the stakeholders to act (Geels & Schot, 2007).

For the three northern provinces Friesland, Groningen and Drenthe, not only these international and national concerns were a driver for initiating the AgroAgenda, but also an internal motivation to ensure the viability of their agro-sector and societal pressure for more sustainability. (AgroAgenda, 2013). In fact, from the underlying documents of the AgroAgenda, a diversity of reasons to participate can be derived (Table 1). The underlying drivers of the initiators were to make a 'green' deal for the agro-sector, and to establish a collaboration between the vegetal (that needs manure) and animal husbandry sectors (that offers manure). Soil was mentioned for the first time as an important underlying theme (G. van Eck, personal communication, August 8, 2021).

Document	Driver
AgroAgenda	Forthcoming reform of the CAP
	Societal demands on animal welfare, public health, biodiversity, landscape, climate, energy and relationship farmer-citizens
	Pressure experienced by farmers from society and regulations
	Environmental impact of minerals, plant protection products and ammonia
	Decline of biodiversity
Dairy agenda	Growing international demand for dairy products
	Abolition of EU quotas
	Major challenges on environment, water, biodiversity
	Need for production in societal harmony and acceptance
Innovation program for the 'Veenkoloniën' (cultivated former peat district)	European policy (CAP) – demand for more sustainability
	National policy (aim for biobased economy)
	Need for industrial development of agro-clusters and logistics
	Need for higher production and financial income per hectare for growers
	Need for more utilization of knowledge
Action plan Potato Valley	The demand to realize an economic, vital circular agriculture in harmony with its environment
	Decline in population and employment, vitality of rural areas is threatened
Regional Deal Nature Inclusive Agriculture	The existence of farmers, landscape and biodiversity is threatened by the present way food is being produced
	Agriculture has traditionally been important for wellbeing and landscape in northern Netherlands

Table 1 *The multiple drivers for the AgroAgenda and the related sectoral agendas (Sources: AgroAgenda 2013, 2015, Potato Valley Foundation, 2019, Stuurgroep voor de Agenda Veenkoloniën, 2012, Regio Deal Natuurinclusieve Landbouw, 2019).*

Inputs

The AgroAgenda is organized as a network initiative, in which the participating organizations and stakeholders finance their own hours. (Figure 1). This creates an optimal involvement. The steering committee comprises representatives from the agro-processing companies (milk processing cooperative, potato breeder & trader), farmers' organizations, nature organizations, education, provincial and national governments, waterboard and the three sector agenda's The supporting team and catalyst team made up of 12 farmers, have the same set-up: members participate from their own interest or are delegated by their organizations. The budget of the AgroAgenda is composed by contributions of the three northern provinces, project subsidies from the EU-EFRD and in-kind contribution (hours) by participating organizations. The three

sector agendas have their own structure and funding. The same goes for the individual projects that are related to the AgroAgenda.

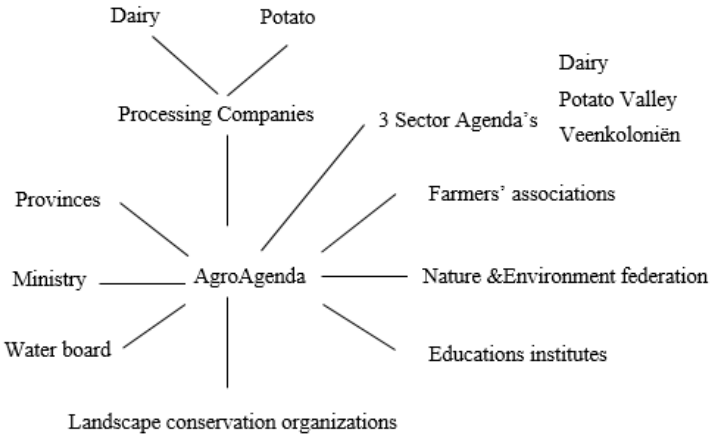

Figure 1 *Participating organizations in the AgroAgenda*

Activities

In 2019, the Dutch Ministry of Agriculture designated the northern Netherlands as one of the five experimental regions in which the ministry collaborates on a multiannual agenda for a transition towards a circular agro-food system.

The region organized a multi-stakeholder approach with tens of different stakeholders (see figure 1). They set up a light organizational structure: a secretariat was installed, and a program-leader appointed. Stakeholders from government, private sector, societal organizations and knowledge- and educational institutes now participate in three teams: a steering committee, with board members of the participating organizations, a supporting team that supports the program leader and a catalyst team with innovative farmers that exchange practical experiences and ensures the bottom-up approach.

The stakeholders jointly implement a common 'AgroAgenda' towards a sustainable agro-food system. In 2020, forty niche innovations were identified as relevant for the AgroAgenda, carried out by individual farmers, cooperatives and consortia of farmers, nature organizations and knowledge institutes. In order to induce a system change, in these pilots four types of innovations can be discerned: governance (innovations in regulation and organization), technologies and methods, competences (knowledge, skills and attitudes) and economic, towards sustainable business models and value chains (Table 2). These innovations affect all stakeholders and require involvement and collaboration.

Governance innovations (22%)	Innovations in National, Provincial and Local policy and legislation
	New organizational structures of stakeholders and regions
Technological & management innovations (50%)	Technical innovations in production and processing
	New methods of farm management and processing
Innovation in competences (10%)	Methods for co-creating new knowledge
	Training methods for new skills
	New awareness, new way of looking at the agro-food system
	New educational programs
Economic innovations (18%)	New business models
	New value chains

Table 2 *Classification of the 40 niche pilots in 2020: the % indicates the result of classification of the forty niche pilots in the types of innovations.*

The concrete activities of the AgroAgenda team are:

- Network meetings
- Communication and exchange of experiences and advice between the region and the Ministry
- Proposing strategies towards network partners how to realize the common goals
- Inspire and support stakeholders in generating new ideas and innovative projects
- Facilitate exchange of information and experiences between participants
- Intervene to eliminate barriers and support the creation of experimental space

The focus of the sector agendas is more on concrete projects that contribute to innovations in the sector related to technological innovations and business models. On the site, participants and interested parties can find news, agenda, desired outcomes and results from different areas (renewable raw materials, dairy cattle, potato valley, peat colonies).

Desired outcomes

The participants formulated the goals of the AgroAgenda as core qualities that should be achieved in the northern Netherlands. These core qualities are clustered in eight themes, as depicted in Table 3.

Themes and core qualities	
Diversity	In: Farms, Landscapes, Biodiversity, Markets and Value Chains.
Clean air, water and soil	No more emissions of pesticides veterinary medicines
	Climate neutral value chains
	As much as possible closed cycles
	Well-functioning soil-ecosystems
Connections with society	Commitment of all value chain actors
	Well informed and market-oriented entrepreneurs
	Accountability of all chain actors
Landscape	A valuable and diverse cultural landscape
Farms	Farms still exist in two generations
	Farms are flexible and adapt to market signals
	Farms are independent of CAP-
Value chains	At least 40% of production in top-market segments
	Leading in healthy food
	No reduced employment
	5% of turnover labeled for R&D
Vital rural areas	Every entrepreneur and employees are active in local societies
	Agricultural production is clean, quit and safe
	Northern Netherlands offers an attractive living environment
Vital nature	Biodiversity contributes to higher agricultural production
	Agriculture contributes to biodiversity
	No farm-land species on list of endangered species

Table 3 *Desired outcomes (2030) of the AgroAgenda (source: https://www.agroagendann.nl/).*

The achievements of the AgroAgenda initiative in 2020-2021 were a.o. the following pilots (AgroAgenda, 2021):

- Early ploughing in wintertime: this project proved that is not necessary to use glyphosate on grassland before ploughing if ploughed during wintertime and that no Nitrogen leaching occurred, as this was absorbed by following arable crops (DLVAdvies, 2021).
- Incorporating straw-rich manure into the soil, to support biodiversity of meadow birds and soil biodiversity, together with a circular farmer cooperative Ecolana (https://ecolana.nl/).
- Collaboration between arable and dairy farms on exchanging feed and manure (de Wolf, 2018).
- Advisory meetings with the innovation department the Ministry of Agriculture, resulting in two approved innovative stable systems.

Discussion and reflection on impact

Successful niche-experiments are a step forwards, but how do we know that the results are viable on the long term and have actually an emerging impact? The process of the AgroAgenda can be considered as a transition pathway, as described by Geels & Schot (2007). Based on transition literature, they discern three levels in the process of system change: the *niche level*, where novelties emerge, the *regime level*, also called socio-technical regime, where engineers, scientists, policy makers, users and interest-groups together work on a system change, and the *landscape level*, the external environment that influences the regime and niches.

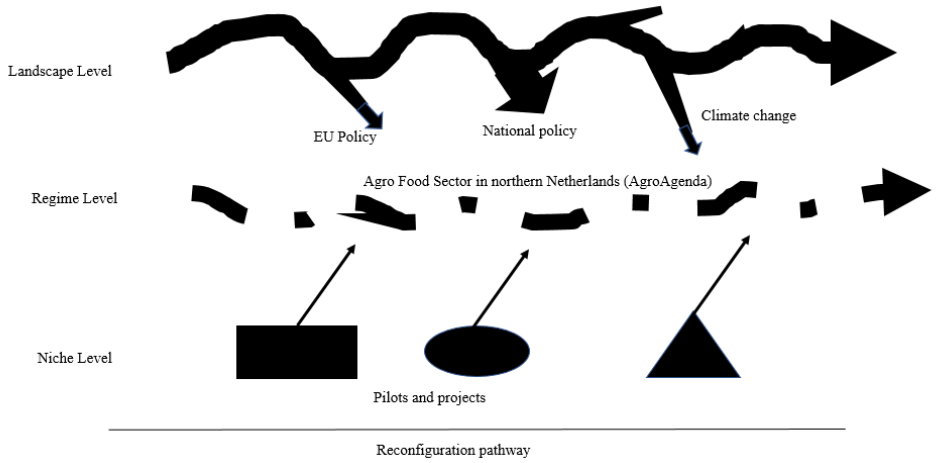

Figure 2 *Transition pathway towards a sustainable deed and food management in the northern Netherlands (Adapted from Geels & Schot, 2007).*

The AgroAgenda can be described in terms of transition theory: niche-innovations, socio-technological regimes and -landscapes. Whereas the innovation pilots and projects constitute niche-innovations, the diverse actors in the northern Netherlands constitutes the socio-technological regime. The landscape-level is established by three major forces: the European Commission issuing regulations on emissions and biodiversity, the national government advocating a transition towards circular agriculture and the environment affecting the regime through climatic changes.

Examining the forty niche-experiments identified by the AgroAgenda, it can be concluded that they meet the indicators as defined by Geels & Schot (2007) for viable niche-innovations that will have impact on the socio-technical regime because:

- The experiences in the pilots are embedded in a design, supported by the dominant stakeholders: the idea of a nature inclusive, circular agriculture that contributes to (soil)biodiversity, reduces climatic impact and closes nutrient cycles is formalized by policy documents of the ministry (Ministry of Agriculture, Nature and Food quality, 2018).
- The design of circular agriculture as-such has been accepted by major and powerful regime actors, who have joined the AgroAgenda.
- The pilots have led to a meaningful price-performance effectiveness in the innovative agricultural practices, because most innovations prove to be cost-effective and a niche market of processing companies and local customers as restaurants, consumers are willing to pay a higher price for regional, sustainable products.

- In 2019, market niches of sustainable agricultural products have raised up to 11% in the Netherlands as a whole (Logatcheva, 2019).

Combining the characteristics of the AgroAgenda with the theory of Multi Level Perspective-transition pathways of Geels & Schot (2007), we may conclude that the AgroAgenda is an example of a transition pathway. Major regime players (the boards of potato processor AVEBE, milk processor FrieslandCampina, farmers association LTO, the provinces, nature and landscape NGO's and educational institutes) are positive and ready to adopt the innovations from multiple experiments by existing and new suppliers and producers. A symbiotic relationship exists between the regime players and the niche-innovators, because of economic, political and environmental pressure.

This constellation leads to the hypothesis that the AgroAgenda in future will lead to technical changes and changes in perceptions of the regime. It can be expected that the external pressure by climatic change will increase and will lead to more and new transition pathways, which will lead to a more fundamental system change, also affecting the economic system (Geels & Schot, 2007).

More organizational learning needed

However, are these 40 experiments the right mix for a real change in the region? When looking at the forty niche-experiments half of the pilots have innovations in technology or farm management methods as the focus, while innovations focusing on economic and governance innovations each score around 20%. Table 2 shows that innovations focusing on competences development, education and learning constitute one-tenth of the pilots. Innovations in education and learning can be characterized by their focus groups: for example, students' education, practitioners training and organizational learning.

Of the forty pilots examined, only one project focuses on organizational or societal learning. Geels & Schot (2007) mention that an important condition for a reconfiguration pathway is that regime actors explore and learn from niche innovations, in order to bring about transformational changes in their institutions such as alternative types of R&D investments, educational systems, product marketing, coalitions and policy and regulations. Therefore, bottom-up, the niche experiments should be monitored and evaluated to learn from their experiences, scaled up within the agro-sector and connected with other sectors (Poppe, Termeer and Slingerland, 2009).

So, a systematic reflection on the AgroAgenda and its niche-experiments is needed. Because this will support the learning by regime-actors. This reflection can be both qualitative, using generative interviews and learning histories (van Mierlo 2010) and quantitative, using performance indicators related to the core qualities identified for the AgroAgenda. Performance indicators have been developed already by several scientific institutes (Koopmans, 2017, Eweg et al., 2021, Stobbelaar & van Mansfelt 1999). Figure 3 provides an example for key-performance indicators related to the AgroAgenda quality 'well-functioning soil-ecosystems'. Soil quality is an important aspect of the transition pathway toward more sustainable and healthier food but is part of a holistic approach considering all relevant variables and related indicators.

- Percentage of rest crops (grass, clover etc.) in crop-rotation
- Balance of organic matter
- % of plant cover
- Score of soil condition (soil life, structure, layers, soil water etc.)
- Use of pesticides and herbicides
- Farm nitrogen surplus

Figure 3 *Example: key-performance indicators for functional soil-biodiversity and good soil management mentioned by Louis Bolk Institute (Koopmans et al., 2017).*

Conclusions

We can conclude that the AgroAgenda creates an environment for impact on the regime and landscape level. The initiative turns out to fit in the multi-level transition theory as described by Geels & Schot. Many pilots for sustainable food production have been initiated and are supported by the initiative. The most relevant stakeholders from production, processing, governance, nature and landscape management, society and education are involved in the initiative.

However, to achieve impact on the regime level, besides developing and implementing niche pilots, not only the farmers but all stakeholders (figure 1) must keep on learning and innovating. They must ask themselves which transition pathways lead to sustainable environments and livelihood for farmers. Tackle long-term, often difficult issues such as: do we want more …. Or more or… And how can the niche-experiments be associated with the governmental and other companies and organizations in the northern Netherlands?

To reach its goals, the AgroAgenda initiative will have to broaden its scope on innovation. Most niche-experiments still focus on technological innovations and new farm management methods. A smaller share address innovation on governance, competences and economical themes we identified. Most of the innovations on governance, competences and economics focus on the farmers' level or take farmers as a starting point. Most of the goals of the AgroAgenda, formulated as 'themes and core qualities are related to primary production. However, to enable and support farmers to reach these qualities, also innovations in the complex and higher level agro-food system will be needed - in governmental organizations (including law and regulations), policy, innovations in value chains related to division of margins, pricing and marketing. Finally, real change also asks for innovations in the educational system: a more interdisciplinary systems-approach and students that are educated to become experts in facilitating transition processes.

A platform can design organizational learning, by starting with an exchange of experiences with the niche-pilots. As Peterson argued, actors must adopt new roles and form new coalitions. The AgroAgenda already started bringing together various actors in learning environments: in multi-disciplinary workshops, via regular markets and farm visits, a web site, and social media. Implementing regional monitoring programs, based on quantitative and qualitative performance indicators, will help to decide the successfulness of innovations. When this monitoring and the accompanying reflection is dynamic, a continuous learning process will be stimulated and facilitated.

The northern Netherlands embarked on a transition pathway towards more sustainable production and management of food and feed. The AgroAgenda is an open and flexible organization, so when it develops further, new actors might join, and new topics will pop up. It might have national impact, as the ministry of agriculture is closely involved in the initiative

and initiated four other comparable initiatives all over the country. The coming years, the initiative will be monitored, and its impact will be further evaluated and assessed on its contribution to sustainable food and feed management and a new agro-food system.

Acknowledgements

I would like to thank Gerda van Eck, program leader of the AgroAgenda northern Netherlands for reading and providing constructive comments on this paper.

References

AGROAGENDA NOORD NEDERLAND. 2015, July. *Nieuwbrief [Newsletter]*. Retrieved from https://docplayer.nl/37460132-Agro-agenda-noord-nederland.html.

AGROAGENDA. 2013. *Intentieovereenkomst [Memoranding of Understanding]*. Retrieved from https://www.agroagendann.nl/.

AGROAGENDA. 2015. *Versnellingsagenda* Veehouderij *[Acceleration Agenda Livestock Farming]*. Retrieved from https://docplayer.nl/37460132-Agro-agenda-noord-nederland.html.

AGROAGENDA. 2021, May. *Voortgangsrapportage [Progress report]*: unpublished.

BERKHOUT, P. - HELMING, J. – BLOKLAND, PW. – SMIT, B. - POLMAN, N. – GREIJDANUS, A. 2021. *Conditionaliteit in het GLB. Onderzoeksvarianten voor een verkenning van de deelnamebereidheid bij ondernemers in de primaire landbouw.* [Conditionality in the CAP. Research variants for an exploration of the willingness among entrepreneurs in primary agriculture to participate]. Wageningen Economic Research, Rapport 2021-027.

BOER, I. de. – ITTERSUM, M.K. van. 2018. *Circularity in agricultural production. Scientific basis for the Mansholt lecture 2018*. Wageningen University & Research.

DLVADVIES. 2021. *Wintervoorploegen van grasland succesvol. [Early ploughing of grassland successful]*. Retrieved from https://www.dlvadvies.nl/nieuws/nieuwsarchief/wintervoorploegen-van-grasland-succesvol/1463.

DOUTHWAITE, B. – HOFFECKER, E. 2017. Towards a complexity-aware theory of change for participatory research programs working within agricultural innovation systems. In Agricultural Systems, 155, 2017, p. 88-102.

EL BILALI, H. 2019. Research on agro-food sustainability transitions: where are food security and nutrition? In Food Sec., Springer, 11, 2019, p. 559–577.

EUROPEAN COMMISSION. 2019. *The European Green Deal*. Communication from the commission to the European Parliament, the European council, the council, the European economic and social committee and the committee of the regions. Brussels. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640.

EWEG, A. – JAGER, J. – MEULEN, H. van der. 2021. *Monitoren Kringlooplandbouw op Bedrijfsniveau. Interne notitie. [Monitoring Circular farming at farm level. Internal report]*. Wageningen Economic Research: unpublished.

GEELS, F. W. - SCHOT, J. W. 2007. Typology of sociotechnical transition pathways. In Research Policy, Elsevier, 36, 2007, p. 399-417.

KLERKX, L. – ROSE, D. 2019. Dealing with the game-changing technologies of Agriculture 4.0: How do we manage diversity and responsibility in food system transition pathways? In Global Food Security, Elsevier, 24, 2020, 100347.

KOOPMANS, C.J. – ERISMAN, J.W. - ZANEN, M. – LUSKE, B. 2017. *Biodiverse akkerbouw - Verkenning van indicatoren voor agrobiodiversiteit in de akkerbouw. [Biodiverse arable farming - Exploring indicators for agrobiodiversity in arable farming]*. Louis Bolk Instituut, Publicatienummer 2017-023.

LOGATCHEVA, K. 2020. *Monitor Duurzaam Voedsel 2019.* Wageningen Economic Research.

LOORBACH, D. - FRANTZESKAKI, N. – AVELINO, F. 2017. Sustainability Transitions Research: Transforming Science and Practice for Societal Change. In Annual Review of Environment and Resources, 42(1), p. 599-626.

MIERLO, B. van. – REGEER, B. - AMSTEL, M. van. - ARKESTEIJN, M. - BEEKMAN, V. - BUNDERS, J. - COCK BUNING, T. de. – ELZEN, B. - HOES, A. – LEEUWIS, C. 2010. *Reflexive monitoring in action. A guide for monitoring system innovation projects*. Communication and Innovation Studies WUR, Athena Institute, VU Amsterdam.

MINISTRY OF AGRICULTURE, NATURE AND FOOD QUALITY. 2018. *Landbouw, natuur en voedsel: waardevol en verbonden. Nederland als koploper in kringlooplandbouw. [Agriculture, nature and food: valuable and connected. The Netherlands as a frontrunner in circular agriculture]*. Ministry LNV, The Hague.

MINISTRY OF AGRICULTURE, NATURE AND FOOD QUALITY. 2019. *Realisatieplan Visie LNV. Op weg met nieuw perspectief. [Realization plan Vision LNV. On the road with a new perspective]*. Ministry LNV, The Hague.

PETERSON, H.C. 2009. Transformational supply chains and the 'wicked problem' of sustainability: aligning knowledge, innovation, entrepreneurship, and leadership. In Journal on Chain and Network Science, Wageningen Academic Publishers, 9(2), 2009, p. 71-82.

PETERSON, H.C. 2013. Fundamental Principles of Managing Multi-stakeholder Engagement In: International Food and Agribusiness Management Review, Special Issue A, IFAMA, 2013.

POPPE, K.J. - TERMEER, C. – SLINGERLAND, M. (Eds.). 2009. *Transitions towards sustainable agriculture and food chains in peri-urban areas.* Wageningen Academic Publishers.

PORTER, M.E. – KRAMER, M.R. 2011. Creating Shared Value. How to reinvent capitalism—and unleash a wave of innovation and growth. In Harvard Business Review, January–February, 2011.

POTATO VALLEY FOUNDATION. 2019, *Plan van Aanpak, 2020-2024. [Action Plan]*. Retrieved from https://www.thepotatovalley.nl/documenten.

Regiodeal Natuurinclusieve Landbouw. 2019. Intentieovereenkomst [Memorandum of Understanding]. Retrieved from https://www.regiodealnatuurinclusievelandbouw.nl/regiodeal.

SANDERS, M.E. – HENKENS, R.J.H.G. – SLIJKERMAN, D.M.E. 2019. *Convention on Biological Diversity; Sixth National Report of the Kingdom of the Netherlands.* Wageningen, the Statutory Research Tasks Unit for Nature & the Environment. WOt-technical report 156.

SOCIAAL-ECONOMISCHE RAAD. 2021. *Naar duurzame toekomstperspectieven voor de landbouw. [Towards sustainable future perspectives for agriculture]*. Social and Economic Council, The Hague.

STOBBELAAR, D.J. – MANSVELT, J.D. van. 1999. *The process of landscape evaluation. Introduction to the 2nd special AGEE issue of the concerted action: "The landscape and nature production capacity of organic/sustainable types of agriculture".* Biological Farming Systems Group, Wageningen Agricultural University.

STUURGROEP VOOR DE AGENDA VEENKOLONIËN. 2012. *Innovatieprogramma Landbouw Veenkoloniën 2012-2020. [Innovation program Veenkoloniën 2012-2020].* Retrieved from https://veenkolonien.nl/upload/25-Innovatieprogramma_Landbouw_VK.pdf.

VOGELEZANG, J. - WALS, A. - MIERLO, B. van. – WIJNANDS, F. 2009. Learning networks in Dutch agriculture: stimulating sustainable development through innovation and change. In: Transitions towards sustainable agriculture and food chains in peri-urban areas. In K.J. Poppe, C. Termeer, M. Slingerland, (Eds.). *Transitions towards sustainable agriculture and food chains in peri-urban areas* (pp. 93-111). Wageningen Academic Publishers.

Wolf, P. de - Klompe, K. - Hanegraaf, M. – Molendijk, L. - Vellinga, T. 2018. *Verduurzaming samenwerking akkerbouw-veehouderij in Drenthe. Expertbeoordeling en advies. [Sustainable cooperation between arable farming and livestock farming in Drenthe; Expert judgement and advice]*. Wageningen Research, Rapport WPR- 773.

Contact address:
Rik Eweg, Van Hall Larenstein UAS, P.O. Box 9001, 6880 GB Velp, The Netherlands. Tel. +31 641149508, rik.eweg@hvhl.nl