German Journal of Agricultural Economics Vol. 73 (2024), No.1, 1-13

Original Research Article

https://doi.org/10.52825/gjae.v73i1.1318

Submitted: 23 Dec. 2022 | Accepted: 12 Mar. 2024 | Published: 17 May 2024

How – and How Much? An Analysis of Major Conflict Lines Regarding the Transformation of German Animal Farming[1]

Philipp von Gall [1], Jörg Luy [2], Moritz Köder [3], and Marie von Meyer-Höfer [4]

[1] Thünen-Institut, Stabsstelle Klima, Boden, Biodiversität, Braunschweig

[2] INSTET - Privates Forschungs- und Beratungsinstitut für angewandte Ethik und Tierschutz gGmbH, Berlin

[3] Georg-August-University, Göttingen

[4] Thünen-Institut für Marktanalyse, Braunschweig

*Correspondence: Marie von Meyer-Höfer, marie.vonmeyer-hoefer@thuenen.de

Abstract: Based on the concept of a 'future workshop', this paper contributes to the understanding of major conflict lines and future pathways for animal farming in Germany. Participants in the future workshop were tasked with outlining their ideal vision of the future of animal farming, focusing on both its mode and quantity. We found three different types of visions differing in their motivation, farming methods, and the scale of envisioned animal farming: 'Higher Standards' (V1), 'System Change and Reduction' (V2), 'Alternatives to Animal Farming' (V3). V1 seeks to secure the quantities of supply and demand of animal products in Germany with minor adjustments towards improved animal welfare and investments in resource-efficiency and climate friendliness. V2 advocates for comprehensive social and environmental systemic changes throughout the agri-food sector, with substantially fewer animals involved. V3 aims to replace animal farming, with plant-based and other alternatives, whenever and wherever possible. Our findings suggest that there is little ground for a societal consensus on a single future mode and scale of animal farming. Stakeholder dialogues and policy initiatives should therefore allow for different pathways while focusing on compromises in the near future. Short-term solutions may be acceptable to supporters of all three visions, however, achieving this requires reframing the debate from 'securing the future of animal farming' to 'guiding the future of animal farming', acknowledging the potential – albeit partly – replacement of animal farming by suitable alternatives.

Keywords: Future of Animal Farming, Future of Food, Sustainable Transformation, Social Acceptance of Agricultural Policies, Stakeholder Dialogue

1 Introduction

The public debate about animal farming has been ongoing for decades. However, it has become increasingly heated in Germany since 2015. During the rise of intensive animal farming between the 1960s and 1990s, the main goal of agricultural politics was to make it more resource-efficient and cost-effective, with an emphasis on the global competitiveness. Minimum

[1] An earlier version of this paper was presented at the 62nd annual meeting of the Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues (GeWiSoLa). This paper received a best paper award at the 62nd annual meeting of the Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues (GeWiSoLa). It underwent a regular review process and complies with the quality standards of this journal.

animal health and protection standards were considered rather as side constraints. Many of the political measures designed at that time are still in place and set incentives for farmers to keep up with such forms of animal farming. In the last decade, however, ethical and sustainability requirements have put public pressure on animal farming in Germany and policy makers (Hölker et al., 2019; Deutscher Ethikrat, 2020; Luy, 2018, 2022), even more so since affordable plant-protein alternatives have emerged. Environmental, climate, and social development goals increasingly determine society's expectations towards animal farming (European Commission, 2007, 2016; Janssen et al., 2016; Busch and Spiller, 2018), even if Russia's war on Ukraine put some emphasis back on resource efficiency. Prior to the large climate protection movement of Friday for Future, the issue of replacing animal farming by alternatives was mostly discussed in animal rights debates (Ladwig, 2020). Due to the environmental and climate problems caused by intensive animal farming, public and scientific awareness has increased regarding the urgency of the matter. The question arises as to whether, and if so, to what quantitative extent animals should be kept for food purposes (Steinfeld et al., 2006; Weis, 2013; Kemmerer, 2014; Twine, 2021).

From a practical point of view, the social disagreement over the future of livestock farming has been preventing investments in new stables, resulting in a backlog of investments. Today, in the socio-political debate on the transformation of the agricultural and food system, the consumption of animal products is at the center of attention. Here, major contemporary protection issues converge: health, climate, environmental and animal protection in the face of multiple crises and economic developments.

Hence, the political design of sustainable farm animal policies must consider a combination of new factors. This includes the question of to what extent plant-based or other alternatives to animal products might be more suitable to achieve societal goals. This leads to a new set of stakeholders involved in animal farming politics. Not only do economic actors involved in animal farming have their 'stakes' in the issue, but also those who produce alternatives to meat, milk, or egg products. Moreover, it's not just NGOs seeking to transform the way animal farming is conducted that need to be heard, but also those arguing for the reduction or replacement of animal farming (von Gall and von Meyer-Höfer, 2021).

In order to settle conflicts and reach agreements, policymakers have made numerous efforts to explore public views on animal farming and seek areas of consensus, for example, through establishing expert and stakeholder committees. Both the 'Zukunftskommission Landwirtschaft' (ZKL) (Future Commission of Agriculture), initiated by Chancellor Angela Merkel in 2020, and the 'Kompetenznetzwerk Nutztierhaltung' (KNW) (Competency Network of Animal Farming), appointed by the Federal Ministry of Agriculture in 2019, have both been regulated and run by the Federal Ministry of Agriculture in order to settle disputes on the future framework conditions of farming in Germany. While the ZKL addresses the whole agricultural sector, including animal farming, the KNW explicitly focused on animal farming, initially emphasizing pig farming. In its final report, the ZKL builds on and mostly supports the recommendations of KNW regarding animal farming (ZKL, 2021). Additionally, the German Agricultural Research Alliance (DAFA) developed a future vision of what agriculture should look like by 2049 (DAFA, 2022).

2 Aim and Scope

Current stakeholder dialogue, e.g. under ZKL, mentioned above, developed one single vision for the future of animal farming in Germany, as a presupposition this for their political recommendations. We believe this approach is problematic because some stakeholder groups might feel overlooked or pressured into adopting this vision, thereby neglecting their specific goals or values. They might not identify with the goals of the dialogue, hindering the necessary search for compromises between the groups. The aim of our future workshop was to identify those visions which are open enough to provide room for a variety of perspectives and groups,

but at the same time do not compromise any of their essential motivations, interests or values. From a policy evaluation perspective, a distinction of different visions for animal farming makes it easier to assess not only the overall acceptance of long-term strategies, but potential political alliances and counterparts on the way towards transformation of the agricultural and food sector.

In terms of terminology, we propose distinguishing between consensus and compromises. Consensus refers to an approving attitude towards goals of transformation, whereas compromises involve a strategic give-and-take process without necessarily sharing consensual goals of transformation.

This article presents three future visions of animal farming in Germany that cover all relevant stakeholder positions and – at the current state – seem irreconcilable. Each of these visions incorporates aspects that are critical interests, goals, and values of at least one stakeholder group. An innovative aspect of this approach is the inclusion of interest groups that are typically not part of traditional stakeholder dialogues on animal farming, e.g. those engaged in the promotion of alternatives to animal farming.

3 Approach

This article presents core findings of the discussion platform of the SocialLab II project, whose overall aim was to assess the acceptance of animal farming in the light of innovations. In 2018, at the time of the application for the project, there was no larger discussion format in Germany aimed at clarifying questions related to the comprehensive social and political development of animal husbandry.

By the end of 2019, given the increasingly heated public debate about animal farming, two prominent commissions were added to the field: KNW and ZKL. Consequently, the methodology of the SocialLab future workshop had to be adapted in order to avoid overlaps.

Following Jungk and Müllert (1997), the concept of ‘future workshop’ was used. Since KNW concentrated on framework conditions for increasing animal welfare standards in the sector, out concept focussed on the question of ‘how and how much?’ animals should be kept in Germany in the future. To this extent, and in addition to several online and on-site workshops, position papers from the various stakeholder groups involved in the future workshop were reviewed between 2019 and 2022.

The SocialLab future workshop on animal farming, whose methodological and chronological approach is outlined in Figure 1, has since become an open, transdisciplinary and scientifically supported dialogue platform. This type of future workshops has already proven to be successful in involving different stakeholders in addressing socially relevant issues and promoting innovative developments in the agri-food sector (von Meyer-Höfer et al., 2020).

Initially, the authors invited over 60 researchers, economic actors, and NGOs to nominate key stakeholders for a discussion on the future development of livestock farming. Subsequently, the nominees were contacted, and 20 representatives agreed to participate in the discussion concerning the future development of livestock farming in Germany. Among the participants were representatives from various stakeholder groups, reflecting different interests along the entire value chain of animal production. This included stakeholders from animal farming (conventional and organic), animal protection / rights, environmental and climate protection, consumer protection, as well as diverse actors from the food sector.

The subsequent dialogue among these representatives was structured according to the approach of a future workshop. By providing structured guidance to exchange ideas and foster

shared problem-solving, the future workshop method is helpful in collectively shaping an envisioned future (Schrot et al., 2021).

As proposed by Jungk and Müllert (1997), the future workshop began with a 'Critique Phase' in spring 2020, during which problems related to the future of animal farming in Germany were identified and structured. The discussions took place as online workshops due to lockdown regulations at the time, preventing in-person meetings. These online workshops were moderated by a professional moderator, who ensured that everyone had the opportunity to express their views in a fair and open manner. Additionally, the moderator served as a conflict manager between the different stakeholders.

The discussions were prepared by the authors, documented, and analyzed. As a result of positions expressed in the critique phase, the participants agreed on developing and discussing visions for both the overall quantity of animals in livestock farming and the animal farming practices.

In the 'Utopian Phase', desirable future visions were identified on the questions 'how and how much of animal farming?'. These visions were utopian, meaning they were written without taking into account their political chances of implementation, and existing regulatory or financial barriers. Each representative wrote one vision and presented it in an online workshop to the other participants of the future workshop. All written visions were collected. In the next step, stakeholders were confronted with the positions of others and asked to identify consensus or topics where they saw space for compromises. They were also asked to mark areas where consensus on pathways of transformation seems impossible.

As a result of these findings, we grouped the positions into visions that cannot be reconciled into one consensual vision without compromising central principles or values of stakeholder groups. We categorized the 'how and how much' mentioned in the collected visions into three main future visions for animal farming in Germany, using criteria such as timeframe, motives of change, animal farming approach, overall size of animal farming, associated diets, and suggested instruments to implement the vision. Following this approach, three main clusters of future visions were identified and labelled. The visions are similar within their group but heterogeneous compared to each other (see Table 1).

Subsequently, we presented these three target visions to the future workshop participants and discussed them in another online workshop during winter 2022. In addition, one-on-one interviews were conducted with the future workshop participants and the authors of the visions to analyse the acceptance of the visions. Comments and feedback on the three final visions for the future development of animal farming in Germany, as presented in this paper, were collected during interviews. Concurrently, position papers and contributions to the debate were compared and adjusted based on the interview results.

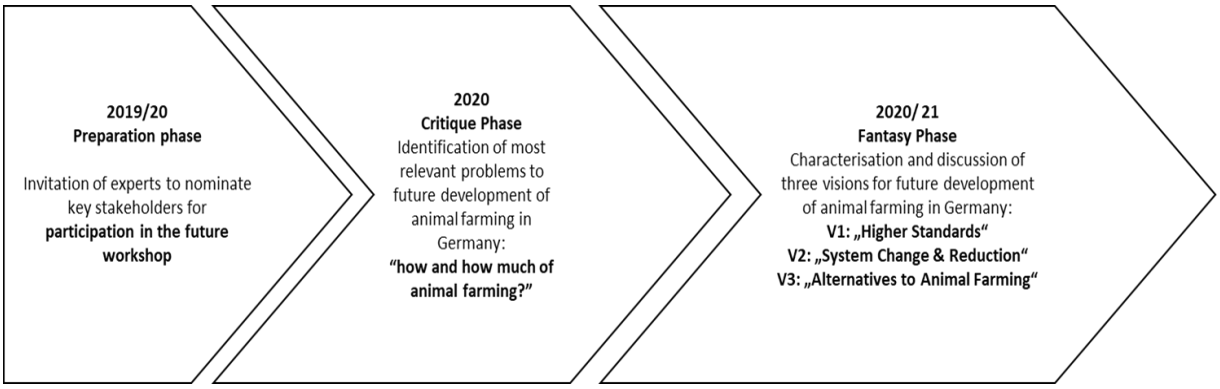

Figure 1. Methodological and chronological procedure of the future workshop on animal farming

Source: own source

4 Results

Stakeholder representatives reflecting various interest groups across the entire value chain of animal production in Germany were tasked with expressing and discussing their visions for 'how and how much' of the future of animal farming in the country. Three substantially different types of visions were then identified. Each vision incorporates critical factors where at least one relevant stakeholder group cannot agree: 'Higher Standards' (V1), 'System Change and Reduction' (V2), and 'Alternatives to Animal Farming' (V3). These visions differ in terms of farming methods as well as the envisioned scale of animal farming and animal-based food consumption.

Table 1 provides an overview of the three identified 'clusters' of future visions regarding what animal farming should ideally look like, as well as its size. Each vision is described in more detail below. The key distinctive features that led to the design of the three main visions were:

- the way animal and environmental protection should be maintained or increased,
- the way the conventional animal farming practices – aimed at high quantities at low costs – are kept competitive at world commodity markets,
- the way the market shares of plant-based or cultured protein alternatives are increased,
- the way animal farming is seen as an integral and valuable part of agriculture even in the distant future,
- the way the number of farmed animals in Germany is reduced.

The results indicate the emergence of new frontiers between stakeholder groups in animal farming. While the primary division was previously between conventional and animal-welfare friendly farming practices, today we envision a debate expanded to include the aspect of alternatives to food of animal origin, which in turn provides room for new alliances.

Vision 1 (V1) 'Higher Standards'

V1 is the least 'utopian' of the three presented visions, as it represents an interest in maintaining the status quo of profitability and world market competitiveness of conventional animal farming. In this vision, necessary changes in animal welfare and climate or environmental standards are subordinated to the goal of economic stability. V1 aims to provide long-term economic planning security for conventional farmers and downstream industries by implementing technical changes and adjusting stable management to meet higher demands for animal welfare and climate protection from society. The number of animals and their production shall be kept at the current high levels. A key aspect for planning security is enhancing social ac-

ceptance of the conventional farming sector, primarily through better communication of its economic and efficiency benefits. The changes towards the higher standards of V1 are proposed to be funded either through higher consumer prices or through public financial support.

The German conventional meat sector, especially the pig meat industry, is an important player on the world market, and in V1, exports would continue to be high or even increase further. Under current conditions, an increase in animal numbers is not deemed realistic, except perhaps for certain production systems such as poultry. However, a reduction in the overall quantity of farm animals is strictly rejected within the framework of V1. Consequently, V1 does not necessarily rely on changing consumption patterns, at least not in terms of quantity. But it does necessitate that consumers are willing to pay the price for the higher standards imposed.

Typical proponents of Vision 1 are conventional, intensive animal farming groups. The motivation for V1 primarily lies in improving and/or maintaining the economic situation of intensive, conventional animal farmers and the respective industry. Maximizing profit and efficiency is a central aim of V1, and the use of animals is not ethically questioned.

There is a pronounced mistrust among V1 supporters regarding society's increasing demand for sustainability, which is partly perceived as overly high consumer expectations. Yet, proponents of V1 do not oppose green or climate targets for the livestock sector per se. But they argue that a combination of remaining high quantities of animal production at the national level with increasing environmental standards of the sector would overall be environmental beneficial, compared to other options. While the demand-side for animal products is seen as a fixed parameter and to be left untouched by politics, a reduction of national animal numbers would only shift the production and problems abroad (so called ‘leakage-effects’), where they tend to be even bigger. Hence, supporters of V1 argue for more understanding and appreciation for the benefits of resource-efficient mass production of animals in Germany at low consumer prices to meet future challenges.

Vision 2 (V2) ‘System Change and Reduction’

V2 shares with V1 a commitment to animal farming as an integral part of agri-food culture, recognizing its value and its importance as a source of income to protect. But V2 proponents draw a very different image of how animal farming looks like, and which role it plays in local sustainable food systems. Alongside the organic sector and alternative farming groups, NGOs advocating for animal welfare, environmental protection, and consumer rights demand a holistic system change in the agri-food sector. They advocate for a new, more sustainable system that ensures both ethical treatment of animals and environmental conservation goals. The proponents of V2 aim to establish a system that provides farmers with better income prospects than they currently have. They believe that an innovative, yet social and natural outlook is essential to meeting the expectations of future generations. While recognizing conflicts between animal welfare and economic needs, supporters of V2 strive for a fair balance between these concerns. In this vision, quality competition is presented as an alternative to the prevailing cost competition in globalised markets.

V2 explicitly envisions a reduction in the consumption of animal products through flexitarian or vegetarian diets. It advocates for a drastic reduction or abandonment of exports and the use of imported protein feeds from overseas to enable more regional cycles of production. Consequently, various reduction targets are proposed within the vision. Some proponents call for a reduction of all farm animals by at least half by 2050, while others advocate for even greater reductions achieved earlier. It remains unclear whether the reduction of animal farming affects all animal species or only the less accepted types of farming, such as pig fattening or poultry farming. However, grassland-based cattle farming is generally still considered not only acceptable, but also meaningful within this vision, since it enables local feed supply with plants not suitable for human diets. In this regard, proponents follow scientific debates regarding the environmental impact of cattle farming. The costs for the transformation outlined in V2 should

be covered by higher prices of the products and by public support. The entire society, as well as the market and politics, are involved in the change, which requires far-reaching structural adjustments to be implemented. These affect all actors in the value chain. A central aspect of V2 is the change in consumption patterns of animal products, both in terms of quantity and appreciation of the higher value of the products.

Typical proponents of V2 have strong ties to the organic and diversified family farming or form part of environmental groups. While many animal protection organizations support V3 as a utopian aim, they back V2 as a realistic and strategic pathway for better treatment of animals that can garner necessary political support.

When the conflict in Ukraine brought food security to the political agenda, the debate on the extensification of agriculture took on a new dimension. Proponents of extensification are under pressure to provide evidence that both food security and extensification can coexist within a single future scenario. To achieve this balance, the shift in diets towards less meat, fewer dairy products, and a significant increase in legume consumption – resulting in nearly 60% less meat production – is presented as a central factor (NABU, 2023).

Table 1. Overview of core future visions for animal farming

Vision	1	2	3
Name	'Higher Standards' *('Höhere Standards')*	'System Change & Reduction' *('Systemwechsel in der Tierhaltung')*	'Alternatives to Animal Farming' *('Alternativen zur Tierhaltung')*
Key supporters	*Conventional animal farming sector (incl. feed and breeding industry and processing)*	*Extensive, organic and other alternative farmers, animal welfare groups, environmental and climate protection groups*	*Animal protection/rights groups, climate and environmental protection groups, alternative farmers; plant based food processors*
Envisioned time frame	*Timely realisation of changes, then no further changes*	*Timely realisation of transformation, phased reduction visions*	*Long-term transition with a strategic transition phase*
Main motives for change	*Maintain economical structures by guaranteeing economic security and gains for the conventional animal farm sector in the future; skepticism about high ethical expectations towards animal welfare; maintain social acceptance of current conventional, intensive production systems*	*New perspectives for animal farming by embracing extensive forms of animal farming with fewer animals and in more circular systems; building respective value chains (local and fair); public appreciation of public goods linked to alternative animal farming compared to conventional farming*	*Ethical and climate innovations by striving for alternatives to animal farming and acting as ethically as possible; respecting planetary boundaries for planetary and human health; public appreciation of public goods linked to plant-based products*
Farming approach ('how?')	*Adjustments regarding animal welfare (technical and managerial) for more animal welfare and climate protection*	*Holistic change of animal farming towards more animal, ecological, climate-friendly, fair and local systems*	*Transition towards replacement of animal farming. High animal and climate protection standards during the transition phase*
Envisioned size and animal numbers ('how much?')	*Depending on species: maintaining and/or increasing size of the sector and number of animals*	*Significant reduction of approx. 50% by 2040 (varies by species) and clear linkage between number of animals/hectare. No or only minor imports of feed and exports of animals*	*Most or all animal food products that are not necessary to ensure a healthy diet are replaced by alternatives*
Envisioned consumption patterns	*Maintain high consumption and export-oriented meat industry*	*Reduction of the consumption of animal-based foods (flexitarian/vegetarian diets)*	*Mostly plant-based or alternative protein foods*
Associated political measures	*Mostly world market-oriented with competitive consumer prices; financial support for both lower and higher production standards*	*Stricter legal minimum standards and market protection from global competition, higher product prices, fewer exports and public financial support only for high standards*	*Competitive market environment for plant-based and alternative protein products and subsidies for protein plants*

Source: own source

Vision 3 (V3) 'Alternatives to Animal Farming'

In the third category of visions for the future of animal farming, traditional animal farming is largely replaced – with perhaps minor exceptions – by alternative methods of producing proteins and food, primarily plant-based. Some proponents of V3 also consider a large role for cultured meat and cellular agriculture, although this aspect is controversial among V3 supporters.

The overall refusal of animal farming in their future vision does not imply, however, that these groups are indifferent to the welfare of animals. On the contrary, they advocate for improving the standards of animal farming as much as possible, focusing on both the well-being of the animals and climate protection. There is a strong conviction among the proponents of V3 that transitioning to a plant-based agri-food system would be the most just option, not only globally and for the welfare of animals but also for future generations.

The ultimate goal of replacement of animal farming in V3 is explicitly utopian, as hardly any proponent believes that it may realistically be implemented in the near future. Consequently, all proponents foresee a reduction phase for animal numbers in the upcoming decades, with a minimum reduction of 50% for all species by 2030, while reduction targets may go up to 90% depending on the species. V3 would require the most significant change in consumption patterns, especially in terms of quantity. Diets should be oriented at the so-called planetary health diet (Willet et al., 2019). Proponents have different practical strategies on how exactly consumption will be effectively influenced or guided. Some argue that if the Animal Protection Act in Germany were taken seriously, with ethical values used as a basis for its interpretation, the ban of all or parts of current animal farming practices would be the immediate logical consequence.

V3 draws much of its normative character from animal ethics, with an emphasis on either animal rights in the deontological sense or a utilitarian weighing of interests where vital animal interests outweigh non-vital interests of humans. Our findings confirm results of previous studies that highlight animal protection as the primary motivation for replacing animal products with alternatives (V3) (Hopwood et al., 2020). This is why animal protection groups remain the main advocates for V3. However, the vision has also gained traction among environmental groups and businesses that supply alternatives to animal products. Some supporters of V3, such as NGOs promoting plant-based diets, strategically avoid making explicit animal ethical claims and instead focus on communicating the benefits for climate and health. Since this vision represents an ideal rather than a mirror of current behavior, even groups that currently opt for flexitarian or meat-based diets may still support the utopian goal of substituting animal farming with alternatives. While the motives are primarily ethical and environmental, large plant-based or cultured meat processors and retailers have growing economic interests in V3. That agriculture itself can benefit economically from the processing of plant-based proteins is mentioned by many proponents of V3. However, since few proponents of V3 are farmers themselves, such claims of profitability seem rather strategic, they are not the main motives for V3. A major problem for V3 proponents is that it is still unclear whether and how alternatives to animal products can be produced at the farm level and hence replace livestock as sources of agricultural income.

5 Reflection

The three visions express disparate views regarding the transformation of animal farming in Germany, reflecting economic, ethical, social and environmental motives of the stakeholders.

The only consensus between these different perspectives is the recognition that the size of the future animal farming sector is of crucial importance and should urgently be addressed on the

political agenda. This supports the methodological extension of stakeholder-dialogues on animal farming, providing more room for the question of 'how much', that was chosen in the future workshop.

Compromises between conflicting parties on the path towards different future goals are indeed possible, but the perceived necessity to seek compromises is different for each group. It depends, inter alia, on the public acceptance of the visions that stakeholder groups advocate for. The future degree of acceptance of the visions, in turn, depends on whether and how their central problems can be solved, and on the scientific evaluation of their impacts.

V1 faces criticism primarily due to its low level of sustainability outcomes and the persistence of animal ethical problems. V2 is criticized for its land-intensive animal farming practices, especially regarding grazing and larger stables. There are doubts about whether there is enough land available to maintain even half of the current farm animals in quasi-natural, animal welfare conditions as envisioned by V2 proponents. Additionally, there are concerns about whether consumers are willing to pay premium prices. Furthermore, a reduction in animal numbers in Germany could potentially be outweighed by imports from other countries, exporting sustainability problems rather than solving them.

V3 is perceived as overly demanding by the majority of the stakeholders participating in the future workshop. Some critics emphasize that parts of the agricultural land can only be used for feed crops, and without animals, this land would be lost for food production. While these are all practical implementation matters, the level of acceptance of each vision is also a matter of communication. The values associated with each vision are often linked to emotions that either resonate with the recipients of the message or do not.

Motives are closely related to values, and they cannot be properly understood if emotions are ignored (Deonna and Teroni, 2021). The stakeholder workshops revealed that the conflict is not solely about material interests but also about emotions, such as fear of losing reputation, compassion for animals or a sense of tradition. Therefore, solutions should, to some extent, address emotional distress. Compromises could be facilitated when stakeholder groups – as individuals – understand and express the emotional basis for their positions, including fears of loss, a sense of justice related to treatment of animals, or attitudes towards innovation. While dealing with emotions is common in mediation practices, it is still a novelty in political stakeholder dialogues where talk of emotions is often seen as unprofessional. The workshops revealed that even the realm of the 'factual' is contested in the field of animal farming. Different understandings of factual bases, such as climate consequences or animal suffering under different conditions, have profound implications for the evaluation of animal farming. If there is no agreement on the scientific basis, any effort to harmonize interests becomes futile. Currently, there are controversies surrounding important factual and conceptual assumptions, such as the definition of animal welfare or the external costs associated with animal farming. These controversies must be resolved and accepted by all groups before negotiating interests. Depending on which scientific evaluation prevails, in the sense that it is acknowledged by all groups, discussions on the future of animal farming are likely to change direction.

Furthermore, the exact wording is crucial when investigating the public acceptance of different visions, e.g. via representative surveys. Demanding *a reduction* or *depletion* of something, e.g. *reduced* consumption, tends to be less popular overall compared to an *increase*, e.g. *more* animal welfare, a *growing* sector or *diversified* consumption. It is therefore important to develop a comparable communication of positive aims for each vision. For instance, a reduction in the animal farming sector could be compensated for by growth in the plant-based food sector, and this aspect should be emphasized in communication efforts. If and to what extent *less* or *more* animal farming translates to *more* or *less* animal welfare or climate protection is – independent of the controversial presuppositions of such claims - an issue of communication.

While there is little room for overall consensus on the future of animal farming, there is indeed room for compromises and new alliances. The first future vision, V1 ('Higher Standards'), aims primarily at securing interests in solid economic performance and a competitiveness of the farming sector. It does not seem to value animal farming for any other than the economic reason. If a favorable economic outcome for farms and companies, for instance with plant-based or cultured 'replacement'-products, can be secured, the chances for compromises between the actors of V1 with proponents of V2, and even V3, are high.

The second vision, V2 ('System Change and Reduction'), represents a common ground for groups with a commitment to systematic change of animal farming towards more ethical and environmental. Threatened by a loss of societal reputation and under pressure to build alliances against those who wish to replace animal farming by alternatives, proponents of V1 might eventually accept this vision for strategic reasons. At the same time, a substantial part of the supporters of V3 seem to support V2 insofar that it leads to reduced numbers of animals. They do not only opt for higher standards for ethical reasons but also have an interest in higher prices of animal products, since this makes plant-based alternatives more competitive. Those V3 supporters seem to concede the fact that V2 entails animal farming as an integral part of agriculture and strategically opt for measures in line with V2. This supports the hypothesis that V2 may currently act as a compromise path that both proponents of V1 and of V3 may follow together for some time before they split in the more distant future.

The third vision, V3 ('Alternatives to Animal Farming'), is attractive for all those who refrain from a commitment to animal farming for ethical and ecological reasons. But it also is attractive to those pragmatist economic actors who treat alternative proteins as economic opportunities in a changing food consumption landscape (Morach et al., 2022). Those actors do not necessarily favor all the values of the animal and climate advocacy proponents of V3. To what extent V3 proponents can built alliances with V1 and V2 proponents depends on the attractiveness and availability of plant-based alternatives and on the extent to which they can compensate income losses in the livestock farming sector with gains from alternatives. There is reason to believe that only with some economic prospects in mind, the more powerful V1 and V2 proponents will pave the way for political support for this vision, e.g. public research in healthy and tasty alternatives to animal products, or enabling a level playing field for the alternative protein sector compared to its animal competitors.

It is less likely that supporters of V2 will support V3 in the future. For supporters of V2, animal farming is intrinsically woven with sustainability and agricultural traditions and values in general. V2 supporters place more emphasis on 'naturalness' as bedrock of the traditional image of a small- or middle-scale, non-industrial farm. They might eventually have greater difficulties with the aims of V3 compared to the current supporters of V1, especially when V3 includes promoting cultured, engineered forms of meat production and leaving little or no role for animal farming.

6 Conclusion and Way Forward

The three visions for the future of animal farming in Germany, as outlined in this paper, were derived from a three-year 'future workshop'. Our findings add to the work of other stakeholder dialogues that have identified or are aiming at identifying one single pathway. The three visions we obtained cannot be merged into one consensual version. This was partly a result of our methodological approach, not restricting the dialogue to interest groups along the value chain of animal products, but also engaging actors representing growing interests in plant-based and other alternatives to animal products.

While positions grouped in this analysis under vision V1 are oriented towards maintaining the economic status quo of animal farming and its supply chain, they mostly exhibit a persistent character and show the least momentum for change. Visions V2 and V3 present a wide range

of novel motives and concepts, not only in production and value chains but also in consumption patterns.

Our findings shed light on the crucial role of scientific facts and research in the interest and value-driven dissent regarding the future of animal farming. For example, while some extensive animal farming systems may have higher land-use footprints with fewer opportunities for carbon storage (Searchinger et al., 2018), different conclusions can be drawn from this fact, favouring either:

- V1 – 'Intensive animal farming better than extensive animal farming',
- V2 – 'Extensive animal farming with fewer animals better than intensive farming', or
- V3 – 'No animal farming better than intensive and extensive farming'.

Moreover, there is a growing understanding that we are already in a competition for market shares between animal-based food and alternatives. Courting consumers will therefore increasingly take precedence, regardless of the question of funding and political support. This is due to the fact that the consumption of meat has long been a symbol of wealth and status.

To reach compromises among some groups on certain issues, the currently often separated positions regarding the 'How and how much?' of animal farming need to be integrated into one debate about the future of animal farming in Germany. Both quality and quantity cannot be viewed independently from one another. Future policies must align the goals and measures for animal farming with those for the development of food consumption.

At this stage, it is challenging to predict future acceptance of the pathways, given the dynamics of social crises, climate change, scientific evidence and ethical attention. The current uncertainty about these issues makes agricultural stakeholders very hesitant in their decisions and investments.

Our findings show that there is currently no consensus about a single vision for the future way and size of animal farming. Stakeholder dialogues should thus provide room for different pathways while focusing on strategic alliances, – between actors tolerating different values and aims – in the near future. Based on our findings we presume that there are short-term solutions that can be accepted by the supporters of all three visions presented. However, this requires reframing the debate from 'securing the future of animal farming' to 'guiding the future of animal farming', with the possibility that this means the – at least partly – replacement of animal farming by suitable alternatives.

Acknowledgements

This article is supported by funds from the Federal Ministry food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via Federal Office for Agriculture and food (BLE) under the innovation support program for the project SocialLab II.

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Contact Author

Dr. Marie von Meyer-Höfer
Thünen-Institut für Marktanalyse
Bundesallee 63, 38116 Braunschweig, Germany
e-mail: marie.vonmeyer-hoefer@thuenen.de