

1 **HOW – AND HOW MUCH? AN ANALYSIS OF OPTIONS FOR A TRANSFORMATION** 2 **OF GERMAN ANIMAL FARMING TOWARDS SUSTAINABILITY**

3 **Summary**

4 Political and scientific actors express the need to transform current agrifood systems into more socially,
5 environmentally and ethically just ones. Animal farming plays a central role in the transformation be-
6 cause the sector is, like no other, responsible for resource inefficiencies, climate issues and ethical dis-
7 putes. This analysis contributes to the so far scarcely investigated field of the acceptance of different
8 future pathways for animal farming by important stakeholder groups.

9 Embedded into a transdisciplinary approach of a ‘Future Workshop’ (‘Zukunftswerkstatt’), stakeholders
10 of the most relevant interest groups (agriculture and food processing sector, animal/environmental/cli-
11 mate protection) were asked to express and discuss their visions for the future development of animal
12 farming in Germany. These perspectives were summarised into three major future scenarios, which we
13 labelled ‘Higher Standards’ (S1), ‘System Change and Reduction (S2) and ‘Alternatives to Animal
14 Farming’ (S3). They all differ in terms of the values motivating their supporters, the farming methods
15 as well as the scale, e.g. animal numbers.

16 S1 (Higher Standards) seeks adjustments towards improved animal welfare and climate friendliness.
17 Farmers should be able to modify their management and stables at relatively low costs. Changes in the
18 system ultimately depend on consumer behaviour but are supported by public subsidies. The aim is to
19 keep the scale of the sector similar to the current status. S2 (System change & reduction) seeks a com-
20 prehensive change of the whole agrifood sector, making change ideally dependent on ethical or scientific
21 norms of animal and environmental protection including changes in the consumption patterns of animal
22 based foods, and at the same time guaranteeing a decent income for animal farmers. The raising of
23 standards is accompanied by a significant reduction of animal numbers in Germany (40–60%). S3 (Al-
24 ternatives to Animal Farming) seeks to replace animal farming (partly or totally) by plant-based and
25 other protein alternatives, while in the transition phase standards for animal farming should increase
26 with a full commitment to animal and environmental protection. This means animal farming is – over a
27 long-term transition phase – transformed from a norm to an exception.

28 Our findings suggest that S2 might represent the most acceptable perspective in the wider array of in-
29 terest groups, as S1 and S3 proponents might regard S2 to pursue at least some of their essential goals
30 in the nearer future. However, many S1 proponents would accept S3 to the degree that alternative in-
31 comes under S3 emerge for the agrifood sector, which is likely to happen. The more economically at-
32 tractive S3 becomes, the more central will be the question of the necessity of animal farming, which S2
33 proponents typically still argue for.

34

35 **Keywords:**

36 sustainable transformation, animal farming, social acceptance, stakeholder dialogue, future workshop

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38

39 **1 Introduction: dialogue formats on the future of animal farming in Germany**

40 The public debate about animal farming has been ongoing for decades but has become increasingly
41 heated in Germany over the last years. During the rise of intensive animal farming between the 1960s
42 and 1980s, the main question in agricultural politics was, how it could be organised more cost efficiently,
43 centred more on the design of stables and farm management. The focus was on global competitiveness
44 of German livestock farming, with minimum animal health and protection standards as a side constraint.
45 Many of the political measures designed at that time are still in place and set incentives for farmers to
46 keep up with current forms of animal farming. In the last decade, however, sustainability has become
47 more urgent, and agricultural politics criticised for neglecting societal goals. Ethical requirements in
48 human-animal relationships have put public pressure on farming practices (EUROPEAN COMMISSION,
49 2007, 2016; HÖLKER ET AL., 2019; DEUTSCHER ETHIKRAT, 2020), even more so since affordable plant-
50 protein alternatives have emerged. Moreover, environment, climate and global development increas-
51 ingly determine society's expectations towards animal farming (EUROPEAN COMMISSION, 2007, 2016;
52 JANSSEN et al., 2016; BUSCH and SPILLER, 2018). Prior to the environmental pressure, the issue of
53 replacing animal farming by alternatives was mostly discussed in animal rights debates (LADWIG, 2021).
54 However, due to the environmental and climate problems caused by intensive animal farming, public
55 and scientific awareness has increased on the urgency of the matter whether and, if so, to what quanti-
56 tative extent, animals should be kept for food purposes (STEINFELD et al., 2006; WEIS, 2013;
57 KEMMERER, 2014; TWINE, 2021). This is why the political design of a sustainable future of animal
58 farming will have to consider a combination of different factors, including the question to what extent
59 plant-based or other alternatives to animal products might also be suitable to reach societal goals. This
60 also requires a reevaluation of interest groups and industries which are considered to be 'stakeholders' of
61 the dialogue about the future of animal farming (VON GALL & VON MEYER-HÖFER, 2021).

62 Even though several changes of legal minimum requirements in animal farming have taken place, a
63 social consensus on animal farming still seems elusive, and conflicts are increasing rather than decreas-
64 ing (WBA, 2015; BUSCH and SPILLER, 2018; LUY, 2018; ZKL, 2021).

65 In order to settle the conflicts and reach agreements, policymakers have made numerous efforts to ex-
66 plore the public view on animal farming and seek areas of consensus, e.g. through representative sur-
67 veys, but also through establishing expert and stakeholder committees (see figure 1: external findings).
68 The 'Zukunftskommission Landwirtschaft' (ZKL) (Future Commission of Agriculture), initiated by
69 Chancellor Angela Merkel in 2020 and the 'Kompetenznetzwerk Nutztierhaltung' (KNW) (Competency
70 Network of Animal Farming), appointed by the Federal Ministry of Agriculture in 2019, have both been

71 regulated and run by the Federal Ministry of Agriculture. While the ZKL addresses the whole agricul-
72 tural sector including animal farming, the KNW explicitly focuses on animal farming but starting with
73 an emphasis on pig farming. In its final report, the ZKL builds on and mostly supports the recommen-
74 dations of KNW regarding animal farming (ZKL, 2021). Additionally, the DAFA (German Agricultural
75 Research Alliance) developed a future scenario of what agriculture should look like by 2049. The gov-
76 ernment-funded project Future Agri-Systems develops both innovations and alternatives for conven-
77 tional animal agriculture. However, none of the approaches has investigated the public and/or stake-
78 holder acceptance of their visions.

79 As part of a government-funded research project on the acceptance of animal farming, called SocialLab
80 Nutztierhaltung (SocialLab Animal Farming), the transdisciplinary ‘Future Workshop on Animal Farm-
81 ing’ (‘Zukunftswerkstatt Landwirtschaftlich Tierhaltung’) was initiated in 2019. It collects and struc-
82 tures stakeholder views on the future of animal farming, seeks to find areas of consensus and explores
83 ways to implement pathways. Representatives of stakeholder groups of the animal farming sector (ag-
84 riculture and food processing, animal/environmental/climate protection) were asked to express and dis-
85 cuss their visions for the future development of animal farming in Germany.

86

87 **2 Aim and approach**

88 This paper presents central findings of the Future Workshop on Animal Farming, specifying and clus-
89 tering the positions of stakeholders into three main visions for the future of animal farming.

90 The findings were generated in several workshops and face-to-face online meetings with representatives
91 of interest groups and were completed by a review of position papers and other publications of these
92 groups.

93 Special emphasis was given to the participant selection process. More than 60 persons representing
94 important interest groups in the debate about the future of animal farming were invited to nominate
95 NGOs and experts that should participate in the following project phases, representing involved interests
96 including animal farming (conventional, extensive, organic), animal welfare, meat and dairy, as well as
97 plant-based processors and distributors, environmental and climate protection. The nominees were con-
98 tacted, and 20 agreed to participate in the Future Workshop on Animal Farming by presenting and dis-
99 cussing their future scenarios for animal farming in Germany.

100 Agriculture was represented by various interest groups, which differed mostly in their appeal to social
101 and ecological values. The perspective on animals was likewise represented by different NGOs. Addi-
102 tionally, views from industry representatives of the value chains linked to animal- and plant-based prod-
103 ucts were considered.

104 Future Workshops are usually run in different phases (JUNGK and MÜLLERT, 1997). Our internal find-
105 ings (see figure 1) started with the first phase of the Future Workshop – the ‘criticism phase’ – aimed to
106 determine the topics that should be discussed with the participants. Both the questions of ‘how?’ and

107 'how much?' with regard to future animal farming in Germany were deemed necessary by stakeholders
108 during the first phase of the Future Workshop. The next step of the project – the so-called 'utopian
109 phase' – presented in this paper collected and clustered positions on the 'how' and 'how much' into
110 future visions for animal farming in Germany. These visions were utopian in the sense that they were
111 not meant to be immediately realisable or in line with mainstream policies. The challenge of implemen-
112 tation will be tackled in the following project step and is not presented in this paper (figure 1).

113 The future scenarios were analysed by using the following criteria: timeframe, motives of change, ani-
114 mal farming approach, overall size of animal farming, associated diets and suggested instruments to
115 implement the scenario. In order to categorise the different perspectives and positions, content thresh-
116 olds were identified that clearly distinguished one group of visions from another.

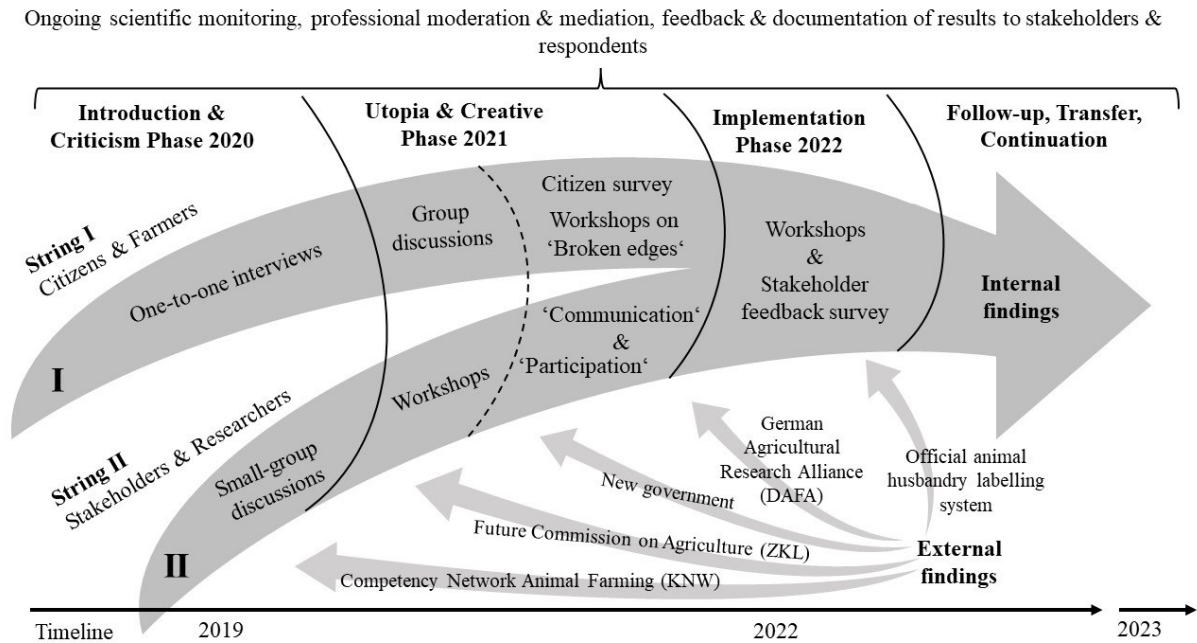
117 The results were compared and adjusted with position papers and contributions to the debate during
118 summer and autumn 2021. Following this approach, three main clusters of future scenarios were iden-
119 tified and labelled. The scenarios are similar within their group and heterogenous compared to each
120 other. The process of the whole Future Workshop and the embedded utopian phase of discussions are
121 presented in the following picture. To analyse the acceptance of the scenarios, one-on-one interviews
122 and a workshop with participants during winter 2021/22 were held to collect comments and feedback
123 on the scenarios presented above.

124

125

126 **Figure 1: Methodological and chronological procedure of the Future Workshop on Animal**
127 **Farming (FWAF)**

128 Source: Own representation 2022



129

130

131 3 Results

132 Based on a set of criteria shown in table 1, three core future scenarios have been clustered. Table 1
133 provides an overview over the three identified clusters of future scenarios on what animal farming
134 should ideally look like, as well as its size. Each scenario is described in more detail below.

135 The key distinctive features that led to the design of the three main scenarios were: a) the way animal
136 and environmental protection should be maintained or increased; b) the way the conventional animal
137 farming practices – aimed at high quantities at low costs – are kept competitive at world commodity
138 markets; c) the way the market shares of plant-based or cultured protein alternatives are increased; d)
139 the way animal farming is seen as an integral and valuable part of agriculture even in the distant future;
140 e) the way the number of farmed animals in Germany is reduced. The results indicate that a new, major
141 frontier between stakeholder groups in animal farming arises: Whereas formerly, the main frontier was
142 between conventional and animal-welfare friendly farming practices, today we envision a new alliance
143 between proponents of conventional and alternative farming practices against positions that entirely
144 question the sustainability of animal farming, compared with its alternatives.

145

146 **Scenario 1 (S1) 'Higher Standards':**

147 S1 is the least ‘utopian’ of the three presented scenarios, since it represents the interest in maintaining
148 the status quo of profitability and world market competitiveness of conventional animal farming, and
149 subordinates the necessary changes in animal welfare and climate or environmental standards to this
150 goal. It seeks long-term economic planning security for conventional farmers and downstream industry
151 by implementing technical changes and adjusting stable management to meet higher animal welfare and
152 climate protection demands of the society. The number of animals and their production shall be kept at
153 the current high levels. A key role for planning security is social acceptance of the conventional farming
154 sector, which in this scenario is to be improved mainly by a better communication of its economic and
155 efficiency benefits. The changes towards S1 shall be paid by higher consumer prices and/or by public
156 financial support.

157 The German conventional meat sector, especially the pig meat industry, is an important player on the
158 world market, and in S1 exports would remain high or increase even further. An increase in animal
159 numbers is not considered realistic under the current conditions, or only for some production systems
160 such as poultry. However, a reduction of the overall quantity of farm animals is strictly rejected. Con-
161 sequently, S1 does not necessarily rely on changing consumption patterns, at least in terms of quantity.
162 But S1 requires that consumers are willing to pay the price for the higher standards.

163 Stereotypical proponents of scenario 1 are conventional, intensive animal farming groups. The motiva-
164 tion for S1 lies mainly in the improvement and/or maintenance of the economic situation of intensive,
165 conventional animal farmers and the respective industry. Maximisation of profit and efficiency is a cen-
166 tral aim of S1. The use of animals is not ethically questioned. There is a pronounced mistrust in society’s
167 demand for sustainability, which is perceived as a temporary trend and as misguided by too high expect-
168 ations of consumers. From the perspective of S1 supporters, more understanding and appreciation for
169 the benefits of resource-efficient mass production of animals at low consumer prices is called upon to
170 meet future challenges.

171

172 **Scenario 2 (S2) ‘System Change and Reduction’:**

173 S2 shares with S1 a commitment to animal farming as an integral part of agrifood culture and as such
174 shares a value or at least a valuable income to protect. Next to the organic sector and alternative farming
175 groups, NGOs like animal welfare, environmental and consumer protection groups demand a wholistic
176 system change of the agrifood sector. They call for a new, more sustainable system that guarantees both
177 animal ethics and environmental principles and goals. But ethical and environmental motives go hand
178 in hand with the economics of the sector. The new system is to give farmers a better income than today,
179 and an innovative outlook shall serve as a guarantee for also meeting the expectations of the next gen-
180 eration. Supporters see that there are conflicts between animal and economic needs, especially when it
181 comes to animal needs, but they strive for a fair balance. In this scenario the quality competition on
182 globalised markets presents an alternative to the currently prevailing cost competition.

183 S2 explicitly envisages a reduction in the consumption of animal products by the way of flexitarian or
184 vegetarian diets. Exports and the use of imported protein feeds from overseas should be reduced drast-
185 ically or abandoned to enable more regional cycles of production. Accordingly, there is a range of reduc-
186 tion targets within the scenario. Some call for a reduction of all farm animals by at least half by 2050,
187 while others want to see even greater reductions achieved earlier. It is not clear whether the reduction
188 of animal farming affects all animal species or only the less accepted types of farming, such as pig
189 fattening or poultry farming. However, grassland-based cattle farming is mostly still considered as ac-
190 ceptable and meaningful. Stereotypical proponents of S2 are organic farmers and environmental groups.
191 Many animal welfare organisations do support S3 as a utopian aim, but they support S2 in so far it is
192 regarded as a realistic and strategic pathway for better treatment of animals that finds necessary political
193 majorities. It is reported by animal welfare proponents that any stronger ties to S3 or the vegan move-
194 ment can make contributions to the politics of the “how” of animal farming, including access to agricul-
195 tural political institutions, more difficult.

196 The costs for the transformation should be covered by higher prices of the products and by public sup-
197 port. The entire society as well as the market and politics are involved in the change, for which far-
198 reaching structural adjustments need to be implemented. These affect all actors in the value chain. A
199 central element for a system change certainly are changed consumption patterns of animal products,
200 both in terms of quantity and appreciation of a higher value of the products.

201

Table 1: Overview of core future scenarios for animal farming

Scenario	1	2	3
Name	‘Higher Standards’ (<i>‘Höhere Standards’</i>)	‘System Change & Reduction’ (<i>‘Systemwechsel in der Tierhaltung’</i>)	‘Alternatives to Animal Farming’ (<i>‘Alternativen zur Tierhaltung’</i>)
Key supporters	<i>Conventional animal farming sector (incl. feed and breeding industry and processing)</i>	<i>Extensive, organic and other alternative farmers, animal welfare groups, environmental and climate protection groups</i>	<i>Animal protection/rights groups, climate and environmental protection groups, alternative farmers; plant-based food processors</i>
Envisioned time frame	<i>Timely realisation of changes, then no further changes</i>	<i>Timely realisation of transformation, phased reduction scenarios</i>	<i>Long-term transition with a strategic transition phase</i>
Main motives for change	<i>Maintain economical structures by guaranteeing economic security and gains for the conventional animal farm sector in the future; scepticism about high ethical expectations towards animal welfare; Maintain social acceptance of current conventional, intensive production systems</i>	<i>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</i>	<i>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 – image of plant-based or alternative protein foods</i>
Farming approach (<i>‘how?’</i>)	<i>Adjustments regarding animal welfare (technical and managerial) for more animal welfare and climate protection</i>	<i>Holistic change of animal farming towards more animal, ecological, climate-friendly, fair and local systems</i>	<i>Transition towards replacement of animal farming. High animal and climate protection standards during the transition phase</i>
Envisioned size and animal numbers (<i>‘how much?’</i>)	<i>Depending on species: maintaining and/or increasing size of the sector and number of animals</i>	<i>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</i>	<i>Most or all animal food products that are not necessary to ensure a healthy diet are replaced by alternatives</i>
Envisioned consumption patterns	<i>Maintain high consumption and export-orientated meat industry</i>	<i>Reduction of the consumption of animal-based foods (flexitarian/vegetarian diets)</i>	<i>Mostly plant-based or alternative protein foods</i>
Associated political measures	<i>Mostly world market-oriented with competitive consumer prices; financial support for both lower and higher production standards</i>	<i>Stricter legal minimum standards and market protection from global competition, higher product prices, fewer exports and public financial support only for high standards</i>	<i>Competitive market environment for plant-based and alternative protein products und subsidies for protein plants</i>

204 **Scenario 3 ‘Alternatives to Animal Farming’:**

205 In the third category of visions for the future of animal farming, the latter is replaced – with perhaps
206 minor exceptions – by alternative ways of producing proteins and food, mainly plant-based, but to some
207 extent also cultured meat, although this issue is more controversial even among S3 proponents.

208 This does not mean, however, that these groups are indifferent towards the way animals are being kept.
209 On the contrary: They opt to improve the standards of animal farming as much as possible, both in terms
210 of the condition of the animals and climate protection. There is a strong conviction among the propo-
211 nents of S3 that the transition to a plant-based agrifood system would be the most just option, not only
212 globally and towards animals but also towards future generations.

213 The ultimate goal of replacement in S3 is explicitly utopian in the sense that hardly any proponent be-
214 lieves that it may realistically be implemented in the near future. All proponents therefore foresee a
215 reduction phase for animal numbers in the upcoming decades, with a minimum of 50% for all species
216 by 2030, while the reduction targets go up to 90% depending on the species. S3 would require the great-
217 est change in consumption patterns, especially in terms of quantity. This required reduction shall at least
218 be oriented at the so-called planetary health diet (WILLET et al., 2019). Like for the other scenarios, the
219 perspectives presented here do not include practical strategies of how exactly consumption will effec-
220 tively be influenced or guided. Some proponents of S3, however, argue that if the Animal Protection
221 Act in Germany was taken seriously, e.g. ethical values used as a basis for its interpretation, the ban of
222 all or parts of current animal farming practices would be the immediate logical consequence.

223 S3 borrows much of its normative character from animal ethics, with emphasis on either animal rights
224 in the deontological sense or a utilitarian weighing of interests where vital animal interests outweigh
225 non-vital interests of humans. This is why vegan or vegetarian groups and enterprises are the stereotyp-
226 ical proponents of S3. But in the light of the climate crisis, also environmental groups support S3. And
227 since this scenario represents an ideal rather than a mirror of current behaviour, also groups that currently
228 opt for flexitarian or meat-based diets may still support the goal of substituting animal farming with
229 alternatives. While the motives are said to be mainly ethical and environmental, large plant-based or
230 cultured meat processors and retailers have growing economic interests in S3. The fact that agriculture
231 itself can benefit economically from the processing of plant-based proteins is mentioned by proponents
232 of S3 but not as a main motive.

233

234 **4 Synthesis of the scenarios**

235 Embedded into a transdisciplinary approach of a ‘Future Workshop’ (‘Zukunftswerkstatt’), representa-
236 tives of stakeholder groups of the animal farming sector (agriculture and food processing sector, ani-
237 mal/environmental/climate protection) were asked to express and discuss their visions for the ‘how’ and
238 the ‘how much’ of animal farming in Germany. Three future scenarios were identified that summarise
239 the variety of positions of stakeholder groups as clusters: ‘Higher Standards’ (S1), ‘System Change and

240 Reduction' (S2) and 'Alternatives to Animal Farming' (S3). They all differ in terms of the farming
241 methods as well as the scale, e.g. animal numbers.

242 The three scenarios are linked to different visions for transformation: Ethical and environmental motives
243 dominate S2 und S3, while public acceptance and economical motivations seem to dominate S1. S1 and
244 S2 are allies in their cultural and economic commitment to maintain animal agriculture even in the
245 distant future. But since many S3 proponents commit to transition plans with a drastically reduced or
246 even abandoned animal farming sector, there is room for bringing together S2 and S3 proponents. This
247 basic constellation of interests makes S2 a potential candidate for compromise for future animal farming
248 politics.

249 While S1 has a persistent character and shows the least momentum for change, S2 and S3 present a wide
250 range of concepts that would trigger holistic changes and transformation processes not only in the pro-
251 duction and along the value chains but also in the consumption.

252 Stakeholders describe the envisioned states in terms of material outcomes for humans, animals and the
253 planet rather than subjective states, such as fears or compassion. An exception is the concept of appre-
254 ciation that especially agricultural groups demand for their work.

255 In many ways, the different ideal scenarios for the future of animal farming stem from different conclu-
256 sions drawn from facts, such as the impacts on the animals or on climate change. Furthermore, the
257 groups seem to have different views on what exactly such relevant facts are.

258 As the ideal future scenarios have been defined, it is now important to move on to their realisation. For
259 this reason, it is important to know more about their immanent problems. The biggest problem associated
260 with S1 is the low intrinsic motivation to substantially improve the sustainability and solve the existing
261 ethical problems. Solutions shall mainly improve public acceptance. S2 is criticised for its resource-in-
262 tense animal farming practices, especially grazing and larger stables. It is doubtful whether there is
263 enough land available to keep even a halved number of current farm animals, as envisioned by S2 pro-
264 ponents, in quasi-natural, animal welfare conditions, especially at a global scale. The question is also
265 whether consumers are willing to pay premium prices. A reduction of animal numbers in Germany could
266 be outweighed by imports from other countries; however, this would only export the problems of lacking
267 sustainability, not solve them. S3 is perceived as too demanding. Moreover, some critics stress that parts
268 of the agricultural land can only be used for feed crops, and without animals this land would be lost for
269 food production.

270 All in all, the transformation of the German animal farming sector has different motives: It is about
271 increasing the acceptability for the sector, guaranteeing sustainable economic outcomes including ade-
272 quate agricultural incomes, seeking ethical solutions for animals and supporting sustainability and cli-
273 mate goals. Positions differ as to which tasks should be in the focus of transformation. However, there
274 is one clear consensus: The size of the future animal farming sector is seen as highly relevant and,
275 therefore, should urgently be put on the political agenda.

277 **5 Discussion of future areas of consensus and alliances**

278 **How and where can consensus on the future of animal farming be reached?**

279 First of all, within what we identified in the three core future scenarios, there is room for consensus for
280 at least some of the involved stakeholder groups. The first future scenario S1 ('Higher Standards') brings
281 together interests in a solid economic performance and intensifies outputs of the conventional animal
282 farming sector while maintaining high animal quantities in consumption and production in Germany.
283 But the resistance against this scenario by animal and environmental protection as well as some farmer
284 groups is already big and likely to increase with more ambitious climate and animal protection goals to
285 come. Since the motives to support S1 are mainly economic, any consensus for this scenario is depend-
286 ent on the economic performance, not only of animal farming, but also of its alternatives for farmers
287 and processors. This makes consensus for this scenario more fragile and less predictable than for S 2
288 and S3.

289 The second scenario S2 ('System Change and Reduction) represents a common ground for groups with
290 a commitment to systematic change of animal farming towards more ethical and environmental, local
291 and smaller scale forms, and reduced animal numbers to around 50% by 2040 or even earlier. Threatened
292 by a loss of societal reputation and under pressure to build alliances against those who wish to replace
293 animal farming by alternatives, conventional farmer groups might eventually opt for this scenario. At
294 the same time, a substantial part of the supporters of S3 seem to support S2 insofar that it leads to
295 reduced numbers of animals. They do not only opt for higher standards for ethical reasons, but also have
296 an interest in higher prices of animal products, since this in turn makes plant-based alternatives more
297 competitive. Those S3 supporters seem to concede the fact that S2 entails animal farming as an integral
298 part of agriculture, and strategically opt for measures in line with S2. This supports the hypothesis that
299 S2 may currently act as a consensus path that both proponents of S1 and of S3 may follow together for
300 some time before they split in the more distant future.

301 The third scenario S3 ('Alternatives to Animal Farming') is attractive for all those who refrain from a
302 commitment to animal farming for ethical and ecologic reasons. But it also is attractive to those prag-
303 matist economic actors who treat alternative proteins as economic opportunities in a changing food con-
304 sumption landscape (MORACH et al., 2022). Those actors do not necessarily favour all the values of the
305 animal and climate advocacy proponents of S3. The overall popularity of S3 will, inter alia, depend on
306 the attractiveness and availability of the food alternatives, and on the extent to which the agrifood sector
307 can compensate the losses of livestock farming with gains from alternatives. Supporters of S3 may treat
308 S2 as an interim and transition phase and support measures to reach it. Proponents of S1 may see S2 as
309 the alliance scenario, given its commitment to animal farming per se.

310 The identification of the three core future visions for animal farming does not mean that each organisa-
311 tion of even individual strictly opts for one of the three. There will be many who wait for better research

312 and findings to come, especially regarding the practicability and resource-efficiencies of each scenario.
313 And there is may be more room for consensus when stakeholders explicate their motives. Motives relate
314 to values, and they cannot be understood properly if emotions are ignored (DEONNA AND TERONI, 2021).
315 The stakeholder workshops showed that the conflict is not only about material interests but also about
316 emotions, e.g. the fear of losing reputation, the compassion for animals, or the sense of tradition. There-
317 fore, solutions should at least to some extent be treated as ways to develop answers to emotional distress.
318 In this regard, consensus could be facilitated when stakeholder groups – as individuals – understand and
319 express the emotional basis for their (cognitive) positions, e.g. the fear of losing what is important to
320 them, a sense of justice related to a certain treatment, or the attitude towards innovation. While dealing
321 with emotions is common in mediation practices, it would be a novum to political stakeholder dialogues
322 where talk of emotions is often seen as unprofessional.

323

324 **What are factors that my influence current alliances and positions regarding the future of animal**
325 **farming?**

326 Aims regarding the size of the animal sector in the agrifood system differ mostly in S1 and S3, they
327 stand in the sharpest contrast to each other. Proponents of both future scenarios will – under current
328 conditions – reach a consensus in the near future. However, as indicated above, a factor that could
329 change this is the economic performance of alternative proteins, when alternative incomes for conven-
330 tional farmers, agricultural and food processors develop in the area of cultured meat and plant-based
331 proteins. It is less likely that supporters of S2 will support S3 in the future, since for them, animal farm-
332 ing seems to be more intrinsically woven with agricultural traditions and values in general, e.g. feeding
333 cows with under-sown, non-food crops that provide the soil with nitrate, in organic agriculture. Gener-
334 ally, S2 supporters place more emphasis on ‘naturalness’ and traditionally combined animal and crop
335 production, as bedrock of the traditional image of a small- or middle-scale, non-industrial farm. S2 sup-
336 porters might eventually have greater difficulties with the aims of S3 compared to the current supporters
337 of S1, especially when S3 includes to promote cultured, engineered forms of meat production, and en-
338 gineered plant-based protein products.

339 The second factor for a possible change in positions is the scientific basis. The workshops revealed that
340 even the sphere of the ‘factual’ seems contested in the field of animal farming: Different understandings
341 of factual bases, e.g. on climate consequences or animal suffering under different conditions, have enor-
342 mous consequences on the evaluation of animal farming. If the scientific basis is not agreed-upon, any
343 effort of a harmonisation of interests is obsolete. Currently, there are controversies on important factual
344 and conceptual assumptions, e.g. about what animal welfare consists of, or what external costs are as-
345 sociated with animal farming. These need to be accepted by all groups prior to negotiating interests.
346 Depending on which factual or conceptual basis will prevail in the future, discussions on the future of
347 animal farming are going to change direction.

348

349 **6. Conclusion and way forward**

350 Embedded into a transdisciplinary approach of a ‘Future Workshop’ (‘Zukunftswerkstatt’), stakeholders
351 were asked to express and discuss their visions for the future development of animal farming in Ger-
352 many. These perspectives were summarised into three major future scenarios, which we labelled ‘Higher
353 Standards’ (S1), ‘System Change and Reduction (S2) and ‘Alternatives to Animal Farming’ (S3). They
354 all differ in terms of the values motivating their supporters, the farming methods as well as the scale,
355 e.g. animal numbers.

356 As our findings suggest that under current conditions, S2 might represent the most acceptable perspec-
357 tive in the wider array of interest groups. However, there is room for convergence of those economically-
358 pragmatist S1-supporters to eventually support S3, whenever alternative protein production provides
359 similar economic attraction in the food sector like animal farming does today. In any way, the assump-
360 tions and impact assessments that lead actors to support the different scenarios need to be clarified fur-
361 ther in the future debate.

362 To reach consensus of at least some groups on some issues, the currently all too often separated positions
363 regarding the ‘how’ and the ‘how much’ of animal farming need to be integrated into one debate. Both
364 quality and quantity cannot be viewed independently from one another. The way both are intertwined
365 has, however, hardly been investigated yet. For example, the subsidisation of animal-welfare measures
366 at the farm level, proposed by the KNW, can indeed be seen as means or incentive to stabilize the animal
367 farming sector in its current size, e.g. through better public acceptance. There is still controversy as to
368 what extent such subsidies influence the size of the animal farming sector in Germany (DEBLITZ et al.,
369 2021; VON GALL und PETRICK, 2022). If this interconnection is not transparently addressed and dis-
370 cussed, achieving consensus on pathways for animal farming will be difficult. Future politics and policy
371 recommendations thus have to bring the goals and measures on the ‘how’ and ‘how much’ of animal
372 farming in line with the goals and measures for the development of food consumption.

373 At this stage it is hard to predict future consumption patterns concerning animal products. The current
374 uncertainty about these issues makes agricultural stakeholders very hesitant in their decisions and in-
375 vestments. This might be due to the implementation dilemma described by MOLNAR (2022). She argues
376 that, in a globalised economy, due to competition reasons, farmers cannot solve the problem of low
377 animal welfare standards themselves, only when the legal framework requires them to do so. Consumer
378 behaviour to support the transition is changing too slowly, and possibilities for granting more subsidies
379 are limited in the face of multiple crises. Against this background, a stronger focus on voluntary (private)
380 sustainability agreements and appropriate legal minimum requirements in animal and climate protection
381 are the way forward.

382 Furthermore, the exact wording is crucial when investigating the public acceptance of different scenar-
383 ios, e.g. via representative surveys. To demand *a reduction* or *depletion* of something, e.g. *reduced*
384 consumption, seems, altogether, less popular compared to an *increase*, e.g. *more* animal welfare, a *grow-*
385 *ing* sector or *diversified* consumption. It is therefore important to develop for each scenario a comparable

386 communication of positive aims. A reduction of the animal farming sector, for instance, may be com-
387 pensated at least partly by growth of the plant-based food sector and should then be communicated in
388 this way. If and to what extent *less* animal farming means *more* animal welfare is an issue of communi-
389 cation with ethical presuppositions.

390 To conclude, policymakers should refrain from quick decisions that determine the future of animal farm-
391 ing over the next decades. Acceptance levels of future scenarios are likely to maintain dynamic. Cur-
392 rently, there are at least three fundamentally different long-term perspectives that enjoy societal support.
393 Yet especially the S3 scenario runs mostly under the radar of mainstream political debate. Based on our
394 findings we presume that there are short-term solutions that can be accepted by the supporters of all
395 three scenarios presented. But this requires reframing the debate from ‘protecting the future of animal
396 farming’ to ‘guiding the future of animal farming’, with the possibility that this means the – at least
397 partly – replacement of animal farming by suitable alternatives.

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406 **References**

407

408 BUSCH, G. und A. SPILLER (2018): Consumer acceptance of livestock farming around the
409 globe. In: *Animal frontiers : the review magazine of animal agriculture* 8 (1): 1–3.

410 DEBLITZ, C., J. EFKEN, M. BANSE, F. ISERMEYER, C. ROHLMANN, H. TERGAST, P. THOBE und
411 M. VERHAAGH (2021): Politikfolgenabschätzung zu den Empfehlungen des Kompetenzz-
412 netzwerks Nutztierhaltung. Thünen Working Paper 173. Johann Heinrich von Thünen-
413 Institut, Braunschweig.

414 DEONNA, J. und F. TERONI (2012): *The Emotions. A Philosophical Introduction*. Routledge.

415 DEUTSCHER ETHIKRAT (2020): *Tierwohlachtung – Zum verantwortlichen Umgang mit Nutz-*
416 *tieren. Stellungnahme*. Berlin.

417 EUROPEAN COMMISSION (2007): *Special Eurobarometer 270. Attitudes of EU Citizens to-*
418 *wards Animal Welfare, Report*. Brussels.

419 EUROPEAN COMMISSION (2016): *Special Eurobarometer 442. Attitudes of Europeans towards*
420 *Animal Welfare, Report*. Brussels.

421 HÖLKER, S., H. STEINFATH, M. VON MEYER-HÖFER und A. SPILLER (2019): Tierethische Intu-
422 itionen in Deutschland: Entwicklung eines Messinstrumentes zur Erfassung bereichsspezi-
423 fischer Werte im Kontext der Mensch-Tier-Beziehung. In: *German Journal of Agricultural*
424 *Economics* 68 (4): 299–315.

- 425 JANSSEN, M., M. RÖDIGER und U. HAMM (2016): Labels for Animal Husbandry Systems
 426 Meet Consumer Preferences: Results from a Meta-analysis of Consumer Studies. In: Jour-
 427 nal of Agricultural and Environmental Ethics 29 (6): 1071–1100.
- 428 JUNGK, R. und N. R. MÜLLERT (1997): Zukunftswerkstätten. Mit Phantasie gegen Routine
 429 und Resignation. Heyne-Bücher 19, Heyne-Sachbuch, Heft 73. Heyne, München.
- 430 KEMMERER, L. (2014): Eating Earth. Environmental Ethics and Dietary Choice. Oxford Uni-
 431 versity Press USA - OSO, Cary.
- 432 LADWIG, B. (2020): Politische Philosophie der Tierrechte. suhrkamp taschenbuch wissen-
 433 schaft, Heft 2315. Suhrkamp, Berlin.
- 434 LUY, J. (2018): Der faire Deal. Basis eines neuen Rechtsverständnisses im Tier-, Natur- und
 435 Umweltschutz. Das Recht der Tiere und der Landwirtschaft, Band 9. Nomos, Baden-Ba-
 436 den.
- 437 MOLNÁR, M., 2022. Transforming Intensive Animal Production: Challenges and Opportuni-
 438 ties for Farm Animal Welfare in the European Union. In: Animals 12, 2086.
- 439 MORACH, B., M. CLAUSEN, J. ROGG, M. BRIGL, U. SCHULZE, N. DEHNERT, M. HEPP, V.
 440 YANG, T. KURTH, E. VON KOELLER, J. BURCHARDT, B. WITTE, P. OBLOJ, S. KOKTENT-
 441 URK, F. GROSSE-HOLZ und O. STOLT-NIELSEN MEINL (2022): The Untapped Climate Op-
 442 portunity in Alternative Proteins. Food for Thought. Boston Consulting Group. In:
 443 [https://www.bcg.com/de-de/publications/2022/combating-climate-crisis-with-alternative-](https://www.bcg.com/de-de/publications/2022/combating-climate-crisis-with-alternative-protein)
 444 [protein](https://www.bcg.com/de-de/publications/2022/combating-climate-crisis-with-alternative-protein). Abruf: 8.12.2022.
- 445 STEINFELD, H., P. GERBER, T. D. WASSENAAR, V. CASTEL, M. ROSALES und C. de HAAN
 446 (2006): Livestock's long shadow. Environmental issues and options. Food and Agriculture
 447 Organization of the United Nations, Rom.
- 448 TWINE, R. (2021): Emissions from Animal Agriculture—16.5% Is the New Minimum Figure.
 449 In: Sustainability 13 (11): 6276.
- 450 VON GALL, P. und K. PETRICK (2022): Weniger Tiere – mehr Raum. Zur Entwicklung der
 451 Tierzahlen aus Tierschutzsicht mit Blick auf den Flächenbedarf. Analyse im Auftrag von
 452 VIER PFOTEN – Stiftung für Tierschutz, Berlin.
- 453 VON GALL, P. und M. VON MEYER-HÖFER (2021): Gremien zur Transformation der landwirt-
 454 schaftlichen Tierhaltung: Welche Ansätze versprechen Erfolg? In: Schriften der Gesell-
 455 schaft für Wirtschafts- und Sozialwissenschaften des Landbaues e.V. (57).
- 456 WEIS, T. (2013): The Ecological Hoofprint. The Global Burden of Industrial Livestock. Zed
 457 Books, London.
- 458 WILLETT, W., J. ROCKSTRÖM, B. LOKEN, M. SPRINGMANN, T. LANG, S. VERMEULEN, T. GAR-
 459 NETT, D. TILMAN, F. DECLERCK, A. WOOD, M. JONELL, M. CLARK, L. J. GORDON, J.
 460 FANZO, C. HAWKES, R. ZURAYK, J. A. RIVERA, W. de VRIES, L. MAJELE SIBANDA, A. AF-
 461 SHIN, A. CHAUDHARY, M. HERRERO, R. AGUSTINA, F. BRANCA, A. LARTEY, S. FAN, B.
 462 CRONA, E. FOX, V. BIGNET, M. TROELL, T. LINDAHL, S. SINGH, S. E. CORNELL, K.
 463 SRINATH REDDY, S. NARAIN, S. NISHTAR und C. J. L. MURRAY (2019): Food in the An-
 464 thropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems.
 465 In: Lancet (London, England) 393 (10170): 447–492.
- 466 WISSENSCHAFTLICHER BEIRAT FÜR AGRARPOLITIK (WBA) BEIM BUNDESMINISTERIUM FÜR ER-
 467 NÄHRUNG UND LANDWIRTSCHAFT (BMEL) (2015): Wege zu einer gesellschaftlich akzep-
 468 tierten Nutztierhaltung. In: Berichte über Landwirtschaft -Zeitschrift für Agrarpolitik und
 469 Landwirtschaft (Sonderheft 221).

470 ZUKUNFTSKOMMISSION LANDWIRTSCHAFT (ZKL) (2021): Zukunft Landwirtschaft. Eine ge-
471 samtgesellschaftliche Aufgabe. Empfehlungen der Zukunftskommission Landwirtschaft.
472 In: <https://www.bmel.de/DE/themen/landwirtschaft/zukunftskommission-landwirt->
473 [schaft.html](https://www.bmel.de/DE/themen/landwirtschaft/zukunftskommission-landwirt-). Abruf: 12.3.2022.
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