



# Consumers' meat commitment and the importance of animal welfare as agricultural policy goal

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## ABSTRACT

Animal welfare is one of the key agricultural policy goals and is considered extremely important by consumers. With the increasing urgency for a sustainable and healthy dietary shift, it could be one of the key motivators for behaviour change. Therefore, we investigate how consumers perceive the importance of animal welfare not only as an agricultural policy goal but also in comparison to conflicting goals, such as domestic food production, farmers' income, and consumer prices. We investigate how the weighing of animal welfare as an agricultural policy goal is related to individual behaviour (i.e. meat consumption), values and attitudes, such as meat commitment, the perceptions of farmers and the Ecological Welfare scale (which includes animal welfare and environment protection). Thus, we conducted an online survey in October 2022, recruiting a sample of 1542 participants (51.5% women) in equal parts from the German-, French-, and Italian-speaking parts of Switzerland. Participants were asked to evaluate the importance of increased animal welfare in three situations with the following conflicting policy goals: (1) increasing domestic food production, (2) reducing consumer food prices, and (3) increasing farm incomes. Regression analysis revealed that the influential predictors in all three models were similar. Being a woman, politically left leaning, and less committed to meat eating, having a more negative perception of farmers, and assigning more importance to ethical food consumption increased the probability of putting more weight on animal welfare in all three goal conflicts described above. The finding that participants who were more committed to meat eating tended to assign less importance to animal welfare when weighing the three conflicting agricultural policy goals is well-aligned with the current literature. Implications for agricultural policy are discussed.

## 1. Introduction

Agricultural and food systems fulfil multiple political goals, such as food provision, environmental sustainability, affordable consumer prices, viable farm income, and animal welfare, all at the same time. Agricultural and food policies contribute to achieve these goals and need to address potential goal conflicts. A better understanding of how consumers weigh the various agricultural policy goals can provide insights into the extent to which agricultural policy can be aligned with consumers' preferences and help transform the food system. In this study, we analyse the importance of improving animal welfare for consumers as an agricultural policy goal related to meat production in comparison to the conflicting goals of increasing domestic food production, increasing farmers' income, and reducing food prices for consumers.

Further, we investigate how personal attitudes and values relate to these preferences, as personal values serve as guiding principles in people's lives, affecting their perception, cognition, and behaviour (Sagiv & Schwartz, 2022).

### 1.1. Agricultural policy goals related to animal welfare

Agricultural policies in Europe aim to address multiple goals. For example, one of the main goals of agricultural policy is to contribute to the reliable provision of the population with food. However, the increasing global food demand pose a challenge for sustainable food production, and there is a significant need for action to address sustainability challenges (Pe'er et al., 2020). Also animal welfare is a goal of agricultural policy and has received much public attention in recent

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years (Verbeke, 2009). For instance, Eurobarometer surveys conducted in 2005 and 2015 revealed that the vast majority of consumers consider animal welfare important (European Commission, 2006, 2016). Similarly, representative studies in Switzerland showed that the public sees animal welfare as one of the main tasks of agriculture (Umbricht & Schaub, 2022). The increase in public concern for animal welfare is not necessarily an indication for the public changing their behaviour. Instead, it might point towards the public supporting actors to drive change towards more animal welfare (Hårstad, 2023). Animal welfare is a broad construct, and it has been argued that to date, clear definitions are lacking (Reimert et al., 2023). One of its early definitions was made by the Brambell Commission of the UK government in 1965 (Brambell, 1965), which defined it as “a wide term that embraces both the physical and mental well-being of the animal”.

This clearly shows that agricultural policy has to deal with more than just the production of food (Boogaard et al., 2008). Instead, it is understood as important for several key goals, such as environmental protection or ensuring that animals are treated properly (Horgan & Gavinelli, 2006). Indeed, animal welfare has become a major policy issue in the European Union (EU) in recent years (Simonin & Gavinelli, 2019). The EU passed the Farm to Fork Strategy in 2020, aiming to transform the European food system (Chang & Chen, 2022; European Commission, 2019). Importantly, the action plan also aims to evaluate and revise animal welfare laws and regulations (European Commission, 2020).

In Switzerland, farmers must comply with minimal animal welfare standards defined by the Animal welfare legislation to become eligible for direct payments; that is, animal welfare standards are part of cross-compliance obligations (“Verordnung über die Direktzahlungen an die Landwirtschaft (DVO),” 2013). In addition, farmers can participate in voluntary animal welfare programmes, with one aiming for regular outdoor exercise and the other aiming for animal-friendly stable systems. Compared to Austria and Germany, regulations in Switzerland are relatively strict (Vogeler, 2017). With these measures, agricultural policy highlights the importance of animal welfare for the Swiss population, which is also reflected in several popular initiatives aimed at improving animal welfare. For example, three recent initiatives aimed at (1) supporting farms to not remove the horns of cows, (2) tying direct payments to the non-prophylactic use of antibiotics, and (3) banning industrial livestock farming (Huber & Finger, 2019). For these reasons, the current work focuses on Switzerland, as an example of a European country with high animal welfare standards and with different payment schemes for animal welfare.

### 1.2. Importance of animal welfare and meat consumption

One reason for the high level of public attention towards animal welfare could be that concern for animals may have its roots in universalistic values, which, in the approach of Schwartz Value Theory, are linked to environmental protection, nature conservation, social concern, social justice and social tolerance (de Boer & Aiking, 2022a; Lee et al., 2016; Schwartz et al., 2012). Thus, it can be assumed that animal welfare as an agricultural policy goal is closely linked to personal values. However, caring about animals and animal welfare does not automatically lead to lower meat consumption or vegetarianism. The term “meat paradox” was introduced by Loughnan et al. (2010) and describes the discrepancy that people simultaneously dislike hurting animals but like eating meat. Being aware of this discrepancy, individuals use different strategies to reduce the resulting cognitive dissonance (Khara et al., 2021). These strategies involve both direct and indirect approaches. Direct approaches include denial of animal suffering, health justifications, and a certain degree of objectification of animals, whereas indirect approaches dissociate animals from food and avoid thinking about animal suffering (Rothgerber, 2013). In line with this, people who eat meat suppress their moral concerns, leading them to perceive animals as having a reduced capacity to suffer (Loughnan et al., 2010).

Even though animal welfare is one of the main motives for not eating meat (Fox & Ward, 2008), individuals differ in their readiness to reduce their meat consumption. One factor affecting willingness to substitute meat is frequency of meat consumption (Graça et al., 2016). How hard it would be for an individual to stop eating meat can for instance be measured using the *meat commitment scale*, which summarises aspects including how (un)willing people are to reduce their meat consumption or whether they believe the best part of a meal is the meat portion (Piazza et al., 2015). The desire to eat meat is associated with strategies to avoid information that is likely to challenge meat consumption (Leach et al., 2022) and ultimately, meat commitment may hinder a shift towards a more plant-based diet (Graca et al., 2015). In terms of gender, women are generally less committed to meat eating than men (Knaapila et al., 2022; Piazza et al., 2015). Further, studies report that women consume less meat (Mertens et al., 2020; Tschanz et al., 2022) and are more willing to reduce meat consumption (Malek et al., 2019) than men. Meat consumption is also associated with political orientation. Right-wing ideologies (measured with social dominance orientation and right-wing authoritarianism) can positively predict attitudes towards meat consumption and animal exploitation (Dhont & Hodson, 2014). In terms of values and attitudes, Knaapila et al. (2022) found that consumer segments with high meat commitment scored lower on the Ecological Welfare scale, which measures attitudes towards animal welfare and environmental protection (Lindeman & Vaananen, 2000). This shows that meat commitment plays a role beyond nutrition (Graca et al., 2015).

### 1.3. Relevance and aim of the current study

Overall, the study follows two main aims. The first aim is to investigate how important animal welfare is for consumers as an agricultural policy goal in itself and in the context of different target conflicts. A deeper understanding of how individuals weigh different conflicting agricultural policy goals is important to legitimise financial support through taxes and consumer prices and to identify entry points for making the food system more sustainable. For example, a recent study in Germany showed that a meat tax would receive more public acceptance when framed as aiming to increase animal welfare than if framed as being used for the reduction of greenhouse gas emissions (Perino & Schwickert, 2023).

In pursuit of this first aim, three target conflicts of agricultural policy are analysed. First, animal welfare conflicts with domestic (meat) production, because more space (e.g. for free-range husbandry) is needed for animal welfare, which ultimately leads to less meat being produced using the same resources for agricultural production. With this target conflict, we cover the aspect of food security, which is generally valued by consumers (Nguyen et al., 2021) and which emerged as an important topic in times of crisis in a recent survey in Switzerland (Umbricht & Schaub, 2022). Another aspect covered by this target conflict is the feed-food competition (Mottet et al., 2017). We assumed that decreasing the number of animals to achieve more space per animal and thereby increasing animal welfare leads to lower feed requirements, which can improve food security (e.g. switching from producing feed to food on arable land increases overall calorie production with the same resources, (Bystricky et al., 2023)).

Second, animal welfare conflicts with food prices, as animal-friendly husbandry requires additional costs that ultimately increase meat prices (Gazzarin & Zimmert, 2021). With this target conflict, we cover the consumer view, as food prices directly affect consumers and play a central role in food decision making (Ammann et al., 2023; Silva et al., 2019).

Third, animal welfare conflicts with farmers' income because animal-friendly husbandry requires additional costs that ultimately reduce farmers' income, assuming that meat prices remain the same. Previous research conducted in the United States found that consumers generally support farm subsidies, not because they consider farm

**Table 1**  
Sample description (N = 1542).

|  | %    | Mean | SD   |
|--|------|------|------|
| Gender (women)   | 51.5 |      |      |
| Age  |      | 44.6 | 15.1 |
| Language   |      |      |      |
| German   | 32.7 |      |      |
| French   | 33.5 |      |      |
| Italian  | 33.7 |      |      |
| Education  |      |      |      |
| No education, in education   | 0.3  |      |      |
| Compulsory school  | 4.3  |      |      |
| Vocational apprenticeship/vocational college/<br>commercial (secondary) school | 35.0 |      |      |
| (Vocational) baccalaureate   | 14.6 |      |      |
| Higher technical or vocational education                                       | 13.8 |      |      |
| University of applied sciences or university of<br>education                   | 13.0 |      |      |
| University   | 18.9 |      |      |
| Place of residence   |      |      |      |
| Very rural   | 8.9  |      |      |
| Rather rural   | 29.4 |      |      |
| Suburban   | 28.3 |      |      |
| Rather urban   | 21.3 |      |      |
| Very urban   | 12.0 |      |      |

incomes too low but rather because they see it as supporting food security (Ellison et al., 2010).

The second aim of the study is to identify and analyse the predictors of the perceived importance of animal welfare as an agricultural policy goal. Based on previous studies, we examine sociodemographic and psychological variables, including personal values, meat commitment, perception of farmers, and attitudes towards animal welfare and environmental protection. In terms of sociodemographic factors, it has been shown that women and younger individuals are more supportive (determined through their willingness to pay) of animal welfare policies (Espinosa, 2023) and political orientation was found related to meat consumption and animal exploitation (Dhont & Hodson, 2014). We further included meat commitment, as the consumption of meat is directly related to animal welfare issues as animals are slaughtered for meat production. In terms of values, beliefs related to the environment and animal welfare were found related to individual's attitude towards reduction of meat consumption, which is why we consider them here as well (Seffen & Dohle, 2023). Similarly, we included public perception of farmers, which includes how the public perceives them to care for animals.

A better understanding of the barriers and drivers of policy acceptance is crucial, as agricultural policy must adapt to support the transition towards a more sustainable food system. More precisely, political goals on a societal level, on the one hand, are oriented towards a normative idea of a "good society" (Joas et al., 2016) and can be seen as means to political action towards the realisation of social and political values (Fischer, 2006; Joas et al., 2016). Personal goals, on the other hand, consist of an expectation (attainable) and a value (desirable) component and both can vary over time (Kruglanski et al., 2015). Personal values can be defined as broad desirable goals, motivating individuals' actions, which can serve as guiding principles for their lives (Sagiv & Schwartz, 2022). They develop in early in life and remain relatively stable as an individual grows older (Sagiv & Schwartz, 2022). Given these relationships, the current study investigates how policy goals on a societal level are related to personal values. There have been various studies on animal welfare, however, no study so far has looked into the conflicting values and trade-offs related to it.

The present study further adds to the current literature by focusing on the importance of animal welfare for consumers as an agricultural policy goal that conflicts with other policy goals, specifically with the domestic production of food, increasing farmers' income, and reducing consumer prices. We analyse how meat consumption and commitment

as personal value together with other sociodemographic and personal values, attitudes and predictors influence individuals' importance of animal welfare. Given that committed meat eaters are less likely to endorse universalistic values including animal welfare (de Boer & Aiking, 2022a), we assumed that the perceived importance of animal welfare as an agricultural policy goal was related to individuals' meat commitment. A better understanding of these mechanisms including values and goals will inevitably help tailor agricultural policy that benefits from public support and helps transform the food system. These interplays are of interest to both research and practice, as attitudes towards meat consumption can shift over time.

## 2. Methods

### 2.1. Participants

Data collection took place in Switzerland in October 2022 through an online survey. Participants were recruited from an internet panel from a commercial and certified panel provider (Bilendi AG). Quotas were used for gender (50 % women), age (33 % aged 18–35, 33 % aged 36–54, and 33 % aged 55–75), and language region (33 % German, 33 % French, 33 % Italian). For each language region, we aimed to recruit 500 participants. As it was not possible to match the age quotas for Italian-speaking Swiss, quotas had to be adapted in the process. In total, 1663 participants completed the survey and matched the selection criteria (i.e., the quotas). Participants who took less than half the median of all participants (i.e., 316 s) to complete the survey were excluded (for example Ammann et al., 2019), assuming that they did not complete the items reliably. Besides this, no attention checks were used. This procedure resulted in a final sample size of 1542 participants (51.5 % women, see Table 1). The study was approved by the ETH Zurich ethical commission (application EK-2022-N-174). It is fully exploratory and was not pre-registered. We do not control for multiple hypothesis testing.

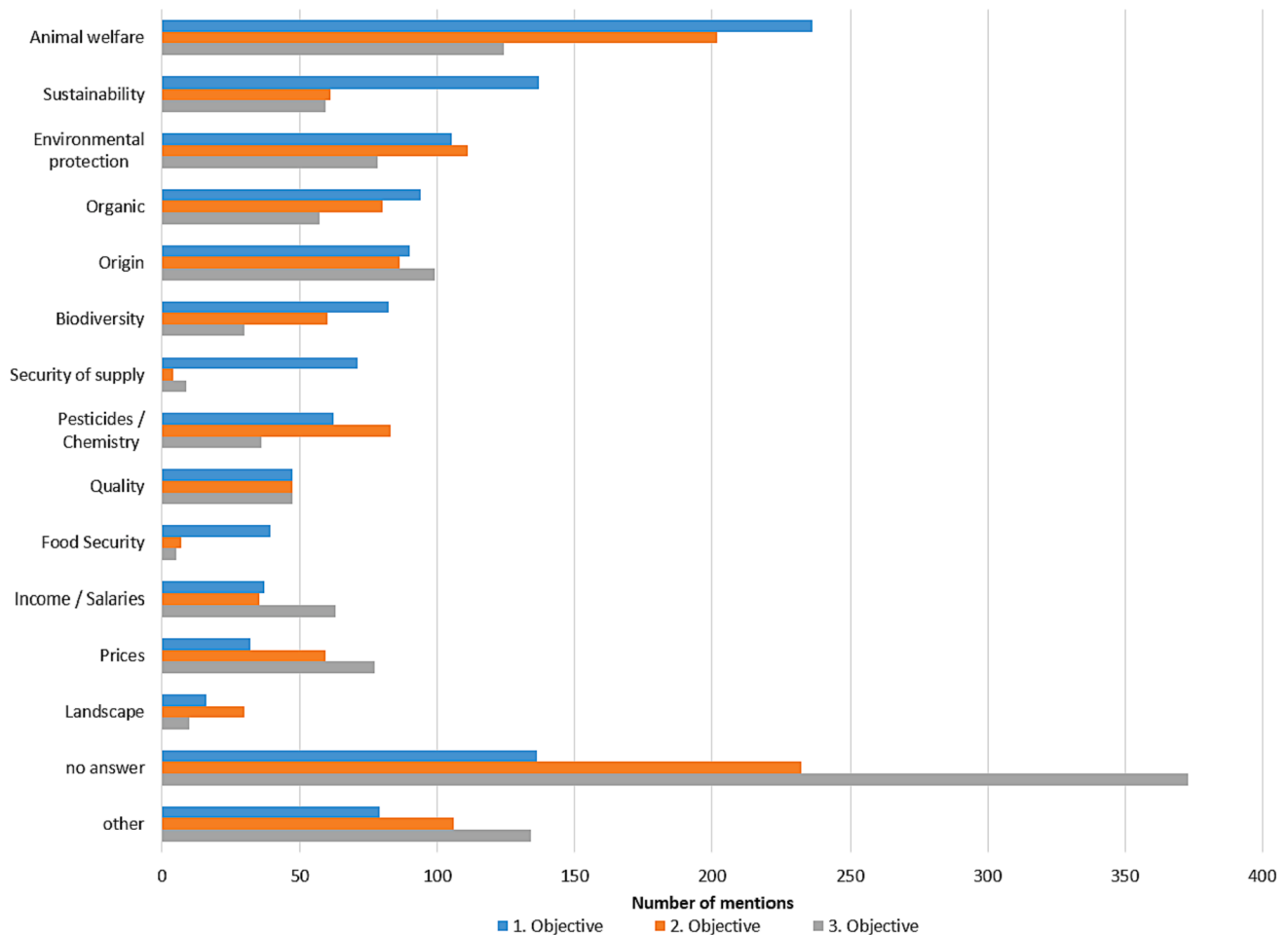
### 2.2. Questionnaire

Upon starting the survey, the participants provided their written consent. The results presented herein were part of a larger study investigating the prioritisation of agricultural policy goals by the Swiss population (El Benni et al., 2023). The complete questionnaire can be found in the appendix. Overall, the questionnaire, as considered for the analyses herein, consisted of three parts. In the first part, sociodemographic and personal information, including age, gender, education, place of residence, and meat consumption (on a scale from [1] never or rarely to [6] several times per day), were collected. Lastly, we asked participants where they placed themselves on a political left–right scale from 0 (very left) over 50 (middle) to 100 (very right), as this was shown to affect consumers' support for different agricultural policy goals in previous research (de Boer & Aiking, 2022b).

The second part of the survey focused on agricultural policy goals. For this, participants were asked to write down the three agricultural policy goals that they found most important (free text answer). We then listed eight agricultural policy goals and asked participants to rate each for how important they should be in Swiss agriculture on a scale from 1 (not important at all) to 7 (very important). For the purpose of the present study, we focus on four agricultural policy goals: (1) animal welfare, (2) farmers' income, (3) food prices and (4) domestic food production. As outlined earlier, agricultural policy comes with trade-offs and goal conflicts. Pursuing one policy goal can mean that another goal is neglected. Next, we informed participants about these trade-offs and goal conflicts as follows:

*"Many agricultural policy goals are in direct conflict with other goals. In this part of the questionnaire, you are asked to weight two given goals that are in direct conflict with each other.*

*Please note that we are limiting ourselves here to the situation in Switzerland. Imports and exports are not taken into account. Furthermore,*



**Fig. 1.** Qualitative analysis of the three most important agricultural policy goals as mentioned by participants in free text responses (N = 1542). Note: The category “no answer” summarises all responses that described something that clearly was not an agricultural policy goal or that participants were unable to give a response. The category “other” summarises various single mentions, which were only mentioned by one participant.

we are dealing with general correlations that do not necessarily apply in individual cases.”.

Following this description, participants were presented with 16 pairs of conflicting agricultural policy goals. The goals were chosen in accordance with Article 104 of the Swiss Constitution, which defines the goals of Swiss agriculture agricultural production. According to these goals, we identified various conflicting goals. For each of them, participants were asked to indicate on a slider scale (0 = goal A, 50 = no preference, 100 = goal B) which of the two conflicting goals they weighed as more important. For the scope of this publication, we focus on three pairs in which increasing animal welfare conflicts with another agricultural goal, that is, increasing domestic production, reducing consumer food prices, and increasing farmers’ income. We chose these three aspects because they each represent a key issue in Swiss agricultural policy and societal debates (e.g. Huber & Finger, 2019): the self-sufficiency view of food production (animal welfare vs. domestic production), the consumers’ view (animal welfare vs. food prices), and the producers’ view (animal welfare vs. farmers’ income).

In the third and final part of the survey, we measured the participants’ values and attitudes. These include perceptions about farmers, assuming that it influences how agricultural policy goals are perceived. We assumed that individuals who generally perceive the work of farmers as caring for the environment and animals would be supportive of the farmers’ income- and animal welfare-related agricultural policy goals. The perception of farmers was measured using five items (see Appendix), which were rated on a scale from 1 (do not agree at all) to 7 (totally agree). Overall, farmers were perceived positively (M = 5.64, SD =

0.96), and the scale’s reliability was good ( $\alpha = 0.82$ ). Meat commitment was measured using seven items developed by Piazza et al. (2015), which were rated on a scale from 1 (do not agree at all) to 7 (totally agree). The reliability of the scale was very good ( $\alpha = 0.92$ , M = 3.87, SD = 1.75). Ecological welfare, which includes a subscale for animal welfare and one for environmental protection, was measured with five items proposed by Lindeman and Vaananen (2000), which were rated on a scale from 1 (not important at all) to 4 (very important). The reliability of the scale was good ( $\alpha = 0.85$ , M = 3.32, SD = 0.58).

### 2.3. Data analysis

The qualitative responses (naming the three most important agricultural policy goals) from part two of the survey were organised into groups of agricultural policy goals. Single mentions were summarised under the category “other”. For the quantitative data of part two of the survey, where participants rated the importance of the agricultural policy goals, difference scores were calculated to identify how many participants were indifferent for the three pairs of conflicting agricultural policy goals.

Linear regression analysis was used to identify the influential predictors for the assessment of three pairs of conflicting agricultural policy goals (part three of the survey). Variance inflation factors were calculated to check for problems regarding multicollinearity (Menard, 1995; Myers, 1990). They were all below 2, indicating that there was no serious problem regarding multicollinearity (Menard, 1995; Myers, 1990). We analysed all data with the Statistical Package for the Social

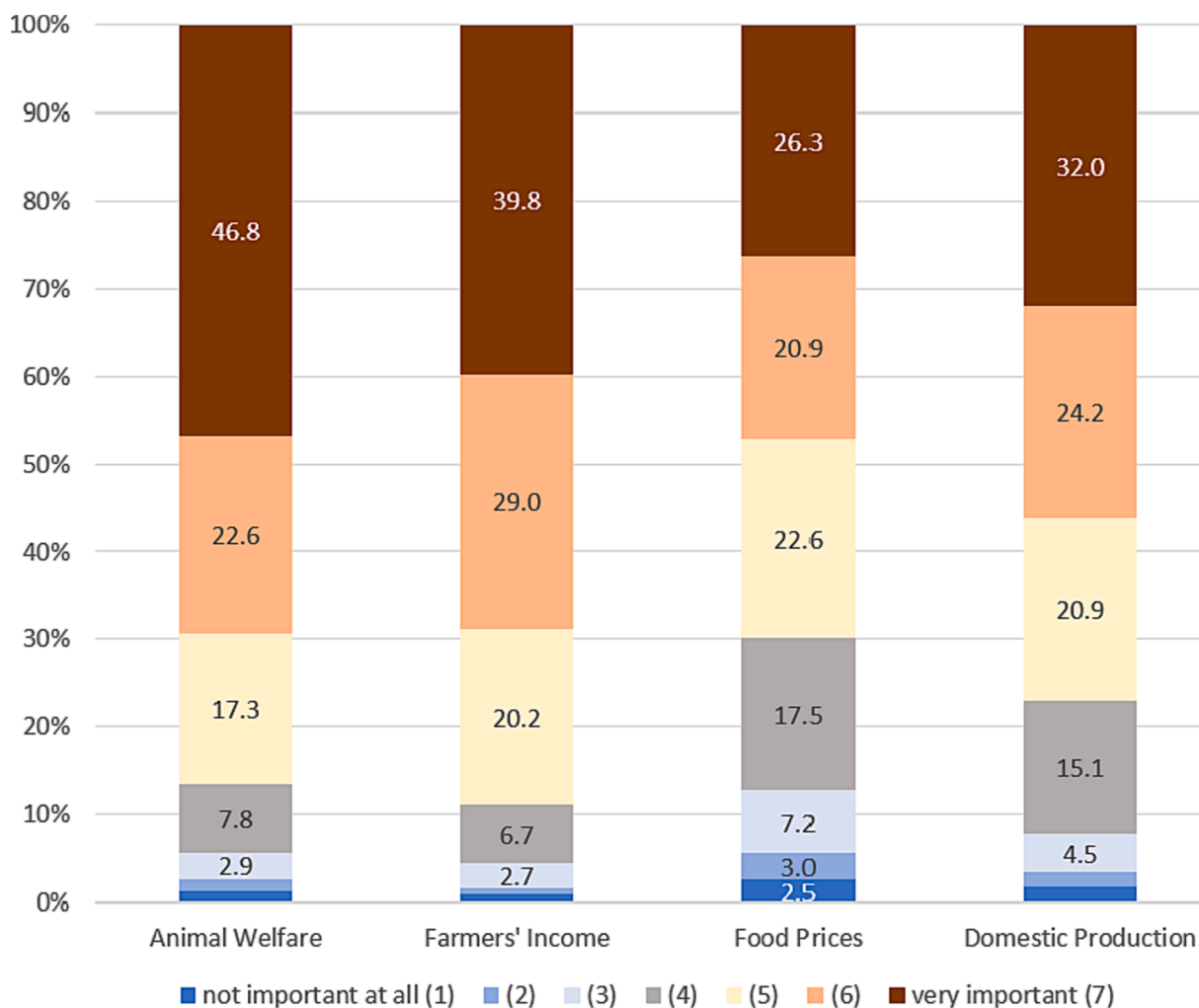


Fig. 2. Importance of the four agricultural policy goals according to consumers (N = 1542).

Sciences (SPSS) version 26 (IBM, New York, USA) for Windows. Following the open science policy, the questionnaire, data, and code used can be freely accessed through Zenodo (link will be added).

### 3. Results and discussion

#### 3.1. Animal welfare as an agricultural policy goal and its predictors

Participants were asked to name the three most important agricultural policy goals that came to mind to assess their first associations with agricultural policy goals. It is important to note that this question was asked before more information on agricultural policy goals was provided to avoid possible carryover effects. We found that around 10 % of the participants had difficulties formulating any policy goal. They said that they did not know an agricultural policy goal or they named something that was not an agricultural policy goal (Fig. 1). Among those who were able to name a policy goal, the most frequently named were animal welfare, followed by sustainability and environmental protection.

Overall, animal welfare was the most salient agricultural policy goal, followed by sustainability and environmental protection (including topics such as organic production and biodiversity). This is well aligned with other studies conducted in Switzerland, which also found that animal welfare is crucial (Umbricht & Schaub, 2022). The importance assigned to ecological sustainability might be related to the public debate on climate change, which is omnipresent and pressing (Pe'er et al., 2020). Similarly, issues related to the current Russia-Ukraine

conflict, such as food security and security of supply, emerged as well. However, less than 50 individuals mentioned food security as the most salient agricultural policy goal, indicating that this issue currently seems to play a minor role in public debate.

When provided with the four agricultural policy goals in part two of the survey, participants rated animal welfare as the most important (M = 5.93, SD = 1.32), followed by farmers' income (M = 5.91, SD = 1.20), domestic production (M = 5.52, SD = 1.41) and food prices (M = 5.23, SD = 1.53, see also Fig. 2).

As meat consumers are faced with the ethical question of whether the animals they eat are treated well, we choose individual meat consumption as a possible predictor for the importance of animal welfare as agricultural policy goal. We find that the average self-reported meat consumption in our sample was between 1 and 3 times per week and 4–6 times per week. Women report significantly lower meat consumption than men ( $t(1540) = 7.08, p < .001$ ). Looking at meat commitment, we find that women are significantly less committed to eating meat than men ( $t(1540) = 9.06, p < .001$ ). These findings are in accordance with the available body of literature (Nevalainen et al., 2023; Vandermoere et al., 2019). Meat consumption and commitment are highly correlated ( $r = 0.57, p < .001$ ). As a result, we focus the subsequent analyses on meat commitment, which is an averaged scale of seven items that have been used before (e.g., Piazza et al., 2015).

Using Pearson's correlations, we investigate the relationships between different predictors, such as sociodemographic variables and personal values and attitudes, including meat commitment, and the

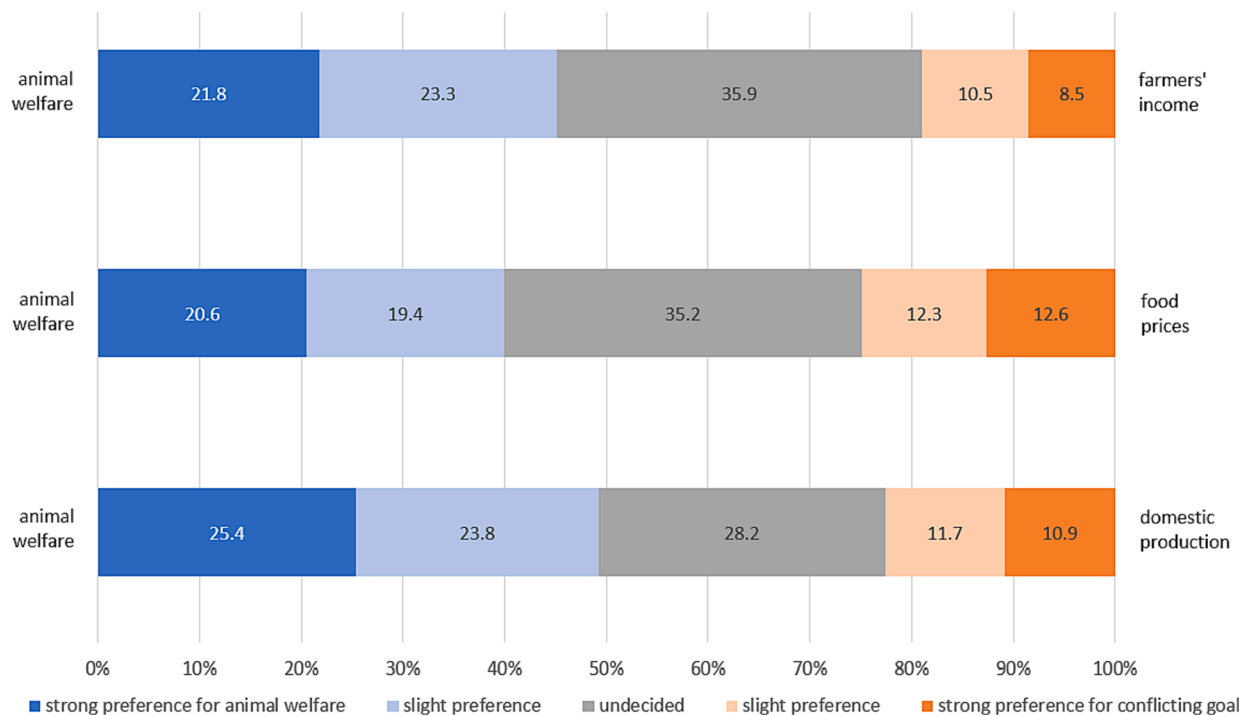
**Table 2**

Pearson’s correlations between sociodemographic and psychological variables and the importance of the four agricultural policy goals (N = 1542).

|                                       | 1        | 2        | 3        | 4      | 5        | 6        | 7        | 8       | 9       | 10      | 11      | 12 |
|---------------------------------------|----------|----------|----------|--------|----------|----------|----------|---------|---------|---------|---------|----|
| 1. Gender                             | 1        |          |          |        |          |          |          |         |         |         |         |    |
| 2. Age                                | -0.04    | 1        |          |        |          |          |          |         |         |         |         |    |
| 3. Education                          | -0.10*** | -0.10*** | 1        |        |          |          |          |         |         |         |         |    |
| 4. Place of residence                 | -0.04    | -0.12*** | 0.17***  | 1      |          |          |          |         |         |         |         |    |
| 5. Political orientation              | -0.11*** | 0.04     | -0.02    | 0.01   | 1        |          |          |         |         |         |         |    |
| 6. Ecological Welfare <sup>a</sup>    | 0.12***  | 0.10***  | 0.01     | 0.01   | -0.11*** | 1        |          |         |         |         |         |    |
| 7. Meat commitment <sup>b</sup>       | -0.23*** | -0.02    | -0.09*** | -0.04  | 0.29***  | -0.17*** | 1        |         |         |         |         |    |
| 8. Perception of farmers <sup>c</sup> | 0.06*    | 0.06*    | -0.04    | -0.03  | 0.12***  | 0.22***  | 0.23***  | 1       |         |         |         |    |
| 9. Animal welfare <sup>d</sup>        | 0.19***  | 0.01     | -0.02    | 0.02   | -0.11*** | 0.44***  | -0.19*** | 0.12**  | 1       |         |         |    |
| 10. Farmers’ income <sup>d</sup>      | 0.11***  | 0.04     | -0.03    | 0.03   | -0.02    | 0.26***  | <0.01    | 0.42*** | 0.45*** | 1       |         |    |
| 11. Food prices <sup>d</sup>          | 0.05*    | 0.01     | -0.06*   | 0.08** | 0.05     | 0.11***  | 0.12***  | 0.12*** | 0.29*** | 0.30*** | 1       |    |
| 12. Domestic production <sup>d</sup>  | -0.01    | 0.05     | -0.02    | -0.03  | 0.10***  | 0.16***  | 0.10***  | 0.26*** | 0.28*** | 0.39*** | 0.27*** | 1  |

Note: Gender: 0 = man, 1 = woman; place of residence on a scale from 1 (very rural) to 5 (very urban), political orientation from 0 (very left) over 50 (middle) to 100 (very right), <sup>a</sup> Ecological welfare scale: importance on a scale from 1 (not important at all) to 4 (very important) (Lindeman & Vaananen, 2000), <sup>b</sup> agreement on a scale from 1 (not at all) to 7 (very much) (Piazza et al., 2015), <sup>c</sup> agreement on a scale from 1 (not at all) to 7 (very much), <sup>d</sup> importance of agricultural policy goals on a scale from 1 (not important at all) to 7 (very important).

\* p < .05, \*\* p < .01, \*\*\* p < .001, H<sub>0</sub>: ρ = 0, that is there is no linear relationship between x and y in the population.



**Fig. 3.** Stacked bar chart showing the results of participants’ preferences when weighing animal welfare against three conflicting agricultural policy goals [part three of the survey] for those participants who assigned similar levels of importance to the two conflicting goals in part two of the survey (n<sub>farmers</sub> = 743, n<sub>prices</sub> = 506, n<sub>production</sub> = 571).

importance of the four agricultural policy goals (Table 2). We find that women tend to rate animal welfare, farmers’ incomes and food prices as more important than men. This effect, however, is not found for domestic food production. The strongest correlations for the importance of the agricultural policy goals are found with the scores on the Ecological Welfare. With increasing ecological welfare scores, individuals rate animal welfare, farmers’ income, food prices and domestic production as more important ( $r = 0.44, r = 0.26, r = 0.11,$  and  $r = 0.16,$  Table 2). For meat commitment, we find that individuals who were more committed to meat tended to rate animal welfare as less important ( $r = -0.19, p < 0.001,$  Table 2). Finally, we see that the importance of the four agricultural policy goals is positively correlated with each other ( $r$  values between 0.27 and 0.45, Table 2). As a result, the question emerges how consumers assess the goals when they are in direct conflict with each other.

### 3.2. Weighing animal welfare against conflicting agricultural policy goals

Next, we assess how participants rate the importance of animal welfare when there is a direct conflict with another agricultural policy goal affecting meat production and consumption. Participants weighed three pairs: animal welfare versus domestic production ( $M = 39.12, SD = 26.65$ ), animal welfare versus consumer food prices ( $M = 40.0, SD = 26.90$ ), and animal welfare versus farmers’ income ( $M = 41.19, SD = 25.89$ ). Values below 50 indicate a preference for animal welfare, whereas values above 50 indicate a preference for the conflicting goal. To visualise these preferences, we grouped the responses into five categories: 1) strong preference for animal welfare (0–20), 2) slight preference for animal welfare (21–40), 3) undecided (41–60), 4) slight preference for the conflicting goal (61–80), and 5) strong preference for the conflicting goal (81–100).

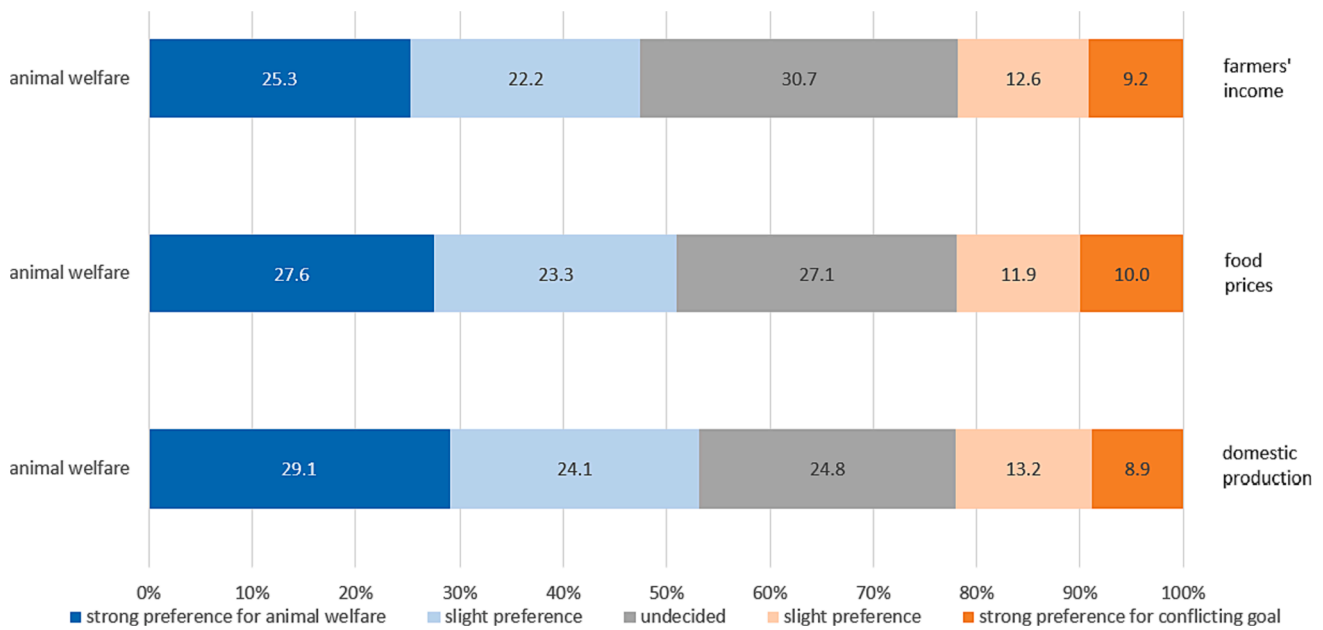


Fig. 4. Stacked bar chart showing the results of participants' preferences when weighing animal welfare against three conflicting agricultural policy goals (N = 1542).

Table 3

Linear regression models explaining the weighing of conflicts between various agricultural policy goals and animal welfare (N = 1542).

|                                    | Animal welfare vs. domestic production         |      |         | Animal welfare vs. food prices                 |      |         | Animal welfare vs. farmers' income             |      |         |
|------------------------------------|--|------|---------|--|------|---------|--|------|---------|
|                                    | B  | SE B | $\beta$ | B  | SE B | $\beta$ | B  | SE B | $\beta$ |
| Constant                           | 30.66***                                       | 5.79 |         | 47.60***                                       | 5.77 |         | 21.91***                                       | 5.60 |         |
| Gender                             | -4.72***                                       | 1.30 | -0.09   | -3.95**  | 1.29 | -0.07   | -3.27**  | 1.25 | -0.06   |
| Age                                | 0.08   | 0.04 | 0.05    | 0.04   | 0.04 | 0.02    | 0.02   | 0.04 | 0.01    |
| Education                          | 0.65   | 0.39 | 0.04    | -0.46  | 0.39 | -0.03   | 0.66   | 0.38 | 0.04    |
| Place of residence                 | 0.12   | 0.55 | 0.01    | 1.67**   | 0.54 | 0.07    | 0.57   | 0.53 | 0.03    |
| Political orientation              | 0.11***  | 0.03 | 0.09    | 0.09**   | 0.03 | 0.08    | 0.07*  | 0.03 | 0.06    |
| Perception of farmers <sup>b</sup> | 3.78***  | 0.69 | 0.14    | 1.90**   | 0.69 | 0.07    | 6.85***  | 0.67 | 0.25    |
| Ecological welfare <sup>c</sup>    | -10.51***                                      | 1.13 | -0.23   | -12.04***                                      | 1.12 | -0.26   | -10.84***                                      | 1.09 | -0.24   |
| Meat commitment <sup>a</sup>       | 3.05***  | 0.40 | 0.20    | 3.70***  | 0.40 | 0.24    | 2.42***  | 0.38 | 0.16    |
|                                    | F (8, 1533) = 40.10 ***; R <sup>2</sup> = 0.17 |      |         | F (8, 1533) = 46.33 ***; R <sup>2</sup> = 0.20 |      |         | F (8, 1533) = 42.44 ***; R <sup>2</sup> = 0.18 |      |         |

Note. Dependent variable: Responses were given on a scale from 0 (complete preference for animal welfare) to 100 (complete preference for the conflicting goal), B = unstandardised regression coefficient,  $\beta$  = standardised regression coefficient. Gender: 0 = man; 1 = woman; place of residence on a scale from 1 (very rural) to 5 (very urban), political orientation from 0 (very left) over 50 (middle) to 100 (very right), <sup>a</sup> importance on a scale from 1 (not important at all) to 4 (very important) (Lindeman & Vaananen, 2000), <sup>b</sup> agreement on a scale from 1 (not at all) to 7 (very much) (Piazza et al., 2015), <sup>c</sup> agreement on a scale from 1 (not at all) to 7 (very much).

\* p <.05, \*\* p <.01, \*\*\* p <.001.

In a first step, we look at those individuals in our sample who assigned similar importance to animal welfare and the conflicting goal in part two of the survey ( $n_{farmers} = 743$ ,  $n_{prices} = 506$ ,  $n_{production} = 571$ ). We investigate how those individuals weigh the two goals when they are in direct conflict (part three of the survey). For farmers' income, it was 48 % of participants, for food prices it was 33 % of participants and for domestic production, it was 37 % of participants who assigned similar levels of importance to animal welfare and the conflicting goal (see Fig. 3). We find that for all three conflicts, there is a tendency towards preference of animal welfare against the conflicting goal. This preference is strongest when animal welfare conflicts with domestic production (almost 50 % prefer animal welfare) and weakest for the conflict with food prices (40 % prefer animal welfare).

Note: Responses were given on a scale from 0 (complete preference for animal welfare) to 100 (complete preference for the conflicting goal). For this graph, responses were grouped into five categories: 1) strong preference for animal welfare (0–20), 2) slight preference for animal welfare (21–40), 3) undecided (41–60), 4) slight preference for

the conflicting goal (61–80), and 5) strong preference for the conflicting goal (81–100).

Analysing the whole sample, we also find a stable tendency towards animal welfare for all pairs, with around 50 % of participants expressing a slight or strong preference for animal welfare (Fig. 4). This again supports the notion that animal welfare is considered important by the public, even when in conflict with other goals. For all three conflicts, only around 20 % of participants expressed a slight or strong preference for the conflicting goal. Around 30 % of participants rated animal welfare as more important than the conflicting goal in all three comparisons.

Note: Responses were given on a scale from 0 (complete preference for animal welfare) to 100 (complete preference for the conflicting goal). For this graph, responses were grouped into five categories: 1) strong preference for animal welfare (0–20), 2) slight preference for animal welfare (21–40), 3) undecided (41–60), 4) slight preference for the conflicting goal (61–80), and 5) strong preference for the conflicting goal (81–100).

**Table A4**  
Original German survey items and English translation.

| German (original)  | English translation   |
|--|---|
| <b>Introduction</b>  |   |
| Warum werde ich gebeten, an dieser Forschungsstudie teilzunehmen?  | Why am I being asked to take part in this research study?   |
| Wir laden Sie ein, an einer Studie teilzunehmen, in der wir mehr über Ihre Meinung zur Schweizer Agrarpolitik herausfinden möchten. Sie müssen mindestens 18 Jahre alt sein, um an der Umfrage teilnehmen zu können.   | We are inviting you to take part in a study to find out more about your opinion on Swiss agricultural policy. You must be at least 18 years old to take part in the survey.   |
| Was ist der Zweck dieser Studie?   | What is the purpose of this study?  |
| Die Umfrage soll neue wissenschaftliche Erkenntnisse über die Agrarpolitik in der Schweiz hervorbringen. Diese Studie ist eine Zusammenarbeit zwischen Agroscope, dem Kompetenzzentrum des Bundes für die landwirtschaftliche Forschung und der ETH Zürich.  | The survey aims to generate new scientific knowledge about agricultural policy in Switzerland. This study is a collaboration between Agroscope, the federal government's centre of excellence for agricultural research, and ETH Zurich.  |
| Wie viel Zeit muss ich investieren?  | How much time do I have to invest?  |
| Die Teilnahme an der Umfrage dauert ca. 15–20 Minuten.   | Participation in the survey takes about 15–20 min.  |
| Was ist der genaue Inhalt der Umfrage?   | What is the exact content of the survey?  |
| Sie werden gebeten, verschiedene agrarpolitische Ziele zu gewichten. Sie beantworten zudem einige soziodemografische Fragen.   | You will be asked to give weight to various agricultural policy objectives. You will also answer some socio-demographic questions.  |
| Was passiert, wenn ich nicht teilnehmen möchte?  | What happens if I do not want to participate?   |
| Ihre Teilnahme an dieser Studie ist freiwillig. Sie können sich entscheiden, nicht an dieser Studie teilzunehmen. Zudem können Sie die Befragung jederzeit verlassen.  | Your participation in this survey is voluntary. You can decide not to take part in this study. Furthermore, you can leave the survey at any time.   |
| Könnte mir die Teilnahme an dieser Studie irgendwie schaden?   | Could participating in this study harm me in any way?   |
| Diese Umfrage enthält keine Fragen, die Ihnen ein Risiko bringen oder Ihnen Unbehagen bereiten könnten. Sie können jedoch jede Frage, die Sie nicht beantworten möchten, überspringen, oder die Umfrage an jeder Stelle abbrechen.   | This survey does not contain any questions that could put you at risk or make you feel uncomfortable. However, you can skip any question you do not want to answer or stop the survey at any point.   |
| Was geschieht mit den für die Forschung gesammelten Informationen?   | What happens to the information collected for the research?   |
| Es werden keine direkten persönlichen Merkmale erfasst. Ihre Angaben werden im Rahmen der gesetzlichen Bestimmungen immer vertraulich behandelt. Die Ergebnisse und die Daten der Forschungsstudie können veröffentlicht werden, Ihre Identität bleibt jedoch immer anonym. Ihre Daten werden Forschenden von Agroscope und der ETH Zürich zugänglich sein.                                      | No direct personal characteristics are collected. Your information will always be kept confidential within the limits of the law. The results and data of the research study may be published, but your identity will always remain anonymous. Your data will be accessible to researchers from Agroscope and ETH Zurich.                                   |
| Mit wem kann ich sprechen?   | Who can I talk to?  |
| Fragen zu dieser Studie können gerne an die Studienleitung (Dr. Jeanine Ammann, <a href="mailto:jeanine.ammann@agroscope.admin.ch">jeanine.ammann@agroscope.admin.ch</a> ) gerichtet werden. Sie können sich auch an das Sekretariat Ethikkommission der ETH Zürich wenden, telefonisch unter + 41 44 63 28,572 oder per E-Mail unter <a href="mailto:ethics@sl.ethz.ch">ethics@sl.ethz.ch</a> . | Questions about this study can be addressed to the study director (Dr Jeanine Ammann, <a href="mailto:jeanine.ammann@agroscope.admin.ch">jeanine.ammann@agroscope.admin.ch</a> ). You can also contact the ETH Zurich Ethics Committee Secretariat by phone at + 41 44 63 28,572 or by e-mail at <a href="mailto:ethics@sl.ethz.ch">ethics@sl.ethz.ch</a> . |
| <b>Consent</b>   |   |
| Wenn Sie eine Kopie dieser Zustimmung für Ihre Unterlagen benötigen, können Sie sie ausdrucken.  | If you need a copy of this consent for your records, you can print it out.  |
| Wenn Sie teilnehmen möchten, klicken Sie bitte auf die Schaltfläche "Ich stimme zu" und Sie werden zur Umfrage weitergeleitet.   | If you wish to participate, please click on the "I agree" button and you will be redirected to the survey.  |
| Wenn Sie nicht an dieser Studie teilnehmen möchten, wählen Sie bitte "Ich stimme nicht zu" oder wählen Sie X in der Ecke Ihres Browsers.   | If you do not wish to participate in this study, please select "I do not agree" or select X in the corner of your browser.  |

**Table A4 (continued)**

| German (original)  | English translation  |
|--|--|
| Mit Ihrer Zustimmung, bestätigen Sie, dass Sie die obige Erklärung gelesen haben und die Möglichkeit hatten, Fragen zu stellen und Bedenken zu äussern. Sie bestätigen, dass Sie den Zweck der Studie sowie die damit einhergehenden potenziellen Risiken verstehen. Sie bestätigen, dass Ihre Teilnahme freiwillig ist und dass Sie mit Ihrer Zustimmung auf keine Rechte verzichten. Sie bestätigen, dass Sie mindestens 18 Jahre alt sind. Ihre Teilnahme an der Studie können Sie jederzeit beenden. | By agreeing, you acknowledge that you have read the above statement and have had the opportunity to ask questions and express concerns. You acknowledge that you understand the purpose of the study and the potential risks involved. You confirm that your participation is voluntary and that you do not waive any rights by giving your consent. You confirm that you are at least 18 years of age. You can end your participation in the study at any time. |
| Wenn Sie mit der obigen Erklärung einverstanden sind, klicken Sie auf "Ich stimme zu, beginne die Studie" und auf «weiter», um fortzufahren.   | If you agree with the above statement, click on "I agree, start the study" and on "continue" to proceed.   |
| Ich stimme zu und beginne mit der Studie<br>Ich stimme nicht zu und möchte nicht an der Studie teilnehmen.   | I agree and start the study<br>I do not agree and do not wish to participate in the study.   |
| <b>Personal information</b>  |  |
| Wir bitten Sie nun einige Angaben zu Ihrer Person zu machen.   | We now ask you to provide some information about yourself.   |
| Bitte geben Sie uns Ihr Geschlecht an.   | Please tell us your gender.  |
| -Mann  | -Male  |
| -Frau  | -Woman   |
| -Anderes   | -Other   |
| -Möchte nicht antworten  | -Does not wish to answer   |
| Bitte geben Sie uns Ihr Geburtsjahr im Format JJJJ an.   | Please give us your year of birth in the format YYYY.  |
| Kreuzen Sie bitte Ihre höchste, abgeschlossene Ausbildung an.  | Please tick your highest completed education.  |
| -Kein Abschluss / in Ausbildung  | -No degree / in education  |
| -Obligatorische Schule   | -Compulsory school   |
| -Berufslehre / Berufsfachschule / Handels (mittel)schule   | -Vocational apprenticeship / Vocational school / Commercial (secondary) school   |
| -Maturität / Berufsmaturität   | -Matura / vocational baccalaureate   |
| -Höhere Fach- oder Berufsausbildung  | -Higher technical or vocational training   |
| -Fachhochschule oder pädagogische Hochschule   | -University of applied sciences or university of teacher education   |
| -Universität / ETH   | -University / ETH  |
| Was trifft am ehesten auf Ihren aktuellen Wohngegend zu?   | Which is most likely to apply to your current neighbourhood?   |
| -Sehr ländlich (1)   | -Very rural (1)  |
| -Eher ländlich (2)   | -Very rural (2)  |
| -Vorstädtisch (3)  | -Suburban (3)  |
| -Eher städtisch (4)  | -Probably urban (4)  |
| -Sehr städtisch (5)  | -Very urban (5)  |
| Wie würden Sie die Gegend beschreiben, in der Sie aufgewachsen sind?   | How would you describe the area where you grew up?   |
| -Sehr ländlich (1)   | -Very rural (1)  |
| -Eher ländlich (2)   | -Very rural (2)  |
| -Vorstädtisch (3)  | -Suburban (3)  |
| -Eher städtisch (4)  | -Probably urban (4)  |
| -Sehr städtisch (5)  | -Very urban (5)  |
| <b>Diet</b>  |  |
| Wie oft essen Sie Fleisch?   | How often do you eat meat?   |
| -Mehrals täglich   | -Multiple times a day  |
| -Täglich   | -Daily   |
| -4–6 mal pro Woche   | -4–6 times per week  |
| -1–3 mal pro Woche   | -1–3 times per week  |
| -1–3 mal pro Monat   | -1–3 times per month   |
| -Selten oder gar nie   | -Rarely or never   |
| Wo ordnen Sie sich auf einer politischen links-rechts Skala ein?   | Where do you rank yourself on a political left–right scale?  |
| Bitte klicken Sie in den Balken, um Ihre Antwort abzugeben.  | Please click in the bar to give your answer.   |
| Ganz links – Mitte – ganz rechts   | Far left - centre - far right  |
| <b>Shopping behaviour</b>  |  |
| Nun folgen ein paar Fragen zu Ihrem Einkaufsverhalten.   | Now follow a few questions about your shopping behaviour.  |
| Wie wichtig sind Ihnen nachfolgende Aspekte beim Lebensmitteleinkauf?  | How important are the following aspects to you when buying food?   |

(continued on next page)



Table A4 (continued)

| German (original)   | English translation   |
|---|---|
| gar nicht wichtig (1) – neutral (4) – sehr wichtig (7)  | not at all important (1) - neutral (4) - very important (7)   |
| - Umwelt- / klimaschonende Produktion   | - Environmentally / climate friendly production   |
| - Möglichst wenige Zusatzstoffe   | - As few additives as possible  |
| - Bioqualität (Bio-Label)   | - Organic quality (organic label)   |
| - Geschmack   | - Taste   |
| - Gesunde Ernährung   | - Healthy nutrition   |
| - Preis   | - Price   |
| - Regionale Herkunft  | - Regional origin   |
| - Artgerechte Tierhaltung   | - Animal welfare  |
| - Sozialstandards wie z.B. faire Einkommen  | - Social standards such as fair incomes   |
| - Erhaltung und Förderung der Artenvielfalt (Biodiversität)   | - Preservation and promotion of species diversity (biodiversity)  |
| <b>Agricultural policy</b>  |   |
| Die Agrarpolitik bzw. die landwirtschaftliche Produktion in der Schweiz verfolgt verschiedene Ziele. Bitte nennen Sie nachfolgend drei agrarpolitische Ziele, die Ihrer Meinung nach am wichtigsten sind.                     | Agricultural policy or agricultural production in Switzerland pursues various objectives. Please name three agricultural policy goals below that you consider to be the most important.                         |
| Ziel 1: _____   | Goal 1: _____   |
| Ziel 2: _____   | Goal 2: _____   |
| Ziel 3: _____   | Goal 3: _____   |
| Bitte geben Sie für die nachfolgenden Aspekte an, wie wichtig diese Ihrer Meinung nach für die Landwirtschaft in der Schweiz sein sollten.  | Please indicate for the following aspects how important you think they should be for agriculture in Switzerland.  |
| Gar nicht wichtig (1) – neutral (4) – sehr wichtig (7)  | Not at all important (1) - Neutral (4) - Very important (7)   |
| - Nährstoffüberschüsse (z.B. Überdüngung) reduzieren  | - Reduce nutrient surpluses (e.g. overfertilisation)  |
| - Lebensmittelpreise senken   | - Reduce food prices  |
| - Artenvielfalt / Biodiversität fördern   | - Promote biodiversity  |
| - Angemessene Einkommen für LandwirtInnen sicherstellen   | - Ensure adequate incomes for farmers   |
| - Pflanzenschutzmitteleinsatz reduzieren  | - Reduce the use of pesticides  |
| - Nahrungsmittelproduktion im Inland erhöhen  | - Increase domestic food production   |
| - Tierwohl erhöhen  | - Increase animal welfare   |
| - Treibhausgasemissionen reduzieren   | - Reduce greenhouse gas emissions   |
| <b>Budget</b>   |   |
| Stellen Sie sich vor, Sie könnten über das Agrarbudget in der Schweiz verfügen. Bitte geben Sie für die nachfolgenden Aspekte an, wie wichtig diese bei der Verteilung des Agrarbudgets (bzw. der Subventionen) sein sollten. | Imagine that you could dispose of the agricultural budget in Switzerland. Please indicate for the following aspects how important they should be in the distribution of the agricultural budget (or subsidies). |
| Gar nicht wichtig (1) – neutral (4) – sehr wichtig (7)  | Not at all important (1) - Neutral (4) - Very important (7)   |
| - Nährstoffüberschüsse (z.B. Überdüngung) reduzieren  | - Reduce nutrient surpluses (e.g. overfertilisation)  |
| - Tierwohl erhöhen  | - Increase animal welfare   |
| - Lebensmittelpreise senken   | - Reduce food prices  |
| - Treibhausgasemissionen reduzieren   | - Reduce greenhouse gas emissions   |
| - Nahrungsmittelproduktion im Inland erhöhen  | - Increase domestic food production   |
| - Artenvielfalt / Biodiversität fördern   | - Promote biodiversity / species diversity  |
| - Pflanzenschutzmitteleinsatz reduzieren  | - Reduce the use of plant protection products   |
| - Angemessene Einkommen für LandwirtInnen sicherstellen   | - Ensure adequate incomes for farmers   |
| Conflicting agricultural policy goals   |   |
| Viele agrarpolitische Ziele stehen in direktem Konflikt mit anderen Zielen. In diesem Teil des Fragebogens sollen Sie jeweils zwei vorgegebene Ziele, die in direktem Konflikt zueinander stehen, gegeneinander gewichten.    | Many agricultural policy goals are in direct conflict with other goals. In this part of the questionnaire, you are asked to weight two given goals that are in direct conflict with each other.                 |
| Bitte beachten Sie, dass wir uns hier auf die Situation in der Schweiz beschränken. Importe und Exporte werden nicht berücksichtigt. Ausserdem geht es um generelle Zusammenhänge, die in                                     | Please note that we are limiting ourselves here to the situation in Switzerland. Imports and exports are not taken into account. Furthermore, we are dealing with general                                       |

Table A4 (continued)

| German (original)   | English translation  |
|---|--|
| Einzelfällen nicht zwingend zutreffen müssen.   | correlations that do not necessarily apply in individual cases.  |
| Bitte klicken Sie in den Balken, um Ihre Antwort abzugeben  | Please click in the bar to submit your answer.   |
| ZK 1  | More land for the promotion of biodiversity (e.g. hedges, flowering strips, standard fruit trees, extensive meadows and pastures) means less land for domestic food production, because the available land is limited overall. |
| Mehr Flächen zur Förderung der Biodiversität (z.B. Hecken, Blühstreifen, Hochstammobstbäume, extensive Wiesen und Weiden) bedeuten weniger Flächen zur inländischen Nahrungsmittelproduktion, weil die verfügbaren Flächen insgesamt begrenzt sind. | - More land for biodiversity / more land for domestic food production  |
| - Mehr Fläche für Biodiversität / mehr Fläche für inländische Nahrungsmittelproduktion  |  |
| ZK 2  | More crop protection products mean higher and more stable domestic crop production volumes because crop failures due to pest infestation can be prevented.   |
| Mehr Pflanzenschutzmittel bedeuten höhere und stabilere Produktionsmengen im Pflanzenbau im Inland, weil Ernteausfälle durch Schädlingsbefall verhindert werden können.   | - Less use of crop protection products / more domestic food production   |
| - weniger Pflanzenschutzmitteleinsatz / mehr inländische Nahrungsmittelproduktion   |  |
| ZK 3  | More / more intensive crop production means more nutrient surpluses because higher fertiliser applications result in higher crop yields.   |
| Mehr / intensivere pflanzliche Produktion bedeutet mehr Nährstoffüberschüsse, weil durch höhere Düngergaben höhere Erntemengen erzielt werden.  | - More domestic food production / less nutrient surpluses  |
| - mehr inländische Nahrungsmittelproduktion / weniger Nährstoffüberschüsse  |  |
| ZK 4  | More animal production means more nutrient surpluses because more manure and slurry are produced.  |
| Mehr tierische Produktion bedeutet mehr Nährstoffüberschüsse, weil mehr Gülle und Mist anfallen.  | - More domestic food production / less nutrient surpluses  |
| - mehr inländische Nahrungsmittelproduktion / weniger Nährstoffüberschüsse  |  |
| ZK 5  | More animal welfare (e.g. free-range) means less domestic production because the space required per animal is higher.  |
| Mehr Tierwohl (z.B. Freilandhaltung) bedeutet weniger Inlandproduktion, weil der Platzbedarf pro Tier höher ist.  | - More animal welfare / more domestic production   |
| - mehr Tierwohl / mehr inländische Produktion   |  |
| ZK 6  | More animal welfare means higher food prices, because species-appropriate husbandry is associated with additional costs.   |
| Mehr Tierwohl bedeutet höhere Lebensmittelpreise, weil artgerechte Haltung mit Mehrkosten verbunden ist.  | - More animal welfare / lower food prices  |
| - mehr Tierwohl / tiefere Lebensmittelpreise  |  |
| ZK 7  | Less use of pesticides reduces food production and thus leads to higher food prices for consumers.   |

(continued on next page)

**Table A5**  
Items used to measure perception of farmers including their English translation.

|   | German (original)   | English translation  |
|---|---|--|
| 1 | Ich bin LandwirtInnen gegenüber generell positiv eingestellt.               | I have a generally positive attitude towards farmers.      |
| 2 | Die Arbeit der LandwirtInnen ist wichtig und wertvoll für die Gesellschaft. | The work of farmers is important and valuable for society. |
| 3 | LandwirtInnen setzen sich für das Tierwohl ein.                             | Farmers are committed to animal welfare.                   |
| 4 | LandwirtInnen haben ein grosses Umweltbewusstsein.                          | Farmers have a great environmental awareness.              |
| 5 | Bäuerliche Familienbetriebe sind wichtig und sollten erhalten bleiben.      | Family farms are important and should be preserved.        |

Next, we analyse possible predictors for preference of animal welfare against conflicting agricultural policy goals. For this, we conducted a linear regression analysis. We estimated three models, one for each of the three pairs of conflicting agricultural policy goals and compared the F-statistics and R<sup>2</sup> values across these models. The full models were statistically significant and explained between 17 % and 20 % of the variance.

We find that in all three models comparing conflicts between animal welfare and three different agricultural policy goals, the same pattern emerges (Table 3). Importantly, in all three models, we found that meat commitment was a significant negative predictor for the weighing of animal welfare (B values between 2.42 and 3.70). As discussed elsewhere, interventions aiming to reduce meat consumption could therefore improve in effectiveness by addressing underlying mechanisms such as meat commitment instead of focusing on situational manipulations (Graça et al., 2016). Tentatively, this association between the perceived importance of animal welfare and meat commitment might be seen as supporting the meat paradox. Eating meat while caring for animals will ultimately cause discomfort.

In our study, individuals who were more committed to meat tended to place less importance on animal welfare as an agricultural policy goal in all three pairs of conflicting goals. This could be a mechanism for dealing with the cognitive dissonance (as part of the meat paradox) emerging from eating meat while caring for animals. In turn, individuals change their beliefs about animal welfare (i.e., believing that animal welfare in Switzerland is high and animals do not suffer for meat production) to reduce cognitive dissonance. As we did not specifically measure cognitive dissonance, this should be further investigated in future studies.

For the Ecological Welfare scale, which includes aspects of animal welfare and environmental protection, we found that individuals scoring

higher on ecological welfare tended to rate animal welfare as more important than those scoring lower on ecological welfare. This is in line with the reasoning of de Boer and Aiking (2022a), stating that concern for animal welfare is derived from attitudes towards natural life (Deemer & Lobao, 2011; Dunlap et al., 2001) and related to but distinct from attitude toward environment protection. Previous studies also reported that beliefs related to the environment and animal welfare had a significant impact on attitude towards reduction of meat consumption (Seffen & Dohle, 2023).

Regarding the participants' perception of farmers, we found that those with a more positive perception of farmers tended to rate animal welfare as less important than individuals who had a less positive perception of farmers. Given that one item used to measure the perception of farmers was that farmers today already "stand up for animal welfare", this was not unexpected. These respondents likely see less need for policy action regarding the improvement of animal welfare.

Regarding sociodemographic and individual variables, we found that women tended to rate animal welfare as more important than men in each of the three models. In terms of political orientation, left-leaning individuals weighed animal welfare as more important than right-leaning individuals. These individual differences are especially important in policymaking, as they show that certain population groups weigh agricultural policy goals differently. In a similar vein, framing a policy measure as intended to increase animal welfare or to reduce environmental impacts can have an effect on its acceptance (Perino & Schwickert, 2023). Effect of communicating animal welfare through labels is limited and price was shown to have a bigger impact (Xu et al., 2023).

Taken together, our results show that animal welfare is of great importance to consumers when assessing the importance of different conflicting agricultural policy goals. As previous studies found that consumers had both positive attitudes towards animal welfare labels and were willing to pay more for these products (Janssen et al., 2016), animal welfare is a topic that should be addressed both in agricultural policy and on a product level (i.e., a label promoting animal-friendly products). Further, our results show that animal welfare, environmentally friendly production (as summarised in the Ecological Welfare scale), and meat commitment are important drivers of how the three conflicts of agricultural policy goals are weighed. Should meat commitment decrease over time, the population will most probably place more importance on animal welfare. This will, in turn, increase the support for animal welfare-related policies, even if they come with trade-offs, such as higher prices, lower farm incomes, or lower domestic production. As described in previous research (Boogaard et al., 2008),

**Table A6**  
Pearson's correlations between sociodemographic and psychological variables and the assessment of pairs of conflicting agricultural policy goals (N = 1542).

|  | 1         | 2         | 3        | 4      | 5        | 6         | 7        | 8        | 9        | 10       | 11 |
|--|-----------|-----------|----------|--------|----------|-----------|----------|----------|----------|----------|----|
| 1. Gender  | 1         |           |          |        |          |           |          |          |          |          |    |
| 2. Age   | -0.044    | 1         |          |        |          |           |          |          |          |          |    |
| 3. Education   | -0.097*** | -0.100*** | 1        |        |          |           |          |          |          |          |    |
| 4. Place of residence  | -0.043    | -0.118*** | 0.166**  | 1      |          |           |          |          |          |          |    |
| 5. Political orientation   | -0.109*** | 0.035     | -0.020   | 0.005  | 1        |           |          |          |          |          |    |
| 6. Ecological Welfare scale <sup>a</sup>                         | 0.117***  | 0.095***  | 0.005    | 0.011  | -0.114** | 1         |          |          |          |          |    |
| 7. Meat commitment <sup>b</sup>                                  | -0.225*** | -0.021    | -0.090** | -0.043 | 0.285**  | -0.165**  | 1        |          |          |          |    |
| 8. Perception of farmers <sup>c</sup>                            | 0.063*    | 0.060*    | -0.035   | -0.033 | 0.117*** | 0.223***  | 0.225*** | 1        |          |          |    |
| 9. Animal welfare [0] vs. domestic production [100] <sup>d</sup> | -0.168*** | 0.029     | 0.019    | -0.005 | 0.201*** | -0.249*** | 0.310*** | 0.136*** | 1        |          |    |
| 10. Animal welfare [0] vs. food prices [100] <sup>d</sup>        | -0.163*** | -0.006    | -0.037   | 0.053* | 0.191*** | -0.300*** | 0.336*** | 0.068**  | 0.592*** | 1        |    |
| 11. Animal welfare [0] vs. farmers' income [100] <sup>d</sup>    | -0.124*** | -0.004    | 0.025    | 0.016  | 0.167*** | -0.227*** | 0.286*** | 0.238*** | 0.614*** | 0.571*** | 1  |

Note: Gender: 0 = man, 1 = woman; place of residence on a scale from 1 (very rural) to 5 (very urban), political orientation from 0 (very left) over 50 (middle) to 100 (very right), <sup>a</sup> importance on a scale from 1 (not important at all) to 4 (very important) (Lindeman & Vaananen, 2000), <sup>b</sup> agreement on a scale from 1 (not at all) to 7 (very much) (Piazza et al., 2015), <sup>c</sup> agreement on a scale from 1 (not at all) to 7 (very much), <sup>d</sup> conflicting agricultural policy goals: weighing two agricultural policy goals against each other, with lower values indicating a tendency towards animal welfare. \* p <.05, \*\* p <.01, \*\*\* p <.001, H<sub>0</sub>: ρ = 0, that is there is no linear relationship between x and y in the population.

Table A4 (continued)

| German (original)  | English translation  |
|--|--|
| Weniger Pflanzenschutzmittel-Einsatz verringert die Nahrungsmittelproduktion und führt damit zu höheren Lebensmittelpreisen für KonsumentInnen.<br>- weniger Treibhausgas-Emissionen; tiefere Lebensmittelpreise<br>ZK 8                             | - Less greenhouse gas emissions; lower food prices<br><br>Avoiding greenhouse gas emissions increases production costs and thus leads to higher food prices for consumers.                     |
| Die Vermeidung von Treibhausgas-Emissionen erhöht die Produktionskosten und führt damit zu höheren Lebensmittelpreisen für KonsumentInnen.<br>- weniger Treibhausgas-Emissionen / tiefere Lebensmittelpreise<br>ZK 9                                 | - Less greenhouse gas emissions / lower food prices<br><br>More animal welfare means higher production costs and thus lower income for farmers.  |
| Mehr Tierwohl bedeutet höhere Produktionskosten und damit geringeres Einkommen der LandwirtInnen.<br>- Mehr Tierwohl / höhere landwirtschaftliche Einkommen<br>ZK 10   | - More animal welfare / higher farm incomes<br><br>More biodiversity means higher production costs and thus lower income for farmers.  |
| Mehr Biodiversität bedeutet höhere Produktionskosten und damit geringeres Einkommen der LandwirtInnen.<br>- Mehr Biodiversität / höhere landwirtschaftliche Einkommen<br>ZK 11   | - More biodiversity / higher agricultural income<br><br>Less use of plant protection products means higher production costs, which leads to lower incomes for farmers.                         |
| Weniger Pflanzenschutzmittel-Einsatz bedeutet höhere Produktionskosten, was zu tieferen Einkommen der LandwirtInnen führt.<br>- weniger Pflanzenschutzmitteleinsatz; höhere landwirtschaftliche Einkommen<br>ZK 12                                   | - Less pesticide use; higher farm incomes<br><br>Avoiding greenhouse gas emissions increases production costs and thus leads to lower income for farmers.                                      |
| Die Vermeidung von Treibhausgas-Emissionen erhöht die Produktionskosten und führt damit zu geringerem Einkommen der LandwirtInnen.<br>- weniger Treibhausgasemissionen; höhere landwirtschaftliche Einkommen<br>ZK 13                                | - Less greenhouse gas emissions; higher farm incomes<br><br>Lower food prices for consumers can lead to less income for farmers.   |
| Niedrigere Lebensmittelpreise für die KonsumentInnen können zu weniger hohen Einkommen bei den LandwirtInnen führen.<br>- tiefere Lebensmittelpreise; höhere landwirtschaftliche Einkommen<br>ZK 14  | - Lower food prices; higher farm incomes<br><br>Fewer nutrient surpluses require reduced fertiliser applications and can thus lead to lower crop yields and thus lower incomes for farmers.    |
| Weniger Nährstoffüberschüsse erfordern reduzierte Düngergaben und können somit zu geringeren Erntemengen und damit zu kleineren Einkommen der LandwirtInnen führen.<br>- weniger Nährstoffüberschüsse; höhere landwirtschaftliche Einkommen<br>ZK 15 | - Less nutrient surpluses; higher farm incomes<br><br>More biodiversity (e.g. hedges, flower strips, etc.) means higher food prices, because promoting biodiversity involves additional costs. |

Table A4 (continued)

| German (original)  | English translation  |
|--|--|
| Mehr Biodiversität (z.B. Hecken, Blühstreifen etc.) bedeutet höhere Lebensmittelpreise, weil Förderung der Artenvielfalt mit Mehrkosten verbunden ist.<br>- mehr Biodiversität; tiefere Lebensmittelpreise<br>ZK 16  | - More biodiversity; lower food prices<br><br>Fewer nutrient surpluses require reduced fertiliser applications and can thus lead to lower harvests and thus to higher prices for consumers.<br>- Less nutrient surpluses; lower food prices  |
| Weniger Nährstoffüberschüsse erfordern reduzierte Düngergaben und können somit zu geringeren Erntemengen und damit zu höheren Preisen für KonsumentInnen führen.<br>- weniger Nährstoffüberschüsse; tiefere Lebensmittelpreise<br><b>Responsibility</b><br>Wenn es um das Erreichen agrarpolitischer Ziele geht, bei wem sehen Sie da die grösste Verantwortung? Wer muss Ihrer Meinung nach dafür sorgen, dass die Ziele erreicht werden?   | - Less nutrient surpluses; lower food prices<br><br>When it comes to achieving agricultural policy goals, who do you see as having the greatest responsibility? Who do you think must ensure that the goals are achieved?<br>No responsibility at all (1) - Neutral (4) - Very much responsibility (7)<br>- Farmers (e.g. through production)  |
| Gar keine Verantwortung (1) – neutral (4) – sehr viel Verantwortung (7)<br>- Landwirtinnen und Landwirte (z.B. über die Produktion)<br>- Handel (z.B. über das Angebot beim Detailhändler)<br>- Konsumentinnen und Konsumenten (z.B. über Konsumverhalten)<br>- Staat / Politik (z.B. über Gesetze)<br><b>Agriculture and consumption</b><br>Bitte geben Sie für die nachfolgenden Aussagen an, wie sehr Sie diesen jeweils zustimmen.<br>Stimme gar nicht zu (-3) – weder noch (0) – stimme voll und ganz zu (3) Disagree (-3) - Neither (0) - Strongly agree (3)<br>- Ich bin LandwirtInnen gegenüber generell positiv eingestellt<br>- Die Arbeit der LandwirtInnen ist wichtig und wertvoll für die Gesellschaft.- The work of farmers is important and valuable for society.<br>- LandwirtInnen setzen sich für das Tierwohl ein.<br>- LandwirtInnen haben ein grosses Umweltbewusstsein.<br>- Bäuerliche Familienbetriebe sind wichtig und sollten erhalten bleiben.<br><b>Meat consumption</b><br>Bitte geben Sie für die nachfolgenden Aussagen an, wie sehr Sie diesen jeweils zustimmen.<br>Stimme gar nicht zu – stimme voll und ganz zu<br>- Wenn ich ein Menü auswähle, wähle ich praktisch immer die Fleischvariante- When I choose a menu, I almost always choose the meat option<br>- Der beste Teil vieler Mahlzeiten ist das Fleisch<br>- Ich würde niemals aufhören, Fleisch zu essen<br>- Ich bin überzeugte/r Fleischesser/in<br>- Ich möchte keine Gerichte ohne Fleisch essen<br>- Ich kann mir nicht vorstellen, mit dem Fleischessen aufzuhören<br>- Ich kann mir nicht vorstellen, Fleisch in einer Mahlzeit durch etwas anderes zu ersetzen | - Retailers (e.g. through the range of products offered by retailers)<br>- Consumers (e.g. through consumer behaviour)<br>- State / politics (e.g. through laws)<br><br>For the following statements, please indicate how much you agree with each of them.<br><br>- I have a generally positive attitude towards farmers<br><br>- Farmers are committed to animal welfare.<br>- Farmers have a high level of environmental awareness.<br>- Family farms are important and should be preserved.<br><br>For the following statements, please indicate how much you agree with each of them.<br>Strongly disagree - Strongly agree<br><br>- The best part of many meals is the meat<br>- I would never stop eating meat<br><br>- I am a convinced meat eater<br>- I don't want to eat meals without meat<br>- I can't imagine stopping eating meat<br>- I can't imagine replacing meat in a meal with something else |
| <b>Food</b>  |  |

(continued on next page)

Table A4 (continued)

| German (original)   | English translation  |
|---|--|
| Es ist wichtig, dass die Lebensmittel, die ich an einem Tag konsumiere, ...   | It is important that the food I consume in a day is ...  |
| Gar nicht wichtig – sehr wichtig  | Not at all important - Very important  |
| - in einer Art und Weise hergestellt wurden, dass das Gleichgewicht der Natur nicht beeinträchtigt wurde                  | - have been produced in a way that has not affected the balance of nature                                |
| - in einer Art und Weise produziert wurden, dass Tiere keine Schmerzen erfahren haben                                     | - produced in a way that does not cause pain to animals  |
| - umweltfreundlich produziert wurden  | - were produced in an environmentally friendly way   |
| - in einer Art und Weise produziert wurden, dass die Rechte der Tiere respektiert wurden                                  | - are produced in a way that respects the rights of animals  |
| - umweltfreundlich verpackt sind  | - are packaged in an environmentally friendly way  |
| <b>End</b>  |  |
| Wir sind schon fast am Ende dieser Befragung. Sollten Sie noch weitere Bemerkungen haben, können Sie diese hier notieren. | We are almost at the end of this survey. If you have any further comments, you can write them down here. |
| Vielen Dank!  | Thank you very much!   |
| Somit sind wir jetzt am Ende dieser Befragung angelangt.  | We have now reached the end of this survey.  |
| Wir danken Ihnen ganz herzlich für Ihre wertvolle Teilnahme an dieser Studie. Sie können die Umfrage jetzt schliessen.    | We thank you very much for your valuable participation in this survey. You can now close the survey      |

we therefore find that agricultural production serves more than the production of food, as agricultural policy mirrors individuals' values.

### 3.3. Limitations and outlook

One limitation of the present study was that we worked with self-report data. The participants rated simplified scenarios, and the data may be subject to social desirability. Future studies should investigate how the public rates animal welfare in the current political debates, which may provide more information. Additionally, our study analysed the Swiss context. The importance of animal welfare differs between countries and cultures and therefore, further contexts should be analysed in future studies (de Boer & Aiking, 2022a). Another limitation of this study is that we broke down complex relationships into simplified pairs of conflicting goals. For instance, we described animal welfare (i.e. more space per animal) as conflicting with food security (i.e. more space for plants). However, a lower number of animals (i.e. more space per animal) would also defuse the food / feed competition (Mottet et al., 2017). Further, we would like to point out that "increasing animal welfare" as agricultural policy goal is an overarching construct that can include several specific and entirely different measures. For instance, Espinosa (2023) outlined twenty different policy measures that are related to animal-welfare. Most importantly, increasing the efforts for one agricultural policy goal will have implications on more than one conflicting goal. Future studies should therefore also try to include more complex relationships and interactions between agricultural policy goals. Finally, how meat commitment develops over time should be monitored, especially now that plant-based products are increasing in market shares (Ploil et al., 2020). Monitoring possible shifts in meat commitment can facilitate the adjustment of agricultural policy accordingly.

### 3.4. Conclusion

This study investigated the importance of animal welfare as an agricultural policy goal for consumers and individual predictors for weighing animal welfare against conflicting policy goals, with a special focus on personal values including meat commitment. Most importantly, we found that meat commitment is a significant, negative predictor for

the weighing of animal welfare. This finding is important for two reasons. First, it supports the notion that committed meat eaters are less likely to endorse universalistic values, that is, animal welfare. Those who are more committed to meat consumption tend to place less importance on animal welfare as an agricultural policy goal. Second, this finding is important from a policy perspective. Our study is in line with previous research, highlighting the importance of animal welfare as an agricultural policy goal. Importantly, our study adds to the discussion by demonstrating that animal welfare remains important when it is in direct conflict with three different policy goals. The fact that all value variables correlate highly with the importance of animal welfare as an agricultural policy goal suggests that this policy goal appeals directly to personal values. Finally, as meat consumption and commitment are variable constructs that evolve and can change over time, so needs to be agricultural policy, given that the support of and demand for animal welfare policies in the population is connected to those constructs. Analysing and understanding the meat commitment of a society can therefore help assess its support for animal welfare policies and the potential of agricultural policy to contribute to more sustainable food systems.

### CRedit authorship contribution statement

**Jeanine Ammann:** Conceptualization, Investigation, Data curation, Writing – original draft, Project administration. **Gabriele Mack:** Conceptualization, Methodology, Writing – review & editing. **Judith Irek:** Conceptualization, Methodology, Writing – review & editing. **Robert Finger:** Conceptualization, Methodology, Writing – review & editing. **Nadja El Benni:** Conceptualization, Methodology, Writing – review & editing, Resources.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

will be made available

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### Appendix

Tables A4–A6.

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