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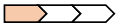
Acceptance of meat reduction policies in Switzerland

Policy Measure	Measure Type	Coerciveness	Acceptance	Strong Rejection
Sustainable diet education	Information measure			-
VAT exemption for vegetable foods	Positive Incentive			Food Industry, Research Institutes, Interest Groups, Political Parties
No subsidies for meat advertising	Removal of Positive Incentive			Political Parties
VAT increase for meat products	Negative Incentive			Political Parties, Interest Groups, Food Industry
Stricter requirements in livestock farming	Regulation			-
Limiting shares of meat products in retail assortments	Regulation			Food Industry, Political Parties, Interest Groups
...	...	...	...	...

Sebastian Richter, Adrian Muller, Mathias Stolze, Isabelle Schneider, Christian Schader

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Highlights

We assess stakeholder-acceptance for 37 elaborated meat reduction measures

Acceptance for deeply-intervening meat reduction measures is low

Potential for consensus found for research promotion and sustainable diet education

Addressing key stakeholder concerns crucial to improve acceptance of the measures

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Acceptance of meat reduction policies in Switzerland

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SUMMARY

The aim of this study was to analyze the acceptance of different policy measures affecting meat consumption in Switzerland. We conducted qualitative interviews with leading stakeholders and elaborated 37 policy measures for reducing meat consumption. In a standardized survey, we analyzed the acceptance of these measures and important preconditions for their implementation. Measures with potentially the biggest direct leverage, such as a VAT increase on meat products, were highly rejected. We found high levels of acceptance for measures that do not directly affect meat consumption but have the potential for significant changes of meat consumption in the longer run – such as research investment and sustainable diet education. Furthermore, some measures with considerable short-term effects were widely accepted (e.g., stricter animal welfare standards, ban of meat advertisements). These measures could be a promising starting point for policy makers aiming at a transformation of the food system toward lower levels of meat consumption.

INTRODUCTION

Reducing meat consumption is seen as an important lever for making food systems more sustainable, in particular in countries with a high meat consumption level such as Switzerland.[1–6] By reducing meat consumption, several target dimensions of sustainable food systems in high-income countries can be addressed. Various studies point to simultaneous health and environmental benefits of reduced meat consumption[7–9] and argue for a reduction of meat consumption as an important precondition for thoroughgoing animal welfare improvements.[10,11]

In the socio-political discussion, a reduction of meat consumption is highly controversial. Different stakeholders (hereafter SHs) of the food system may have strong positions regarding certain policy measures and try to influence the political process as well as the societal discourse on meat consumption.[12–15] Environmental associations and NGOs point out the ecological and health consequences of meat consumption and call for political action to reduce meat consumption; companies and associations from the food industry, on the other hand, warn against patronizing consumers through government consumption guidelines and market-distorting interventions.[15] Through understanding the acceptance of different policy options by central SHs, key points of conflict can be addressed when introducing and implementing policy measures.[16,17] Furthermore, a better understanding of SH-acceptance enables the development of concrete packages of measures that include a combination of those individual measures that have a positive impact on socio-political support for the respective packages of measures in their entirety, thereby addressing the conflict between the effectiveness and political feasibility of measures that is often found in the literature.[18] On the other hand, substantial reservations of SHs can be addressed by developing ways to compensate or offset SHs negatively affected by the measures. A sound knowledge of the socio-political acceptance of policy measures is therefore crucial for their successful implementation and long-term establishment.[19–22]

There is currently little research in the scientific literature on the acceptability or socio-political feasibility of sustainable food policy measures.[18] In the specific context of reducing the consumption of meat products, the acceptance of SHs has hardly been investigated. Individual studies have examined interests and perceptions, attitudes or support for measures. Sievert et al.[14] analyzed key actors and power structures as well as their interests and perceptions. Sievert et al.[15] investigated the attitudes and framings used by different SH-groups toward a reduction of red and processed meat consumption. Grimsrud et al.[23] analyzed the acceptance and willingness to pay for a (climate-motivated) meat tax. Furthermore, Fesenfeld

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et al.[18] used a conjoint experiment to investigate support for different packages of measures to reduce meat and fish consumption and promote plant-based foods, to generate politically enforceable packages by systematically bundling various individual measures. However, their investigation was limited to the SH-group of citizens/consumers. Furthermore, the notions of acceptability, attitudes, perception, and support differ in their scope and content from the notion of acceptance and need to be distinguished from it, although they are sometimes used interchangeably in the literature or are not clearly distinguished from each other.[24] To the best of our knowledge, a comparative analysis of the acceptance of different organized SH-groups on different policy measures for meat reduction has not been conducted so far. We addressed this research gap by using a two-stage SH-survey to elaborate different policy options for reducing meat consumption in Switzerland and analyzed their socio-political acceptance. In doing so, we addressed the following three research questions:

i. Which policy measures for a direct or indirect reduction of meat consumption can be derived from the socio-political discussion?

ii. How accepted are different policy measures for reducing meat consumption?

iii. Which relevant preconditions for an implementation of the measures are mentioned by SHs?

For answering these questions, we chose Switzerland as a case study because it is a high-income country with meat consumption levels exceeding national dietary recommendations and the abundance of both extensive (grassland-based) and intensive domestic meat production with substantial share of imported feedstuffs. The average meat consumption in Switzerland is currently about 51 kg per year and person,[25] which is significantly higher than the level recommended by the Swiss Society for Nutrition.[26] Accordingly, Frehner et al.[9] show that substantial synergies between health and ecological target dimensions of the Swiss food system could be achieved by reducing meat consumption levels. Furthermore, Switzerland can be seen as a frontrunner in terms of a) the active socio-political discourse, because of several past and upcoming referenda addressing the sustainability of food systems and b) progressive, target-oriented agricultural policies that acknowledge the multifunctional character of agriculture.

Many other high-income countries share Switzerland's characteristics of high meat consumption and a mix of extensive and intensive meat production with a high share of imported concentrate feed. Moreover, the socio-political discourse about reducing meat consumption as a way to reduce the environmental burden of food systems is progressing also in many member states of the EU (e.g., through the Farm to Fork Strategy) and in the US. Therefore, the results may be applicable to other countries, particularly in the EU and the US.

We proceed by introducing the conceptual frame of this study (Section Conceptual background) and presenting the results of the SH-surveys (Section Results). The presentation of results is structured along the three research questions: first, the policy measures to reduce meat consumption are presented and categorized (Section Classification of policy measures), followed by the quantitative and qualitative analysis of SH-acceptance for the policy measures (Section Evaluation of acceptance of policy measures). Building on this, we discuss key findings of this study and address relevant policy implications (Section Discussion), before providing conclusions and an outlook for researchers and political practitioners (Section Conclusion). The approach and methodology used to analyze the research questions is described at the end of the paper.

Conceptual background

Stakeholder acceptance

In a literature review, Busse and Siebert[24] investigate the use of the notion of acceptance in a variety of studies in the field of land use and conclude that there is no uniform understanding of acceptance, but that rather a variety of partly inconsistent definitions are used or the term is understood as common and therefore not further defined. They elaborate on and discuss different characteristics and structural features of the concept of acceptance, the most important of which for the purposes of our study being the following: excluding versus including rejection, intra-personal versus intersubjective judgment processes, type of acceptance and degree of acceptance.[24] In the context of this study, we define SH-acceptance as the evaluation of an option by SHs based on perceptions of appropriateness and suitability, which reflects the liking or disliking of that option on the part of the evaluating person or organization on a continuum between approval and rejection (based on Brunson,[27] Wolsink,[28] Specht et al.,[29] Busse and Siebert[24]).

Accordingly, our working definition of acceptance includes not only the positive dimension of approval of a measure, but also the negative dimension of rejection.[24] Furthermore, our notion of "acceptance is not focused on behavior, even though it is a (pro)active opinion-forming process in terms of an intersubjective or intra-personal engagement" (Busse and Siebert,[24] p.239). As such, our notion of acceptance refers to the type of social-political acceptance[28,30] and includes as social groups key SHs of the Swiss food system.[24] By this we mean individuals or organizations that are either directly involved in food system activities (in the context of food production, processing, distribution, consumption, or disposal), or exert an influence on decision-making in this context.[16] We did not consider individual citizens or consumers and instead examined the acceptance of key SH-organizations in the Swiss food system, including political parties, government institutions, national umbrella organizations of municipalities, cities and mountain regions, the economy and agriculture, relevant business associations and civil society actors as well as relevant economic corporations in the context of the Swiss food system and relevant Swiss research institutes. The degree of acceptance of a measure in the form of approval or rejection can take different forms and can range from rejection to active ownership.[24] Given the large number of different policy measures and comparatively high complexity of the questionnaire, and to reduce the decision-making burden and the time required for participants, we limited the acceptance query to four possible and distinct choices – approval, conditional approval or rejection of a measure and no opinion/indifference (explained in more detail in the STAR Methods section below).

Factors influencing stakeholder acceptance

SH-acceptance of different policy measures can depend on various individual and contextual factors.[31] In the context of our study, individual (SH-related) factors are related to the level of the organizations, as the participants in our study can be seen as representatives of their respective organization. Schade and Schlag[32] as well as Pleger[31] identify various essential determinants for *public* acceptance. Some of these determinants are also relevant for the acceptance of SHs at the organizational level. Building on this and adapting it to the context of SH-organizations, relevant determinants include these individual factors: (1) SHs *expected socio-economic impacts* of the implementation of the measures on their own operations, with more negative impacts leading to a lower degree of acceptance; (2) *organizational aims* – i.e., are the aims of the organization primarily socially oriented or more oriented toward the interests of in-group members, where more socially oriented organizations can be assumed to have a higher acceptance for meat reduction measures because of the long-term social benefits (cf. Section Introduction); and (3) SHs *perceived effectiveness* (i.e., whether the measure achieves its intended aim) *and efficiency* (in terms of cost-benefit-considerations) of the measures, with a lower efficiency leading to lower acceptance and a lower effectiveness leading to lower acceptance in case the organization is generally in favor of the corresponding measure. (Schade and Schlag[32])

Furthermore, the relevant contextual factors are (1) The *economic conditions* (i.e., the current state of the economy (e.g., recession, with a worse state tending to be accompanied by a lower level of acceptance because of potential negative economic impacts and adverse effects of meat reduction measures); and (2) the *type of policy measure*.[31] The latter can be differentiated between market-based measures (in our study negative and positive financial incentives) and non-marked-based measures (in our study voluntary and information measures as well as regulations) as well as their depth of intervention or coerciveness, with measures that financially disincentivize and sanction, restrict, and/or prohibit certain types of behavior (so-called 'push measures') – in our case the consumption and production of meat products – having a high degree of coerciveness, whereas measures promoting a certain type of behavior (so-called 'pull measures') – in our case the consumption and production of meat alternatives – having a low degree of coerciveness.[33,34] On the level of the individual organizations, the type of measure influences both the expected socioeconomic impacts of the measure as well as its perceived effectiveness and efficiency. Both can vary depending on the type of SH-organization. Whereas SHs directly affected in their own operations by a certain measure can be assumed to have lower acceptance for more coercive measures, because of their high socio-economic impacts, SHs with primarily socially oriented aims that are not directly affected by the measure in their own operations can be assumed to have a higher degree of acceptance. On a more general societal level though, acceptance for policy measures with a low degree of intervention depth or coerciveness (e.g., information measures) can be assumed to be comparatively higher. For differences in acceptance of marked-based compared to non-marked-based measures, at least for the acceptance of the general public, no clear pattern can be found in the literature.[31] Figure 1 summarizes the above statements.

RESULTS

Section Classification of policy measures provides an overview of the classification of policy measures for reduced meat consumption (Research Question 1). Section Evaluation of acceptance of policy measures

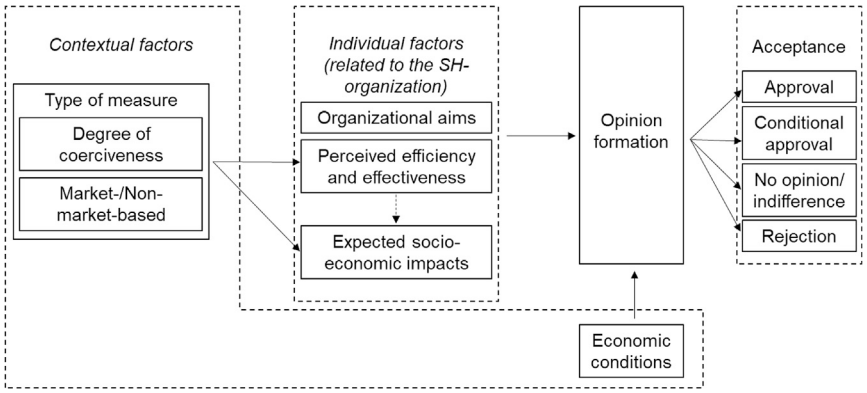

Figure 1. Individual and contextual factors influencing opinion formation and (degree of) acceptance of the SH-organizations; source: own illustration based on Schade and Schlag[32] and Pleger[31]

presents the SH-acceptance of the policy measures (Research Question 2) and the analysis of preconditions for implementing the policy measures (Research Question 3).

Classification of policy measures

In Table 1, the 37 measures elaborated from the SH interviews and the socio-political discussion are assigned to the four food system areas (rows) and measure types (columns). The largest number of measures (11) are regulatory measures, i.e., measures that constitute binding government regulation. Nine measures are positive incentives – measures that provide financial support for certain products, services or production methods by the state. Two measures are aimed at removing such subsidies (removal of positive incentive). The information measures (six in total) include both the provision of information in the narrower sense, e.g., via campaigns, as well as educational measures and product labeling obligations, which are also aimed at conveying information, but contain a regulatory obligation and could therefore also be classified as a regulatory measure. The two voluntary measures are target agreements between retailers and the state but without binding force, which means that failure to achieve the target is not sanctioned. Six measures are negative incentives, i.e., these measures levy financial charges on certain products, services or modes of production. The complete version of the matrix of measures contains a more detailed description of the individual measures as well as the assignment to thematic areas, in addition to the assignment to the measure type and area of the food system (see Table S1). A graphical overview of the 37 meat reduction measures and their associated categories is provided in Supplemental Information B (Figure S1).

Evaluation of acceptance of policy measures

Figure 2 shows the acceptance of the 37 individual measures, ranked in ascending order of the number of rejections. The measures at the top of Figure 2 are therefore the least rejected ones, the measures at the bottom are the ones most often rejected by the SHs. The assignment to the respective measure type is given in parentheses after the individual measures (Voluntary Measure (VM), Information Measure (IM), Positive Incentive (PI), Removal of Positive Incentive (RPI), Negative Incentive (NI), Regulation (R), Others (O)).

Measures with high acceptance

The measures "voluntary target agreement between farming associations, retailers and Federal Government to improve animal welfare", "sustainable diet education", "research promotion for sustainable food systems" and "strengthening of antibiotic requirements and controls" received the lowest levels of rejection. Only one or none of the SHs rejected these measures. Low rejection is also found for the measures "information and prevention campaigns on sustainable and healthy diets" and "mandatory labeling of meat imports from production methods prohibited in CH". Thus, in addition to research funding, the measures with the highest rate of approval are information measures as well as voluntary measures. Despite their high acceptance, important caveats need to be considered when discussing, introducing and implementing these measures, especially because some SHs only conditionally approved them. The preconditions for acceptance mentioned by SHs provide useful insights into such caveats. Regarding the two measures "information and prevention campaigns on sustainable and healthy diets" and "sustainable diet education", various SHs particularly emphasized the need of a balanced, ideology-free implementation.

Table 1. Matrix of the 37 meat reduction measures assigned to their respective food system area (rows) and measurement type (columns); see also Figure S1, Tables S1 and S4.

	Measurement type						
Food system area	Voluntary Measures	Information Measures	Positive Incentive	Removal of Positive Incentive	Negative Incentive	Regulation	Others
Agriculture	- Voluntary target agreement between farming associations, retailers and Federal Government to improve animal welfare	–	- Direct payment increases for site-adapted (grassland) meat production - Direct payment shift from livestock to plant production - Transformation support for conversion from livestock to plant production	- No investment support for livestock barns of non-site-adapted agricultural systems (site-adapted agricultural systems are further characterized in SI A, Table S1, measure A.1.1 (cf. also Müller et al.[35]))	- Levy on nitrogen surpluses	- Strengthening of requirements for use and controls of antibiotics - Binding target agreement between farming associations, retailers and Federal Government to improve animal welfare - Strengthening of requirements and controls in livestock farming	–
Processing/Trade	- Voluntary target agreement between retailers and the Federal Government on limitations of the share of meat products in the overall retail assortments	–	–	–	- Levy increase on feed and meat imports	- Mandatory limit on the share of meat products in the overall retail assortments - Reduction of regulatory barriers for the reuse of meat products - Extension of the auction system for quota meat imports - Link tariff and quota system to the agricultural standards that are binding in Switzerland (CH)	–

(*Continued on next page*)

Table 1. ***Continued***

	Measurement type						
Food system area	Voluntary Measures	Information Measures	Positive Incentive	Removal of Positive Incentive	Negative Incentive	Regulation	Others
Consumption/Demand	–	- Tightening of "Swiss meat" labeling criteria - Mandatory labeling of meat imports from production methods prohibited in Switzerland (CH) - Mandatory labeling of "non-site-adapted" agriculture - Information and prevention campaigns on sustainable and healthy diets - Sustainable diet education - Mandatory animal welfare label	- Promotion of nudging for meat alternatives - Sales promotion of meat substitutes - Food coupon issuance for vegetable foods - Value added tax (VAT) exemption for vegetable foods	- Removal of subsidies for meat advertising	- Increase VAT for meat products to regular VAT rate of 7.7% - Increase VAT for meat products to >7.7% - Internalization of external costs of meat production through a meat tax - Label-based tax for animal welfare	- Regulation of nudging for meat alternatives - Limiting the amount of meat offered in public catering - Sustainability standards for public catering - Advertising and discount regulation for meat products	–
Others	–	–	- Innovation promotion for sustainable food systems - Research promotion for sustainable food systems	–	–	–	- Favor sustainable food concepts when leasing public properties

Figure 2. Acceptance of the 37 meat reduction measures

The numbers in the above figure represent the number of individual SHs that rejected the measure (orange), stated "don't know" (gray), conditionally approved (light blue) or approved (dark blue) the measure. See also Figure S2 and Table S6.

Regarding voluntary target agreements for animal welfare, individual SHs pointed out the necessity to accompany the measure by creating transparency along the value chain and to establish them "in strict co-ordination with the label associations".

Among the measures involving financial incentives, comparatively high numbers of approval can be found for measures aiming to remove existing positive incentives for meat production or consumption. A total of 15 and 14 SHs respectively approved the measures "no investment support for livestock-barns of non-site-adapted agricultural systems" (a definition of such systems is given in Table S1, Measure A.1.1) and "removal of subsidies for meat advertising". Although for these two measures the number of rejections is considerably higher (six rejections each) compared with the above information and voluntary measures, acceptance for these measures is higher than for all other measures involving positive or negative financial incentives. A precondition mentioned was that there should be "advance notice (lead time); financial compensation;[and] changeover assistance" when removing the investment support for livestock-barns of non-site-adapted agricultural systems.

Among the regulations, the measures "reduction of regulatory barriers to reuse meat products", "link tariff and quota system to the agricultural standards that are binding in Switzerland", and "strengthening of requirements and controls in livestock farming" show the lowest rejection rates (descriptions of these measures can be found in Table S1). The measure "strengthening of antibiotic requirements and controls" was rejected by only one SH, but many SHs (13) only conditionally approved this measure. It consists in the removal of the currently existing exemptions for *preventive* antibiotic treatment and thus a complete ban on *preventive* antibiotic use, as well as the introduction of stricter controls and the creation of greater transparency on antibiotic use in general (not only preventive), which can be used in the medium term to establish benchmarking across the various farms and associations. The main preconditions mentioned by

SHs were that the measure should be accompanied by advice, training and further education of farmers and veterinarians on preventive health measures. The "inclusion of veterinarians" should be ensured and necessary information provided. Furthermore, the "creation of structures that allow preventive use to be avoided" was called for as a prerequisite. In a similar vein, there was also a call for simultaneous "stronger support for species-appropriate animal husbandry (calf husbandry, pig fattening, etc.)." If the necessary conditions are not created, a complete ban on preventive antibiotic use could produce negative side effects. In this context, concerns were expressed with regard to animal welfare ("if animals are not treated until they are sick") and an increased total use of antibiotics (e.g., because of disease outbreaks). In this sense, there were also individual calls for the "exemption regulations to be retained, because they only come into play in – justified – exceptional cases." Likewise, it was expressed that "effective alternatives must be known and applicable."

Regarding preconditions for the measure "strengthening of requirements and controls in livestock farming", individual SHs referred to the need for facilitation by conducting risk-based controls and ensuring that the "first complaint does not lead to sanctions" as well as the need for education and sensitization by "raising awareness among buyers". As preconditions for the measure "Link tariff and quota system to the agricultural standards that are binding in Switzerland", some SHs mentioned that a close cooperation with the EU as well as a functioning market supply should be ensured, and that the standards in Switzerland need to be "demonstrably higher/better than abroad." Several SHs mentioned further restrictions concerning potential trade law problems that could arise from implementing the measure. Individual SHs considered the measure "problematic when it comes to compliance with international agreements." For the measure "reduction of regulatory barriers to reuse meat products" SHs primarily addressed the precondition that negative impacts on human or animal health must be avoided by meeting the necessary health and hygiene requirements, with BSE (bovine spongiform encephalopathy) as a negative example repeatedly referred to.

Measures with low acceptance

The measures most frequently rejected are the regulatory measures "mandatory limit on the share of meat products in the overall retail assortments", "regulation of nudging for meat alternatives" by the state as well as the financial incentives "VAT exemption for vegetable foods", "increase VAT for meat products to >7.7%". The regulatory measure "advertising and discount regulation for meat products", which is currently being discussed and considered by the Federal Office for Agriculture (FOAG) in Switzerland in a somewhat similar form,[36] is also strongly rejected, with only seven out of 23 SHs approving this measure, three conditional approvals and twelve rejections. However, as the measure in this survey encompasses the regulation of discounts for meat products and not only the prohibition of advertising for discounts on meat products, as discussed by the FOAG, the measure included in this survey is more stringent. Of interest, there is no clear pattern that emerges in this context regarding the type of measures with high rejection rates. Among the most rejected measures are both regulatory measures as well as negative and positive incentives.

Polarizing measures

We use the term 'polarizing measure' for measures with a relatively high and roughly equal approval and rejection rate, meaning that SHs approved and rejected the same measure to a roughly equal degree. This is especially the case for the following five measures: "direct payment shift from livestock to plant production"; "Voluntary target agreement between retailers and the Federal Government on limitations of the share of meat products in the overall retail assortments"; "increase VAT for meat products to regular VAT rate of 7.7%"; "sales promotion of meat substitutes"; and "levy increase on feed and meat imports". The divergence in SH-acceptance for these measures is reflected in conflicting positions between different groups of SHs. For example, all three research institutions approved the measure "levy increase on feed and meat imports", whereas all four companies from the food industry rejected it. A similar pattern emerges for the measures "increase VAT for meat products to regular VAT rate of 7.7%" and the voluntary target agreement on meat limitations in retail markets: again, all three research institutions approved both measures, whereas among the companies from the food industry, three rejected both measures with one conditional approval each. In an attenuated form this also applies to the measure "direct payment shift from livestock to plant production", with research institutions and NGOs approving or conditionally approving them and companies from the food industry as well as interest groups mostly rejecting them. An exception is the measure "sales promotion of meat substitutes", for which the approval and rejection rate is relatively even across all six SH-groups with high variations between the individual organizations *within* the respective groups.

Type of measure, stakeholder groups and acceptance

Figure 3 presents the average acceptance rates for the different measure types overall and with respect to the various organization types or SH-groups. Rejection of the measures is comparatively low overall for the non-coercive voluntary measures (17%) and information measures (18%) and highest for more coercive push measures of the type 'negative incentive' (43%). However, measures of the type 'positive incentive' (i.e., less coercive pull measures) are also frequently rejected (33%) with a slightly higher rejection rate than comparatively more coercive regulations (32%). The market-based measures of the types of positive and negative incentives are therefore the least accepted ones overall. Nevertheless, the marked-based measures of the type 'removal of positive incentive' are less rejected (26%), also compared to non-marked-based regulations. For all identified patterns on an aggregate level, it has to be emphasized, that there is considerable variation between individual measures within the categories.

Taking into account the acceptance among different SH-groups, distinct differences can be found between the organization types. SHs from the food industry as well as interest groups and political parties generally have much lower acceptance rates compared to NGOs, research institutes or state institutions. This divergence is particularly strong for negative incentives, for which rejection from NGOs, research institutes and state institutions is comparatively low (8%, 17% and 17% respectively) and not higher on average than for positive incentives or regulations. In contrast, rejection for negative incentives is very high among SHs from the food industry (75%), interest groups (64%) and political parties (61%) and considerably higher than for regulations or positive incentives for all three SH-groups.

The same pattern can be found regarding measures from the thematic areas of 'direct meat reduction' and 'meat alternatives', where rejection among these three SH-groups is exceptionally high, whereas among NGOs, research institutes and state institutions this is not the case. The corresponding graphic can be found in Figure S2.

Preconditions for the implementation of measures

Some preconditions for individual measures have already been discussed above. In this section, some general observations regarding the preconditions mentioned by SHs across all 37 measures will be discussed. Most of the mentioned preconditions refer to the economic impact of the measures. Several SHs mentioned that negative consequential effects of measures on the domestic economy and its economic actors are to be avoided. Also, the importance of ensuring congruence between domestic and foreign standards was mentioned relatively frequently by SHs. They were concerned with balancing out different country specific standards either by harmonizing the standards or by making foreign products with lower standards more expensive, so as not to discriminate the Swiss producers and processors through additional measures or higher requirements. Furthermore, it is important to some SHs that the introduction of individual policy measures does not lead to an imbalance between supply and demand. In this context, SHs pointed out that supply side measures – e.g., those that require more stringent agricultural production standards and would possibly be accompanied by a price increase – must be covered by corresponding demand or supplemented by accompanying production- and consumption-side measures.

Many of the preconditions mentioned also refer to the policy design of the measures. Here, SHs specifically referred to the need to (1) aim at facilitating the changeover or implementation for affected SHs by granting a lead time before the measure becomes mandatory or by granting a tolerance range within which no sanctioning takes place; (2) aim at improving comprehensibility and transparency for consumers (e.g., in the case of product labeling or an animal welfare label); (3) generate coherent policies by considering the induced incentive and negative side effects on other areas and gearing them toward a common goal. As one SH put it: "In principle,[…] a comprehensive approach with a mix of measures and instruments is very important to achieve progress and not to shift problems between areas or countries." As a concrete example for this approach, it is mentioned by one SH that the implementation of sales promotion for meat substitutes should be accompanied by the removal of sales promotion for animal products to ensure political coherence.

Regarding the socio-political implementation and ethical considerations several SHs emphasize to start with less far-reaching measures and implementing far reaching ones only if the desired results are not achieved. Furthermore, several SHs emphasize, that the concrete introduction and implementation of a measure should be done in cooperation with the affected SH-groups and accompanied by education and awareness raising, as well as training for the affected SHs.

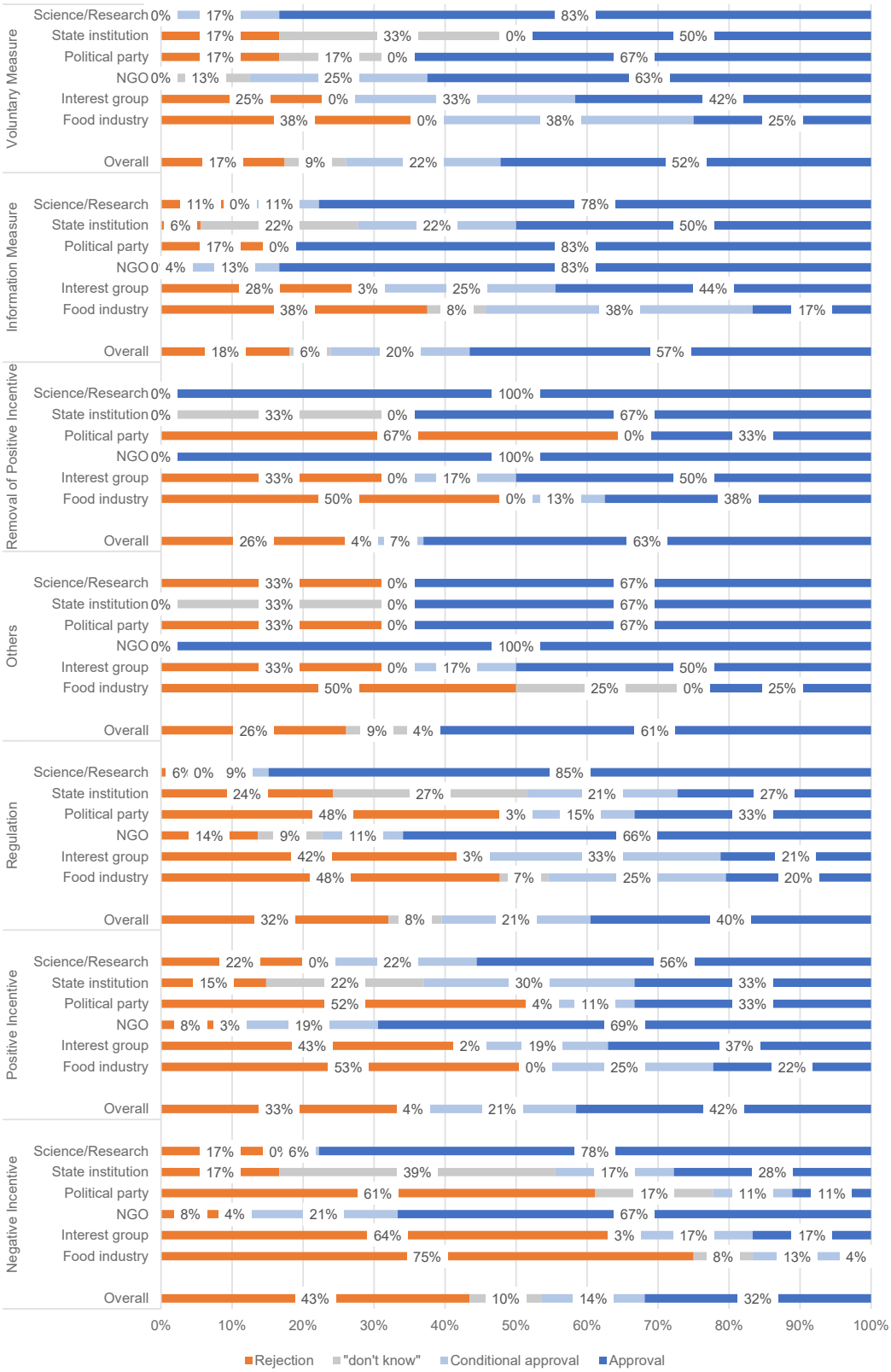

Figure 3. Acceptance by measure and organization type

The numbers in the above figure represent the average percentage of SHs of the respective organization type that rejected (orange), stated "don't know" (gray), conditionally approved (light blue) or approved (dark blue) the measures from the respective measure type. See also Figure S2.

The complete list of coded preconditions and overarching categories can be found in Supplemental Information, Table S6.

DISCUSSION

Degree of coerciveness and effectiveness

The results have shown a high degree of acceptance for measures with low coerciveness or with voluntary character, for which the immediate effectiveness of implementing any one of these measures individually is presumably low. In contrast, acceptance for coercive measures with higher short-term effectiveness is generally low. These findings underline "the potential trade-off between political feasibility and problem-solving effectiveness" (Fesenfeld et al.,[18] p. 173). Measures with a high degree of coerciveness are especially rejected by SHs directly affected by meat reduction measures – organizations from within the food industry or interest groups –, but also by political parties. However, also some non-coercive pull measures have received comparatively low levels of acceptance, especially measures of the type 'positive incentive' with approximately equal average acceptance rates than the more coercive regulations. We therefore find no clear pattern regarding the type of measures with high rejection rates. However, it is noticeable that negative incentives (e.g., tax increases) are on average most frequently rejected by SHs, especially if they target the area of consumption/demand. This result is in line with previous research by Grimsrud et al.,[23] who found low levels of acceptance of citizens in Norway for a tax on red meat.

The fact that we find no clear pattern of acceptance regarding the type of measure may be better explained by taking into account the acceptance across different thematic areas. Among the different thematic areas, least accepted are measures from the areas 'direct meat reduction' and 'meat alternatives', with roughly equal average approval and rejection rates. This result is somewhat surprising, as it could have been expected, that measures aimed at the promotion of meat alternatives (non-coercive pull measures) would receive higher acceptance rates than measures aimed directly at the reduction of meat products (coercive push measures).[18,34] It can be assumed, that high degrees of rejection are because of SHs expected negative socio-economic impacts on their own operations (see Figure 1 above), which are expected by SHs directly affected by meat reduction measures particularly from measures with either high effectiveness in reducing meat products (negative incentives aimed at directly reducing meat production or consumption), or high effectiveness in improving the competitiveness of alternative market products (positive incentives to increase the production or consumption of meat alternatives). Nevertheless, we have not tested for this link in our study, and it has to be emphasized that for all identified patterns on an aggregate level there is considerable variation between individual measures within the categories.

Fesenfeld et al.[18] demonstrate for citizens that a low level of acceptance for negative incentives can be mitigated by designing policies in a specific way (e.g., regarding the earmarking of tax revenues) and combining it with more accepted policy instruments (e.g., stricter animal welfare requirements) in policy packages. Nevertheless, if policy makers want to include more far-reaching measures when designing food policies to reduce meat consumption, they should be aware that measures involving negative incentives are likely to considerably decrease the acceptance of the overall policy or policy packages, especially among SHs from within the food industry as well as interest groups.

Market-based versus non-marked-based measures

The lowest level of acceptance in our study is found for marked-based measures (positive and especially negative incentives). However, marked-based measures of the type 'removal of positive incentive' are found to be less rejected compared to non-marked-based regulations. Considering the variations of acceptance between the individual measures within their respective measure type category, no clear pattern of acceptance can be inferred for marked-based and non-marked-based measures. This finding is consistent with previous research and could be attributable to the so-called "cost illusion", which refers to an underestimation of "the costs of command-and-control instruments because they are less visible than in market based instruments." (Pleger,[31] p. 504)

Differences in acceptance between stakeholder groups

State institutions and especially NGOs and research institutes were found to have the highest average acceptance for the meat reduction measures. These are SHs with comparatively low direct affectedness by these measures and rather socially oriented organizational aims. In contrast, interest groups and

food industry organizations, which are more affected by the meat reduction measures in their own operations were found to have the lowest average acceptance rates for the meat reduction measures. Nevertheless, it has to be emphasized that between the various organizations within these SH-groups, considerable deviations in acceptance were found and that the category of interest groups includes very different organizations with different organizational aims and operations.

Economic conditions

The general economic background conditions at the time of data collection (June to the end of October 2021) were influenced by the socioeconomic crisis related to COVID-19. Nevertheless, we did not further investigate the influence and impact of the crisis on the SH-acceptance of the measures.

Promising individual measures

When considering a longer time horizon, the two measures "research promotion for sustainable food systems" and "sustainable diet education", which are both highly accepted, could prove to be very effective by providing the basis for major innovations and changing attitudes of food system actors.[4] The existing potential for consensus for these measures could therefore be used to promote a more sustainable design of the food system. Furthermore, as some SHs pointed out in their annotations, information and education measures could prove to be valuable in complementing more far-reaching measures within packages of policy measures. For example, the introduction of stricter animal welfare or antibiotic standards should be accompanied by information and education measures for affected SHs and the public, to ensure successful implementation and public understanding of the relevance of these measures. To what extent information can increase the public acceptance of policy measures is debatable, however. Whitley et al.[37] find that information measures have only a limited effect on the policy acceptance of meat reduction measures. If an impact of information on policy acceptance is to be achieved, effective communication strategies will be necessary. In this context, Collier et al.[38] discuss advantages and disadvantages of different communication strategies regarding sustainability impacts of meat products.

Acceptance is also comparatively high for a "mandatory labeling of meat imports from production methods prohibited in CH". This labeling obligation for meat imports concerns both the retail and catering trade (see specification in Table S1) and is potentially extensive in scope because it can refer to different aspects such as animal welfare requirements or the (preventive) use of antibiotics. Because recent studies suggest that food labels can have a significant impact on food consumption choices,[39–41] this measure has the potential to be an effective as well as accepted measure. Furthermore, we find comparatively high levels of acceptance for the two measures aimed at removing a positive incentive for meat production or meat products – "no investment support for livestock barns of non-site-adapted agricultural systems" and "removal of subsidies for meat advertising". Because these measures change financial incentives, they can also be assumed to be rather effective measures, while at the same time proving to be more feasible because of their much higher acceptance.

The three regulatory measures "Link tariff and quota system to the agricultural standards that are binding in Switzerland", "strengthening of requirements for use and controls of antibiotics" and "strengthening of requirements and controls in livestock farming" are also especially noteworthy. They are comparatively highly accepted and could have a significant impact on reducing meat consumption because of their depth of intervention and corresponding influence on meat prices. If relevant reservations and preconditions of SH for those measures are being addressed (cf. Section Evaluation of acceptance of policy measures), these measures could turn out to be feasible as well as effective in practice. The comparatively high SH-acceptance for strengthened livestock requirements is furthermore in line with recent research on citizen and consumer preferences on animal welfare. E.g., Markova-Nenova & Wätzold[42] found strong animal welfare preferences for milk consumers and Fesenfeld et al.[18] found that stricter animal farming standards were among various policy instruments the one which most increased the support of citizens for certain policy packages.

Addressing key stakeholder concerns

In general, addressing the reservations and concerns of SHs in the design and implementation of policy measures is of particular importance. This can be achieved, among other things, by accounting for the preconditions for the implementation of policy measures mentioned by SHs. Policy makers need to consider the mitigation of potential negative impacts on the domestic economy or domestic economic actors, as

this was the category most referred to by SHs in their mentioned preconditions. In this context, also the (perceived) economic efficiency – in terms of economic viability, the cost-benefit ratio and low administrative burden – plays an important role for SHs and was frequently mentioned in their preconditions. Furthermore, SHs emphasized that unintended side effects of individual policy measures on other food system areas should be avoided by consistently and coherently orienting them toward common policy goals and objectives.[43] This finding is in line with Saviolidis et al.,[44] who conclude that SHs have a "shared recognition of the need for policy cohesion in the service of long-term goals." (p. 17). Useful insights in this context provide Candel and Biesbroek[45] and Lieu et al.,[46] who, respectively, develop proxy indicators and a method for the coherence and consistency of individual policy measures within policy packages.

Furthermore, policy makers should take specific care on a transparent design of the measures accompanied by relevant information, education and training, which should make it easier for consumers to understand the measures as well as for affected SHs to implement them. A fact-based and balanced communication and implementation of measures, free from ideological bias, could prove to be crucial for facilitating long-term acceptance among different SH-groups, because several SHs pointed out the importance of this aspect. Aside from policy makers, it can also be important for NGOs and environmental interest groups to take this into account when designing their communication strategies. Moreover, as pointed out by several SHs, ensuring a lead time before the adoption of measures becomes mandatory and/or a margin of tolerance for the implementation and monitoring of measures can be important to facilitate the adjustment for affected SHs and increase the acceptance of SHs for the policy measures.

Limitations of the study

The selection of SHs was not based on representative criteria such as the actual proportion of organizations within the different SH groups or their relative influence on policy-making in Switzerland. In addition, individual key SHs in the Swiss food system that were approached to be part of the study did not participate in the survey. Thus, the results of the SH survey are not a representative reflection of SH positions in Switzerland. However, taking this limitation into account, we attached importance to capturing the broad spectrum of opinions by (1) considering different and diverse relevant SH-groups in Switzerland and (2) attaching importance to the inclusion of central SHs from the different strands of the spectrum of opinions within the survey. The acceptance of the citizenry/consumers, on the other hand, was not investigated.

A second limitation is the fact that SHs were asked about their acceptance of the 37 individual measures, but not about their acceptance of policy measure packages in the form of combinations of these measures. However, in real world policy processes, as discussed above, an integrative policy approach involving the elaboration of a coherent and consistent mix of measures is of key importance[43] and the introduction of certain measures is reasonable only in combination with the implementation or explicit absence of other measures. Depending on the specific combination of measures as well as the framing of the overarching policy goal, acceptance for the measures can change.[18,37]

Furthermore, the dynamics of the real-world political process are not covered by this study, which is a static analysis at a specific point in time. Other factors, like path dependencies and budgetary limitations,[20] resource intensiveness[20,47] and the effectiveness (in terms of their ability to reduce meat consumption, or more generally, in terms of 'problem-solving effectiveness'[18]) associated with a potential implementation of individual measures or a combination of individual measures were not analyzed. Finally, relevant ethical and legal considerations regarding the introduction and implementation of meat reduction measures have not been considered in this study.

Conclusion

Our findings demonstrate that acceptance for coercive measures with high presumable short-term effectiveness in reducing meat production and consumption is low, with particularly high rejection for these measures among food industry stakeholders as well as interest groups and political parties. This is especially the case for negative incentives directly aimed at reducing meat production or consumption. Therefore, these measures could prove to be unfeasible and potentially mobilize extensive SH-resistance. This point is also emphasized by the high socio-political sensitivity of introducing policies for reducing meat consumption that we could observe in the course of this study through the refusal of some SHs to participate in our survey for strategic reasons. We also found low overall acceptance for measures aimed at the

promotion of meat alternatives by providing positive incentives for the production or consumption of such products. In general, marked-based measures were not more accepted than non-marked-based measures.

On the other hand, our findings indicate high acceptance for measures that have the potential for significant changes in meat consumption attitudes and behavior in the longer run – like research investment and sustainable diet education. These measures could be important complementary measures. Nevertheless, our study of stakeholder acceptance does not involve the perspective of consumers, and the *sole* shifting of responsibility for meat reductions to consumers is questionable from an ethical and socio-political point of view.

Furthermore, our findings indicate comparatively high levels of acceptance for some measures indirectly affecting and reducing meat production and consumption levels by targeting other sustainability or ethical issues. Among these more accepted and promising measures, that could lead to meat reductions also in the shorter run while at the same time providing additional benefits, are stricter animal welfare and antibiotic standards and the removal of investment support for non-site-adapted agricultural production systems as well as subsidies for meat advertisements. It can be reasonable to consider these measures as an appropriate starting point for policy makers aiming at a transformation of the food system toward lower levels of meat consumption.

The results of this study can be used to design promising and acceptable policy packages, and evaluate them in terms of their effectiveness, resource intensiveness as well as internal consistency and coherence. On the other hand, they can be useful for political and societal actors, as they open up a comparative overview of the attitudes of central stakeholders toward diverse meat reduction measures, highlight potential lines of conflict and provide insights into important prerequisites for a successful promotion and implementation of meat reduction measures. Finally, this study is relevant beyond Switzerland, as excessive consumption of meat can be observed in many high-income countries and its production structures of imported concentrate feed and a mix of extensive ruminant production and intensive livestock production are found in most member states of the EU and in the US. We can also observe a similar socio-political discourse about meat consumption in these countries, which is triggered in the EU through the Green Deal and the Farm to Fork Strategy.

STAR★METHODS

Detailed methods are provided in the online version of this paper and include the following:

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SUPPLEMENTAL INFORMATION

Supplemental information can be found online at https://doi.org/10.1016/j.isci.2023.106129.

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AUTHOR CONTRIBUTIONS

S.R.: Methodology, data collection and curation, formal analysis, project administration, writing – original draft, writing – review and editing. A.M.: Methodology, formal analysis, writing – review and editing. M.S.: Methodology, formal analysis, writing – review and editing. I.S.: Conceptualization, funding acquisition, methodology, data collection and curation. C.S.: Conceptualization, funding acquisition, methodology, supervision, writing - review and editing.

DECLARATION OF INTERESTS

The authors declare no competing interests.

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STAR★METHODS

KEY RESOURCES TABLE

REAGENT or RESOURCE	SOURCE	IDENTIFIER
Deposited data		
Raw and analyzed data	This paper	N/A
Software and algorithms		
MS Excel	Microsoft Corporation	https://www.microsoft.com/de-de/microsoft-365/excel?rtc=1
MS Word	Microsoft Corporation	https://www.microsoft.com/de-de/microsoft-365/word
MAXQDA	VERBI	https://www.maxqda.com/

RESOURCE AVAILABILITY

Lead contact

Further information and requests for resources should be directed to and will be fulfilled by the lead contact, Christian Schader (christian.schader@fibl.org).

Materials availability

This study generated data on the variables reported in this study. This study did not generate new unique reagents.

Data and code availability

- Because of data protection reasons, the raw data of this study cannot be made publicly available. Nevertheless, materials generated in this study, e.g. evaluation data, can be made available in anonymized form by the lead contact upon request.
- This paper does not report original code.
- Any additional information required to reanalyze the data reported in this paper is available from the lead contact upon request.

EXPERIMENTAL MODEL AND SUBJECT DETAILS

Human

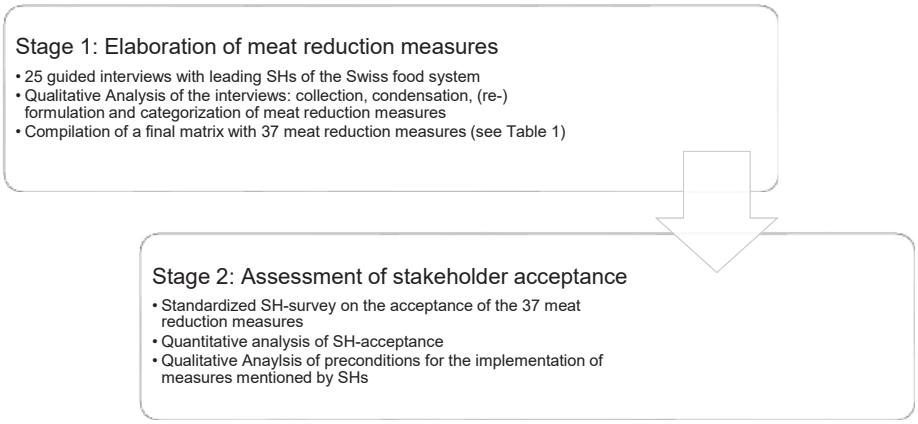
The samples were recruited based on an elaborated list of relevant SHs of the Swiss food system (for details see below) from all parts of Switzerland (German, French and Italian speaking). Leading representatives of the SH-organizations were contacted. Of the participating representatives in the first survey (SH-interviews, see below) 67% were female, 33% male. In the second survey (Questionnaire on policy acceptance, see below), 52% of the representatives were female, 48% male. Information on gender and age of the representatives was not gathered.

The section of this study that involved human participants was performed in accordance with all relevant institutional and national ethical guidelines. Written informed consent was collected from all participants in accordance with the Swiss Federal Data Protection Act (DSG) provisions on data processing for research purposes (Art. 13(2)(e) DSG resp. Art. 22 DSG). Participants did not receive any compensation for their participation in this study.

METHOD DETAILS

To answer the practice-oriented research questions, we chose a mixed-method approach (e.g., Creswell et al.[48] Doyle et al.[49] Yvonne Feilzer[50] Mauceri[51]) involving both qualitative and quantitative analysis mainly because of the different types of research questions underlying our study and in order to investigate and illustrate the study phenomenon more comprehensively.[49] We thereby chose a sequential exploratory

design[48,49,51] involving two stages: First, guided SH-interviews were conducted to obtain and evaluate SH-opinions on a sustainable food system in Switzerland. The interviews were analyzed qualitatively and the evaluation was then used to develop a matrix of measures and a standardized questionnaire on concrete policy measures regarding meat reduction. This questionnaire formed the basis for a second – mainly, but not exclusively quantitative – survey of SHs and a quantitative and qualitative analysis of SH-acceptance. The below figure illustrates our study design and methodological approach.



The following more detailed description of our methodological approach is structured along the two stages of our research process. We start by explaining the procedure for the elaboration of meat reduction measures (stage 1: SH-interviews, subsequent *qualitative* analysis and compilation of meat reduction measures), followed by the procedure to assess SH-acceptance for the elaborated policy measures from stage 1 (stage 2: standardized SH-survey and subsequent quantitative *and* qualitative analysis).

Stage 1: Elaboration of meat reduction measures

Based on an initial literature research, we compiled guiding questions for SH-interviews on the broader topic of a Sustainable Swiss Food System. These original interviews were designed and conducted with a broader intent and will be used beyond this study for further research on related topics in the context of sustainable food systems. The resulting guideline questionnaire (Table S2) was subjected to a pre-test and afterward used for conducting 25 guided online interviews with leading SHs of the Swiss food system. In the guideline interviews SHs were not asked directly for ideas of meat reduction policies, but instead the topic of meat reduction and corresponding policy measures was frequently referred to by the SHs and discussed in the broader context of a sustainable Swiss food system during the interviews. All of the measures that were explicitly named or indirectly referred to (e.g., in case they referred to a specific document of their organization) were then formulated and condensed as meat reduction policies. The exact procedure is described below under "interview analysis".

Interviewee selection

To select the interviewees, we compiled a long list of relevant institutions and organizations (in the following in short: organizations) in the context of the Swiss food system. This list included the largest political parties (measured by the fraction of seats in parliament); government institutions (selected by affectedness according to the realization of food system relevant SDGs[52]); the national umbrella organizations of municipalities, cities and mountain regions, the economy and agriculture, as well as relevant business associations and civil society actors (taken from the consultation list of the agricultural policy 22+[53]); relevant economic corporations in the context of the Swiss food system (based on the WWF-Rating of the Swiss Food Industry[54]); and context relevant Swiss research institutes. The number of SHs on this list for each organization type can be found in the Supplemental Information B (Table S3, column "long list"). Based on this initial list, we selected a short list of 38 SHs considering the most central organizations from different areas of the food system (politics, economy, civil society, interest groups, public institutions, etc.) and broad and even coverage of different SH-groups (column "short list" in Table S3). Leading representatives of the selected SHs were approached for an interview. With 25 SHs an interview could be conducted (column "completed surveys" in Table S3), the response rate was therefore 66%. The interviews were

conducted as guideline interviews and all of them were recorded (one record was lost due to a technical error). Of the 25 interviews 24 could be transcribed and analyzed qualitatively (with help of the programs MAXQDA as well as MS Word). The interviews took place online between October and December 2020. To obtain informative answers, despite the highly sensitive political topic and the fact that leading SHs with public standing and strongly polarized opinions on the subject were interviewed, the interviewees were assured of anonymity. Therefore, the persons and institutions interviewed will not be mentioned by name.

Interview analysis

To analyze the interviews we used qualitative content analysis.[55,56] We manually gathered the statements made and policy measures named or referred to by SHs during the interviews about a sustainable Swiss food system, which were related directly or indirectly to a reduction of meat consumption, and formulated them as specific policy measures, resulting in an initial collection of about 100 meat reduction measures. We then structured and aggregated the measures by the procedure of inductive category formation based on Kuckartz[55] and Mayring.[56] Measures with only very minor differences to each other - e.g. with regard to the concrete formulation or a very specific design – that were mentioned by different SHs were harmonized and combined into more general measures. In this way, the number of measures could be condensed from originally about 100 to 34. Additionally to these 34 measures, we included three measures which were not mentioned in the interviews but recently discussed in the literature: Levy on nitrogen surpluses,[57] Mandatory animal welfare label and Label-based tax on animal welfare.[11] We specified the resulting total of 37 measures in their wording, made them concrete by means of a brief description, and classified them in an explorative approach along three categories – the thematic area addressed by the measure; the area of the food system to which the measure can be assigned; and the type of measure, e.g., whether the measure is a voluntary measure or a binding regulation. The resulting matrix of meat reduction measures including their specification by brief descriptions is shown in full in the Table S1.

Stage 2: Assessment of stakeholder acceptance

Based on the elaborated matrix of measures from stage 1, we created a questionnaire in the form of a Word document to record the acceptance of various SHs for the different measures (Table S7). This questionnaire contained a brief description of the individual measures. It was formulated in German language. The SHs could indicate for each of the 37 measures whether they would accept it or not. In order to reduce the decision-making burden and the time required for participants, we limited the acceptance query to four possible and distinct choices. The SHs could indicate for each of the 37 measures whether they would approve or reject the measure. Alternatively, they had the option to accept "under preconditions" (conditional approval) – in this case, the corresponding conditions could be explained – as well as the option to omit an answer for a specific measure ("don't know"-option). Finally, they could enter general comments (e.g. additional remarks or a justification for or against the acceptance of a measure). At the end of the questionnaire, participants were also given the opportunity to list additional measures not included in the matrix (the resulting additional measure proposals are found in the Table S4).

Survey participant selection

Following the same pattern as for the selection of interview participants (see above), we created a short list with the most relevant organizations in the context of the Swiss food system to select the survey participants. This list consisted of the 25 SHs from the first round of interviews (= interview participants) as well as an additional 32 SHs, chosen, again, with the aim to achieve a broad and even coverage of the different SH-groups of the Swiss food system (for the distribution of the SHs see Table S5). For the questionnaires of the SHs already interviewed before for the elaboration of meat reduction measures (see above), we prefilled the acceptance column for one or more measure(s) in case their acceptance for these measures could be derived based on their statement(s) during the interview. These pre-filled answer(s) could be changed by the SHs while filling out the questionnaire. Accordingly, the introductory text was slightly adjusted for these questionnaires by addressing pre-filling and the procedure for pre-filling (see Table S7). The data collection period lasted from the end of June to the end of October 2021. A total of 23 questionnaires were returned fully completed and accordingly included in the evaluation. The response rate was therefore 40%. Of those fully completed and returned questionnaires 13 are from SHs who participated in one of the 25 interviews from the first survey round related to the broader topic of a sustainable Swiss food system and ten from SHs who did not participate in an interview (the distribution of the 23 SHs is found in Table S5).

Survey analysis

For the evaluation of the questionnaires, we transferred the SH-answers from the MS Word-questionnaires to an MS Excel document and quantitatively analyzed them using the pivot function of Excel. We carried out the quantitative evaluation of the acceptance survey at different levels – the level of individual measures, the level of thematic areas, the level of the food system area and the level of the measure types and the organization types. For the analysis at the level of the individual measures, we calculated the acceptance values (approval, disapproval, conditional approval and "don't know") for all measures across all SHs as well as for different SH-groups. For the evaluation at the level of measure type, thematic area, food system area, and organization type we calculated the acceptance by aggregating the acceptance values for all individual measures associated with the respective categories (e.g., Information measure at the level of measure types) and calculating the proportion values (percentage of approval, disapproval, conditional approval and "don't know" answers) across all SHs. For the evaluation at the level of measure type and thematic area we also calculated the acceptance for different SH-groups, again by aggregating the acceptance values for all individual measures associated with the respective categories and calculating the proportion values with respect to the different SH-groups.

For the qualitative evaluation of preconditions for the implementation of measures, we first screened annotations made by the SHs in the columns 'preconditions' and 'comments' and classified them according to the type of annotation. A distinction was made between preconditions for the implementation of the measure and other annotations, e.g., reasons for the approval or rejection of the measure or annotations that were insignificant or irrelevant in terms of content. Based on this classification, we conducted a qualitative analysis of the preconditions for the implementation of measures. We used the procedure of inductive category formation based on Kuckartz[55] and Mayring[56] to form categories - or codes - for the comments classified as preconditions and to assign the stated preconditions to those categories. The full list of coded preconditions including short descriptions is found in the Table S6. We qualitatively evaluated noticeable commonalities of SH's remarks as well as frequently mentioned preconditions and analyzed the annotations of SHs on specific measures in more detail (see Section Evaluation of acceptance of policy measures). All direct quotations of SH-annotations in Section Evaluation of acceptance of policy measures have been translated by the authors.