Understanding the social dimension of sustainable agriculture

– Swiss dairy farmers perspectives

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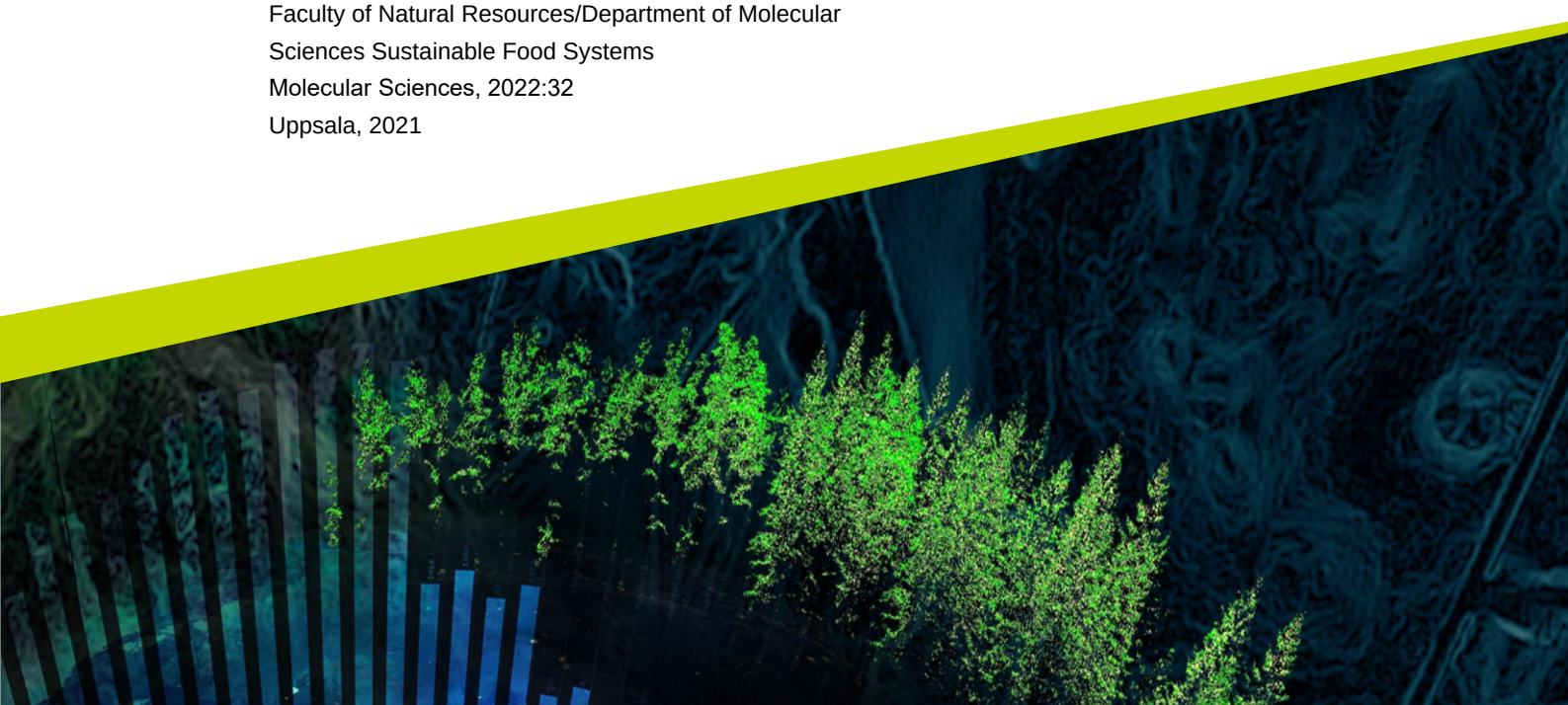

Understanding the social dimension of sustainable agriculture – Swiss dairy farmers perspectives

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Abstract

The current food systems need to become more sustainable, and this involves the creation of balance between the economic, environmental and social dimension of these systems. The social dimension, however, is least clearly conceptualized and likely to be overlooked when the issues are not very obvious as this is the case for many regions in the global north. Switzerland, as a country in the global north, invests great sums of money to improve agricultures environmental performance and to secure public goods. But low income, the resulting precarious situations and financial pressure, long working hours and no holidays describe agriculture in Switzerland and especially the lives of farmers as well. By applying Q-Methodology, this study aims to identify key perspectives Swiss dairy farmers have about the social dimensions of sustainable agriculture.

To gather statements, representing the understanding of the social dimension of sustainable agriculture by Swiss dairy farmers, two focus groups were conducted with the starting question: "What does the social dimension of sustainable farming mean to you?". The data gathered during these focus groups was processed into 40 statements and these were sorted in forced distribution by 23 respondents, before a factor analysis was performed.

This resulted in five perspectives representing 59.27% of the studies variance, from which four where interpretable into coherent perspectives and accordingly labelled. The "equality-perspective" is covering the most variance in this study and focuses on equal opportunities in agriculture and succession. The "passing on a successful business-perspective", in contrast disagrees strongly with these equality statements while valuing statements regarding a successful business that can be passed on to the next generation high. The "family and friends-perspective" similarly desires a successful business but more importantly, is focused on the relations with family and friends. And the "education-perspective" agrees most with education related statements. Moreover, it was seen that the financial dimension can not be disconnected from the social discourse. Income was frequently discussed during the focus groups and the resulting statements were mostly agreed with by the sorting-exercise respondents. It was also seen that many of the perspectives disagreed with the same two statements which leads to the interpretation that the vanishing of farms and the ongoing rise of digitalisation in agriculture are not important social issues among the identified perspectives in this study.

Keywords: social sustainability, dairy farmers, farming, agriculture, Switzerland, Q-Methodology, focus group, factor analysis, perspectives

Zusammenfassung

Die derzeitigen Ernährungssysteme müssen nachhaltiger werden, und dazu gehört die Herstellung eines Gleichgewichts zwischen der wirtschaftlichen, ökologischen und sozialen Dimension dieser Systeme. Die soziale Dimension ist jedoch am wenigsten klar konzeptualisiert und kann leicht übersehen werden, wenn die Probleme nicht sehr offensichtlich sind, wie dies in vielen Regionen des globalen Nordens der Fall ist. Die Schweiz, als ein Land im globalen Norden, investiert große Summen, um die Umweltleistung der Landwirtschaft zu verbessern und öffentliche Güter zu sichern. Doch niedrige Einkommen, daraus resultierende prekäre Situationen und finanzieller Druck, lange Arbeitszeiten und kein Urlaub beschreiben ebenso die Landwirtschaft in der Schweiz und insbesondere das Leben der Landwirte. Durch die Anwendung von Q-Methodology zielt diese Studie darauf ab, die Schlüsselperspektiven der Schweizer Milchbauern bezüglich der sozialen Dimensionen der nachhaltigen Landwirtschaft zu identifizieren.

Um Aussagen zu sammeln, die das Verständnis der sozialen Dimension der nachhaltigen Landwirtschaft durch die Schweizer Milchbauern repräsentieren, wurden zwei Fokusgruppen mit der folgenden Ausgangsfrage durchgeführt: "Was bedeutet die soziale Dimension der nachhaltigen Landwirtschaft für Sie?". Die in diesen Fokusgruppen gesammelten Daten wurden zu 40 Aussagen verarbeitet und dann von 23 Teilnehmern in Zwangsverteilung sortiert, bevor eine Faktorenanalyse durchgeführt wurde.

Daraus ergaben sich fünf Perspektiven, die 59,27 % der Varianz der Studie ausmachen, von denen vier als kohärente Perspektiven interpretiert und entsprechend gekennzeichnet werden konnten. Die "Gleichstellungsperspektive" umfasst die größte Varianz in dieser Studie und konzentriert sich auf die Chancengleichheit in der Landwirtschaft und der Nachfolge unabhängig vom Geschlecht. Die "Perspektive der Weitergabe eines erfolgreichen Unternehmens" lehnt dagegen zwei dieser Gleichstellungsaussagen stark ab, während sie die Aussagen bezüglich eins erfolgreichen Unternehmens, welches an die nächste Generation weitergegeben werden kann, hoch bewertet. Die "Familien- und Freundesperspektive" wünscht sich ebenfalls ein erfolgreiches Unternehmen, legt aber mehr Wert auf die Beziehungen zu Familie und Freunden. Und die "Bildungsperspektive" stimmt am meisten mit bildungsbezogenen Aussagen überein. Darüber hinaus wurde festgestellt, dass die finanzielle Dimension nicht vom sozialen Diskurs abgekoppelt werden kann. In den Fokusgruppen wurde häufig über das Einkommen gesprochen, und den daraus resultierenden Aussagen stimmten die Befragten in der Sortierübung häufig zu. Es wurde auch festgestellt, dass viele der Perspektiven denselben beiden Aussagen nicht zustimmten, was zu der Interpretation führt, dass das Bauernhofsterben und die fortschreitende Digitalisierung in der Landwirtschaft unter den in dieser Studie identifizierten Perspektiven keine wichtigen sozialen Themen sind.

S*tichworte*: Soziale Nachhaltigkeit, Milchbauern, Landwirtschaft, Schweiz, Q-Methodik, Q-Methodology, Fokusgruppe, Faktorenanalyse, Perspektiven

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1. Introduction

It is indisputable that our food systems must become more sustainable. The past decades were characterized by an increasing demand for food and an increased productivity in agriculture as a consequence of these circumstances (FAO 2018). What was sufficient to cover food demands for a great share of the world population, posted new challenges on the environment and the social wellbeing of people. The focus on increased productivity consequently created imbalances in our food systems. Therefore, the FAO (2018) argues that positive change in food and agriculture shall be approached by recreating a balance between the economic, environmental and social dimension of sustainability. This stated vision shall especially benefit the rural population, of which farmers are an important part, by having them actively participating (ibid).

Finding this desired balance is the subject of much work by academia, NGOs and different policy processes. While the narrative of the need for more food to feed food insecure people in the global south leads to the overlooking of environmental shortcomings, the global north takes more rigorous environmental actions such as resource management and pollution control (Janker et al. 2018). However, in the global north the social dimension receives less attention since social issues are not as noticeable as they are in the global south. Nevertheless, they cannot be overlooked or being dismissed as unimportant. Social issues do not stop once the poverty threshold is crossed (ibid).

The conceptualisation of the social dimension of sustainable agriculture, however, remains undefined (Janker & Mann 2018). Its context specific nature complicates a conceptualisation (ibid).

Such a country in the global north is Switzerland in which agriculture only accounts for 1% of the nation's GDP but still produces 55% of the domestically consumed food (EDA 2019). As suggested by Janker et al. (2018), Switzerland undertakes great efforts to reduce agricultures impact on the environment. Regulations in this respect are strict. In addition, farming is not only detrimental for the environment, farmers in Switzerland provide services to society by landscape management and biodiversity preservation (EDA 2019). Nevertheless, low income, the resulting precarious situations and financial pressure, long working hours and no holidays also describe agriculture in Switzerland (Contzen & Crettaz 2019).

Therefore, there is a need to study the social dimension of sustainable agriculture as well.

This thesis focuses on the very people at the heart of agriculture and their viewpoints on the topic of this under-conceptualized dimension. The aim of this thesis is to assess what perspectives the farmers themselves have about the social dimension of sustainable farming. By using Q-Methodology and Swiss dairy farmers as respondents, this thesis attempts to answer the following research question:

What perspectives do Swiss dairy farmers have about the social dimension of sustainable agriculture?

Q-Methodology is applied since this method is able to identify the key perspectives held by a group of respondents (Watts & Stenner 2012). By shedding light at areas which matter to the responding group, Q-Methodology can be beneficial for policy development and improve the quality of problem identification and the creation of policy alternatives (Curry et al. 2013). It is therefore no surprise that this method is progressively more applied to analyse stakeholders' viewpoints in sustainability subjects (ibid).

2. Background

This chapter provides the reader with background information about the social dimension of sustainability in agriculture, farming in Switzerland and information about Q-Methodology.

2.1. Social sustainability in agriculture

The social dimension of sustainability and in particular for agriculture might be the dimension which was the last to come into the consciousness of the public. Nevertheless, several efforts are being made to understand this dimension and its implications in the context of agriculture.

Janker & Mann (2018) illustrate that an agreement on the meaning of the social dimension of sustainability, especially in the agricultural context, is lacking. The authors evaluated 87 assessment tools for sustainability in agriculture to clarify what the tool developers regard as social sustainability for agriculture. While some common topics were identified, the inconsistency of covered topics, their definition and indicators measured was standing out. Moreover, clear distinctions were visible between the tools depending on the context in which they were applied. Context differences were the scale of farming (e.g. corporate or family farming), production system (e.g. organic, conventional), production system (e.g. livestock, commodity) and geographical areas. However, the topics of human rights and work conditions are included in most work on the social dimension of sustainable agriculture. The two topics of life quality and impact on the society are often assessed as an outcome of social sustainability and are highly context specific and only evaluated on a local scale. A common understanding and a conceptualisation of social sustainability is needed to be able to truly evaluate agricultures progress in terms of social sustainability (ibid).

Janker et al. (2018) used discourse analysis to study the meaning of sustainable agriculture and its ongoing development. A systematic literature review was conducted, and articles were identified by searching with the keywords “sustainable agriculture” OR “agricultural sustainability”. The discourse in international politics and in the scientific sphere were accounted for separately to identify the key themes for each group of actors. By pursuing this study, it became evident that the meaning

of sustainable agriculture varies considerably between these two interest groups. Focusing on the social dimension, Table 1 represents the identified key themes highlighted in this study.

Table 1 Key themes in international politics and the scientific discourse about the social dimension of sustainability (Janker et al. 2018)

International politics discourse	Scientific discourse
Food security	Smallholders and family farming
Small-scale farmers	Farmer knowledge and skills
Livelihood	Labour conditions
Food safety and quality	Wellbeing of people in agriculture
Participation and rights e.g. human rights and equity	Participation and rights
	Community impact
	Societal transformation

It can be seen that some similar topics are covered in both discourses; however, the authors highlight that the scientific discourse accounts better for the local contexts and highlights the importance of taking these differences into account (Janker et al. 2018). Moreover, the authors highlight that the social discourse within the international politics focuses more on the global south than on the north. This is most likely due to less obvious social issues in the global north. However, this can lead to a neglection of addressing social issues in the global north. In addition, the social dimension of sustainable agriculture is not understood well enough in both discourses and is rather vague. It is therefore suggested to put the people at the center of further conceptions of the social dimension of sustainability in agriculture. While small-scale farmers were addressed in social sustainability discourses increasingly in the last years and human rights was a focus area, actors on large farms and others affected by agriculture, need to be included as well in the further conceptualization of the social dimension of sustainable agriculture (ibid).

A study conducted in the global north identified eight categories of indicators to evaluate rural social sustainability and to understand the central themes in social sustainability for rural Sweden (Nordström Källström & Caselunghe 2010) (Table 2).

Table 2 Eight themes in rural social sustainability identified by Nordström Källström & Caselunghe (2010) with examples of covered matters

Theme	Example of covered matter
Participation, democracy and social status	Participation in society and democratic processes, opportunity to influence decisions, part-taking in shaping the society, perception of rural citizens status in different contexts

Networks and social relations	Local networks and partnerships, social contacts, opportunities to create a desirable family situation
Health, security and work environment	Health (mental and physical), presence of risk factors like stress, obesity etc., working hours, spare time, experience of being able to influence one's health and well-being life situation
Equality	Equality among people regardless of gender, background, class, ethnicity, sexuality, disability, age, etc, equal opportunities to control one's own life, no discrimination
Education and learning	Individuals' opportunities for education of choice and access to it, no discrimination within education
Services and communication	Access to public and commercial services (e.g. schools, childcare, healthcare, food), infrastructure quality, opportunities for young, elderly and the disabled
Livelihood and occupation	Opportunities for local livelihoods and rewarding employment, various forms of employment available, commuting opportunities
Financial distribution	Distribution of local resources such as land, differences in living standards, poverty

The authors studied the available literature for social sustainability indicators in Sweden and the EU and then assessed which indicators are relevant for rural areas. This work was done in association with assessing the Swedish Rural Development programme 2000-2006 (ibid). The study does not relate to the farmers social sustainability exclusively but themes relevant for rural communities overall. However, since farmers are a vital part of such communities (FAO 2018), these indicators should be relevant also for describing the social situation of farmers.

The study by Nordström Källström & Caselunghe (2010) was also used as a starting point in a study by Röös et al. (2019) to identify factors to include in a survey assessing relevant factors for the social sustainability among Swedish livestock farmers. Additional literature was used to complement the topics covered in the survey and a total of 46 questions were created. The aim was to identify the key questions relevant to explain the farmers satisfaction with life in general. As a result, the study highlights six factors as most relevant to describe the social sustainability for Swedish livestock farmers:

- Having a good financial situation
- Experiencing a similar standard of living as others
- Not experiencing too much stress
- Finding work meaningful

- Having decent working hours
- Having a desirable family situation

By starting off from the eight themes introduced by Nordström Källström & Caselunghe (2010), which describe the relevant themes for social sustainability for the rural population, the study by Röös et al. (2019) puts the lens on the perception specific for farmers and highlights factors important for their social sustainability.

2.2. Farming in Switzerland

2.2.1. Farming structures

Farming in Switzerland is almost exclusively based on small-scale family farming (Mann 2005) and employed 149’500 people in 2020 of which more than 75% were family members of the farm owner (Bundesamt für Landwirtschaft BLW 2021). The small-scale family farming structure is preserved despite an ongoing trend of farms vanishing while the remaining farms are becoming larger and this trend does not exclude dairy farms (Schweizer Milchproduzenten SMP Genossenschaft 2022). Mann (2014) argues that this structure is maintained since the need of increasing efficiency is absent in Switzerland. A societal luxury only rich countries can afford according to Mann (ibid).

While the majority of the farm owners were working more than 50 hours a week most employees only work part time (Bundesamt für Landwirtschaft BLW 2021). On average, farm owners take nine days of holidays a year. However, 20% of farm owners don’t take any days off at all. This is especially the case for farm owners which take care of livestock since it is complex and costly to hand the task over to someone else (ibid).

The average income per farm has increased from CHF 74’200 in 2019 to CHF 79’200 in 2020, which is an increase of about 6.7% (Bundesamt für Landwirtschaft BLW 2021). This was caused by better prices and a higher demand for domestic animal products. Moreover, a trend towards direct marketing from the farm to the consumer was seen promoted by the recent pandemic (ibid). The GDP generated by agriculture makes up for only 1% of the nations GDP while half of that is originating from livestock farming and especially from dairy farming (EDA 2019).

Dairy farmers in Switzerland produce slightly more milk than what is needed for the nation to be self-sufficient in dairy products (Bundesamt für Landwirtschaft BLW 2021). Table 3 shows key indicators representing the year 2020 for dairy farming. It has to be kept in mind that there are major differences between the geographical regions occurring (ibid).

Table 3 Key indicators of Swiss dairy farming for 2020 (Schweizer Milchproduzenten SMP Genossenschaft 2022)

Indicator	
Number of milk producing farms	18’396
Average size of dairy farms	27.7 ha
Average amount of cows per farm	27.1 cows
Average amount of sold milk per farm	177’288 kg
Percentage of organic milk	12.9% (varies between 5% and 56% depending on region)

2.2.2. Farmers quality of life

Every four years the quality of life is assessed for Swiss farmers in comparison to the non-farming population which is used as a reference group (Bundesamt für Landwirtschaft BLW 2021). The survey assesses the satisfaction and the importance of twelve spheres of life and moreover, asks the farmers what they perceive as positive and negative aspects of their profession.

In the last survey, conducted in spring 2021 (nFarmers = 501, nReference = 505), it was seen that farmers, as well as the reference group, value health and family as the most important sphere of life. Moreover, farmers are most satisfied with their family situation while they are least satisfied with the political and economic environment. In addition, by weighing the scores per sphere for the satisfaction and the importance, the quality of live index is created and allows to compare the overall quality of life of farmers and the reference group and moreover, shows if the overall quality of live improves or deteriorates over time. For 2021 the index for farmers was 13.4 while the reference group scored 15.4 on a scale from -36 to +36. This means that both groups have a positive quality of life index but the reference group’s quality of life is higher. Over time (2005-2021) the quality of life index decreased for both groups while the rate of reduction is smaller for farmers than for the reference group.

Farmers value being their own boss, the work with nature and the contact with their animals as the three most positive aspects of their profession. As most negative, on the other hand, they valued image-problems / low appreciation, long working hours and the high amount of regulations (ibid).

A study focusing on the quality of life improvement strategies for Swiss dairy farmers highlights that most of the strategies aim to free time and to create clearer boundaries between work and spare time by reorganising the farm operations (Häberli et al. 2021). It is seen that the constant connection to the farm operation restricts the time for recreation and activities with the family. Which makes an increased flexibility in time and personnel, as well as stricter boundaries desirable (ibid). This is especially important in regards to how high farmers value family as

it is shown by the Bundesamt für Landwirtschaft BLW (2021) in the paragraphs above.

2.2.3. How to become a farmer

Succession on Swiss farms is primarily patrilinear (Rossier & Wyss 2008). By law males and females are equal, however, in the case of in-family succession, sons are usually favoured over daughters. Daughters are rather seen as a stopgap solution if no son wants to continue the farm. Moreover, the interest of sons in taking over family farms is greater. The study by Rossier & Wyss (2008) gathered the answers of 731 children of farmers to the question if they are interested in taking over the parental farm. While 46% of the sons were interested in taking over the farm as a full- or part-time job, only 12% of daughters were interested in being a successor (ibid). In case there is no land ownership in the family already or additional land acquisition is desired, hurdles have to be overcome to acquire agricultural land.

The purchase of agricultural land is regulated in federal legislation (Bundesversammlung der Schweizerischen Eidgenossenschaft 1994). In general, people who want to buy agricultural land and do not belong to the prior owner's immediate family, need a permission by the responsible canton to do so. To get this permission, the potential buyer has to proof that he himself is going to farm the land and that he is capable of doing so. It depends on the canton what grade of agricultural education is accepted as proof of capability. Moreover, the selling price of the land has to be approved as well, which will only be the case if the price complies with prices usually paid for agricultural land in the same area (ibid). This legislation leads to low prices for agricultural land, on one hand, but also sets the entry point for people who want to change careers and start farming, very high and makes agricultural land less accessible to many (Wehrli & Can 2019). Since the average age of farmers is 51 years (Bundesamt für Statistik 2022), succession planning and the passing on of agricultural land becomes important and well educated farmers are needed.

The educational system to become a farmer experienced many changes in the last 80 years (Wettstein 1987). A heterogenous education system which depended on regional institutions and the parental farm for practical education and thereby was favouring sons of farmers, has developed into a more inclusive and homogenous system (ibid). Nowadays everyone who has the wish can become a farmer and as multifaceted as farming is, so versatile is the educational catalogue. Nevertheless, the professional path of farmers typically starts at the same point which usually is the three year apprenticeship program to achieve a federal diploma of profession (SDBB 2022). Prerequisite to attend such a program is a completed nine years of obligatory school. The apprenticeship combines practical work at 2-3 different farms and theoretical education in an agricultural school. The education is very broad and covers topics such as animal husbandry, plant cultivation,

mechanization, economics, social competences, and policy compliance. This educational program is also possible to complete with a focus on organic farming. After three years of education and a final examination, the student holds the federal diploma of profession and can start working as a farmer and/or proceed with further education.

After completing this education there are multiple options to specialize in certain areas by attending courses offered by the farmers' association, higher education and other organisations. Moreover, the participation in universities is possible after an additional education specialized in preparing students for university (ibid). The apprenticeship program, combining practical work and theoretical education in schools, is in place for many professions in Switzerland and is a popular path to enter the professional world after the obligatory school.

According to the federal office of statistics, 71% of farmers in 2020 hold a federal diploma of profession while 21% of them have additionally engaged in higher education, while 28% of farmers are having practical experience without holding a federal diploma of profession in agriculture and 1% is not accounted for (Bundesamt für Statistik 2022). The Swiss farmers association highlights the importance of a live long learning and thereby points at the diverse portfolio of continuous training (Schweizer Bauernverband 2022).

2.2.4. The farmer as a provider of public goods

It is commonly known that agriculture provides goods beyond commodities but public goods which are accessible by everyone and the amount available does not get fewer by consumption (Cooper et al. 2009). Moreover, Kiefer et al. (2015) argue that this is especially the case for dairy farming and that smart policy making can stimulate the provision of many beneficial services to society (ibid). The farmer, therefore, is a service provider as well and should be compensated for it. Besides the prospect of compensation, the degree to which a farmer commits to measures such as biodiversity creation or landscape protection could lie within the overall vision farmers have for their farms and their personal belives (Marquardt et al. 2022). Milestad et al. (2011) recognizes that multi-functionality increases the smaller the farm is, which bares significant potential considering the small-scale family farm structure present in Swiss agriculture.

The provision of public goods by Swiss farmers is embodied in federal law (Bundesversammlung der Schweizerischen Eidgenossenschaft 1999). Legislations regarding environmental sustainability are strict in Switzerland and must be complied with. In addition, services and activities which go beyond the legislations are rewarded within the direct payment scheme by the government. There are seven specific direct payment types the farmers can benefit from when they fulfil the demanded requirements (Bundesamt für Landwirtschaft BLW 2021):

1. Cultural landscape premiums
2. Supply reliability premiums
3. Biodiversity premiums
4. Landscape quality premiums
5. Production system premiums
6. Resource efficiency premiums
7. Transition premiums

The specific activity which must be fulfilled to benefit from direct payments are set by the cantons and are therefore adapted to regional characteristics (ibid) [1].

In 2020 the direct payments made up for about 21% (CHF 2.8 billions) of the income generated in agriculture in Switzerland (Bundesamt für Landwirtschaft BLW 2021).

Mann (2005) reasons that direct payments made by the state to its farmers must be understood as an indirect social policy. Direct payments are used to gain control over the way land is farmed and to create incentives for the farmers which follow a sustainable way of land management. This system is rewarding farmers for work beyond the already strict environmental regulation, which is not paid for by the market. But more importantly, direct payments are balancing the low incomes of farmers generated by low prices for their products. In Switzerland, farmers can choose to participate in direct payment programs. By not participating they are excluded from receiving such payments and therefore are excluded from this indirect social benefits (ibid).

This is surely one factor for the income inequalities presented by Mann (2005) within farming households. A factor which seems determining for the income level of the farm is its size and the generation of additional off-farm income. The author highlights that many farmers are below the income level which would make them eligible for general social welfare even with the direct payments. Therefore, these farmers could apply for general social welfare, which is hardly ever done. There is an unwillingness among farmers to apply for general welfare, hence, to help these farmers out of their vulnerable situation, the author argues that a change in direct payment policy would be needed (ibid).

The unwillingness to apply for social welfare by farmers has not changed over the years as Contzen & Crettaz (2019) state the same phenomenon 14 years later and highlight that farmers which have an income below the poverty level often do

[1] The direct payment scheme in Switzerland differs from the eponymous direct payment scheme known in the EU. The swiss scheme is less focused on production and is decoupled from animal headcounts or the size of managed area (OECD 2017). Farmers exclusively get compensated for measures within the above mentioned payment types (ibid).

not define themselves as poor but as satisfied with what they have. The study shows that the chances are 2.5 times higher that a farmer is satisfied with his income while other self-employed with the same income and material circumstances are not satisfied. Still, a classic social welfare system which supports the poor does therefore not work for the farming population which makes the distribution of direct payments even more important even though the authors emphasize that these payments are not meant to be a social policy (ibid).

2.2.5. Welfare regimes for farmers and their families

The entitlement to social benefits is closely linked to employment in Switzerland (Häusermann 2020). Moreover, the primary source of funding for the social state are contributions from employment. Health insurance is obligatory and provided by private companies. Moreover, additional health as well as pension insurances are similarly offered by private companies (ibid).

Pension provision is based on a three-pillar system which consists of a pillar provided by the state, one provided by employment and a third private pillar. Only the first pillar can be accessed by everybody regardless of prior income or employment status, but only covers the essentials of living for pensioners. The second pillar is provided by former employment while contribution is not obligatory for self-employed persons. However, only participating persons are entitled to benefit from payments once the retirement is reached. The same applies to private retirement savings, the third pillar, which is voluntary for everyone (Bundesamt für Sozialversicherungen BSV 2021).

Since farmers most often are self-employed and business owners, they need to take care of their pension insurance themselves. Moreover, they also need to secure the continuation of the business if they or a family member is not able to work anymore as a consequence of illness or an accident (Taggeld) (Schweizer Bauernverband 2021). This is especially important since Swiss farming is family based and the income from the farm usually not only provides for one person but for whole families (ibid).

This is where private insurance providers are needed. The Swiss farmers association itself owns one of these private providers and therefore is able to offer tailored insurance solutions to farmers and their families (Agrisano 2022). These private solutions make it possible for farmers to contribute to the voluntary second pillar and moreover, ensure the continuity of the farm if they are not able to work as a consequence of illness or an accident. For example, tailored insurance solutions would then pay for a farm helper during illness (ibid).

2.2.6. Ongoing policy change for social security in agriculture

The Swiss agricultural policy is revised frequently and adjusted to keep pace with emerging challenges. In the agricultural policy 22+ draft (AP22+ / parliamentary business 20.022), which is planned for implementation in 2022, five strategic areas of action are defined (Bundesamt für Landwirtschaft 2020). These five areas of action are: value creation at the market, ecological footprint, animal welfare and health, farm development and social security. In each of these areas of action, measures are defined to achieve the strategic goals. Some measures are translated into new legislations while others are achieved by creating incentives such as establishing requirements as a condition for receiving direct payments (ibid).

Focusing on the drafted policy changes for an increase in social security, the on-farm working spouse of the farm owner is of main interest. As highlighted by the Federal Bureau of Agriculture, most people occupied in agriculture are family members (Bundesamt für Landwirtschaft BLW 2021). In 2020 30'738 spouses were working on the farm owned by their partner (Bundesamt für Statistik 2022), of which 36% (17'913) did not have another employment which would cover for the second pillar of social security and pension provision. From these 17'913 persons, 37% were not voluntarily insured in the second pillar and to a similar degree not insured by a private organization against loss of income (ibid). This leaves them in a vulnerable position (Bundesamt für Landwirtschaft 2020). Health insurance covers costs caused by illness or accidents, however, following costs if this person is not able to work on the farm anymore are not covered (Taggeld). Policy makers identified this as a critical factor for people getting trapped in poverty. The new AP22+ therefore specifies that the entitlement to direct payments is dependent on the spouses working on the farm being adequately protected against loss of income and for retirement. Figure 1 provides a simplified overview of the current situation and the drafted changes. A two-year grace period is suggested to give farmers the chance to get consultancy to work out which insurance solutions are best suitable for them (ibid).

		current	new with draft AP22+
Pension	by state (1st Pillar)	obligatory	obligatory
	by employment (2nd Pillar)	voluntarly	obligatory to receive direct payments (either Pillar 2 or 3)
	private (3rd Pillar)	voluntarly	
Taggeld	Following costs caused by accident or illness	voluntarly	obligatory to receive direct payments

Figure 1 Comparison of social security coverage for on farm working spouses according to current and the drafted legislation (AP22+). Changes are highlighted yellow.

On the 2nd of February 2021 the parliament officially informed the public that further discussion of the policy draft AP22+ is suspended (Sekretariat der Kommissionen für Wirtschaft und Abgaben 2021). The draft would interfere negatively with several topics such as the self-sufficiency of the country or the administrative burden for farmers, for example. The draft is handed back to the federal council for revision but is expected to be resubmitted within 2022 (ibid). The implementation of the new agricultural policies, therefore, will be delayed.

2.3. Q-Methodology

Q-Methodology combines qualitative with quantitative methods and aims at identifying subjective perspectives held by a group of individuals (Watts 2015). Moreover, this method is used for identifying what topics in a certain discourse are important and what questions shall be asked in future, complementary research (Andersen et al. 2018).

Q-methodology assesses a concours first, applying qualitative methods (Watts 2015). The concours is the total of everything said by people about the research topic. Statements which represent the concourse are then sorted by chosen participants according to their personal level of approval. The sorting is done following a quasi-normal distribution, which forces the participant to prioritize while not only rating the single statement but also rating it in comparison to all the other statements. Afterwards, by applying factor analysis, perspectives on the initial research question are generated and interpreted (ibid).

Watts & Stenner (2012) highlight the benefit of applying Q-Methodology for answering three different kinds of research questions:

1. *Representation:* asks the participant to formulate how a topic is typically understood or constructed
2. *Understanding:* asks the participant what a topic means to them personally
3. *Conduct:* asks participants what can be done about a topic

A research question should be focused on only one of these three categories to be clear and understandable for the participants (Watts & Stenner 2012).

Curry et al. (2013) divide the process into the seven stages as it is illustrated in Figure 2. The following pages will explain the methodologies' approach and what each step consist of. Therefore, the structure of this section follows the steps of the methodology itself.

Figure 2 Q-Methodologies seven steps followed in this thesis (Curry et al. 2013)

2.3.1. Identification of the research topic

Identifying a research topic and identifying the respondents are very likely to depend on each other in Q-Methodology since this method is assessing shared perspectives of a defined group on a topic (Watts & Stenner 2012). Q-Methodology therefore is best suitable if it truly matters what a certain group of people thinks about the topic in question. The authors highlight the importance of setting a simple and easily understandable research question to prevent confusion during the research process. It is important that the research question should be understood in the same way by all the participants (ibid).

2.3.2. Identification of the respondents

Q-Methodology does not rely on large sample sizes like other quantitative methods (Watts 2015). A relatively small number of respondents (n = 20-40) who do the sorting exercise, is sufficient if the participants represent a group whose opinion on the topic truly matters. Therefore, the quality of respondents is more important than the quantity for this kind of study (ibid).

2.3.3. Interviews with the respondents

The entire catalogue of statements which is sorted later by participants is called Q-Set in the literature (Watts & Stenner 2012). This Q-Set must cover the research question in a broad way to give space for various opinions of the participants. Moreover, the Q-set must be balanced which means that besides a broad range of opinions it shall not be biased towards one particular perspective. Participants who are involved in the process of generating the Q-set cannot feel restricted or delimited during the process and must be able to voice their opinions. To guarantee such a well covering and balanced Q-Set the authors suggest breaking down the relevant subject into smaller themes which can be pointed at during the assessment of the Q-set (ibid).

There is no single best practice known to assess the Q-Set statements so far (Watts & Stenner 2012). Frequently applied methods to gather statements are semi structured interviews and focus groups. Curry et al. (2013) and Ellingsen et al. (2010), both used semi structured interviews to gather the Q-Sets in their research work. Both authors argue that an interview must be semi structured and rather interviewee driven than strongly guided by the interviewer (ibid). Moreover,

Ellingsen et al. (2010) advises to only use over-arching umbrella questions, which give the opportunity for different answer outcomes, if the interviewer has to interfere or get the discussion going again. This is an attempt to limit the influence of the interviewer and to give the interviewee the freedom to cover themes they think are appropriate to answer the research question (ibid).

Andersen et al. (2018) who assessed perspectives of citizens on democracy, instead conducted focus groups to create the Q-set. The focus groups were participant driven to limit a possible bias. A question set was prepared which could have been used if the discussion comes to a natural halt. However, it is stated that the opening question, asking the participants what democracy means to them, was sufficient to keep the discussion going and the rest of the question set was barely used. Moreover, Andersen et al. (2018) was prepared to complement the Q-Set with statements from the literature, which can also be done in Q-Methodology. However, the authors refrained from doing so, since the data gathered from the focus group was perceived as satisfactory to cover the research topic (ibid).

Watts & Stenner (2012) emphasizes the convenience of creating a Q-Set based on a literature review since researchers inform themselves about the research topic anyway prior to conducting practical work. However, Powell & Single (1996) argue that qualitative data assessment with a focus group is able to cover a wide span of experiences and is especially useful when the current knowledge within the research topic is inadequate.

2.3.4. Identification of key statements

According to Watts & Stenner (2012), a typical Q-Set consists of about 40-80 statements and every single statements adds its own contribution to the Q-Set. Watts & Stenner (2012) highlight the importance of keeping the statements simple and understandable. Moreover, negative statements shall be avoided since these can lead to a double negative interpretation by participants later on and therefore are misleading and confusing (ibid).

2.3.5. Q-sorting by respondents

Watts & Stenner (2012) refer to the small number of respondents needed for such a study again and refer to a rule of thumb which says that there should be at least two Q-Set items per respondent. Therefore, a study with a Q-Set of 60 items should not have more than 30 respondents. However, in practice studies are carried out with more respondents than one per two items but also with less than that. The group of sorting respondents of a study is called the P-Set (ibid).

The respondent's task is to sort the items from the Q-Set according to their level of agreement with the items/statements Watts & Stenner (2012). This is done on a defined scale and in forced distribution. A quasi-normal distribution is created

which means that the number of items sortable per ranking value is limited and less items can be sorted the stronger the ranking value is (ibid). The example of such a quasi-normal distribution can be seen in Figure 3 in chapter 3.4 (distribution applied in this thesis).

The chosen scale depends on the number of items in the Q-Set and on the expected proficiency of the respondents (Watts & Stenner 2012). In general, a -4 to +4 (9-point scale) distribution is suggested for Q-Sets with 40 and less items. A Q-Set with 40-60 items shall be rated with a -5 to +5 (11-point scale) distribution while all bigger Q-Sets are suggested to be rated with a -6 to +6 (13-point scale) distribution. If the P-Set is expected to be very knowledgeable in the research topic a shallower distribution could be chosen. As an example, a Q-Set of 40 items could be rated with a 11-point scale since the respondents are then able to give a more nuanced distinction. Accordingly, the opposite is the case if the respondents are expected to be unfamiliar with the topic. Choosing a steeper distribution allows for more items to be place in the middle of the distribution.

The sorting itself should start with a pre-sort for the respondent in which items can be sorted according to if the respondent feels positive, negative or undecided about the item (Watts & Stenner 2012). This pre-sorting is done to make the later finer sorting easier and to get familiar with the items and how they are formulated. After pre-sorting, the actual sorting of the items into the forced distribution scale can start. It is important that the respondent has enough time to sort the statements, has the freedom to follow their own strategy and can do it in a comfortable environment. Along with the sorting, demographic and personal data of the respondents, which might have an influence on the perspectives on the topic, is collected (ibid).

The sorting exercise can be carried out in person with printed cards which are used for sorting, by mail or online (Watts & Stenner 2012). Regardless of the chosen way to conduct the sorting, a detailed recording is important for the later analysis (ibid).

2.3.6. Factor analysis of the Q-Sorts

In exploratory factor analysis for Q-Methodology, the participant who sorted the Q-Set-statements are the variables (Watts & Stenner 2012). The sorted dataset is called Q-Sort and the goal of this analysis is to extract a number of factors from the data. These factors represent the perspectives held by a number of participants. The analysis identifies shared meaning in the data and at the same time aims to account for as much variance in the data as possible. The outcome which is then used for the interpretation are the so-called factor arrays. The factor arrays are a single Q-sort created to represent the perspective per factor (ibid). The aim of this chapter is to give a brief insight into the concept of this analysis rather than diving into the mathematics behind it.

The first step in the analysis is to create a correlation matrix (Watts & Stenner 2012). This analysis evaluates the intercorrelation between each Q-Sort. As a result, relationships between the Q-Sorts can be seen. The correlation matrix represents 100% of the studies meaning which is also known as the study variance and shall be represented by the later extracted factors as entirely as possible (ibid).

The factors are extracted by performing a centroid factor analysis (Watts & Stenner 2012). For this analysis the user has to decide how many factors shall be extracted which can be determined by different tests during the analysis. The goal should be to find a suitable number of factors to represent the gathered data in an adequate way. By extracting the first factor from the data a certain amount of shared meaning has been removed from the original correlation matrix. The remaining correlation matrix is now searched again for shared meaning and a second factor will be extracted. This goes on until the prior set number of factors has been extracted (ibid).

The result is the unrotated factors matrix which shows the extracted factors and each Q-Sorts factor loading (Watts & Stenner 2012). This loading states how well a Q-Sort correlates with a factor. Moreover, the matrix shows the covered variance per factor and its eigenvalue which indicate the strength of the factors. The extracted factors should exceed a combined variance of about 35-40% to be recognized as sound. The eigenvalue is the sum of the factor loadings for one factor in square (ibid).

Each Q-Sorts loadings can be translated into coordinates in a multidimensional graph in which each factor is one dimension (axis) (Watts & Stenner 2012). If two Q-Sort share a similar meaning they will have coordinates close to each other in this space. The next step in the analysis is factor rotation. By rotating, the factor loadings of the Q-Sorts increase for one factor and therefore decrease on all the other factors. The aim of this step in the analysis is to position the factors in a manner that they are as close as possible to the perspective of a group of Q-Sorts whose members hold much shared meaning with each other. The result is the rotated factors matrix with the same indicators as the unrotated factors matrix holds. It is important to highlight that the factor rotation only changes the position of the factors but not the position of the Q-Sorts in relation to each other. The participants perspectives are not changed only the factor that tries to account for these perspectives as comprehensive as possible (ibid).

To be able to interpret the factors and to see what these viewpoints are, factor arrays are created (Watts & Stenner 2012). Simplified, this is a Q-Sort per factor, and represents the shared meaning extracted for this factor. Therefore, the statements with which the factor agrees most and least can be identified in the same manner as it was in each Q-Sort before the analysis. Moreover, statements which were significantly differently valued by one factor, in comparison to the other

factors, are highlighted and give indications for later interpretation. These statements are called distinguishing statements (ibid).

2.3.7. Interpretation of factor analysis

There is not much consensus about how to interpret the results of a factor analysis in Q-Methodology (Watts & Stenner 2012). Watts & Stenner (2012) suggest drawing a so-called Crib Sheet per factor. A table which includes four different categories of items per factor: highest ranked items, lowest ranked items, higher ranked than in other factors and lower ranked than in other factors. Yang (2016) on the other hand, argues that a rigorous interpretation of the results should be carried out by including the highest and lowest rated statements, distinguishing and consensus statements. A statements score is distinguishing if it was valued significantly different by one of the extracted factors in comparison with the other scores (Watts & Stenner 2012). On the contrary, consensus statements are valued the same by all the factors. In other words, no significant difference in the scores is seen (ibid).

3. Method

This chapter describes the application of the Q-Methodology to answer this thesis's research question. The application followed the seven stages presented in chapter 2.3. The first two stages were however conducted together since they depend on each other and on the available group of respondents. The two stages were combined in the initial formulation of the research question. The practical work which included participants were performed in German and translations for the purpose of this report were carried out by the author.

3.1. Formulation of the research question

The aim of this thesis is to assess what perspectives the farmers themselves have about the social dimension of sustainable farming. Since this is a question answered by the farmers themselves and therefore, reflecting their personal understanding of the topic, the research question focuses on the *understanding* according to Watts & Stenner (2012).

The choice of the participant group is based on availability and accessibility of participants. Various farmer organisations were contacted to recruit participants. The organization "Swiss Milk Producers" (SMP), which unites several local organizations of milk producing farmers, was willing to assist in gathering contact data. Therefore, this thesis is focusing on the understanding of the social dimension of sustainable agriculture by Swiss dairy farmers. This resulted in setting the research question for this thesis as: What perspectives do Swiss dairy farmers have about the social dimensions of sustainable agriculture? While the participants themselves will be facing the following research question throughout their participation: What does the social dimension of sustainable farming mean to you?

3.2. Focus group discussion with the respondents

As highlighted in chapter 2.3.3 it is suggested by Watts & Stenner (2012) to break down the relevant subject into smaller themes to guarantee an adequate coverage and balance in the Q-Set. Therefore, the eight themes introduced by Nordström

Källström & Caselunghe (2010) (Table 2) were used during the compilation/identification of the Q-Set as guidance to ensure covering the research question in a broad manner. These themes cover the social dimension of sustainability in rural areas, not particular in agriculture. However, since farmers usually operate in rural areas and are an important part of these communities, these eight themes were chosen to ensure the coverage and balance of the resulting Q-Set.

Since the research topic of the social dimension of sustainable agriculture is rather underdeveloped and is assumed to be broad, focus groups fit the purpose of gathering needed data to create the Q-Set. It was important to have an open, non-restricted exchange of thoughts regarding the research topic among the focus group participants, which were dairy farmers themselves. Two focus groups were held with a total of twelve participants. The participants were dairy farmers belonging to one of the German speaking production associations. These focus groups were held online and voice recorded to be able to process the focus group discussion later on.

Participants were invited to choose one of the two appointments and then sent the according link to the meeting. At the beginning of the meeting the participants were again informed about the recording of the meeting and given the according information. After a short introduction of the focus group moderator and why we meet to discuss this topic, the opening question, adapted from (Andersen et al. 2018), "What does the social dimension of sustainable farming mean to you?", marked the beginning of the discussion. Participants were animated to explain their view on the topic but also to react to statements made by other participants. The moderator did not interfere with the discussion unless it came to a halt. In that case, the moderator asked about the participants thoughts on a not yet mentioned theme introduced by Nordström Källström & Caselunghe (2010). The focus groups were planned to go on for about one hour.

3.3. Identification of key statements and creation of the Q-Set

The first step was to listen to the recordings and extract every statement made which was related to the research topic. By doing so, 158 statements were gathered. To create a better overview these statements were categorized according to the eight themes presented at the end of the focus group. A second, more refined, categorization based on 42 keywords was then introduced to facilitate the identification of duplicates. After excluding these duplicates, 58 statements with a stand-alone contribution were left. By changing negative formulated statements into positive ones two more duplicate pairs were identified and therefore combined.

The statements were shown to a farmer to check their understandability. This was followed by a quality check of the statements by the thesis supervisor. It was seen that the formulation of the statements was not sufficient to answer the research question and that not all statements contribute with a stand-alone contribution, especially after reformulation. Moreover, it was seen that one of the topics suggested by Nordström Källström & Caselunghe (2010) was not covered in the discourse. Therefore, the Q-Set was supplemented with statements extracted from the literature for the topic of equality. In addition, during the research to identify these statements, three other statements were identified in the literature as well and included (Table 4).

Table 4 List of additionally added statements to the Q-Set identified in the literature

Source	Statement	Theme
(Rossier 2005; Rossier & Wyss 2007)	Following personal goals as a farmer determined by individual interests and values.	Livelihood and occupation
Rossier & Wyss 2007	In case of off-farm income: Having an understanding employer and accessibility to a job which gives enough room for farming activities.	Health, security and work environment
(von Glasenapp & Thornton 2011; Mann 2014)	Freedom to use techniques in farming applied over generations to preserve the cultural heritage.	Culture/Identity
(Rossier 2005)	Equal opportunities in agriculture regardless of gender.	Equality
(Rossier 2005)	Free choice of roles within the farm family and on farm regardless of my gender.	Equality
(Rossier & Wyss 2008)	Equal opportunities in farm succession regardless of gender.	Equality

This refining, reformulation, and supplementing lead to the final Q-Set with a total of 40 stand-alone statements. These were shown to a farmer again after translation into German to check if the statements were understandable and then finalized. The complete Q-Set can be seen in Appendix 1.

3.4. Q-sorting by respondents

The sorting exercise was carried out by 23 dairy farmers in a web-based tool called QSortware by Pruneddu & Zentner (2013). The participants were asked to sort the

statements on a 9-point-scale (+4 to -4) according to their level of agreement and disagreement after doing a pre-sorting in which they sorted the statements only in terms of agreeing, disagreeing and neither. A quasi-normal distribution was used as shown in Figure 3. Additionally, the age, gender, production system (organic, conventional, demeter), farm size [ha], number of cows and the availability of an off-farm income were collected for every participant. The participants were invited by mail and along with the invitation received a quick manual for the exercise and a video-call link for a daily consultation hour which they could join if there were any questions regarding the exercise. This sorting took place from the 10th of March until the 4th of April in 2022.

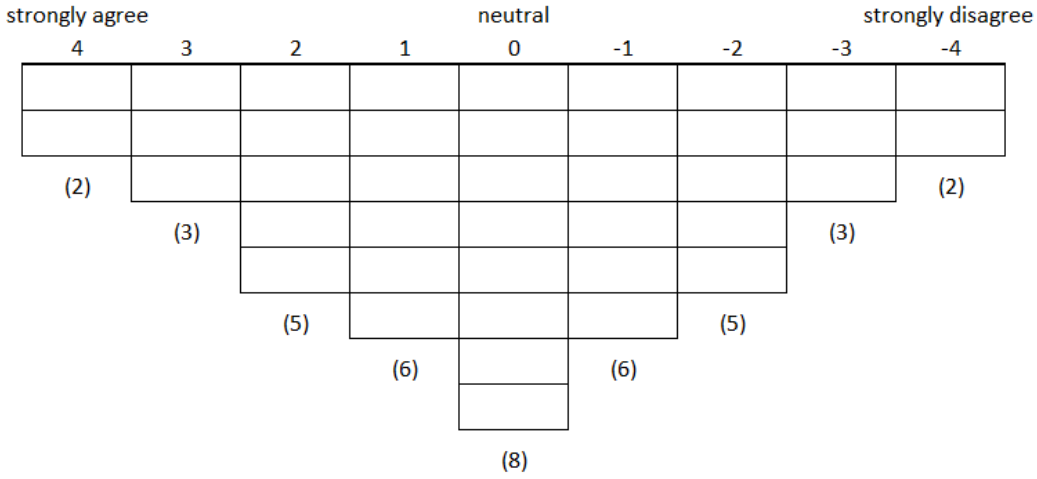

Figure 3 Forced quasi-normal distribution for sorting exercise by participants

3.5. Factor analysis of the Q-Sorts

The analysis of the gathered data was done with Stata/SE 17.0 (StataCorp 2021). To determine the number of factors to extract, the correlation matrix was created, followed by a principal-component factors analysis which identified eight factors with an Eigenvalue higher than 1.0. After an orthogonal rotation with Varimax a Scree plot was created in which the factors are the x-axis and the Eigenvalues per factor the y-axis (Figure 4). According to (Watts & Stenner 2012), to decide how many factors to retain, the Scree plot should be cut where the slope of the curve changes. In this Scree plot this was the case after five factors.

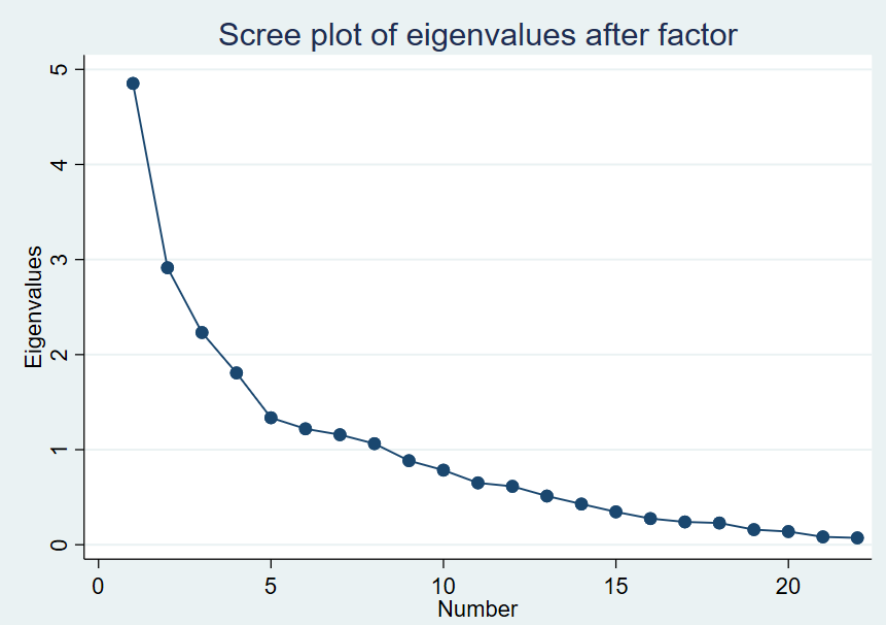

Figure 4 Scree plot as criterion to determine how many factors to retain in the factor analysis

After determining the number of factors to extract, a new analysis was started with the command "qfactor" by Akhtar-Danesh (2018). Choosing a principle components factor analysis with five factors to retain and a Varimax rotation the analysis was run and the output including factors arrays and the distinguishing statements per factor are presented in the following chapter.

3.6. Interpretation of factor analysis

For the interpretation of the factors, following the approach by Yang (2016), the statements which score with +4 and -4 per factor are taken into account but also the +3 and +3 statements are considered. Moreover, the distinguishing statements were included and mainly used to understand how the factors stand to each other.

4. Results

Five factors were extracted from the data. Therefore, this thesis identifies five perspectives on the matter of the social dimension of sustainable farming among Swiss dairy farmers. These factors cover 59.27% of the studies variance. Table 6 provides an overview on these five perspectives. Seventeen Q-Sorts loaded for one of the presented factors while six Q-Sorts were confounded or non-significant for only one factor. In total 23 Q-Sorts were included into the analysis. The demographic overview of all 23 participants who created the Q-Sorts is given in Table 5, while Table 6 exclusively includes the participants who loaded for one of the factors.

Table 5 Demographic summary of all 23 participants of the Q-Sort exercise

Age range [years]		25 - 64
Gender	Male	19
	Female	4
Production system	organic	7
	conventional	14
	other	2
Managed farm area range [ha]		13 - 95
Number of cows		15 - 170
Off-farm income	yes	15
	no	8

The factor arrays for the five perspectives are presented in Table 7. The labelling of the perspectives was made on the basis of the statements valued with +4 and -4 but also considering the statements valued with +3 and -3. Moreover, the scores marked with a star (*) are the ones which are distinguishing a perspective from others. This chapter now proceeds with introducing the five perspectives in more details by referring to the arrays presented in Table 7. Statements will be referred to by the number they have in Table 7.

Table 6 Overview of the five identified perspectives on the on the matter of the social dimension of sustainable farming among Swiss dairy farmers

	Perspective 1	**Perspective 2**	**Perspective 3**	**Perspective 4**	**Perspective 5**
Covered variance	16.79	13.73	10.43	9.41	8.91
Label	Equality	Passing on a successful business	Family and Friends	Non-coherent	Education
Number of loaded Q-Sorts	4	5	3	2	3
Q-Sort characteristics:					
Age [years]	27 – 40	25 – 52	48 - 58	47 / 51	55 - 64
Gender	3 males / 1 female	4 males / 1 female	3 males	1 male / 1 female	3 males
Production system	3 conv. / 1 other	4 conv. / 1 organic	1 conv. / 2 organic	1 conv. / 1 other	1 conv. / 2 organic
Managed farm area [ha]	48 – 103	13 – 33	25 – 45	33 / 35	14 – 28
Number of cows	43 – 160	18 – 65	37 – 45	40 / 40	15 – 71
Off-farm income	3 yes / 1 no	4 yes / 1 no	1 yes / 2 no	1 yes / 1 no	3 yes

*Table 7 Q-Set statements including the theme (Nordström Källström & Caselunghe 2010) they are associated with and the factor arrays; scores for distinguishing statements are marked with *****; scores for consensus statements are in italic; highlighted scores: 4= dark green, 3= light green, -4= dark red, -3= light red*

Nr	**Statement**	**Theme**	**P1**	**P2**	**P3**	**P4**	**P5**
1	Learning how to interact with the community around the farm rather than only focusing on the economics of farming.	Education and learning	1	-1	-1	0	**3***
2	Availability of vocational training that covers a wide range of relevant topics needed to become a farmer.	Education and learning	3	0	0	3	**4***

3	Having access to further education programs for farmers that cover a wide range of needed topics and competences.	Education and learning	3	**-2***	1	4	1
4	Equal opportunities in agriculture regardless of gender.	Equality	**4***	**-4***	1	1	**-2***
5	Free choice of roles within the farm family and on farm regardless of my gender.	Equality	2	-2	1	1	-1
6	Equal opportunities in farm succession regardless of gender.	Equality	**4***	**-3***	2	1	**0***
7	An increased understanding of the cost of farm products among the population through e.g. education.	Financial distribution	2	4	**-1***	2	1
8	Reducing mental health problems for farmers and their family members from pressures associated with financial insecurity.	Financial distribution	1	-1	-1	3	2
9	Freedom of the expectation to perform social tasks on the farm (visits, education on the farm) as these pose an additional burden.	Health, security and work environment	0	-2	-2	**2***	-1
10	Slowing down the vanishing of farms.	Health, security and work environment	-4	1	-4	1	-4
11	Less reliance on digital tools and systems.	Health, security and work environment	-4	-4	-4	**0***	-4
12	Having flexibility in workload that I determined myself and the possibility to take time off.	Health, security and work environment	-1	2	-1	2	2
13	Having the possibility to remain a small-scale farmer and to have a profitable business.	Health, security and work environment	-3	0	1	1	-1
14	Reasonable income for all the extra work. (long working hours compared to employed people)	Health, security and work environment	2	2	2	4	**-2***
15	Being able to manage the increasing complexity and requirements of farming and not being overwhelmed by it.	Health, security and work environment	0	-1	**-3***	3	3
16	Having the time to participate in further education.	Health, security and work environment	**-2***	**-1***	1	2	4
17	In case of off-farm income: Having an understanding employer and accessibility to a job which gives enough room for farming activities.	Health, security and work environment	-1	-1	0	1	2
18	Being aware that it is essential to take care of social security (follow-up costs from illness/accident, pension, invalidity) on one's own responsibility and doing that accordingly.	Health, security and work environment	1	0	2	-1	2
19	Availability of tailored social security protection solutions (follow-up costs from illness/accident, pension, invalidity) by for example general insurance companies and the farmers' association.	Health, security and work environment	0	-1	0	-3	**3***

20	Family and employees are entitled to vacations.	Health, security and work environment	0	2	0	0	-1
21	Earning enough from selling the farm products to be able to produce sustainable.	Livelihood and occupation	3	3	4	**0***	**-3***
22	Building up a farm that can be passed on to the next generation.	Livelihood and occupation	1	**3***	-1	0	0
23	Possibility to earn an income on which one can live reasonably.	Livelihood and occupation	2	**4***	3	**-1***	1
24	The ability to follow personal goals as a farmer determined by individual interests and values.	Livelihood and occupation	0	0	-1	0	-3
25	Less financial dependency on direct payments to increase freedom of farm operation.	Livelihood and occupation	**2***	**1***	-3	-4	-3
26	Being able to pass on the joy of the profession and the professional pride to visitors and the next generation (succession).	Networks and social relations	0	**3***	**-3***	0	0
27	Good family relations.	Networks and social relations	**-2***	1	3	2	2
28	Giving children the possibility to grow up on farms which gives them a down-to-earth perspective on life.	Networks and social relations	0	1	-2	-1	0
29	Well-developed social networks (e.g. friends to socialize and celebrate e.g. traditions) among the farmers and other participants in agriculture.	Networks and social relations	-1	-2	**2***	-3	0
30	Having a strong farmer community in the close neighbourhood (Machine pooling, temporary help, exchange of experience and support)	Networks and social relations	-1	1	**4***	-2	0
31	Having a favourable image of my farm among the non-farming community.	Networks and social relations	1	1	**0***	**-3***	1
32	Respectful and empathic treatment of family and employees.	Networks and social relations	-1	-2	**3***	-1	**1***
33	Being part of a functioning community with non-farming people. E.g of a village.	Networks and social relations	-2	0	0	-2	1
34	Greater appreciation from society for farmers work and their contribution to the general public by providing food and public goods.	Networks and social relations	0	2	2	0	0
35	A reduced political focus on cheap food production to enable a focus on the people involved in farming and their needs.	Participation, democracy and social status	-3	**0***	-2	-2	-2
36	A political landscape which conveys stability and certainty.	Participation, democracy and social status	1	0	0	-1	-1
37	We should be able to produce healthy food with fewer inputs and thus reduce dependence on input providers.	Services and communication	-2	-3	**0***	-4	-2
38	Availability of support services to master the office work to receive direct payments and other grants if they are needed.	Services and communication	-3	0	-2	-1	-1
39	Manageable burden of office work to receive direct payments and other grants.	Services and communication	-1	2	1	-2	0
40	Freedom to use techniques in farming applied over generations to preserve the cultural heritage.	Culture/Identity	*-2*	*-3*	*-2*	*-2*	*-2*

4.1.1. Perspective 1 – The ”equality-perspective”

This perspective agrees most (+4) with two statements from the equality theme (4,6). Both statements refer to equal opportunities regardless of gender. Moreover, these two statements are also distinguishing for this perspective and are scoring significantly higher for the “equality-perspective” than for the other perspectives. In addition, the three statements scoring with a +3 consist of two statements regarding education (2,3) and statement 21 which refers to the wish of earning enough from the products return to be able to farm sustainably. The availability of vocational training (2) and the access to further education (3) are important to the group representing this perspective.

The two statements scoring lowest (-4) in the “equality-perspective” are statement 10 “Slowing down the vanishing of farms.” and statement 11 “Less reliance on digital tools and systems.”. In addition to disagreeing strongly on statement 10 this perspective also disagrees (-3) with statement 13 which argues for the possibility of staying a small-scale farmer and being profitable. This perspective also disagrees (-3) with statement 35 “A reduced political focus on cheap food production to enable a focus on the people” and statement 38 “Availability of support services to master the office work to receive direct payments and other grants if they are needed.”.

Besides the two highest scoring statements, three more statements are distinguishing for this perspective. By scoring a 2 in the array, this perspective values statement 25 the highest of all perspectives. And moreover, agrees on wishing for less dependency on direct payments and thereby increasing freedom of farming operations. Statement 16 “Having the time to participate in further education.”, on the other hand, is scoring significantly low (-2) in comparison with other perspectives. The same applies to statement 27, “Good family relations” (-2).

4.1.2. Perspective 2 – The “passing on a successful business-perspective”

This perspective agrees most (+4) with statement 7 which wishes for an increased understanding of the cost of farming by the population and moreover, agrees to the same degree to statement 23 which states the possibility to earn an income one can live reasonably from. Statement 23 is also a distinguishing statement for this perspective just like two of the three statements scoring with +3. The first is statement 22: “Building up a farm that can be passed on to the next generation.”. The second statement scoring +3 and being distinguishing for perspective 2 is statement 26: “Being able to pass on the joy of the profession and the professional pride to visitors and the next generation (succession).” Together these statements concern the passing on of the farm and the joy of profession to the next generation.

The third statement scoring a 3+ but not being distinguishing for this factor is statement 21 which refers to the wish of earning enough from the products return to be able to farm sustainably.

Strong disagreeing is expressed towards statement 11 “Less reliance on digital tools and systems.” and statement 4 “Equal opportunities in agriculture regardless of gender.”. The degree of disagreeing with statement 4 is distinguishing strong compared to the other perspectives. This perspective, moreover, disagrees (-3) distinctively on statement 6, which is also an equality statement. The two other statements scoring -3 are not distinguishing for this factor. Statement 37 “We should be able to produce healthy food with fewer inputs and thus reduce dependence on input providers.” and statement 40 “Freedom to use techniques in farming applied over generations to preserve the cultural heritage.”

The “passing on a successful business-perspective” agrees slightly (+1) with statement 25 “Less financial dependency on direct payments to increase freedom of farm operation.” while the other perspectives, except perspective one disagree on it, which makes this score distinguishing. Another distinguishing statement for this perspective is statement 35 “A reduced political focus on cheap food production to enable a focus on the people involved in farming and their needs.”, scoring a 0 while the other perspectives disagree with it. Furthermore, statement 16 “Having the time to participate in further education.” is slightly disagreed on (-1) while the other perspectives, except perspective one have higher scores. The last distinguishing statement for this perspective is statement 3 “Having access to further education programs for farmers that cover a wide range of needed topics and competences.”, which is scoring a -2 as the other perspectives score for this statement in the positive range.

4.1.3. Perspective 3 – The ”family and friends-perspective”

”Having a strong farmer community in the close neighbourhood (ev. Machine pooling, temporary help, exchange of experience and support)”, statement 30, is scoring a +4 in the “family and friends-perspective” and is moreover, a distinguishing statement for this perspective since the other factors agree less with it. Statement 21 ”Earning enough from selling the farm products to be able to produce sustainable.” on the other hand, is scoring a +4 as well but is not distinguishing for this perspective. The related statement 23 ”Possibility to earn an income on which one can live reasonably.” is scoring a +3 alongside statement 27 ” Good family relations”. The third statement which is ranked along them but is distinguishing for this perspective, is number 32 ”Respectful and empathic treatment of family and employees.”.

Like the “equality-perspective”, the “family and friends-perspective” mostly disagrees with statement 10 and 11. Further this perspective disagrees (-3) with statement 25 ”Less financial dependency on direct payments to increase freedom

of farm operation.”. Statement 15 ” Being able to manage the increasing complexity and requirements of farming and not being overwhelmed by it.” is also scoring a -3 and by doing so, being a distinguishing statement for this perspective since the other perspectives have a significantly higher approval for this statement. In contrast to perspective 2 (+3) this perspective disagrees (-3) on statement 26 “Being able to pass on the joy of the profession and the professional pride to visitors and the next generation (succession).” For this perspective statement 26 is likewise a distinguishing statement.

In addition to the already mentioned distinguishing statements among those which are rated with +4, -4, +3 or -3, four more statements are distinguishing for the “family and friends-perspective”. The first one is statement 29 which implicates well-developed social networks among farmers and other participants in agriculture. By scoring a +2 this is the highest level of approval for this statement among the perspectives. While all perspectives disagree with statement 37 “We should be able to produce healthy food with fewer inputs and thus reduce dependence on input providers.”, the “family and friends-perspective” holds the neutral (0) position towards that statement. The same score was achieved for statement 31 “Having a favourable image of my farm among the non-farming community.” The last distinguishing statement for this perspective is Number 7 “An increased understanding of the cost of farm products among the population through e.g. education.”, which is slightly disagreed on (-1) while the other perspectives rather agree on it.

4.1.4. Perspective 4 – The ”non-coherent-perspective”

The ”non-coherent-perspective” mostly agrees (+4) on statement 3 “Having access to further education programs for farmers that cover a wide range of needed topics and competences.” and statement 14 “Reasonable income for all the extra work. (long working hours compared to employed people)”. Furthermore, statement 2, concerning the availability of vocational training is scoring a +3 alongside statement 8 “Reducing mental health problems for farmers and their family members from pressures associated with financial insecurity.” and statement 15 “Being able to manage the increasing complexity and requirements of farming and not being overwhelmed by it.”. None of these mentioned statements are distinguishing for this factor.

The strongest disagree (-4) was scored by statement 25 “Less financial dependency on direct payments to increase freedom of farm operation.” and statement 37 “We should be able to produce healthy food with fewer inputs and thus reduce dependence on input providers.”. Both statements indicate that this perspective has no issue with being dependent on direct payment nor input providers. One of the statements scoring -3 is distinguishing for the ”non-coherent-perspective”: Statement 31 “Having a favourable image of my farm among the non-

farming community.” is significantly stronger disagreed on by the ”non-coherent-perspective” than by the other perspectives. Furthermore, statement 29 “Well-developed social networks (e.g. friends to socialize and celebrate e.g. traditions) among the farmers and other participants in agriculture.” is valued with -3 as well as statement 19 “Availability of tailored social security protection solutions (follow-up costs from illness/accident, pension, invalidity) by for example general insurance companies and the farmers' association.”.

One distinguishing statement for this persepctive has been mentioned already and four more will be highlighted here. In contrast to the other perspectives, the ”non-coherent-perspective” agrees with statement 9 “Freedom of the expectation to perform social tasks on the farm (visits, education on the farm) as these pose an additional burden.” by rating it with a 2 while the other perspectives disagree or rate it neutral. Statement 11” Less reliance on digital tools and systems.” is strongly disagreed with (-4) by every perspective except the ”non-coherent-perspective” which rates it neutrally (0). The same rating applies to statement 21 “Earning enough from selling the farm products to be able to produce sustainable.” while three other perspectives agree rather strongly and one perspective disagrees strongly (-4) with it. Finally, this perspective slightly disagrees with statement 23 “Possibility to earn an income on which one can live reasonably.” while all the other perspectives give positive scores for this statement.

4.1.5. Perspective 5 – The ”education-perspective”

As seen in Table 7 the ”education-perspective” strongly agrees (+4) with statement 2 ” Availability of vocational training that covers a wide range of relevant topics needed to become a farmer.” and statement 16 which refers to having the time to participate in further education. Furthermore, the strong agreeing with statement 2 is distinguishing for this perspective. In addition to this, two statements rated with a +3 are distinguishing for the ”education-perspective” ass well. First statement 1 “Learning how to interact with the community around the farm rather than only focusing on the economics of farming.” which is significantly highest rated by the ”education-perspective” and secondly statement 19 “Availability of tailored social security protection solutions (follow-up costs from illness/accident, pension, invalidity) by for example general insurance companies and the farmers' association.”. The third statement rated with a +3 for the ”education-perspective”, but not distinguishing, is number 15 “Being able to manage the increasing complexity and requirements of farming and not being overwhelmed by it.”.

The ”education-perspective” rates the same statements with -4 as the “equality-perspective” and the “family and friends-perspective” did (10, 11). One of the statements rated with -3 is also a distinguishing statement for this perspective. This is statement 21 “Earning enough from selling the farm products to be able to produce sustainable.”. Statement 24 “The ability to follow personal goals as a

farmer determined by individual interests and values.” and 25 “Less financial dependency on direct payments to increase freedom of farm operation.” are both rated with -3 but are not distinguishing for this perspective.

Four more distinguishing statements have to be taken into consideration for the ”education-perspective”. First statement 32 “Respectful and empathic treatment of family and employees.” which was rated with 1 by this perspective while three of the other perspectives rather disagree with that statement and only the “family and friends-perspective” rated it higher than the ”education-perspective”. Statement 6 “Equal opportunities in farm succession regardless of gender.” is valued neutrally (0) by the ”education-perspective” while the other perspectives rather agree with it or rather strongly disagree (-3) as it is the case for the “passing on a successful business-perspective”. Similarly, does the ”education-perspective” rate the other equality statement, number 4 “Equal opportunities in agriculture regardless of gender.”, with a -2 while the other perspectives rather agree with it or strongly disagree (-4) like the “passing on a successful business-perspective” again. The last distinguishing statement for this perspective is number 14 “Reasonable income for all the extra work. (long working hours compared to employed people)” which is disagreed (-2) on by the ”education-perspective” while the other perspectives agree with it by rating it with +2 and +4 respectively.

5. Discussion

By applying Q-Methodology five key perspectives held by Swiss dairy farmers, concerning the social dimension of sustainable farming, were identified of which four were possible to interpret into coherent perspectives.

Janker & Mann (2018) state that a consensus regarding the meaning of the social dimension of sustainability in agriculture is missing. Nevertheless, human rights and working conditions are most commonly included when sustainability is assessed (ibid). These two topics, however, do not seem highly relevant for Swiss dairy farmers. Human rights concerns were not expressed during the focus group nor found in context relevant literature. While working condition statements, besides the ones regarding income, did not score high or distinguishing.

The "equality-perspective", covering the most variance in this study, focuses on equal opportunities in agriculture. The "passing on a successful business-perspective", in contrast disagrees strongly with two of these equality statements while valuing statements regarding a successful business that can be passed on to the next generation high. The "family and friends-perspective" similarly desires a successful business but more importantly, is focused on the relations with family and friends. The "non-coherent-perspective" is the perspective which focuses least clearly on a certain area within the discourse while the "education-perspective" can be labelled as most concerned with education for that matter. This shared meaning within, and differences between the perspectives will be subject of the following discussion which starts off with the subject of equality. A short discussion regarding the applied method will follow before conclusions are drawn.

5.1. Equality in agriculture matters

Gender equality matters to Swiss dairy farmers in the context of the social dimension of sustainable agriculture and this is the case especially for the "equality-perspective". In this study equality was limited to gender equality since it was the aspect found in the context relevant literature (Rossier 2005; Rossier & Wyss 2007). This does not mean that other equality factors are not important to Swiss dairy farmers.

At first glance one can also see the major differences in the perception between the “equality-perspective” and the “passing on a successful business-perspective” in terms of the two statements regarding equal opportunities in agriculture and farm succession regardless of gender (statements 4 and 6). While the “equality-perspective” rates both statement with +4, the “passing on a successful business-perspective” rates these with -4 and -3. It is tempting to conclude that the “passing on a successful business-perspective” disagrees with equality being important for the social dimension of sustainable agriculture. However, these equality statements might have been rated low in the “passing on a successful business-perspective” because equality is not seen as an issue in agriculture since genders are equal by law (Rossier & Wyss 2008). Interestingly, the “passing on a successful business-perspective” has a focus on having a successful business and passing it on to the next generation while valuing statement 6, which is concerned with equal opportunities for succession, with -3. Therefore, succession is very important, but the equality aspect of succession seems neglected.

Remarkably, the theme of gender equality was not mentioned during the focus group discussions but still emerged as central in the factors which explain most of the variance. Both, female and male Q-Sorts loaded for the “equality-perspective” and the “passing on a successful business-perspective”.

Moreover, the four Q-Sorts which loaded for the “equality-perspective” belong to respondents that were rather young in comparison with the four other perspectives. However, no statistical test was performed to say anything about the generalisability of this difference beyond the 23 participants in this sample.

Not directly targeting the farmer, but his/her spouse, is the currently ongoing change in agriculture policies (AP22+) (Bundesamt für Landwirtschaft 2020). This aims to decrease the spouse’s dependency on the farmer in terms of pension savings and therefore increases their independence. This legislation draft might be able to increase the equality within the farm. Intra-farm equality, however, was not covered in this thesis but could be another equality factor of importance.

5.2. Income as part of social sustainability and its sourcing

During the focus group discussion income was frequently discussed and is also represented in the Q-Set with multiple statements covering different aspects of it. Examples of focus group contributions were: *“Everyone is aware that if you work in agriculture, you have a low wage per hour.”* and *“(Nevertheless) you have to be able to earn an income that you can live on reasonably.”*. Besides the “non-coherent-perspective”, all perspectives agree with the wish for a reasonable income. Moreover, four of the five perspectives agree with statement 14, arguing for having

a reasonable income for the long working hours farmers provide. This indicates that income for farmers is perceived as too low after all since these statements were important enough to agree with, even though they were competing with all the other statements in the Q-Set. The monetary aspects of farming, which would initially be seen as the economic dimension of sustainable farming, therefore, cannot be separated from the social dimension. By investigating three sustainability assessment tools for agriculture, Röös et al. (2019) came to the same conclusion since the financial situation is key for life satisfaction and an important part of working conditions.

In the specific case of Swiss farmers it is important to keep in mind that they are less likely to perceive themselves as poor even though they are de facto (Contzen & Crettaz 2019). Besides commonly being more satisfied with their income than others, the present study showed that an adequate level of income is perceived as important.

The preferred source of income, however, is up for discussion among the five perspectives. The direct payment scheme seems to be an acceptable source of income by three of the five perspectives, since these disagree rather strongly (-3, -4) with statement 25 which vouches for a decreased financial dependency on these payments to increase the freedom of operating the farm in the way farmers want. Moreover, the ratings for statement 35 show that the political focus on cheap food is not seen as a main issue compared to the other statements by the five perspectives. This means that direct payments as a source of income is not seen as an instrument creating a problematic dependency by three of the five perspectives in this study and that the low prices for products seem to be accepted as long as another income source is provided. This could be explained by different motives to participate in programs supported by the direct payment scheme. Marquardt et al. (2022) argue that farmers follow different logics/vision for their farming operations which are determined by the farmers identity, the environment he/she is situated in and his/her believes relating to the conflict between environmental goals and the farm's production. While some farmers might identify themselves as food producers, others identify themselves as landscape managers or environmental guardians. Therefore, direct payments might not be perceived as creating dependency by all farmers but more as a payment for practices they implement for other reasons anyways.

An additional angle to the matter of income sourcing is provided by statement 21 which expresses the desire to earn enough from the products to be able to produce sustainably. The two perspectives ("equality" and "passing on a successful business") which agree distinctively with statement 25 and therefore support a decrease in financial dependency on the direct payments also agree (+3) with statement 21. It seems as these perspectives have the desire to earn more from the products itself rather than from the direct payment scheme and thereby enable a

more sustainable production. In contrary, the "education-perspective" rates both statements with -3 and therefore takes a stand for direct payments as an income source and valuing the income generated by the product itself and/or the incomes use to farm sustainable significantly lowest. However, the interpretation of statement 21 is not straightforward since this statement includes the income factor of product return but also the desire to produce sustainably. So, it is unclear if the participants creating the Q-Sorts agreed/disagreed with both contents or only one. This is a statement which should have been formulated differently for this study.

Nevertheless, the direct payment scheme is an important source of income for Swiss farmers regardless if this is perceived as acceptable or not. Moreover, it is used as an indirect social policy even thought that is not the purpose of the scheme (Mann 2005; Contzen & Crettaz 2019). This study did not assess if farmers perceive the direct payment scheme as payment for services or indirect social policy but this perception might has influenced the ratings of related statements by the perspectives.

5.3. Social relations in agriculture

While conducting the focus groups one topic which was discussed a lot was the farmers' families and how these relations are the most important for many: *"Family is the most important social aspect for me!"* and *"For us the most precious is certainly the family and our loved ones."*. These discussions were integrated into the Q-Set by adding statement 27 that was ranked highest by the "family and friends-perspective". And this seems to be a perspective valuing relations and connections to others highly. Not only within the family by also agreeing (+3) with the statement regarding respectful and empathic treatment of family and employees, but also by distinguishing strongly agreeing with the statement vouching for a strong farmer community (30). Additionally, this perspective is the only perspective which agrees with statement 29, wishing for a well-developed social network among people involved in agriculture. However, these relations do not seem to involve sharing the joy of profession and professional pride with visitors or the next generation since perspective disagrees (-3) with statement 26. Within the perspective "family and friends", networks and social relations seem to be very important detached from the actual farming responsibilities.

5.4. Education and social security – a concern for elderly farmers?

The “equality-perspective”, the “non-coherent-perspective” and the “education-perspective” agree to a rather large extent (+3 / +4) with at least two of the statements concerning education (1, 2, 3, 16). The access to adequate education therefore is perceived as very important by Swiss dairy farmers holding these perspectives. The “education-perspective” stands out clearly by agreeing distinguishingly strong with statement 1 and 2 but moreover strongly agreeing with statement 16. This perspective therefore acknowledges additionally the importance of having the time to participate in education. Which was a much discussed topic during the focus group discussion: *“Further training is only possible if someone else takes over the work on the farm”* or *“It is a problem to find the time to take part in educational activities.”.*

The three participants loading for the “education-perspective” belong to the rather older part of the participating farmers. A reason for their high appreciation of statements concerning education could be seen in the structural change the educational system has undergone since these farmers themselves were at the stage of their vocational education. Between 1970 and 1980 a change was ongoing away from education on the parental farm, towards an educational system equal to other professions (Wettstein 1987). It is not possible to evaluate if that development is valued as positive or negative by the participants loading for this perspective.

In retrospective, it potentially could have added to the understanding of the “education-perspective” to assess the educational status of the participants to potentially add up on the discussion on why the education is seen as so important.

Moreover, this perspective was the only perspective which agrees (+3) with statement 19 regarding the availability of social security insurances for farmers in particular. Which might be connected to the age of these participants as well. In relation to the other statements in the Q-Set the ones concerning social security do not seem to be very high rated. Which is noteworthy since the upcoming policy changes (AP22+) exclusively specify a change in social security regarding social policies.

5.5. Vanishing of farms and the digitalisation are least troublesome in terms of social sustainability

Two statements stick out in terms of how many perspectives strongly disagree (-4) with them. First, statement 10 which is advocating for a slowing down of the vanishing of farms. The Schweizer Milchproduzenten SMP Genossenschaft (2022) states that dairy farms became fewer and bigger over the years and during the focus

group discussion this development was seen worrisome: *"The progressive vanishing of farms is a burden for me"*. Nevertheless, the results now show that three of the perspectives ("equality-perspective", "family and friends-perspective", "education-perspective") disagree strongly with the related statement while the other two perspectives agree slightly with the statement. The reasons for this rating can only be speculated about. Maybe an underlying wish for a higher level of efficiency takes part, which would be in line with the argumentation by Mann (2014) who states that the small-scale family farming structure consists in regions with an absent need of economy of scale. Since the vanishing of farms primarily is related to small-scale farms (Bundesamt für Landwirtschaft BLW 2021) the results for statement 13 " Having the possibility to remain a small-scale farmer and to have a profitable business." are relevant to take into consideration. While the "equality-perspective" disagrees with this statement by rating it with -3 and the "education-perspective" disagrees slightly by rating it with -1, the other perspectives hold a rather neutral or slightly agreeing stand towards this statement. Therefore, it can be stated, that "equality-perspective" has little issue with smaller farms vanishing. Moreover, the farm size and number of cows of the four participants loading for the "equality-perspective" shows that these are, for the most parts, the bigger farmers out of the participants. This could be seen as an indication that this perspective would like to see more efficient and bigger farms and might grew to be a bigger farm themselves by taking over land and production volume of vanishing farms.

The second statement which was generally disagreed with is statement 11. Four perspectives strongly (-4) disagree with this statement expressing the desire for less reliance on digital tools in agriculture and only the "non-coherent-perspective" rated it neutral. Therefore, it can be highlighted that the increasing reliance on digital tools is not seen as a challenge for the social dimension of sustainable farming. However, it is noteworthy that this study was conducted online using web-based tools, which could have been a hurdle already for farmers for whom the increasing reliance on digital tools is a challenge.

5.6. The five perspectives find consent

The analysis, moreover, highlighted one consensus statement. Statement 40, which emphasizes on the freedom to use techniques in farming applied over generations to preserve the cultural heritage, does not particularly fit into one of the eight themes presented by Nordström Källström & Caselunghe (2010) but was included nevertheless since it was perceived as relevant by the author of this report for its relation to cultural identity. Being a consensus statement, all the perspectives rate this statement significantly equal. In this case the statement was rated with -2 to -3 and therefore rather disagreed on. Moreover, this statement did not originate in the focus group but was added to the Q-Set from the literature.

5.7. Method discussion - Learnings and reflections

It was seen as very useful to break a research topic down into smaller themes or topics as it is suggested by Watts & Stenner (2012) in this study. The topic of equality was not covered during the focus group discussions and only later added to the Q-Set by including statements identified in relevant literature. Two of these exact statements proofed to be highly agreed with by the "equality-perspective" and disagreed with by the "passing on ta successful business-perspective". The rating of these statements is not only important to describe the perspectives but also to distinguish them from each other since the rating of these statements were polarizing and distinguishing for several perspectives. Moreover, for the topic of equality a short discussion with the participants loading for these two would be beneficial to assess what these participants think about the topic and why they rated the statements in the manner they did. It is hard to imagine that the "passing on ta successful business-perspective" is actually strongly disagreeing with two of the equality statements as it now seems from the sheer numbers. Moreover, such discussions could have been beneficial for the interpretation of other aspects resulting from this report.

The formulation of the statements for the Q-Set was done very carefully, according to guidelines given by the literature and was quality checked. However, as it was discovered during the interpretation of the perspectives, some statements are not straightforward interpretable. Statement 21 for example refers to earning enough from selling the farms products and at the same time to the ability to produce sustainably. This generates uncertainty for the results regarding this statement. It is unclear if the degree of agreeing and disagreeing relates to the first part of the statement, the second part of both. The interpretation of scores for this statement, therefore, has to be done with awareness.

6. Conclusion

This thesis aimed to identify what perspectives swiss dairy farmers have about the social dimension of sustainable agriculture. By applying Q-Methodology and swiss dairy farmers as the studies respondents, five perspectives on the subject were identified and four are interpreted into coherent perspectives.

The first of the five perspectives is the so called “equality-perspective” and focuses on equal opportunities in agriculture and farm succession regardless of gender. This “equality-perspective” covers the most variance presented by the perspectives even though, equality was not mentioned in the focus groups which were carried out to gather statements regarding the research topic from Swiss dairy farmers. This perspective, moreover, seems to desire larger, more efficient farms and has little concern for the smaller farms vanishing. The second perspective values highest having a successful business and being able to pass that, and the joy of farming, on to the next generation. Therefore, this perspective is called “passing on a successful business-perspective”. This second perspective opposes the “equality-perspectives” viewpoints in terms of equality completely and disagrees strongly with two of the three equality statements. The “family and friends-perspective” has a focus on the relations with family, friends and employees besides ranking income statements high as well. And lastly the “education-perspective” ranked education related statements highest and is most concerned with social security among the identified perspectives.

Moreover, it became evident that the social dimension is not clearly separable from economic factors. Income was frequently discussed in the focus groups and the statements ratings, representing these discussions, showed that there is a desire for better income among the here represented perspectives. This has been established despite the fact that that farmers are 2.5 times more likely to be satisfied with their income and material circumstances than other self-employed people, as stated by Contzen & Crettaz (2019).

This study identified the perspectives held by Swiss dairy farmers and therefore is able to pinpoint at the areas which truly matter to the responding group in the context of the social dimension of sustainable agriculture. Generalisations from this study’s results concerning other respondents cannot be made directly. Therefore, repeating such a study with other groups of farmers or agricultural stakeholders could be valuable. Moreover, this study did explicitly include the farmer but not

family members or employees in agriculture. Since the Swiss farming structure is family based, incorporating family members into similar studies will be more inclusive and represent a more nuanced result.

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Thank you, Tack Tack und Merci vielmal!

Appendix 1 Q-Set

Nr	Statement	Theme
1	Learning how to interact with the community around the farm rather than only focusing on the economics of farming.	Education and learning
2	Availability of vocational training that covers a wide range of relevant topics needed to become a farmer.	Education and learning
3	Having access to further education programs for farmers that cover a wide range of needed topics and competences.	Education and learning
4	Equal opportunities in agriculture regardless of gender.	Equality
5	Free choice of roles within the farm family and on farm regardless of my gender.	Equality
6	Equal opportunities in farm succession regardless of gender.	Equality
7	An increased understanding of the cost of farm products among the population through e.g. education.	Financial distribution
8	Reducing mental health problems for farmers and their family members from pressures associated with financial insecurity.	Financial distribution
9	Freedom of the expectation to perform social tasks on the farm (visits, education on the farm) as these pose an additional burden.	Health, security and work environment
10	Slowing down the vanishing of farms.	Health, security and work environment
11	Less reliance on digital tools and systems.	Health, security and work environment
12	Having flexibility in workload that I determined myself and the possibility to take time off.	Health, security and work environment
13	Having the possibility to remain a small-scale farmer and to have a profitable business.	Health, security and work environment
14	Reasonable income for all the extra work. (long working hours compared to employed people)	Health, security and work environment
15	Being able to manage the increasing complexity and requirements of farming and not being overwhelmed by it.	Health, security and work environment
16	Having the time to participate in further education.	Health, security and work environment
17	In case of off-farm income: Having an understanding employer and accessibility to a job which gives enough room for farming activities.	Health, security and work environment
18	Being aware that it is essential to take care of social security (follow-up costs from illness/accident, pension, invalidity) on one's own responsibility and doing that accordingly.	Health, security and work environment
19	Availability of tailored social security protection solutions (follow-up costs from illness/accident, pension, invalidity) by for example general insurance companies and the farmers' association.	Health, security and work environment
20	Family and employees are entitled to vacations.	Health, security and work environment

21	Earning enough from selling the farm products to be able to produce sustainable.	Livelihood and occupation
22	Building up a farm that can be passed on to the next generation.	Livelihood and occupation
23	Possibility to earn an income on which one can live reasonably.	Livelihood and occupation
24	The ability to follow personal goals as a farmer determined by individual interests and values.	Livelihood and occupation
25	Less financial dependency on direct payments to increase freedom of farm operation.	Livelihood and occupation
26	Being able to pass on the joy of the profession and the professional pride to visitors and the next generation (succession).	Networks and social relations
27	Good family relations.	Networks and social relations
28	Giving children the possibility to grow up on farms which gives them a down-to-earth perspective on life.	Networks and social relations
29	Well-developed social networks (e.g. friends to socialize and celebrate e.g. traditions) among the farmers and other participants in agriculture.	Networks and social relations
30	Having a strong farmer community in the close neighbourhood (Machine pooling, temporary help, exchange of experience and support)	Networks and social relations
31	Having a favourable image of my farm among the non-farming community.	Networks and social relations
32	Respectful and empathic treatment of family and employees.	Networks and social relations
33	Being part of a functioning community with non-farming people. E.g of a village.	Networks and social relations
34	Greater appreciation from society for farmers work and their contribution to the general public by providing food and public goods.	Networks and social relations
35	A reduced political focus on cheap food production to enable a focus on the people involved in farming and their needs.	Participation, democracy and social status
36	A political landscape which conveys stability and certainty.	Participation, democracy and social status
37	We should be able to produce healthy food with fewer inputs and thus reduce dependence on input providers.	Services and communication
38	Availability of support services to master the office work to receive direct payments and other grants if they are needed.	Services and communication
39	Manageable burden of office work to receive direct payments and other grants.	Services and communication
40	Freedom to use techniques in farming applied over generations to preserve the cultural heritage.	Culture/Identity

Appendix 2 Popular scientific summary

The alarm goes off, it is five o'clock in the morning and Hans is awakening from his dreams. The alarm keeps on ringing relentlessly such as every morning. The alarm falls silent under Hans' hands, and the wish to just fall back to sleep sneaks in as every morning. But he knows what would happen if he would just follow his wishes. The herd of dairy cows in his barn do not need a clock to know that it is time for some food, getting milked and starting a new day. And they are not afraid to call for Hans with loud mooing when they have to.

The tasks and the responsibilities of a Swiss dairy farmer are wide-ranging and feeding and milking cows is just one component. Landscape manger, biodiversity shepherd, businessman and family member are some of the roles a Swiss dairy farmer often holds. The goal of Swiss agriculture is to produce sustainable and high quality food. It is known that sustainable agriculture is based on the balance between the environmental, economical and social dimension, but do we know what these dimensions actually mean? The social dimension depends a lot on the context in which farming takes place and a clear meaning is not yet known.

This thesis focuses on the very people at the heart of Swiss dairy farming and therefore wants to identify perspectives Swiss dairy farmers have in regards to the social dimension of sustainable farming. The process involved group discussions with Swiss dairy farmers and an exercise in which farmers ranked statements generated from the group discussions' content.

This resulted in five identified perspectives held by Swiss dairy farmers from which 4 can be interpreted. The "equality-perspective" focuses on equal opportunities in agriculture and farm succession regardless of gender. The "passing on a successful business-perspective", in contrast disagrees strongly with two of these equality statements while valuing statements regarding a successful business that can be passed on to the next generation high. The "family and friends-perspective" similarly desires a successful business but more importantly, is focused on the relations with family and friends. The "education-perspective" can be labelled as most concerned with education for that matter.

This thesis identified the perspectives held by Swiss dairy farmers and therefore is able to pinpoint at the areas which truly matter to the responding group in the terms of the social dimension of sustainable agriculture.