A comparative analysis of regional agricultural enterprises in Romania and Germany as a basis for developing possibilities of an effective EU subsidy policy on a regional level

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"We cannot change the wind, but we can set the sails differently." (Aristotle)

FOREWORD

You are what you eat. This slogan still has an oppressive validity today. Huge sums of taxpayers' money support the production of food permanently. It is difficult to see through the interplay between the economic interests of those involved in the agricultural market, the selection, the quality, and the price of the food, as well as the production methods used and their effects on the environment and health. I have already been engaged with this topic for a long time, and I am therefore very glad that I finally got the opportunity to deal with these coherences in the present thesis.

However, for personal reasons, I was unable to implement my wish to pursue a doctoral degree after completing my regular studies, I have never completely let go of this thought. Friends continuously motivated me not to lose sight of this goal. Therefore, I have regularly looked for appropriate opportunities that allow me to carry out such a project in addition to my full-time job. Overall initial contact requests were only reluctantly dealt with by the German universities. So, when finally, the founding of a graduate centre became known to me by TRIKON, the news journal of the Westphalian University of applied science in Gelsenkirchen, which advertised extensive, cooperative doctoral opportunities, the implementation was suddenly put in concrete forms.

It all starts with the first step. The meaning of this slightly modified proverb of Confucius was ultimately the all-important trigger to dial the telephone number mentioned in the contact details of Dr. Marginean and to start the adventure dissertation. Although with Prof. Dr.-Ing. Manfred Külkens a supervising professor was quickly found and existing doubts on my part about the feasibility were dispelled, the project nevertheless threatened to fail in the short term. The economics faculties of the German universities, in contrast to the technical faculties, were not prepared to cooperate in this way. The project was saved by the willingness of Prof.univ.ing.dr.ec. Marian Mocan from the Political University of Timisoara to enter into such a cooperation and to supervise this project.

However, the creation of such a work has not depended on me alone. It is an endeavour that has required the support of many others for its successful implementation such like the supervisors and advisors, but also family and friends. Many people have therefore accompanied me on this path, and it is only fair and right that I should thank everyone at this point and share the joy of the successful conclusion with them.

My first thanks go to my two supervisors Mr. Prof.univ.ing.dr.ec. Marian Mocan and Prof. Dr.-Ing. Manfred Külkens, who were willing to supervise this project, despite the unusual boundary conditions caused by my professional activity, and thus gave me the opportunity for personal development. Their valuable hints enriched my dissertation in all phases. Furthermore, they also gave me the personal support to complete this work to the present extent.

In addition to their evaluation and support, numerous people have contributed to the completion of this work. Therefore, a big thank you goes to Dr. Gabriela Marginean from the Westphalian University of Applied Sciences in Gelsenkirchen. Always friendly and helpful, she took care of every problem, always committed and assertive and always found a practicable and pragmatic solution. Without this support, the implementation of the research project would not have been possible.

With regard to the organization and implementation of the obligatory attendance

appointments, the support regarding general university formalities at the Polytechnic University, as well as for the warm welcome in Timisoara, I would like to take this opportunity to thank Dr. Attila Turi for his shown helpfulness.

I would also like to thank all the students at the Graduate Centre of the Westphalian University of Applied Sciences in Gelsenkirchen, namely Dr. Dragos Pascal and Dr. Norbert Kazamer, who, by integrating their own experiences, have contributed for meeting existing study requirements more efficiently.

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For the further editing and translation work, as well as the support in the respective presentation preparations and the continuous feedback I received, I would like to thank Mr. Helmut Wolff from Recklinghausen, Mr. Klaus Eickhoff from Bochum and Mr. Hermann Diener from Herten. Without their support, my writing style would have been less precise in terms of expression and grammar, as well as the vocabulary used. Thank you for the continuous support over the entire processing period.

Moreover, I would also like to thank Mr. Diener and my son Malte for the travel companion to the obligatory attendance dates in Timisoara. Traveling alone is only half as much fun and company creates the necessary distraction.

In addition to the supporters already mentioned, I would also like to thank Mrs. Gudrun Joester and Mr. Bernhard Laufer for additional proofreading.

Finally, I would also like to thank all people from my private environment, especially my parents, my wife, my children, but also all friends for the understanding that in recent years the private activities have often been a little too short and because of that reminding me of what is really important in life.

My very special thanks also go to Mr. Rüdiger Kunas, who has always been an important contact person for me during my entire doctoral studies. With his limitless enthusiasm willingness to discuss different options with me and his constructive advice and excellent suggestions and ideas, he has repeatedly revealed to me various solution possibilities and thus was a strong personal support for me and motivated me, especially in difficult hours, to continue and finish the work.

Unfortunately, Mr. Kunas, like my father, passed away very suddenly in 2020. Therefore, I dedicate this work in particular to these two people, but also to all people who believed in me to deal with this challenge.

Thank You!

Herten, March 2023 Michael Glowinkel

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A comparative analysis of regional agricultural enterprises in Romania and Germany as a basis for developing possibilities of an effective EU subsidy policy on a regional level

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Rezumat:
The aim of this thesis was to provide a thorough insight into the European funding policy and the Common Agricultural Policy (CAP) in particular. In addition, it should be examined to what extent the CAP ensures effective funding at the regional level based on the needs of the local farmers there and to what extent adjustments would be necessary to ensure the implementation of a common and sustainable European agricultural policy, as well as to enable small and medium-sized farms in particular to facilitate potential for development in the current process of concentration.
The thesis offers a comprehensible insight into the current European funding policy with its goals, challenges and processes. The structure and development of agricultural subsidies, the current financial instruments and the characteristics of the application, award and control processes are explained and summarized.
Furthermore, major undesirable developments in CAP and their associated effects on the agricultural market and European society are emphasized in detail. Especially, the effects on the labour market, the animal welfare, the development of land prices, the biodiversity, the health, climate, soil and water protection, the world trade and the market exit of small and medium-sized farms are highlighted.
Case studies and the evaluation of statistical data describe the comparative situation of the German and Romanian agriculture in just as much detail as the system comparison of the CAP with the comparable conditions of the US agriculture. The effects of subsidies or changes of subsidies and their characteristics on farms and the associated procurement and sales markets are examined in detail and the respective developments are reviewed.
The evaluation of two surveys with the same content in the regions of Westmünsterland and in the Banat near the city of Timisoara provide a detailed basic assessment of the current CAP and enable conclusions to be drawn about necessary adjustments. It was examined whether and to what extent the predatory competition takes place at the expense of small and medium-sized farms. It was crucial to answer the question of whether and to what extent the displacement of small and medium-sized farms is caused by subsidies for large companies. Furthermore, an in-depth, comparative analysis of the two survey regions was carried out and the influence of subsidy payments on key success and competitive factors in agriculture was examined, as well as a discussion of possible alternatives to subsidy payments for strengthening these factors.
The current degree of digitisation in agriculture in comparison to industrial digitisation as a whole was presented and the importance of an advancing digitisation for the future survival on the market was examined.
The results of both surveys and of the analysis concerning the current state of digitisation in agriculture finally offer predefined starting points for future research. Five thought models were briefly outlined and qualitatively assessed concerning to their feasibility.

ABSTRACT

European agriculture is financially supported by the European Union extensively within the framework of the Common Agricultural Policy -CAP for short-. With around EUR 60 billion, the budget item for agricultural subsidies is the largest within the total EU budget. The self-imposed goals of the CAP are: to continuously improve agricultural productivity, to supply enough food for consumers, to guarantee farmers' income, to promote climate change related efforts, and to use natural resources sustainably. Despite the extensive funding, these goals they have not or have only been partially achieved. On the contrary, the current subsidization is causing permanent structural changes, as a result of which agricultural small and medium-sized enterprises (agri-SMEs) in particular are being pushed out of the market and principles of sustainable agriculture, as well as their effects on human health, only play a subordinate role. The aim of the present thesis is to answer whether it is possible to define an effective funding policy based on the farmers' needs at the regional level within the current funding practice. The main research question to be examined in this context is to what extent the European CAP is suitable for securing the market presence of agri-SMEs in Europe in the long term.

In order to answer the research question, the significant effects of the current funding practice on farms and their environment were first shown by means of literature research, the evaluation of statistical key figures and a system comparison of developments in US agriculture. Furthermore, a comparative data collection was carried out online with the basic version of survio (www.survio.com) in the regions of Westmünsterland with 50 and Banat with 39 participating agricultural companies, respectively. The questionnaire comprises 39 questions, whereas the majority of them could be answered by means of a five-stage Likert scale rating from 'disagree' to 'agree', whereas only few questions allowed free answers.

The analysis reveals that the CAP self-imposed goals have not been achieved as a result of inadequate support towards sustainable strategies and practises; the importance of agri-SMEs, which has been steadily declining for decades, have contributed to this type of funding. This tendency corresponds to the previous development in US agriculture, where agriculture is dominated by few industrialized enterprises as a result of the concentration process; so far negative side effects on the environment, climate, fauna, animal welfare and health etc. have been accepted. The companies' owners who were questioned in both surveys reject the current form of subsidization on a broad front and call for appropriate CAP reforms to secure the future of the European agriculture.

The results stress the need for far-reaching structural reforms to the CAP. In this way, a more sustainable design can be made to achieve the goals set and to create an agriculture that is in harmony with society and nature. In this way, negative developments analogous to those observed in US agriculture could be avoided. The advancing digitisation and various possibilities for a more specific subsidization of European agriculture offer options for a sustainable reform of the CAP and should be analysed in more detail in future research.

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LIST OF ABBREVIATIONS

Agri-SME	Agricultural small- and medium-sized enterprises
AMS	Agricultural Marketing Service
Applications	apps
ARC	Agricultural Risk Coverage
ASAL	Agricultural Sector Adjustment Loan
Business-to-Consumer	B2C
CAP	Common Agricultural Policy
cf.	confer
CF	Cohesion Fund
COMECON	Council for Mutual Economic Assistance
CPS	Cyber-Physical-System
DG AGRI	Directorate-General of Agriculture and Rural Development
EAGF	European Agricultural Guidance and Guarantee Fund
EAFRD	European Agricultural Fund for Rural Development
e.g.	exempli gratia
EMFF	European Maritime and Fisheries Fund
ERDF	European Regional Development Fund
ESF	European Social Fund
EU	European Union
EUR	Euro
f	following
ff	following pages
FAS	Foreign Agricultural Service
FSA	Farm Service Agency
FNS	Food and Nutrition Service
GDP	Gross Domestic Product
Germany	DE (according to ISO 3166 Alpha-2)
GFCF	Gross Fixed Capital Formation
GMO	Genetically Modified Organism
GNI	Gross National Income
GVA	Gross Value Added
ha	hectares
hl	hectolitre
http	Hypertext Transfer Protocol
IAS	State Farms
ICT	Information and Communications TechnologyICT
IDAS	Internal Department Audit Service
i.e.	id est
IoT	Internet of things
inhab	inhabitants
IPv6	Internet Protocol Version 6
LEADER	Liaison Entre Actions de Développement de l'Économie Rurale
MARD	Ministry for Agriculture and Rural Development

MFF	Multiannual Financial Framework
NRDP	National Rural Development Programme
NRP	National Reform Programme
NRW	North Rhine-Westphalia
OECD	Organization for Economic Co-operation and Development
PLC	Price Loss Coverage
RMA	Risk Management Agency
RD	Rural Development
R&D	Research & Development
RDP	Rural Development Programme
RFID	Radio Frequency Identification
Romania	RO (according to ISO 3166 Alpha-3)
SAPARD	Special Accession Programme for Agriculture and Rural Development
SAPS	Single Area Payment Scheme
SiB	Survey in the region of Banat
SiW	Survey in the region of Westmünsterland
SMEs	Small and medium-sized enterprises
SPS	Single Payment Scheme
SO	Standard Output
T	tons
TEN-T	Trans-European Networks-Transport
TFP	Total Factor Productivity
thou	thousand
UAA	Utilized Agricultural Area
URL	Uniform Resource Locator
USD	US Dollar
USDA	US Department of Agriculture
VAT	Value added tax

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1 INTRODUCTION

1.1 Position of the problem

The beginnings of the European Union date back to the 1950s. At that time, the European Community was formed by six states with the intention of achieving an economic integration among themselves, as well as an extension of the market potential. Over the years, other states joined the federation, until the European Union was finally founded in 1992. Since 2022 it has consisted of 27 Member States, has its own organs and also its own budget. The EU countries are pursuing the continuous development of Europe through a common focus. In order to promote the implementation of European development, the European Union invests annual, financial contributions across the three-digit billion range in concerted areas across Europe.

This is also valid for the agricultural policy, which is one of the most important tasks of European policy and was laid down in the EEC Treaty in 1957. Their support is therefore a fundamental part of the policy of the European Union. The Lisbon Treaty reaffirmed and ratified the Common Agricultural Policy as a fundamental element of European policy in 2009 [124]. European agriculture is an important economic sector in the European Union and, with the subsidies granted, a significant item in its budget. The development of the EU agriculture is an integrative part of the EU institutions' aims. The department for agriculture and rural development is involved with problems of agriculture and approaches for finding possible solutions. In the European Commission the commissioner for agriculture and rural development is as the head of this department in charge of any political decisions in this field. [118]. The main objectives of the CAP are to increase agricultural production within the Common Agricultural Policy, to ensure a fair income for farmers, to stabilise the market and to guarantee consumer security at affordable prices.

Such subsidization measures are of great importance for agri-SMEs in particular. Since 1992, direct payments as the main instrument of CAP have been used to support agriculture. In 2021, direct payments account for more than three quarters of total agricultural subsidy payments [121]. By this means, size and type of enterprises determine the influence of the direct payments on the income [54].

As a consequence of this EU funding, a lot of farms are being eliminated from the EU market by competitors. There is an intensive farming in the EU, which is carried out mainly by a few farms that expends tremendously [19,164,165,166]. So that just 3% of all farms cultivate most (>50%) of the total agricultural acreage [30,164,165,166]. Approximately 30% of all EU farms ceased their businesses between the years 2005 and 2016. Mainly agri-SMEs became victims of this process [56,165]. Goals of the CAP concerning the protection of the climate and conservation of nature have not yet been achieved. The same is true for goals involving global justice through sustainable use of resources and fair-trade [30,164,165,166].

As a consequence of this development a tense atmosphere was created and that is why farmers have reduced their expenses for investments. This structural change has led to economic constraints . On the other side there is a very intensive public dispute about agriculture and nutrition in general. That is why there can no

simple solution offered for farmers. Although subsidy payments slow down this process of concentration, it cannot be stopped under the given boundary conditions. In order to ensure a sufficient supply diversity and sustainable production structures as well as to ensure agricultural development perspectives, it is necessary to investigate to what extent adjustments to the existing subsidy practices would be necessary.

Hence, in this research, the current situation and mood among German and Romanian farmers in the context of the CAP is explained and possible solutions are identified that will enable or maintain sustainable and diversified agriculture in the future.

1.2 Goal of the dissertation

The aim of the present work is to examine whether it is possible to define more suitable CAP instruments within the current subsidization practice for creating an effective and needs-oriented subsidy policy at the regional level which will ensure the achievement of the Common Agricultural Policy goals and at the same time will stop the current agricultural repression and concentration process to ensure a sustainable and diverse production, as well as social and economic development perspectives, especially for agricultural countries such as Romania.

To achieve this overall goal the following research objectives have been identified:

- to analyse the current CAP and its planned reform with regard to the sustainability of agri-SMEs,
- to assess the current situation of the German and Romanian agriculture,
- to investigate the influences of the current subsidy policy in the EU and the USA,
- to assess the influence of subsidies as a key instrument of the CAP on farms, taking the Westmünsterland region of North Rhine-Westphalia and the region of Banat as representative examples,
- to take a look at the potentials of digitization in agriculture as a means for improving productivity,
- to outline options for more suitable CAP instruments that support diversity and sustainability in the European agriculture,
- to show the research results with regard to the influence of EU funding for farms and of the effects on the farmers' market activities . Therefore, a survey with farmers was made in the regions of the Westmünsterland and Banat.

1.3 Materials and methods

In this thesis the currently valid subsidy practice of the European Union is presented. In a system comparison with the US subsidy policy, a global classification of the European system is to be described. Furthermore, the evaluation of statistical time series should show the significant effects of agricultural subsidy payments. Once the marginal conditions of German as well as Romanian agriculture including their peculiarities have been pointed out, alternative possibilities for an effective and appropriate subsidy policy should be derived on the basis of a comparative data collection and analysis (survey of affected farmers in Germany and Romania).

The relevant factors and processes as well as the main contents of the CAP were elaborated by literature research and contextual statistics in order to explain the current subsidy policy in the European agriculture for individual farms and its effects on the market exit of agri-SMEs.

All statistical data are taken from publicly accessible databases. Depending on the time of data acquisition and depending on the individual sources, the statistical data may differ slightly in individual cases. The literature research is based on publications of public institutions, as well as on international literature.

A survey of farmers in the Westmünsterland and Banat region was carried-out to evaluate the suitability of the European Common Agricultural Policy (CAP) for ensuring the market position of agri-SMEs in Europe. This region is above all home to medium-sized farmers who work in traditional German and Romanian agricultural sectors like fattening, milk production, and arable farming.

The results of this survey are discussed to find out how the current subsidy programme has affected farmers in Westmünsterland and the Banat region. As the regional agriculture is characterized primarily by agri-SMEs, these regions can be seen as representative. The goal of this survey is to examine how subsidy payments affect farmers in their management concerning their behaviour on the market. In order to understand the function of subsidies and how farmers evaluated them, a specially designed questionnaire was used.

Following the guidelines and standards of ‘Survey Research’, a German-language online questionnaire with 39 questions in four categories was developed.

The first category 'General information about your agricultural business' contains 12 questions to describe and classify better the respective corporate structures of the surveyed farms.

Category 2 'The situation of agriculture from your point of view' includes 2 questions to assess the general situation of agriculture from the point of view of the interviewed farmers regarding economic perspectives and the appreciation of sustainable cultivation methods.

The 12 questions in category 3 'Subsidy measures in your agricultural business' aim at examining the influence of subsidy payments on the respective farm activity.

Finally, 13 questions in category 4 'Personal assessment of subsidies' are targeted to capture the personal opinion of the surveyed farmers on the current situation and the future development of agricultural activities.

As assessment method an online survey was chosen. Beside an online survey, there is also the option of collecting data by personal interview, telephone survey, post-call survey, mail-in survey or similar. The decision in favour of an online survey is based on the fact that this type of survey is easy to organize, practical to use and simple to conduct, as well as very effective in terms of cost-benefit considerations. In addition, it provides good results and is applicable in both regions mentioned (in the Westmünsterland and in the Banat). Furthermore, language problems and problems of accessibility are avoidable by an online survey. For the online survey Survio (www.survio.com) was used as an adequate tool. Survio is available free of charge, is very well established in the field of online surveys, used in an academic environment as well as by industry, e.g. Microsoft. Furthermore, the tool can be used in several languages and offers a high level of data security. Survio provides its own predefined evaluation options.

The answers to the questions regarding the company structures are evaluated as a graphical representation of the respective proportion. The evaluation of the answers to the questions in the other categories are mainly carried out by means of a

five-stage Likert scale and are also presented graphically. Using a five-point Likert scale encourages participation as respondents feel they have more choices. In addition, a five-stage scale leads to a higher quality data. Furthermore, respondents are more likely to consider their answers, when they have fewer options.

In some cases, the participants also have the opportunity to give free answers in these categories.

A sample overview of the evaluation of selected questions is provided by the following table 1.1.

Table 1.1. Sample overview or the evaluation of selected questions

	Dimension	Sample Item	Scale
Company	Corporate structure	The enforceability of the price	Y/N
		No. of employees	Integer
Status	Situation of agriculture	Business perspective	Five-stage Likert
		Honouring of sustainable production methods	Five-stage Likert
Relevance of subsidies	Subsidy measures	The types of subsidy reference	Y/N
		The influence of subsidies on the economic situation	Five-stage Likert
New CAP orientation	Personal assessment	The limitation of the duration of subsidies	Five-stage Likert
		Possible adjustments	Free text

After assigning numbers from 1 (disagree) to 5 (agree) to the levels of the five-stage Likert scale, the formula

$$\bar{x} = \frac{1}{n}\sum_{k=1}^{n} \quad ak$$

is applied to determine an average value per single question for each group surveyed and then also to graphically display this value in comparison with the defined groups.

If, for example, the answer to question 13 'I consider the economic prospects for agriculture in the next few years to be good' generates the following distribution of responses using the five-stage Likert scale:

Table 1.2. Example of determining an average value per affected question

Answer (Likert-Scale)	Digit assignment	Number of answers
Do not agree	1	8
Tend to disagree	2	15
Neutral	3	21
Tend to agree	4	3
Do agree	5	3
		50

Subsequently, the above formula can be used to calculate the mean value for each group surveyed with regard to this question:

(8+1+15*2+21*3+3*4+3*5)/50 = 2,6

In a further step, the results obtained in this way are converted into a predefined qualitative evaluation scale in graphical form for a better visibility.

Table 1.3. Conversion of the average values into a qualitative rating scale

Values	Symbol
0,0 – 1,4	▲
1,5 - 2,4	△
2,5 – 3,4	○
3,5 – 4,4	□
4,5 – 5,0	■

Based on this scale, the answers are evaluated comparatively with regard to the defined groups. The evaluation within the analysis of the answers follows the following criteria:

i. Predefined essential questions (such as the importance of subsidies).
ii. The five questions with the highest agreement
iii. The five questions with the lowest agreement
iv. The five questions with a better rating
v. The five questions with a worse rating

All other comparative analyses are presented in tabular or textual form. The same applies to conclusions at the end of each analysis section.

2 THE EXISTING SUPPORT SYSTEM WITHIN THE EUROPEAN UNION

2.1 Cohesiveness of the EU Member States by financial sponsorship

The European Union (EU) has been founded with the aim of shaping the future of the European states. The Member States are striving to achieve sustainable development on social, and economic aspects. Europe's agricultural landscapes are diverse, and the political challenges are capacious. The support of agriculture is a fundamental part of the European Union's policy. Therefore, the agricultural policy is moulded primarily in Brussels. For this reason, over 50 years ago, the European Common Agricultural Policy (CAP) was launched, established in an EU treaty, and confirmed again with the ratification of the Lisbon Treaty in 2009. The Treaty of Lisbon was put into force in 2009 in order to find a common path towards the direction of the Member States and to clearly define them. This treaty lays down uniform provisions on the objectives and methods of cooperation in the European Union. Balanced economic growth, price stability and a highly competitive social market economy are the basis for a sustainable development [123].

Agriculture influences the habitat structure more than any other sector in industry does. If it changes, the ecological and social systems that are combined with it will alter too. The methods of agriculture and how animals are kept changes swiftly throughout Europe. Many farms have already ceased to exist and remaining farms have expanded. As a consequence of that, the land is cultivated extremely as possible [19,29,103,134,164,165,166].

National funds are not used to supplement the EU budget in any way. The largest portion of agricultural spending is included in the European Union budget, and it is still about to increase [51,164,166]. For some countries or regions, the CAP can offer opportunities for solving problems concerning their agricultural development by grating financial support e.g. for meeting environmental requirements or increasing the automation level automation. Two funding areas—referred to as pillars—are the sources of agricultural funding. From the generously conceived first pillar, that makes almost 73% of the CAP funds are distributed to farms on a general basis as area premiums. The second pillar finances measures for rural development and for environmental and wildlife protection projects. It is obviously underfunded in comparison to pillar 1 and thus is consequently given less emphasis [29,164,165,166,267].

Due to their intensive ties to agriculture, the environment, food, and rural areas, any changes in agriculture have a direct impact on EU inhabitants. That is why that is crucial to shape the transformation of European agriculture in such a way that a wide social agreement is formed on the course that agriculture should pursue. The current agricultural policies in Europe are not yet designed with these principles in mind. In order to prevent more and more agri-SMEs from going out of business comprehensive reforms and a vigorous promotion of sustainable agriculture is needed. Otherwise, the disappearance of these farms from the market, will have an serious impact on product diversity, production techniques, product quality, and price stability. Furthermore, it is difficult to meet the essential self-defined targets of the CAP. That also applies for both global justice achieved by resource sustainability and ethical

international trade, as well as the preservation of the climate, soil, water, and biodiversity. The current threat to European agriculture is illustrated by the fact that between 2003 and 2013, one-third of all farms in the EU stopped producing goods and closed their businesses, so that nowadays, 3.1% of all farms cultivate more than half of all the agricultural area. In Germany for example a large enterprise with 5,000 hectares (ha) can expect premiums of nearly EUR 1.4 million and a farm with 50 ha only receives roughly about EUR 14,000 yearly. This means that, 20% of farms in the EU received 80% of the funding [30,164,165,166]. As a consequence of that, giant corporations push agri-SMEs out of the market.

The orientation of the agricultural sector, with its various tasks and responsibilities, is integrated within the assignments of the EU institutions. The European Parliament has established a Committee for Agriculture and Rural Development to discuss issues in European agriculture and to reach potential solutions. The European Council has jurisdiction over the Council of Agriculture and Fisheries, which have adopted agricultural laws. This body is made up of Ministers from all EU member countries. Furthermore, the EU has appointed a Commissioner for Agriculture and Rural Development [120,164,166].

Although the Gross Domestic Product (GDP) of the EU amounted to around 13.920 billion Euro in 2014 and the EU is the most important economic area in the world, there are inequalities in the economic power of the individual Member States. The average GDP per capita in the EU amounted to EUR 25,500 in 2013, but that of the countries of Bulgaria and Romania fell significantly, for example, to EUR 5,400 and EUR 6,800 respectively [81]. In addition, income in the EU is extremely unequally distributed, especially after the eastward enlargement.

In the Treaty establishing the European Community (EC Treaty), Article 2 states that 'the task of the Community is to [...] promote a high degree of competitiveness and convergence of economic activities' [124].

To implement this principle, the EU is obliged to compensate for the existing economic and consequent social inequalities by means of financial measures. The aim is, on the one hand, to minimize the spreading of income levels and the economic performance of the individual Member States, and, on the other hand, to improve the performance level of the respective state. The European Union uses subsidies to implement the projects. As a result, the EU has adopted a new funding period extending from 2014 to 2020 and reformed for the period 2021 to 2027.

A common strategic framework for EU funding will focus on the areas of employment, research and development and innovation, climate change and energy, education, poverty and social exclusion for the coming years [305]. In addition, improved and more effective regional policy should strengthen economic, social and territorial cohesion and align the differences between the different regions of Europe.

The guidelines of the agricultural policy are defined by the European institutions. The involvement of all Member States in agricultural projects aims to achieve a holistic orientation of the European agriculture. The available funds can also be used and targeted more specifically based on a common EU strategy, which does not prevent the Member States to pursue their own strategies [159,164,166].

The main objectives of CAP are in detail [97,104,164,166]:

- general assistance to farmers,
- constant development in agriculture output to guarantee consumer food supplies,
- guaranteeing an appropriate income for farmers,
- support of measures to combat the climate change, as well as a sustainable

resource management,
- the preservation and care of rural areas in the EU,
- keeping and developing jobs in agriculture and allied industries,
- ensuring a stable agricultural market.

Furthermore, the association of individual Member States has created a huge European market for agricultural products, and fair competition conditions are established and implemented by consistent strategies both at home and worldwide. Without a coherent approach to agricultural policy, each country would pursue its own national policies, each with its own goals and varying levels of government intervention [129,164,184].

For decades, the European Union's most important common policy area has been the CAP. As a result, this economic sector receives a considerable amount of the EU budget [34,51,74,164,166]. Every year, around EUR 59 billion, that is nearly 38% of the EU budget, are spent on this sector [96].

2.1.1 Europe in 2020 – The growth strategy of the European Union

The European Commission has adopted the current Europe 2020 reform cycle and is aiming at an intelligent, sustainable and inclusive economy for Europe with this growth strategy [80]. These three priorities - intelligent, sustainable, inclusive - should help to overcome the economic crisis of the EU and its Member States and create the foundations for a more competitive economy with more employment opportunities [305].

In order to ensure the achievement of the objectives of the Europe 2020 strategy and also to document the progress made, five key objectives have been agreed on for the whole EU [48]:

- an employment rate of 75% is targeted among the 20- to 64-year-olds, including the increased involvement of young people, older workers and low-skilled, as well as the better integration of legal migrants,
- the conditions for research and development should be improved, in particular with a view to achieving a public and private investment volume of 3% of GDP in this area; the Commission will develop an indicator of research and development (R&D) and innovation intensity,
- the greenhouse gas emissions are to be reduced by 20% compared to the 1990 level, the share of renewable energies in total energy consumption should rise to 20% and an increase in energy efficiency in the direction of 20%,
- improving the level of education, with a particular focus on lowering the school drop-out rate to below 10% and increasing the proportion of 30 to 34-year-old graduates with equivalent qualifications to at least 40%,
- social inclusion should be promoted, in particular, by reducing poverty, with the aim of protecting at least 20 million people from the risk of suffering from poverty or exclusion.

Each Member State has the task of translating these objectives into national targets with regard to the respective situation and the possibilities within the state. This will ensure that the countries contribute to the achievement of the common objectives and still retain the substance of the reform measures.

The five key objectives have defined the areas in which action is needed and what the Union is to achieve by 2020. For implementation at national level, each EU

country establishes reform programmes that are oriented towards the general direction of the strategy and contribute to the achievement of the objectives. The reform programmes include, for example, the stronger integration of women, the elderly and migrants, as well as investment in low-emission generation technologies [47].

To intensify the implementation of the Agenda Europe 2020 at national level, countries are obliged to submit national measures and progress towards the implementation of the strategy annually in a National Reform Programme (NRP). The NRP provides information on provisions to overcome growth obstacles and the implementation of structural reforms. In conjunction with a developed convergence programme, EU Member States submit the NRP to the Commission every year. As a result, the European Council makes specific recommendations to the various countries. These guidelines are to be considered in the political plans and budgets of the respective states and also taken up in the reform programme of the following year [305].

2.1.2 The aims of the European Union concerning agricultural sponsorship

Through regular publications, the EU Member States highlighted their interests and guidelines. Basic orientations as well as long-term strategies are being developed among the EU countries and jointly adopted. In addition to this, the granting of funds in priority topics is an effective instrument of the European policy making [305].

Funding by the EU is, in principle, an approximation to the principles and objectives laid down. Continuous monitoring, evaluation and review of the progress gained in the achievement of the objectives will provide an overall picture of the development of the European Union and is an important tool in the EU's political action.

The heights of the budgets of the individual funding areas reflect the importance that the Member States within the framework of the overall strategy of the EU Europe 2020 to refer to the respective subject areas. As a result, also the individual development of each country is in the foreground in addition to the joint pursuit of common goals. Since the Member States differ fundamentally in many areas and have very different levels regarding wealth, average income and economic strength, the funding in each country must be integrated in different ways. Although fewer people in the community can benefit in the more developed states, particularly due to the different geographical location, different possibilities in terms of investment potential and the development of the economic performance of the respective regions arise.

This is evident when looking at the distribution of agricultural area (UAA) in the European Union. The UAA refers to the percentage of land area that is cultivatable, which also includes temporarily fallow land, and is under permanent cultivation or used as permanent pasture. In Romania, for example, the proportion of agricultural land in the area amounts to approximately 60.4%, whereas the figure for Sweden is only 7.5% [275,279].

These inherently country-specific differences were reflected also in the ensuing funding approaches. While in Romania, the promotion of agriculture plays an important role, its importance due to the distribution of land is low in Sweden. This example shows that the European Union pursues a common overall strategy, which is promoted in the different EU countries but must be adapted to the needs, requirements and opportunities of the individual state.

2.1.3 Integration of the agricultural sponsorship within the policy of the European Union

The support of agriculture is a fundamental part of the European Union's policy. The Agriculture and Fisheries Council adopts existing legislation in the field of agriculture. It is composed of ministers from all EU member states and the Commissioner for Agriculture and Rural Development elected by the European Parliament and reports to the European Council. As a committee set up by the European Parliament, agricultural concerns and issues are dealt with and the development of the European agricultural sector as a whole is moulded [118].

European agricultural policy is being moulded holistically at European level. This is done by involving all Member States in decision-making processes on agricultural matters. This central common European policy allows a more targeted and efficient use of the available budgetary resources compared to several co-existing policies and measures of the individual Member States. The main objective of European agricultural policy is to increase agricultural productivity, to permanently secure the supply to consumers. With regard to the development of agricultural productivity in the EU a presentation can be found as well as further explanations in sub-section 2.4.4. Furthermore, the merger of the individual Member States enables the formation of a European agricultural internal market with fair competitive conditions created on the basis of coherent strategies. The pursuit of own, national policy approaches and goals per member state, with possible negative effects within the entire European agriculture, is avoided by the common agricultural policy [73].

The EU can allocate financial aid based on community action. This accessible support is a tremendous chance for countries or regions where there is pent-up demand in the area of agricultural development to help improve the economic strength and prosperity of the individual country. Meeting EU environmental laws, for example, as well as having a decent degree of mechanisation available in their operation, is a problem many farmers have to cope with. For many farmers, it is, for example, a challenge to meet EU environmental requirements, as well as to have a reasonable degree of mechanisation in their operation. Financial support from the European Union can help to overcome these problems. What role the EU subsidies in the agricultural sector for each country plays, is shown by the share of the agricultural income. In average the agricultural subsidies make up 39% of the total agricultural income in the European Union. In Romania its value is 51%, considering that the country integrated at least European subsidies in agriculture (see figure 2.1). To what extent these are effective and conducive nationwide for farms in Romania is taken up in the following remarks yet.

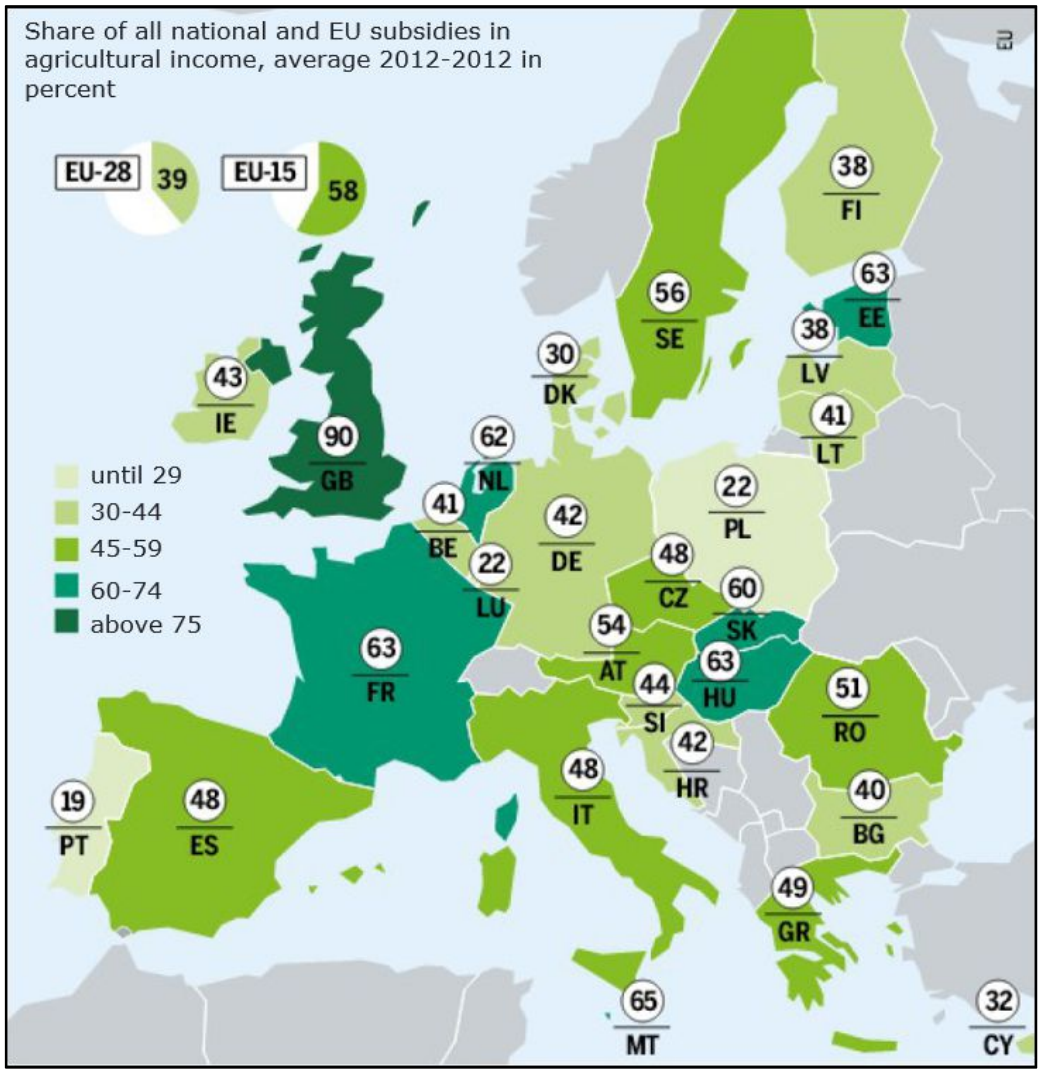


Figure 2.1. Proportion of all national and EU subsidies in the agricultural income [173]

2.2 The pattern of finance within the European Union

The European Union's budget is mainly an investment budget. In the EU budget, the resources of the Member States are bundled in order to achieve savings [305] and to be able to invest in individual countries. The EU supports projects and activities involving a promotion which affects several Member States. These are mostly investment projects, which would be realized without any financial support by the EU. However, the promotion with the principle of co-financing will expire. This means the Union does not completely independently perform an investment in a particular project, but the national or regional authorities take a defined proportion of financial expenditure on their own responsibility. Various instruments are needed to

make good use of the EU's financial resources as effectively as possible and to distribute the necessary fields. In addition to the structural funds and operational programmes, in particular the agricultural sector creates a high output area of the EU [72]. The following text sections aim at providing an overview of the financial flows of funds within the European Union and at presenting the associated financial instruments of the EU. The remarks on the distribution of funding in Germany and Romania serves the later overall understanding concerning the review of the effectiveness of subsidy payments in the in the Romania's agricultural sector.

2.2.1 The constitution of the cash-flow budget of the European Union

The EU budget, which is always balanced, had a volume of EUR 135.5 billion in 2014. The amount which appears high at first glance is low in comparison with the economies of other countries. The EU budget is equivalent to about 1% of the Gross Domestic Product (which is the total value of all goods produced in the EU and services) of the 28 Member States at that time. In contrast to this, the budget of each Member State makes on average about 40% of the national GDP. The budget of the Federal Republic of Germany amounted to 44.7% of GDP in the year 2013 [82].

The EU budget resources are collected by the Member States and made available to the EU. The most important source of income represents the rate of a certain percentage of the Gross National Income (GNI) of each country in this context. In 2014, this was EUR 99.767 billion and thus was 73.6% of the EU budget. Annually the EU will also receive 0.3% of VAT revenues of the EU States. In 2014, these were EUR 17.882 billion, i.e., 13.2% of its total revenues. In addition, so-called traditional own resources like duties on imports from non-EU States and sugar levies, contribute to the budget. In 2014, the EU's income amounted to EUR 16.31 billion through its own traditional resources, which meant a share of 12% of the total budget. Contributions from non-EU countries to certain programmes, bank interest rates and taxes and levies on salaries of EU officials are considered as other sources of revenue of the European Union (cf. figure 2.2) [75].

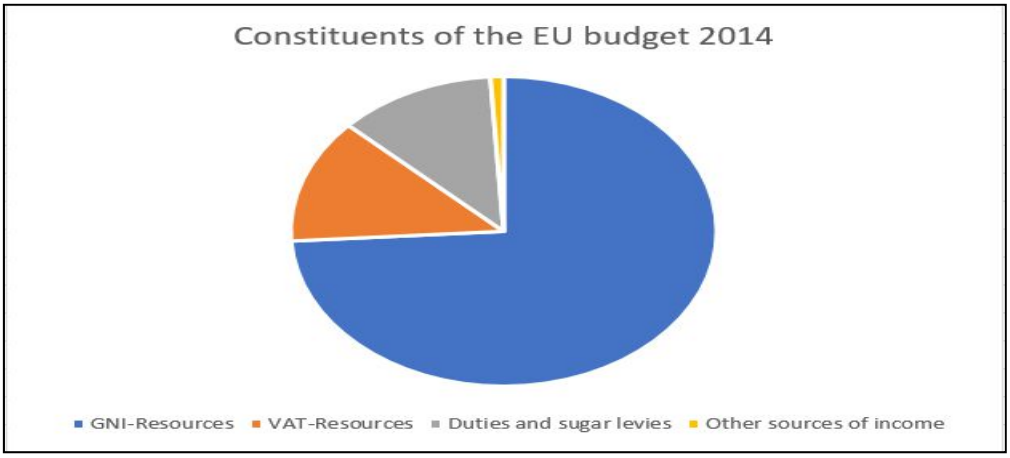


Figure 2.2. Constituents of the EU budget 2014 [76]

The EU budget is limited concerning its own resources. According to one of their basic decrees, the capital must not override 1.23% of the GNI of the EU. The corresponding amount is determined annually by the European Commission [78].

Due to the generally agreed regulation concerning the composition of the countries' own resources there are different amounts that are to be paid by the Member States. Therefore, the contribution of the individual Member States to the EU budget on one side is often compared with the financial support measures received by the EU on the other side. So, for example, the United Kingdom due to her originally less developed branch of farming benefited less from the agricultural spending of the EU than other countries. The difference between the British contributions to the EU budget and the amounts which flow back again into the United Kingdom, was refunded in the form of compensation by the other Member States. These savings for the UK can be attributed to the former Prime Minister Margaret Thatcher who achieved the so-called British rebate in the negotiations of 1984. The share of agriculture in the former EC budget accounted for over 80%. The British had only a small amount of agriculture - much less than other EU States and therefore got less money back [171].

The Member States, which bear an excessive budgetary burden, received a corrective action. Thus, 66% of its net contribution (difference between the payments and pay backs) had been reimbursed to the United Kingdom. As basis for calculation the GNI and VAT of each Member State are used. The rate that each member state has to pay from its VAT incomes e.g., for Germany, Sweden and the Netherlands has also been reduced to 0.15% during the programme period 2014-2020.

2.2.2 The financial framework for consecutive years

The annual budget of the European Union is integrated in a financial framework. With this official definition, both the revenues and the expenditures have been fixed for seven years and cannot be changed. The Multiannual Financial Framework (MFF) of the EU for the 2014-2020 financial period was valid. In particular, the annual limits which must be paid by the EU in the various headings are set in the financing decision. They establish a guideline for the financial planning and budgetary discipline by which it is ensured that the expenditures of the EU are predictable and remain within the agreed limits [74,76].

Investment in five categories of expenditure with a total volume of about EUR 1,082 billion in current prices were spent for the seven-year financial period. The areas of 'smart and inclusive growth' - with lower priorities were focused on 'Competitiveness for Growth and Employment' (Euro 142.1 billion) and 'Economic, Social and Territorial Cohesion' (Euro 366.8 billion) - is as well as 'Sustainable Growth: Natural Resources' (EUR 420 billion). In addition, payments for 'Europe in the world' (EUR 66.3 billion), 'the management' (EUR 69.6 billion) and also 'security and European citizenship' were (EUR 17.7 billion) provided (see figure 2.3).

	Funds for commitments	2014	2015	2016	2017	2018	2019	2020	Total 2014-2020
1	Intelligent and inclusive	63973	66813	69304	72342	75271	78752	82466	508921
1a	Competitiveness for growth and employment	16560	17666	18467	19925	21239	23082	25191	142130
1b	Economic, social and territorial cohesion	47413	49147	50837	52417	54032	55670	57275	366791
2	Sustainable growth: natural resources	59303	59599	59909	60191	60267	60344	60421	420034
	therefrom: market related expenses and direct payments	44130	44368	44628	44863	44889	44916	44941	312735
3	Security and Union citizenship	2179	2246	2378	2514	2656	2801	2951	17725
4	Europe in the world	8335	8749	9143	9432	9825	10268	10510	66262
5	Administration	8721	9076	9483	9918	10346	10786	11254	69584
	therefrom: administrative expenses of the institutions	7056	7351	7679	8007	8360	8700	9071	56224
6	Compensation payments	29	0	0	0	0	0	0	29
	Funds for total commitments	142540	146483	150217	154397	158365	162951	167602	1082555
	In % of the GNI	1,03%	1,02%	1,00%	1,00%	0,99%	0,98%	0,98%	1,00%
	Funds for total payments	135866	141901	144685	142771	149074	153362	156295	1023954
	In % of the GNI	0,98%	0,98%	0,97%	0,92%	0,93%	0,93%	0,91%	0,95%
	Available scope	0,25%	0,25%	0,26%	0,31%	0,30%	0,30%	0,32%	0,28%
	Capital limit in % of the GNI	1,23%	1,23%	1,23%	1,23%	1,23%	1,23%	1,23%	1,23%

Figure 2.3. The Multiannual Financial Framework 2014-2020 [76]

2.2.3 The financial instruments of the European Union

Specific policies and actions of the European Union are financially supported by funds. The funds in the private financial sector are often equipped with their own legal personality and their own capital. On EU level this term is used for different versions. Therefore, from the use of the term 'fund' the source of funding that is feeding them, neither the owner nor the management of funds can be concluded [119]. On the one hand there are EU funds that are financed from the budget of the European Union. Thus, it is not these funds that are a special kind of assets. The structural funds or the Cohesion Fund, for example, fall into this category. On the other hand, there are funds of the European Union which do not, or only partly come from the EU budget. As they have supported European policies, they appear as EU funds. Examples for them are the European Investment Fund and the European Development Fund [119].

The contents and financing options of the most important funds and funding programmes of the European Union are presented in the following sections.

2.2.3.1 The funds for structure and investment

In the funding period from 2014 to 2020, there were five different structural and investment funds in the European Union. These were to stimulate the European economy through growth and employment in the context of the Agenda 2020.
The cohesion policy comprises the following main funds [76,305]:

- the European Fund for Regional Development (ERDF),
- the European Social Fund (ESF),

- the Cohesion Fund (CF),
- the European Agricultural Fund for Rural Development (EAFRD) and
- the European Maritime and Fisheries Fund (EMFF).

The ERDF is a structural fund of the EU. It is used to support the regions in decline and serves to achieve a redistribution between beneficiaries and disadvantaged regions. Beside the CF, this fund pursues the already mentioned aim of the cohesion within the EU. By investing in growth-enhancing sectors, the ERDF should promote competitiveness and create new jobs. In addition, the ERDF focused on two objectives during the programme period 2014-2020: the effect of investments in growth and employment as well as the expansion of European territorial cohesion. Investment measures are designed to reduce the economic, environmental and social problems in urban areas. Sustainable urban development should be set as a goal. The territorial characteristics of the region are especially taken into account. Hence, the ERDF supports regions on the edge of the EU territory to compensate for any disadvantages due to their geographical location [305].

The European Social Fund is also part of the EU's structural funds. It is Europe's most important instrument for the promotion of employment and the reduction of unemployment. Within the Agenda 2020 the European Union has issued the goal to promote the creation of more and better jobs and thus to create a society with less social exclusion. The ESF invests in workers, young people, and anyone who is looking for work. The focus is the qualification to improve training and employment of people in Europe, and thus their chances on the labour market. Particularly it discusses these disadvantaged groups to enable integration and reintegration into the labour market. In addition, founders on their way to self-employment supports are supported as well as companies in their management of demographic change and their search for professionals [305].

During the 2014-2020 period, EU wide around EUR 325 billion available were for the cohesion policy of the structural funds [46]. The budget distribution for the ERDF and ESF is carried out in the same way. To set the level of payments and to categorize, the regions are divided into three different groups. The classification is based on GDP per capita value of the respective area. Regions with GDP per capita by < 75% of the EU average are defined as less developed (e.g. Romania, Bulgaria), regions with GDP per capita between 75% and 90% are transition regions (e.g. Eastern Germany, southern Spain).

More developed regions have a GDP per capita of over 90% of the EU-28 average (Western / Southern Germany, Netherlands) (see figure 2.4).

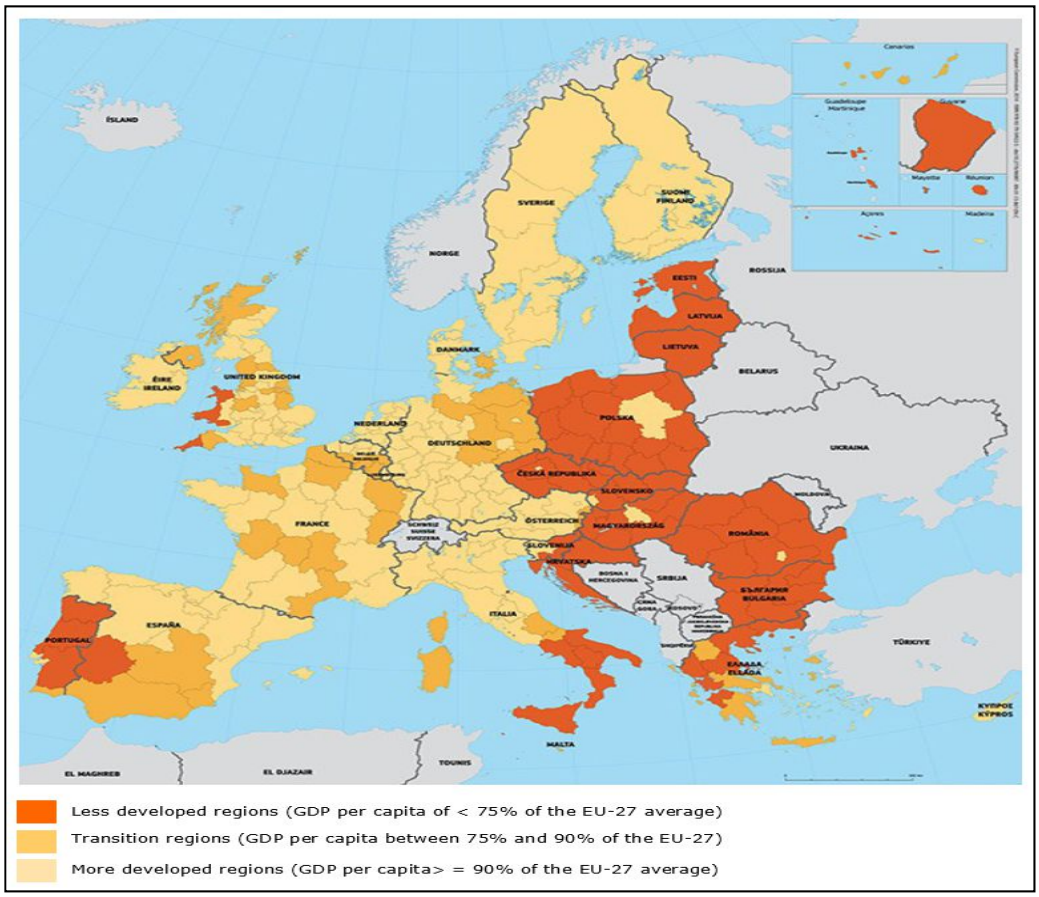


Figure 2.4. Eligibility for structural funds (ERDF and ESF) [77]

In addition, there is the EU Cohesion Fund. It supports especially states with a GNI per inhabitant which is less than 90% of the EU average. In the 2014-2020 funding period, the CF financed, for example, activities and projects in countries such as Bulgaria, Croatia and Spain and Poland. The Cohesion Fund interventions are carried out in the Member States in the form of operational programmes. In focus, the financing of regional infrastructure projects is to improve the trans-European transport networks. On the other hand, the investment is in the environment of individual countries and regions. Energy and transport projects are supported, if their implementation make a unique benefit for the environment [305].

The European Agricultural Fund for Rural Development exist since 2007 as a financial instrument of the EU. The main objectives of the fund are [303]:

- the enhancement of agricultural competitiveness,
- to provide sustainable natural resource management and climate protection,
- to achieve balanced spatial development of the rural economy and rural communities, including creation and securing of jobs.

The fund contributes to the co-financing of national and regional programmes

such as agricultural-environmental and climate protection measures, as well as the promotion of organic farming.
Following ceilings apply to the contribution of the funds for the co-financing of the EU [46]:

- 53% of eligible expenditure in more developed regions,
- 63% or 75% of total eligible expenditure in regions in transition and
- 85% of eligible expenditure in less-developed regions.

The European Maritime and Fisheries Fund helps the fishermen in the transition to sustainable fisheries. Coastal communities are supported in the development of new economic activities. As a result, the quality of life on the coasts of Europe should be improved. The locations could be thus attractive for the settlement of companies and create new jobs. Each Member State receives a contribution from the general budget of the fund pro rata to the size of its fishing industry [305].

During the programme period 2014-2020 the funding for the European Structural and Investment Fund amounted to about EUR 454 billion [84].

Thus, more than one-third of the total budget of the Multiannual Financial Framework is scheduled for regional policy in the EU. The objectives of each fund contributed to the overall objectives in the programme period 2014-2020 (see section 2.1). So, the field of cohesion policy the ESF, the ERDF and the CF cover and treat mainly the social and regional problems. The EAFRD and the EMFF promote, however, especially agricultural development, as well as the fishing industry.

2.2.3.2 Economic development schemes by the European Union

In addition to the EU structural funds the EU action programmes are a further important pillar of EU funding. They supported in particular projects which pursued the interests of the European Union 2020 and contributed to the implementation of innovation, employment and growth objectives of the Agenda 2020. The European added value is in the centre of all ideas in the implementation of all these programmes. Wider European cooperation should accompany each project and a great scope in several countries is to be created. Compared to the EU structural funds, the financial resources for the respective programmes, assigned directly by the various Directorates-General of the European Commission, are neither managed nor distributed according to a regional key. The allocation of funding is organized according to the competition principle. The project, which most closely matches the general objectives of the programmes in the European Union is awarded for the promotion. The European Commission publishes their annual work programmes, which serve as an orientation for the applicants for various programmes who can submit their project proposal to the specific EU department. An important criterion is the innovative approach of the project, a novelty value, as well as additional emerging benefits for Europe. The cross-border nature of a project is also of importance. Many EU programmes require that at least two or three or more EU Member States are involved in the project, to increase the range of positive effects. Across the EU, several hundred programmes in completely different areas are planned and carried out [211].

Horizon 2020 is the most far-reaching programme in the European Union which was intended to make the EU more innovative in many different topics. In the context of the Agenda 2020 a knowledge - and innovation-based society and a competitive economy should be established accordingly. The programme included

three main areas, which were considered as a guideline in the implementation. "Social challenges" such as climate change or the demographic change were addressed by using the funds and solutions should be achieved. Also, in particular research and development with a focus on 'the leading role of the industry' was included. As a result, new industrial technologies that lead to new product developments as well as to increased competitiveness, were created. The third part of the programmes involved the 'scientific excellence'. The EU supported and promoted highly qualified and talented scientists on their career path. With a budget of EUR 77 billion, Horizon 2020 was the largest funding programme in the programme period 2014-2020 [211].

For the period from 2021 to 2027, around EUR 95.5 billion will be made available for investments in research and innovation via the successor programme Horizon Europe. Based on European values, Horizon Europe is the vision of a sustainable and fair future for people and for our planet. This research framework programme gives innovators, who want to contribute to the implementation of this vision the opportunity to use a network across Europe and beyond, and to promote joint projects with financial support from the EU. As can be seen in figure 2.5 Horizon Europe is based on three pillars [109].

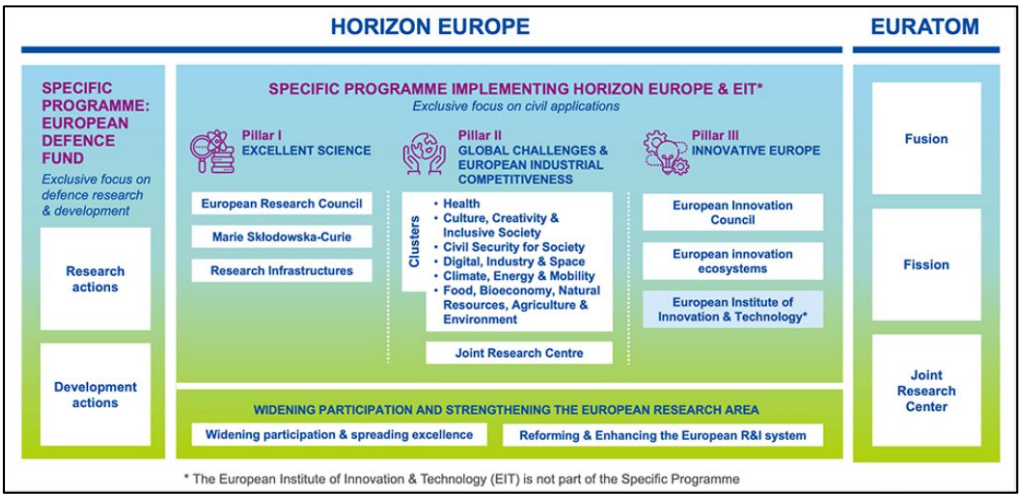


Figure 2.5. Structure of Horizon Europe [109]

In addition, the LEADER programme is especially designed for the development of rural regions and is of special importance. As a part of the EAFRD it promotes innovative strategies for the development of rural regions. This should promote rural development -tailored to the respective regional situation-.
In terms of content, the programme moreover pursues the following thematic priorities [120,164,166,305]:

- increasing agricultural and forestry competitiveness,
- enhancing the environment and the countryside
- increasing the quality of life in rural areas and encouraging of the diversification of the rural economy.

A key characteristic of the LEADER programme is the bottom-up approach. This specifies the strategies and projects to be created in the region, and not by

external planning administration. The implementation and planning of local development strategies are made by local stakeholders. Since local officials are most familiar with the region's shortcomings, issues, and needs, they may adopt the most efficient approach to the region's opportunities, strengths, and potentials [164,166,305].

2.2.4 Common Agricultural Policy and the agrarian funds of the European Union

For decades, the Common Agricultural Policy has been the most important common policy issue in the European Union. As a result, a significant percentage of the EU budget is allocated to this sector. Farmers in Europe are obliged to carry out their agricultural activities and to maintain standards with respect to food safety, environmental protection and landscape maintenance. The agricultural sector is exclusively funded by the EU budget and not by the national budgets. The European Union has budgeted EUR 59.64 billion for agricultural subsidies in 2019. An amount of EUR 43.19 billion were budgeted solely for direct payments. Thus, agriculture expenditure is the largest share of the European budget, accounting for more than a third of the entire budget, and the trend of these amount is increasing [52,96,164,165,166].

The EU can allocate and grant financial aid based on community action. This accessible support is a huge opportunity to improve the economic power and prosperity of one's own country. This is essential especially for countries and regions, where there is increasing need for a new agricultural orientation. The European Union's financial assistance can help overcome certain difficulties for the farmers. The CAP has three components: market assistance, income assistance, and rural development. These three dimensions are interconnected, and their long-term viability is dependent on the ability to engage in all three sectors in a coordinated way [129,164].

With regard to the market support, agriculture is more weather - and climate-dependent than other industries. In addition to that, there is generally a time shift between demand signals and the possibility of appropriate offerings to respond to them. Even small changes of quantities produced can have a large impact on the determination of the respective prices since food consumption proves to be largely constant. The business uncertainties are the reason for the important role of the public sector by guarantying stable conditions for agricultural enterprises. With the aid of the second dimension, the income support, a degree of basic income is secured and the provision of public environmental goods such as water and soils are to help farmers by means of direct payments. The third dimension is the development of the rural areas. Especially for the promotion of economically weaker regions, the EU has introduced its development programmes, including for example the development programme for rural areas (RDP) [73].

In this context the essential aims of the CAP must be considered, as they have already been mentioned in chapter 2.1 on page 42.

Agricultural expenses primarily consist of two components that are part of the EU's overall budget. The European Agricultural Guidance and Guarantee Fund (EAGF), often known as pillar 1, is one of them. It grants direct payments to farmers as well as programmes to regulate agricultural markets [129,164]. In addition to direct payments to farmers as part of the first pillar, the second primary goal of the CAP is to make the people’s ways of life in rural areas more appealing. The European Agricultural Fund for Rural Development (EAFRD), commonly known as pillar 2 of the

CAP, is the primary instrument of support for the achievement of these EU priorities for rural development [44,119,164]. It co-finances the programmes of the Member States to the development of the rural areas and is run under the structural funds, because it pushes the regional development of certain Member States [33,34]. It is intended to flank the first pillar "and at the same time to contribute to the implementation of growth, employment and sustainability in rural areas" [62]. Funding is therefore geared to long-term and strategic objectives which have already been mentioned in the previous chapter for example, to strengthen the competitiveness in agriculture and forestry, to increase the quality of live in rural areas and to enhance the environmental protection [120,164,166].

Often, the EAGF provides direct payments to farmers in the European Union [192]. More than EUR 43 billion or 73% of the total CAP budget in 2019 [29,30]. With these payments the European promotion aims to ensure the preservation of the before mentioned dimensions as well as their implementation. The amount of the direct payment depends on the size of the area managed by the farms and was also linked to the respective production by 2004. Since 2005, the coupling to the production has no longer been of importance, therefore since then the direct payments have been called the 'decoupled single farm payment'. In addition, the first pillar includes export subsidies, known as export refunds, which were reduced in the period to a minimum [192]. Farmers get direct payments if certain conditions are fulfilled. Since 1st of January 2015, fundamental changes in the EU direct payments have been put into force, based on the EU agricultural reform and the decisions to implement national goals [281]. Since then, the direct payment method has had four major components. Basic and redistribution premium, young farmer and the Greening award [29,30,164,165,166].

In the European Union, a regionally uniform support per hectare of eligible area is provided in the form of the base premium. Previously, regional premiums ranging from EUR 154 to EUR 191 per ha were paid, which were fixed to EUR 175 per ha in 2019. A greater subsidy, known as the redistribution premium, was granted upon for smaller farms as part of the agrarian reforms. This redistribution incentive, often known as the first ha promotion, is also a kind of direct payment. This share of the direct payments must be applied for separately. This premium is available for a maximum of 46 ha. Similarly, farms with more than 46 suitable ha may also apply for the redistributive premium, but this payment is only paid for 46 ha [164,193].

Through the redistribution premium farms receive approximately EUR 50 per ha (supplement I) for the first 30 ha of their management. For another 16 ha about EUR 30 per ha (supplement II). Especially for agri-SMEs, these payments have a noticeably positive effect. The management has been implemented between the European Union and the Member States. As a result, the European Commission does not disburse its aid directly to the recipient; this is done by the national authorities of the Member States [33].

Also, EUR 85 per ha is granted via the Greening premium for concrete environmental performance. Greening includes the maintenance of permanent grassland, an increase of a greater variation in crop selection, and the establishment of so-called 'ecological priority zones' on arable land. The operation receives these direct payments but only if it complies with additional environmental requirements and translates these. The Greening is mandatory for all farmers, applying for direct payments. Consequently, in case of infringements, there is a risk of premium cuts. Only farms according to the small farm restrictions, as well as organic agriculture operations are exempted from the Greening initiative.

Furthermore, young farmers can apply for a distinct premium within the direct

payments. The 'young farmer's premium' is provided to farms with a maximum of 90 ha and amounts to about EUR 44 per hectare of suitable land. In this situation, the compulsory relationship to the basic premium is preserved, and a young farmer premium is also determined based on the payment entitlements. This premium is only granted for 5 years to young business owners or new founders who are not older than 40 years old in the first year of application [44,119,164].

In figure 2.6, the direct payments from column I as an example for a farm with 50 ha of management are listed.

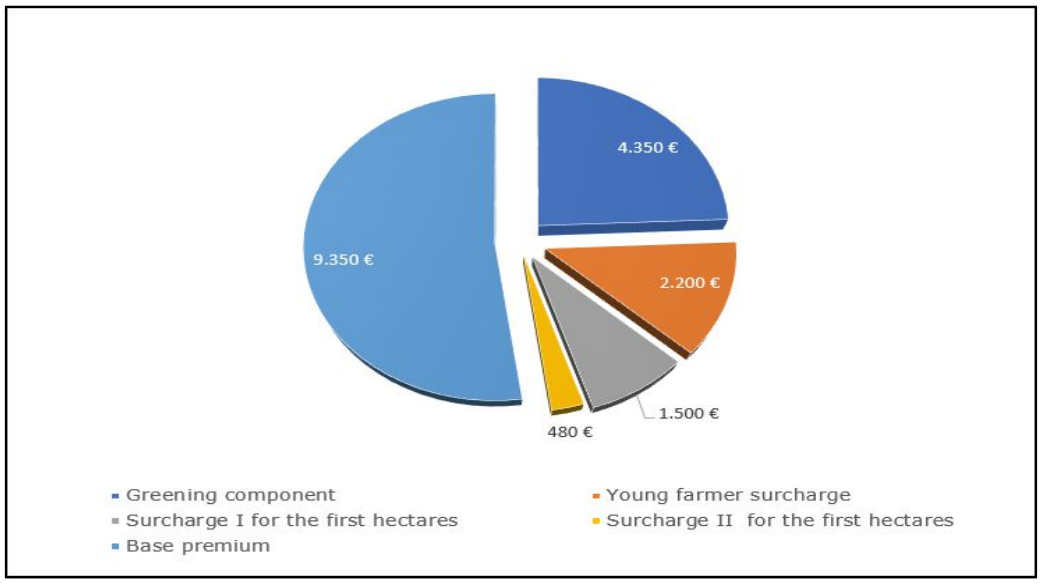


Figure 2.6. Premium estimate for 50 ha including young farmer subsidies [18]

The amounts are made up as follows:

Greening component:	87 Euro x 50 ha =	4,350 Euro
Base premium:	187 Euro x 50 ha =	9,350 Euro
Surcharge I:	50 Euro x 30 ha =	1,500 Euro
Surcharge II:	30 Euro x 16 ha =	480 Euro
Young farmer surcharge:	44 Euro x 50 ha =	2,200 Euro
Total amount:		17,880 Euro

Besides, targeted EU agricultural market measures are performed by using the EAGF to be able to respond to exceptional market disturbances such as e.g. extreme fluctuations in market price. The aims of the EU are to stabilize markets and to keep the prices in a reasonable frame. In addition to agricultural holdings, the market support measures are also given to businesses in the trade and the food industry. In conjunction with the direct payments, businesses increasingly have a predictable income [33,44].

In the financial period 2014-2020, the volume of the EAGF was EUR 312.7 billion (at current prices). The total volume of the fund had decreased by 17.5% compared to the previous programme period (EUR 336,69 billion). For the

development of rural areas, a total budget of EUR 95.6 billion had been assigned to the period 2014 to 2020 [39].

The agricultural policy takes about 40% of the EU budget. In contrast to other policy areas in which Member States invest in personal responsibility, the common agricultural policy is financed by the European Union [44].

Farmers must consider of the so-called Cross-Compliance standards in order to obtain direct payments. These are important guidelines for food safety, environmental protection, animal welfare, and plant health [44,164].

As previously stated, direct payments accounted for 73% of the total CAP budget throughout the 2014-2020 funding period and are nearly entirely tied to acreage. Direct payments, on the other hand, do not forced farmers to grow anything exceptional. The impact of direct payments to farmers is determined by the size and type of business. The importance of direct payments is minimal for farms with a high productivity per ha and farms where acreage plays a subordinate role. Direct payments in arable farming and grazing, on the other hand, by far exceed the income from the usual agricultural activity. As farms in the EU vary greatly in size; in 2013, 66% of farms had less than 5 ha of agricultural land, whereas 7% of them had more than 50 ha at their disposal, and the average farm size was 16.1 ha. This clearly reveals an imbalance [97,164], an imbalance is the result. Only 20% of the beneficiaries receive 80% of direct payments. More than 30% of the total direct payments were given to less than 2% of businesses, i.e., 131,000 of 6.7 million businesses [92,97,98,197,214].

2.2.5 Impact of funding using the Romanian agriculture as an example

In Romania there is a positive attitude and appreciation of the common agricultural policy. The European Agricultural Policy is seen as modern and stimulating the demand for 'Made in EU' products. The budget of the reformed EU agricultural policy is also equitably distributed. Romania has also many advantages compared to other EU States. The country as an EU Member State enjoys all the positive effects that are from the European Commission on behalf of the EU as a free trade agreement with other international markets. Especially in the Asian market, there are consumers with a demand for high quality food, thus creating a great potential for its export. Romania could be competitive because of its production costs in such markets [228].

Moreover, the agricultural budget in Romania was rising in the 2014-2020 financial period compared to the previous turn (see section 2.2.6). This was not the case in some other EU countries. So, it still offers the possibility to invest in the Romanian agriculture in the future. Romania hopes for a development in the domestic food industry through financial support. By means of promoting the EU’s ultimately funding the country can take advantage and achieve an improved positioning of Romania on the European as well as on external markets [228].

A challenge for the agriculture in Romania is also to educate the young generation of farmers concerning EU funding in order to make them familiar with. This is a result of the Eurobarometer survey among the citizens of Romania. When asked if they had heard of the possibilities of support by the EU within the framework which CAP offers 45% answered with 'Yes', but without knowing details about it. 36% answered they had never heard anything about it [227]. In addition to the institutions of the EU, it is in particular the task of local authorities to offer such educational work.

2.2.6 The distribution of funding in Germany and in Romania

The EU Member States Germany (DE) and Romania (RO) play very different roles in the European Union. Due to its great economic power, Germany contributes to the EU budget large sums every year and is therefore one of the main contributors to the EU budget. Putting the revenues of EUR 25.82 billion in 2014 in relation to its spending, Germany pays EUR 15.5 billion into the EU budget which is more than it gets. Germany is known as a net contributor to the EU. Romania, however, is called a weak economy country in the EU. As a result, the annual contribution to the EU budget was comparatively small in the year 2014 with EUR 1.35 billion, but with the EU payments to Romania the country has a positive balance in its budget of EUR 4.52 billion. Thus, Romania is a net beneficiary of the European Union [88,242].

Germany can compensate its negative balance of payment in the EU by concurrent financial transactions. Romania, however, is dependent on the payments of the Union and for being able to invest in many areas of the country. During the 2014-2020 programme period, EU funds amounting to EUR 39.8 billion in total were available for Romania. This was an increase of the budget of nearly EUR 9 billion compared to the previous period. The European Commission signed a partnership agreement with Romania on the use of the EU's structural and investment fund for the programme period 2014-2020 in order to define meaningful priorities for investment. EUR 23 billion were available for Romania for investments financed from funds of the cohesion policy. Among them is the European Regional Development Fund, the Cohesion Fund and the European Social Fund. The resources for the European Territorial Cooperation and Youth Employment Initiative are also part of it. Furthermore, funds for the European Agriculture Fund for the Development of Rural Areas amounting to approximately EUR 8 billion and the European Maritime and Fisheries Fund amounting to EUR 0.17 billion were included (see table 2.1). In addition, the country has several operational programmes from which individual regions and companies as well as the society as a whole should benefit [161,263].

Like Romania, Germany had signed a partnership agreement with the European Union, to fix the contents of that financial period. Germany received EUR 19.2 billion from funds of the cohesion policy (ERDF, ESF and European Territorial Cooperation). By 2020, EUR 0.22 billion were assigned for the EAFRD and EUR 9.44 billion for the EMFF. Germany received no funding from the Cohesion Fund [160].

Table 2.1. Financial funding RO and DE concerning EU fund 2014-2020 in billion EUR [161]

Funds	**Romania**	**Germany**
The European Fund for Regional Development	10.73	10.77
European Social Fund	4.77	7.50
Cohesions Fund	6.94	-
Territorial Cooperation	0.45	0.90
Agricultural funds including	19.00	43.40
European Agricultural Fund for Rural Development	8.02	8.22
European Maritime and Fisheries Fund	0.17	0.22

Beside to the investments in the structure and investment funds the support of the agricultural sector of the European Union is also of enormous importance. With a total area of about 13.06 million ha, Romania occupies approx. 7.5% of the agricultural area in the EU. The agricultural area is only marginally higher in Germany with ca. 16.70 million ha and a share of ca. 9.6% of the total agricultural area. However, it is striking that over one-third of all agricultural enterprises of the EU are in Romania (in 2014: 3.63 million, 33.5% of all farms run in the EU). As a result, the agriculture in Romania especially consists of small farms compared to the rest of the EU. Germany has, however, only over about 285,000 farms [131].

Between 2014 and 2020, Romania received about EUR 19 billion of EU agricultural subsidies. Of them EUR 8.02 billion were given by the EAFRD and EUR 11 billion had been paid by means of direct payments to the farms. Germany received approximately EUR 43.4 billion in the 2014-2020 funding period for the agricultural sector. Of them EUR 8.22 billion were given to the EAFRD and nearly EUR 35 billion came from direct payments in the agricultural sector [76].

2.3 The approval and the decision-making process of European funding

To obtain financial support from the European Union, the respective applicant for a project must go through designated application procedures. In this section, first the management of EU funds is elaborated and then the EU project calls are pointed out. The process of submission in the agricultural sector is illustrated by an example. For the participation in the procurement process, the Union has certain criteria, which are connected in the agricultural sector with environmental commitments, the Cross-Compliance rules.

2.3.1 The management and allocation of funds

The European Commission is responsible for ensuring that all funds from the EU budget are used properly. Since about 80% of EU funds are administered at the national level, a corresponding responsibility also remains for the governments of EU member countries. Organizations and companies seeking a European funding, have to check carefully at what institutions they have to submit their requests or proposals for a project. The European Commission manages the budget with the help of its departments and the Executive agencies of the EU. Member States transfer the central administration mostly to authorities like their ministries and other public institutions [305].

These are responsible for the processing of calls for proposals or tenders. Basically, there are two different management forms of EU funds. On the one hand, there is the direct management of funds. Here, it maintains a fund or programme directly by the European Commission or one of its agencies. The administration tasks primarily include the selection of the contractor, the granting of financial assistance, the transfer of funds and monitoring measures. On the other hand, there is shared management. In this case, the management of EU funds or EU programme is delegated to the Member States. For example, in agriculture or to the promotion of growth and development in regions of the EU (European structural and investment funds) the funds are controlled on the basis of shared management [305].

2.3.1.1 The financial implementation of subsidies

Basically, the implementation of the funds and programmes of the EU is subject to the principle of co-financing. Co-financing means that two or more parties provide money for a project. The EU does not grant any full financing for investments or projects, but the use of additional sources of financing outside the EU institutions are required. These include [72]:

- capital of the grant recipient,
- support of institutions,
- grants from foundations and other institutions,
- donations and sponsorships.

Co-financing is a prerequisite for the granting of an approval notification. The commitment and the involvement of additional sources of funding must already have been assigned before a project is approved [305].

Usually, the co-financing rates, i.e., the financial contribution of the EU, range between 20% and 85%, according to the relative prosperity of the region. A balanced investment should be achieved through the joint promotion of regional projects by means of national contributions, as well as by the EU payments as a result. The application of different co-financing rates by the EU intends to equip structurally weak regions with necessary financial means, thus they should serve to compensate for some countries' limited financial possibilities. In the financial period 2007-2013 the average co-funding rate in the European Union amounted to 56.2%, and Lithuania was the region with the highest co-funding rate with 87% [201].

2.3.1.2 Call for proposals

The European Commission supports projects and organisations in the form of various forms of financing in the financial periods. Direct grants are used for the implementation of specific projects, which promote the interests of the EU or contribute to the implementation of a programme or a strategy of the EU. To get a support from the Union in this respect, interested applicants may participate in the "call for proposals" [305].

The delivery of notices of actual call for proposals must be published in accordance with the European directive in the official journal of the European Union. This document appears on all working days in the official languages of the EU. The European Commission represents the respective call for proposals regarding a specific topic in a multi-page version in it. Starting with the definition of the project content in the prompt the Commission limited the number of potential applicants. An example is used to illustrate a project call, which was released on October 23rd, 2015, in the official journal of the EU (see figure 2.7).

23.10.2015 EN Official Journal of the European Union C 351/9

V

(Announcements)

ADMINISTRATIVE PROCEDURES

EUROPEAN COMMISSION

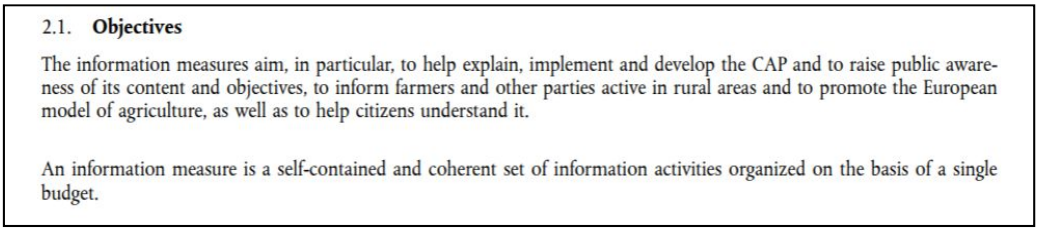
CALL FOR PROPOSALS

'Support for information measures relating to the common agricultural policy (CAP)' for 2016

(2015/C 351/09)

Figure 2.7. Call for proposals [79]

A project was to be initiated that should support the promotion of information measures relating to the CAP in 2016. After a short introduction the interpretation of targets follows, in this case the notice should lead to a better understanding of the contents and the goals of the CAP among the citizens in the EU (see figure 2.8).



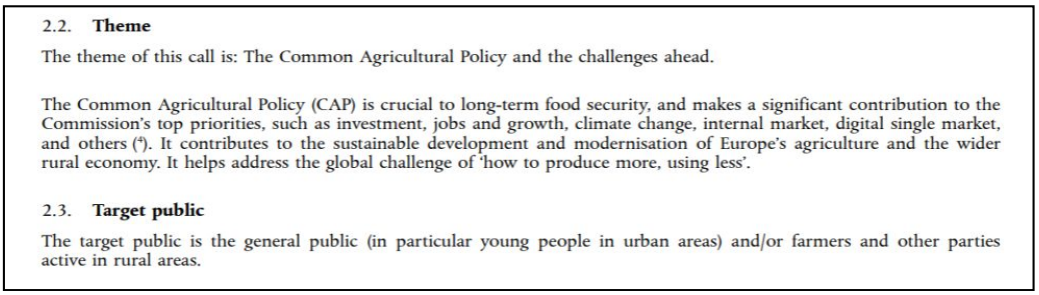
2.1. **Objectives**

The information measures aim, in particular, to help explain, implement and develop the CAP and to raise public awareness of its content and objectives, to inform farmers and other parties active in rural areas and to promote the European model of agriculture, as well as to help citizens understand it.

An information measure is a self-contained and coherent set of information activities organized on the basis of a single budget.

Figure 2.8. Objectives of the project [79]

By the naming of the thematic content and target groups, the Commission gives an overview of the project for the interested parties and outlines its scope within the EU as well. The selected example should demonstrate the importance of the CAP for European agriculture for the general public but particularly for young people and farmers by means of information measures (see figure 2.9).



2.2. **Theme**

The theme of this call is: The Common Agricultural Policy and the challenges ahead.

The Common Agricultural Policy (CAP) is crucial to long-term food security, and makes a significant contribution to the Commission's top priorities, such as investment, jobs and growth, climate change, internal market, digital single market, and others (*). It contributes to the sustainable development and modernisation of Europe's agriculture and the wider rural economy. It helps address the global challenge of 'how to produce more, using less'.

2.3. **Target public**

The target public is the general public (in particular young people in urban areas) and/or farmers and other parties active in rural areas.

Figure 2.9. Contents of the project [79]

The other conditions are due to the 'schedule' and the 'available means' given. The European Commission estimated EUR 2.5 million to co-finance for the implementation of the advertised project (see figure 2.10).

3. **TIMETABLE**

	Stages	Date and time or indicative period
a)	Publication of the call	October 2015
b)	Deadline for submitting applications	30 November 2015
c)	Evaluation period	15 December 2015 – 15 March 2016
d)	Information to applicants	April 2016
e)	Signature of grant agreements	April 2016
f)	Starting date of the measure	1 May 2016

4. **BUDGET AVAILABLE**

The total budget earmarked for the co-financing of activities is estimated at EUR 2 500 000.

This amount is subject to the availability of the appropriations provided for in the draft budget for 2016 after the adoption of the budget for 2016 by the budgetary authority or provided for in the system of provisional twelfths.

The Commission reserves the right not to distribute all the funds available.

Figure 2.10. Timetable and resources available for the project [79]

Selection criteria as well as legal obligations and financial modalities of the project implementation are submitted in the further course of the prompt. 50% of the financial scope should be defrayed by the EU and the remaining part should be taken over by the co-financing of the contractor (see figure 2.11).

Funding shall take the form of a mixed financing composed of:

— a reimbursement of maximum 50 % of the eligible direct costs actually incurred,

— a flat-rate contribution of 7 % of the total eligible direct costs of the information measure is eligible under indirect costs, representing the beneficiary's general administrative costs which can be regarded as chargeable to the information measure.

Co-financing

Co-financing means that the resources which are necessary to carry out the activities may not be entirely provided by the EU grant.

Co-financing of the information measure may take the form of:

— the beneficiary's own resources,

— income generated by the information measure,

— financial contributions from third parties.

Figure 2.11. Financial arrangements of the project [79]

2.3.1.3 Tendering procedure for orders

In addition to the call for proposals public orders by the European Union are awarded by tenders (a process that is referred to as public procurement). The orders serve to acquire local services, goods or construction services, which ensure the functioning of the EU institutions and the implementation of the EU institutions [305]. The contractors are selected via calls for tender, carried out by departments, offices and agencies of the Commission in the whole of Europe. Among those areas such as agriculture, fisheries, and food security, as well as energy and natural resources are covered [305].

Companies established in the EU have the possibility to participate in the competition for public contracts in other Member States as well as in their own country. To create the same starting conditions for companies in the European Union, uniform minimum standards are laid down in the EU law. These Europe-wide regulations, however, only apply to tenders, whose order value (threshold value) exceeds a certain amount (see table 2.2). From a certain volume, it is assumed that the tenders are of cross-border interest, and it is worthwhile for companies making an offer from abroad. National budget law, with additional general principles of EU law applies to tenders of lower value [49].

Since January 1st, the following threshold values have been valid:

Table 2.2. Threshold values public orders [49]

Order type	Thresholds [EUR]
Delivery and service contracts by sector clients	418,000
Construction jobs	5,225,000
Supply and service contracts for top, upper federal authorities and similar federal agencies	135,000
Delivery and service contracts for all other contracting entities	209,000
Defence and security-related supplies and services	418,000
Defence and security-related construction contracts	5,225,000

2.3.1.4 Different kinds of award procedure for public orders

Below and above the threshold values several types of procurement procedures are available for government authorities. According to the act against restraints of competition these are above the threshold values of the open procedure, the negotiated procedures, the competitive dialogue and the restricted procedures. Which of these procedures is applied, is regulated by law and is not negotiable. Since the procedures above and below the thresholds differ only slightly, they are presented together. By the open procedure (or tenders below the threshold) a call is understood, in which an unlimited number of companies are publicly prompted to submit offers. As a result, any interested companies for the tender can apply. It's a one-step procedure, in which the interested parties submit their offers at the same time [178].

In the restricted procedures (or limited tender below the threshold), first it is publicly called to participate in the procurement. Then, only a limited number of companies is called to tender. It's a two-step process. The companies demonstrate their suitability for implementation of the project in the first step on the basis of a project outline. Then, at least five eligible companies are asked to submit an offer. The final placement of orders takes place in the competition among the remaining bidders [178].

Negotiated procedures (or hands-free procurement below the threshold) are procedures, in which the client with or without previous public tender addresses a

group of selected companies to negotiate with one or more contractors about the terms and conditions. In contrast to the procedure discussed earlier there is no negotiation ban [178].

Through the competitive dialogue (just above the thresholds), particularly complex procurement is carried out through government contracting. After an invitation to possible participants, negotiations with selected companies on details of the execution of the order follow [178].

As far as public procurement is concerned, the European Parliament and the Council have introduced a guideline. In this, it says that public procurement in the context of the 'Europe 2020' strategy plays a key role. This should be used as one of the market-based instruments to achieve intelligent, sustainable and inclusive growth while ensuring an efficient use of public funds. In addition, the participation of small and medium-sized enterprises (SMEs) should be facilitated in public procurement procedures particularly [125].

2.3.2 Criteria for being able to apply for financial support within the European Union

There are a variety of requirements to be fulfilled for a successful submission to a call for proposals or a public-service mission. In addition to the formal and substantive criteria, (including) financial aspects play a crucial role. To meet the formal criteria for EU applications, it is vital for applicants to comply with the respective guides (guidelines, manuals) of EU programmes. Applications that do not meet the formal criteria, that are incomplete, or miss the deadline, are excluded from the award. A project is eligible only if [305]:

- there is a specific promoter,
- it is factual (content),
- it is within the time span (period) and
- it meets (regional aid) the selection criteria of the respective measure or
- it corresponds to the programme.

Beyond, the formal requirements, when applying there are special items concerning the contents that are to be considered. A presentation of what social benefits can be achieved by the project is required by the European Union. In particular, the resulting added value on European level has to be pointed out. Furthermore, the applicant should deal with the question to what extent the project covers current topics or political priorities of the EU on the national, regional or local level. The strategy 'Europe 2020' could serve as an orientation, for it contains flagship initiatives of individual programmes and thematic priorities of the individual policy areas of the European Union such as for example the increase of educational and employment levels in the EU [305].

The European Union also encourages measures and projects that access the following content [305]:

- compliance with equal opportunities for men and women,
- cooperation of partners from the eligible countries,
- innovative approaches and ideas,
- application of new information and communication technologies,
- inclusion of disadvantaged groups and integration of the results with a European dimension.

The project should contain a description of the outputs or the indicators in addition to the content representation, which are necessary to achieve the intended effect. Project results can be methods, procedures, techniques or products and services provided that can be used beyond the project if possible. The calls and tenders to the EU programmes contain detailed information for what charges the Union will ensure financial support and which costs will not be refunded. Reimbursable expenses must basically fulfil the following prerequisites [305]:

- real costs,
- costs that the beneficiaries have to pay,
- costs that emerged during the project period,
- costs that are detectable by the usual accounting and management practices of the grant recipient,
- costs that are used alone for the fulfilment of the project's objectives,
- costs that are captured in the account books of the grant recipient.

Furthermore, a distinction is made between [305]:

- direct costs that can directly be attributed to the project, and
- indirect costs that are not related to the realization of the project.

Direct costs in this context are for example personnel or material consuming costs. Expenses for electricity and rent can be termed as indirect costs. The amount of the awarded grant differs from programme to programme. In the calls it is mostly specified to what percentage EU grants are possible. These are usually paid after all bills have been submitted [305].

2.3.3 Cross-Compliance rules for farms

More obstacles in the use of EU funds occur over the claim processing, in particular for agricultural holdings. The Cross-Compliance is a mechanism with which direct payments to farmers are tied on their fulfilment of obligations in the field of environmental protection, food safety, animal and plant health and animal welfare, as well as the preservation of agricultural land in good management and environmental status [83].

Since 2005, the Cross-Compliance for all farmers, who rely on direct payments has had to be kept. In principle, the restrictions include two elements. At first, it provides certain basic requirements for the management of agricultural enterprises which were published in an official regulation ratified by the European Council. It is these legal standards that are to be kept by the agricultural holdings in the European Union. The so-called standards for the preservation of agricultural land in good agricultural and environmental condition are also valid. These include seven guidelines to reduce soil erosion, to prevent the removal of landscape elements, and to protect waters. Therefore, the Cross-Compliance forms the basis of agri-environmental measures. Farmers must pay for the costs for these requirements themselves. Therefore, the farms are forced to spend a part of the direct payments that they receive in the EU as a compensation for the higher production costs that are caused by the high standards the enterprises in the Member States have to meet. This context, while increasing the general conditions in farms, contributes to the promotion of sustainable agriculture, but limits the field of use of funds. Compliance is monitored by the technically competent authorities or the paying agent locally on the basis of samples with the recipients of the payments. Also, controls with regard to concrete events in

individual establishments take place. Any violations will be evaluated according to severity, extent, duration and will accordingly lead to a reduction concerning the amount of the payments. With minor infringements the payments are usually reduced by 3%. In rare and extreme cases violations can even cause the withdrawal of the funding for one or more years by the authorities. Since 2015, a new early warning system, which exacerbates the existing rules, has been in operation, too. As a result, the European Commission has announced that repeated minor offences against the same commitment will be sanctioned in a considerably stricter way than before. To remove the penalties, the farmer is not only obliged to fix the specifically identified violation but also not to violate the same Cross-Compliance in the following three years [41].

Ultimately, the Cross-Compliance is an important tool for integrating environmental requirements into the common agricultural policy. The mechanism of Cross-Compliance creates synergies between the CAP payments and the need to meet minimum requirements [83].

2.3.4 The policy makers within agricultural subsidies

In the granting of subsidies in the EU, the European Commission has the largest decision-making power. The EU Commission, which is composed of one representative per Member State, is comparable to the government in a state system and assumes above all tasks of the executive. The Commission is divided into departments – known as Directorates-General. The Directorates-General are associated with specific political areas and are engaged in themes and tasks of the respective area. Most of them are subordinated directly to one member of the Commission. In addition, each Directorate-General has a General Manager. The Directorate-General of agriculture and rural development (DG AGRI), which consists of a staff of about 1,000 employees, is responsible for the agricultural policy and the policy for rural areas, which is carried out in conjunction with another Directorates-General that are involved in the structural policy. As this department is occupied with all aspects of the common agricultural policy, including the market organisation, the rural development policy and with related analyses and evaluations as well, this is the top decision-making body with regard to the final allocation of EU funds. The information collected on agricultural contexts is also passed on to the national authorities of the Member States. The processing of direct payments in agriculture is conducted through authorised paying agencies that make the decision about the respective project proposals in the EU countries. So, the decisions are made in many cases by the competent paying agencies on behalf of the European Commission [85].

Also, independent experts are included in the decision-making on the allocation of fund payments. These experts are specialists in their respective programme areas and are selected by the EU official calls for tender [85].

The programmes in the field of rural development are managed by the Member States on their own responsibility and they determine their specific needs and in which regional areas of agriculture they invest. Then the respective projects are co-financed by the EU after a consultation with the Commission [86].

2.3.5 The way of the application up to the implementation

A fictional Romanian farm from the region Arad is used to illustrate the procedure of the request processing of direct payments in agriculture.

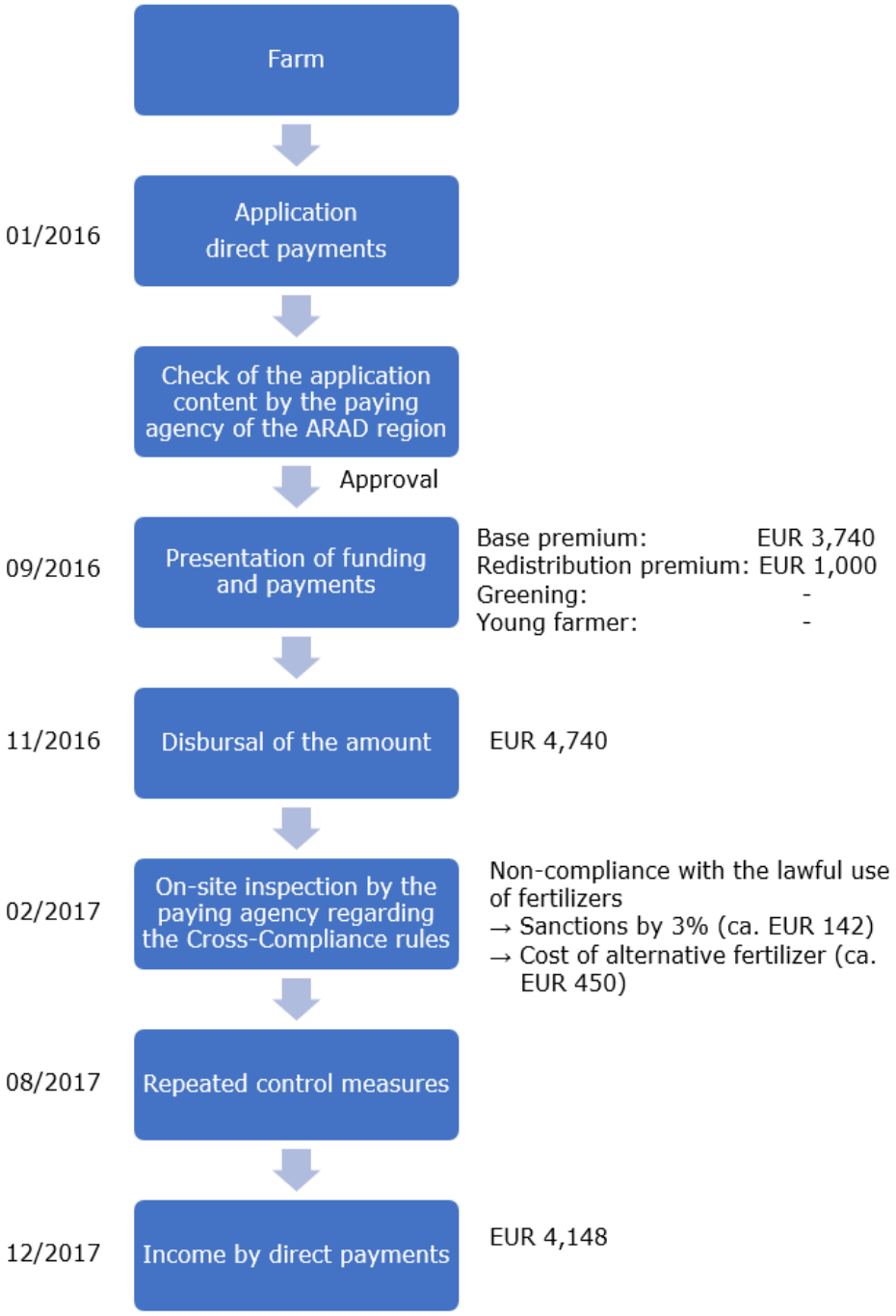
Figure 2.12. Political map of Romania with its districts [199]

More facts about the operation are:

Area: 20 ha

Farmer: 55-year-old Romanian runs the farm with his family

Land use: cereals


Farm
01/2016
Application direct payments
Check of the application content by the paying agency of the ARAD region
Approval
09/2016
Presentation of funding and payments
Base premium: EUR 3,740
Redistribution premium: EUR 1,000
Greening: -
Young farmer: -
11/2016
Disbursal of the amount
EUR 4,740
02/2017
On-site inspection by the paying agency regarding the Cross-Compliance rules
Non-compliance with the lawful use of fertilizers
→ Sanctions by 3% (ca. EUR 142)
→ Cost of alternative fertilizer (ca. EUR 450)
08/2017
Repeated control measures
12/2017
Income by direct payments
EUR 4,148

2.4 The effectivity of subsidies granted by the European Union

The effectivity of the funding by the European Union can be pointed out by some indicators [89]:

- by the publication of funding recipients and amounts of funding it is visible for the citizens of the European Union where the money of the EU budget explicitly goes to. It creates transparency and trust among the population. Also, the incentive to apply for own funding and to start an EU-project grows,
- infringements within the claim processing should be avoided on the basis of introduced control systems,
- the still existing error rate shows in which areas there is still room for improvement,
- in relation to the use of the funding amounts the value added per worker is a common reading with regard to the impact of financial aid in the field of agriculture. This becomes obvious when looking at the agricultural situation in Romania.

In the following sections, these aspects are discussed in more detail and in conjunction with each other.

2.4.1 Transparency of the recipient of subsidies

With regard to the processing of the application, the principles of transparency and equal treatment are enshrined in the financial regulation of the EU and the associated regulations. These apply to all applicants in the same way no matter if you apply for a promotion at the European Commission, at a national administrative authority or take part in a tender. To ensure equal access to information for all interested parties, the notices and invitations to tender to various EU projects are issued on the respective websites. In addition, information on the beneficiaries of EU funds is made available. The names of the recipients of funds, which are managed by the European Commission, as well as the amounts paid out are published on the EU website on the basis of a financial transparency system. Also concerning the funds managed at the national level information on the names of the recipients and the amount of the approved payments must be made public. Included are the funds allocated by the agricultural, marine and fisheries policy and the structural and investment fund. The respective EU Member States publish the appropriate information after a successful completion of the application procedure [89].

2.4.2 Supervision and monitoring of agricultural subsidies payments

The individual members of the European Commission are responsible for the lawful use of EU funds. The EU countries are obliged to set up efficient and effective internal control systems [89] to verify the use of the funds continuously. In addition, each country must report on the implementation of the rules annually. This is done in the form of financial statements, a management statement, an overview of the tests and controls and an audit certificate issued by an independent inspecting authority. The current financial management and the management of funding is transmitted to the Commission of the relevant Directorates-General. This administrative body of the

EU is comparable to the ministries at the national level. The issue of annual activity reports of Directorates-General is the main instrument of accountability within the Commission. They include a statement of assurance and an analysis established by each department on internal control and financial management systems that are designed to ensure the proper management of EU funds [89].

On the basis of the statement of assurance made regularly, it is assured that all financial transactions have been conducted lawfully. This includes the transfer of specified subsidies to the Member States or the respective contractor, after a complete claim processing has taken place. The areas where problems have come up are to be documented and submitted to the European Commission. As approximately 80% of all EU funding are managed by the Member States, they assume a huge responsibility with regard to the proper distribution of subsidies. Also, the European institutions use the central exclusion database as a tool for the prevention of fraud and corruption in the management of the EU budget. The data bank can be consulted by all Member States and contains information on people and organizations which have become conspicuous of fraud, corruption, participation in criminal organisations or other unlawful acts which harm the financial interests of the EU [89].

2.4.2.1 Attributes of the control system in the fields of the EAGF and the EAFRD

For a legitimate claim processing with regard to the funding procedures, the EU has requirements to the competent administrative bodies. Systems are introduced to prevent violations by the applicant or Member States and thus to minimize the financial risk of the EU. According to the guidelines defined by the EU, funding may not be used for other purposes. Reports and checks are carried out during the project's implementation, as well as after it. That total control system for promotions with EU funding basically consists of the four parameters of 'Financial limit per Member State', 'Internal controls', 'External controls' and 'Financial aid' (see figure 2.13) [229]. The control system in the area of the EAGF and of the EAFRD is considered in the following discussion.

Total - Control system for financial benefits with EU - (Co-) financing			
Financial ceilings per Member State	Internal controls -Applicant -Paying agent (internal control system)	External controls	Financial consequences -Applicant -Member State

Figure 2.13. Parameters of the total - control system [229]

Financial limits ceilings per Member State:

In the EAGF fund, an annual limit with regard to possible pay-outs on the part of the EU applies for any Member State. The upper limit for expenditure of EFGL corresponds to the maximum amounts that are set for this fund in the Multiannual Financial Framework for the EU countries. If the payments threaten to exceed this

limit, the Member State must cut linear pay-outs (so-called financial discipline) [89].

In the EAFRD fund a fixed amount for the relevant financial period is available for each Member State (article 12 paragraph 2). So, the European Union lays down a financial framework and deviations from this can be seen on the basis of the checks. The control of the financial upper limits is conveyed in addition to ensure the correctness of the payment [89].

Internal Supervision:

Payments of EU funds may be carried out only by accredited paying agencies (article 10). A paying agency includes all levels of administration, organizational units and bodies which are involved in the approval, control, payment and accounting. In Germany, a paying agent of the EU is set in each federal state. For the control, an internal department audit service (IDAS) is to be set up in the individual Member States. This audit service has to consider to what extent the policies of the executive department are in accordance with the EU rules and whether the accounting is complete. In EU funded support measures, all information must be controlled in each application process in 100% of cases. In the EU agricultural sector there are other obligations for the farmers (Cross-Compliance), of which 1% are usually checked annually). The EU prescribes the Member States prior to the funding for UAA (base and redistribution premium) to accomplish with an organized administration and control system. This system provides a continuous monitoring and control of the level of the applicant about the administrative units responsible for this operation up to the level of the EU. Various plausibility tests are already made by the programme itself which prevents errors and reduces the administrative expenditures of the application processing. Furthermore, 5% of the applications for funding agricultural area are checked by on-site inspection. The same is true for the applications for EAFRD measures. In addition to the remote sensing of the structures on the ground, the aid of satellite images is used to control the sizes of farming land [89].

External Supervision:

In addition to the internal control measures, additional external controls are prescribed by the EU. To check compliance with the eligibility criteria in a paying agency, a department at ministry level is introduced. Except for the fundamental review of the eligibility criteria of an applicant, the department examines whether the paying agent has drawn the necessary conclusions from the inspection reports of the European Commission, as well as the IDAS. In addition, the European Commission carries out EU-wide tests by its Directorate-General for agriculture and rural development. The specified control and administrative measures are checked, which are necessary with regard to the correct application for funding such as [89]:

- the compliance deadlines for applications,
- double applications,
- risk analysis,
- the imposition of sanctions and
- the appropriate supervision of the procedures.

Financial consequences:

As a fourth parameter the EU imposes financial sanctions against the applicants and the Member States, to preserve the accuracy of funding payments if an error in applying or non-compliance with the control provisions is detected. The European Union intends to cause a deterrent effect by these sanctions, so that already incorrect information of the applicants can be punished. For the areas of EAGF and EAFRD sanctions are imposed in the following cases [89]:

- late submission of the request,
- false statements in the application, such as, for example, incorrect square footage to a certain extent and
- violations of Cross-Compliance requirements e.g. concerning environmental conditions and animal detection.

Sanctions are already imposed, when funding has been applied for farming land that overrides more than 3% of the existing farming land. With wrong information concerning farming land that is between 3% and 20% additional surface the financial support must be shortened by more than double of the amount. Overriding 20%, of the farming land in question means no support is granted for the affected area. In addition, the European Commission imposes charges for the Member States, when errors in the application process are revealed in the sampling of the Commission [89].

2.4.3 Error rate in funding

Through an annual report for the year 2014, the European Court of Auditors has found irregularities in the use of EU agricultural subsidies. To represent these irregularities, the Court of Auditors used a calculated error rate. The Court defined as error the operations (or parts thereof) that were not in line with the purposes approved by budgetary and legal basis, mistakes that were made due to incorrect calculations and thus violated the relevant rules and regulations [115]. For the agricultural sector, the total error rate is at 9.1%, from which 2.1% occur within the first pillar, the direct payments and market measures, and 6.2% within the second pillar, the measures for rural development. Spending for the environment, climate and fisheries policy are included in the value for pillar two. Although the value for the agricultural sector was declining compared to 10.6% in 2013, the upper limit set by the European Court of Auditors of 2% has clearly been exceeded. The error rate for all budgetary spending estimated by the Court of Auditors is 4.4%. So, failures are proved disproportionately often in the EU agricultural expenditures in processing the aid payments. Among others there were errors in the following form [280]:

- excessive square footage in the direct payment details,
- non-observance of obligations in the context of environmental measures as well as,
- the construction of fake farms to be granted subsidies by actually not eligible companies.

In addition to publishing the overall error rates, the European Court of Auditors published a special report on the 'error in expenditure on the development of rural areas' in the year 2015. For that report random samples were analysed from the years 2011, 2012 and 2013. The analysis includes 461 operations, of which 160 have contributed to the error rate. Both operations of area payments and investments for the development of rural areas were examined. The study has a margin of error of 8.2% for the temporal framework conditions, from which 2.5% are connected with area-related aid and 5.7% with investment measures (see figure 2.14) [115].

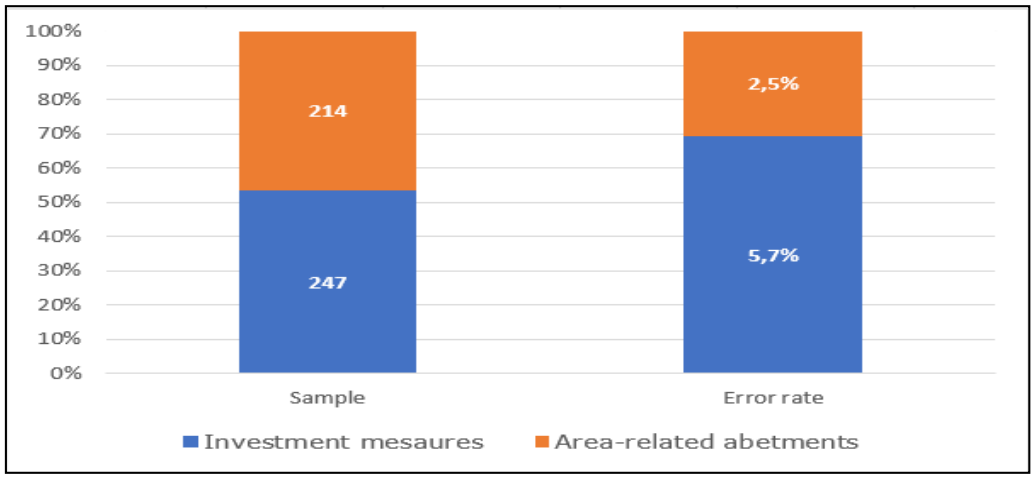


Figure 2.14. Share of area-related abetments and investment measures on the sample and the error rate [115]

With investment measures in the field of rural development the most widespread failures were violations against eligibility conditions, which is an indicator for the fact that private beneficiaries may deliberately have caused irregularities and non-compliance with rules for public and private procurement (see figure 2.15).

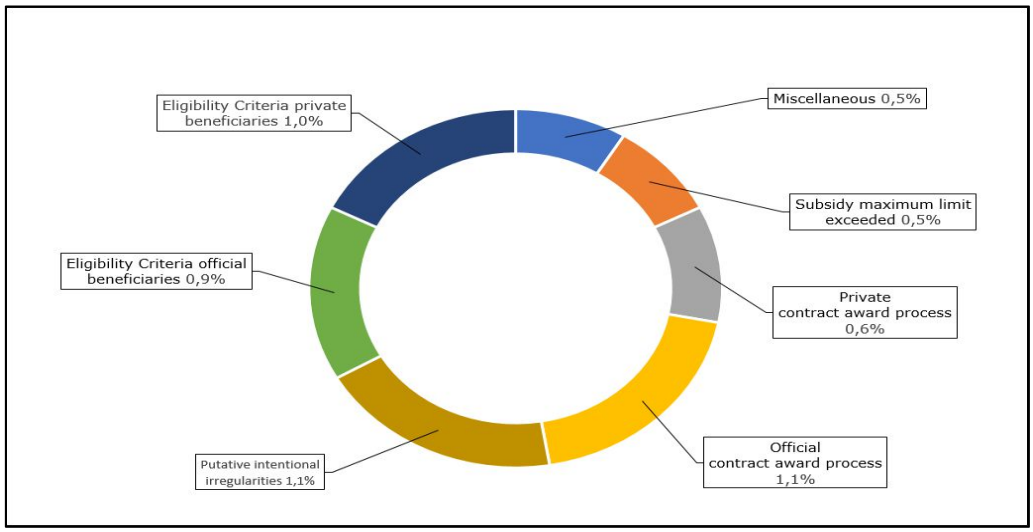


Figure 2.15. Distribution of 5.7% share of the investment measures the error rate [115]

Regarding the area-related aid the most commonly identified error is located in the non-compliance of environmental commitments in agriculture (see section 2.2.3), in non-eligible agricultural plots and in an indication of too large-scale square footage (that are area discrepancies) (see figure 2.16).

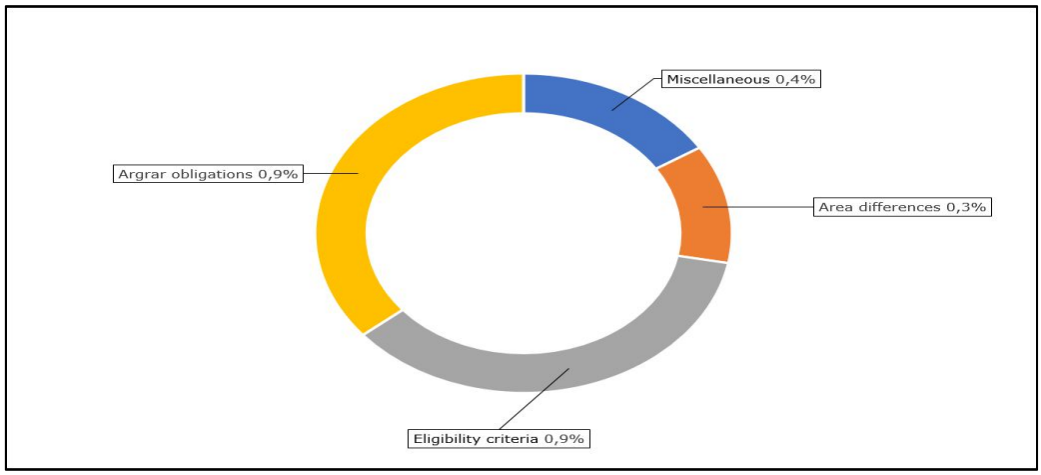


Figure 2.16. Breakdown of the 2.5% share of the area-related aid to the level of errors [115]

2.4.4 Impact of funding on the agricultural sector of Romania

The volume of financial amounts, which are available as subsidies in the European Union's disposal, was pointed out above. Of enormous importance is however whether these funds are also effectively used and if they lead to a measurable improvement within a state or region. To determine the level of development in the agricultural sector, considering the agricultural productivity the agricultural value added per worker serves as a scale. The value added in agriculture measures the work income of the agricultural sector minus the values of the intermediate resources. Agriculture comprises value added from the forestry and fisheries as well as the agriculture and the livestock industry. Since the EU accession of Romania in 2007 a positive development can certainly be seen. The agricultural productivity in Romania has increased significantly (see figure 2.16). The agricultural value added per worker since the EU accession of Romania has been more than doubled until 2019 to USD 6,618 [276].

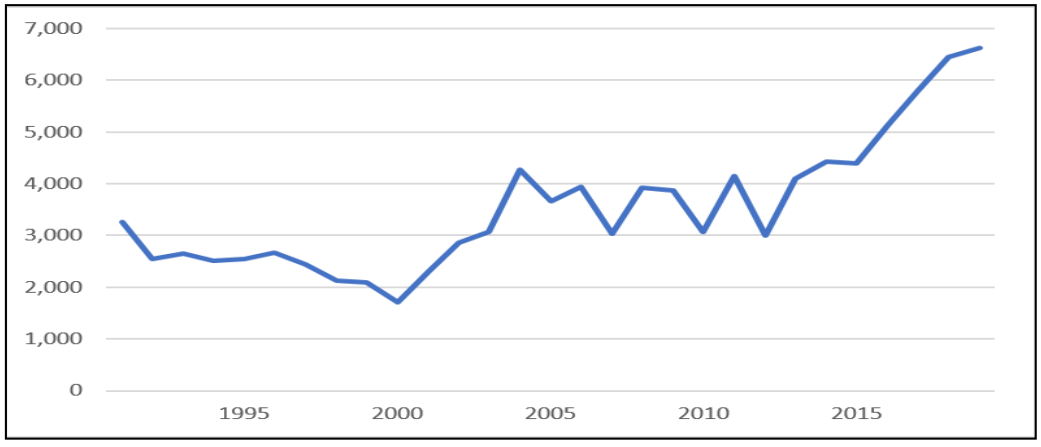


Figure 2.17. Agricultural value added per worker in Romania (constant 2010 USD) [276]

Despite this good development, agricultural productivity is in comparison still significantly weaker than the EU average (see figure 2.18).

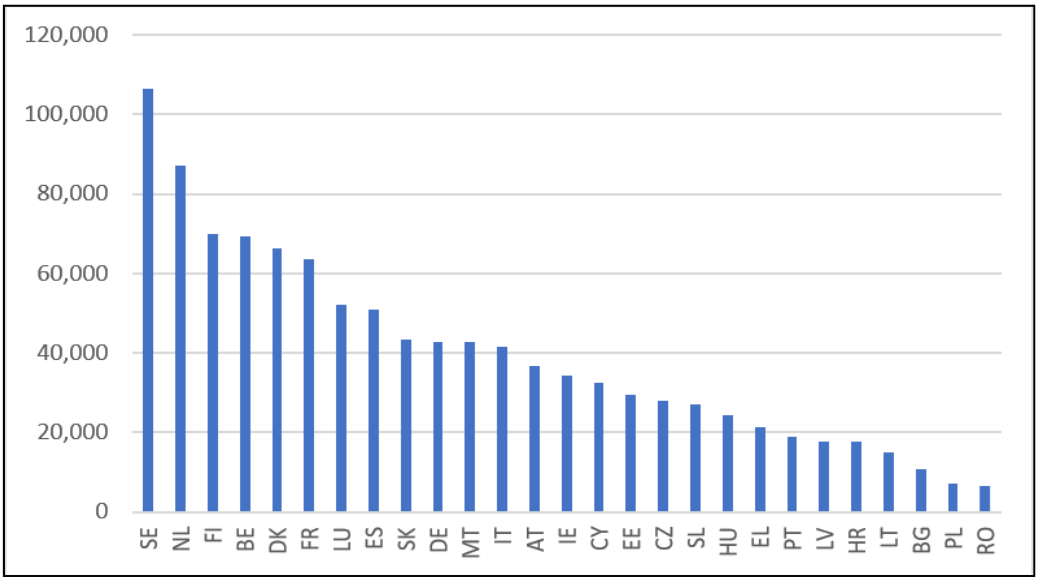


Figure 2.18. Agricultural value added per worker in 2019 (constant 2010 USD) [276]

This circumstance is reinforced by the fact that the Romanian agriculture in 2014 has contributed only 4.6% to the GDP of its own country despite an employment rate of 28%. The very low level of mechanization in the agricultural sector can be blamed for the low agricultural productivity. According to data of the national Agricultural Association, more than 500,000 farmers work their land without the use of machines. The affected farms have an area of only 1 to 3 ha [58].

The low demand rate of funding in Romania proves to be a problem too. Between 2007 and 2013 only about a third of the EU structural funds available to the country were obtained, this was the lowest rate in any state within the EU. The demand rate of funds for rural development was at least about 67%. According to Romanian farmers, it is complicated to apply for funds, and it is not uncommon to fail with one's application. As reasons for the comparatively low number of retrieved funds, bureaucracy, lack of knowledge and frequent staff changes are listed up by the European Commission [66].

A focus is put on the dissemination of information regarding the possibilities that may arise through funding of the EU for the citizens of Romania for the funding periods after 2013. That is why the European Commission has officially introduced a project which focuses on the implementation of the Common Agricultural Policy and plans an announcement in the population (see section 4.1.2).

The very small-structured farming sector, however, proves to be problematic for Romania. The average area of an agricultural operation in Romania consisted of only 3.1 ha in 2003, which only insignificantly rose to an average of 3.6 ha in 2013. In most EU countries, a significant change already took place in this period. In Germany, the average area of farms between 2003 and 2013 rose from 41.2 to 58.6 ha. In Slovakia, the value even rose from 29.8 to 80.7 ha [131].

2.4.5 The Common Agriculture Policy in the period after 2020

The current CAP revision has been approved for implementation between 2021 and 2027. In the future a fairer distribution of direct payments in the future, reduced bureaucracy, strengthened targeted support for sustainable agriculture, and improved environmental and climate protection features will be the key topics, which can no longer be ignored. The current CAP objectives will be revised accordingly. For the first time, all EU Member States must develop national strategy plans for both pillars of the CAP for this period. Technical needs must be deduced from a strengths-weaknesses-opportunities-threats (SWOT) analysis of each member state's agricultural policy in accordance with nine specific goals. Furthermore, for the needs that have to be given priority, the development of specific support measures (e.g. intervention descriptions) is obligatory. In the new financial period, the CAP will receive around 28.5% of the total EU budget amounting to EUR 365 billion [105,106,165,166]. Although the budget has been cut, this expenditure is fourteen times that of European defence and security defence and eleven times that of border management and migration [165,166,172]. More than three-quarters of this budget is still allocated to pillar 1. Increased support for environmental and climate protection goals is conceivable and can be established by each Member State. Furthermore, pillar 2 should emphasize the advancement of new agricultural technologies. Direct payments under pillar 1 will be restricted to smaller businesses, and the existing financial instruments Cross-Compliance and Greening will be integrated. Eco-schemes, as a novel funding tool based on voluntary involvement, provide farmers with extra opportunity to support environmental and climate protection measures funded by pillar 1 financial means [105,106,165,166].

The outlined improvements appear to make the CAP more sustainable, fairer, climate and environmentally concerned beginning in 2021. Ineffective direct payments, on the other hand, continue to be the biggest part in the financial system across all dimensions of sustainability. The 28% budget cut in pillar 2 is much greater than the 11% cut in pillar 1. Besides, to strengthen the position of agri-SMEs on the market will hardly be achieved despite the well-intended method to cap and digress direct payments. This is why labour costs can be removed from the premium. In almost all circumstances, the outcome will be insignificant, therefore this digressing and capping will not be effective enough. Furthermore, the incentive will encourage existing farms to divide their businesses in order to maximize the allocated funding [165,166,215]. Direct payments will thus continue to amount to a considerable share of the subsidy budget in the future. A further effect will be that anymore incentives for farmers are hardly made available for the use of sustainable production methods to improve public goods and services to the European society. This would be a deterioration in comparison with the situation as it was before. If individual Member States are allowed to act more flexibly, it may result in cherry picking and in competition being distorted between the states with a strong preference for enhancing public goods and those that are simply concerned with providing unexpected profits for their farmers. The desired downsizing in bureaucracy may also lead to funding requirements for enhancing sustainable agriculture being criticized as unnecessary impediments to bureaucracy, as well as allowing lobbyists a better opportunity to influence political decisions. Eco-schemes that are perfectly consistent with the rational of spending public money on public goods would be unable to significantly increase sustainable agriculture due to an insufficient commitment and inappropriately established amounts. Furthermore, recent experience with Greening does not indicate that incentives based on the idea of voluntary commitment will be

used to promote sustainable industrial practices. Because the subsidies are not appropriately targeted toward their environmental and socio-economic aims, the granting of direct payments in the future financing period 2021-2027 will provide no additional value in public goods to European society [165,166,172].

Due to the lack of a legal basis at EU level, the new funding period will not start until 2023. For the transition period of two years, the current CAP framework is continued by a transitional regulation. The new name is thus: 2023-2027 funding period [210].

2.5 Conclusion

The areas of application that the European Union selects for their financial support are closely combined with the fundamental orientation of the EU. For the next few years objectives are designed in the strategy "Europe 2020", which are intended as a guideline for the EU as a whole as well as for the individual Member States. The focus is put on the approach of the EU countries mainly in economic and social aspects. Based on the structural and investment funds Member States invest the budget provided by the EU in regions and selected projects that need financial support in the context of the European development. The CAP is the most important policy area in the EU and will be financed by direct payments and the European agricultural fund for the development of rural areas in the States. For many applicants the award procedure and information and documentation that has to be submitted for this procedure has proven to be an obstacle, because a variety of farms get no, or only limited promotion as pre-set criteria are not met or mistakes in the application processing are made. In addition, the Cross-Compliance rules to establish environmental requirements in the EU are a challenge for the farms. Failures to keep these rules lead to sanctions and to a further financial burden for farmers. While trying to raise the general environmental standards in the European Union to a higher level, especially small businesses and enterprises from economically disadvantaged regions do without the application for direct payments in some cases to avoid financial burdens. In Romania this relation is shown by the low demand rate of promotions in recent years. The European Union should make stronger efforts to elucidate the benefits of EU support above all in the less favoured regions in particular. The existing error rate, which has been found in the bodies of the European Union, shows that the claim processing in the allocation of funding needs to be optimized. On the one hand, improvement potential is in the EU itself. It is vital to inform the citizens about the process of submission and to minimize the administrative burden. On the other hand, also the applicant must be familiar with the criteria for a successful application for funding payments. EU funding in the field of education in Romania for example in the form of training, specially designed in the EU support programmes and their execution could help if they are combined with each other.

The agricultural sector of Romania shows in what a positive way the involvement of EU subsidies can affect a sector of the economy. Since the EU accession of Romania in 2007, a significant development is evident in the agricultural productivity of the country. The agricultural value added per worker in Romania has more than doubled in the funding period (2007-2013). Although in terms of agricultural productivity Romania is still below the EU average, by this the enormous potential for development in agriculture is shown.

If in addition the demand rate of Romanian agricultural holdings can be promoted, an evolution in terms of productivity in the coming years is realistic. In particular, it is important for every funding period that funding even reaches small

family businesses to advance their economic development to the level of their European neighbours. Also, a possible scenario is that the very small structured agricultural sector could undergo a change. It is impossible to achieve in the short term that Romania has similar sizes in farms like Germany, but the country can approach these sizes. Small businesses could cooperate in the coming years, with each other, to benefit from each other. It is also possible for the existing Romanian agricultural enterprises to participate in the agricultural small holdings in order to expand their area of influence.

If an agricultural company in Romania has an increased operating area, it can increasingly operate in a market-oriented way. The management of the operating area is not only to achieve self-sufficiency, but also to achieve sales on suitable markets. This would in turn affect the economic development possibilities of operation positively, competitiveness would rise on European markets and a budget for new investments would be available.

However, primarily large farms benefit from Europe's current subsidization policy, and as a result, significant negative developments cannot be avoided in fields like climate, water, and soil preservation, biodiversity, as well as animal welfare and health protection. These developments clearly show the present risks to European agriculture. The replacement of agri-SMEs by large ones cannot be avoided under the current and future European CAP.

The efforts to reform the CAP regulations during the 2021-2027 budget term are insufficient. Nonetheless, a revision of the funding policy in pillar 1 that focuses on agri-SMEs is required, as a simple area-based funding strategy has proven to be ineffective.

3 INFLUENCES OF THE MARKETS

This chapter deals with the effects of subsidies, or changes of subsidies and their characteristics, on farms and the associated procurement and sales markets taking Germany and the USA as examples. It examines the behaviour of various characteristics in the change of subsidies.

3.1 The situation in German agriculture

In 2018, in terms of agricultural imports and exports, Germany was ranked third globally. Germany exported around 4.5% of all agricultural goods shipped globally, totalling 1,807 billion US dollars. Agricultural exports represented for 5.4% (EUR 71.6 billion) of total German foreign trade, while agricultural imports accounted for 7.8% (EUR 85.2 billion). Nonetheless, the majority of Germany's agricultural trade occurs within the EU at 78%, with the remaining 22% of trade with non-EU countries. Exports account for roughly one-third of overall agricultural output in Germany [62,165].

Farming covers roughly half of the land area in Germany. In 2018, total cultivated land area was reported at around 16.7 million ha. Grain crops such as wheat, barley, and rye are mostly farmed; nevertheless, milk production and pig fattening are also considered important despite the perceived unfavourable trends in these industries [62,165].

As shown in table 3.1, the majority of German farms are medium-sized. The single farmer cultivates an area of up to 100 ha and uses approximately 37% of the available land, accounting for 86% of the total. In the 2018/2019 fiscal year, farms earned an average of EUR 54,900 per company and EUR 38,400 each worker. The net investment per farms amounted to EUR 7,300 [62,165].

Table 3.1. German agricultural structure 2018 - Farms are grouped according to their size (farms from 5 ha) [62,165]

Agricultural structure – Farms grouped according to their size (ha) (Farms from 5 ha)				
Farm Size	Farms		Area	
from…to… less than ha	Number In 1,000	Share In %	Hectares In 1,000	Share In %
less than 10	65.6	24.6	358.5	2.2
10 to 20	54.0	20.2	806.4	4.8
20 to 50	63.1	23.7	2,106.1	12.7
50 t0 100	46.6	17.5	3,293.1	19.8
100 to 200	24.7	9.3	3,368.5	20.2
200 to 500	8.9	3.3	2,587.3	15.5
500 to 1,000	2.3	0.9	1,639.9	9.9
1,000 and more	1.5	0.6	2,485.4	14.9
Overall	**266.7**	**100.0**	**16,645.1**	**100.0**

Despite having only, a 0.9% share of the Gross Value Added (GVA) in 2018 and a 1.4% share of employed personnel, German agriculture, forestry, and fishing remain important economic sectors. This significance is highlighted when considering the entire agribusiness as a whole, which includes the food production, food trade (or

dissemination), and food catering, from the point of origin to the end customer. Additionally, around 700,000 German agricultural enterprises employ 10% of all workers, contributing to a total production value of EUR 499 billion in 2018; this is equivalent to 8% of total output value or 7% of total GVA [62,165].

The 67% rise in production during the last two decades, compared to the German economy's average, leads to a capital intensity increase. Agriculture is one of the most capital-intensive industries, requiring approximately EUR 581 thousand per employed person. Despite the high cost, industry, trade, and construction, each area requiring substantially less capital, at EUR 327 thousand, EUR 145 thousand, and EUR 46 thousand respectively. In 2018, net fixed assets account for a total of EUR 161 billion, with two-thirds of assets having been self-financed [62,165].

In 2018, around 42% of individuals employed in agriculture were independent entrepreneurs, managing up to 267 thousand farms larger than 5 ha and approximately 22 thousand farms smaller than 5 ha of arable land. In the same year, the average farm area was 62.4 ha, with regional variations between East and West Germany [62].

Even in Germany the European trend of concentrating on larger manufacturing enterprises is evident. The number of farms has declined by 17.1% since 2007, from 321,600 to 266,700 (2018). Farms of less than 100 ha have disappeared from the market, while farms of 100 ha or more, which cultivate around 61% of the useable area, have expanded. This structural transformation is also noticeable in animal husbandry. Overall, the number of non-livestock farms have climbed from 28% (2010) to 33% (2016) [62,165].

The vast majority of farms are operated as individual family businesses. With an average farm size of 44 ha, they manage 64% of the agricultural area. Farms which earn more than 50% of their income from agricultural activities have the size of an average of 60 ha. Part-time farms, on the other hand, are typically significantly smaller (23 ha), although their popularity is continuously increasing, thereby increasing the number of such farms. Partnership-farms have an average of 120 ha and incorporated legal entities have up to 527 ha [62,165].

Another outcome of the concentration process is an increase in agricultural revenue and income combinations through diversifications; approximately two-thirds of all firms have augmented their income prospects, such as through hospitality ventures (i.e., restaurants, hotels, food & beverage), energy generation (biogas, etc.), direct sales (Business-to-Consumer - B2C), provisional contractual work (ad hoc), and machine rentals [62,165].

Business have been presented with the opportunity to succeed in organic farming due to the consumer trend which focuses on increased health awareness; this results in the demand for nutritious, fresh, and sustainably produced food. Organic farming has raised its share of total agricultural land from 5.9% (2010) to 9.1% (2018). By the end of 2018, there were 1.521 million ha more of organical farmland than in 2017. The number of organic farms increased by 7.9%, or 2,300, to 31,700—this means that 12% of farms are now dedicated to organic farming [62,165].

3.2 Consequences due to subsidy payments by the European Union using the example of the German agricultural sector

The basic free-market tension of farms is seen in Figure 3.1. Agricultural enterprises, like businesses in other industries, are part of active market competition. In contrast, agricultural firms—unlike other industries—are heavily influenced by

political decisions and CAP goal-setting. Thus, agricultural subsidies must not only provide farmers with a reasonable and respectable income, but also ensure their role as food suppliers indefinitely.

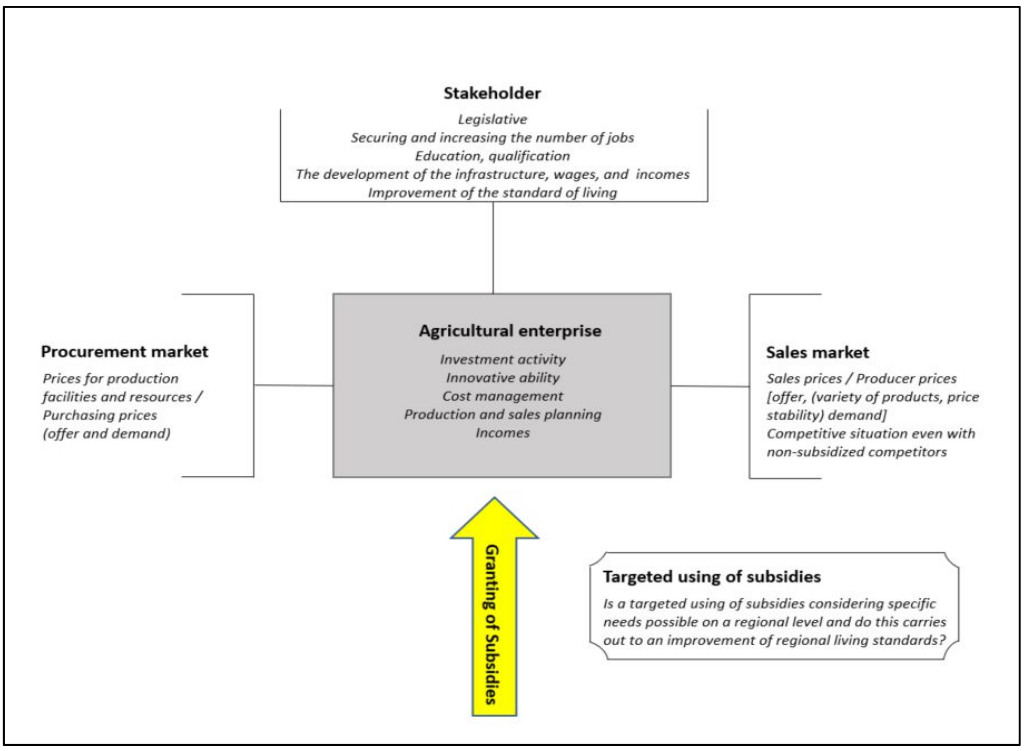


Figure 3.1. Basic free-market tension of agricultural holdings [164]

The investigation focuses on the German market in the period from 2000 to 2014. In a next step, the average subsidy amount per ha land area is introduced as a measure. This measure combines the various measures, such as the single farm payment, average payments from agricultural-environmental measures, the agricultural diesel compensation and interest- and investment subsidies. Then the structure of the farms in Germany are analysed. For this purpose, the size of the farms and then the relationship between conventional and organic agriculture is examined first. This is followed by the agricultural procurement and sales markets. To do this, the history of procurement and producer price indices is to be analysed. The investment behaviour of agricultural holdings in relation to subsidies is considered at the end of this chapter. Questions are also developed at the end for a survey of farms, which classifies the assessment of subsidy measures and their significance.

3.2.1 Development of EU subsidy payments to German farms

The distribution of the EU funds is administrated in Germany at the country level. The following graph represents the amount of support of the European Union for German farms. The phasing out of export refunds and the trend fall in the total amount of direct payments of the CAP is visible. Subsidies to German farmers were previously valued at more than EUR 7 billion but have since been reduced to EUR 6

billion (2014). In recent years, the majority of the funds have been direct payments.

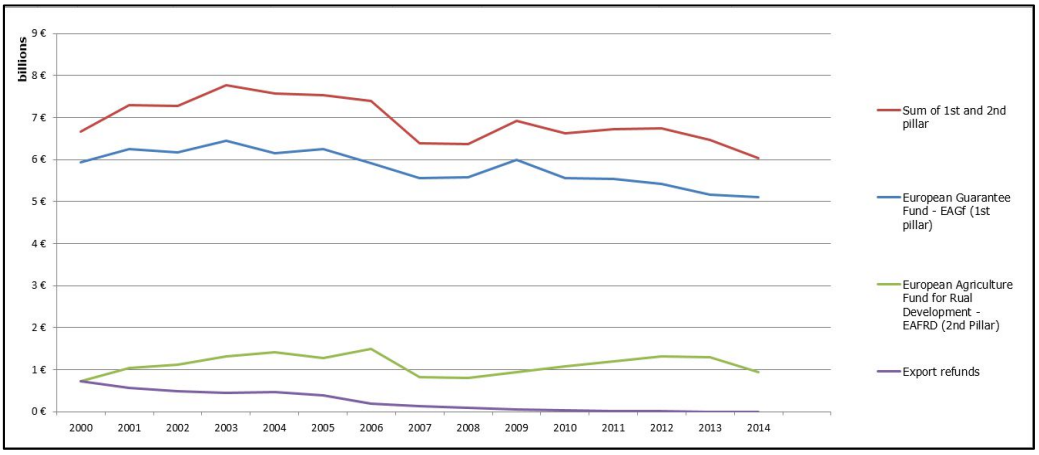


Figure 3.2. Development of payments of the EU to Germany from 2000 to 2014 [38,164]

As a uniform parameter of measurement, the average amount of subsidy per ha of agricultural land area is chosen for the following studies. This parameter reflects the different types of agricultural aid. It consists of 75% of the single farm payment. Other components include 10% of the average payments of agri-environmental measures and roughly 5% of the agricultural diesel compensation and interest and investment subsidies.

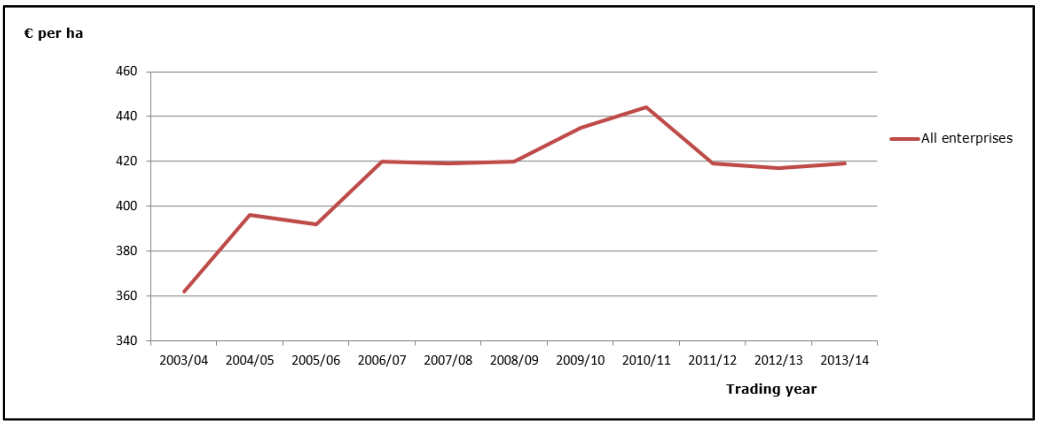


Figure 3.3. The average EU subsidy amount per ha land area for German farms [38]

The rise of the curve in the fiscal year 2006/07 is to be explained through the conversion of the production-related premium to the decoupled operating premium, which had been completed until then. The goal of a constant subsidy sum of around EUR 420 per ha of land area as of the financial year 2007/08 was not observed due to the global economic crisis. In the course of the crisis, the funding measures for two fiscal years were significantly increased. As a result of the increase, the losses in profits resulting from the fallen producer prices were compensated for by the farms. A comparison of the fiscal years 2011/2012 with the pre-crisis level of 2007/2008

shows a decrease of 5%. At this level of EUR 420, average subsidy amount per ha land remained stagnant at the end for the following years.

3.2.2 Structures of agricultural enterprises

Subsidy payments per ha are higher for smaller farms. This is because the premium per ha (decoupled premium per area) declines with increasing land area. According to the redistribution bonus, the first 46 ha of land are subsidized around 15% more on average. The graph below depicts the average subsidies per ha for small, medium, and large farms, as well as their average profits per ha. Small, medium, and large farms are classified under the Federal Ministry of Food and Agriculture's definition as follows: small farms (~ 35 ha), medium farms (~ 65 ha), and large farms (~ 120 ha) [43,164].

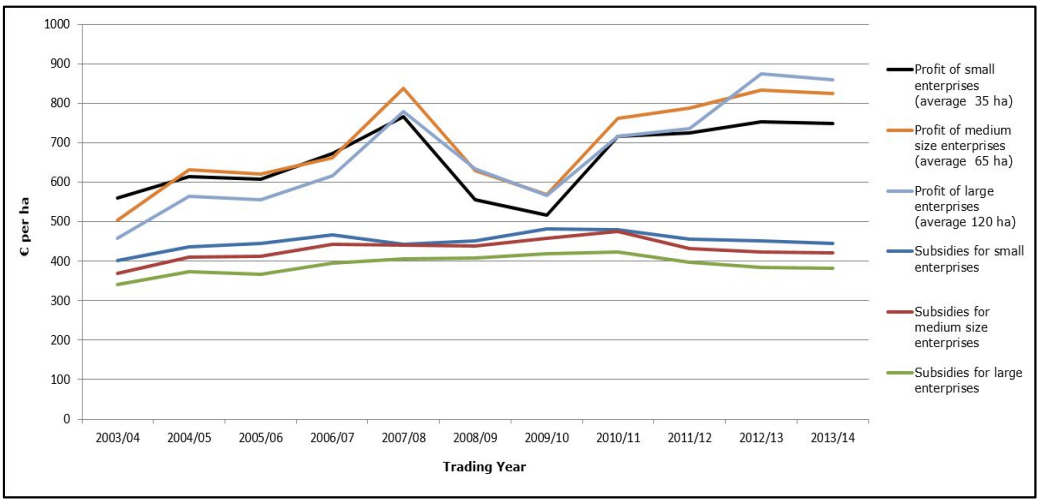


Figure 3.4. Profit for small, medium and large German farms and subsidizing those per ha land area [38,164]

The higher subsidy amount for smaller farms is obvious, as are the higher earnings of larger farms; increased productivity by larger farms have enabled an increased in income because these farms can use more advanced production methods due to their greater financial power. The drop in profits during the Great Recession of 2008-2009, as well as the subsequent rise in the average subsidy amounts, are also noticeable. In the fiscal year 2009/2010, the subsidised earnings in smaller farms accounted for more than 90% of total earnings. Even in years of significant profitability, such as 2007/2008 or 2012/2013, the percentage of average subsidy per ha to average profit per ha is roughly 50%. A structural change is visible in agriculture; as the number of farms declines, the average land area per farm grows in size. However, despite the increased specific subsidy to smaller farms, their numbers continue to decline. In fiscal year 2016, the total number of farms fell to 275,392, a significant reduction from 471,960 farms in fiscal year 1999. During this time, the average farmland area increased from 36.3 ha to 60.5 ha [43,165,262].

It is clear that despite the increased subsidy amount for smaller farms, agricultural structural transformation continues. It is also safe to assume that this

concentration process, with identical subsidies for all farms of the same size, is expected to move even quicker.

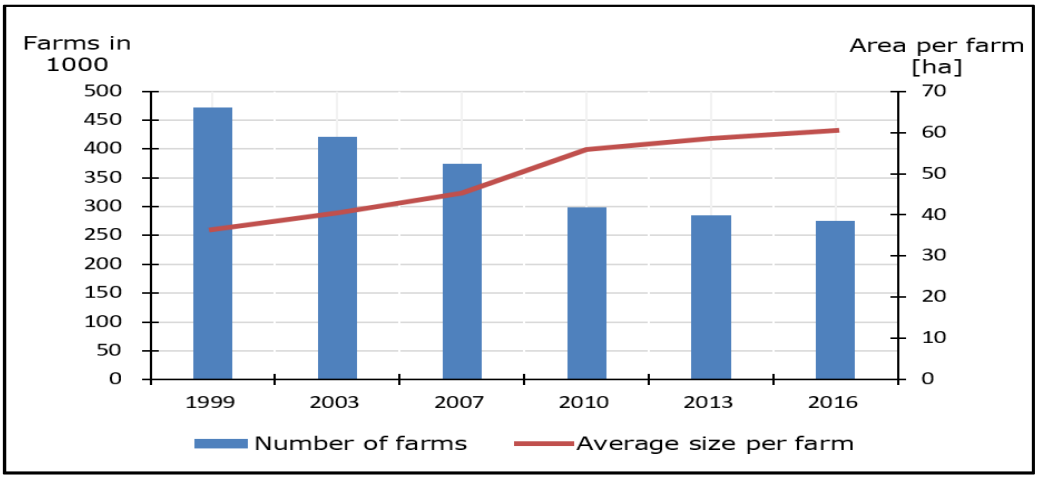


Figure 3.5. Development of the farm structure of farms from 5 ha in Germany [43,164]

3.2.3 Subsidizing the ecological oriented branch in the agricultural sector

Organic farming largely follows the organizing principle of a self-contained operating organism: land use and livestock will be individually adapted to the location and connected organizationally within the plant. Cyclic processes and recycling management determine the environmentally friendly production of food of high quality and secure the natural foundations of production in the long term [31].

Agricultural enterprises that operate according to the EU eco regulation, received higher subsidies for organic farming than conventional farms. The average subsidy amounts per ha land area in organic farming exceeded those of conventional farming by about 35% in the considered period at the average.

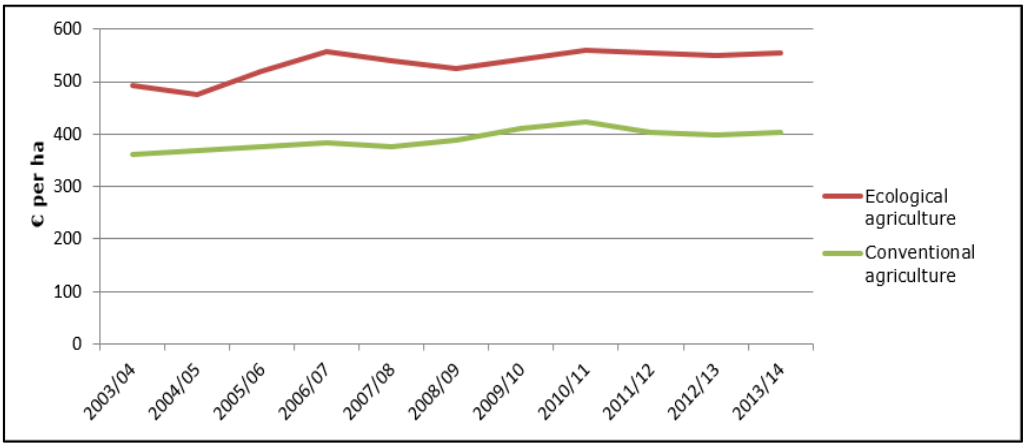


Figure 3.6. Subsidy per ha of land area for organic and conventional farms in Germany [38]

Higher subsidization of organic farming is to promote virtues like those of being particularly environmentally friendly, ground preserving and animal-friendly farms and conventional farms to move to a changeover [62]. As it can be seen in the following graph, the financial aid leads to this parameter. So, the proportion of the area of organic agriculture of the entire land doubled by 2013 to 6.4% in comparison with the period of 2000, when it only amounted to 3.2%. During this period the total utilised agricultural area decreased by about 2%. The trend to a higher percentage of green land was relatively constant, only since 2014 a slight decline has been seen (to 6.3%). The federal organic food economy blames that decline on three factors: high lease rates by the strong demand for corn in bio-gas plants, uncertainty about new EU rules for the organic farmers and insufficient subsidies for organic farming in the affected provinces [9].

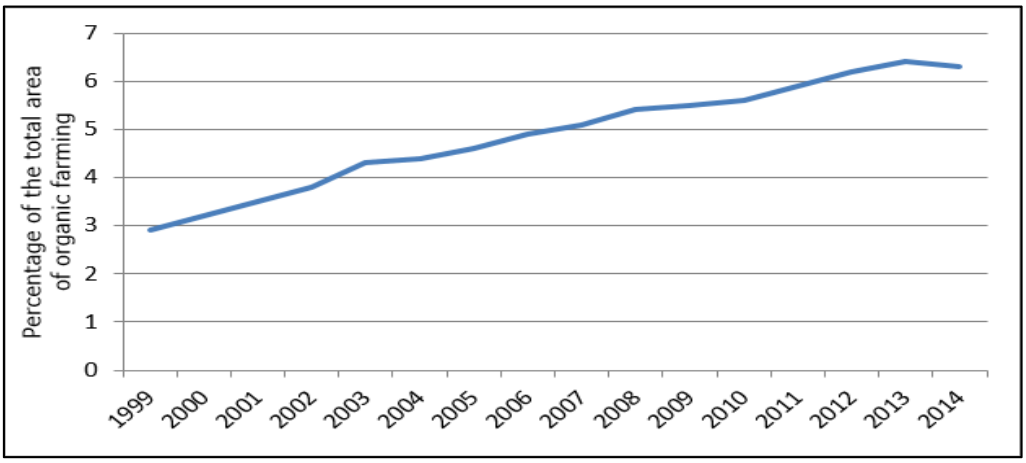


Figure 3.7. Percentage of organic agriculture on the entire land of German agriculture [38]

There is a correlation between higher subsidies for organic farming and their distribution. The goal of higher subsidies designated by the European Union's is achieved. With a sustained higher subsidy sum for organic farming, a further spread can be assumed of this sector. The question whether rather larger or smaller farms switch to organic production is still excluded in this documentation and remains open for further investigation.

3.2.4 Influences on the markets for procurement and selling

For the impact of subsidies in agriculture, the respective procurement and sales market are considered in the following part. For the procurement market, the 'index of the purchasing prices and agricultural resources' is selected as the characteristic value. This comprises prices for goods such as seeds and seedlings, fertilizer, animal feed and services, veterinary services, and maintenance of machines and materials. The 'producer price index of agricultural products' is used for the sales market. It depicts the evolution of prices of agricultural products from plant or animal production, such as corn, canola, milk and cattle.

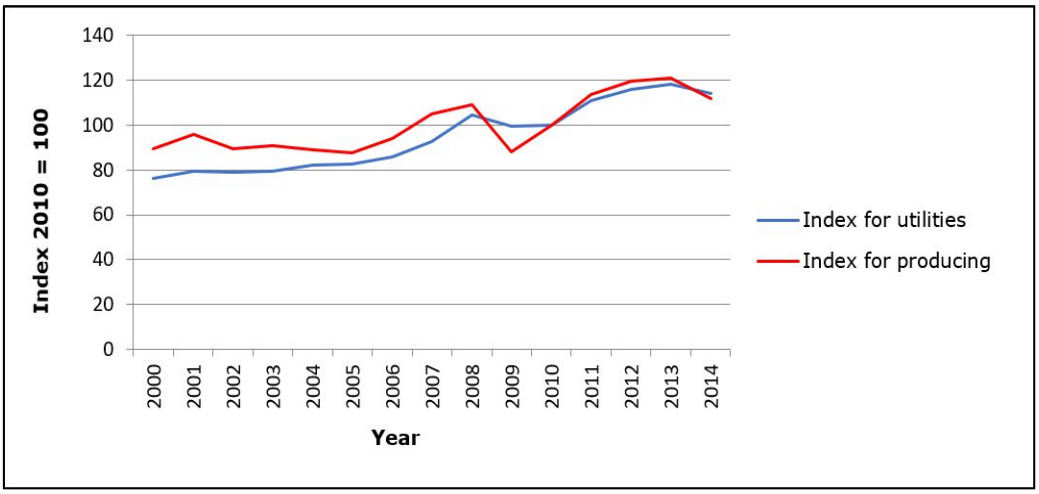


Figure 3.8. Resources and producer price index 2000-2014 in Germany [262]

The price decline shown by the indices in the year 2009, especially the decline in the index of producer prices by 20%, can be explained by the financial crisis. The decline in the year 2014 was a consequence of the Russian ban on imports of agricultural goods and a drop, in demand from China [267]. The calculation of the correlation coefficient between the subsidisation (average sum per ha of land area (see figure 3.3)) and the two indices (figure 3.8) yields a value of 0.69 for the resources and of 0.57 for producer prices. In general, a value of 0.6 guarantees a statistically discernible correlation [246].

A link is therefore given between the amount, of subsidies and (above all) producer prices. After calculating the correlation, the causality is focused on. In this case, it is important to say that the prices for producers and resources are to a large extent dependent on supply and demand fluctuations on the global agricultural market. Subsidies in the agricultural sector are to compensate for these variations for the producers according to their basic understanding. That the subsidies lead to a significant increase of the financial income of farms (see figure 3.4) and thus rather higher resources prices and lower producer prices is out of question. A change in the amount of the subsidy, however, has an immediate and direct impact on the producer and resources prices, which is not analysed in this investigation and remains open for further investigation.

3.2.5 Changes in the kind of investments

The analysis of the relationship between the subsidy sum and the investment behaviour of agricultural holdings is based on the trend of gross fixed capital formation.

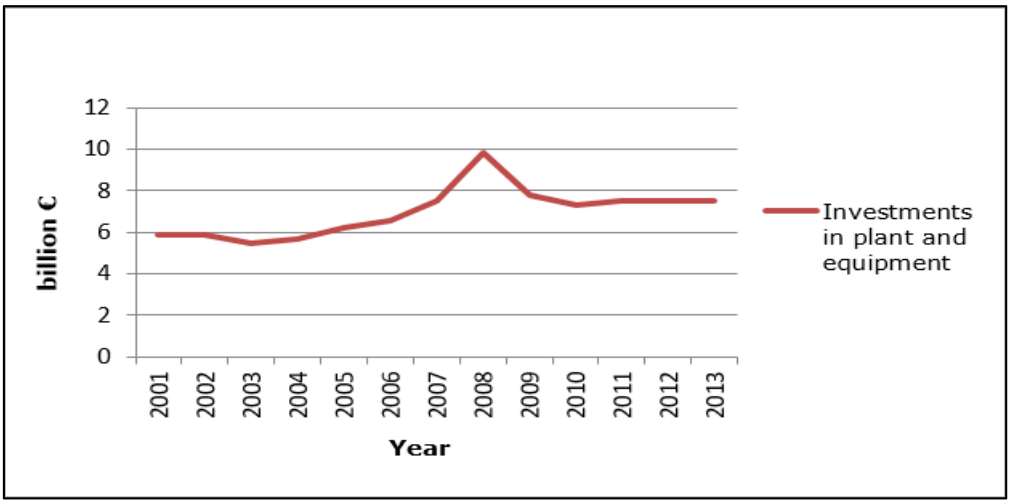


Figure 3.9. Gross fixed investment in the German agriculture at current prices [38]

After a downward trend at the beginning of the period, the sum of the gross fixed investment grew rapidly to nearly EUR 10 billion in 2008. Due to the financial crisis, the level of investment decreased to just under EUR 7.3 billion and remains constant with about EUR 7.5 billion at the end. The calculation of the correlation coefficients between the subsidy amount (average sum per ha of land area (see figure 3.3)) and the gross fixed investment yields a value of 0.64. A correlation is thus statistically apparent. Here too, the question of causality arises. As can be found even in the appearance of profits (figure 3.4) farms were located in an uptrend in the business year 2007/08. This is also comprehendible in relation to the increased investment up to the year 2008. The affiliated strong downward trend in the economic crisis (see also figure 3.8) was apparently absorbed by an increase of subsidies in the fiscal years 2009/10 and 2010/11, so that this downward trend already changed into a slight growth from 2011 and now will remain constant. A context is thus conclusive. Why these investments no longer increased cannot be answered yet and remains open for further investigation.

3.2.6 Conclusion

As outlined before, the subsidy measures have a great significance especially for agri-SMEs. This investigation of the consequences of the EU subsidy policy for Germany shows that the goals defined for the CAP instruments are not achieved for German agriculture: the number of SME farms in Germany decreases constantly, while the average size of the farms is steadily increasing. By this kind of subsidies, the profit of enterprises especially for large agricultural enterprises increases significantly.

The structural change in agriculture, caused by the concentration process, can apparently be slowed down, but not be avoided by the current subsidizing system of the CAP. Those with substantial arable land receive a high amount of subsidies from the first pillar in the form of direct payments. For farms within this grouping, the EU requires no special requirements other than compliance with existing regulations. Because much of the emphasis is placed on the benefits of direct payments, ensuring farmers' income, as an aspect, receives more attention than the other remaining CAP aims. Therefore, a change of the current subsidy policy is required to prevent

significant consequences for the agricultural market in terms of employment, product quality and product diversity, rural development concerns, sustainability issues, as well as health-, climate-, animal-, and environmental protection; simply limiting direct payments and lowering the subsidy amounts is futile.

The development of organic farming shows how significant subsidizing is. The importance of organic farming is increasing in Germany, but without an appropriate subsidization, organic farming is currently not competitive. As a result, increasing the means of pillar 2, in connection to direct payments in favour of supporting specific environmental and animal protection measures, as well as improving the competitiveness of agri-SMEs, is critical. Long-term subsidies should be granted on the basis of the "public money for public values" concept. Additional regulations, market rules, and labelling should be implemented to promote ecological agriculture as well as regional value chains. Furthermore, fixed funds should be used for public interest objectives such as biodiversity, climate- and environmental protection, as well as to encourage sustainable production practices in accordance with organic farming principles. A direct influence of the amount of subsidies on producer and resources prices cannot be shown. A further aspect is, that supporting farmers by such subsidies has an effect on their investment behaviour. A complete elimination of subsidies would end the development of organic farming and further advance the concentration process. Times of crisis would also be coped with significantly worse. In addition, currently constant investment levels, due to the significantly lower financial surplus would be reduced, too. The existing European Union agricultural subsidy policy is insufficient to achieve a sustainable and demand-oriented agriculture. Global reductions and the overall cap of direct payments from pillar 1 are currently being examined as potential adjustments to be made. As a result, the current trend of agri-SMEs exiting the market will continue.

By expanding current market segments (for example, direct sales through farm sales or expanding organic farming activities), agri-SMEs farms will continue to try to establish themselves firmly in the market. Even so, it remains to be seen how many of such farms can overcome the above-mentioned tendency and remain in the market indefinitely.

After the analysis has been described the impact of the CAP on agriculture in general, the question arises how the farms themselves assess and rate this impact on their own business activities. For answering a corresponding questionnaire was developed and used for corresponding data gathering in selected German and Romanian regions.

3.2.7 Questions for further investigations

From the discussions in the preceding sections one can derive some aspects that require a more in-depth investigation. The utilisation of the five-stage Likert scale will rank and classify the statements from disagree to agree, where 1 means no consent and 5 equates full approval.

Questions about the farm

It is to be asked how far the farms estimate the value of subsidies for their farms. It should also be asked whether subsidies provide a stimulus for organic farming and other investments.

- The subsidies are very important for my company.
- At the end of subsidy measures, I would not continue the operation-lead.
- Without the subsidy measures I would generate a loss.
- I consider myself due to higher subsidies on eco-standards.
- I would change my operation on the eco-land construction, if the subsidies were increased.
- Higher subsidies lead to higher investments in my company.
- Increases in the subsidies do not promote my investment behaviour.

Questions about assessment of the overall situation

Here should be shown how the farmers see the impact of subsidies on the overall market. In this context, the evaluation is carried out again by the use the five-stage Likert scale.

- I consider subsidizing agriculture as important.
- Without the subsidy there would be no agriculture in Germany.
- I think the general type of the distribution (not considering the single farm payment) is useful.
- Spending on the subsidies should be limited.

These questions provide the basis for a questionnaire and online survey that is presented in detail in chapter 6.

3.3 Alternatives for managing subsidies using the agricultural market in the USA as an example

The following section, in comparison with the European system, describes the historical development of the agricultural market and subsidy policy in the USA. In addition to a general comparison between the EU and US markets, the history and importance of American agriculture as well as the influence of the current structural change against the background of relevant key figures will be described. For a better understanding of the American subsidy system, some statistical time series will be outlined, and the development of the actual system will be described.

Finally, the actual competitive situation for the American agricultural sector and the relevance of BIO-Products will be analysed.

3.3.1 Setting the US and EU agricultures in relation

The EU is a consortium of 27 Member States and consists of an area of approximately 4,236,351 square km [278]. The largest country is France with 643,801 square km and the smallest is Malta with 316 square km [245,262]. In 2019, the EU had a population of more than 513 million people [139,243]], and the EU's GDP was approximately EUR 13,900 billion[166,251]. The agricultural sector accounted for 1.64% of the total [166,250].

Table 3.2 depicts the evolution of the European farm structure based on economic sales classes between 2013 and 2016. According to the table, agri-SMEs dominate the European agricultural structure. The concentration process has a significant impact on farms, in general. In contrast, the number of profitable, larger farms increased throughout the same time period [99,138,165,166].

Table 3.2. Development of number of farms by Economic sales class in the European Union 2013 - 2016 [99,138]

Economic sales classes of EU28 farms	Number of farms			
	2013		2016	
	amount	percent	amount	percent
€ 0 - € 7,999	7,493,160	69.1	7,073,080	67.6
€ 8,000 - € 99,999	2,667,390	24.6	2,661,400	25.4
€ 100,000 - € 249,999	417,6300	3.9	429,24	4.1
€ 250,000 - € 499,999	166,8900	1.5	187,45	1.8
€ 500,000 or over	95,9500	0.9	116,64	1.1
Total	10,841,020	100.0	10,467,810	100.0

The United States, on the other hand, is the world's third largest country, with 50 states. It is twice the size of the EU with an area of 9,826,675 square kilometres [244,278]. In 2019, the population is reported at 329 million people [253,302] and the US GDP was almost USD 21,433 billion [258,302]; agriculture accounted for 0.9% of the GDP [166,256,258,302].

3.3.2 The history of the US agricultural market

Agriculture has traditionally held a dominant position in the American economy and society. Being farmers and farming used to be a sign of independence, hard work, and initiative. Farmers in the Midwest were able to produce great yields due to the excellent soil. As a result, the first two decades of the twentieth century were known by many as the "golden age of American agriculture" [166,287,291].

Following the World Wars, overproduction, considerable technological advances, as well as the use of pesticides and other chemical fertilizers altered the agricultural scene there, allowing for better yields per ha. During this time, the farmers' quest for increased productivity and efficiency intensified—agriculture was, indeed, under great economic pressure in terms of productivity, efficacy, and efficiency. Nowadays, large corporations dominate American agriculture, which has resulted in greater productivity but at a cost; the importance of small farmers have diminished. In the last 50 years alone, production has more than doubled, but the number of farms has decreased by more than two-thirds [166,291,296].

3.3.3 The importance of agriculture in the USA

About 1.34% of the total workforce was employed in the American agriculture in 2019, which accounts for approximately 0,94% of the Gross Domestic Product. The industry enfolds, for example, 19.81% of the workforce, who earn 17.95% of the GDP [256,259].

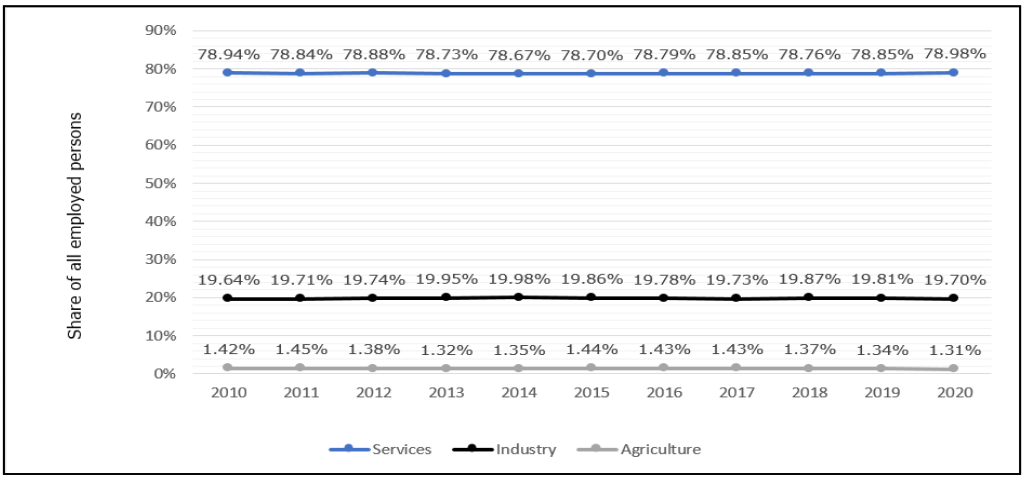


Figure 3.10. USA: Distribution of workers on economic sectors [259]

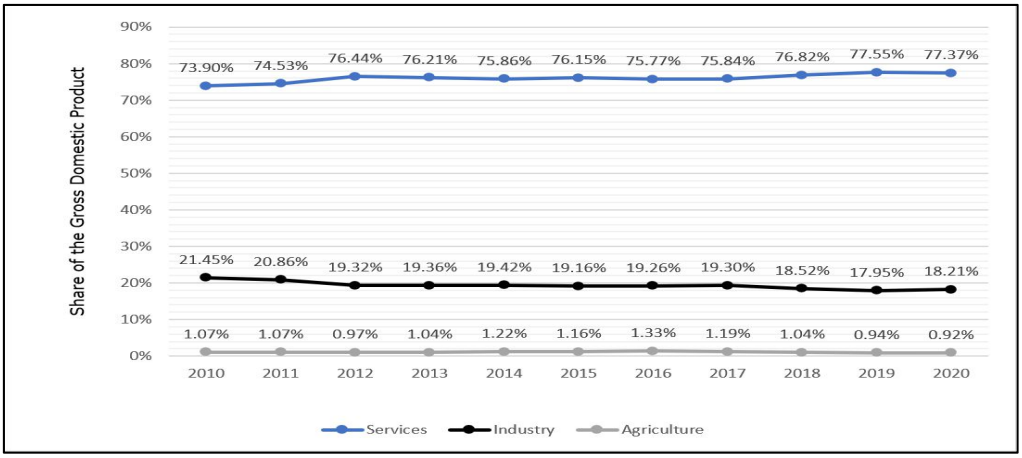


Figure 3.11. USA: Shares of the economic sector in Gross Domestic Product [256]

Since 1970, as the world's largest exporter of agricultural products, the US has been exporting 40%-70% of its wheat output. As a result, the agriculture industry is a significant contributor to the American economy. In terms of global production, the US accounts for 7.7% of wheat, 41% of soybeans, 38% of corn, 20% of cotton, and 16% of pork [149,166].

Because of American liberalism, supply and demand regulates the American agricultural market; simply put, production can respond swiftly to market demands. In conjunction with a subsidy policy that is significantly weaker than that of the EU, new production processes and forms are being developed, allowing for rapid structural changes in the entire industry. Since the 1950s, developments to improve efficiency have progressed steadily. This has resulted in a trend of concentration and displacement processes, analogous to that seen in Europe. The American agricultural scene is depicted through the image of few big-scale farms with few workers producing enormous quantities of low-priced agricultural products using artificial

fertilizers and technology. Finally, as a result of this process and export variations, agricultural land area decreased considerably from 450 million ha in 1950 to 380 million ha in 2003. In tandem with the shrinking land area, the number of farms has decreased throughout time. Because farmers could start their own enterprises, the number of farms has steadily increased to 6.8 million in 1935. However, this number started to decline. In 1980, there were around 5.6 million farms [149,166]. By 2015, this figure has steadily declined to 2.065 million [166,285].

Over the last decade, the progressive decline of agri-SMEs has still continued. This process has led to a striking and lasting increase in the average farm size [166,285].

In the US agriculture the farms are classified as follows [149,166]:

- Small farms: elderly farms, hobby farms, and part-time farms (around 50 ha and lower incomes)
- Family farms: around 340 ha in size. Due to a lack of funds for modernization, the number of family farms is decreasing
- Mega-/Super-/Corporate farms: large agricultural enterprises (1.164 ha), and with high borrowed capital and high income

Table 3.3 illustrates the distribution of US farms and farm sizes by sales class. These classifications are similar to those used in table 3.1 for EU sales classes.

Table 3.3. Development of number of farms, land in farms and average farm size by economic sales class - United States 2017 – 2018 [166,288,290]

Economic sales classes of US farms	Number of farms				Land in farms			
	2017		2018		2017		2018	
	amount	percent	amount	percent	average [ha]	percent	average [ha]	percent
$ 1,000 -$ 9,999	1,043,462	51.1	1,034,892	51.0	33	9.4	33	9.4
$ 10,000 -$ 99,999	620,768	30.4	618,906	30.5	122	20.7	122	20.8
$100,000 -$249,999	136,814	6.7	135,956	6.7	393	14.7	399	14.8
$250,000 -$499,999	89,848	4.4	89,285	4.4	586	14.4	587	14.3
$500,000 -$999,999	71,470	3.5	73,051	3.6	781	15.4	779	15.4
$1,000,000 or more	79,638	3.9	79,139	3.9	1,160	25.3	1,172	25.3
Total 1	2,042,000	100.0	2,029,200	100.1	178	99.9	179	100.0

May not add to 100% due to rounding.

Table 3.3 reveals that, in 2017 and 2018, roughly 12% of farms in the US are large farms; most of which are high profit generators. In terms of numbers, over 241 thousand of the 2.04 million agricultural firms in the US owned more than 50% of the total available agricultural area in 2017 [166,288]. Furthermore, this 12% of agricultural enterprises had sales in 2018 of USD 250,000 or more and approximately 7,5% even USD 500,000 more [290].

The trend towards development in the direction of large-scale farming can also be seen clearly in figure 3.12.

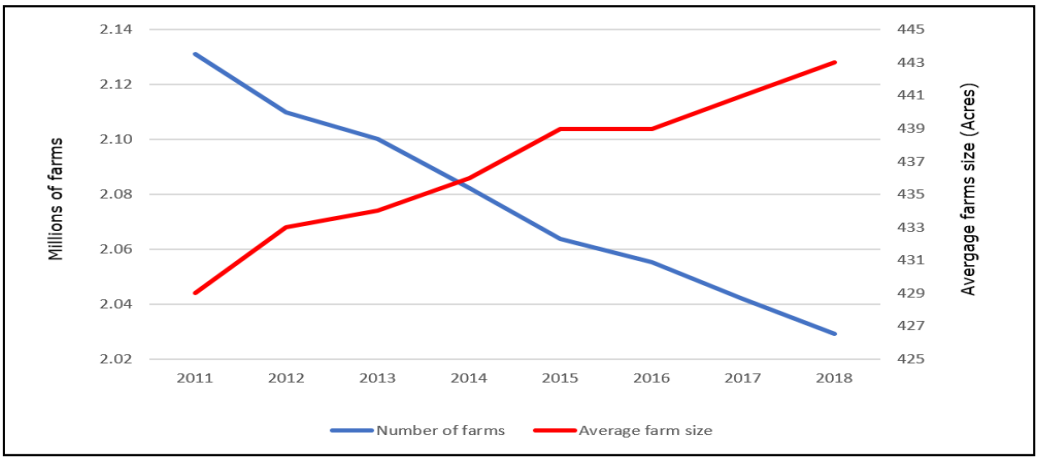


Figure 3.12. Number of Farms and Average Farm Size United States from 2011 to 2018 [290]

The number of farms has steadily decreased up to 2018. On the other hand, the average farm size has increased continuously [290].

Many small farms can only generate a small income and few large farms generate very large incomes. In 2002, 7.5% of farms managed 76.9% of total agricultural revenues under this dual operating structure. If the mega-farms are viewed separately, they accounted for about 48% of the agricultural revenues [149].

The growth in agricultural enterprise efficiency is the result of progressive mechanization (big and powerful equipment, fully automated stables) and economic cost optimization (e.g., outsourcing of sowing and harvesting to migrant workers). Furthermore, larger yields are attained through specialization techniques such as the application of gene technology (e.g., to produce more resistant plants with shorter cultivation durations) and the ongoing optimization of large-area, artificial irrigation systems. Productivity has increased dramatically as a result of these policies, both per ha and per worker. Corn yields per ha, for example, have tripled since 1960. In addition, food production has increased, so that from 25 persons to over 130 persons per farmer can be fed today. However, this approach in farming, which is mainly aimed toward boosting efficiency, has resulted in massive environmental issues, most notably ongoing soil erosion. As a result of that mismanagement, many areas in the Midwest have become barren and are no longer shielded by adaptive vegetation. Heavy dust storms form and devastate arable land, leaving large areas desolate [149,166].

3.3.4 The infrastructure of the organizations

The US has a centralised Ministry of Agriculture — the United States Department of Agriculture (USDA) — similar to the administrative architecture for the European countries. The USDA was founded in 1862 with its principal mandate to ensure sustainable food provisions to the American people. Furthermore, the USDA has oversight in agrarian market regulation, forest and landscape conservation, agrarian science and research, and rural America's economic development. It is comprised of 29 agencies and offices with almost 100,000 personnel serving the American people in over 4,500 locations around the country and abroad. These agencies' important departments include, for example [42,166,291]:

Agricultural Marketing Service (AMS):

AMS promotes a competitive and efficient marketplace and ensures fair trade practices through the facilitation of the strategic marketing of agricultural goods in both domestic and international markets. AMS also continuously works to create new marketing offerings in order to boost client satisfaction.

Farm Service Agency (FSA):

Through a national network of offices, implements agricultural policy, administers loan and credit programmes, and oversees conservation, commodities, disaster, and farm marketing programmes.

Food and Nutrition Service (FNS):

Promotes food security and reduces hunger in collaboration with cooperating organizations through food provisions, healthy diets, as well as nutrition education to children and low-income individuals in line with American agricultural interests and inspires public trust.

Foreign Agricultural Service (FAS):

Works to improve American product reach for overseas markets. The FAS also oversees programmes aimed at developing new markets and strengthening US' agricultural competitiveness within the global economy.

Risk Management Agency (RMA):

RMA assists farmers by ensuring that they have the necessary financial instruments needed to manage agricultural risks. RMA also offers protection coverage to farmers through the Federal Crop Insurance Corporation, which promotes national welfare by improving agricultural economic stability.

Rural Development (RD):

RD advances rural development and growth by providing federal aid, thus improving quality of life. RD also identifies underserved communities and provides them with financial and technical assistance.

3.3.5 The American system of granting subsidies

3.3.5.1 Subsidization and changes in the subsidy policy

In the past, the US subsidy system did not play a significant role. At the turn of the twentieth century, agricultural products were in high demand, and most farmers in the United States were prosperous. Nonetheless, different subsidy programmes have existed since the USDA's inception. The Morrill Act of 1862 was one of the first agricultural subsidy programmes, establishing land-grant universities. Other funding programmes were the Hatch Act of 1887, which sponsored agricultural research, and the Smith-Lever Act of 1914, which funded agricultural education [71,166].

The Federal Farm Loan Act of 1916 established cooperative 'land banks' to give loans to farmers. However, government agricultural subsidies remained modest in the 1920s. As a result, the USDA concentrated on providing statistics, sponsoring research, and responding to issues like insect infestations. Then calls came for direct farmer subsidies, which resulted in the creation of the Agricultural Marketing Act, established in 1929 by the Federal Farm Board, which attempted to raise commodity prices by hoarding production [26,166].

With the outbreak of the Second World War, prices plummeted dramatically. Subsidies were used as a policy response, which ensured that prices remained

reasonably steady. This came at a considerable cost and was only partially successful. Nonetheless, this approach was maintained after World War II. Subsidies were finally phased out in 1970 in favour of agricultural industrialisation. Then Agriculture Minister Henry A. Wallace's tagline "get big or get out" spurred a process which began in the 1970s and this process is still ongoing today. Megafarms, which could function far more effectively, took the place of family farms. Traditional farming has been transformed into an entrepreneurial activity, one that is still representative of agriculture in the US today [166,287,291]. Although Congress examined farm reforms on occasion, this usually happens when commodity prices were high; however, when prices were down, Congress returned to subsidy expansions. The Reagan administration recommended large cutbacks to farm subsidies in the 1980s, but farm finances were in horrible shape at the time, prompting Congress to enhance farm support rather than to scale it down [166,213].

In the 1990s, Congress passed a pro-market legislation reform, including the 1996 "Freedom to Farm" Act, enabling farmers more freedom in their day-to-day labour management (including farm work), depending on market supply and demand. However, by the conclusion of the 1990s, Congress amended this legislation once more by adopting additional agricultural subsidy measures [53,166,213]. As a result, the subsidy spending, which was anticipated to rise from USD 47 billion under the 1996 law over a seven-year period, eventually reached USD 121 billion [53,71,166,213].

Since 2000, Congress and the government have approved further assistance programmes. Examples include the 'countercyclical' programme in 2002, farm legislation in 2008, and the general structural adjustment of earlier support programmes in 2014 [71,166]. This did not, however, halt the concentration process towards mega-farms in the 1970s [71,166,291]. Agricultural subsidies are classified into eight types:

Insurance

Under USDA's Risk Management Agency, Crop insurance has grown to be the largest farm programme, with yearly expenditures of almost USD 8 billion [298]. Subsidised insurance protects against a variety of business-related liabilities, which include bad weather, low output, and low revenue. Coverage extends to more than 100 crops, of which the most important being corn, cotton, soybeans, and wheat. Crop insurance also subsidises both insurance premiums and the administrative costs of the 19 private insurance companies that provide farm insurance policies. The private insurance companies earn a handsome profit: through the collection of subsidies and the hefty premiums they charge. According to the Government Accountability Office, farmers benefit as well because the USDA pays around 60% of the insurance premium costs [167]. So, most farmers make money on insurance over time, receiving more in claims than they pay in premiums [11]. Since 2014 the American Congress has restructured the subsidy system. Direct payments have been cancelled and insurance programmes have been extended. Two new hedges have been added. Farmers have the choice between an agricultural risk coverage and a price-based coverage. However, insurance subsidies are less transparent and have no income limits [71].

Agricultural Risk Coverage (ARC)

This is a sales-based hedge that protects against minor sales losses that are not covered by standard crop-loss insurance. This scheme provides farmers with subsidies if their revenue per acre, or the revenue per acre of their county, falls below a benchmark or specified amount. In general, the higher the subsidies paid, the lower

the prices and revenues are. Wheat and corn are among the crops covered, as are chickpeas and mustard. ARC subsidies vary; but in 2016, they were around USD 7 billion [286].

Price Loss Coverage (PLC)

Price caps are set for significant cereal types in the case of price-based hedging. Farmers receive the difference if the market price drops below this threshold. The greater the drop in the price of a crop, below its reference price, the greater the pay-out to farmers. PLC subsidies also extend to over 20 crops. PLC subsidies vary; but in 2016, they were around USD 2 billion [286].

Conservation Programmes

The Conservation Reserve Programme is the largest among a variety of forest protection initiatives. Farmers are paid around USD 1.7 billion per year to not farm millions of acres. The overall annual scope of all forest protection programmes exceeds USD 5 billion annually [71].

Marketing Loans

This is a price guarantee programme that started during the New Deal time period. The original plan was to provide farmers with a loan during harvest season so that they could store their products and sell them at a higher price later on. However, the scheme has developed into merely another subsidy programme that provides farmers with larger pay-outs when market prices are low. In 2016, these subsidies cost almost USD 400 million [71].

Disaster Aid

The government runs several disaster relief programmes for various types of farmers, ranging from those who grow wheat, to those who practice animal husbandry, to those who own orchards. In addition to the already established disaster programmes, Congress occasionally provides supplemental relief in the aftermath of disasters. Annual disaster and supplemental assistance costs between USD 1 and USD 2 billion [71].

Marketing and Export Promotion

Each year, the Agriculture Marketing Service spends over USD 1.2 billion on farm and food promotion operations. The Foreign Agricultural Service spends around USD 1.4 billion annually on a variety of operations, including the promotion of US farm and food products internationally through 93 of its foreign offices [71].

Research and other Support

The majority of American firms support their own R&D, in addition to those already employed (thousands of scientists and other professionals) by the government to assist the agricultural industry. The USDA spends over USD 3 billion annually on agriculture and food research at over 100 different locations. Other support services provided by the department include statistical data and economic studies [71].

The actual pay-out from the insurance programmes depends on the climatic conditions in the main cultivation regions. Farmers are secured with this hedging system against the general conditions during the harvest. Due to the fact that weather extremes have repeatedly increased in the past few years, this expanded safety net meets many farms [71].

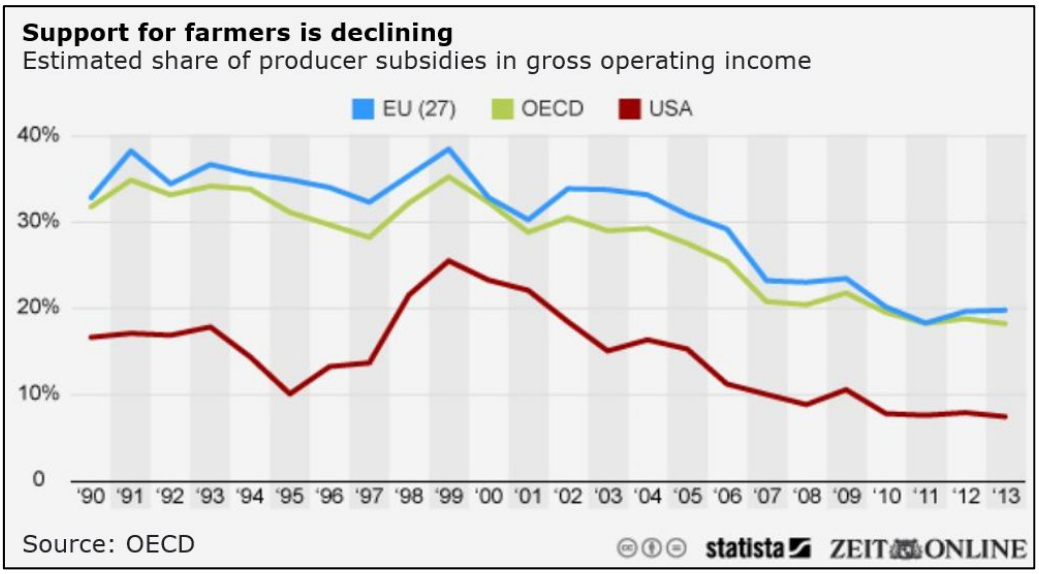


Figure 3.13. Support for farmers is declining [67]

A look at financial aid for agriculture in time-lapse, reveals that both in America, the EU and all OECD countries, payments have declined and have almost halved over the time. According to the current OECD agricultural report, the share of government subsidies for the operating income last year was 18% on average. Two decades ago, it was still 30%. However, it is striking how strongly the EU continues to support its farmers financially. In the 27 EU Member States (at that time), farmers received more financial resources than in the 34 OECD countries on average - and above all in comparison to the USA. In total, farmers in the OECD countries received USD 258 billion in 2013. According to the OECD, however, half of these funds have a distorting effect on production and trade. European products for example are sometimes only sold to the world market by financial support, and consequently they are pushing out goods produced in Africa, which cannot keep up because of too high costs in this competition [67].

3.3.5.2 International market and competition

The sector of highly industrialized US agriculture is one of the largest foreign exchange providers across America. For this reason, a long-term planning security of the agriculture is of enormous political interest. As a result of the global population increase, the demand for agricultural products rises, particularly in Asia, and the usable cultivation area decreases. The before mentioned population increase influences the agricultural economy of the USA, which particularly benefits due to its highly technological and efficient production methods [163].
The main US trading partners are Canada and Mexico. The free trade agreement NAFTA supports trade between the three countries. More than one-third (36.3%) of imports from America are delivered from these two countries [40].

The USA and Canada are among the world's largest producers of agricultural products and continue to drive the technological development of agriculture in many areas. Their political and economic weight, in particular their influence on the development of international agricultural markets and their role as important

competitors in international agricultural trade, make them important partners in all areas of resource, energy and trade policy. In addition, the USA is one of the three most important foreign markets for German agricultural products [40].

The EU-US economic relationship accounts for a significant portion of global trade in products and services. They are each other's principal commercial trading partners in products and services, and they enjoy the world's greatest bilateral trade relationship. Both the US and the EU have established themselves as top trading and investment partners for many other countries in the global economy. They also provide each other with their most important sources of foreign direct investment [136].

The EU is the largest partner in international trade in agricultural products. The majority of unprocessed agricultural products are imported. Exports are mainly processed foods. Concerning the exports outside the EU countries in 2016, the USA, with a share of 16%, was the most important recipient of agricultural products. On the other hand, the import share of agricultural products from the USA is around 9% [135,136].

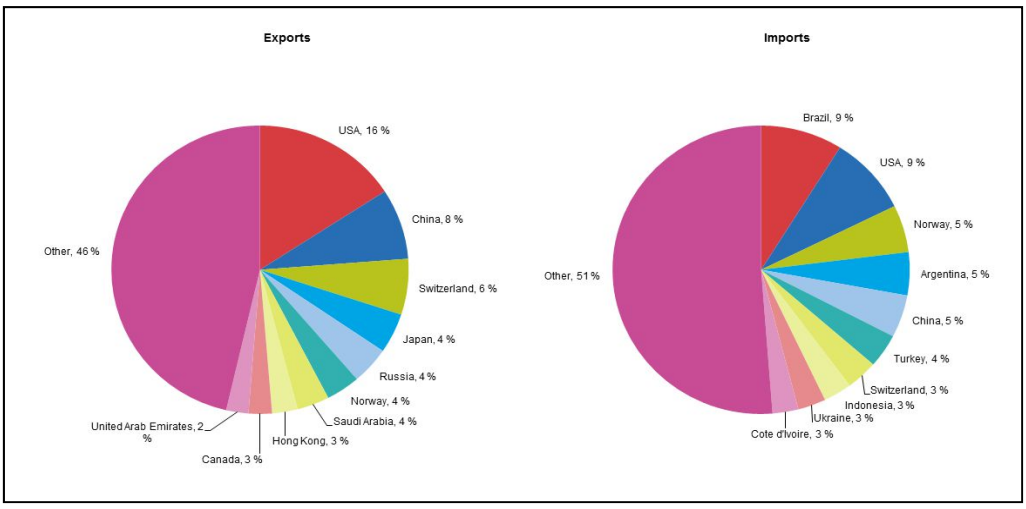


Figure 3.14. Extra-EU exports and imports of agricultural products [135]

Global competition will continue to be of great importance for the European agriculture in the future. The reform of European agricultural policy, better market access for developing countries and the negotiations on a free trade agreement will have a significant impact on existing framework conditions [181].

3.3.5.3 Impact of industrial agriculture

Agricultural enterprises' productivity has steadily increased as a result of the US subsidy programme [289]. Consequently, they are able to adapt to global market issues and challenges more flexibly; for instance, farmers have been able to raise their sales numbers. Agriculture technological advancements have also had a positive economic impact on agricultural transformations. Farms have maintained constant production increase while utilising fewer resources as a result of the advancements in breeding and the management of animal- and plant-genetics, chemicals, and equipment. Despite a reduction in agricultural acreage and labour, overall agricultural production has more than doubled between 1948 and 2015. Annual agricultural

production climbed by 1.48% within this era, compared to a 0.1% growth in total agricultural input consumption (including land, labour, machinery, and intermediate goods). The rise in agricultural productivity, as measured by Total Factor Productivity (TFP) - the difference between Total Input Growth and Total Output Growth - is the primary driver of output growth. TFP increased at an annual average rate of 1.38% between 1948 and 2015 [166,289].

Archer Daniels Midland, Bunge, Cargill, Louis Dreyfus Company, and Cofco dominate agricultural commodity import and export. Three of these firms have their headquarters in the US [166,175].

These firms' great market clout allows them to influence global agricultural markets and leverage their enormous bargaining power over producers in price negotiations. They are capable of earning high rates of return, based on their market and bargaining strength, as well as their financial activities. However, they operate their business in a way that disregards the needs of sustainable farming [166,175].

Aside from the frequency and speed at which agri-SMEs exit the market, there are also considerable environmental issues. While the environmental movement has grown in importance in the EU since the 1970s, the US has pursued a different approach. In the EU, political influence has succeeded in enforcing massive environmental protection laws and regulations; but in the US, cost-effective production and efficiency remain a key agricultural policy objective. As a result of this approach, many agricultural areas in the US have become unsuitable due to intensive and high-tech agricultural practices. Unrestricted use of pesticides and chemical fertilizers have caused an increasing number of places to experience soil erosion—this initially resulted in yield losses and eventually, barren soil. Farmers attitude only began to shift when they saw a significant reduction in profits as a direct outcome of the high cost of field restoration. Nevertheless, environmental protection issues are still not as broadly accepted in the US as it is in the European Union. Although many American farmers are actively involved in organic farming today, environmental protection issues still remain a secondary goal since the American agriculture market puts profits ahead of other goals [166,289,291].

In the US, the ever-expanding use of Genetically Modified Organisms (GMO) in agriculture is largely driven by the focus on profitability; more than 90% of available land farm GMOs [166,292]. This intensive cultivation of GMO causes massive ecological, social, and economic problems such as:

- a contamination by genetic engineering constructs in food,
- the development of resistance in weeds, the increasing lack of the effects of pesticides on plants, the loss of biodiversity, an outcrossing of gene constructs,
- a harm to beneficial insects,
- an alteration of soil organisms, and
- the enhancement of the market concentration and an increase in food patents.

Throughout history, a wide range of crops, each with its own distinct traits, have developed from natural cultivation. This diversity is now threatened by the high concentrations of a few genetically engineered types and the resulting decrease of agricultural crops' natural gene pool. Local crop types that are best adapted to their environment become extinct. For financial reasons, GMO cultivation focuses on species that promise substantial revenues, such as corn, cotton, soy, and oilseed rape. Pollination, transposed seeds, and contamination by animals or infected equipment contribute to the uncontrolled spread and the proliferation of genetically engineered plants. This results in the growth of the so-called super weeds which are highly

resistant to pesticides. Consequently, GMO-free seeds can no longer be used in huge regions. Furthermore, genetically modified plants cannot be recovered from nature. Compounding the issue, genetically altered plants stimulate the creation of resistant pests, which in turn, have toxic and harmful effects on insects and soil organisms and favour the formation of secondary pests. Herbicide-tolerant plants, on the other hand, facilitate large-scale pesticide application. This wipes out the natural diversity of plants and insects, which leads to an increase in weed remnants and simultaneously, increase pesticide use. Scientific study in this area has mostly ignored the impact on human and animal health. As a result, the hazards to humans are not yet apparent. Inducing patentable transgenic plants has led to farming traditions, such as the sowing of crops, having lost its value. This development privatizes a portion of everyday life in favour of the respective large farms. The use of genetically modified plants has not only environmental consequences, but also noticeable economic consequences. The production of both conventionally and organically grown food becomes more expensive as a result of the substantial additional costs in contamination prevention. In the long run, it is difficult to avoid the displacement of various types of farming by agri-genetic engineering [166,284].

3.3.5.4 Relevance of an ecological agriculture

Organic farming plays a secondary role in American agriculture due to the exclusion of genetic engineering and organic farming, despite a constant increase in the demand for organic products. As a result, this additional demand must be met by imports [166,225].

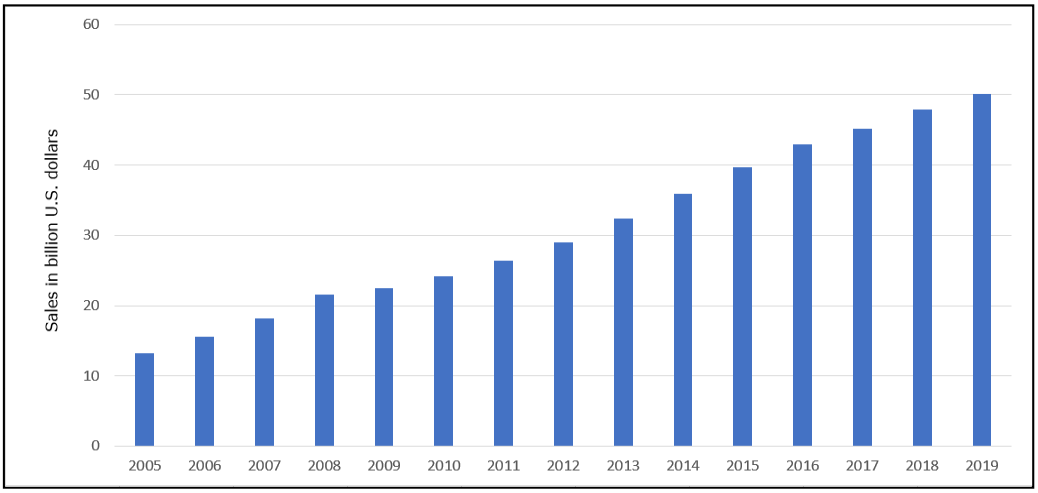


Figure 3.15. Organic food sales in the United States from 2005 to 2019 [254]

Between 2004 and 2014, the share of organic products in the total food market rose from about 2 to about 5% [162]. As consequence of the associated increase in prices, predominantly young well-educated people with an increased awareness of healthy nutrition are its main consumers. The demand for organic food is growing particularly as a result of the needs of young well-educated people with an increased awareness of healthy nutrition. These people are also willing and able to pay the much higher product prices [64].

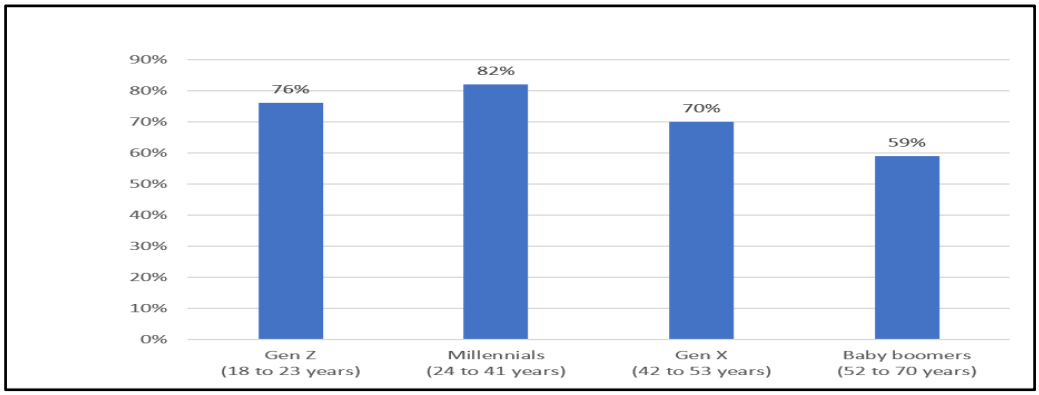


Figure 3.16. Distribution of specialty food consumers in the US as of 2019, by generation [248]

For the coming years, the demand for bioproducts is expected to grow strongly in the United States. Due to the fact that the organic cultivated area with just under 2.2 million ha corresponds to only 1% of the total agricultural area, American organic production cannot meet the strong demand growth. In other countries, this share is much higher. Coverage of this demand can thus only be achieved by means of goods imports. A total of 18,500 farms were active as certified organic farms in 2014. Approximately 3,200 farms were in the conversion phase at that time. As an obstacle to a changeover, organic farming is the very intensive conventional farming and the fact that the climate in the USA permits the cultivation of numerous products. Furthermore, the conversion to organic agriculture requires a massive rethinking of the farmers. That is why not every farmer is willing to undertake such a production change [225]. According to the latest agricultural survey, less than 1% of American farms were classified as 'organic' in 2012 [21].

Global sales for organic food amounted to almost 97 billion euros in the year 2018. The United States was the largest market with nearly 41 billion euros, followed by Germany (EUR 11 billion) and France (EUR 9 billion) [22,151].

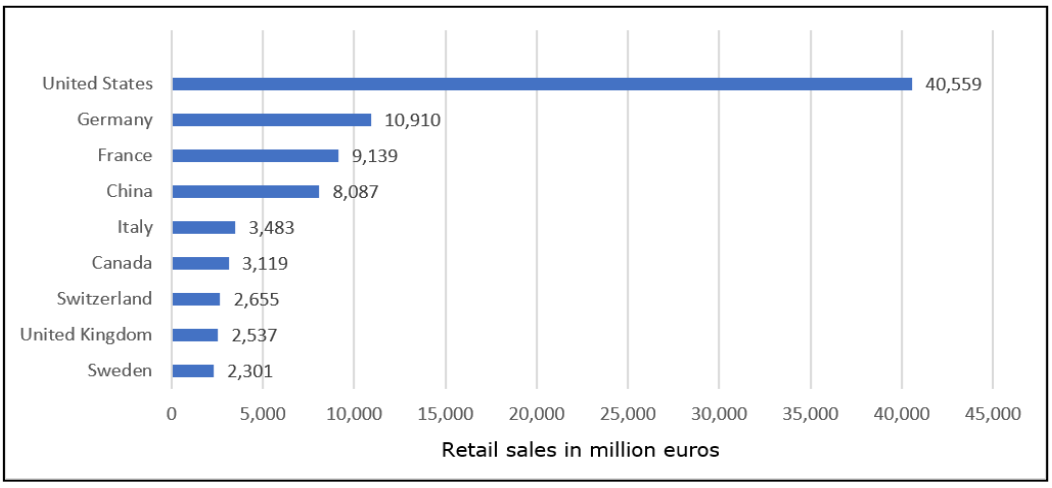


Figure 3.17. The ten countries with the largest market for organic food in 2018 [153]

In some countries the growth was in the double digits. With 15.4%, the biggest growth was registered in France. The per capita consumption in North America was EUR 120. In Europe, there are the highest per capita consumption identifiable. Switzerland and Denmark lead in this category with EUR 312 each. Furthermore, concerning the share of the organic market of the total food market, Denmark also has the biggest share with 11.5%, followed by further European nations like Sweden (9.6%), Austria (8.9%) and Luxembourg (8.0%) [153].

After Australia and Argentina, the USA cultivated the third largest area for organic products in 2018.

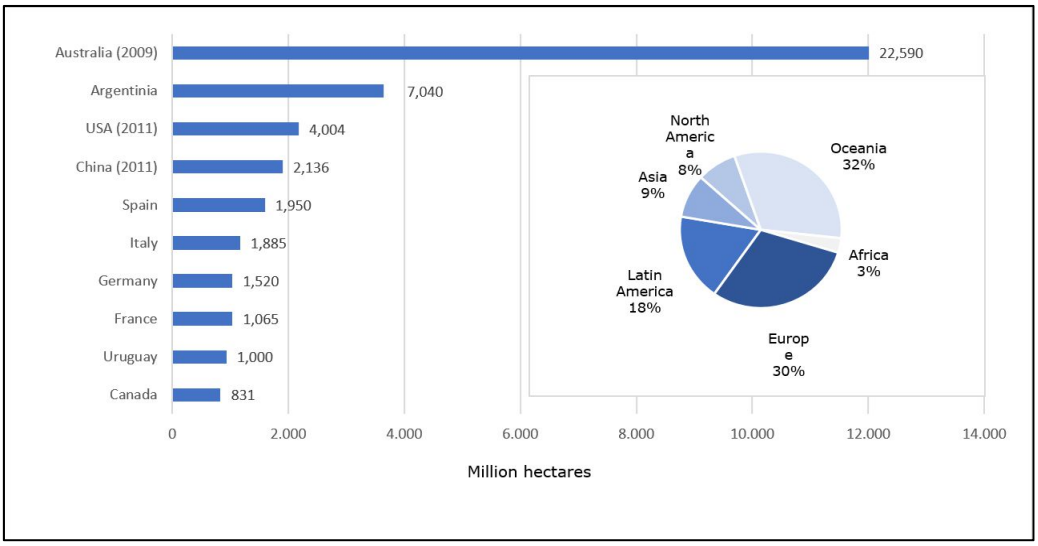


Figure 3.18. The ten countries with the largest bio-economic area in 2015 [151]

Looking at the global organic sales, the US has the largest single market, followed by the European Union and China. More than EUR 3 billion were spent on organic products in the USA in comparison with Europe [153].

In 2014, the US spent EUR 27.1 billion on organic food, reaching an organic market share of 5% of the total food market and this amount has risen to approximately EUR 42.1 billion in 2019 [212]. For the fourth consecutive year, the US organic market grew by double-digit growth in 2015 and sales more than doubled during the decade from 2009 until 2019.

As in many European countries, the domestic US bio-supply is not always sufficient, so the US is dependent on imports. The main import goods were organic coffee, soybeans and olive oil. At the same time, US organic apples, various types of vegetables and salads were exported on a larger scale [31,32].

3.3.6 Comparison of agricultural KPI between the EU and the US farming sector

In the US agricultural market as well as in the EU, agricultural enterprises can be classified into small, medium and large farms. However, the operating types are with regard to the size of the area, differently dimensioned. All three operating units are significantly larger in the USA than in the EU [137,149].

Regarding the number of people in employment, it is clear, that there are

significantly more people working in the EU than in the USA.

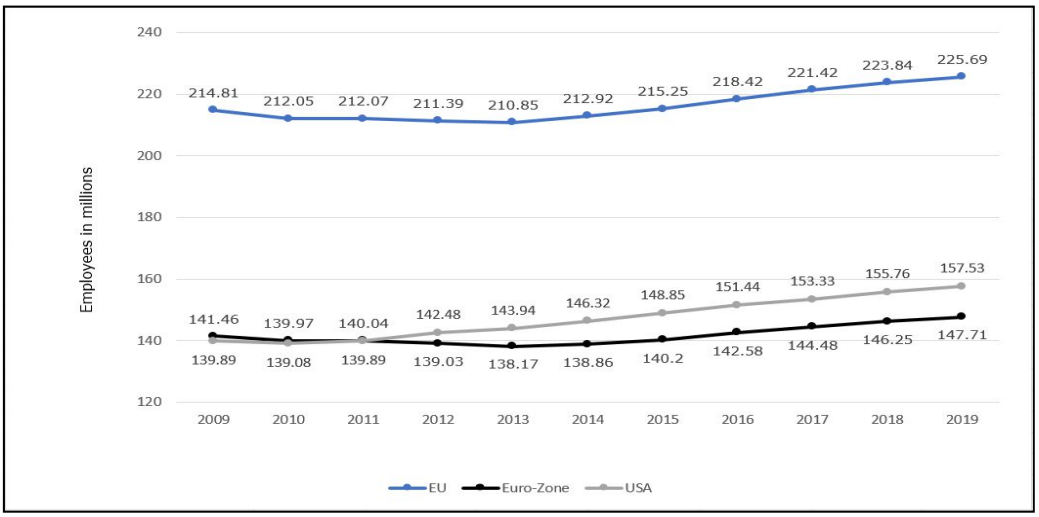


Figure 3.19. Development of the number of employees in the EU and the US [249,257]

Measured against all employed persons, this corresponds to a share of 4.24% in the EU and 1.31% in the USA in 2020 [257,259].

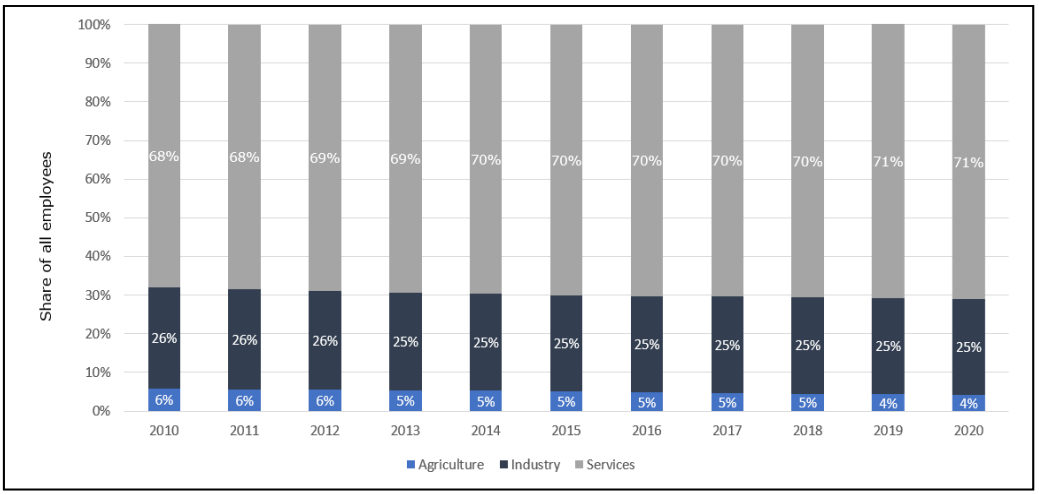


Figure 3.20. Share of all employed persons by economic sectors in the EU [252]

Related to 2019, the share of agriculture in the GDP is with 1.64% to 0.94% noticeable bigger in Europe than in the USA [247,250,256].

In addition, it can be stated, that in both agricultural sectors the age of the farmers is decisively over fifty years due to a lack of successors. For example, the average age of American farmers in 2012 was 58.3 years [4], and the average age of, for example, German farmers in 2013 was 53.3 years [282]. Furthermore, the value of US agricultural production rose by almost 33% to USD 395 billion (approx.

EUR 332 billion) over the period 2007 to 2012 [4]. In the EU this figure was around EUR 414 billion in the same year [255].

In addition to this, the average revenue per farm in the US in 2014 was USD 134,165 [292]. In the EU the factor income of the agricultural industry over all was valued at EUR 151.61 billion in basic price terms for the same year 2014 [133].

Finally, with regard to trade in agricultural products, the US imports more from the EU than they export. In 2018, the US imported agricultural goods worth EUR 20.9 billion and exported these kinds of goods for EUR 11.8 billion [62]. One reason for this is that the US is increasingly importing refined agricultural products and mainly exports unprocessed agricultural products [91].

The following table summarizes some central and comparative key agricultural data in the USA and the EU.

Table 3.4. Key agricultural data in the USA and in the EU

Key agricultural data	Reference Year	Quantity Unit		USA	EU
Number of employed persons	2019	[million]	Agriculture	2.11	9.86
		[million]	Overall	157.53	225.69
		[%]	Share	1.34	4.37
Proportion of agriculutre in GDP	2019	[billion €]	Agriculture	169.35	228.62
		[billion €]	Overall	18,016	13,940
		[%]	Share	0.94	1.64
KPI: GDP / Employed persons	2019	[€]	Agriculture	80,225.04	23,179.97
		[billion €]	Overall	406.6	268.7
		[%]	Share	5.14	4.39
Population	2019	[million]		329	513
Economic Sale Classes	2018 [US]/2016 [EU]				
> 250,000 [$ for US and € for EU]		[%]	Share	55.0	2.9
> 500,000 [$ for US and € for EU]		[%]	Share	40.7	1.1

3.3.7 Conclusion

Agriculture has always held a high position in American society and for a long time has been regarded as a symbol of independence, hard work, initiative and high-income potential.

The growth of the agricultural market in the US clearly demonstrates that in the absence of external norms and steering mechanisms; economic metrics are the exclusive drivers of farms, with little concern for social and environmental factors. As a result of advancing technologization and industrialization, there has been a displacement competition which have been continuing up to this day. A company's drastic and consistent decline, as well as the corresponding job loss, results in significant market shifts—for instance, the formation and emergence of oligopolies. Exploiting their market dominance, a few large, industrialised farms control the course of agricultural development, most notably in terms of production methods, product diversity, product options, product quality, and, ultimately, product pricing. Production is continually being increased and farms are still disappearing from the market much faster than this is the case in Europe.

Consequently, the US subsidy policy, as an existential aid, especially for small farms, cannot intervene here.

The discussion on the influences on the current subsidy operation shows a great uncertainty about the further development of the American agricultural market

as a whole. Significant criticisms of the discussion include the redistribution of wealth to large enterprises, a possible damage to the economy caused by overproduction and its impact, the development of bureaucratic hurdles and procedures, impairment of international trade relations and the degradation of the environment.

The use of genetic engineering in farming, as well as the depletion of available natural resources, is accompanied by a loss of natural diversity with unknown ramifications for human and animal health, as well as irreversible effects on flora and fauna. Furthermore, American agriculture is caught in an efficiency trap; agricultural production demands appear to be barely met at the moment, fuelling the need for improved efficiency. This drive for constant efficiency gains, on the other hand, reinforces the aforementioned trend and prevents other cultivation methods from being given a fair chance. Despite the fact that there is a growing need for bio products, rejecting this advancement in manufacturing technologies is not an option.

As in Europe, small farms in particular are trying to secure their livelihood through the production of organic products. However, although in the meantime a stronger awareness of a healthy diet and an intact environment in population strata of the American society was caused, it is difficult for many establishments to adjust to the peculiarities of organic farming. Sustainable production of agricultural products including a rich and high-quality supply and safeguarding adequate incomes will only be achieved by correspondingly high demands, on the basis of a growing awareness in broad sections of the American society.

In comparison to the American agricultural market, Europe is profiting from its greater diversification. Although the revenue per farm is significantly lower as a result of the different size of the area, more people in Europe can also live by farming, no matter if there is conventional or organic farming concerned. For the consumer the current system provides a comprehensive range of goods, with a high-quality of products, avoiding comparable environmental damage and the use of socially controversially debated technologies. The US subsidy system shows that it is not suitable to slow down or avoid the displacement of small farms in combination with concentrating processes and to permanently prevent negative environmental influences of the production activity.

Nevertheless, Europe's current subsidisation approach primarily benefits large farms. As a result, significant negative developments in biodiversity, climate-, water-, and soil preservation, as well as animal welfare and health protection, cannot be avoided. These developments clearly show the current risks to European agriculture. The displacement of agri-SMEs by large ones is pre-programmed under the current and future European CAP. If this trend continues, European agricultural policy will send the European agricultural sector into the same exact negative situation as evident in the US.

If European agriculture is to diverge from the footsteps of American agriculture to avoid suffering the consequences, the CAP must change or substantially restructure and enfold agriculture in the future, in its entirety. The data presented shows that the European agriculture market is structurally equivalent to the US agricultural market. Few huge farms control the vast bulk of available agricultural land, dominating the agricultural market as a whole. On the other hand, agri-SMEs are low-yielding and thus, are in a losing position vis-a-vis their economic relationship and their development. Although significant development steps have already been taken in the US agricultural industry's concentration process, and because of the agri-SMEs' minor role in the agricultural market, this concentration process is still ongoing, with the progressive replacement of these agri-SMEs. It can thus be argued that the crowding-out development in the European agricultural market is still ongoing, and

that the EU CAP supports a comparable and undesirable development in the US agriculture market through its subsidy payments. As a result, the ongoing displacement of SME in European agriculture, as well as biodiversity loss and pollution of water, air, and soil, must be halted. Instead of focusing just on agricultural exports, the CAP must be repositioned to contribute to climate, environmental, and animal protection, as well as to foster regionalism. To conduct environmentally friendly agriculture, increase the competitiveness of agri-SMEs, and strengthen regional value chains, a shift in focus toward improved funding of pillar 2 is required.

Agriculture changes are inextricably linked to climate, nature, food, and rural areas, and so, have immediate effects on EU residents. Developing widespread social agreement on how agricultural production ought to be developed is critical to defining the current agricultural transition. However, the CAP does not take this aspect seriously enough. Without proper reforms to improve sustainable agriculture, an increasing number of agri-SMEs will exit the market. This will undoubtedly affect product diversity, quality, methods, and price stability.

The CAP adjustments for the 2021-2027 budget cycle are insufficient to halt the current trend in European agriculture. A revision of the financial approach in pillar 1 is especially needed, with a focus on agri-SMEs; a simple area-based funding strategy has proven ineffective.

4 SUBSIDIES IN THE ROMANIAN AGRICULTURE

This section deals with the development of the Romanian agriculture in the period shortly before its EU accession until today. It focuses on agricultural subsidies considering different key figures and factors. The aim is to point out how agriculture in Romania has developed in terms of competitiveness and profitability and how these aspects can be improved.

At first the history and evolution of the Romanian agriculture until its accession to the European Union are described. Thereupon the importance of agriculture is examined by its share in the GDP, by its contribution to employment, its use of agricultural areas, its most frequently produced agricultural goods and its largest exports in agriculture. Section 4.3 shows the changing of the farm structures over the past few years. This includes the size of holdings, the standard output and age of farmers. Subsequently, the state of the infrastructure in Romania is compared with the average standard in the EU. The course of input and output prices between 2005 and 2021 and the course of investment behaviour between 2004 and 2018 are described in sections 4.5 and 4.6, respectively. Next the importance of organic production in Romania is illustrated by means of untapped potentials, already registered organic farmers and their mainly produced organic products. In the section on land grabbing, it is explained how much land large-scale investors bought. Furthermore, this section is going to describe what kind of factors play a major role in buying land and how this affects small-scale farmers. The last but one section deals with agricultural subsidies in Romania. In the beginning, the subsidy system in the past and the subsidy system for the years 2014 to 2020 are briefly presented. This is followed by the development of CAP payments in Romania and the unequal distribution of direct subsidies. Finally, surveys of European studies show shows what the Romanian farmers require and what they know and if they accept agricultural aids. A résumé and an outlook conclude this chapter.

4.1 The history and evolution of the Romanian agriculture

The agricultural sector has always been of major importance in Romania. After the First World War the province of Banat was divided into Romania, Hungary and the former Yugoslavia, now Serbia. Romania received almost two-thirds of the Banat, Yugoslavia a third and in Hungary only a small portion remained [232]. During the two world wars the land reform’s motif from 1921 consisted of reorganizing properties. This implies that the land of big farms was transformed into small farms [269].

In 1928 a crisis developed in the Romanian agriculture. Many peasants and farmers, in the following only the term farmers will be used, could no longer work economically. Due to debts, they lost their assigned areas, which they had received with the agrarian reform in 1921. Even the debt relief measures by the government in 1932 did not prevent this. In Banat agriculture was in a better state than in the rest of Romania because of the fertile soil and self-developed measures against the crisis. These measures included training opportunities, modernization to increase quality and production as well as the well-organized cooperatives and associations which allowed a cooperation in banking, procurement and marketing. This has led to higher productivity in crop production and livestock farming in comparison with other

parts of Romania [232].

During the taking over of the communist regime between 1949 and 1962 the communist governments launched the collectivization of agricultural lands. The consequence of the collectivization was, that the farmers lost their land ownership [180]. The full dispossession of the farmers in Banat started earlier than in the other parts of Romania based on the large German minority. A part of the newly gained soil was merged into state farms and a big part of soil was distributed to landless village inhabitants. The implementation of the collectivization in Banat from 1949 to 1952 was already more advanced than in the other parts of Romania since the state interventions against the German minority intimidated the small farmers [232]. Large investments between the years 1950 and 1989 made chemicals and mechanical tools in agriculture available for the big agricultural farms [15]. Furthermore, almost 3 million ha of arable land had irrigations in 1989, out of the total of 9.4 million ha of arable land [15]. All these methods improved the productivity per ha but "the Romanian cereal supply to the European market was still low" [15].

Following the collapse of the communist regime in Romania in 1990 the new government started to remove collective farms and state farms and they gave back the land to their former owners [60]. This changed the entire farm structure. In 1997 family farms and household plots cultivated 67% of the utilized agricultural area (UAA). The average size of the small farms was only 3 ha. In contrast, the average size of the privatized state farms was 2,491 ha [216].

Between 1996 and 2004 the share of Romanian agriculture in GDP valued 14% and had a growth rate of only 0.7% per year. Shortly before the EU accession the situation of Romanian agriculture deteriorated again. The competitiveness of Romania's agricultural products was miserable, and the technology used for farming was strongly outdated. Farmers ploughed their land with plough and horses. Because of that and caused by the land fragmentation the domestic prices were significantly higher than the world prices. To secure the support of farms by Brussels the authorities determined that the land should be consolidated. The objective of the EU was to ensure their competitiveness by supporting agri-SMEs [68].

In 2007, Romania became a member state of the EU. The time since the EU accession will be illustrated in the following sections.

4.2 The importance of agriculture in Romania

4.2.1 Gross Domestic Product and employment in the agricultural sector

In Romania agriculture contributes much more to the national GDP than it is the case in any other European country. In 2005 the share declined from 9.48% in 2005 to 5.34% in 2014 [274]. In 2021, this share was still 4.35% [261] but it is significantly higher than in any other EU country, yet [260]. In 2014, in the Romanian agriculture, approximately 28.35% [273] of the workforce generated around 5.34% [274] of the GDP. In 2020, 26% of all employees were still working in agriculture, generating a share of GDP of about 4.4% [274,300,61]. Compared to that, the agricultural sector in the EU generated in 2020 only 1.56% [271] of the GDP on average. Furthermore, only around 1.2% [270] of the employees in Germany were active in the agricultural sector in 2020 and 0.74% [272] of the GDP was created in the agricultural sector. These figures underline, that agriculture is an important part of Romanian's economy.

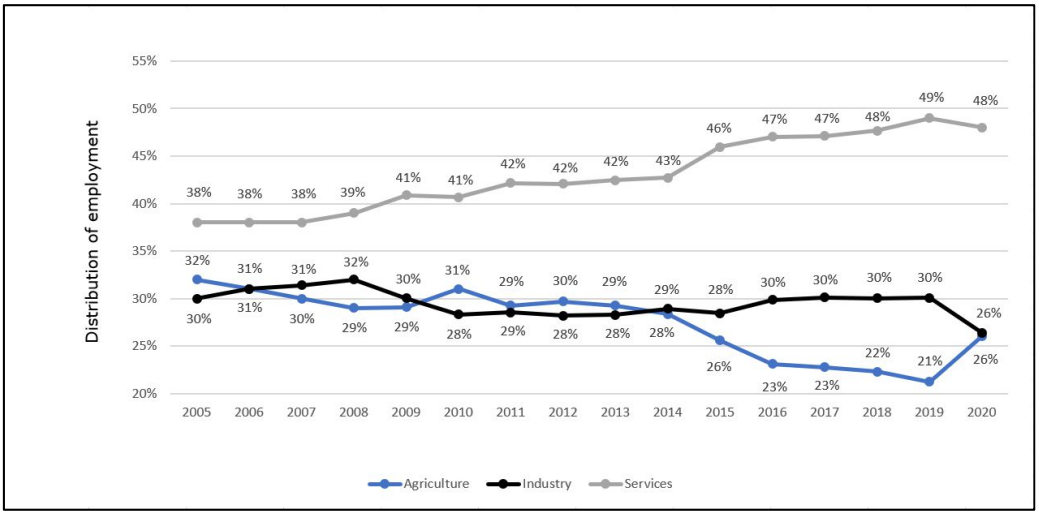


Figure 4.1. Distribution of employment in Romania per economic sector [273,300]

4.2.2 The use of agricultural land in Romania

From 2009 to 2014, the agricultural area remained more or less unchanged. In 2009 the agricultural area comprised 14.7 million ha and 14.6 million ha in 2014. The arable land covers about 64.2% of the agricultural area followed by 22.4% pastures, and 10.6% hayfields. The vineyards and orchards have a share of only 2.7% of the agricultural area. Therefore, the shares of agricultural land have not changed significantly, either [206].

Table 4.1. Total land fund, by use in thousand ha [206]

	2009	2010	2011	2012	2013	2014	2018	2020
Agricultural area	14,684.90	14,635.50	14,621.50	14,615.10	14,611.90	14,630.10	13,414.00	13,591.00
Arable land	9,422.50	9,404.00	9,379.50	9,392.30	9,389.30	9,395.30	8,714.00	8,728.04[1)]
Pastures	3,313.80	3,288.70	3.279.30	3,270.60	3,273.90	3,272.20	2,947.08[1)]	3,049.26[1)]
Hayfields	1,528.00	1,529.60	1,554.70	1,544.90	1,541.90	1,556.30	1,384.70[1)]	1,432.71[1)]
Vineyards and vine nurseries	215.40	213.60	211.30	210.50	210.30	209.40	190.08[1)]	196.67[1)]
Orchards and tree nurseries	205.20	198.60	196.70	196.80	196.50	196.90	178.14[1)]	184.32[1)]

[1)] Provisional data

These ratios have only slightly changed until today. In 2018, the total agricultural area was 13.4 million ha [187]. The share of arable land was about 8.7 million ha [277]. This leaves 4.7 million ha for pastures, hayfields, vineyards and orchards, with vineyards and orchards expected to be of minor importance. The change in the total agricultural area to 13.6 million ha in 2020 [188] also suggests that there has been no significant change in the proportions of agricultural land.

4.2.3 Agricultural products

The agricultural production is divided into three main parts: crop production, animal production and agricultural services. Crop production was predominant with a share of 64.9% (65.9%) in 2020 (2014), followed by animal production with 32.9% (32.8%) and agricultural services with 2,3% (1.3%). Cereals have the largest share in plant production. They include maize grains on the first position, wheat on the second, followed by barley and rye. From 2019 to 2020, there is a decrease of about 34% in crop production. In this context, the outbreak of the corona pandemic can be named as a major reason for this decline. In 2021, this decline was largely compensated. However, the volume produced was still about 9% below the level of 2019 [207].

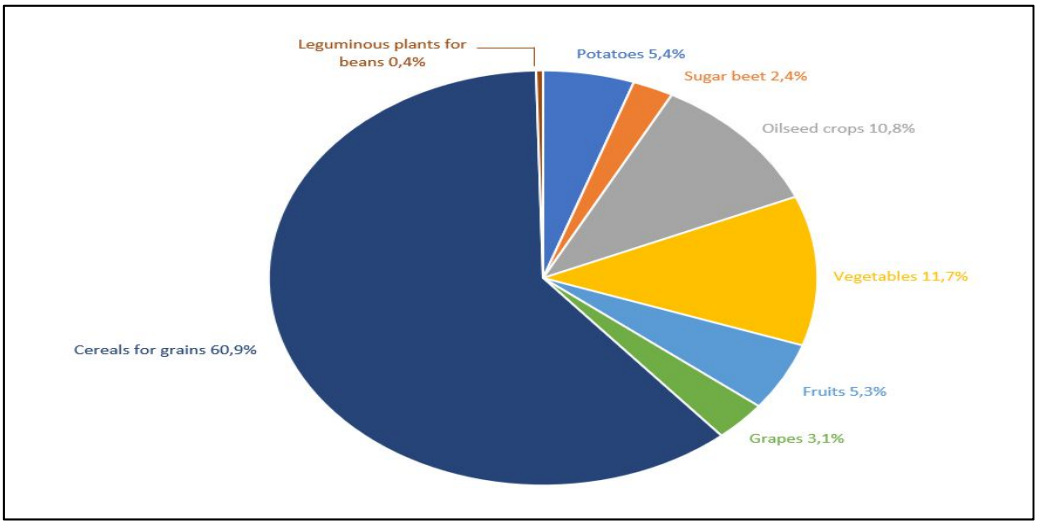


Figure 4.2. Crop production in Romania 2020 [207]

The second largest part of agricultural production is the animal production. Table 4.2 shows a downward trend in the production of milk, and eggs. In contrast, the production of wool, extracted honey, meat and fish increased from 2011 to 2020.

Table 4.2. Animal production [205,207]

	Dimensional Unit	2011	2012	2013	2019	2020
Meat	**thou t live weight**	**1,357**	**1,332**	**1,300**	**1,495**	**1,458**
of which						
Beef	thou t live weight	212	198	192	179	173
Pork	thou t live weight	557	555	546	512	498
Mutton and goat	thou t live weight	110	107	104	127	121
Poultry	thou t live weight	477	471	457	672	663
Milk - total	**thou hl**	**50,074**	**48,337**	**48,728**	**46,161**	**46,697**
of which						
Cow and buffalo cow milk	thou hl	43,947	42,036	42,593	39,753	40,234
Wool	**tonnes**	**19,026**	**19,713**	**20,719**	**23,824**	**23,057**
Eggs	**mill pcs**	**6,327**	**6,398**	**6,388**	**5,564**	**5,428**
Extracted honey	**tonnes**	**24,127**	**23,062**	**26,678**	**25,269**	**30,714**
Fish	**tonnes**	**11,593**	**13,443**	**14,861**	**23,776**	**19,469**

4.2.4 Exports and imports of agricultural products

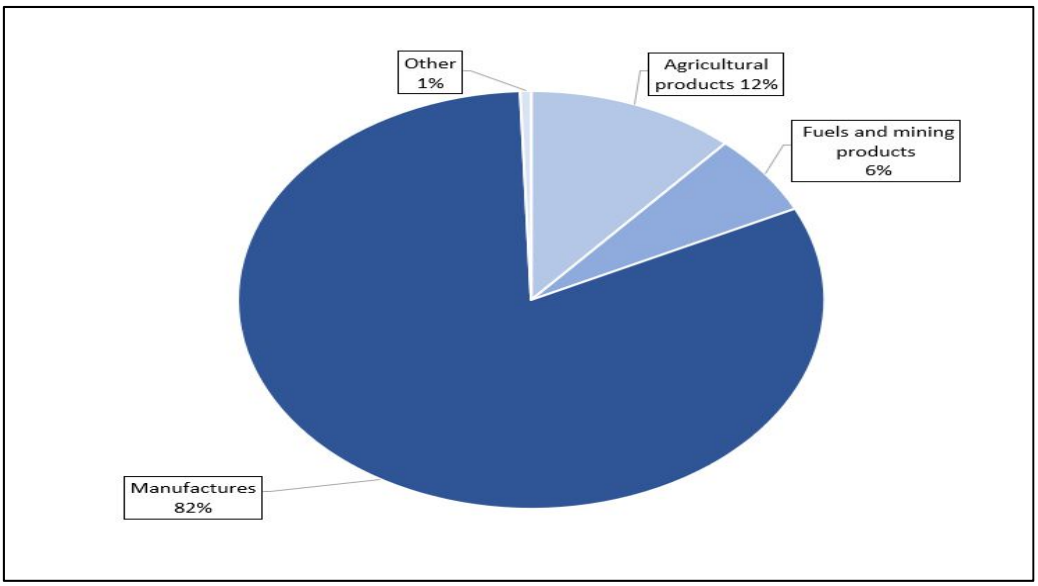


Figure 4.3. Breakdown in economy's total exports by main commodity group in 2019 [303]

The share of agricultural products in Romanian exports was about EUR 7.4 billion in 2019, corresponding to 11.5% [110,303]. Compared to this share, other EU Member States such as Germany with 6.3% (about EUR 77 billion) or the Czech Republic with 5.5% (about EUR 8 billion), as well as the EU as a whole with 9.4% (about EUR 182 billion excluding intra EU trade) showed significantly lower overall agricultural export shares. On the other hand, countries such as Poland with 14.2% (approx. EUR 32 billion) and Bulgaria with 17.1% (approx. EUR 5 billion) were above Romania's share. These ratios of agricultural export shares were at a comparable level for 2020 [110,111,112,113,303].

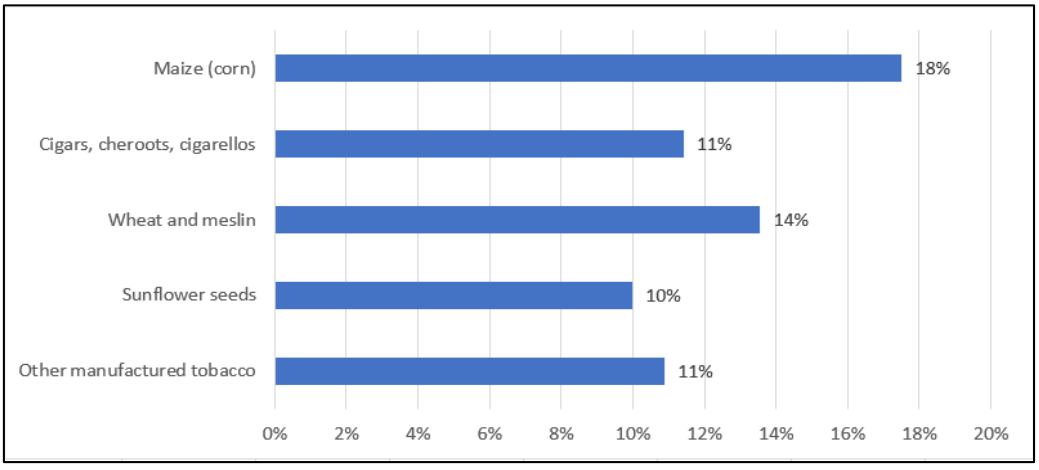


Figure 4.4. Romania's top exported agricultural products in 2020 [112,303]

In 2020 the top exported agricultural products included maize with a value of EUR 1,226 million, cigars, cheroots, cigarillos with a value of EUR 799 million, wheat and meslin with a value of EUR 949 million and other manufactured tobacco with EUR 762 million. Sunflowers with the lowest value amounting to approximately EUR 699 million. The largest trading partner is the EU with their Member States with a share of approx. 74% of the recorded imports [303].

Compared to the listed exports, the share of imported agricultural goods in 2019 was 10.9%. The share for imported manufactures was 78.6%, for fuels and mining products 10% and other imports 0.5%. In absolute terms, agricultural products were imported for about EUR 8.4 billion. Pork accounted for the largest share at around 8%, followed by bread and bakery products at around 5%, and dairy products, other foodstuffs and animal feed at around 4.5% each. The share of trade with EU countries also amounts to approx. 74% of imports. According to the exports, the EU is also the largest trading partner for Romanian agriculture in terms of imports. [112,303].

The share of imported agricultural goods is at a comparable level in the previously mentioned EU countries Poland (10%), Germany (9.4%) and Bulgaria (12.2%). Only the Czech Republic, with a share of only 6.8%, is significantly below this level. The figure for the EU as a whole is around 8.3%. It is also striking that the countries mentioned import between 52% and 61% of the imported goods from other EU countries. These are significantly lower shares than the 74% reported for Romania [110,111,112,113,303].

4.3 The structure of Romanian farms

Table 4.3 shows the very contrasting structure of Romania’s landscape according to the latest EU census in 2016. On the one hand, there were many small farms below 10 ha with a share of 98% of the total agricultural holdings that made a possession of 39% of the UAA in 2016. With just a share of 2%, agri-SMEs between 10 and 100 ha were hardly existent. They comprised 13% of the UAA. On the other hand, only 0.4% of the farms consisted of 100 or more ha but they held 48% of the UAA. Between 2005 and 2016 the number of small farms under 10 ha decreased by 826,000, almost 20%. Concurrently, the number of big farms over 100 ha has increased by 33%. Therefore, the UAA per holding increased from 3.27 ha in 2005 to 3.65 ha in 2016. The structure of farms as just described is the consequence of the land restitution which took place during the 1990s. During this period the state and cooperative farms were almost completely dissolved, and the land was given back to former landowners.

Table 4.3. Structure of Romanian agricultural enterprises [132,144]

	2005		2007		2010		2013		2016	
Farm size class	No. of farms	UAA	No. of farms	UAA	No. of farms	UAA	No. of farms	UAA	No. of farms	UAA
[ha]	[thou]	[thou ha]	[thou]	[thou ha]	[thou]	[thou ha]	[thou]	[thou ha]	[thou]	[thou ha]
Total	4,256	13,907	3,931	13,753	3,859	13,306	3,630	13,056	3,422	12,503
0	135	0	80	0	135	0	66	0	80	0
< 2	2,722	1,942	2,486	1,808	2,732	1,718	2,890	1,585	2,401	1,540
2 - 5	1,014	3,161	966	3,022	727	2,230	691	2,141	660	2,049
5 - 10	290	1,926	300	2,018	182	1,211	194	1,295	194	1,304
10 - 20	66	850	70	924	44	571	50	654	50	666
20 - 30	10	243	10	230	10	234	10	248	11	263
30 - 50	6	227	7	251	8	315	8	326	8	289
50 - 100	5	333	5	328	7	518	7	506	6	418
> 100	9	5,226	10	5,172	14	6,508	13	6,300	12	5,973

As presented in table 4.4 the total Standard Output (SO) of Romanian agricultural holdings was EUR 12,106 million in 2016 which was an increase of almost 16% compared to 2005. Compared to other EU Member States Germany for example, had a SO of EUR 49,249 million, Denmark of EUR 10,062 million and Poland of EUR 25,006 million. The smallest farms with an economic size of less than EUR 8,000 had a total SO of EUR 5,191 million and accounted for 43% of Romania's total SO in 2016. Nevertheless, the largest farms with an economic size of more than EUR 500,000 had a total SO of EUR 2,266 million, accounting for 19% of the total SO. In Germany, by contrast, the smallest farms with an economic size of less than EUR 8,000 had a total SO of EUR 154 million and accounted for less than 1% of the country's SO in 2016. In contrast, farms with an economic size of more than EUR 500,000 had a SO of EUR 23,734 million. This represented more than 48% of the total SO in the same year [144].

Table 4.4. Standard Output of Romanian agricultural enterprises [132,144]

Standard Output	2005	2007	2010	2013	2016
Total [EUR million]	10,489	10,120	9,875	11,990	12,106
< EUR 8,000	6,886	6,165	5,214	5,367	5,191
EUR 8,000 - 500,000	2,617	2,980	3,163	4,530	4,649
> = EUR 500,000	986	975	1,498	2,093	2,266

Although the number of Romanian farms accounted for about one-third of the EU in 2016, Romanian agriculture contributed only 3.6% of the EU's total SO. This was far behind the big four national economies of France (18%), Italy (15%) Germany (15%) and Spain (11%) [142]. A major reason for this was the small size of many farms. As previously shown, 92% of Romanian farms are smaller than 5 ha, compared to the other farms in the EU as a whole. In the entire EU 16% of all farms had a size of only 15.2 ha. Furthermore, it should be considered in this context that the vast majority of these farms are operated as family farms and about 75% of these farms consume about 50% of their SO by themselves [142,144].

Based on the data mentioned above it can be said that Romania's structure of

agricultural holdings consists largely of small farms, which predominantly produce goods for personal household consumption. The SO in Romania has not changed decisively in recent years and it is extremely low compared to the SO in Germany although the share of agriculture in GDP is very high compared to the other EU Member States.

Table 4.5 shows the age structure of farmers. Since 2005, the share of farmers who are under 35 years old had decreased sharply by 2016. The share of farmers between age 35 and 44 years and between age 55 and 64 years had remained almost constant in total. In contrast, the share of farmers with an age of over 64 years had slightly increased. This shows that the farmers in the Romanian agriculture had grown to old and that the continued existence of many farms in the next generations is not assured. On the contrary, a further decline in the number of farms is to be expected for these age-related reasons. Therefore, in the future the continuation of the agricultural holdings is no longer guaranteed and consequently the agricultural sector is endangered.

Table 4.5. Romanian agricultural enterprises by age structure of farmers [95,112]

Holdings		2005		2010		2013		2016	
		Total	%	Total	%	Total	%	Total	%
By age of holders	< 35 years	226,230	5.3	280,440	7.3	171,960	4.7	105,590	3.1
	35 - 44 years	513,710	12.1	609,610	15.8	504,810	13.9	399,850	11.7
	45 - 54 years	756,300	17.8	636,370	16.5	614,550	16.9	632,780	18.5
	55 - 64 years	946,830	22.2	868,910	22.5	851,230	23.5	765,450	22.4
	>= 65 years	1,813,090	42.6	1,463,720	37.9	1,487,110	41.0	1,515,570	44.3

4.4 Infrastructure

The quality of Romania's infrastructure is still low. Romania got one of the lowest scores in an EU infrastructure ranking [87]. Romania achieved 2.4 scores for quality of railroad infrastructure, 3.36 scores for quality of port infrastructure, 3.75 scores for quality of air transport infrastructure and 2.6 scores for the quality of roads [87]. Also, the scores for the quality of timeliness of shipments (3.22), modernization and development of the Trans-European Networks-Transport (TEN-T) conventional rail core network (5%) and TEN-T high speed rail core network (0%) were very low. The rating comprises a range from 1 to 7, whereas 7 is the best rate. The EU average was significantly better in these categories: railroad infrastructure 4.3 scores, port infrastructure 5.14 scores, air transport infrastructure 5.10 scores, roads 4.77, timeliness of shipments 3.98, TEN-T conventional rail core network 60% and TEN-T high speed rail core network 44%. In the completion of TEN-T road core network Romania achieved 42%. The EU average is 74%. Only in the category modernization and development of TEN-T inland waterways core network Romania has 91%, more than the EU average (89%) [87].

4.5 Purchasing and sales market

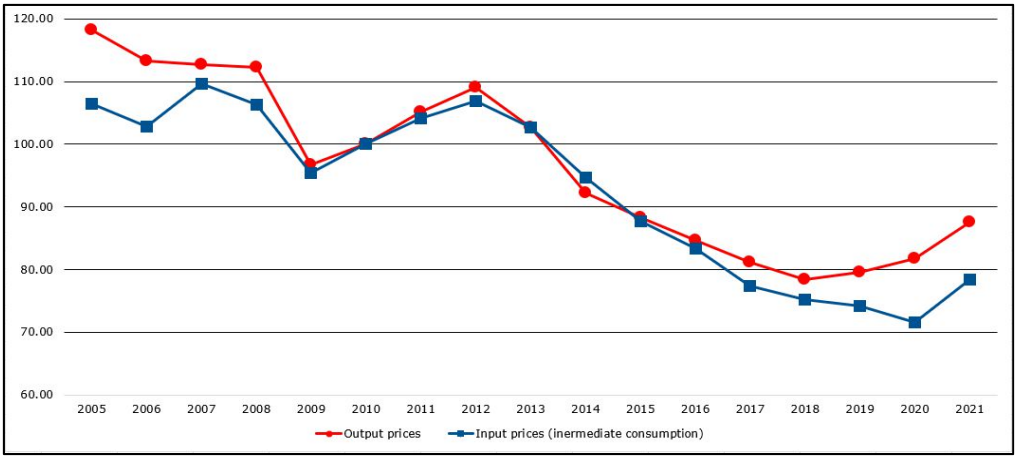


Figure 4.5. Evolution of agricultural input and output prices in Romania [95,112]

Figure 4.5 describes the evolution of agricultural input and output prices. Between 2005 and 2006 the course of the indices declined. In 2007 the year of the EU accession the output prices increased strongly, and the input prices slightly rose. A sharp downturn of agricultural input and output prices can be seen in 2009 due to the peak of the global financial and economic crisis. This is followed by an increase through to 2012. Thereafter, the development of both indices shows a general downward trend. In 2014, the output prices were even lower than the input prices. With regard to the output prices, this trend continued up to 2018, concerning the input prices even up to 2020. After that, a strong increase can be seen in 2021 for both indices [95,112,143].

4.6 Investment behaviour in the Romanian agriculture

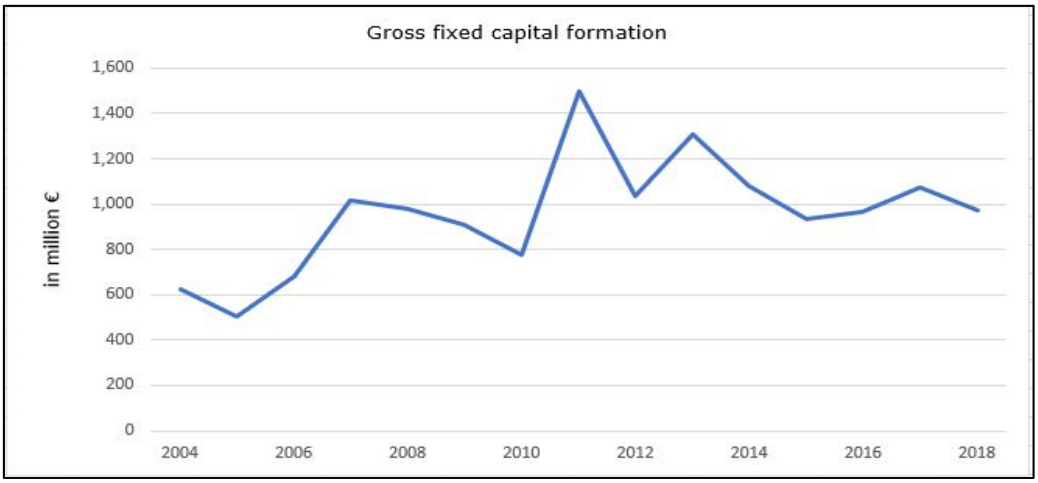


Figure 4.6. Investment behaviour in the Romanian agriculture [107]

Figure 4.6 illustrates the investment behaviour in the Romanian agriculture. In 2004, the Gross Fixed Capital Formation (GFCF) amounted to EUR 621 million, whereas the value of the GFCF reached its lowest point at EUR 501 million in 2005. Between 2005 and 2007 investments increased to a value of EUR 1,015 million. Thereafter they dropped to EUR 773 million in 2010. One reason of the decline in this period is the impact of the economic and financial crisis in 2009. After the decline, the curve rose steeply and reached its highest peak in 2011 with a value of EUR 1,500 million. In the following years the investment behaviour declined again and, after an interim peak in 2017, had an amount of EUR 970 million in 2018. In summary, overall investment in the agricultural sector has increased since Romania's EU accession.

4.7 The importance of organic farming in Romania

The importance of organic farming has increased in recent years. In organic farming technologies are used to conserve biodiversity and environmental protection [50]. Romania offers a wide range of possibilities to develop organic agriculture. These include good natural conditions, soil and climate. However, compared to the EU, Romania still has a great potential for improvement in this area [2] because of the lack of modern technology equipment, land fragmentation, low productivity, inefficient output and the aging society [69].

The EU implemented the first action plan for organic production in 2004. The previous action plan included a challenge for organic agriculture [2]. Under pillar 1 organic farms automatically receive a Greening component and pillar 2 provides funds for organic farming under the Rural Development Regulation (EU) No 1305/2013 [265]. The Romanian government implemented a special package of CAP in the new National Rural Development Plan for 2014 – 2020 to support organic farming [2].

As presented in table 4.6, the number of operators in organic farming shows an enormous upward trend from 2010 to 2012. This is a consequence of the development of the agriculture supported by European funds. After 2013 the number of registered operators decreased slightly. The development of the total organic area shows a similar trend, whereby from the year 2018 the area size has continuously and significantly increased to the maximum figure of 486,887 ha in 2020. Thus, from 2012 to 2020, the area devoted to organic farming increased by almost 63%, while the number of farms decreased by about 37% during the same period [69,145,146].

Table 4.6. Organic farming indicators in Romania [69,145,146]

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of registered operators in organic farming	3.155	9.703	15.280	14.553	14.151	11.812	10.083	7.908	8.518	9.277	9.647
Total organic area (hectares) - fully converted and under conversion to organic farming	182.706	229.946	288.261	286.896	289.252	245.924	226.309	258.471	326.260	395.228	468.887

Nevertheless, Romanian agriculture still holds one of the last rank in the development of organic farming in the EU. The area share for organic farming in 2020 is about 3% and thus significantly below the EU average of about 9%. In contrast, France and Spain, the leading countries in organic farming in the EU, each have about fivefold as much land for organic farming. This corresponds to about 17% of the total agricultural area in each of these countries [147].

The largest areas of the total surface area for organic farming in 2020 are represented by cereals, industrial crops and Permanent grassland - hayfields and pastures [145].

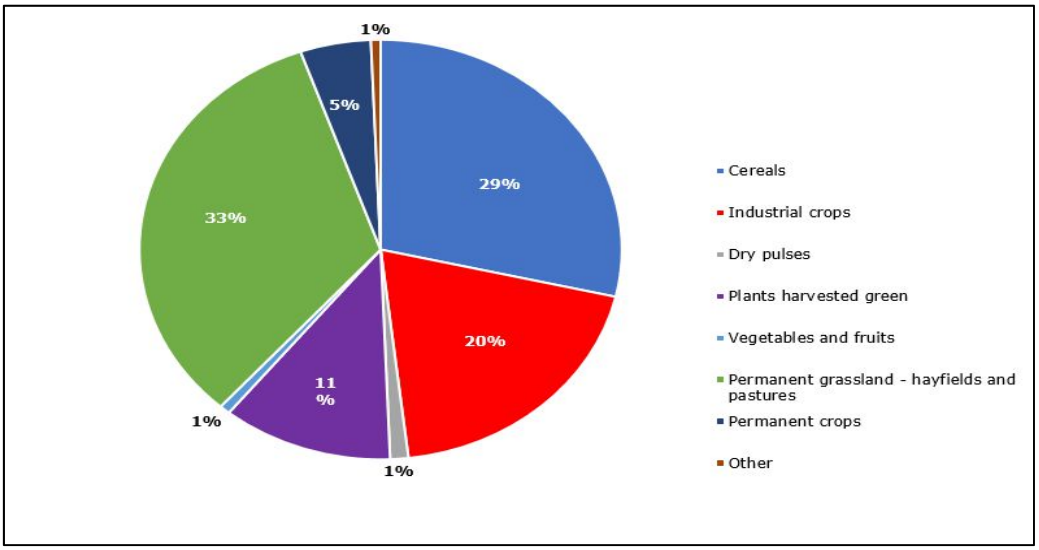


Figure 4.7. Share of organic culture surfaces of total organic agricultural surface area in Romania 2020 [145]

4.8 Land grabbing – Acquisition of land by major investors

Across Romania it can be observed that natural resources have become the target of speculation and large investments [25,221]. The term 'land grabbing' describes the (partly illegitimate or illegal) purchasing or long-term leasing of land from public or private owners [12]. Romania is sought-after destination for land grabbing. About 900,000 ha of agricultural land are already in the hands of foreign investors. This corresponds to approximately 8% of the total arable area in 2016 [70, 112]. Among the top 100 recipients of agricultural subsidies in Romania are enterprises with connections to Lebanon, Italy, Luxembourg, the USA, Austria, Great Britain, the Netherlands, Spain, Germany, France and Portugal [266,221].

Romania is exemplary for some young EU countries, where investors from all over the world are vying for huge tracts of land. Land grabbing has long since ceased to be confined to the Third World. The ones who suffer from this development in Romania are the small local farmers, most of whom have had to sell out of financial necessity. The few who refuse to follow the trend are barely competitive on the domestic market, because subsidies make food imported from other EU countries cheaper. Critics such as Oxfam and Greenpeace say that EU policy is also partly to blame. For example, investors are rewarded annually with premiums of several hundred euros per ha if they use the land for agricultural purposes [150].

4.8.1 Factors which enable land grabbing

Land grabbing is caused by various external circumstances related to agricultural subsidies. The key factors and conditions are described in more detail below.

4.8.1.1 Process of land concentration and land inequality

Before the collapse of the communist regime mainly large farms existed such as state farms and farm cooperatives. In 1989, they owned 90% of the UAA. By the Land Trusts law in February 1991, cooperatives have been dissolved and the decollectivisation started. The land has been restructured and tiny plots of lands were given back to their former owners. By this means the land was given back to people who possibly did not want it or who did not know how to cultivate it [185].

By law nr.15/1990 state farms have disassembled and changed into commercial companies. This gave former regime officers the opportunity to gain a better access to the purchase of state farms and agricultural production cooperatives. Since then, the rural structure has been marked by highly concentrated and highly fragmented land use [25,221]. The result was that private landowners with good connections to politicians and high capital could acquire small farms which could not compete with large farms [185].

4.8.1.2 Soil fertility and common grazing land

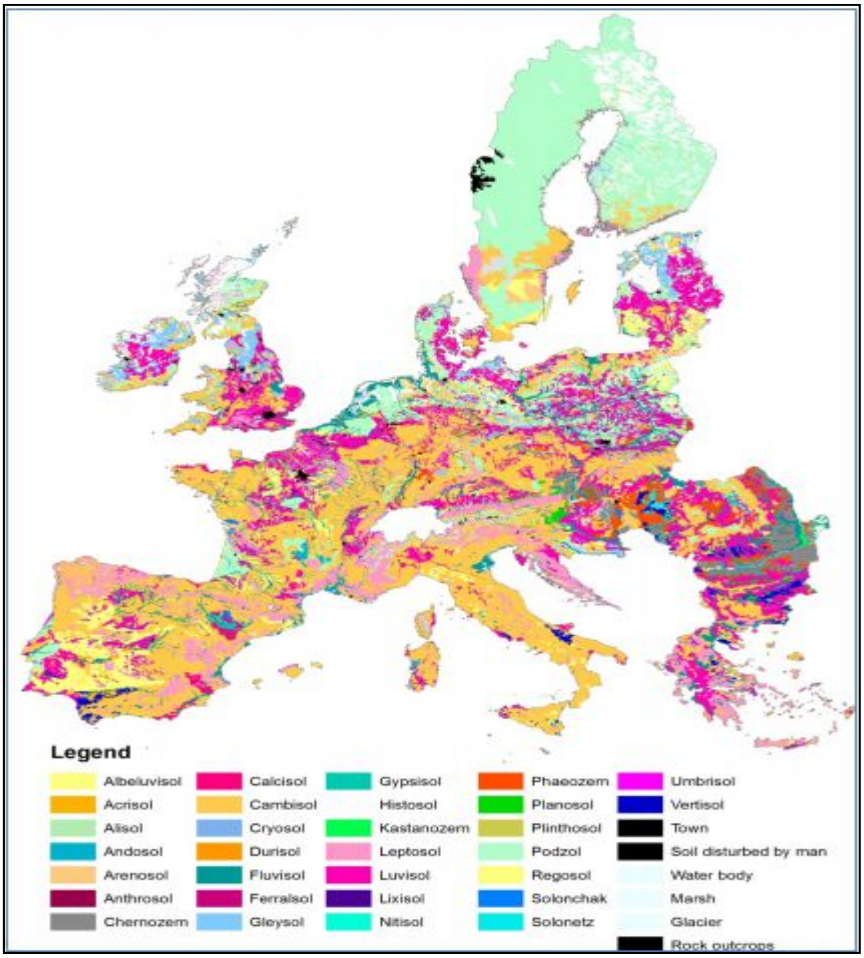


Figure 4.8. Soil types in the EU [20]

The biggest part of Romania disposes of fertile soil. Chernozem, also called black earth, belongs to the most fertile and most productive soil of the world. Chernozems can be found in the South and the East of the Carpathians as well as in the Banat. The surface is characterized by a dark brown or black colour. It has a high content of organic substances (humus-rich), a high pH and is rich in secondary calcium carbonate concentrations [179]. The soil map (figure 4.8) shows that Romania owns the largest share of Chernozems in the EU.

Commons are defined as land owned by rural communities, which are collectively used under certain rules. They are important for small-scale farmers because they can use them to graze their animals without the acquisition of extra land. Commons are financed and maintained by groups of farmers who are then allowed to use the land in return. Unfortunately, the amount of commons fell sharply between 2003 and 2010. Their area has decreased by 100,000 ha. Without commons small farms are not able to own cattle because their property is too small to tend their cows, sheep etc. although the ownership of livestock would lead to higher income and economic advantages [13].

Before the EU accession Romanian municipalities charged taxes for the usage of commons by farmers. After accession, these municipalities tried to receive CAP subsidies to take care of commons. However, the government restricted CAP subsidies as it meant that the municipal authorities would not spend that money on the commons. Because of that more individuals and associations have rented commons to receive subsidies. Commons have become a popular destination for land grabbing, because of the extraordinary biodiversity and the large unused land [13].

4.8.1.3 Cheap land market

In 2013 the average farmland prices were three times higher than in 2007 and varied from region to region. For example, the land price per ha was lowest in Bucovina and Moldova with a value between EUR 2,600 and EUR 2,900. In the Banat and Muntenia region the prices were highest with an amount of EUR 3,600 and EUR 3,500 per ha. The estimated average price per ha for the whole country was EUR 3,100. In comparison, the price for land in Denmark was about EUR 28,000, in Germany EUR 12,000 and in the Czech Republic EUR 5,100 [70]. Therefore, Romania is a popular target for foreign investors.

Up to the present, the ratios have changed only slightly, but prices have risen significantly in all EU countries. The range is currently from EUR 3,500 per ha in the Baltic States to EUR 70,000 per ha in the Netherlands. In some regions, prices can even exceed EUR 100,000 per ha. In Germany, the price is currently around EUR 26,000, whereas in Romania it is only EUR 7,163 per ha [5,6]. For Romania, this means a tripling of the price compared to 2013, and even a quadrupling compared to 2011. In Germany, prices had doubled compared to 2013. In other EU countries, prices had hardly changed (Denmark), in the Eastern European countries, the rates of increase were clearly the highest, but even the Netherlands still showed a price increase of about 29% compared to 2013 [148].

The reasons for these price differences and for the price dynamics are complex. However, the main influencing factors are the productivity of agriculture, the share of land ownership and leased land and the corresponding availability of land, as well as the situation on the credit and capital markets, government regulation and control (taxes and levies), the level of direct payments, alternative land use (construction of solar parks, road construction, business parks on agricultural land), and the influence of foreign investors [5].

4.8.1.4 Permissive legislation

Until 2014 a law restricted the acquisition of Romanian land by investors of foreign countries. But loopholes in the law made it possible to purchase land if the European company merged with a domestic company. The law stipulated that if one partner decides to cease operations and withdraws from the commercial registry, the remaining partners inherit the portfolio [25].

According to the EU Accession Agreement Romania had to allow the purchasing or leasing of land by European people [185]. The legislation of the new Romanian Civil Code which does not guarantee compensation and a bilateral negotiation between the parties is the basis for that. The tenant shows a stronger power for the negotiation if he or she prepares the contract. Moreover, older people who want to lease their land do not have the knowledge of these procedures and sign contracts without reading them [266].

4.8.1.5 Political support

In Romania, the government supports large scaled farms. In 2014 the Ministry for Agriculture and Rural Development (MARD) explained that EUR 112 million from direct payments were to be transferred to Rural Development in 2015. Its aim was the consolidation of agricultural land. Furthermore, MARD wanted to support those farmers who would sell or lease their land by paying EUR 45 for agricultural land between 5-30 ha and only EUR 5 for 1-5 ha [7].

However, in August 2020, Law 17/2014 was amended to significantly restrict the sale and acquisition of agricultural land for foreign nationals. To this end, an expansion of the categories of beneficiaries of the statutory right of first refusal in the sale of agricultural land was carried out. Beneficiaries have been expanded from four groups (co-owners, neighbouring owners, tenants, and the Romanian state via the State Property Agency) to thirteen classifications with seven distinct ranks [55]:

- "Rank 1: co-owners, first-degree relatives, spouses, relatives and in-laws up to and including the third degree,
- Rank 2: owners and lessees of agricultural investments for tree crops, vines, hops, exclusively private irrigation,
- Rank 3: owners and lessees of agricultural land adjacent to the land for sale. The land must be located within the country and the tenure must be five years prior to the date of publication of the offer for sale,
- Rank 4: young farmers up to 40 years of age within the meaning of Article 2(1)(N) of Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) who intend to engage in or are already engaged in agricultural activity,
- Rank 5: Academy of Agricultural and Forestry Sciences Gheorghe Ionescu-Șișești and research and development units in the fields of agriculture, forestry and food industry organized and regulated by Law No. 45/2009,
- Rank 6: natural persons with residence or domicile in the administrative units where the property is located or in the neighbouring administrative units.
  Rank 7: the Romanian State through the State Property Agency."

For this reason, new obligatory criteria have been set for potential buyers who do not have a right of first refusal. If none of the pre-emptors wishes to buy the

agricultural land any associated property, this land may be sold to individuals or legal companies, provided specified cumulative criteria are met. Buyers who have been residents or living in Romania for a minimum of five years, are given preference under these terms. Acquisitions made from buyers with Romanian agriculture experience, prior to the sale offer advertisement date, are also preferred. Similarly, a majority shareholder must have lived in Romania for a minimum of five years prior to the sale offer advertisement date. Successive sales are limited by the government; the new law limits the sale of agricultural land for a time frame of eight years from the date of purchase by imposing a fine to buyers equal to 80% of the difference between the selling price and the purchase price of the corresponding land as it appears in the notarial record. This provision also applies to the direct or indirect transfer of majority shares in enterprises that own more than 25% of their assets in the form of agricultural land. Double taxation is avoided by applying the profit tax to a reduced tax base. The absolute invalidity of the deed by which the controlling stock was transferred is a consequence of violations against these obligations. The amendment provides in its current form, for a mandatory procedure for all investments that result in land use other than agricultural. The procedure for abandoning the agricultural use of land is neither repealed nor explicitly changed. All future amendments to the law should be measured against the extent to which changes to secondary legislation could restrict or impede the release of agricultural land [55].

4.8.1.6 European subsidies for the Romanian agriculture

With the membership in the European Union Romania has become access to direct payments under pillar 1 of the CAP. They are market-related costs which are paid to EU farmers. The objectives of direct payments are boosting the viability, productivity, competitiveness, and sustainability of the agriculture in all European Member States. Pillar 2 is orientated towards rural development. It includes aids for training, advisory, innovation and risk-management programme [185].

But the CAP direct payments have been inequitably distributed. In 2012, farms above 500 ha accounting for 1% of agricultural holdings gained 50% of the subsidies. Moreover, the direct subsidies have risen in recent years which makes Romania very attractive for land grabbers. Another obstacle for Romanian farmers is the limited access to the EAFRD. The funds were only paid to those farmers who put up 50% of the finance for the project. Generally, farmers do not have enough capital for expenditures on modernization and they have limited access to bank loans [25]. Furthermore, the CAP 2007–2013 supported the dualistic structure in the EU. Each agricultural holding allotted a given amount of Single Payment Scheme (SPS) entitlements in the first year of SPS. These entitlements depended on the SPS model and the eligible area of the holding. But the entitlements were only effective if the farms submitted them by an equal amount of eligible land. The consequence was: if farmers did not have the ownership for this amount of land, they could not receive the payments. Therefore, the unequal distribution of CAP subsidies led to the land grabbing. The fact that Romania's top 1.1% of beneficiaries of CAP direct payments received 51.7% of those payments in 2013 highlights this argument [57].

This unfair distribution of direct payments has not changed significantly. In 2019, 94% of farms received only 29% of the direct payments, and regarding the share of 81% of farms, their share of direct payments only amounts to 16% (see also sub-section 4.9.3) [112].

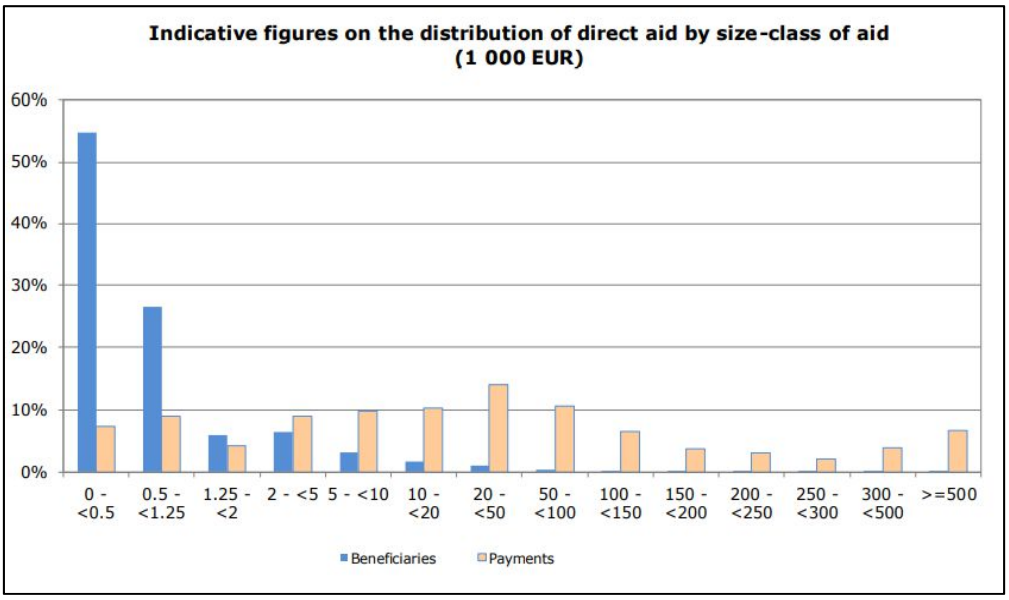


Figure 4.9. Distribution of direct aid by size class of aid 2019 [112]

4.9 Agricultural subsidies in Romania

4.9.1 Subsidy system in the past

The break-up of the communist state in Romania resulted in reforms in the agriculture and food sector. The reforms included the 1991 Land Law which determined the dissolution of the cooperative and state farms and the return of ownership of land to former farmers [57]. Until 1997 the government had subsidized agricultural products of national importance (wheat, milk, pork, and poultry) by paying minimum prices for these products. In return farmers had to commit themselves to selling their production to the so called 'integration centres'. In addition, state-controlled farms especially benefited from input subsidies, extensive direct payments, and credit schemes [60].

Romania implemented a new reform package in 1997 which included an adaptation of economic policies. The aim was to increase macroeconomic stability, to sharply reduce inflation through a restrictive monetary policy and to minimize the budget deficit. The called Agricultural Sector Adjustment Loan (ASAL) programme of the World Bank provided coupons for agricultural input. It served to divert subsidies from state farms and in this way to raise agricultural production [57].

In 1997 Romanians concluded the ASAL contract with the World Bank with an amount of 350 million dollars [60].

The agrarian subsidy of 1997 has continuously changed and has been adapted continuously. The government regulation of June 2001 stated that only farms with not less than 110 ha of farmland or 15 dairy cows were authorized to receive the entire agricultural subsidies. Due to the unfavourable response of the EU a change in the rules followed in April 2002. From now on there was also the possibility to obtain support payments for those family farms which wanted to increase their market sales. However, the support for the small farms was very limited as the criteria such as

complex documentation and formal registration requirements could not be met by most farmers [57].

During the pre-accession period from 2002 to 2006 the funding could be divided into two parts: national payments and EU payments. National payments included income subsidies, input subsidies, commodity/product subsidies, investment subsidies, other subsidies and co-financing to the Special Accession Programme for Agriculture and Rural Development (SAPARD) provided by the EU. EU payments contained the support for SAPARD [177].

After EU Accession between 2007 and 2013, Romania's subsidies in agriculture have been characterized like in the period of pre-accession but with a few changes. Changes in national payments are as followed: the income subsidies were extended by complementary national direct payments and the 2008 de minimis aid and co-financing was extended by the National Rural Development Programme (NRDP). EU payments were divided in pillar 1 market and income support financed by the EAGF and pillar 2 rural development support financed by the EAFRD. Pillar 1 contains direct payments (Single Area Payment Scheme (SAPS)), market interventions and other direct aids and pillar 2 contains support for SAPARD and NRDP [127,177].

4.9.2 The CAP 2014 – 2020 in Romania and future adjustments

The CAP consists of two pillars: Pillar 1 concentrates on granting direct payments and on market measures whereas pillar 2 promotes Rural Development. The CAP budget for Romania for 2014 – 2020 amounted to EUR 408.31 billion and was divided in two parts: EUR 308.73 billion for direct payments and market measures and EUR 99.56 billion for rural development [93].

The EAFRD contains the European Regional Development Fund, the European Social Fund, the Cohesion Fund, and the Fisheries Fund. The Partnership Agreement of the CAP makes it necessary to meet several challenges. The Romanian National Rural Development Programme from 2013 to 2020 covers three of these, namely: competitiveness, resources, people and society. The last challenge is an obligation to prove how Romania intends to use European funds to fulfil the objectives of the European Union. The core element of the NRDP is increasing competitiveness with objectives like improving the economic performance of farms and market access for farms, increasing agricultural output etc. Another priority is the sustainable management of natural resources with objectives like environmental quality, biodiversity, sustainable forest etc. Inclusive growth is the third priority (People and Society) of the NRDP. An example for another aim is promoting an economy with a high rate of employment [196].

On December 17, 2020, the EU budget 2021-2027 was adopted by Council decision. Thus, all conditions were met for the Multiannual Financial Framework for the period 2021-2027 to enter into force on 01 January 2021. The MFF has an influence on the level of the agricultural budget, which is decisive for the future design of the CAP. The European Commission has presented a legislative package with proposals for the design of the CAP after 2020. However, final decisions on this are still pending. Due to the lack of a legal basis at EU level, the new funding period has not started before 2023. For the transition period of two years (2021-2022), the current CAP framework was continued by a transitional regulation. The new name is thus: 2023-2027 funding period. The transitional regulation, which has entered into force, provided the legal basis for CAP funding to continue after the current regulation expired at the end of 2020. In addition to the use of EAFRD funds for the years 2021

and 2022, the transitional regulation also governed the use of the eight billion euros that were to benefit rural regions as part of the EU's economic stimulus programme. 37% of the funds were to be used to promote environmental and climate protection, animal welfare and LEADER regions. At least 55% of the funds were earmarked for promoting economic and social development in rural areas. For the first time, all EU Member States must develop national strategy plans for the 1st and 2nd pillars of the CAP for the new CAP funding period. These enable the Member States to target support measures and align them with their respective national needs [114,210].

The CAP strategic plan sets funding priorities in the interest of environmental and climate protection as well as crisis-proof agriculture and attractive rural areas. With the reform of the CAP, the EU is pursuing the goals of modernizing the support measures available to farmers and rural areas, making them more efficient and strengthening them. This is intended to enable agriculture to adapt to changing social and environmental requirements - without losing its competitiveness. Another important concern is to reduce the administrative burden for the support measures. The main results of the trialogue negotiations on the implementation of the new CAP are the EU-wide mandatory organic schemes. At least 25 percent of direct payments must be reserved for this purpose. Furthermore, Member States will be required to redistribute at least 10 percent of direct payments in favour of smaller farms, and a new mandatory minimum rate of 3% of Member States' income support budgets will be set aside to support young farmers. This may include income support, investment or start-up aid for young farmers. [45,65,114].

In this context, the EU Commission has also issued their recommendations on the strategic orientation of Romanian agriculture for the new funding period [108]. These recommendations concern the categories [108]:

- foster a smart, resilient, and diverse agricultural sector to ensure food security,
- boost environmental protection and climate action and contribute to the EU’s environmental and climate-related goals,
- enhance the socioeconomic fabric in rural regions and address associated societal issues,
- modernise the industry through the promotion and knowledge-sharing of innovation and digitalisation, further encouraging their use.

Broadly speaking, the recommendations are aimed at improving the viability of small farms with development potential in particular, strengthening their competitive position and increasing the diversification of agricultural production. Furthermore, agricultural production itself must become more sustainable. This is to be achieved mainly by making nutrient management more effective, concerning soil protection, water management, the conservation status of agricultural areas and animal welfare conditions. Other recommendations include reducing the economic and social disparities between urban and rural areas, reducing poverty in rural areas, slowing the rural exodus, supporting young farmers and modernizing production methods [108].

4.9.3 The development of CAP payments to Romania

Figure 4.9 shows the development of CAP payments. Since the EU accession a steady increase in subsidies until 2017 is recognizable. Only in 2014 and 2016 were declines in the payment trend discernible, before the previous peak value was reached in 2017. In 2007 the total of CAP payments amounted to about EUR 7 million and in

2017 they were EUR 3,398 million, split into the amount for EAGF of EUR 1,828 million and for EAFRD of EUR 1,569 million. From 2018 onwards, payments are subject to annual fluctuations. In particular, payments from the EAFRD have declined significantly compared with 2017. Overall, payments are currently back on a level well above EUR 3 billion, even if the figure for 2017 in total has not yet been reached again [94].

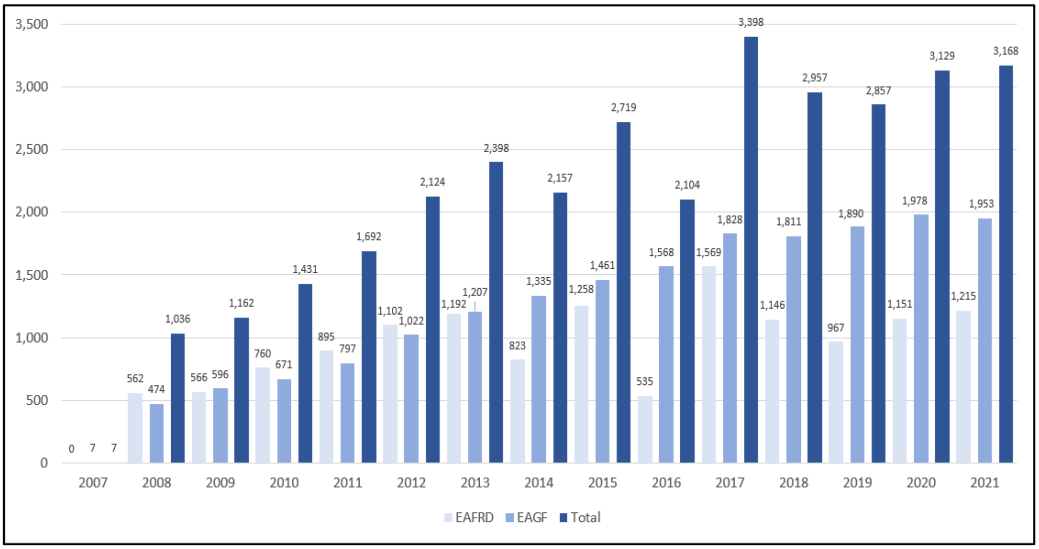


Figure 4.10. Development of CAP payments in Million Euro to Romania [94]

Referring to the year 2019, the unequally distributed direct payments among agri-SMEs and large farms concerned Romania and the whole European Union to a variable extent. On the one hand, in Romania, almost 81% of the beneficiaries received amounts under EUR 1,250. The direct aid for these beneficiaries was only 16% of the total expenditure. In the EU28 48% of the beneficiaries received under EUR 1,250 and hardly 5% of the direct aid. In Germany only 17% of the beneficiaries received under EUR 1,250 and less than 1% of the direct aid. On the other hand, in Romania 0.25%, in EU28 0.50% and in Germany 1.72% of the beneficiaries obtained more than EUR 100,000. The direct aid for these beneficiaries was 26% in Romania, 29% in the former EU28 and 26% in Germany of the total expenditure. The comparison shows that not only distribution within Romania was unfair but also within the EU countries in general. In Romania, many businesses got less than EUR 1,250. In contrast, many farms in Germany received between EUR 2,000 and EUR 50,000. Compared to the former EU28 the difference is clearly visible, even if it is not as high as compared to Germany [110,111,112]. Comparing the data with 2015, it can be seen that there has been no significant change in the basic distribution situation. At most, there are slight shifts in favour of the farms that received up to EUR 100,000. [90].

Table 4.7. Distribution of direct aids to the producers in the financial year 2019 [90]

		Romania	EU	Germany
Total number of beneficiaries (x 1,000)		827	6,158	311
Amount paid to the beneficiaries (x 1,000) [EUR]		1,847,944	38,162,145	4,794,444
Beneficiaries receiving [%]	< EUR 1,250	81.30	48.10	16.50
	EUR 1,250 - 100,000	18.45	51.40	81.78
	> EUR 100,000	0.25	0.50	1.72
Direct aid distributed among beneficiaries Receiving [%]	< EUR 1,250	16.30	4.60	0.80
	EUR 1,250 - 100,000	57.90	66.20	73.00
	> EUR 100,000	25.80	28.70	26.20

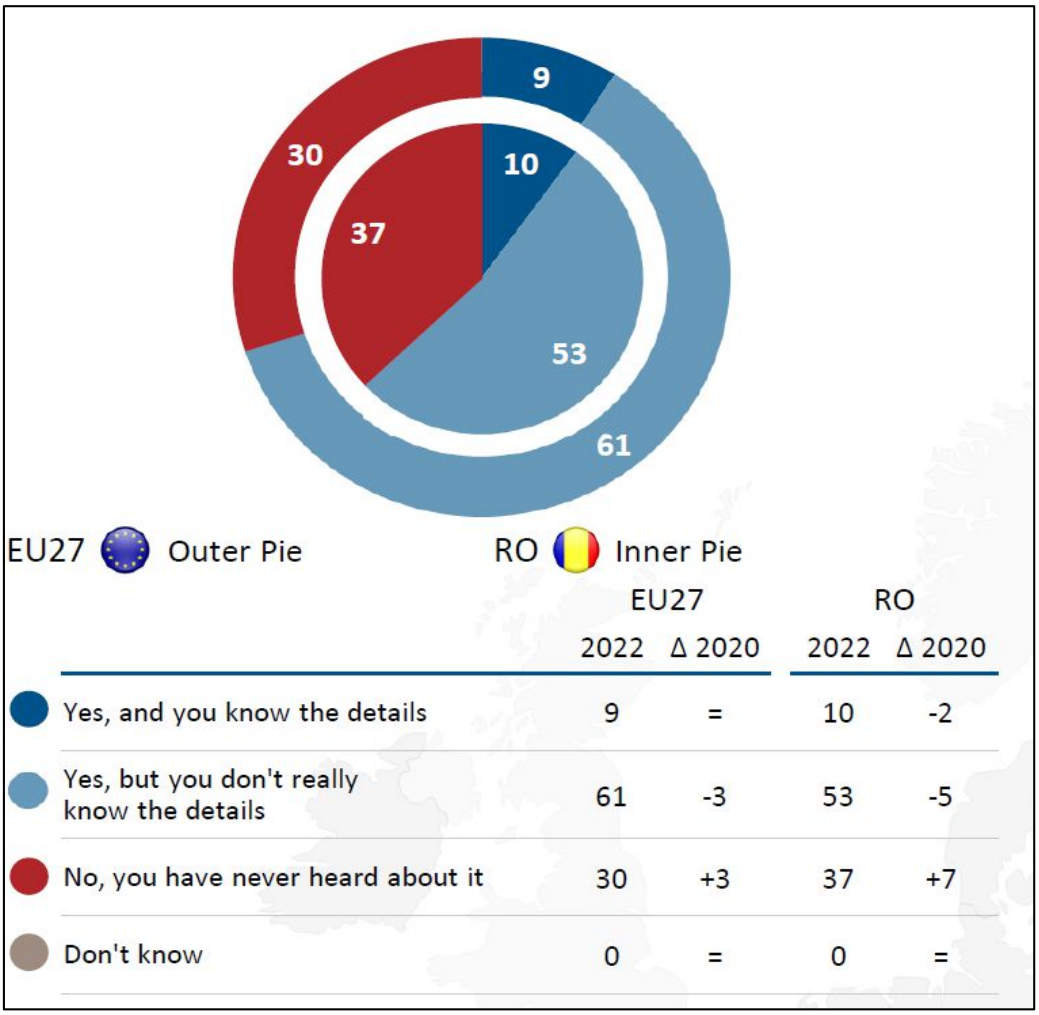
4.9.4 Farmers' knowledge and acceptance of agricultural aids

The results of various surveys regarding awareness of funds and needs of Romanian farmers are explained below.

The empirical research regarding European funds by Romanian farms in the agricultural sector in 2012 has led to the following conclusion: 76% of the interviewed farmers were aware of the access to EU funds. But most of Romanian agricultural enterprises were not interested in application for agricultural EU funds because of the lack of funds, excessive bureaucracy, long time to approval and the lack of eligibility for a project. If one takes a look at the respondents' perspectives the support by state authorities can be improved and the costs of accessing the payments are too high. But those farmers who had successfully applied for European funds thought that the state authorities' support was satisfactory [217].

The main conclusions of the Eurobarometer survey in 2016 were the following: 18% of the Romanian respondents stated that they knew the details about the support through the CAP, 50% knew it roughly, but did not really know the details and 30% had never heard of it. The survey of the EU28 showed similar results. Furthermore, most of the Romanians thought that the support for farmers was too low and that they would like to see an increase in the EU financial support for farmers over the following ten years [126].

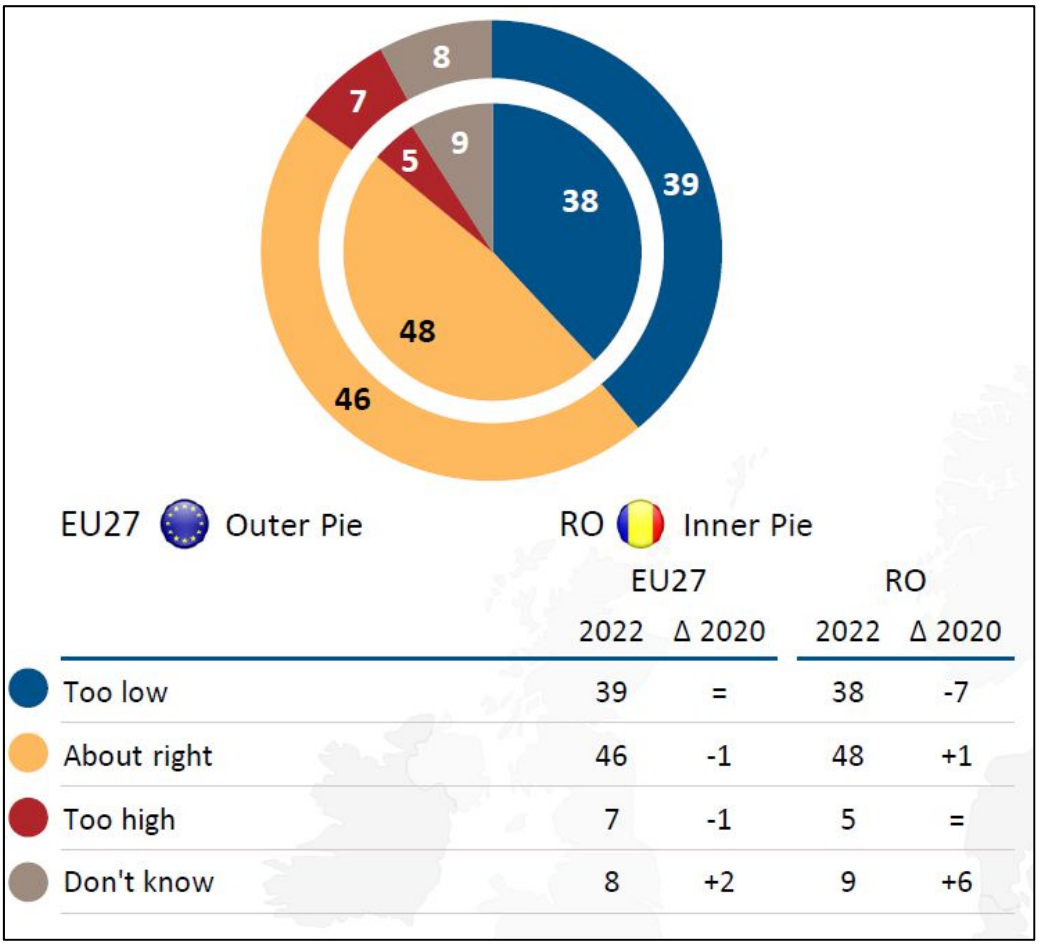
The most recent survey from 2022 has not revealed any serious changes with regard to this opinion. As before, only a small proportion of 10% of farmers was comprehensively informed about the existing funding opportunities and associated administrative activities. The vast majority had rudimentary (53%) or no (37%) knowledge of this [130].



	EU27		RO	
	2022	Δ 2020	2022	Δ 2020
Yes, and you know the details	9	=	10	-2
Yes, but you don't really know the details	61	-3	53	-5
No, you have never heard about it	30	+3	37	+7
Don't know	0	=	0	=

Figure 4.11. Knowledge of agricultural subsidies in the EU in % [130]

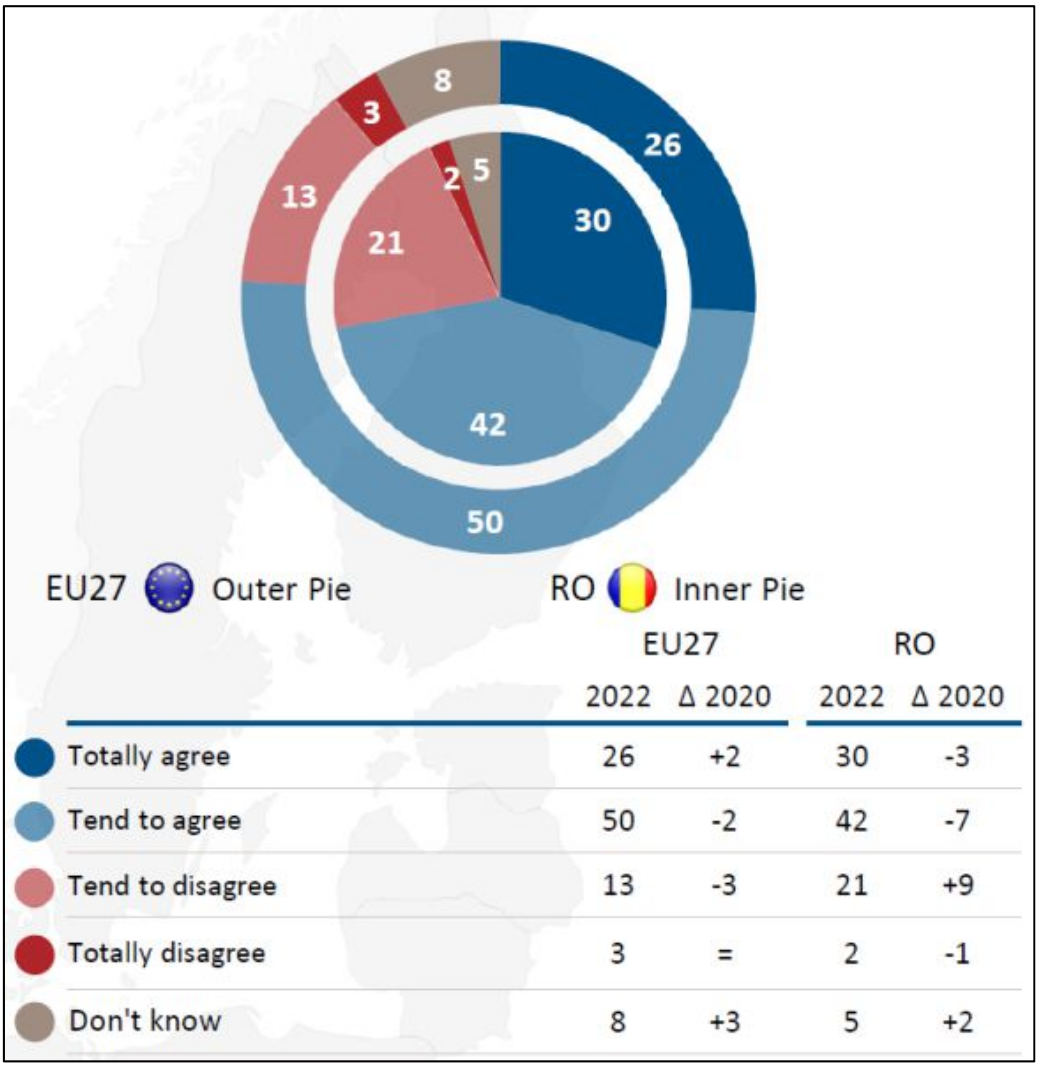
Farmers were divided concerning the level of support. Around 48% considered the level of subsidies to be sufficient. In contrast, around 38% still considered the subsidies granted to be too low [130].



	EU27		RO	
	2022	Δ 2020	2022	Δ 2020
Too low	39	=	38	-7
About right	46	-1	48	+1
Too high	7	-1	5	=
Don't know	8	+2	9	+6

Figure 4.12. EU support to farmers in % [130]

Other remarkable results of the survey were the majority conviction (82%) that agriculture is important for the future development of Europe and that from the subsidies spent all citizens of the EU benefited and not only the farmers did (72%) [130].



	EU27		RO	
	2022	Δ 2020	2022	Δ 2020
Totally agree	26	+2	30	-3
Tend to agree	50	-2	42	-7
Tend to disagree	13	-3	21	+9
Totally disagree	3	=	2	-1
Don't know	8	+3	5	+2

Figure 4.13 CAP benefits all European citizens in % [130]

The majority of farmers surveyed also agreed that the objectives of the CAP would be achieved. Finally, the majority of farmers (43%) saw the main task of farming in providing safe, healthy and sustainable food of high quality. The biggest risk to food security was seen in extreme weather events (39%), natural resource scarcity (23%), and the diminishing number of farms in the EU (30%). Although the assessment of Romanian farmers differed from the overall European opinion on individual issues, the discernible trends were generally the same [130].

In addition, the latest survey of young farmers' needs in Romania in 2015 presented similarities and differences in the needs of young farmers between Romania and the Member States. The most important needs for young farmers in Romania were the availability of land to be acquired or leased, the granting of subsidies, the access to credits and to qualified labour and machinery. The need for access to credits and insurance, the advice of extension services were significantly higher than in other

Member States. Moreover, more than 60% of the Romanian respondents admitted that they have a lack in knowledge and skills regarding technology, marketing, management, and farm strategy. The lack of time was the main obstacle in obtaining information followed by language difficulties and costs [195]. In view of the already mentioned age structure, CAP was called upon in particular to provide enhanced support for young farmers in the future.

4.10 Conclusion

Based on the previous data, the following conclusions can be drawn: although the agricultural sector is of immense importance for Romania, as it contributes a great deal to the GDP and many Romanians work in this sector, agriculture in Romania has not changed significantly. Despite increased investment and subsidies in agriculture, Romania's competitiveness has not been able to match the competitiveness of the other EU Member States. Small farms can no longer withstand the competitive pressure of low prices offered by large farms and foreign companies, so that the Romania agriculture could not establish itself on the world market. The major issue is that the productivity of Romanian farms has not been increased due to the large number of very small farms, the poor infrastructure, and the use of outdated technology. The consequences of land grabbing and the unequal distribution of subsidies also play an important role. Because of the purchase of land by large investors and increased land prices, it is scarcely possible for agri-SMEs to continue to develop and expand. The limited access to loans and subsidies makes it difficult for farmers to raise new capital. However, during the CAP period from 2014 to 2020 more smallholders could be reached than before. In the CAP period from 2007 to 2013, the absorption rate for pillar 1 was satisfactory (90%) but the absorption rate for pillar 2 was less than 60%. This was mainly due to the fact that the application for pillar 2 subsidies was very difficult to understand, the application process was very lengthy, and capital or loans were necessary for application. Private consultants were too expensive and the lack of information about CAP was immense. The latest surveys in this respect show no fundamental change.

Provided that a larger improvement is being made in Romania, this country still has a great potential in agriculture based on the high fertility of soils, the biodiversity, the large number of unused land areas and good weather conditions. Small farms have the chance to develop into medium-sized farms in order to become more competitive and economically viable. This can be realized if in the future the application process will be facilitated or simplified for small farms and will be made more difficult for large farms. Furthermore, the addressing of subsidies should be improved with the aid of surveys. The employees in the public authorities of each region should be specifically trained for the subsidy processes and be available as consultants for the farmers.

Further suggestions are more accessible bank loans for small farmers, a strong restriction on the purchase or lease of large land areas by large investors and an improved infrastructure through an increased participation of the private sector [8].

5 CONSEQUENCES OF THE CURRENT SUBSIDY POLICY IN EUROPEAN AGRICULTURE

5.1 Significance of the European agriculture

Agriculture is an important economic sector in the European Union and, with the subsidies granted, a significant item in the budget of the European Union. A little more than 10 million farms are responsible for managing 174 million ha; that is nearly 40% of the entire EU territory which is used for agriculture. Farms in Romania account for around 33% of these, while farms in Poland account for 13%, followed by Italy and Spain. Farm size in Romania and the Czech Republic vary, on average between 3 ha and 133 ha [101].

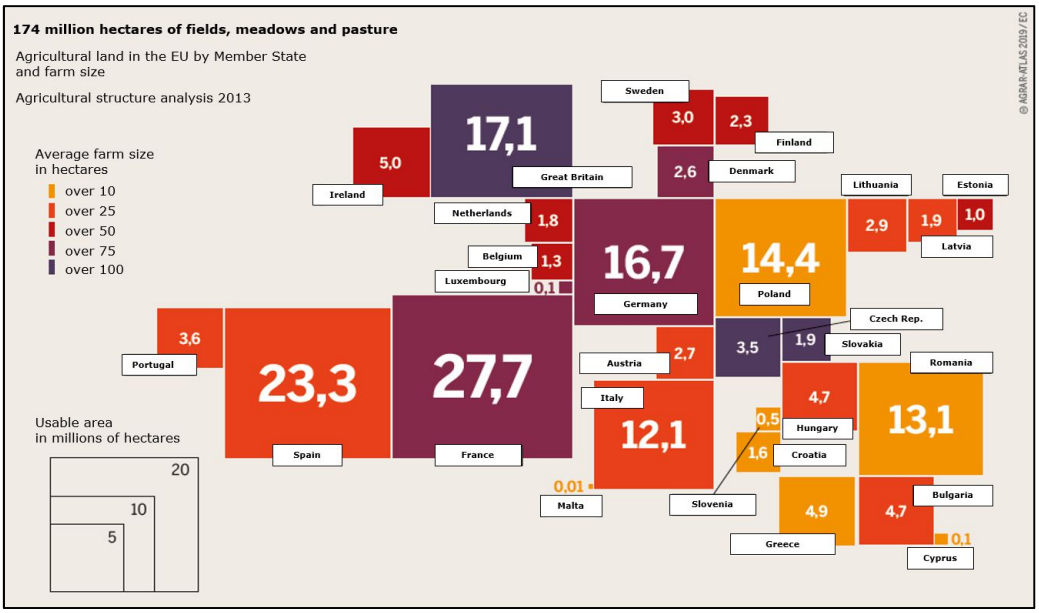


Figure 5.1. Agricultural land in Europe [54]

Around EUR 60 billion, or about 33% of the EU budget, is spent on promoting European agriculture each year. This corresponds to about EUR 114 per EU citizen. This subsidiary's main aim is to foster the implementation of the CAP's objectives, which essentially entails guaranteeing a steady food supply, with a good variety and quality, at a fair price, as well as a reasonable income for farmers. Despite the experiences of overproduction (butter mountains, milk lakes) and the associated quantity destruction and export subsidies (artificial reduction of product prices in the world market) and the already ongoing reforms, the objectives of the CAP have not yet been reached. The impact of European agriculture on the environment and nature, sustainable development, and global equity (product quality, animal welfare, climate change, human health, social development in rural areas) is irrelevant in the CAP [54, 107]. It is foreseeable that the targets for climate protection, biodiversity and global

justice will be missed, as the EU's agricultural policy is not geared towards these goals.

5.2 Impact of first pillar funding

Since 1992, direct payments have been used to support agriculture. In the 2014-2020 period, direct payments accounted with EUR 43 billion for approximately 73% of total agricultural subsidy payments [29]. The direct payments can be linked to products, that means the payments depend on the generated quantity, or they could be decoupled. In the case of a decoupled payment, this granting of subsidies depends on the size of the acreage. Around 90% of direct payments have been decoupled. Direct payments are essentially the financing of the European Agricultural Guarantee Fund and are referred to as the first pillar of agricultural subsidy payments. Size and type of enterprises determine the influence of the direct payments on the income. On average, about EUR 267 per ha were paid. However, 80% of the funds were paid to only 20% of the beneficiaries because of the different sizes of their farms. More than 30% were accounted for only 131,000 of the approx. 6.7 million businesses, i.e., about 2%, received more than 30% of total direct payments [97,197].

Thus, extensive aid is granted to agricultural companies whose incomes are well above the EU average anyway. For farms with a low UAA (such as producers of pork, poultry, horticulture, and wine) direct payments are therefore of little importance. In agriculture and pastoral farming, direct payments can exceed the income from primary agricultural activity. In the Eastern Member States, the problem of distribution is even more serious than in Western countries.

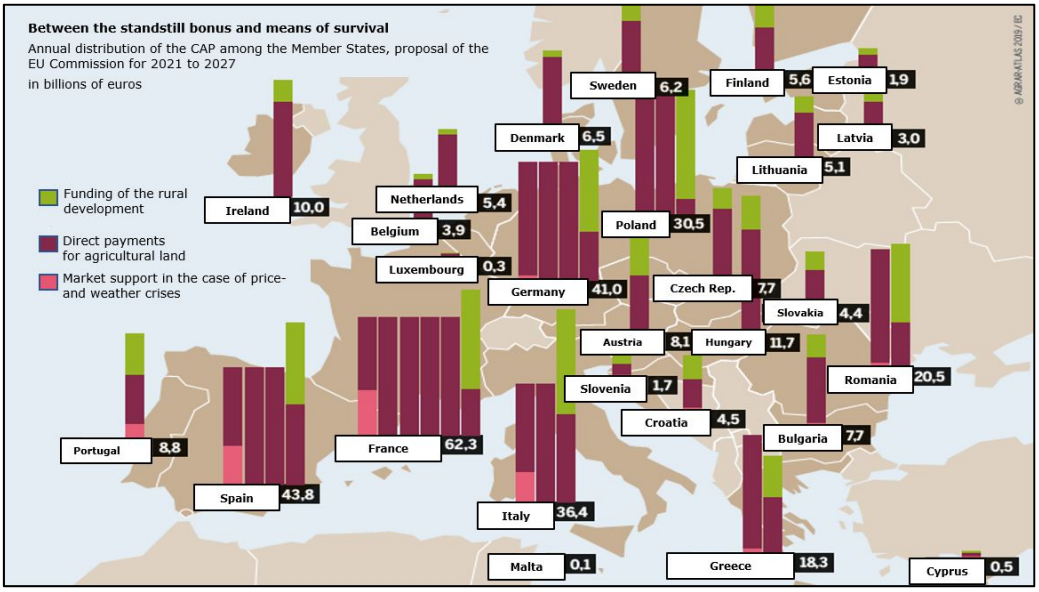


Figure 5.2. Share of agricultural subsidies [197]

In particular, direct payments in the context of the CAP are designed to safeguard farmers' incomes. That increases low incomes, stabilizes incomes in a risky field, and compensates for higher EU standards in the international competition. However, this type of support also has unwanted market influences. For example,

around half of the utilized agricultural area is leased. By increasing lease payments, subsidies are withdrawn by the landowners [197].

Direct payments in their current form are inefficient and ineffective. The reasons are first that all farms are paid on the basis of cultivated area and e.g. not due to the achievement of concrete results and goals. Secondly the basic problems of low incomes and low productivity cannot be resolved concretely. Moreover, they are unfair, as most of the money is paid to farms whose incomes are well above the average throughout the agricultural sector anyway [197].

5.3 Impact and potential of the second pillar funding

The second pillar of funding is provided by the European Agricultural Fund for Rural Development. The second pillar disposes of far less money than the first pillar. The share of total agricultural subsidies is about 25%. These funds are intended to promote and finance measures in favour of climate-, environmental-, animal-, water-, soil, and nature protection as well as the competitiveness of enterprises, the general sustainability aspect, and a regionally balanced development in accordance with the principle of public funds for public goods. The funding for this second pillar attempts to increase the allure of farming in the future for those living in rural areas. As a result, funding is focused on the following long-term and strategic goals [120,164,166]. Eligible measures are allocated to the six defined topics of knowledge transfer and innovation, profitability and competitiveness, organization of the supply chain, preservation of ecosystems, climate protection and economic development of rural areas. The second pillar of funding thus represents the environmental and social part of the CAP and must be co-financed by the respective Member States. The effectiveness of the funds used depends on the concrete programmes implemented by the Member States. Due to the scope which is available to the Member States in order to raise or lower the second pillar's funds, their effectiveness also depends on how much money they provide for the second pillar. Austria has about 44% of its EU agricultural funds in the second pillar, France only about 17% [237].

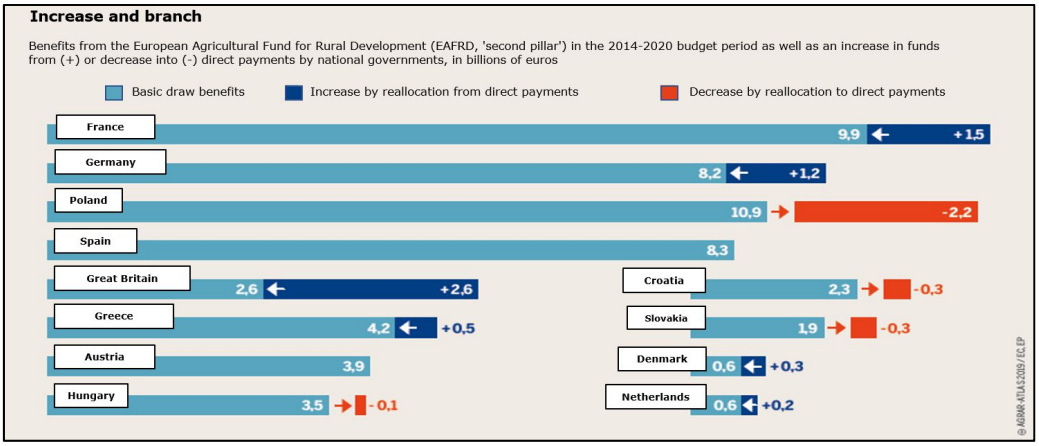


Figure 5.3. Increase and decrease of agricultural subsidies of the second pillar [237]

Around 20% of the EU population lives in rural areas, which varies widely. In order to meet their needs, the policies of the second pillar can be made flexible.

Investment aid, aid for areas with difficult climatic conditions and subsidies for environmental and climate change measures are particularly common.

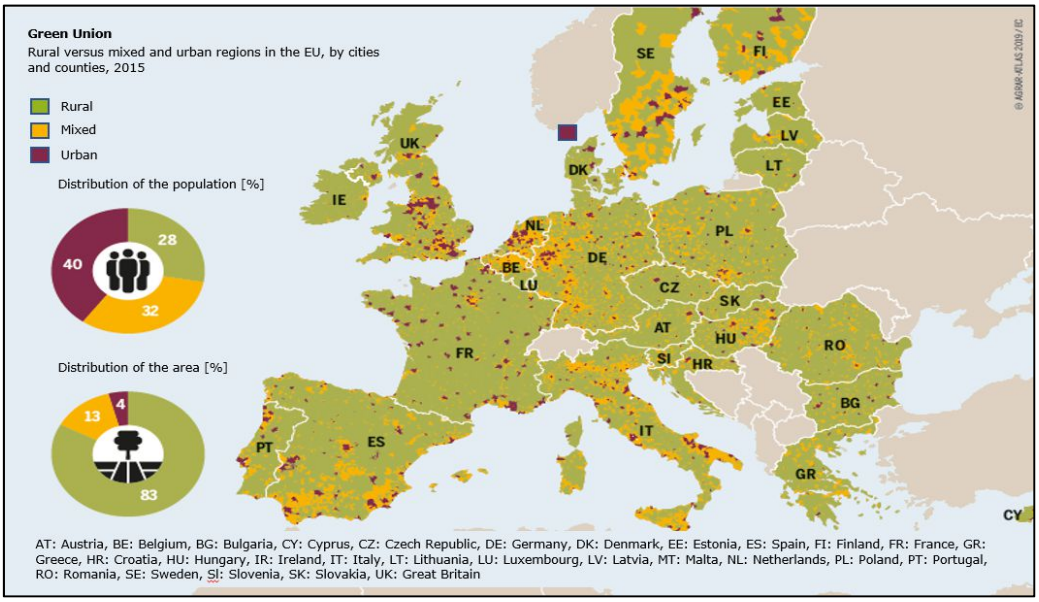


Figure 5.4. Rural and urban regions in the EU [237]

For example, Ireland is strengthening organic farming by increasing its competitiveness, as well as by supporting environmental sustainability and contributing to rural development. Lithuania uses second pillar funding to modernize and financially stabilize agri-SMEs, whereas the Netherlands is substantially promoting innovation and environmentally sustainable policies [209].

The second pillar for the promotion of agriculture is very useful as it can be tailored to local needs, such as improving the connectivity to the digital network or combating the aging of rural areas and thus serves the common good.

5.4 Impact on the disappearance of farms in the European agriculture

In comparison to the period when the CAP was started there has been a drastic shift concerning numbers and sizes of farms in the EU. Fewer but larger farms now provide food for the majority of human consumption. The number of farms in the EU declined by 25% in the ten years between 2003 and 2013. Particularly in the Czech Republic, the average size of farms has expanded from 80 to 130 ha. Overall, the number of livestock animals retained on smaller farms has decreased by more than 50% since the year 2005; approximately 75% of the animals are kept on the larger farms. More than 75% of all livestock units (cattle, pork, sheep) are kept in larger farms in half of all the EU countries. In Denmark and Benelux, the share is even higher than 90%. In Romania, about one third of the animals are kept in smaller farms [100,103,134].

The division of agricultural enterprises is made according to area and operating income in the five categories 'very small', 'small', 'medium', 'large' and 'very

large'. Up to now, the smaller family farms still form the majority, measured by the number of farms and employees, but the number of these farms has been declining sharply. Large and very large agricultural enterprises have become increasingly important. Farms with more than 100 ha account for only about 3% of all EU farms. However, their number has increased by about 16% in the last decades, and they now use around 52% of the total agricultural area. This development has also been pronounced in Bulgaria, Hungary and Slovakia, where a few very large firms dominate the national agriculture. For instance, only approximately 2.5% of the farms in Bulgaria are bigger than 100 ha. Nevertheless, these farms cultivate about 85% of the available agricultural land; including the trends for Romania and Poland, it can be determined that this is where the greatest decline in the number of available agricultural jobs has occurred [128]. The growth of huge farms is accompanied by adverse impacts such as job losses, less diversity in the products cultivated, intensive agriculture, and the ensuing environmental damage. About 80% of all farms in the EU are smaller than 10 ha with primarily diverse production; however, only about 10% of the available land is used by these farms, and these farms are now decreasing fast. Between 2003 and 2013, 96% of the disappeared farms disposed of an area of less than 10 ha [19,164,165,166].

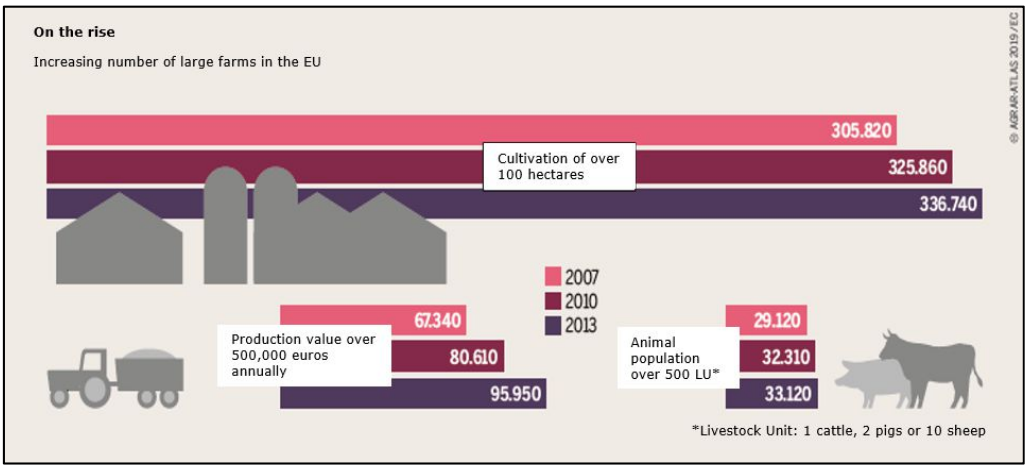


Figure 5.5. Increase in large farms [19]

One of the main reasons for this development is the liberalization of the market and the associated specializations as a consequence of the receipt of direct payments. If subsidies make up a substantial part of the income, then the incentive will be strengthened to acquire more land. Existing large agricultural companies have more capital than small businesses and have the opportunity to dispose the means for further land purchase. Small businesses and newcomers do not have this opportunity to the same extent [19].

Through this approach adopted by the European agricultural policy, inequality in the sector increases. The current subsidy structure is not well suited for achieving the goals it has set itself because of the increasing adverse effects and burdens on species diversity and the climate [154,165]. The amount of funding and subsidies that directly help to protect the environment, the climate, and biodiversity is too low. Only a small amount of such payments is dedicated to ecological agriculture in regions with high biodiversity. In contrast, the majority of such payments are invested in intensive

agricultural areas [165,238].

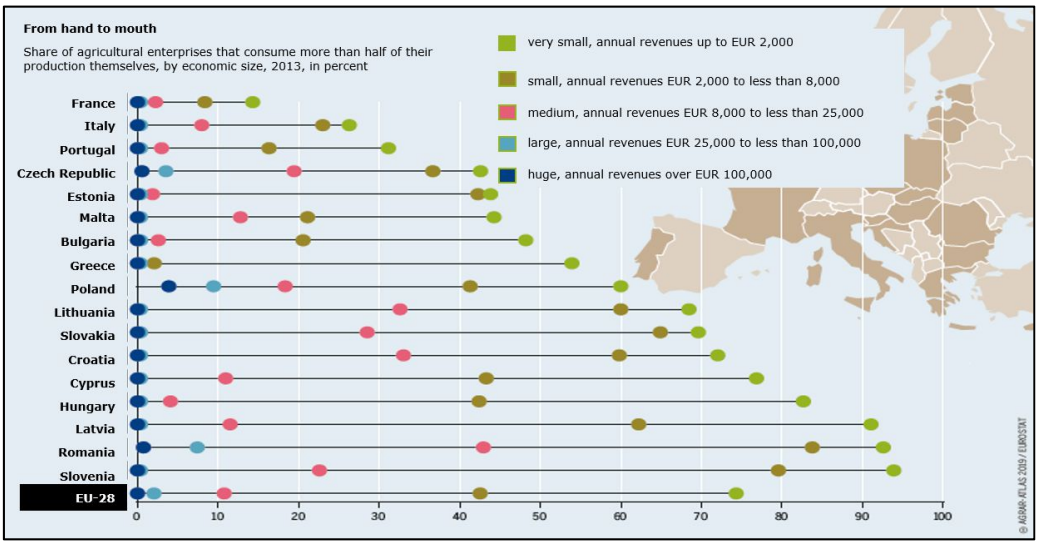


Figure 5.6. Share of self-consumption of the produced goods [19]

Direct payments enable many people to work in agriculture despite poor economic conditions they live in. But all too often these direct payments have led to the fact that land ownership is concentrated in only few hands. This in turn prevents future generations from acquiring land and farms. Although small farms have received more money specifically since 2013, this did not stop the disappearance of smaller farms. Subsidiaries for young farmers are not enough to attract young people for taking up jobs in agriculture. Between 2007 and 2013, about 190 thousand young farmers received grants, but approximately 3.5 million people over the age of 65 will retire in the upcoming years. This group of persons mainly manages agri-SMEs. The funds (2% of the budget) do not reach those who urgently need this financial support and are too badly linked to a national business start-up policy [19].

The new entry into this branch is supported by grants for agricultural start-ups, joint acquisitions, or agricultural cooperatives. Many new small businesses are innovative and operate organic farming, supply the urban customers, engage in solidarity agriculture, or process the food produced on their own farms. This increases the value added, contributes to the supply of food from the region, creates jobs and strengthens the environment. Targeted action at regional, national and EU level to promote such new operations would support the change of generations, create jobs, maintain rural structures in Europe and promote the agri-ecological transformation of our food and farming systems.

5.5 The importance of the European agricultural sector for the labour market

More than 22 million people work in the agricultural sector in the EU. Many of them work part-time or seasonally. In countries with many small businesses, their share is particularly high. For example, in Romanian agriculture, only 1.5% of people work full-time. Including part-time and seasonal work, agriculture offered

employment for approximately 9.5 million full-time workers in 2016, which is equivalent to 4.4% of all jobs in the EU [100,103].

The importance of the agricultural sector differs significantly from country to country and goes down below 2% in the UK and Germany and up to more than 10% in Romania, Bulgaria, Greece and Poland. However, the trend is declining everywhere in the EU. Between 2005 and 2016, the share fell by more than 25% and corresponds to a long-term trend. In France, for example, the share was still 27% in 1955, today it is only about 3%. Most of the agricultural work is done by farm owners, including their family members. These are roughly 75% of all agricultural workers. With approximately 35%, the proportion of women is lower than in other sectors of the economy with around 46%. The lowest proportion of women who are employed in the agricultural sector is vaguely 12% in Ireland and nearly 20% in Denmark [100,103].

Much of the agricultural work has since then been replaced using capital for investments in mechanization. The increased investment in measures to increase productivity, such as investments in the use of chemicals, machinery, and digitisation, will lead to a continuation of this development and make more and more agricultural workers redundant. Especially for the countries in South-Eastern Europe, this development is a major problem against the background of high unemployment and the shortage of alternative jobs. The types of jobs are also changing. Self-employment and family work are decreasing, and the share of wage earners is rising. Due to the increasing number of short-term contracts, increasing migrant work and undeclared work, which accounted for around 25% of all agricultural activities in 2010, these paid jobs are often of a precarious nature [283].

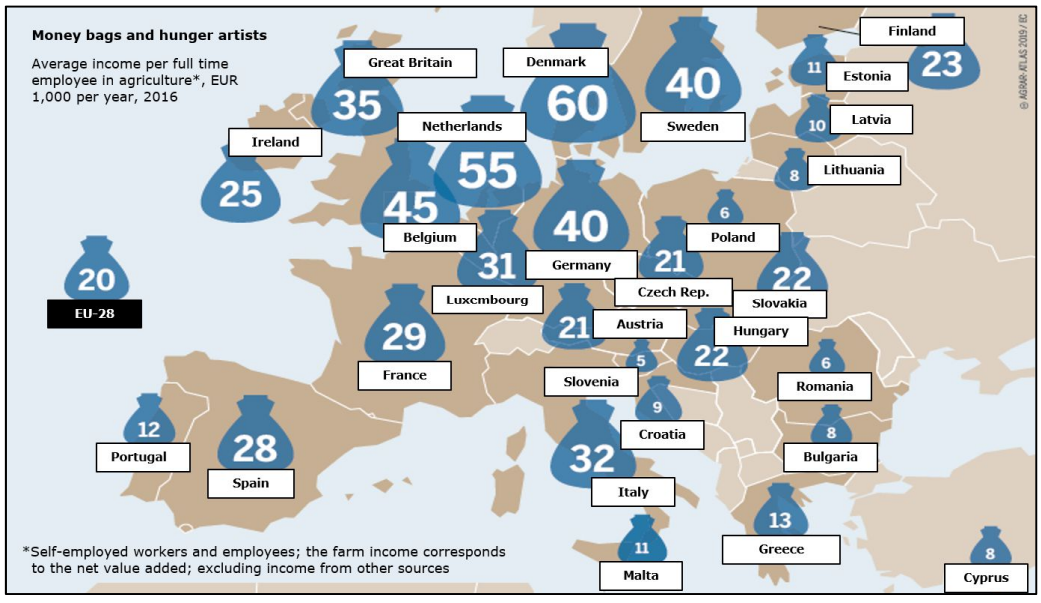


Figure 5.7. Income gap in the European agriculture [283]

Although the stabilization of agricultural income is part of the CAP, maintaining a job or ensuring good job conditions is not a CAP objective. The farm income, however, gives little information about the actual profits' farmers make, as many farmers have multiple sources of income. A key argument in favour of continuing direct payments was the low productivity of agriculture compared to the economy as a whole. Direct

payments can thus account for a significant proportion of one's average operating income. These payments are given per ha or animal regardless of the current price level and lead to strong income fluctuations. So, with falling prices e.g. for milk in 2014 and 2016 of the producers faced existential problems. If prices rise, direct payments reach farms that are profitable anyway and do not have an acute need for additional funds. Payments per ha instead of e.g., per worker support the expansion of agribusiness and boost land prices instead of creating jobs, because the larger the land ownership, the less labour is generally employed per ha. As part of the CAP reform in 2013, smaller agricultural companies should be supported with additional funds, since there are comparatively more people employed. The use of funds was left to the discretion of the individual Member States. Many governments have not paid the funds, or only in reduced form, to small businesses. In connection with the rejected reduction of direct payments to max. EUR 300 per thousand and per farm, the large farms thus remain the main beneficiaries of the CAP. In order to be able to exert a positive influence on the agricultural labour market with the subsidy policy, it would make sense to make social clauses such as appropriate wages, regular training, compliance with health and safety standards objectives of the CAP [23].

5.6 The influence of subsidies on the development of land prices

The increasing concentration of land ownership has a significant impact on agriculture in Europe, as it is the most important resource of agriculture in terms of fertile soil. The land is farmed by fewer and fewer people and industrial agriculture is increasingly taking over the acreage of agri-SMEs. In 2013, more than 50% of the agricultural area in the EU was used by only 3.1% of the holdings. For 75% of the holdings only 11% of the area was available. Between 1990 and 2013, the number of large farms with more than 100 ha has doubled in some Western European countries, in others even quintupled. The same applies to the usable areas that these farms manage. The distribution of land is out of balance, even more than the distribution of wealth. Although the European Parliament has recognized that the existence of small and family farms is threatened, more than 80% of direct payments are paid to the largest 20% of the farms. Extensive lands owned by a few owners are particularly widely spread in Eastern Europe. At first, large parts of the rural population lived here, and the land was still cheap. With the start of direct payments, land prices and leasing rates, such as those in Bulgaria between 2006 and 2012, soared by 175%. The average area of large farms in Eastern Europe is well above the EU average of around 300 ha. Bulgaria with an average of 671 ha, the Czech Republic with about 698 ha and Slovakia with nearly 781 ha have the largest area size for large farms [23].

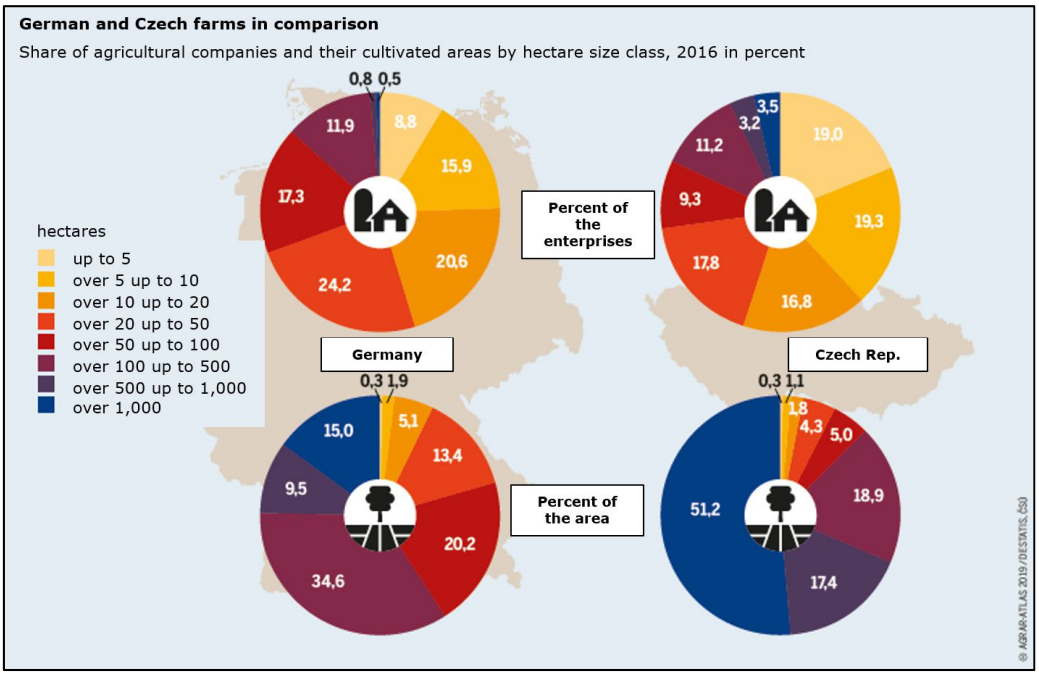


Figure 5.8. Share of farms by ha size class [23]

Small farms disappear very quickly in countries where they once shaped the image. In Romania, nearly 1.7 million small farmers manage farms of a maximum size of 1 ha. They grow food for self-supply and sell surpluses. Due to their small size, these farmers often do not benefit from the direct payments, because the payment is linked to a minimum of 1 ha. Without grants, however, these farms cannot exist permanently on the market. They only have the opportunity to sell or give up their business. This type of repression also displaces types of production. In Bulgaria, the abandonment of smaller farms or their sale reduced the small-scale production of vegetables and fish in favour of a subsequent cultivation of grain monocultures. The increase in rental prices and the handling of real estate transactions in dubious circumstances lead to the concentration of land holdings to a considerable extent in favour of predominantly foreign institutional investor groups and prevents the market access for newcomers without land ownership. In the European population there is a wide acceptance of the CAP to secure a sufficient income, especially for agri-SMEs. Strengthening the smaller farms and the diverse cultural heritage of European agriculture can certainly be achieved, if support policies are increasingly geared towards paying farmers to provide public goods such as climate protection, biodiversity, or water conservation [23].

5.7 The impact of agricultural subsidies on biodiversity in Europe

Intensive agriculture is considered the biggest threat to the flora and fauna in Europe. The status of ca. 60% of species and ca. 77% of habitats are considered unfavourable. The number of field birds has decreased by nearly 56% since 1980, and

since 1990 there has been a ca. 35% fall in grassland butterflies. In some cases, individual species such as the turtle dove today are threatened with extinction. The biomass of insects in Germany has shrunk over around 75% since 1990. Intensive agriculture is therefore the biggest threat to biodiversity [27].

Short-term yield as a goal of agriculture offers less food for the animal world. A further reduction in food supply is the lack of natural vegetation as a result of monocultures and the use of fertilizers and pesticides, which in turn kills insects and weeds. In addition, the intensive use of agricultural land offers the wild birds less space to breed and is responsible for the clearing of wild hedges and the draining of wet habitats as their original habitats. Likewise, intensive agriculture also has an indirect impact on wildlife. It overuses water as an important raw material for production, pumps it off or pollutes it with fertilizers and pesticides. Excess nitrogen gets into the soil and reduces plant diversity. The outflow of nitrogen into the water can cause algal blooms, which consume oxygen and cause the death of aquatic animals [27].

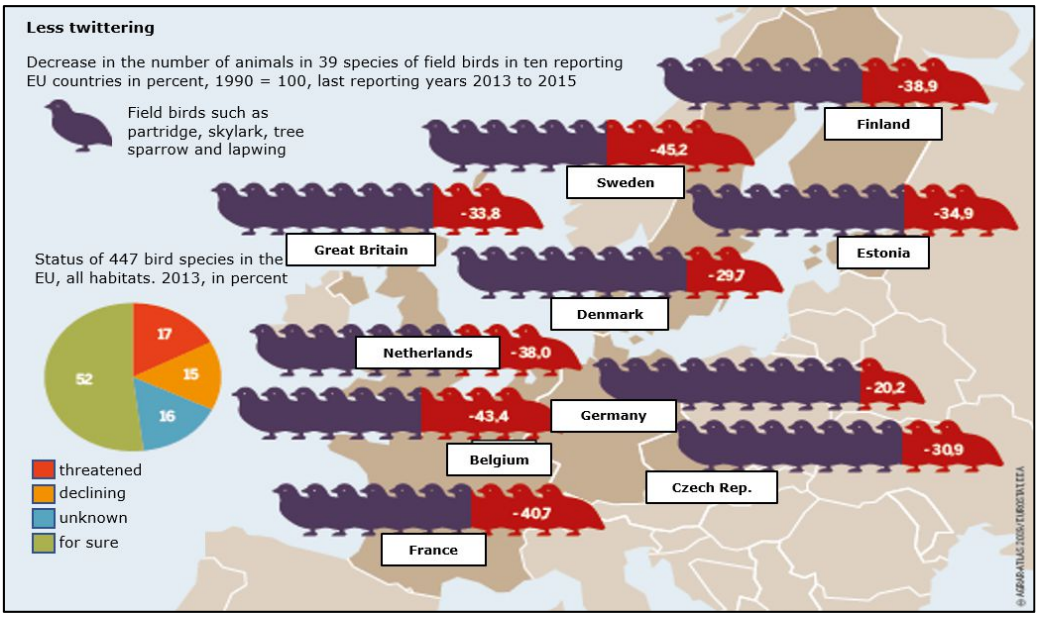


Figure 5.9. Bird population as a bioindicator [27]

Since birds are easy to count, they are a well-known bioindicator. Where intensive agriculture is practiced, stocks are falling.

European resources for the protection of habitats and biodiversity conservation are provided through the EU budget title 'Natural Growth, Natural Resources'. Of these funds, around 97% will be used to finance the CAP. Individual environmental funds, such as LIFE receive only ca. 0.8% of the available funds and are therefore much less endowed financially. The environmental financing is thus integrated in the CAP. This results in conflicting goals, as the subsidy policy of CAP aims, inter alia, at further intensifying agriculture and biodiversity or its preservation plays only a minor role. Direct payments, which account for the majority of European agricultural subsidies, favour the most intensive forms in agriculture, that are detrimental for the environment, such as cereal cultivation and intensive animal

husbandry. The receipt of direct payments is hardly bound by criteria for sustainability but is largely determined by the size of the farms. Non-recurring subsidies, e.g., for the acquisition of heavy agricultural machinery or sorting and distribution systems, also promote the intensification. Direct payments provided by the EU to protect the environment will miss its target in terms of protecting biodiversity.

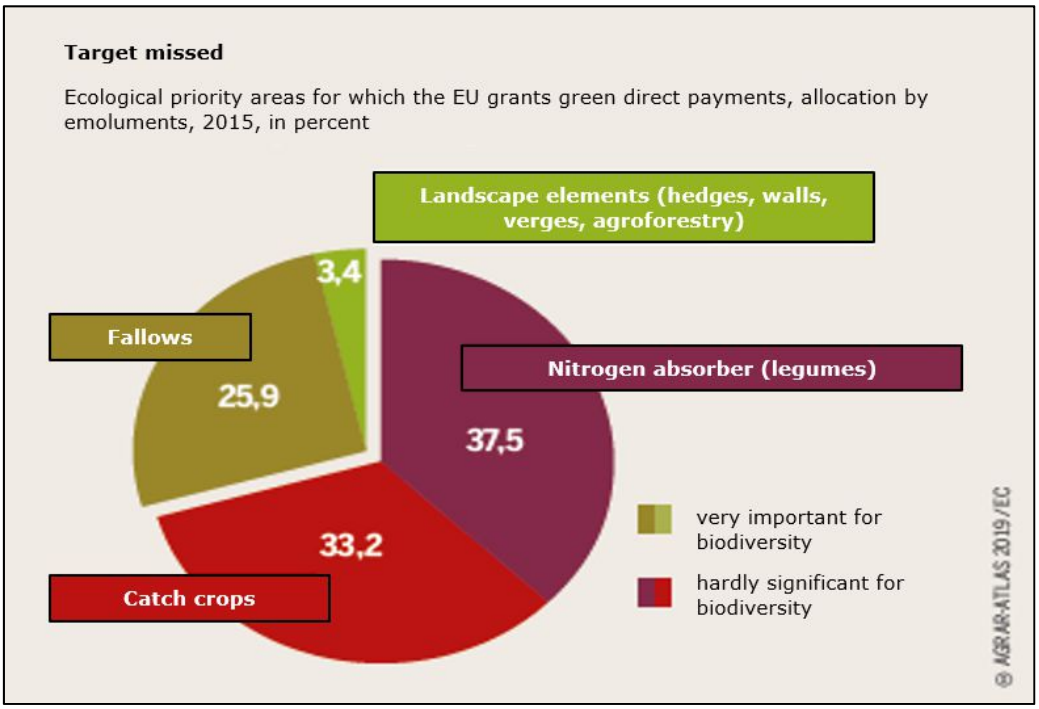


Figure 5.10. Benefit of direct payments to conserve biodiversity [27]

In order to conserve biodiversity, it is necessary for farmers to receive adequate resources to protect biodiversity. On the other hand, incentives to support intensive agriculture must be reduced [27,116].

5.8 The influence of subsidies on soil and water protection

Modern agriculture has a direct impact on the environment and especially on cultivated soil and water management. The use of too much fertilizer and pesticides leads to economic, ecological and health damage. Due to the lack of suitable instruments, CAP can only partially prevent these damaging effects.

5.8.1 The use of pesticides

Including carbon dioxide, around 391,000 tons of active ingredients are used in European agriculture like large quantities of chemicals. About 80% of the chemicals are used as fungicides and herbicides, these are pesticides for controlling fungi and weeds. Pesticide sales in the EU have been relatively stable for more than 15 years. In the individual Member States, on the other hand, the quantity of such chemicals either increased or decreased significantly. On the one hand, in Poland, the use of

pesticides has tripled since joining the EU. On the other hand, in Denmark there is a decline of ca. 50% after an adjustment of the pesticides tax [117,209].

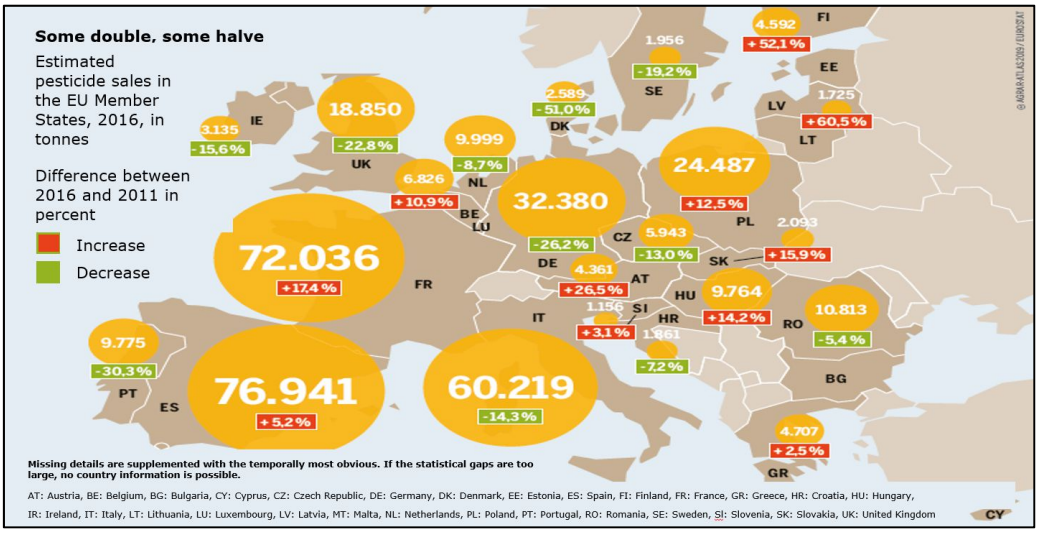


Figure 5.11. Pesticide sales per EU Member State [209]

The intensive use of pesticides leads to a variety of effects with almost every conventionally producing business using herbicides at least once a year. In fruit and ornamental crops, fungicides can be used even more often than 30 times a year. On the one hand, this use of chemicals leads to high costs for the general public because of the monitoring of residues in the food and the purification of the groundwater to make it drinkable. On the other hand, sensitive species disappear in waters with high pesticide concentrations. By destroying weeds man destroys the habitats and food sources for insects and birds and thus endangers the biological control of vermin pests and beneficial organisms. Further ecological damage is caused by the cultivation of monocultures and the elimination of diverse crop rotations. Although the EU has prescribed at least two crops from 10 ha onwards in 2015 and at least three crops from 30 ha onwards, this requirement has been relatively ineffective as it is mandatory for only 25% of the farmland. On 75% of the area monocultures have been tolerated as there is no EU prescription [209].

Hardly any action or programme in the CAP has currently led to a significant reduction in the use of pesticides. As there is an exception for farms with more than 15 ha of arable land, which must treat 5% of their area as an ecological priority area. To permanently reduce the use of pesticides, a conversion of the cultivation systems is required. Agricultural support must be linked to stricter pesticide use. It would be conceivable, e.g. to renounce the use of certain pesticides altogether, to prioritize biological pest management or to define areas of monocultures of a certain size as areas that must remain free of pesticides [209].

5.8.2 The use of fertilizer

The existing Nitrates Directive of 1991 aims at protecting groundwater and surface water in the EU from nitrogen contamination by agriculture. Although stable groundwater quality has been observed for years in more than two-thirds of the

monitoring stations, in many regions of Europe groundwater is heavily contaminated with nitrate. In more than 13% of the measuring stations, the drinking water limit of 50 milligrams per litre was exceeded between 2012 and 2015. These high numbers are mainly caused by the intensive animal husbandry and the intensive cultivation of land by agricultural enterprises. Manure cannot be absorbed by the plants and soils and plants are fertilized before harvest, although they can no longer utilize the nitrogen. Some countries in the EU, such as Bulgaria have doubled their nitrogen consumption within ten years. Nitrogen, which is not used by the plants, can get into the water and leads to the over-fertilization of streams and rivers or pollutes the groundwater with nitrate. In the coastal waters of the North Sea, the Baltic Sea and the Mediterranean Sea, the infiltration of fertilizers through the rivers, as well as leftovers and feces of marine aquaculture, leads to an overload with nutrients. An increase in algae growth in turn results in a shortage of oxygen and thus alters the overall maritime balance [230].

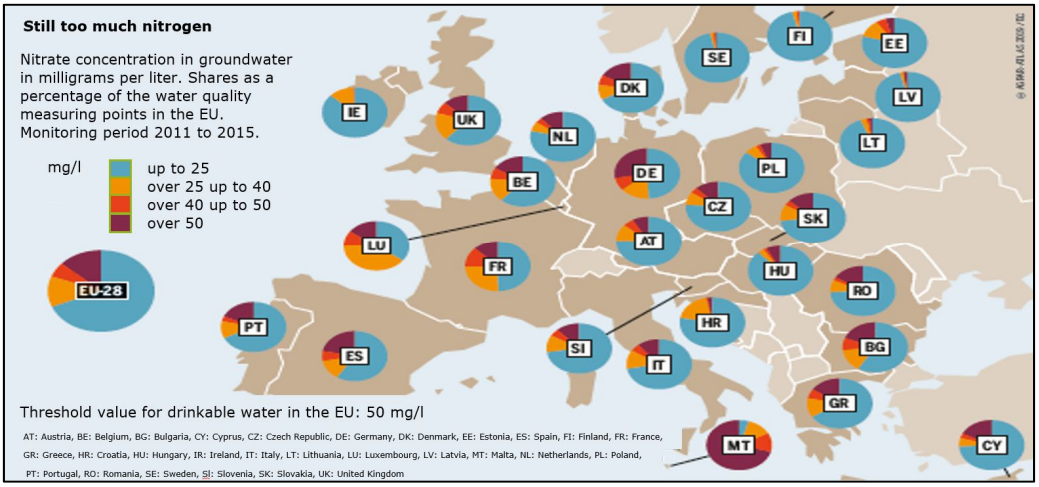


Figure 5.12. Nitrate concentration in groundwater [230]

While there are a number of instruments available for the politicians in the EU to stem over-fertilization, they are neither often enough used nor are they coordinated with the CAP. For example, water protection depends on national commitment. Options such as detailed specifications for the use of fertilizers, documentation requirements or the determination of a defined application rate per ha can only be found in the respective national legislation. In addition to coordination at the European level within the framework of the CAP, it would also be necessary to improve the water protection by extending the previous scope of control of 1% of the subsidized businesses and also to adjust the current penalties of 5% of the received subsidies. In addition to the extension of controls and the adjustment of penalties, the CAP must take measures to promote environmentally friendly and species-appropriate animal husbandry, which would permanently reduce the current livestock population and thus significantly improve the water conservation. As a supplementary criterion for obtaining subsidy payments, only as many animals should be allowed to keep as the farm's own areas can feed. In addition to that their own fertilizer should be used exclusively on the farm's arable land completely. Farms that concentrate more on the use of meadows and pastures instead of exclusively feeding grain should be supported with priority [102,230].

5.9 Impact of subsidies on livestock farming in Europe

With around 40% of the EU's agricultural output livestock has a significant share. In the individual Member States, this share differs tremendously from ca. 21% in Romania to ca. 75% in Ireland. Likewise, livestock stock per unit area varies in different Member States. There are strong concentrations in the Netherlands, in Germany, Italy and France. The high number of livestock stock per unit area is also responsible for existing animal welfare deficits. Fattening pigs often leads to hogs suffering from joint diseases, cattle being lame and in poultry having to cope with foot abnormalities. The overwhelming majority of the EU's population are in favour of expanding or improving animal welfare. The cost would be about 18% of today's production costs on average. However, neither the Member States nor the EU has already developed a political and economic implementation strategy that addresses the dimension of this challenge [169].

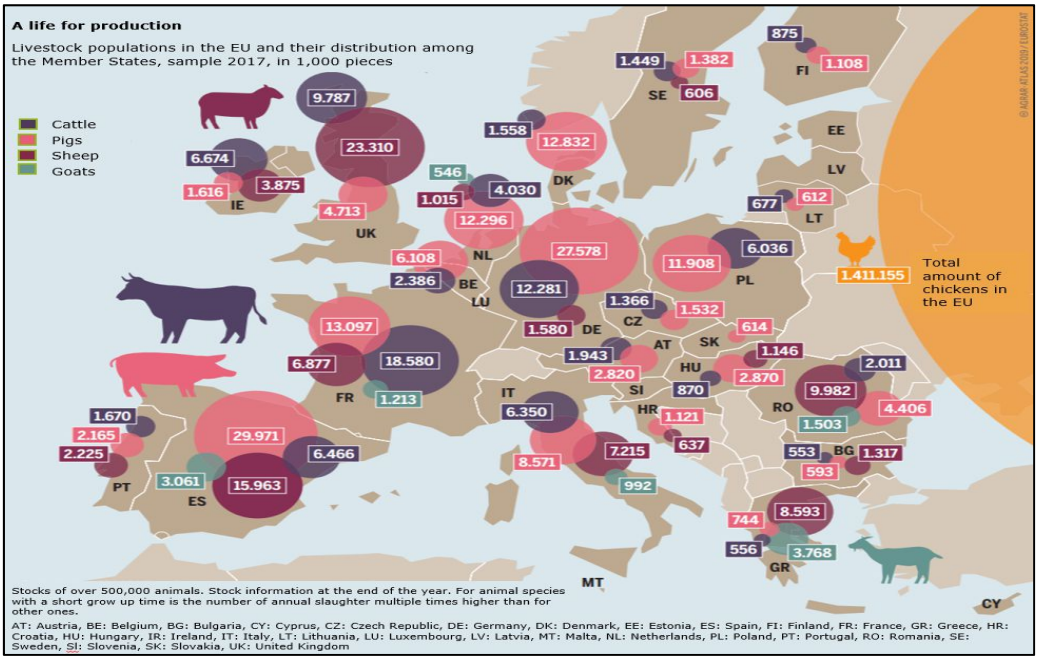


Figure 5.13. Farm animal stock in the EU [169]

The CAP does not provide the framework for implementing measures to improve animal welfare. It is not aligned with the flat-rate direct payments on the achievements and challenges of agriculture. The second pillar of the CAP offers opportunities to grant funds for particular animal welfare, such as grazing, more space for movements or to give one's animals employment incentives, but this option is hardly made use of. Only about 1.5% of subsidies in the second pillar have been spent on animal welfare. That is about EUR 205 million at EU level. The direct payments amount to around EUR 40 billion. In contrast to the amounts budgeted in each case, the requirements in the context of livestock husbandry with regard to the areas of groundwater and surface water protection, climate protection, biodiversity protection and animal welfare have been increasing. An increasing demand is expected. In terms

of regulatory law, these requirements cannot be enforced, since increased controls and regulatory requirements would lead to a significant increase in production costs and thus, due to international competition, to an increase of imports from countries without any requirements. The failure to protect the environment and guarantee animal welfare is hardly to be averted. Better financial provision of the second pillar is therefore necessary. Alternatively, it would be possible to reallocate funds within the first pillar, e.g., by focusing on the remuneration of benefits, capping basic income support payments and linking direct payments to the production depending on public services as it is the case e.g., with grazing [169].

5.10 Organic farming in the EU

Customer demand pushes the sustained growth of organic agriculture. In contrast to conventional agriculture, organic farming does without the use of chemical-synthetic pesticides, easily soluble mineral fertilizers, and genetically modified organisms. In animal husbandry, strict conditions apply to the runs for animals and the use of animal feed. The farm is considered in its entirety as an ecosystem of coordinated, self-regulating forces. For goods production there is EU-wide legislation supplemented by additional national standards. Organic farming is becoming increasingly important due to its low impact on the environment and the conservation of limited resources [156].

In the EU, the proportion of organic farming in relation to the total agricultural area is about 6.7%. The Member States Austria, Estonia and Sweden have the highest shares. Spain, Italy, and France are the countries in the EU with the absolute largest organic areas. In the countries of France, Italy and Germany, the organic acreage increased significantly from 2015 to 2016 with a total amount of 681,000 ha [140].

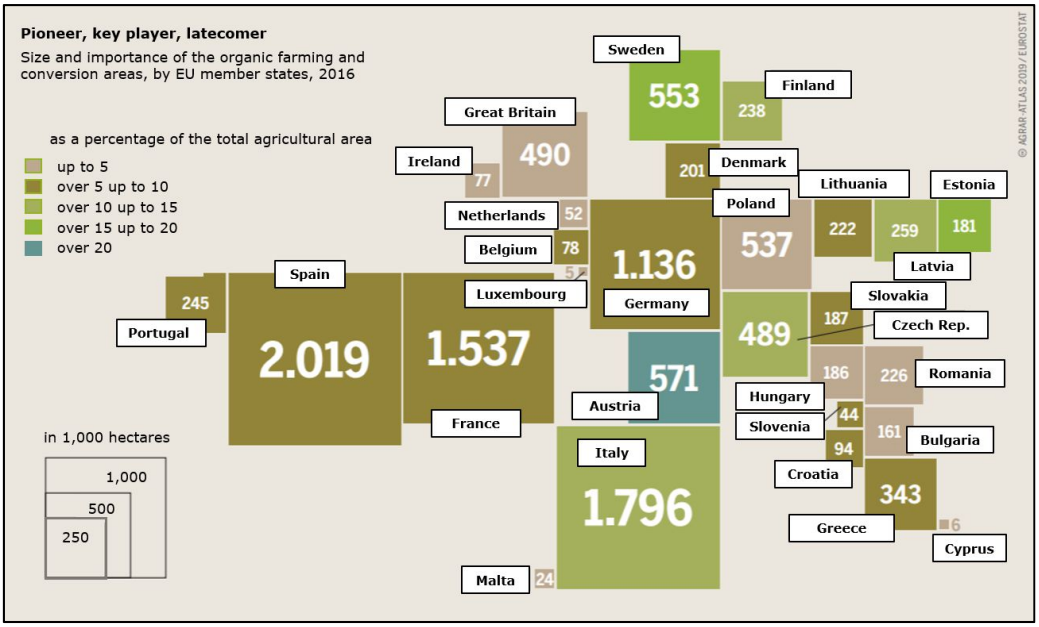


Figure 5.14. Size and importance of organic farming areas in the EU [156]

This positive development can be attributed to the continuous increase in demand and state support measures. Between 2000 and 2016, per capita consumption of organic food in the EU nearly quadrupled to reach EUR 60.50. The market for organic food has grown by 5% to 19% per year in the EU average [156].

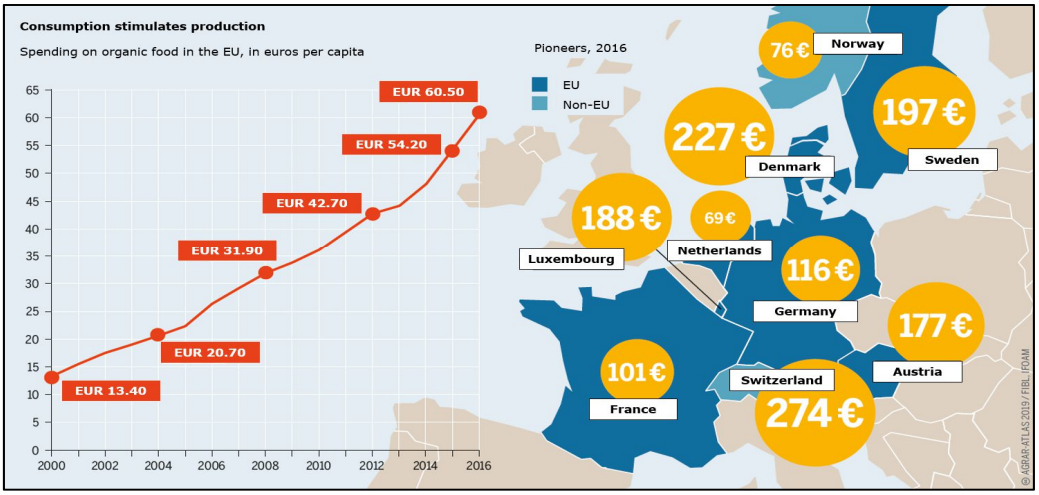


Figure 5.15. Consumption stimulates production [156]

Organic farms receive targeted support through the CAP second pillar and automatically meet the environmental requirements for the first pillar direct payments. The EU pays around 6.4% of its budget for agricultural environmental and climate measures to organic farming, with the proportions per Member State varying between ca. 0.2% in Malta and ca. 13.2% in Denmark. The Netherlands is the only country that does not provide direct payments to organic farms, but instead focuses on policies that will permanently strengthen competitiveness for organic farming. The premiums granted are paid for the conversion to and retention of organic farming. In addition, premiums are granted for land use, stocking densities of farm animals and crops. The premium payments also vary per Member State. For example, grassland maintenance premiums range from EUR 43 in Sweden to EUR 545 in Estonia, as well as for arable land from EUR 90 in the UK to EUR 600 in Slovenia. Despite the increasing importance of organic farming, the increased demand cannot be satisfied by European production alone. The targeted use of subsidies for agricultural, climate and environmental measures as well as the promotion of organic farming through national strategies, which involve the entire value chain, contribute to the strengthening of organic farming [152,156].

5.11 Influence of subsidies on health protection

Health is a very important concern for most Europeans. This includes ensuring that safe, healthy, and high-quality food are given a high priority in the objectives of the CAP. Agriculture and health are thus closely related. The food produced satisfies a basic human need, but also has many negative effects. Every year, more than 7,700 tons of antibiotics are used to treat animals. This use is the main cause for antibiotic resistance, which in turn increases the mortality rate. In addition, agriculture is a major contributor to air pollution due to the high level of 90% of ammonia emissions

and emissions from manure and fertilizers. The ongoing discussion about the long-term effects of pesticide residues in particular, bacteria or fungi in food also lead to a negative perception of European agriculture. This includes the close connection between the consumption of food and the emergence of diseases that are directly related to each other. More than half of all Europeans are overweight and almost a quarter are obese. The treatment of these diseases last not least results in considerable financial burdens for the states. Economic, political, and socio-cultural factors influence what people consume. Most of the commodity flows of agricultural products are dominated by multinational corporations. In households with an increased consumption of highly processed food, the incidence of overweight and obesity also increases because such products provide too much energy, sugar, and fat, but are low in fibre [122,226].

Although more than 25 years ago the Member States agreed to improve the health status of the EU population in all sectors of the EU policy, to meet health concerns, however, is not a CAP objective. There is a close connection between the topics of health, animal welfare, the protection of environment and social justice. Thus, e.g., better animal welfare with healthier animals reduces the need for antibiotics. Higher incomes, especially for smallholders, reduce the risk of social exclusion and improve the structures in rural areas. An increase in fruit and vegetable production and less animal husbandry reduces greenhouse gas emissions, air and water pollution and promotes a healthy and sustainable diet. Higher-quality foods enable producers to increase their incomes and lower pesticide use reduces the associated health risks. The CAP can support such a development by stimulating a healthy and sustainable diet, for example through information campaigns and labelling obligations, involving health-care stakeholders, both on the demand and on the supply side. The expansion of the second pillar also indirectly leads to an improvement in health aspects due to the networking of the policy areas with the associated positive aspects of promotion regarding climate, environmental, water, soil, and animal welfare [226,268].

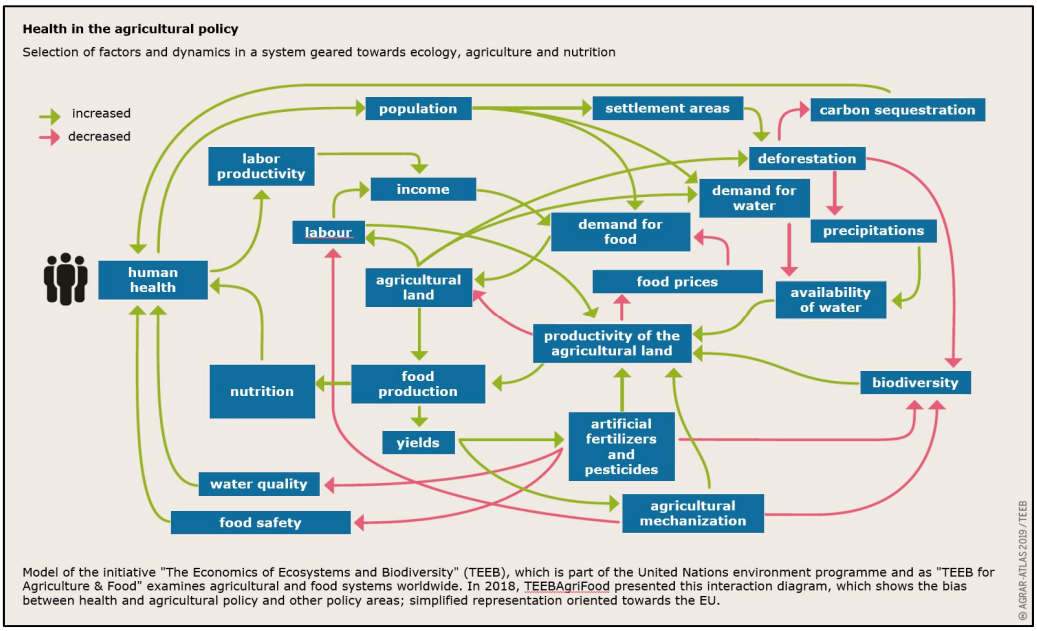


Figure 5.16. Health in agricultural policy [226]

5.12 Effects of subsidies on climate protection

Climate change affects agriculture in many ways. In northern Europe, the warmer weather may well be beneficial for agriculture, while in central and southern Europe the negative consequences like the effects of droughts, floods, pest infestation and plant diseases prevail. However, agriculture itself is partly responsible for this development. Large amounts of nitrous oxide are released during fertilization, as intensive animal husbandry produces large quantities of methane. In Europe the agricultural sector is the third largest source of emissions contributing about 10% of total emissions following the energy production and transport sector. Modern forms of cultivating the soils with fertilizers lead to an emission share of nearly 38% whereas animal husbandry share amounts to around 61% with three quarters being caused predominantly by the digestive process of ruminants and one quarter by dung and liquid manure [235].

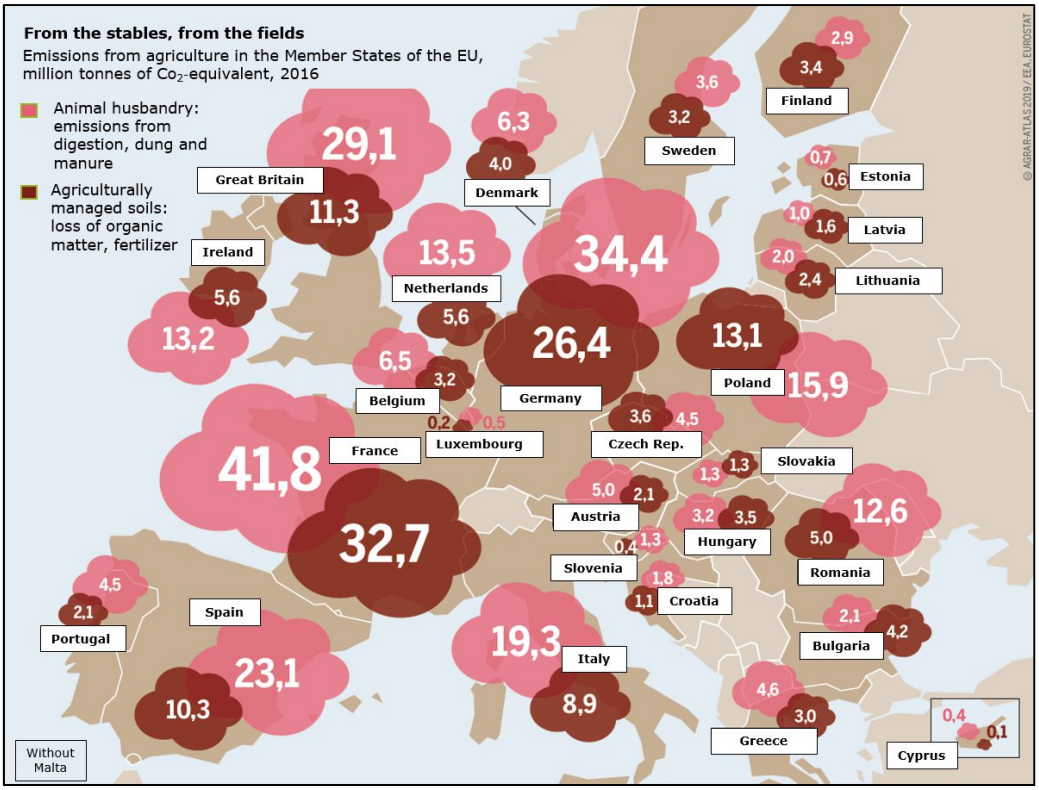


Figure 5.17. Emissions of agriculture in the EU [235]

At the Paris Climate Change Conference in 2015, the EU committed itself to reducing its emissions by 40% until 2030 and adapting agriculture to climate change without restricting production. Climate protection measures have continuously gained in importance in the CAP and have been incorporated as a core objective in the second pillar since 2013. Nevertheless, the funding of climate protection measures varies greatly in the different Member States. However, the CAP lacks a precise definition of goals to what extent far agricultural emissions are to be reduced. If more carbon could

be trapped in soils, the CAP's objectives could be reconciled with food safety and climate change. Frances's aim is, for example, to increase the content of organically bound carbon in the soil by 0.4% per annum by cultivating crops with deep roots and by using manure, mulch, and compost. At EU level, no balances, reports, or measures are required so far to minimize the loss of carbon in the soil. The CAP should therefore not only support food production, but also improve the fertility of the soil, since in many regions the soil is now depleted of carbon. The enrichment of soil organic matter is best achieved by supporting sustainable production methods and diversifying agriculture. Cultivation methods that protect the ecosystem and biodiversity strengthen the resilience of agriculture to extreme variations in climate. In particular, the reduced use of fertilizers and pesticides in connection with a permanent covering of the soil with suitable plants to protect against erosion risks provides a significant improvement in soil protection. Even beyond ecological priority areas, soil-covering crops and catch crops should become obligatory, as should temporary, fallow land or grassland in crop rotation. Further funding alternatives to improve the climate protection are the use of combined agroforestry systems, which combine trees with arable crops or animal husbandry, permanent grassland, which means grassland being older than five years and the use of leguminous plants instead of mineral fertilizers. The combination of animal and plant production, for example should serve to feed one's own animals, and the farmland should be fertilized with animal manure and the use of leguminous plants instead of mineral fertilizers [235].

5.13 Agricultural subsidies and their impact on the world trade

The EU agriculture is part of the international value chains and influences global agricultural markets and thus also prices, wages, incomes, and nutrition in the countries of the southern hemisphere. The use of tax revenues to encourage the export of agricultural products has contributed to the collapse of world market prices and displaced farmers from their local markets in the past. Since the 1990s, area-based direct payments have been the CAP's most important instrument leading to a decline in export subsidies, which were banned worldwide in 2015 by a WTO decision. Area premiums affect production only insignificantly and therefore have only a minimal international impact. Nonetheless, there would be significant changes in production and exports excluding area premiums in some sectors. Without area premiums, prices for cereals and animal fodder would become more expensive leading to a decrease in EU net exports of pork by 16%, wheat by 20% and poultry by as much as 75% [231].

The long-term high agricultural import surpluses of the EU have disappeared. Since 2007, the EU has received more than EUR 20 billion per year from the export of agricultural products, such as pork, milk, and wheat. In addition, high exports are another incentive to produce more overall. Africa is an important market for many agricultural products. Especially North Africa, as there are only limited production possibilities. Around 40% of EU wheat exports are delivered to this region. For the countries south of the Sahara, where wheat can only be grown in a few regions, the share is around 25%. The imports from the EU compete with the production of food crops such as millet, cassava and yams, which are adapted to the local peculiarities and thus influence the local population's dietary habits. The EU exports of poultry meat accounted for approximately 43% in 2017 to sub-Saharan countries. Should these exports decrease in the event of a loss of direct payments, supply pressure in this sector would decrease and prices in many African markets could rise. In turn, this price increase would be an incentive for local investment, as long as productivity is

still low [231].

EU exports are not exclusively caused by subsidies, but also by the constantly increasing productivity of the European agriculture. However, as sales in Europe are stagnating, additional growth can only be achieved with increasing exports. Stronger support for Pillar 1 direct payments measures and insufficient regulatory or environmental or animal welfare support will increase the productivity and reduce the producer prices. The example of the milk price crisis in 2015 shows that farmers do not always profit from this system. Due to increased exports of EU dairies, the milk price has collapsed. While the dairies were able to pass on the falling prices to the producing dairy farmers, who either had to give up their businesses for economic reasons or received emergency loans from the state to overcome the crisis. Despite the abolition of export subsidies, the current CAP creates comparable problem situations for European agriculture. In addition to that, agricultural imports into the EU cause ecological and economic problems, too. The imports mainly consist of former colonial products such as palm oil, soya, cocoa, coffee, bananas, and cotton. The associated production and distribution conflicts over land and deforestation, the use of water and pesticide have a negative impact on nutrition, health, human rights, global justice and sustainability. For example, soya is used as animal feed in the EU. The CAP leads to increased production of pork and chicken. This brings with it an increased demand for soybeans. In order to be able to meet this demand, plantations are being built in Latin America, where formerly forests and meadows existed. With the purpose of making a sustainable contribution to the goals of a sustainable global development, it is necessary to implement an ecological and globally just design in the CAP's goals. The CAP can thus help to reach the UN sustainability goals for the year 2030 [231].

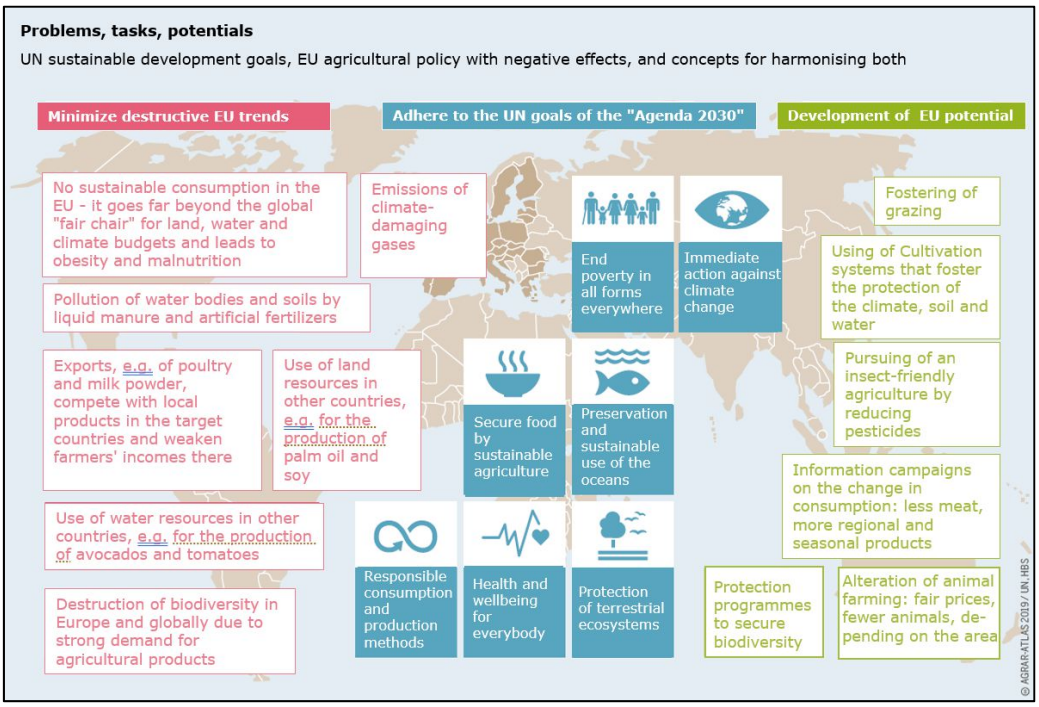


Figure 5.18. Problems, tasks, potentials [231]

5.14 Conclusion

The national agricultural structures in Europe are very heterogeneous. With 174 million ha, ten million farms cultivate around 40% of the total available area. Farm sizes vary from an average of 3 ha to 133 ha. Although the share of agriculture is only about 1.4% of the GDP; the funds needed for support are the dominant budget item in the budget with a share of nearly 38%.

The CAP defines the objectives and the measures chosen to achieve them. After initially the food supply after the 2nd World War was ensured by support measures, the measures led to the further stabilization of prices and incomes, in the 70s to overproduction and through export subsidies to distortions in the world market. Despite several interim reforms, the CAP's objectives have not really been adapted to the current challenges. Securing farmers' incomes is still at the top of the agenda. This objective is safeguarded by direct payments within the first pillar. The cost of this is about 75% of the total funding. Measures that can control the enormous impact of agriculture on the environment and nature, on sustainable development and global justice are mainly financed by the second pillar, which is less well funded. Although issues such as the quality of soils, water, climate protection, human health, social development of rural areas, global sustainability aspects and habitats for insects and rare plants are inextricably linked to agricultural production and should be addressed as the major challenges at European level, the funding of these issues within the CAP has so far only taken place on a case-by-case basis. Direct payments, on the other hand, also lead to major distortions within farm structures. Around 80% of pillar 1 funding is paid out to only around 20% of farms, while only approximately 131,000 farms account for more than 30% of the total amount of direct payments. These cash flows have led to the fact that the number of agri-SMEs in particular has been steadily decreasing for years and without any signs of a trend reversal. Agricultural enterprises with an area of more than 100 ha account for only a small proportion of all EU farms. However, their number has grown by a double-digit percentage in ten years, and they use more than half of the total agricultural land. With the start of direct payments, land prices and rents skyrocketed, in some cases up to +175% within six years. Because small businesses, can no longer afford these prices and leases, they are being displaced particularly quickly in the countries in which they once shaped the landscape.

With the spread of large farms, jobs are also lost, the diversity of cultivation systems and products decreases and the intensification of agriculture with the associated burden on the environment increases. In contrast, small farms with less than 10 ha account for around 80% of all farms in the EU and stand for a mostly diverse production. For this, they use only about 10% of the available land. However, their number is declining dramatically: Nearly 96% of the farms that disappeared within a period of ten years between 2003 and 2013 had less than 10 ha.

Agriculture is playing a declining role as an employer in the EU. Only about 4.4% of all employees are employed in agriculture. Most of them work as part-time or seasonal workers. Full-time employment is mainly carried out by farm owners themselves and their family members. The current digitalization will lead to further productivity increases and thus incoming job losses. The type of jobs will also change. Self-employment and family work have decreased, the proportion of wage earners and precarious jobs, as well as the proportion of undeclared work have increased. In particular, the very agricultural countries of South-Eastern Europe will be affected by this development. The CAP does not counteract this development, because the preservation of jobs or the guarantee of good workplace conditions are not in themselves goals of the CAP. Subsidies per ha instead of per worker accelerate the

expansion of agricultural enterprises and, as a side effect, drive up land prices instead of creating jobs. The process of concentration towards ever larger agricultural enterprises that require fewer and fewer workers is thus promoted rather than stopped by the CAP.

The intensification of production methods associated with the concentration process leads to a threat to biological diversity and to a significant loss of species. Habitat degradation and species decline clearly show that agriculture geared towards short-term yields and sustainable biodiversity cannot be reconciled. In particular, the consistently high use of pesticides leads to a negative impact on the development of biodiversity and, in addition, to high costs for the public, as permanent monitoring of residues in food and purification of groundwater is required. A loss of biodiversity is accompanied by a loss of biological control of pests by beneficial organisms, as well as the increased formation of monocultures instead of diverse crop rotations. The previous measures of the CAP have not led to a reduction in the use of pesticides.

The intensive production methods can also be found in livestock farming, as an essential area of production. A high concentration of farm animals per unit area is directly associated with deficits for animal welfare. However, although most consumers would welcome improvements in livestock farming and accept additional costs, there are no implementation strategies at EU or national level. Only about 1.5% of the available subsidies are spent on animal welfare premiums.

There is also a close link between agriculture and health itself. The agricultural sector produces food and thus satisfies a basic need but has many negative effects. The use of antibiotics leads to deaths due to resistance, the pollution of the air leads to respiratory diseases, the influence on the hormonal balance is caused by pesticide residues in the food, the increase in obesity is favoured by an increased consumption of highly processed food, which is mainly produced by multinational agricultural enterprises. The list of influences is long. A CAP aimed at consumer health could remedy many of the current shortcomings within European agriculture and support and enable a sustainable agriculture, for example by a better animal welfare with a lower need for antibiotics, higher incomes for small farmers to reduce the risk of social exclusion and improve rural structures, increase the production of more fruit and vegetables to reduce the emission of greenhouse gases and pollution of air and water in connection with declining livestock farming. Promoting healthy and sustainable nutrition ultimately enables higher incomes through high-quality food and reduces the health risks associated with current production methods in a future-proof manner.

In terms of climate policy, agriculture is also caught between cause and effect. On the one hand, climate change, especially in southern Europe, has negative consequences such as drought, floods for agriculture, on the other hand, agriculture contributes significantly to climate change using fertilizers and concentrated livestock farming. With a share of about 10%, the agricultural sector is the third largest source of total emissions in Europe after energy production and transport. A way out of this dilemma can only be achieved by enriching soil organic matter in depleted soils and the associated decline in the use of fertilizers and pesticides. The CAP should therefore not only promote food production, but also the improvement of soil fertility.

Furthermore, the CAP has a significant influence on world trade. The EU agriculture is part of international value chains. It influences the global agricultural markets and thus also prices, productions, income, and food in countries of the south. Direct payments and the constant increase in productivity resulting from this type of support lead to an oversupply of food and thus to greater export opportunities, which in turn represent an incentive to produce more when demand within the EU remains constant. Important sales markets are in developing countries, where cultivation

opportunities are limited. However, due to the cost advantage of falling producer prices, local smallholder farmers are pushed out of the market and local eating habits are influenced. Without direct payments, current exports would be significantly reduced. This would lead to a reduction in supply pressures and prices in many African markets could rise and provide an incentive for local investment to increase productivity.

The current problems in agriculture make it clear that something must change. The significantly increased funding of pillar 2 can be the model for the future. Organic agriculture preserves diversity in terms of species and habitats, but also ensures climate-friendly and health-oriented, sustainable agriculture, as well as a wide range of products. To this end, the market displacement of agri-SMEs would be slowed down if not stopped, then at least significantly slowed down. However, this requires a target adjustment of the current CAP by promoting organic farming better than before through a stronger, financial design of the second pillar and the significant reduction of direct payments.

Accordingly, the CAP must make necessary reforms and be persistent in opposing farm closures, biodiversity loss, and pollution of the soil, water, and air. Additionally, it must contribute to the welfare of the climate, the environment, and animals while fostering regionality rather than encouraging agricultural exports. To this end, funding should be linked to the principle of 'public money for public services' in generally. In addition, flat-rate direct payments should be abolished gradually and to support concrete environmental and animal welfare services. Furthermore, fixed budgets are to be used for public services in the areas of biodiversity, climate protection and environmental protection and farms and young farmers must be supported sufficiently. Additionally, a more species-appropriate animal husbandry is also to be promoted with CAP funds, as well as organic farming and particularly near-natural land management must also be supported target-oriented. Laws, market rules and labelling must be geared towards organic farming and regional value chains and finally, the CAP must not have a negative impact on the countries of the Global South.

6 ANALYSIS OF EFFECTS OF SUBSIDY CONSERVATION ON THE MARKET BEHAVIOUR OF FARMS USING THE EXAMPLE OF FARMS IN THE WESTMÜNSTERLAND REGION AND IN THE ROMANIAN REGION OF BANAT

6.1 Description of the goal

This chapter deals with the analysis of subsidy payments to agricultural enterprises and their effects on their market behaviour. It should also be noted what significance the subsidy payments have for the farms. A developed questionnaire is used to illustrate the role of subsidies and their assessment by farmers. This questionnaire could be completed online or filled in writing by the farmers.

Representative enterprises were identified with the support as well of the Chamber of Agriculture in the Westmünsterland region as of the comparable organization in Timisoara and were addressed for participation.

In particular, it is investigated whether and to what extent the displacement in markets takes place at the expense of agri-SMEs. Furthermore, it is important to investigate this effect and think about possible alternatives, since the agri-SMEs also stand for quality and diversity. So, it is essential to answer the question of whether and to what extent agri-SMEs are displaced from the market by subsidies for large agricultural enterprises.

Finally, a comparative analysis of both survey regions follows and the influence of subsidy payments on key agricultural success and competitive factors is examined and possible alternatives of subsidy payments to strengthen these factors are discussed.

6.2 Structure of the questionnaire

An online survey system called Survio (www.survio.com) was used to create the questionnaire. There are 39 questions total, which have been divided into 4 categories [165].

1: General information about your agricultural business
2: The situation of agriculture from your point of view
3: Subsidy measures in your agricultural business
4: Personal assessment of subsidies

The first group of questions is to provide general information on the farms surveyed, which allows for their classification in terms of size (in ha), personnel, or type of market segment. The market surveyed can be regarded as a standard (typical)

market in Europe [165].

In the second category, questions asked provide information about the general attitude of the surveyed farms vis-a-vis the current agricultural situation and if the surveyed farms are satisfied [165].

The third set of questions focuses on whether or not subsidies are received, the type of subsidies received, and their influence on boosting innovation capacity and strengthening the farms' competitiveness. Besides, in this category, the question of whether the farms could still exist without subsidies is addressed [165].

The fourth set of questions concerns the personal opinions of the farms surveyed vis-a-vis agricultural subsidies and whether they are regarded as important and fairly distributed [165].

The majority of the 39 questions may be responded by using a five-stage Likert scale rating ranging from 'disagree' to 'agree', with only a few questions allowing open responses [165,234].

6.3 Evaluation of the survey in the region of Westmünsterland (SiW)

With the help of the North Rhine-Westphalia Chamber of Agriculture, a total of 120 representative farms were identified in Westmünsterland and were invited to participate in the online survey, out of which 50 participated. The online survey was conducted between autumn 2017 and spring 2018. Most of the farms surveyed are agri-SMEs with an agricultural area up to 100 ha, maximum was up to 200 ha [165].

6.3.1 Particularities of agriculture in the state of North Rhine-Westphalia and the region of Westmünsterland

The state of North Rhine-Westphalia (NRW) offers a unique character in that not only is it the most densely populated state (17.9 million people, being fourth largest state in the Federal Republic of Germany with 34,110 km^2 of land area), NRW possesses a strong industrial structure and is a major player in German agriculture. In 2018, 31,200 farms (11% of all farms in Germany) with an average size of 47 ha cultivated almost 1.5 million ha, primarily in arable farming. Approximately 90% of farms, have less than 100 ha of arable land at their disposal. In terms of the share of leased land and the importance of organic farming, NRW ranks 10th and 7th in German agriculture, respectively. NRW employs around 12% of all agricultural workers in Germany, with 117,000 individuals working. Aside from arable farming, livestock farming is a secondary line of production. NRW ranks among the top five federal states in sheep farming, cattle (cow) farming, and pig farming, with roughly 9%, 12%, and 26%, respectively. NRW is the most important region in Germany for pig slaughtering, accounting for 31% of total butchering, making NRW home to two of Germany's top three slaughterhouses [165,264].

The Westmünsterland region is located in the north-west of NRW, between the city of Münster in the east, the Ruhr area in the south and the Dutch border in the west. Like many other regions it is presently in the centre of a global food competition with other global regions due to its processing of animal products. The region is one of the most productive farming areas worldwide. The reasons for this competitiveness are composite agricultural systems covering key sectors from dairy industry to meat industry. Often, farms have therefore evolved into specialized, high-tech, and intensive agricultural enterprises. Also, North Westphalia has formed a close and dynamic relationship between agricultural output and an extremely efficient upstream

and downstream industry at the same time. This provides means of production for the farmers. The farms supply cutting-edge technical equipment for cultivating crops, raising cattle, and the delivering of products [165,191]. The agricultural companies in the Westmünsterland region are mainly small and medium-sized distinct and predominantly active in classic areas of German agriculture.

6.3.2 The results of the 1st category ‚'General information about your agricultural business' (SiW)

In the first category 'General information about your agricultural business' there are questions like size, age, distribution type, automation and qualifications.

6.3.2.1 Representative farm size (SiW)

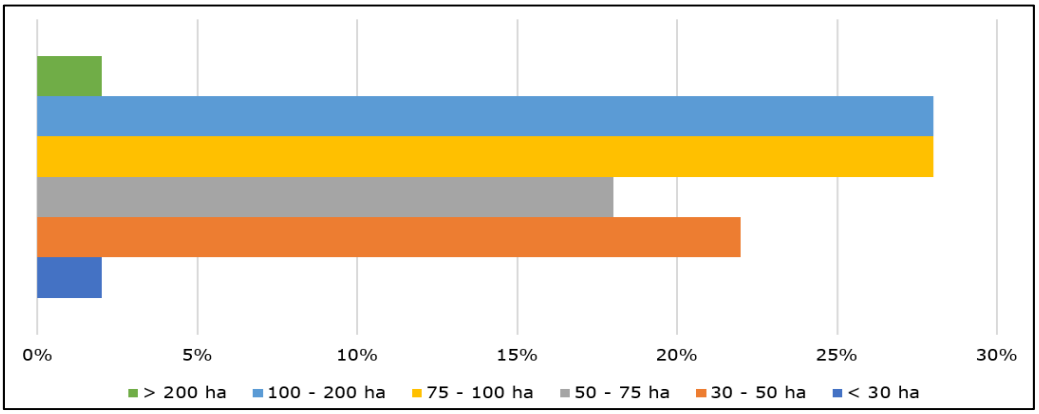


Figure 6.1. Representative company size (SiW) [165]

Figure 6.1 illustrates that most of the farms have an agricultural area between 30-200 ha. Only one has under 30 ha and one has over 200 ha. As a result, you can say that most of the farms are agri-SMEs.

6.3.2.2 The Age of farms (SiW)

Figure 6.2 shows the age of the companies.

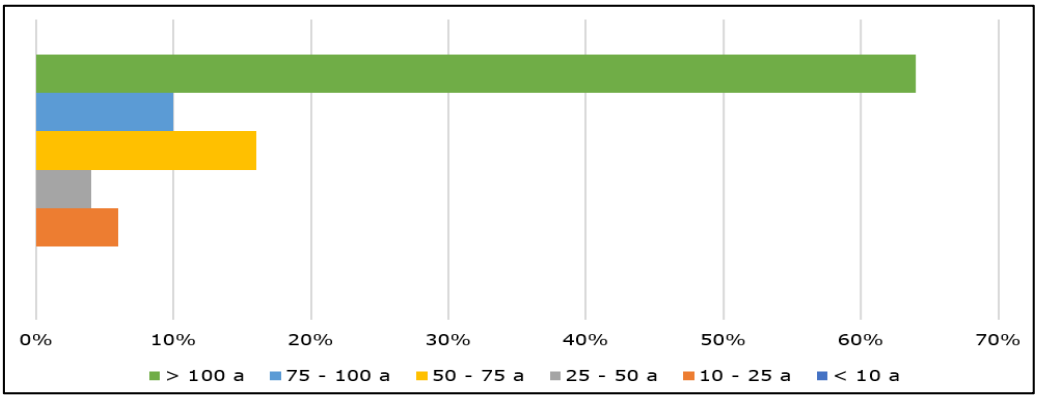


Figure 6.2. The age of farms (SiW)

It is remarkable that 64% of the 50 farms are more than 100 years old it stands out that most of the farms are family businesses.

6.3.2.3 The age of equipment (SiW)

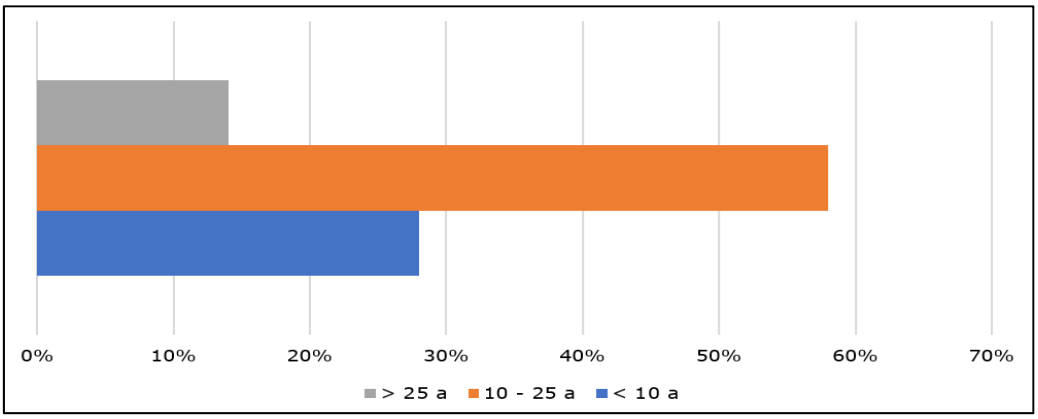


Figure 6.3. The age of equipment (SiW)

Most farms have a medium-aged equipment. The tendency is the same in both categories.

6.3.2.4 The number of employees (SiW)

Figure 6.4 shows the number of employees in the farms who took part in the survey.

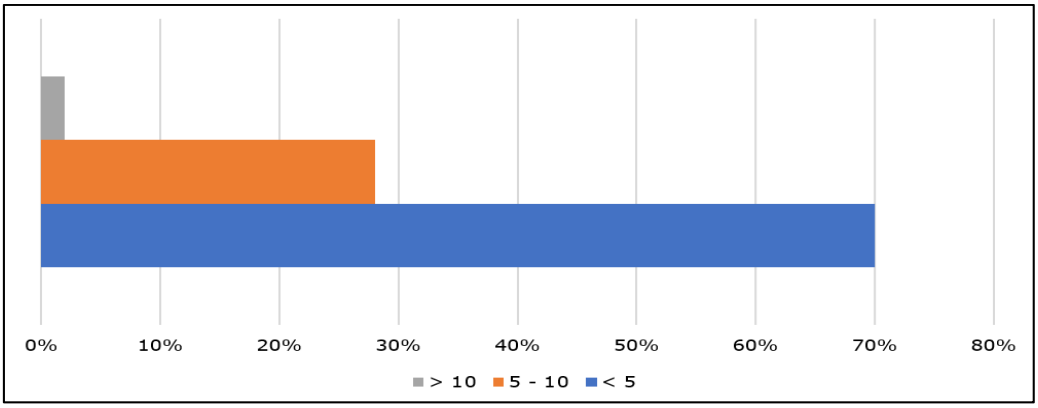


Figure 6.4. The number of employees (SiW)

Here it gets clear that most of the farms have less than 5 employees. A possible reason for that is that most farms are run as family businesses.

6.3.2.5 The labour situation (SiW)

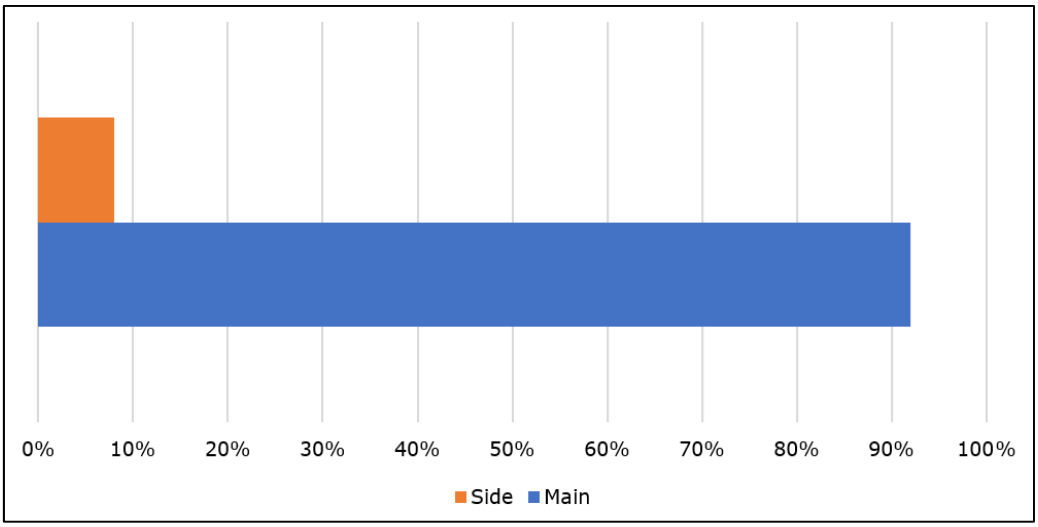


Figure 6.5. The labour situation (SiW)

This question was about the labour situation. It is striking that most farmers run their farms professionally. The difference between all and the agri-SMEs is negligible.

6.3.2.6 The types of distribution (SiW)

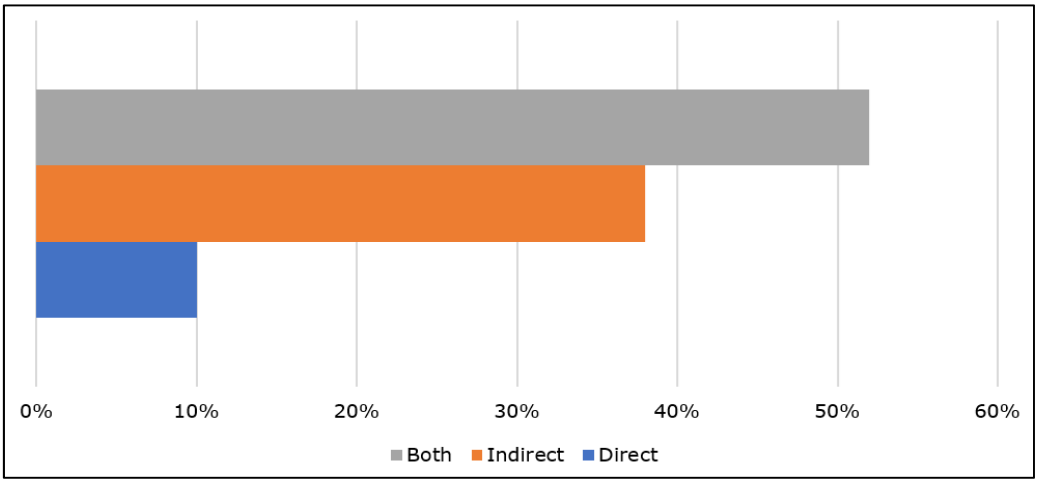


Figure 6.6. The distribution type of product (SiW)

The sixth question was about the distribution. Most farmers distribute their goods directly and indirectly. In the category of ‚agri-SMEs' most farmers distribute their products indirectly.

6.3.2.7 The enforceability of the price (SiW)

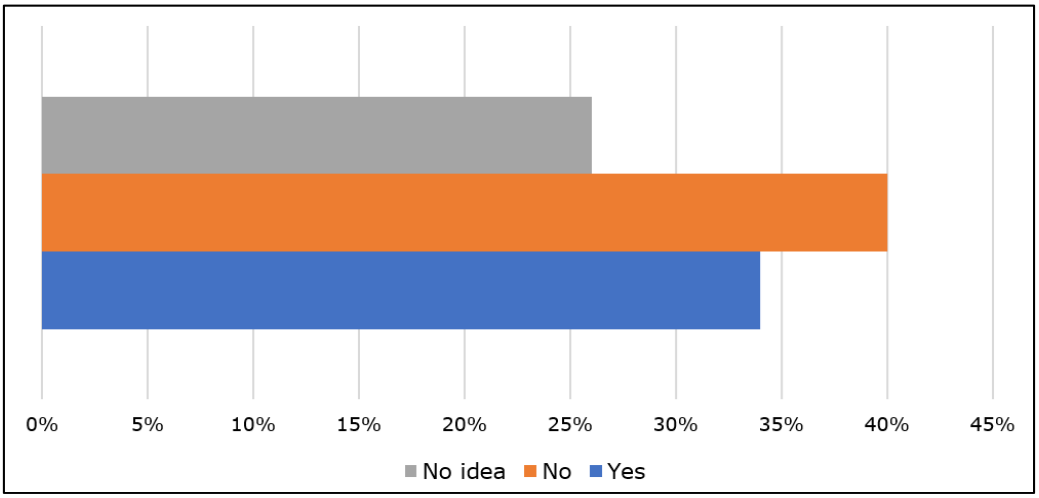


Figure 6.7. The enforceability of the price (SiW)

In the seventh question the participants were asked, if their price idea can enable them to survive in the competitive market. The current market situation is viewed critically. The majority cannot enforce their price expectations on the market.

6.3.2.8 The various kinds of business (SiW)

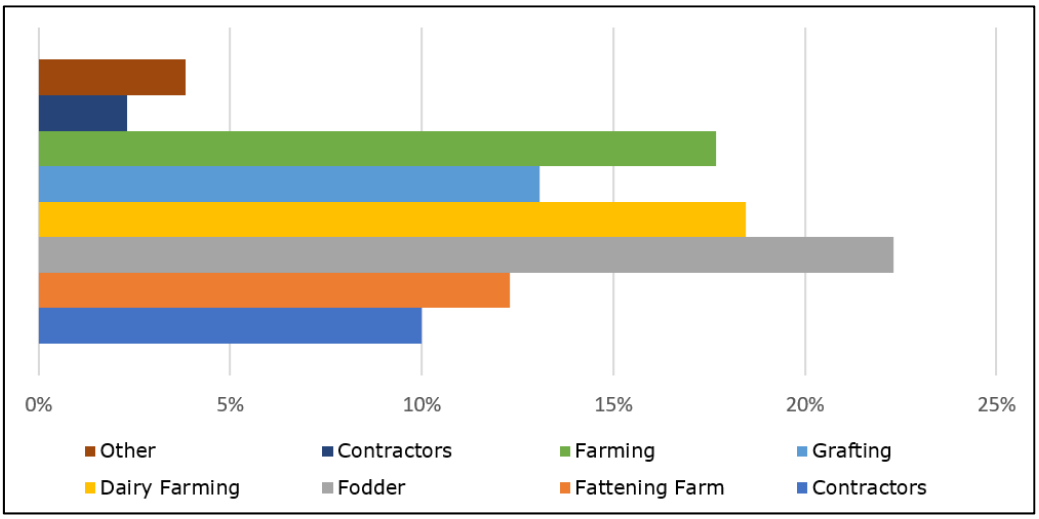


Figure 6.8. The various kinds of business (SiW)

This question deals with the various kinds of business. All farms as well as agri-SMEs primarily make their money by feeding pigs and dairy cattle farming. Only a few farmers have an agricultural contracting business.

6.3.2.9 The degree of automation (SiW)

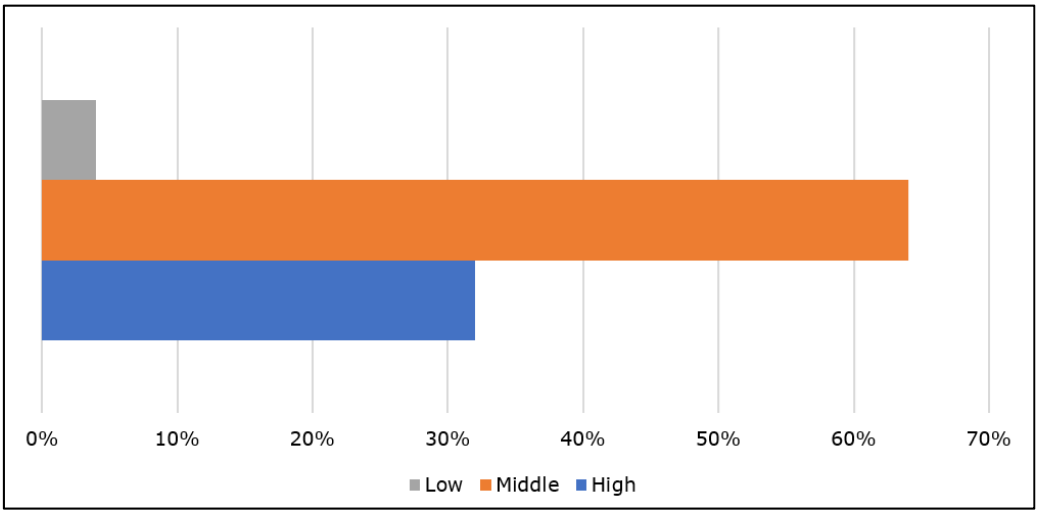


Figure 6.9. The degree of automation (SiW)

Here it becomes clear that most farms have a medium automation level. Only 4% of all have a low automation level.

6.3.2.10 The age of the agricultural manager (SiW)

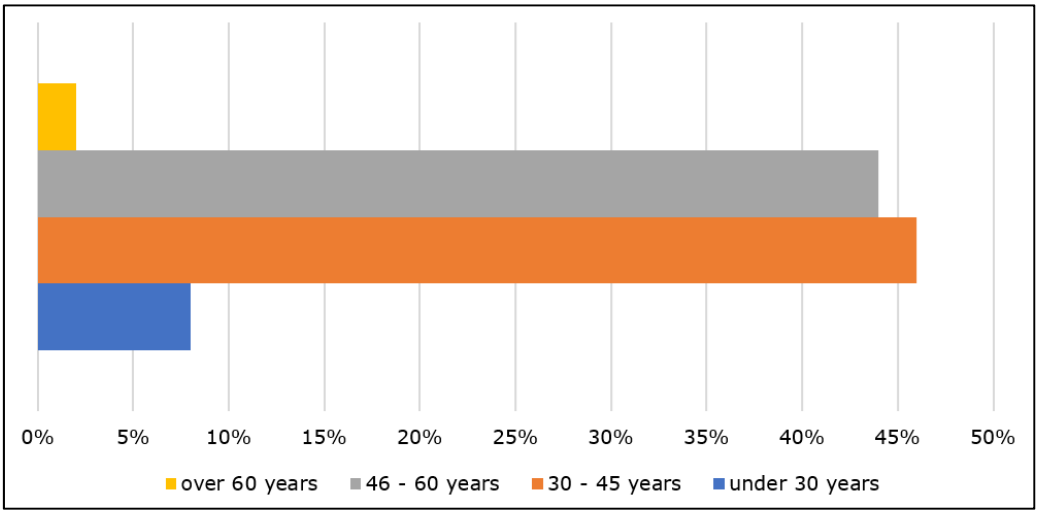


Figure 6.10. The age of agricultural manager (SiW)

Figure 6.10 shows that the medium age of the agricultural manager in the Westmünsterland is between 30 and 60 years. Only a few managers are older than 60 or younger than 30.

6.3.2.11 The qualification of the agricultural manager (SiW)

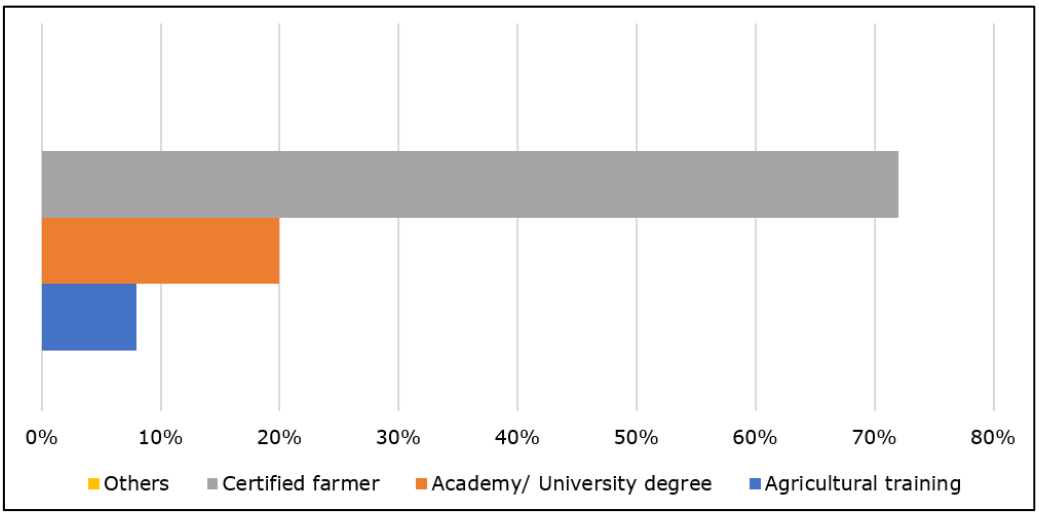


Figure 6.11. The qualification of the agricultural manager (SiW)

The eleventh question deals with the qualification of the agricultural managers. More than 70 % are graduated farmers. There are no striking differences between the categories of 'all farms' and 'agri-SMEs'.

6.3.2.12 Reasons for the farming companies' future existence in the market (SiW)

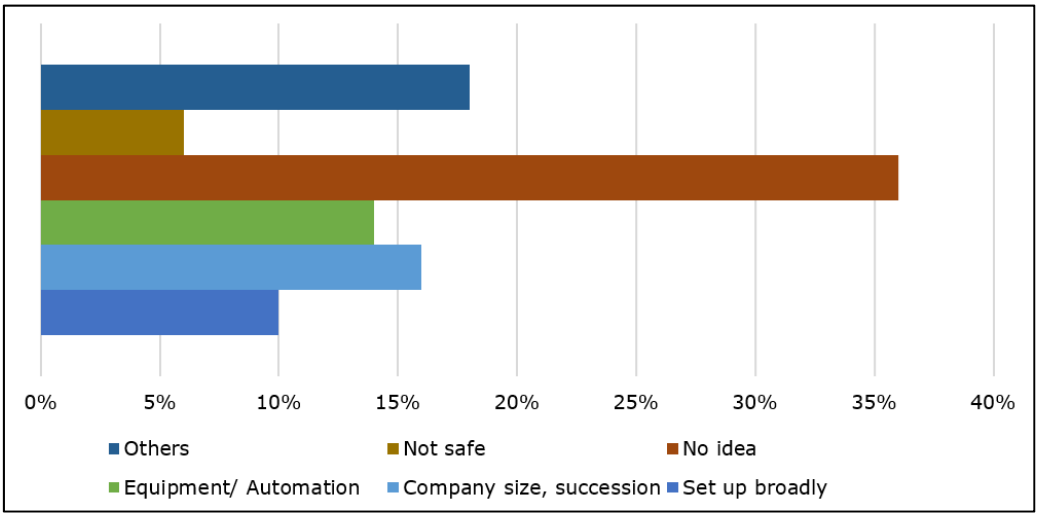


Figure 6.12. The Farm survives the next generation because.. (SiW)

The last question of the first category relates to the fact if the farm can survive the next generation. The participants were asked to give reasons for their decisions. It becomes clear that 36 % of all farmers are not sure if their farms will exist in the next generation. Some farmers who are sure about the survival of their farms gave reasons like ‚I have a worthy successor' (16 %) or , my company has a high level of automation, which makes it very competitive' (14%).

6.3.2.13 Conclusion of the 1st category (SiW)

To sum up the first category ‚'General information about your agricultural business' it can be said that there are no striking differences between the total number of farms and the agri-SMEs surveyed.

It is conspicuous and worrying that 40% of the farmers cannot enforce their price idea at the market and nearly 40% are not sure if their company is capable of surviving the next generation. For the first category of business classification, there are with family businesses, which are medium sized and 64% of them have existed for over 100 years. It should also be noted that 92% of the farms that took part in the survey state that their farm is their main source of income.

The degree of automation is 64% and the sales channels are 52% direct and indirect. That implies that the farms are professionally managed. Another important point is that 42% of the chances for the future are considered to be bleak, which is also confirmed by the question of the enforceability of the price, which is answered by 74% in a negative way.

6.3.3 The results of the 2nd category 'The situation of agriculture from your point of view' (SiW)

The questions to come are from the 2nd category that means 'The situation of agriculture from your point of view'.

6.3.3.1 The expectation of good economic prospects in agriculture (SiW)

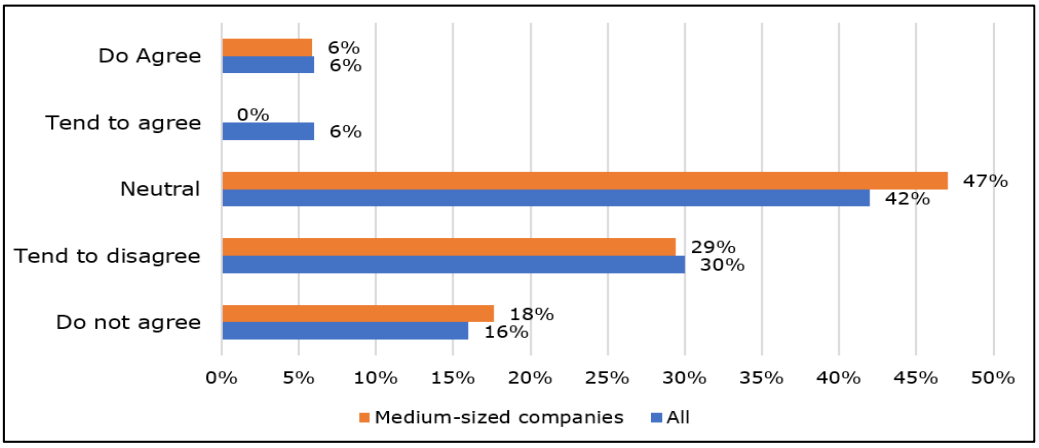


Figure 6.13. The expectation of good economic prospects in agriculture (SiW)

This chart shows that the future prospects of agricultural farms are considered in a more negative than positive way. 42% are uncertain and 46% of the farms are convinced that the future situation will get worse. This trend is also confirmed by the answers to the other questions. There is no big difference between agri-SMEs and all the others.

6.3.3.2 Honouring environmentally friendly production (SiW)

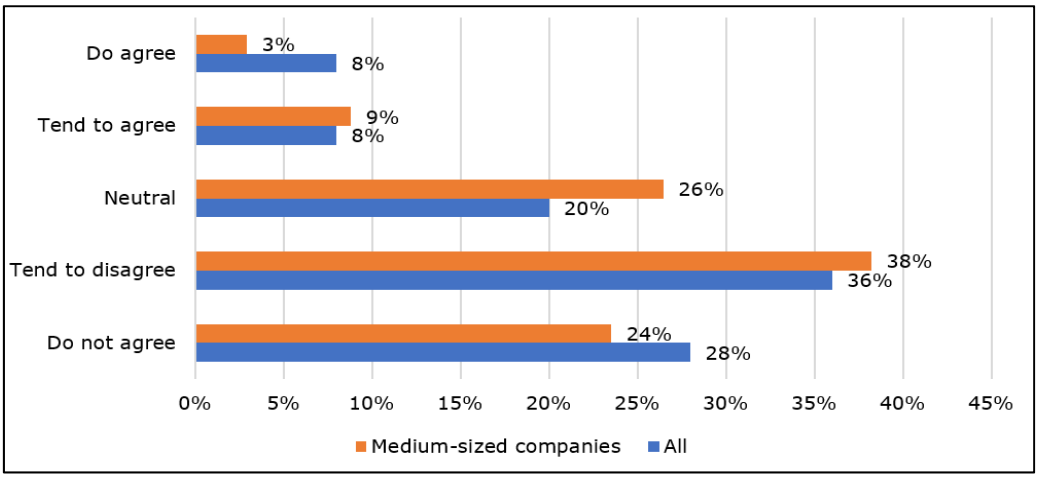


Figure 6.14. Honouring environmentally friendly production (SiW)

It is surprising in this diagram is that there is a general negative mood expressed towards this form of agriculture, as most of the farms consider their farm-friendly processes are not rewarded enough.

6.3.3.3 Conclusion of the 2nd category (SiW)

In the second category 'The situation of agriculture from your point of view' there are no striking differences between the total number of farms and the agri-SMEs surveyed.

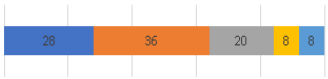
B. 'The situation of agriculture from your point of view				
Figure	Designation	Distribution in %	Average rating by all farms	Average rating by agri-SMEs
6.13	*Expectation of good economic prospects in agriculture*		2,6	2,5
6.14	*Honoring environmentally friendly production processes by the consumer*		2,3	2,3
Legend: Do not agree; Tend to disagree; Neutral; Tend to agree; Do agree				

Figure 6.15. Sum up of the 2nd category (SiW)

The first question refers to the future expectations of farms, with the group of agri-SMEs having a slightly worse expectation. It should also be noted that the general expectation of all farms is rather bad. The answer to the last question in this category reveals, whether environmentally friendly production methods are rewarded by consumers. This question is also answered in a negative way with up to 64% for all farms, whereby it is slightly better for agri-SMEs with up to 62%. Again, it should be noted that there is a generally poor acceptance of environmentally friendly production processes by consumers.

6.3.4 The results of the 3rd category 'Subsidy measures in your agricultural business' (SiW)

The following questions belong to the 3rd category 'Subsidy measures in your agricultural business'.

6.3.4.1 The types of subsidy reference (SiW)

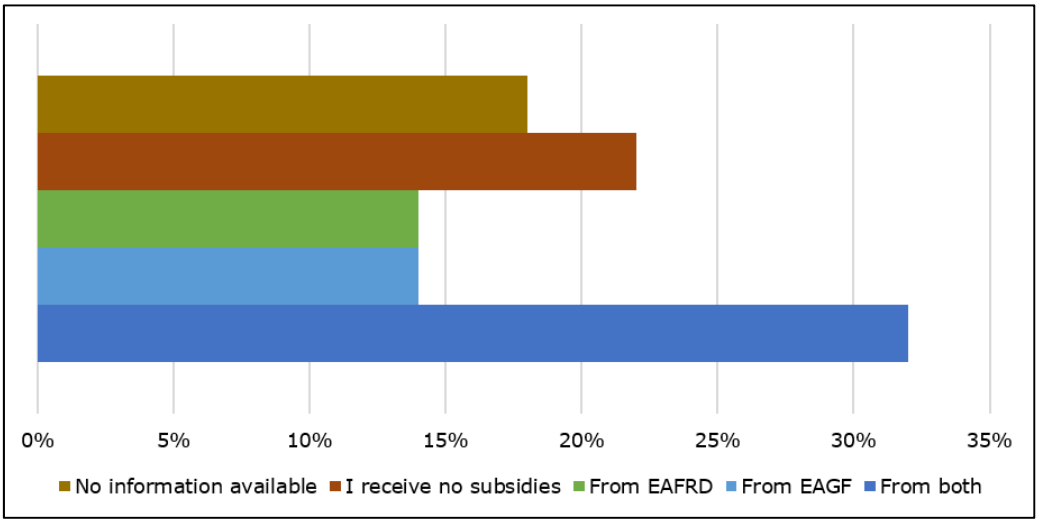


Figure 6.16. The types of subsidy reference (SiW)

Figure 6.16 shows that 22% of the farms do not receive any subsidy payments.

6.3.4.2 The influence of subsidies on the ability of innovation and optimization (SiW)

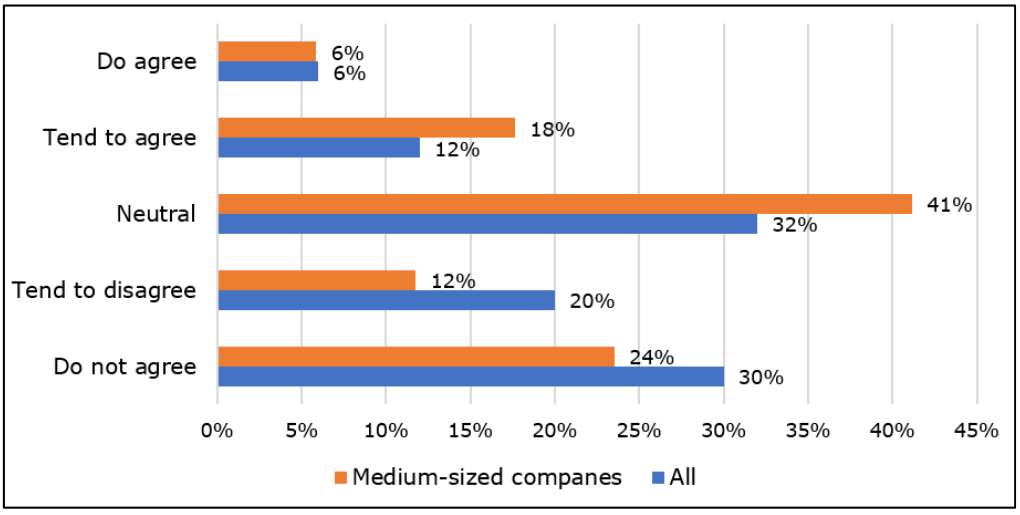


Figure 6.17. Influencing the ability of innovation and optimization by subsidy payments (SiW)

In this figure it can be seen how many farms see their ability to innovate and optimize by subsidy payments. In this context it is striking that the agri-SMEs here have a slightly more positive opinion about this question.

6.3.4.3 Support in the European competition (SiW)

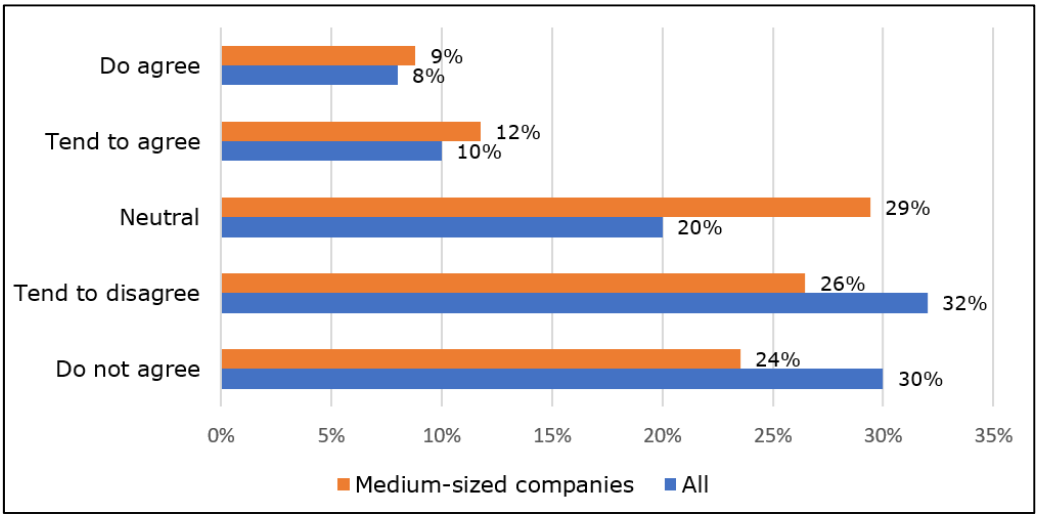


Figure 6.18. Support in the European Competition (SiW)

It is noticeable in this figure how many farms see themselves as well supported in the European competition by receiving subsidies. In this diagram it can be seen that the agri-SMEs consider themselves better supported.

6.3.4.4 Support in the competition outside the EU (SiW)

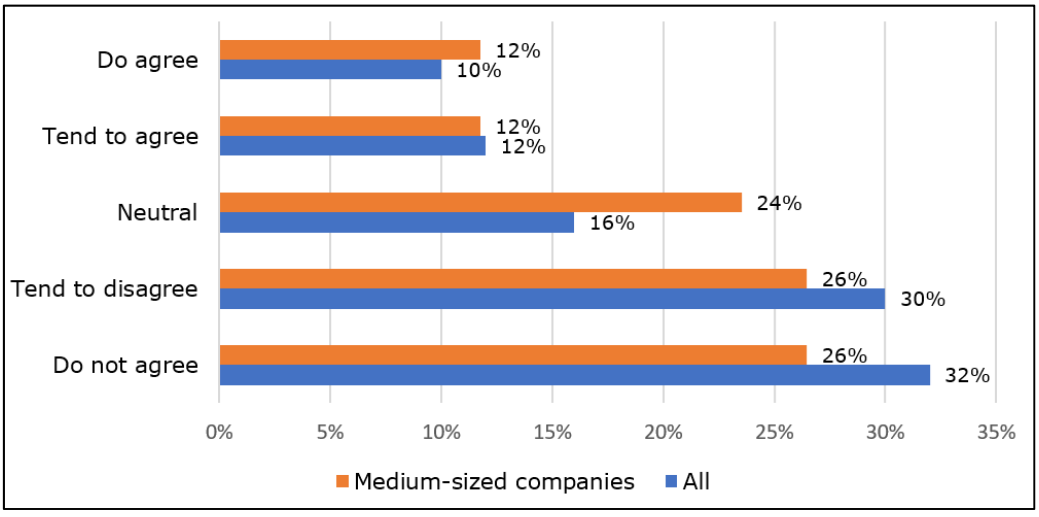


Figure 6.19. Support in the competition outside the EU (SiW)

As expected, a similar result can be seen in the competition outside the EU.

6.3.4.5 The influence of subsidies on cost management (SiW)

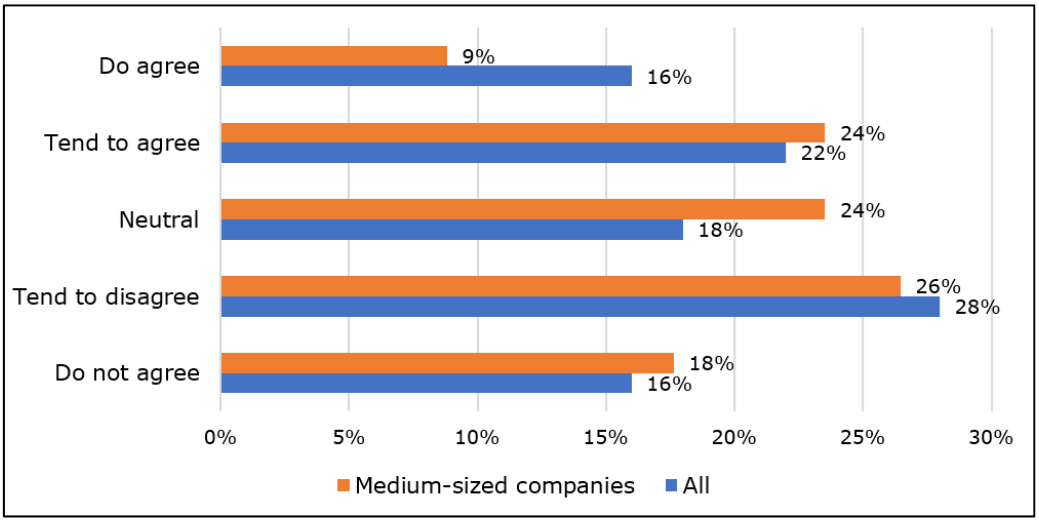


Figure 6.20. Influencing company cost management by obtaining subsidies (SiW)

This figure shows how strongly farms see their operational cost management influenced. It is noticeable that a majority of farms reject this correlation.

6.3.4.6 The operational significance of subsidies (SiW)

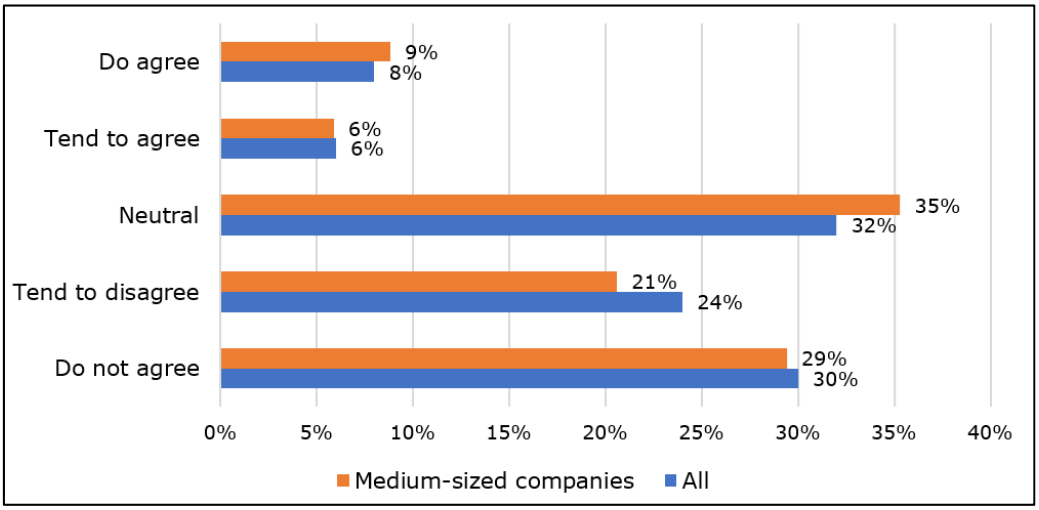


Figure 6.21. The high priority of subsidies for operation (SiW)

This figure shows the reputation of subsidies among the farms. In contrast to the assumption that subsidies are widely welcomed, most of the farms reject the idea of being subsidized in the way they are presently granted.

6.3.4.7 The influence of subsidies on the product and sales planning (SiW)

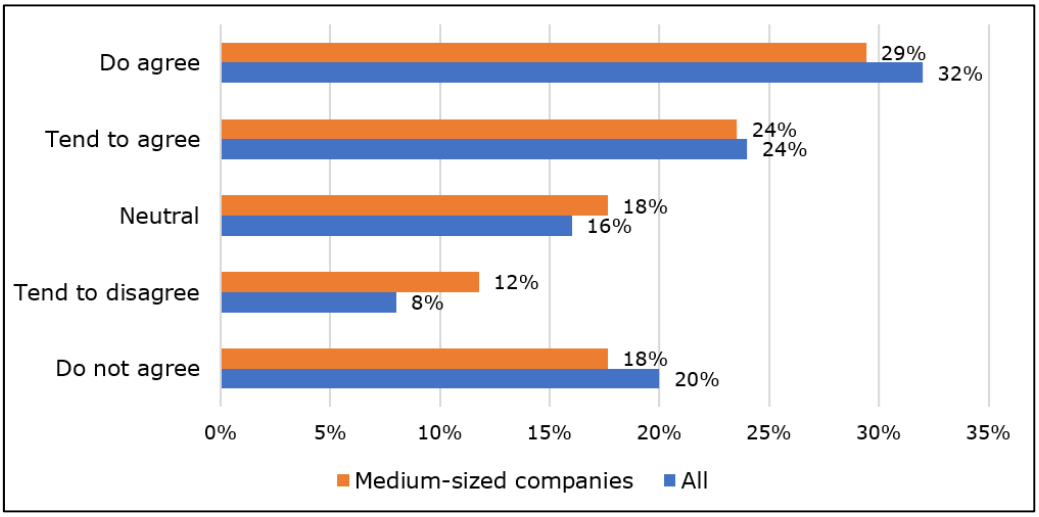


Figure 6.22. The influence of subsidy on budget planning and pricing (SiW)

In this figure it can be seen to what extent farms regard their product and sales planning as being influenced by subsidies. That shows that the farms thus stress their entrepreneurial freedom not being limited by any subsidies.

6.3.4.8 The influence of subsidies on the economic situation (SiW)

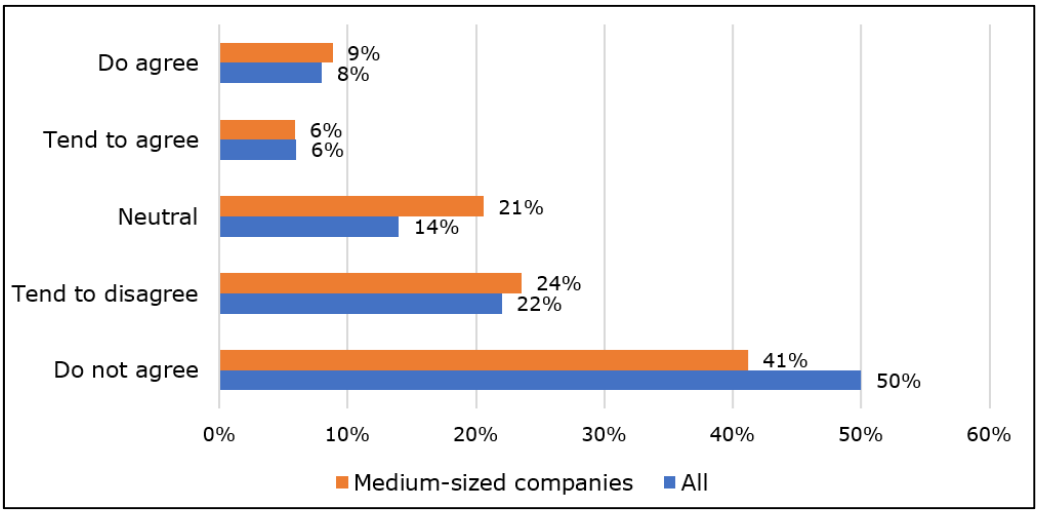


Figure 6.23. Losses without subsidies (SiW)

This figure confirms the entrepreneurial independence of subsidies as mentioned before. Most farms do not expect any losses with subsidies not being granted.

6.3.4.9 The influence of subsidies on the continuation of the company (SiW)

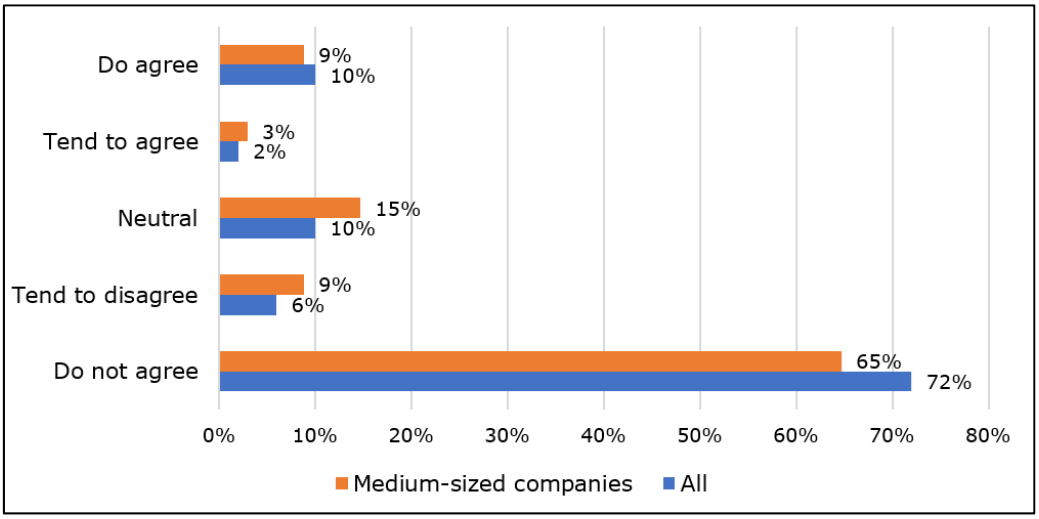


Figure 6.24. Shutdown of the production plant in case of subsidy failure (SiW)

The previous question is again confirmed in this figure as the dependency of the production from subsidy payments is strongly disputed. Almost three quarters of the respondents are convinced that they can maintain their operations profitably and should not have to make a loss or cease operations, if they no longer receive subsidies. As somewhat less definite yet similar opinion is reflected by another 6% of the surveyed farmers [165].

6.3.4.10 The change to organic farming (SiW)

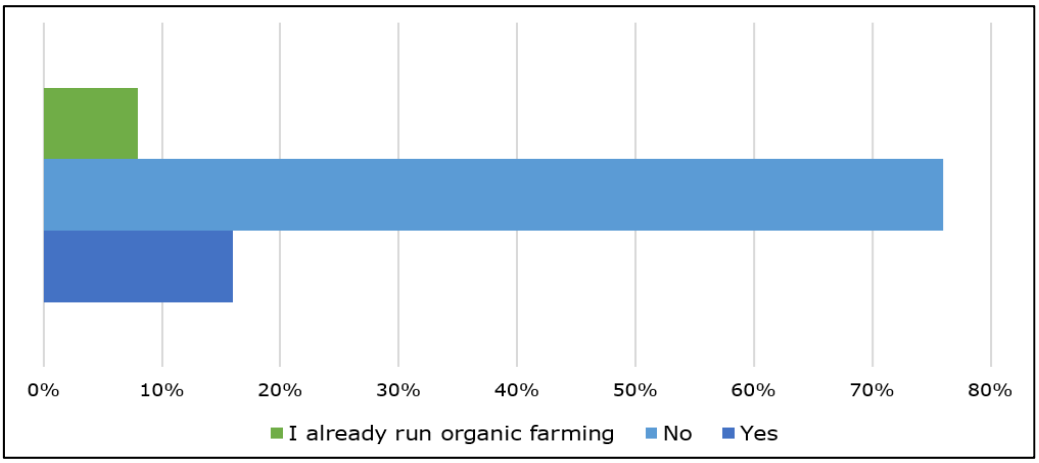


Figure 6.25. Will there be a change to organic farming with increased subsidy payments? (SiW)

Surprisingly, this figure shows to what extent the farms would be willing to switch their production to organic farming with increased subsidy payments. Even in the case of increased subsidies 76% of the farms would not be willing to change to

organic farming.

6.3.4.11 The influence of subsidies on the investment behaviour (SiW)

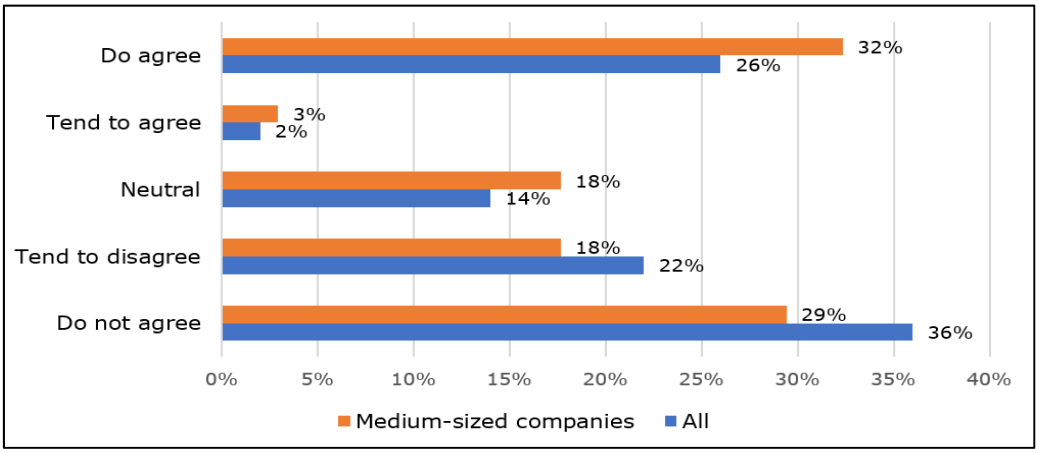


Figure 6.26. The expansion of investment activity with increased subsidy coverage (SiW)

This figure shows whether higher subsidy payments would lead to higher investments. This is only true for agri-SMEs as their managers confirm the statement in this question more often.

6.3.4.12 The influence of subsidies on the labour market in agriculture (SiW)

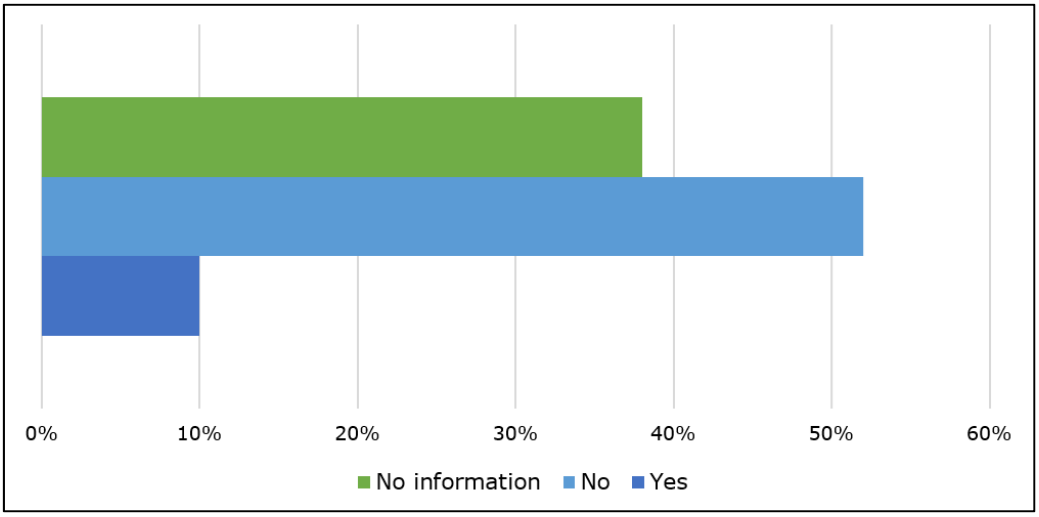


Figure 6.27. Job creation due to the granting of subsidies (SiW)

This figure shows whether subsidies help to create new jobs. Only 10% of the managers of the farms surveyed answered this question in the affirmative.

6.3.4.13 Conclusion of the 3rd category (SiW)

More than 60% of the farms surveyed receive agricultural subsidies through the EAFRD and EAGF funds of the European Union. An influence on the ability to optimize and innovate, as well as the production and sales planning is generally not perceived by the farms. Yet, the farmers of agri-SMEs are more critical about these issues. There is consensus in those surveyed that the received subsidy payments are not a source of competitiveness against larger industrialised farms; therefore, the majority of the surveyed farms refuse a similarly high level of funding. The majority are also convinced that farms should not have to incur a loss or halt operations if they are no longer subsidised. Yet, the impact of subsidies on corporate cost management is highly controversially rated no matter what the company sizes are. Besides, it should also be noticed that any increase in subsidy payments is only partially reinvested in the farms, and thus no new jobs are created. Consequently, the motivation to move to organic farming is not strengthened in this manner. In summary, for questions in the third category, ''Subsidy measures in your agricultural business' it can be argued that the significance of subsidies is considered by the farms surveyed, a form of compensatory corrective payment. This is because the funding is essentially used to secure the farms' income when competing against larger industrialised farms. Agri-SMEs see subsidies a little bit as more important, as is demonstrated by the charts of better ability, better support in competition, higher value and better innovation ability of farms.

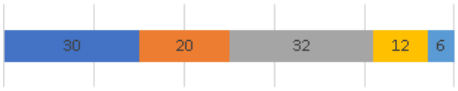
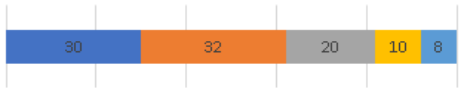
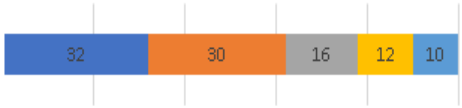
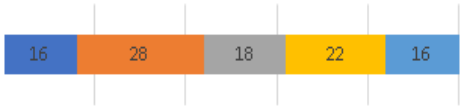
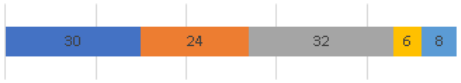
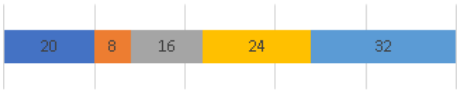
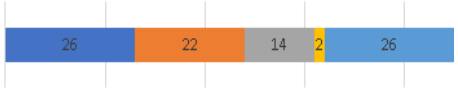
C. Subsidy measures in your agricultural business				
Figure	Designation	Distribution in %	Average Rating by all farms	Average Rating by agri-SMEs
6.17	*Subsidy payments influences the innovation and optimization ability*		2,4	2,7
6.18	*Subsidies support to compete within the EU*		2,3	2,6
6.19	*Subsidies support to compete outside the EU*		2,4	2,6
6.20	*Receiving subsidies will not affect the existing cost management*		2,9	2,8
6.21	*The subsidies have a high priority*		2,4	2,4
6.22	*Product and sales planning are not influenced by subsidy payments*		3,4	3,4
6.23	*Generating a loss without subsidy payments?*		2,0	2,2
6.24	*Shutdown the operation without receiving subsidies*		1,7	1,8
6.26	*Expand investments measures by increasing subsidies*		2,6	2,9
Legend: Do not agree; Tend to disagree; Neutral; Tend to agree; Do agree				

Figure 6.28. Sum up of the 3rd category (SiW)

6.3.5 The results of the 4th category 'Personal assessment of subsidies' (SiW)

The questions of the 4th category deal around 'Personal assessment of subsidies'.

6.3.5.1 The significance of subsidies (SiW)

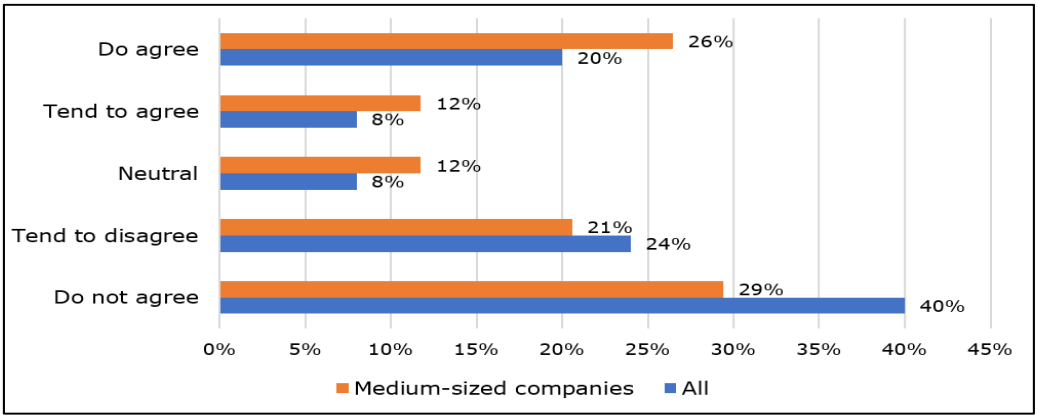


Figure 6.29. The importance of agricultural subsidies (SiW)

This figure shows if the subsidizing of agriculture is generally important. It is noticeable that 64% of the surveyed farms do not consider this as important or not important at all. These figures are surprising at first sight, but on the background of prices being dictated by the market and not by the producers it can be understood that on one hand many farms would not be able to survive without subsidies in such a competitive market; yet on the background of the farmers desire to act as an independent economic unit may serve as an explanation of these statements.

6.3.5.2 The influence of subsidies on the situation of income (SiW)

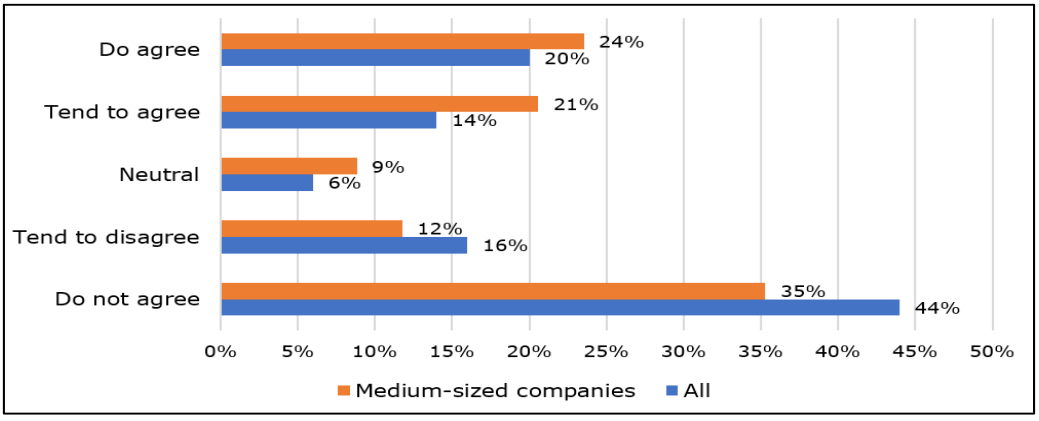


Figure 6.30. Obtaining a fair income due to subsidies (SiW)

In this figure can be seen if a decent income is achieved through subsidy preservation. Subsidy payments do not play a significant role in achieving an adequate income according to the majority's view of the farmers. Surprisingly agri-SMEs expressed a more positive attitude about subsidies.

6.3.5.3 The farms' dependency on subsidies (SiW)

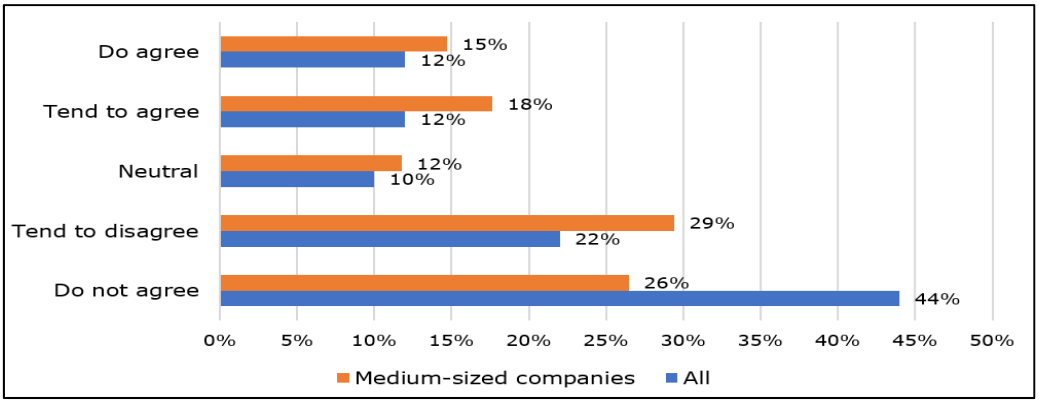


Figure 6.31. The survivability of German agriculture without subsidies (SiW)

This figure answers the question if agriculture without subsidizing would no longer exist in Germany. As expected for agri-SMEs the subsidies are regarded as being of vital importance. However, the farms' managers did not see the further existence of their farms being endangered if subsidies were not granted at all.

6.3.5.4 The distribution of subsidies (SiW)

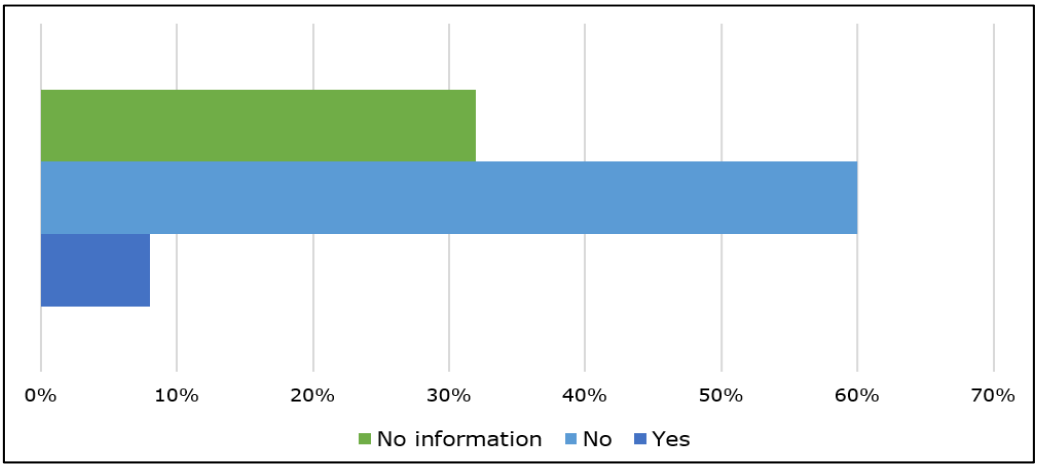


Figure 6.32. A fair distribution of subsidies (SiW)

This figure shows whether the distribution of subsidies is considered to be fair. It is striking that only 8% of the farms surveyed think that the distribution is fair.

6.3.5.5 Fairness in the distribution of subsidies by the size of area (SiW)

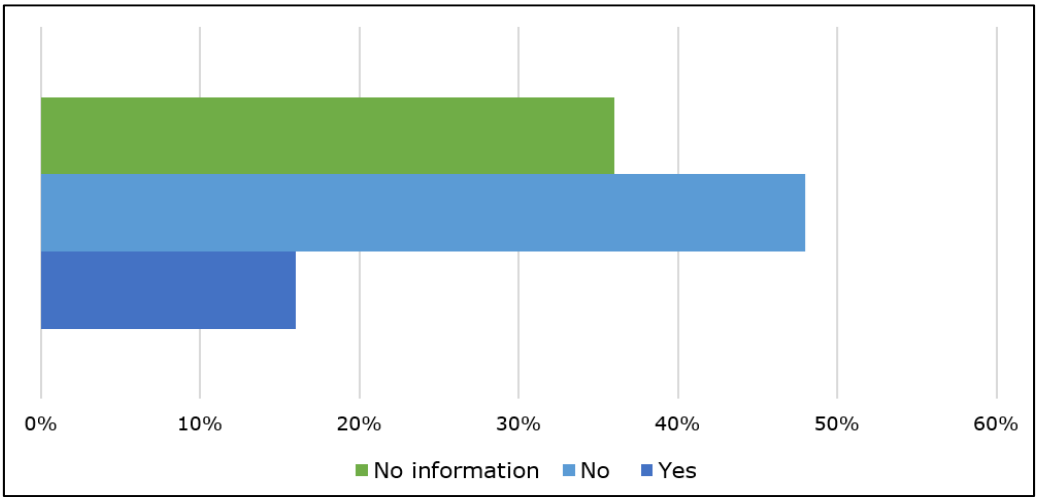


Figure 6.33. The distribution of subsidy payments by farm size is fair (SiW)

In this figure it can be seen if the farmers think the distribution of subsidy payments according to rural farm size is fair. Most farmers think that the present distribution is unfair. Only 16% of the surveyed farms are content with that distribution.

6.3.5.6 The necessity of subsidies for modernization (SiW)

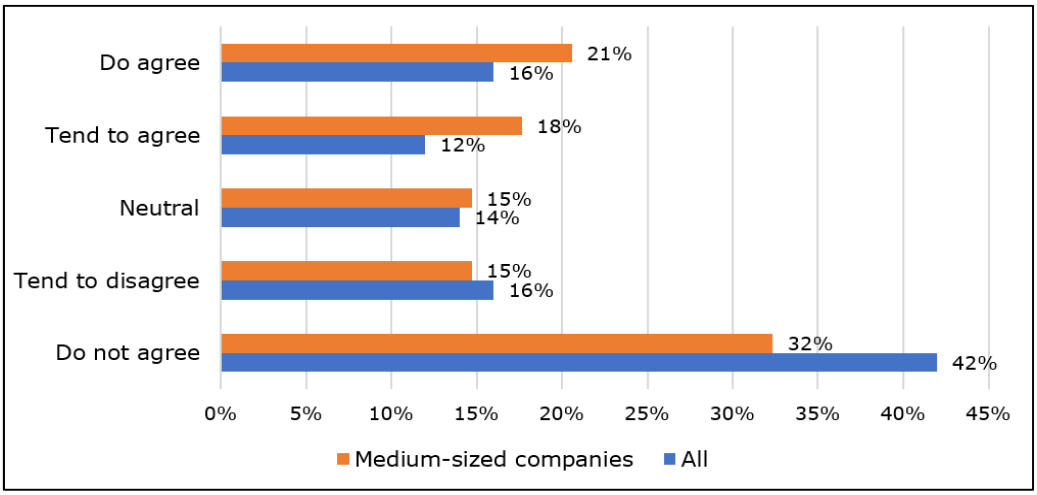


Figure 6.34. The necessity of subsidy payments for modernizations (SiW)

This figure reveals that the agri-SMEs regard subsidies for the modernization of their farms being essential. Yet, there is a big agreement with 58%, of all farms that subsidies for upcoming modernization are not fundamentally necessary.

6.3.5.7 The influence of subsidies on the competition ability (SiW)

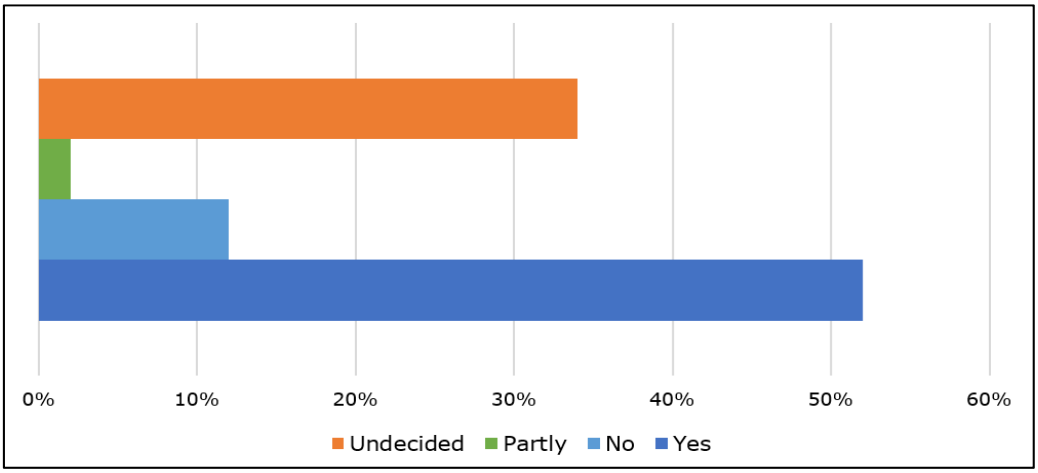


Figure 6.35. Advantages for large farms due to subsidies (SiW)

In figure 6.35 it can be seen that up to 54% of the farms surveyed believe that large farms are favoured by the present subsidy system and hence gain a competitive advantage in an already highly competitive market by obtaining subsidies [165].

6.3.5.8 Profit opportunities in organic farming (SiW)

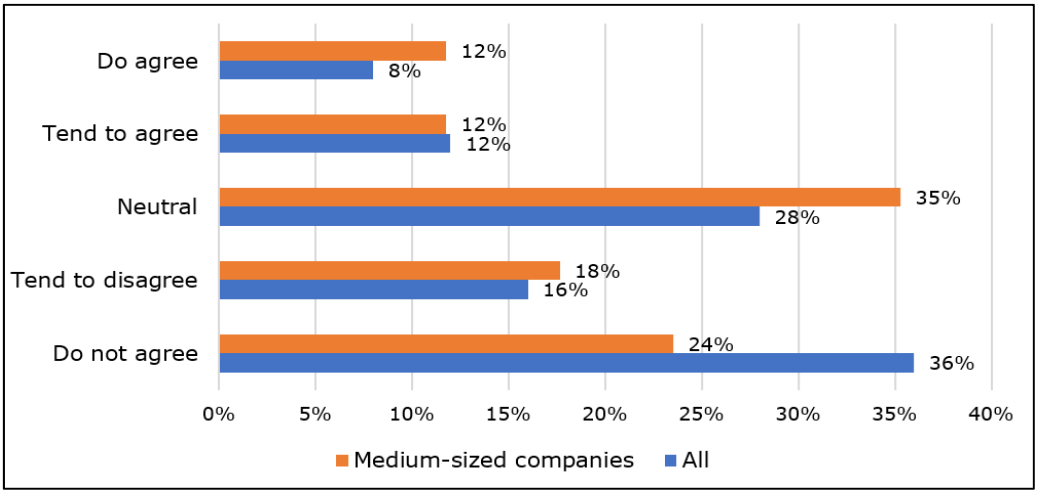


Figure 6.36. Higher profit opportunities in organic farming (SiW)

This figure describes if the surveyed farms assume a higher profit potential in organic farming. It is noticeable that above all agri-SMEs consider this option in a positive way.

6.3.5.9 Product-specific differentiation as an alternative (SiW)

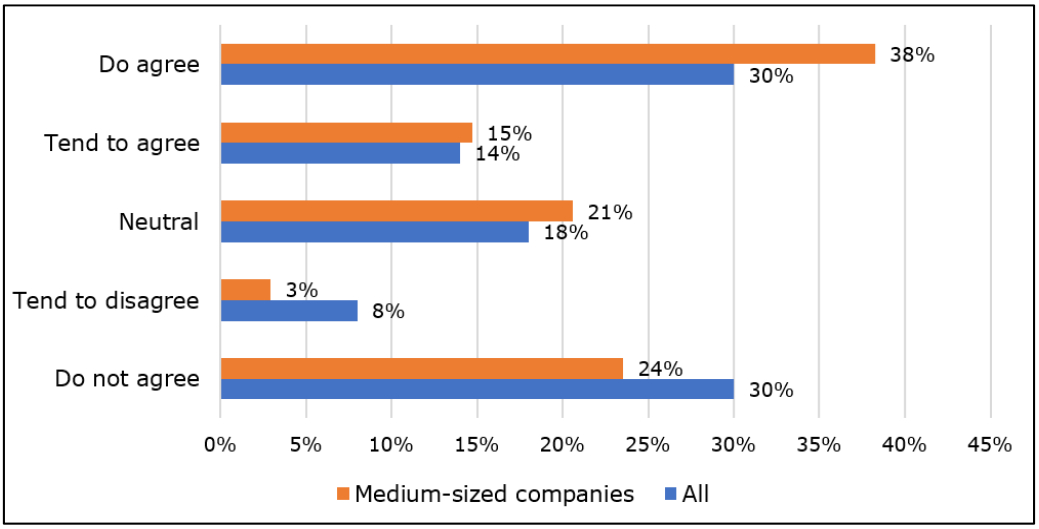


Figure 6.37. Product specific distinguishing of subsidy payments is more advantageous (SiW)

Whether the farms surveyed consider product-specific differentiation of subsidy payments to be more advantageous can be seen in figure 6.37. It is striking that the agri-SMEs agree to this statement in contrast to all other farms. They see more advantages in a product-specific support system than large farms, however, a uniform opinion cannot be recognized.

6.3.5.10 The limitation of the amount of subsidies (SiW)

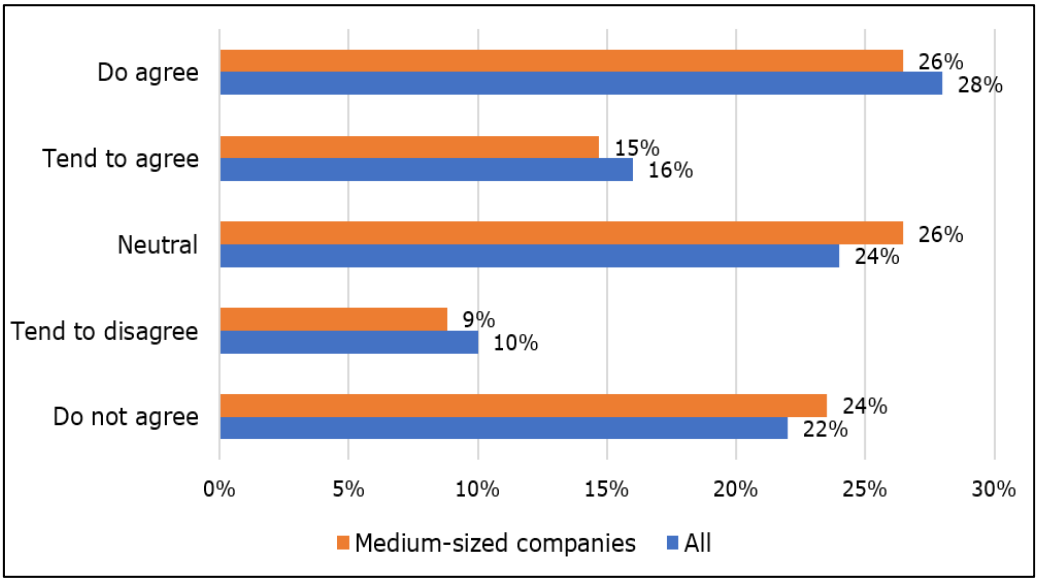


Figure 6.38. The limitation of the amount of subsidy payments (SiW)

In the figure above, it is visible whether limiting the amount of subsidy payments is considered positive. Both agri-SMEs and all other farms have answered this question in a similar way. In general, the opinions about the mentioned limitation are divided. There is no consensus on the extent to which subsidies should be capped according to amount or duration. The number of farmers who support, oppose, and are undecided about such measures are comparable. However, agri-SMEs, more than the large ones, reject any kinds of limitations [165].

6.3.5.11 The limitation of the duration of subsidies (SiW)

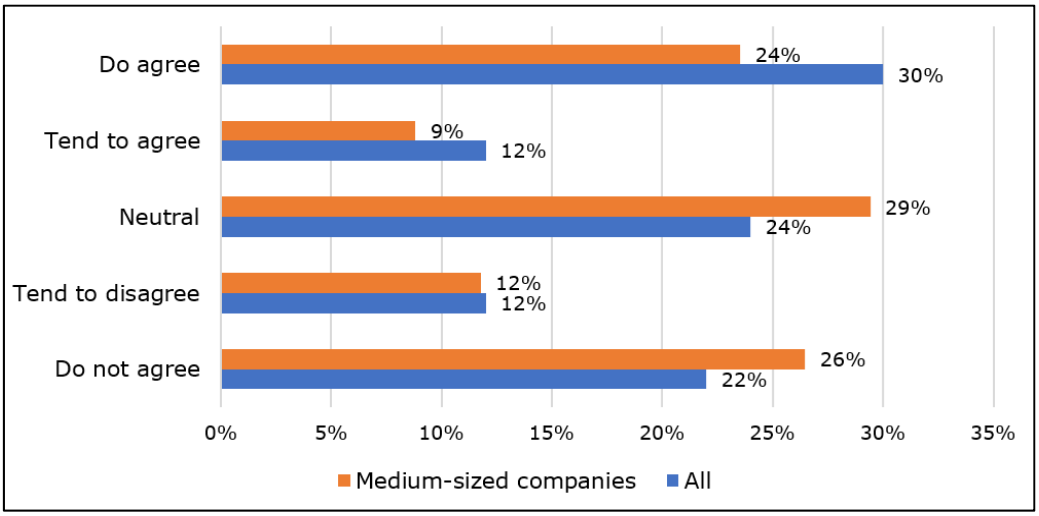


Figure 6.39. The limitation of the duration of subsidy payments (SiW)

In figure 6.39 it can be seen that the majority of the surveyed farms are for limiting the duration of subsidy payments. Yet a limitation of the duration of subsidy payments are refused by a majority of the agri-SMEs, which is surprising because they are in favour of limiting the amount of subsidies.

6.3.5.12 Possible adjustments (SiW)

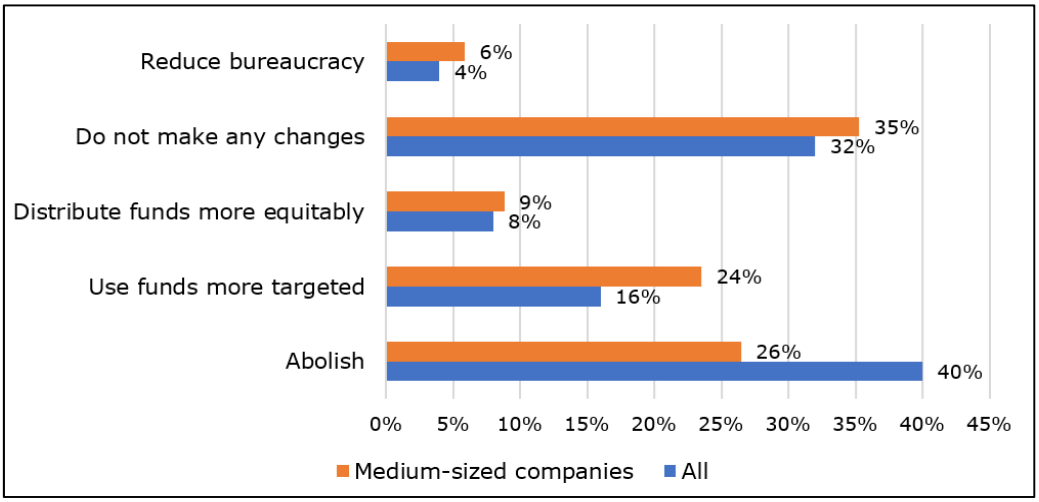


Figure 6.40. What should be change? (SiW)

In this figure it can be revealed that surveyed farms would change the current subsidy policy. It is noticeable, that 40% of farms would like to get rid of subsidies and 32% of the farms would not change anything. In this chart it can also be seen that among agri-SMEs only 26% would be in favour of the abolition of subsidies and 35% would change nothing about it at all.

6.3.5.13 Reasons for the market exit of farms (SiW)

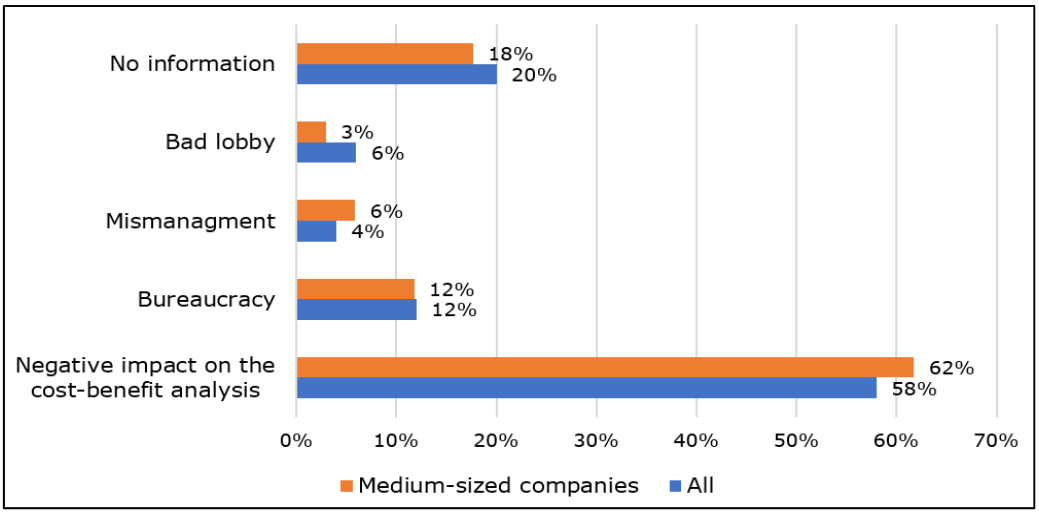


Figure 6.41. Why are there less farms nowadays? (SiW)

This figure informs about why farms think there are fewer and fewer farms nowadays. As a reason for this 62% of the agri-SMEs are convinced that poor competitive conditions have a negative impact on the cost-benefit analysis. Most

farms surveyed do not assess this entire subsidy procedure as improvable. The reduction of bureaucracy, a more target-oriented use and a fairer distribution would not stop the trend. As main reason two-thirds of all farms, and even more in the agri-SMEs group, believe that the collapse of farms is justified by the existing inadequate competitive conditions. These perspectives reinforce the premise that the existing subsidizing will only slow down but not prevent agri-SMEs from exiting the market, further compromising the CAP's objectives [165].

6.3.5.14 Conclusion of the 4th category (SiW)

According to personal assessments of the value of subsidies, the majority of farmers see agricultural subsidy payments as unimportant (up to 66%); farmers' survival is not threatened in the same way if they do not receive any funding. Furthermore, according to the majority of farmers, subsidies do not guarantee the achievement of an adequate income. Additionally, the majority of farmers surveyed believe that the distribution of these subsidy payments, in general and especially according to the size of the farm, is unfair. There is no discernible difference in sentiments between agri-SMEs and the remainder of surveyed farms.

For agri-SMEs, subsidies gain in importance for them to carry out farm modernizations as compared to the larger farms. Nonetheless, 58% of all farms agree that subsidies for an upcoming modernization are not essentially needed.

Regarding the competitive context with large farms, more than half (54%) of the farms surveyed believe that large farms benefit from this subsidy policy and thus gain a competitive advantage in the already highly competitive market by receiving higher subsidies in comparison to other farms.

Agri-SMEs are more likely to recognize higher profit opportunities in organic farming, but the farms are generally sceptical about the subject.

In this category, it is also crucial to consider if subsidy payments should be differentiated by product. Agri-SMEs benefit more from a product-specific support system than large businesses, but there is no consensus on the matter.

There is also no consensus on whether or not subsidies should be limited, in duration or amount. The numbers of farmers who oppose, support, and are undecided about such measures are comparable. However, agri-SMEs, more than large businesses, reject any kinds of limitations.

Concerning potential changes to the present subsidy policy, the fraction of farmers who want the subsidies completely eliminated and those who do not want any changes are nearly comparable in numbers, with 40% and 32%, respectively. Only a minority surveyed sees room for improvement in the form of a fairer distribution, a more targeted use, and reduced bureaucracy throughout the funding procedure.

All in all, two-thirds of all farms surveyed, and even more in the agri-SME group, believe that the decrease in the number of agricultural firms is caused by the existing inadequate competitive conditions. These perspectives reinforce the premise that the existing CAP programme will only slow down but not prevent agri-SMEs from exiting the market, compromising the CAP's objectives.

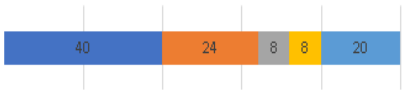
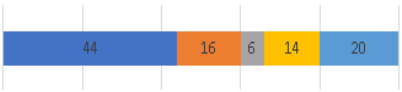
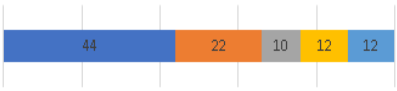
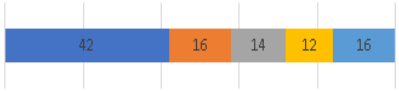
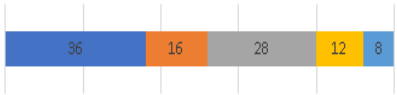
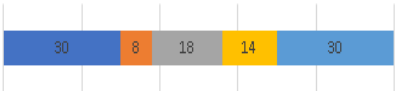
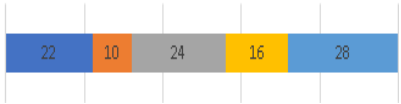
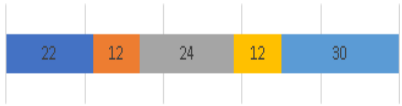
D. Personal assessment of subsidies				
Figure	Designation	Distribution in %	Average rating by all farms	Average rating by agri-SMEs
6.29	*Subsidizing agriculture is important*		2,4	2,9
6.30	*Subsidies guarantee achieving a reasonable personal income*		2,5	2,9
6.31	*Agriculture would not exist without subsidies in Germany*		2,3	2,6
6.34	*Subsidy payments are necessary to carry out necessary modernization and investment in operating and office equipment*		2,4	2,8
6.36	*In organic farming, there are opportunities for higher profits*		2,4	2,7
6.37	*Expenditure on subsidies should be differentiated product-specifically*		3,1	3,4
6.38	*Expenditure on subsidies in agriculture should be limited in amount*		3,2	3,1
6.39	*Expenditure on subsidies in agriculture should be limited in duration*		3,2	2,9
Legend: Do not agree; Tend to disagree; Neutral; Tend to agree; Do agree				

Figure 6.42. Sum up of the 4th category (SiW)

6.3.6 Summary of the survey in the region of Westmünsterland

The agricultural companies in the region of Westmünsterland show a uniform and typically medium-sized structure. For example, the farms there mostly dispose of 30 to 200 ha, have existed for more than 100 years and have relatively modern operating and office equipment. Furthermore, with a medium to high degree of automation hardly more than five employees are employed. The farmers are predominantly middle-aged, and all have specific skills that are necessary to do their job successfully.

Furthermore, the farms are almost exclusively operated as a main business and the wide range, from dairy farming up to market crop, is covered by their agricultural activities. Farms that only rely on direct sales are a minority. Most farms distribute their products by direct and indirect distribution channels. Yet, with 40% most farms cannot enforce their pricing on the market.

Although the long-term chances of existence are seen rather positively, bad economic prospects are expected by the farmers in the short term in connection with the poor enforceability of their own price expectations. In this context, 64% of farmers believe that the use of environmentally friendly production methods is not adequately rewarded by consumers.

Subsidies are designed to help farmers in the market competition and to help achieving the objectives of the common agricultural policy. Accordingly, most farmers receive subsidy payments through the funds EAFRD and EAGF. Agri-SMEs are more likely to favour the subsidies than most of the farms surveyed do. In general, however, the majority of the farmers, regardless of their farms' size, do not feel sufficiently supported by receiving subsidies in the intra-European and non-European competition. Consequently, it is no surprise that most businesses cannot confirm the influence of subsidies on their ability for innovating, optimizing, and that is also true for planning their products and sales. Only the influence of subsidies on operational cost management is highly controversial no matter what the farms' sizes are. In conjunction with the majority's expectation to be able to generate profits and continue operating without subsidies, the low significance of subsidy payments for around 54% of all surveyed farms is confirmed.

Furthermore, it can be seen that a strengthening of organic farming could not be achieved by increasing subsidy payments. The lack of rewarding of consumers for environmentally friendly production processes, has led to only 8% of the farmers being willing to switch their production processes to organic farming, as the majority of the farmers do not expect higher profit opportunities in organic farming compared to conventional agriculture.

An increase in investment activities and additional job creation cannot be achieved by increasing subsidy payments. Only just under a third of the farms surveyed would invest more in their own business if they received higher subsidies. New jobs would be created by only 10% of the farms due to higher subsidy amounts.

Neither are the current subsidy payments necessary to provide an adequate income, nor to secure the livelihood of about two-thirds of the farms surveyed. Agri-SMEs, however, attach importance to subsidy payments. Comparable results relate to the question of a possible need for subsidy payments and the implementation of modernization measures. In this overall picture, it is not surprising that around 60% consider the distribution of subsidies per se and 48% the distribution according to farm size as unjust. More than half of the farms surveyed recognize this type of allocation of funds as resulting injustices or competitive disadvantages in competition with large-scale agricultural enterprises.

On the question of what changes would have to be brought about in order to achieve greater acceptance and fairness from the point of view of the farmers concerned, it is noticeable that agri-SMEs change nothing according to the majority's views and not agri-SMEs would largely abolish subsidies completely. One-third of the farms surveyed would prefer distributing the funds more equitably or using them more purposefully, with neither a majority for nor even a majority against a product-specific distribution of the subsidies.

Also, with regard to limiting the subsidy in amount and duration, it can be stated that there is no clear majority for or against a limitation. Again, agri-SMEs predominantly are against a limitation of any kind in this respect.

Finally, it can be stated that the overwhelming majority blame the poor competitive conditions for the steady decline or market exit of agricultural enterprises. Overall, there is a very negative picture of the current subsidy policy from the perspective of farmers.

Although the efficiency of the funds used is highly questioned and has virtually no impact on business decisions such as regarding investment, product and sales planning, personnel planning, organic production practices, and the fact that farmers are convinced of the viability of their farms even without subsidies; agri-SMEs in particular do not want to do without subsidies in order to be able to compete better in the market.

Overarching solutions to stop the current trend of displacement of agri-SMEs by large agricultural enterprises could not be found by the survey of farmers. Nevertheless, it can be deduced from the survey results that a change in the current subsidy policy is required to prevent the further market exit of above all agri-SMEs. Only in this way can the objectives of the common agricultural policy, in particular with regard to the variety and quality of the supply and the securing of an appropriate price, be achieved in the long term. Therefore, it will be necessary to develop funding opportunities that exert and directly influence the company's competitive and success factors.

6.3.7 Essential findings of the survey in the region of Westmünsterland

The survey findings are typically centred on the belief that the resent CAP should be completely revised, because all farms, regardless of their size, do not view future prospects of agricultural industries positively. Although the farms are convinced that they can survive without subsidy payments, these financial aids help them to compete. It is also clear that farms are willing to adjust the existing CAP. Another important finding of this survey is that agri-SMEs are more reliant on subsidy measures; therefore, a particular subsidy programme for this type of farm which is more suited to their necessities and conditions, may be considered. Subsidy policy changes, for example, would include subsidy use in a more targeted way [165].

6.3.7.1 The approval of the surveyed farms to the five essential topics (SiW)

Essential topics can be identified from the answers received as follows.

	Topic	Rating by all farms	Rating by agri-SMEs
1	Expectation of good economic prospects in agriculture	○	○
2	Subsidizing agriculture is important	△	○
3	Obtaining a fair income due to subsidies	○	○
4	Cessation of the production plant in case of subsidy failure	△	△
5	Expansion of investment activity with increased subsidy coverage	○	○

Legend: ▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average

Figure 6.43. The approval to the essential topics (SiW) [165]

Figure 6.43 illustrates the five most critical topics from the perspective of the farms surveyed, as well as the relationship between agri-SMEs and all farms surveyed. As a result, the legend depicted is generated from the questionnaire's five-stage Likert scale, based on the degree of consent by all participants. Generally, future prospect is only seen as average and SMEs perceive subsidies as more important.

Furthermore, agri-SMEs are much more likely to increase their investment activities with the help of increased subsidy payments. It is also noteworthy that while farms do not believe to be reliant on subsidy payments, in the event of a cessation of subsidies, business operations are interrupted [165].

6.3.7.2 The five topics with the highest approval of the farms surveyed (SiW)

Rank	Topic	Rating by all farms	Rating by agri-SMEs
1	Product and sales planning are not influenced by subsidy terms	○	○
2	Limitation of the amount of subsidy payments	○	○
3	Limitation of the duration of subsidy payments	○	○
4	Product-specific differentiation of subsidy payments is more advantageous	○	○
5	Influencing company cost management by obtaining subsidies	○	○

Legend: ▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average

Figure 6.44. The five topics with the highest approval (SiW) [165]

Figure 6.44 depicts the five topics which farms have rated as most important. The infograph shows that the majority of farms support restricting the amount and length of subsidies. Another remarkable observation is that farms believe the subsidy payments are not sufficiently targeted. Similarly, the receipt of subsidies from the farms surveyed had little impact on their entrepreneurial activities [165].

6.3.7.3 The five topics with the lowest approval of the farms surveyed (SiW)

Rank	Topic	Rating by all farms	Rating by agri-SMEs
1	Cessation of the production plant in case of subsidy failure	△	△
2	Generating a loss without subsidy relation	△	△
3	Honouring environmentally friendly production processes by the consumer	△	△
4	Survivability of German agriculture without subsidization	△	○
5	Support in European Competition	△	○

Legend: ▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average

Figure 6.45. The five topics with the lowest approval (SiW)

Figure 6.45 reveals the five topics that received the lowest approval from the farms surveyed. In addition to an overestimation of the importance of subsidies, the farms' survival is deemed unaffected; farms can also be operated profitably without receiving subsidies. However, organic farming is not widely accepted as a viable production option. Nonetheless, despite the clear, negative attitude towards subsidy payments, the vanishing of farms from the market is well perceived by all other farmers [165].

The responses of agri-SMEs in relation to the evaluation of all the farms surveyed are analysed in detail. The difference shown in the following figures indicates how the rating of agri-SMEs varies from the rating of all farms.

6.3.7.4 The five topics better rated by agri-SMEs (SiW)

Rank	Topic	Rating by all farms	Rating by agri-SMEs	Difference
1	Subsidizing agriculture is important	△	○	0,5
2	Subsidy payments are necessary for required plant modernizations	△	○	0,4
3	Obtaining a fair income through subsidies	○	○	0,4
4	Support in European competition by receiving subsidy	△	○	0,3
5	Influencing the innovation and optimization ability through subsidy relation	△	○	0,3

Legend: ▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average

Figure 6.46. The five topics better rated by agri-SMEs (SiW) [165]

Agri-SMEs have essential concerns about the existing CAP, including the importance and the necessity of the financial aids, as well as their impacts on the competitive support and innovativeness. When all the responses from the farms surveyed are combined, the level of acceptance towards these positive impacts rises. Despite many farmers' negative attitudes towards subsidies, in general, a larger proportion of these payments are necessary, particularly by agri-SMEs, to keep agricultural production from being permanently threatened with extinction. [165].

6.3.7.5 The five topics worst rated by agri-SMEs (SiW)

Rank	Topic	Rating by all farms	Rating by agri-SMEs	Difference
1	The limitation of the duration of subsidy payments	○	○	-0,3
2	Influencing company cost management by obtaining subsidies	△	△	-0,1
3	The expectation of good economic prospects in agriculture	△	△	-0,1
4	Limitation of the amount of subsidy payments	△	△	-0,1
5	The high priority of subsidies for operation	△	△	0

Legend: ▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average

Figure 6.47. The five topics worst rated by agri-SMEs (SiW)

The non-agri-SMEs surveyed in particular, rate the issues such as the limiting of subsidy payments, the influence on cost management, future economic development expectations, and the progressing market exit of farms higher than the agri-SMEs do. These evaluations, each with a 0.1-point deviation, are, however, significantly weaker than the comparison as shown in figure 6.46 [165].

6.3.8 Conclusion of the survey in the region of Westmünsterland

The findings of the Westmünsterland survey closely reflect the general mood amongst German farmers. A 2019 survey conducted by the research firm Forsa highlighted comparable problem areas among German farmers, which included farmers' dissatisfaction with the existing subsidy policy [155,200].

Approximately 68% of farmers surveyed deny the current subsidy policy in its entirety. The large proportion of farmers opposed direct payments as a method of funding. This land ownership reward policy disproportionately disadvantages agri-SMEs and forces them out of the market in the long term. These farms are then increasingly compelled to utilize more intense production methods regardless of their associated negative economic and environmental effects. Thus, the complete elimination of direct payments over the next ten years is a salient point of argument by almost 50% of the farmers surveyed. Although the vast majority of farmers surveyed oppose the current subsidy policy, they do so because the current system restrains the competitiveness of agri-SMEs in comparison to larger farms. These farms want a subsidy policy that encourages the development of sustainable agriculture with the appropriate environmental standards [155].

The CAP does not strive to ensure the production of healthy nurture through sustainable agriculture while minimizing negative consequences on animal protection and welfare as well as water, soil, and climate protection (birds, insects, biodiversity). Unfortunately, farmers have been compelled to use ever more intensive production

methods due to economic restraints as a result of the high portion of direct payments. Consequently, agri-SMEs are consistently suppressed of the market, and the EU-set goals, such as biodiversity, soil, climate, and water protection, are not met. The data presented emphasize this development regardless of whether the study conducted is at the regional, supra-regional, or nationwide level.

German agriculture is a major component of European agriculture and a significant economic contributor, particularly when considered in the broader agribusiness context. Nonetheless, German agriculture is characterized by agri-SMEs, with significant regional distinctions between East and West Germany, and is thus completely affected by any structural change and the consequences of the ongoing concentration process.

According to the analysis, German farmers are dissatisfied with the political orientation that underlies the CAP, and the majority of them view the current situation and future aspirations adversely in the absence of far-reaching political reforms. To halt the current trend and establish and promote sustainable agriculture within an appropriate framework, it is recommended that available funds be used in such a way that rewards farms in practising sustainable agriculture (public money for public goods). Furthermore, those funds which have been set aside for financing are provided with sufficient financial support to shift funds originally earmarked for direct payments towards the rewards.

6.4 Evaluation of the survey in the region of Banat (SiB)

In the Banat region around the city of Timisoara, 39 farms were persuaded to take part in the survey. The survey was carried out in autumn 2018. Approximately 41% of the farms surveyed were medium-sized farms with a size of up to 100 ha. The remaining farms were in some cases significantly larger than 200 ha.

6.4.1 Particularities of agriculture in the Banat region

The Banat is a historical administrative region in southwestern Romania. Both, its natural conditions and its historical developments characterize it as a special border area in East Central Europe. In the north the region is bordered by the Mieresch, in the east by the foothills of the Southern Capes, in the south by the Danube and in the west by the Theiss. Within these limits, the area of the Banat is 28,523 km², almost the size of Belgium, which today no longer forms a territorial political entity [233]. The districts of Caraș-Severin and Timis form the Romanian part of the Banat for the most part [236].

The southern part of Mures, parts of Arad, Orsova in the district of Mehedinti and additionally some communities from the district of Hunedoara complete the Romanian side of the old Banat. The largest and most important city is Timisoara, with 319,279 inhabitants [304].

Figure 6.48. Das Banat [241]

The region has been inhabited since ancient times and was shaped early on by a wide variety of civilizational influences. The country was a transit area and the starting point for numerous upheavals and was always the heart of a new beginning. Many peoples and rulers have left their mark here. Draker, Romans, Hungarians and Ottomans shaped the region until the 18th century [233].

Since 1918, the area has been divided between Hungary, Romania and Serbia. With the Treaty of Passarowitz (1718; serb. Požarevac), the area came from the Ottoman sovereignty, in which it had been since the middle of the 16th century, under the rule of the Habsburgs. The emperor in Vienna created his own administrative unit called 'Banat', which had been directly subordinated to the Viennese administration until 1778 and then successively passed on to Hungary. In order to sustainably promote the reconstruction or the 'state institution' after centuries of war and to expand the Banat into an economically strong region, the Viennese court decided in the course of the 18th century, to systematically recruit skilled workers to settle there in return for benefits. In the selection of the colonists, their skills and expertise played the decisive role. The economic decline has begun, among other things, with the systematic emigration of Germans since the end of the 1970s and the consequences of the transformation processes since 1989 [236].

Through the recruitment of skilled workers and the associated urbanization of the predominantly congested country, the foundation stone was laid for the region as the breadbasket of Europe. Agriculture, as well as the economy as a whole, flourished and a period of economic rise began until the time of the First World War. The construction and expansion of railway lines, Danube ports and other infrastructure opened up all markets in Central Europe, the Balkans and the Orient. The aforementioned division of the Banat after the First World War, which led to a tearing up of the infrastructure in this process. In 1921, large estates were expropriated and divided into small parts among the rural population. Many farmers could not work under these conditions and lost their property due to liabilities. After the Second World War, another agrarian reform was carried out, which in turn was characterized by expropriations. This time, however, the purpose was the goal of collectivization. This is how large state-owned enterprises were created, the kolkhozes [182].

The communist era, especially under the leadership of Nicolae Ceausescu, led to an impoverishment of the Romanian people as a whole as a result of an imposed renunciation of consumption, a permanent lack of energy and food. After the violent overthrow, the transformation processes that continue to this day began in order to support and enable the democratization and establishment of market-based processes [182].

The opening of Romania after the dramatic events surrounding the fall of Nicolae Ceauşescu in December 1989 brought to light considerable regional disparities in spatial development. Fifty years of socialist planned economy and dictatorial forms of rule, despite extensive collectivization measures in agriculture and industrialization efforts, were unable to compensate for the differences between the Romanian Old Kingdom (Wallachia and Moldova) and the new territories added after 1918 (for example, Transylvania, Banat). The violent transformation of older structures merely created new disparities and partly reinforced old ones. The Banat as a historical region largely traces this development. While the highly developed mining region of the Caraş-Severin district with its industrial centre Reşiţa was considered a model for Romania after 1918, the city suddenly lost this position with the turn of 1989. From an ethnic point of view, the Romanian Banat was also an example of the overall situation of the state, which after the end of the First World War was confronted with considerable minorities who even dominated in individual regions and settlements. Romania did not see itself in a position to include the minorities in its nation idea, on the contrary, it pushed for decades even after 1945 an assimilation policy of creeping Romanisation. Although the situation of minorities in terms of their real rights began to improve in the 1960s, the exodus of these groups, which had already begun during the Second World War, could no longer be reversed. The worsening economic situation of the country at the end of the Ceauşescu era only accelerated this development. The Romanian Banat is thus a prime example of the highly fragmented development of South-Eastern Europe, which is often perceived too little from a Western perspective, which can not only be reduced to the obvious differences between urban and rural areas, but also has a considerable temporal, i.e. historical, component. While Timiş county is slowly recovering from the transformation shock of the 1990s through its agricultural priority areas and remarkable investments from the outside, but also through the engine of the central town of Timişoara, and is gradually transitioning into general change, the more mountainous Caraş-Severin with its outdated industrial facilities and the precarious infrastructure of its rural areas has not yet reached the bottom of the valley. The hesitant appreciation of the natural, historical and cultural potential of the Banat mountain landscape on the one hand and the Danube for the region on the other is not yet in a position to compensate for the loss during the former era of government. Here, the transformation processes that began in 1989 are still ongoing [236].

In times of a professional management, the Banat was and is a surplus region due to its fertile soils. This region is characterized by a continental climate with an annual precipitation of 500-650 mm and an average annual temperature of 11 ° C. Mainly grain, corn and sunflowers are grown. Due to the historical division, the average parcel size of agricultural land is 0.5 - 2 ha, depending on the district. This parcel structure was largely retained during privatization. Since the early 1990s, the fertile soils in the Banat have been less and less cultivated. In recent years, the formerly collectivized agricultural land has been returned to the previous owners in a small-parcelled structure. Since only a few areas were taken back into cultivation, the region was characterized by fallow land and an infrastructure was no longer recognizable [14].

If, in order to be able to better describe the Romanian part of the region from an agricultural point of view, only the two districts of Caras-Severin and Timis, which are completely belonging to the region, are considered. It is noticeable that with approximately 98% of the total farms located in these districts, the majority operate as partnership [204].

Almost 73% of the 135 thousand farmers in this region are engaged in arable farming. This corresponds to a share of around 4% of all farms active in arable farming across the country. With approx. 627,562 ha, around 60% of the agricultural area in these districts and almost 8% of the state-wide agricultural areas are cultivated. In addition to arable farming, the agricultural areas in these districts are also used as family gardens (1%), for cultivating permanent crops (2%), but also predominantly as meadows and pastures (37%) [202].

Animal husbandry is another essential part of agriculture in this region. Almost every agricultural enterprise is involved in the keeping of one or more animal species. The majority in the poultry keeping (55%), followed by the pig- (23%) and livestock farming (11%). The keeping of sheep (6%), goats (3%) and bees (2%) follow by far in this context. With regard to the number of animals, this contemplation changes somewhat. Poultry farming dominates at this interpretation too (63%), followed by sheep farming (17%), pig housing (15%), bee colonies (2%), cattle husbandry (2%) and goat grazing (1%) [203].

6.4.2 The results of the 1st category 'General information about your agricultural business' (SiB)

The same questionnaire that was used for the survey in the Westmünsterland region was also used for a survey in the Banat region. It was intended to provide a more detailed picture of the effectiveness of European subsidy payments in agriculture, in particular with regard to the competitive situation of the middle-sized farms. Since a comparable online survey could not be implemented, the survey was conducted by a paper questionnaire. The farms were personally addressed and called to participate. In the end, twenty-two family agri-SMEs in the Banat region took part in the survey. As the farms in Romania are generally larger than comparable farms in Germany, the analysis shows agri-SMEs with an area of more than 200 ha are farmed separately. This analysis does not only provide information on the opinion of agri-SMEs as a whole, but also shows the competitive situations of larger farms, especially in comparison to the industrialized, large-scale international agricultural enterprises.

For the first category the Romanian farms were asked to answer questions to categorize their farms according to the size of their land, the age of the company or their distribution type.

6.4.2.1 Representative farm size (SiB)

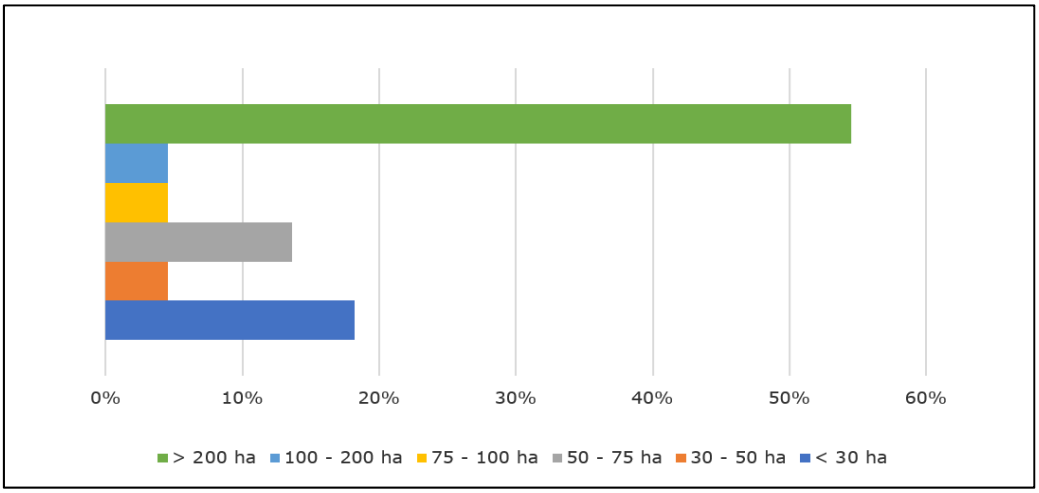


Figure 6.49. Representative company size (SiB)

In figure 6.49 it is obvious that most of the farms have more than 200 ha of agricultural area. The minority of the farms have less than 200 ha of land to cultivate.

6.4.2.2 The age of farms (SiB)

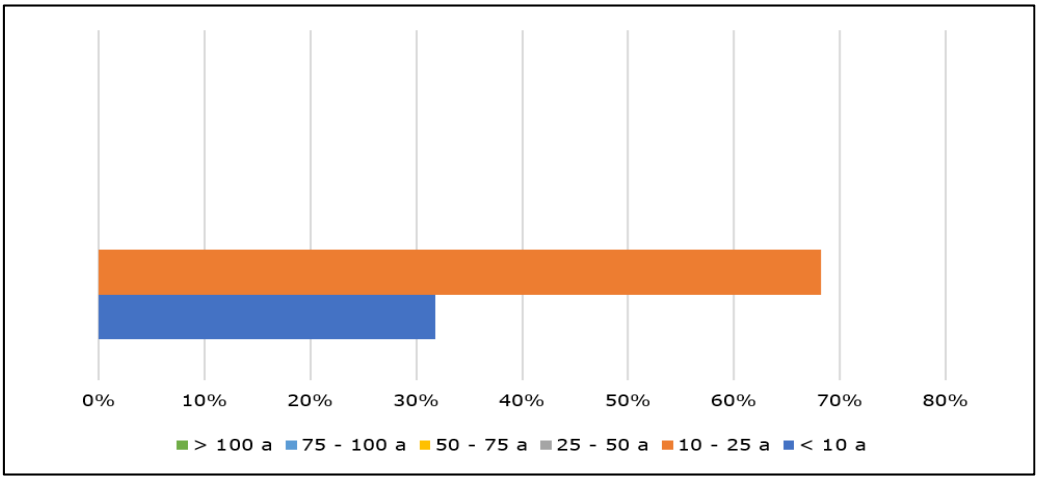


Figure 6.50. The age of farms (SiB)

It is interesting that all farms have not existed for more than 25 years. All of them were founded after the end of the Warsaw pact which also marked the end of the former COMECOM system. Until that time, everything was publicly owned. After the failure of the communist government, the farms were privatized.

6.4.2.3 The age of equipment (SiB)

The next question deals with the age of the equipment of these farms. Due to the fact mentioned above, none of the equipment is older than 25 years. Nothing could be taken over from the former state farms. In fact, most of the equipment is younger than 5 years.

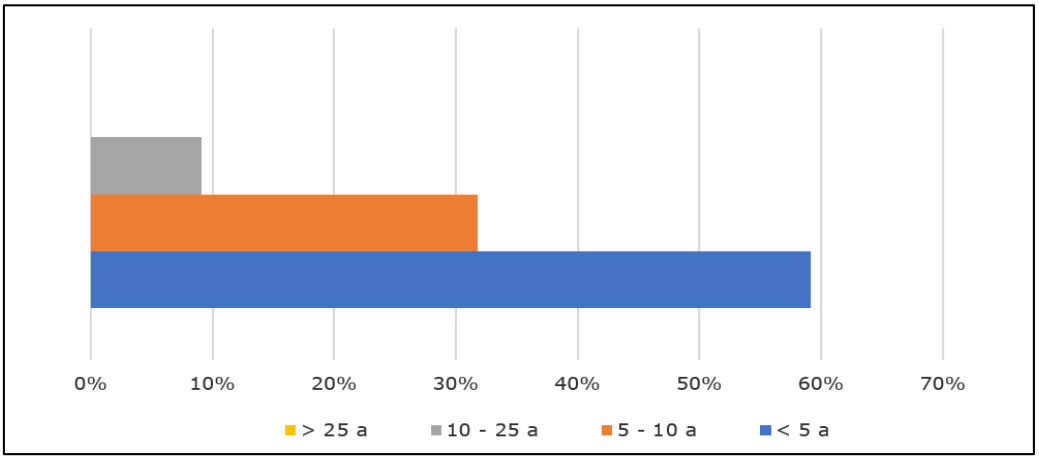


Figure 6.51. The age of equipment (SiB)

6.4.2.4 The number of employees (SiB)

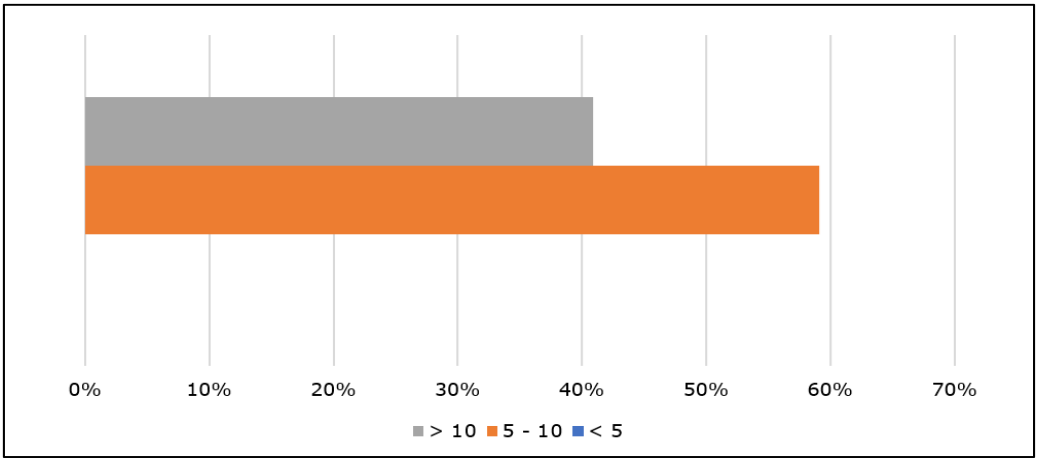


Figure 6.52. The number of employees (SiB)

Despite the fact that most farms dispose of an area of more than 200 ha, there are never more than 20 labourers employed. Most of the farms have less than 10 farm workers employed. These workers are not educated farmers, they are only 'helping hands'.

6.4.2.5 The labour situation (SiB)

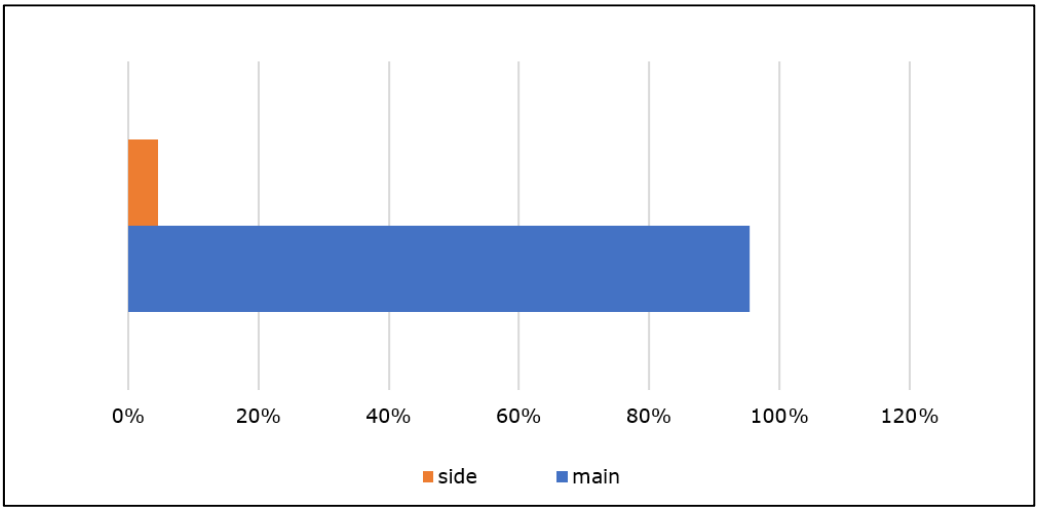


Figure 6.53. The labour situation (SiB)

For 95% the farmers working on their farms is their main occupation. It can be said that all of the farms are run as family businesses and are not part of a comprehensive agricultural group.

6.4.2.6 The types of distribution (SiB)

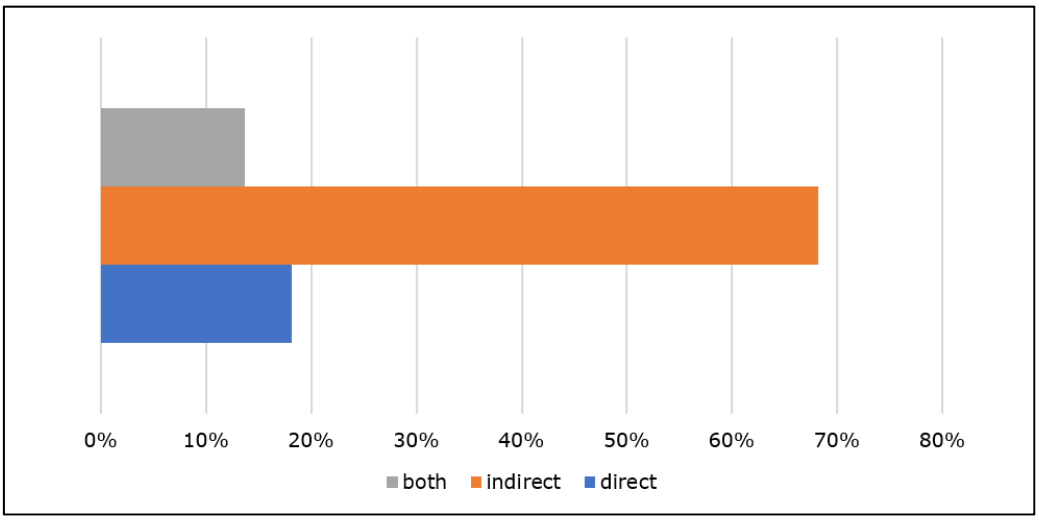


Figure 6.54. The distribution type of product (SiB)

With a share of 68% most farmers distribute their products indirectly, a small amount of 14% can be distributed directly or both ways. Most of them, however, distribute their products indirectly.

6.4.2.7 The enforcement of the price (SiB)

Although there is a strong dependency on the indirect distribution channel, over 70% say that they can enforce their price on the market.

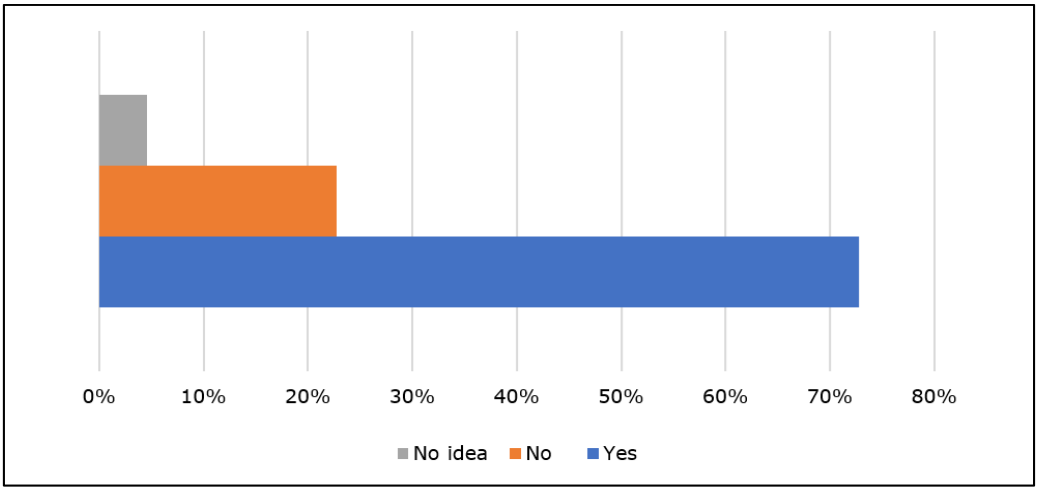


Figure 6.55. The enforcement of the price (SiB)

6.4.2.8 The various kinds of business (SiB)

The next figure shows the various kinds of business.

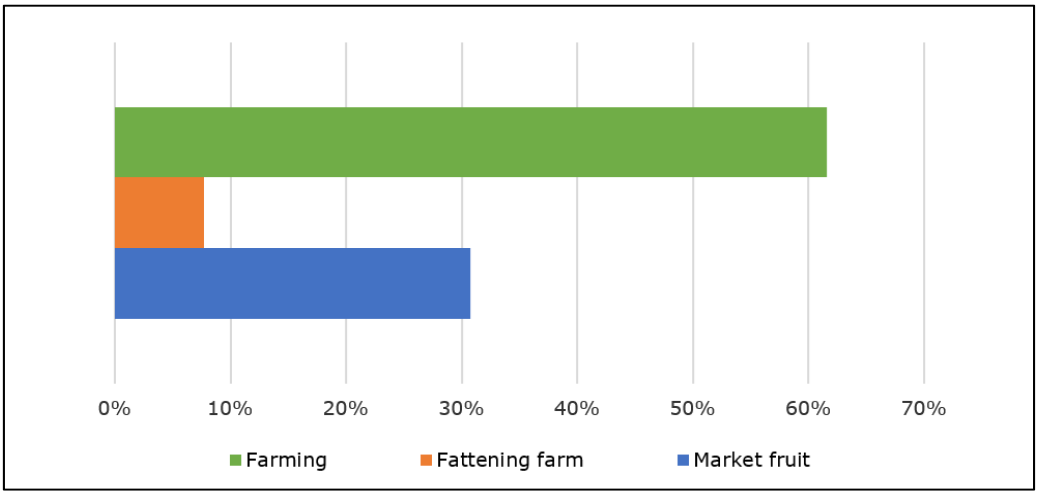


Figure 6.56. The various kinds of business (SIB)

Farms with animals are rare, as most of the farms are to be found in arable farming. Some of them also grow market fruit, which are very valuable. Traditional agriculture means growing cereals. This is the most widely spread product cultivated on the farms in Romania.

6.4.2.9 The degree of automation (SiB)

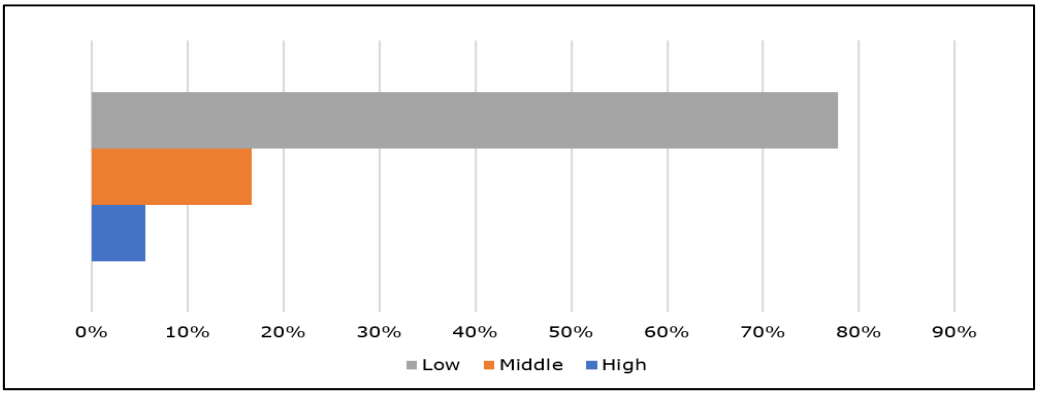


Figure 6.57. The degree of automation (SiB)

It is not surprising that 78% of the farms have a low degree of automation. After the cold war, a lot of the agricultural land was worn out and the new owners of the farms were left with little money. As described above, most of the farms are run by families, and the business was passed on from generation to generation.

6.4.2.10 Reasons for the farming companies' future existence in the market (SiB)

This passing on of their farm from generation to generation has remained their view for the future, as shown in the next figure.

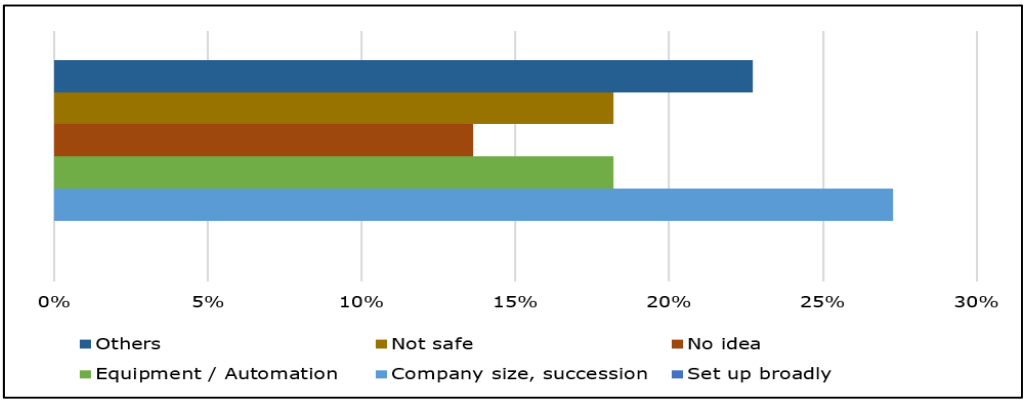


Figure 6.58. Reasons for the future existence in the Romanian agricultural market (SiB)

A third of the farmers fear that their farms' future is not guaranteed, nor do they have any concrete idea of how to survive in this competitive market. More than a quarter of them put their hopes in successors to go on with this kind of business and 18% of them think that modern equipment combined with progressive automatization will guarantee the future existence of their farms.

6.4.2.11 Conclusion of the 1st category (SiB)

It is obvious that most farming businesses have more agricultural land than 200 ha. This is a lot more than most of European middle-sized farms have (the average land size of middle-sized farms in Germany is between 30 and 100 ha). Despite that, all of the farms are run as family businesses, which means they are also agri-SMEs with only a few employees.

The farms were founded after the age of communism in Romania during the period of privatization. However, the equipment was still outdated and at the time of privatization it was not up to the technical standard. After Romania had joined the EU, subsidies were a new form of income. New equipment, like a modern tractor, has been bought since then. This is the reason why the equipment is mostly younger than 5 years.

The goods are sold mainly indirectly, and the farmers can enforce their price in the market. Most of the farms are not prepared for the future. Whereas in Western Europe farmers appreciate the advantages of the Internet of Things (IoT), the degree of automation is low for 78% of the farms surveyed in Romania. After the EU has started with subsidies, the farms have been able to invest. This explains the current, slightly better state of the agriculture in Romania.

Still, it is not certain that the farms will survive in the future. Most of the farmers want to pass on their farm to a family member. Yet, this is not a guarantee for future success.

6.4.3 The results of the 2nd category 'The situation of agriculture from your point of view' (SiB)

The second category deals with the current situation of agriculture in the Banat. All farms surveyed are middle-sized farms run as family businesses. Therefore, in the following diagrams the answers are compared to the answers of company owners with more than 200 ha. It will reveal, if the farms with much land have better future perspectives or if all these owners' views are identical.

6.4.3.1 The expectation of good economic prospects in agriculture (SiB)

First, the farmers were asked about the generally economic prospect in agriculture. They should not only consider their own current situation but the situation of the agriculture as a whole. Figure 6.59 shows their answers.

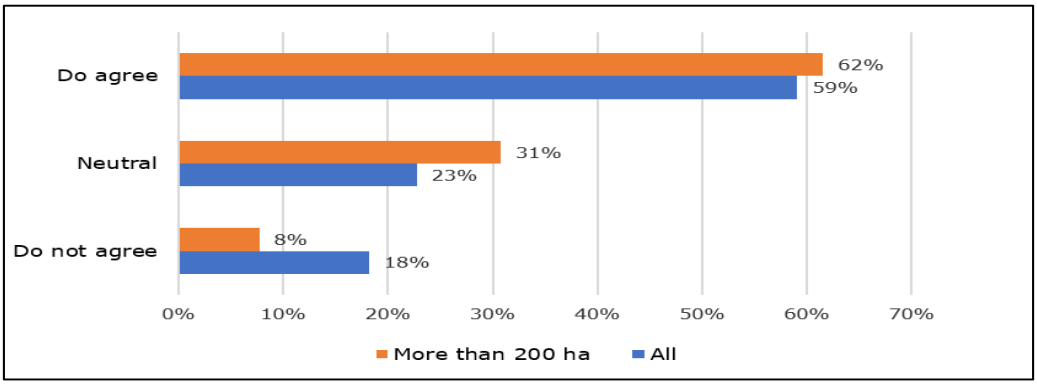


Figure 6.59. Expectation of good economic prospects (SiB)

Most of the company owners tend to share the view, that they will have good economic perspectives. The company owners with more than 200 ha see their future in a more positive light. All in all, the farmers are mostly positive as far as the agricultural economic prospects are concerned, so they think that this market will grow, the prices will remain steady, and most of the farms will survive.

6.4.3.2 Honouring environmentally friendly production (SiB)

Regarding a rating of organic farming by the consumer the majority of farms were undecided, as their do not perceive any great changes concerning the customers' feedback. The smaller farms are more likely to agree. It can be assumed, that they cultivate their land in an environmentally friendly way, so they have experience in this field.

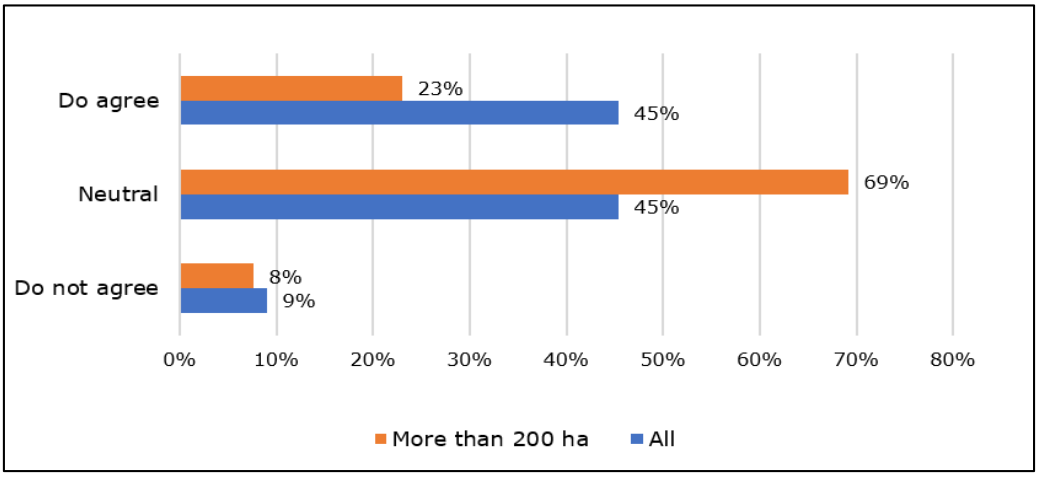


Figure 6.60. Honouring environmental, friendly production (SiB)

6.4.3.3 Conclusion of the 2nd category (SiB)

The farms do have different views on the current situation of agriculture, depending on the size of their land. Whereas all enterprises surveyed see their economic future in a very positive light and above all they see opportunities in organic farming to improve their economic conditions, in contrast, the larger farms surveyed in particular focus their attention on the conventional production of agricultural goods. So, farms with less than 200 ha are more willing to launch the necessary investments.

The high level of a neutral feedback can also be explained by the fact that the farms have not had much experience in organic farming. Probably they know that this would increase their income, because the same goods, if produced environmentally friendly, are more valuable.

But environmentally friendly production requires additional investments. Even if they had the financial resources, most farms would obviously shirk from the risk which is associated with it.

B. The situation of agriculture from your point of view				
Figure	Designation	Distribution in %	Average rating by all farms	Average rating by farms with > 200 ha
6.58	*Expectation of good economic prospects in agriculture*		4,0	4,2
6.59	*Honoring environmentally friendly production processes by the consumer*		3,8	3,7
Legend: Do not agree Neutral Do agree				

Figure 6.61. Sum up of the 2nd category (SiB)

6.4.4 The results of the 3rd category 'Subsidy measures in your agricultural business' (SiB)

The third category examines the influence of subsidies on operating business. First, the farms were asked if they get subsidies and if they do, they were asked for information concerning what kind of subsidies these are. After that the farmers were to give more detail information to what extent these subsidies influences, their behaviour of operating business in the fields of innovation and optimization ability as well as their sales planning and cost management. In addition to that the impact of subsidies on farms' willingness to migrate to organic farming and to create new jobs is examined as well as the existence of subsidy payments is.

6.4.4.1 The types of subsidy reference (SiB)

Many farms receive subsidies from the FEADR, which is equivalent to the EAFRD fond from the EU. Other farms get subsidies from the APIA, a national society which is provided with money from the EU. The farms make good use of subsidies, so they have money to pay for investment or the necessary changes to environmentally friendly production.

6.4.4.2 The influence of subsidies on the ability of innovation and optimization (SiB)

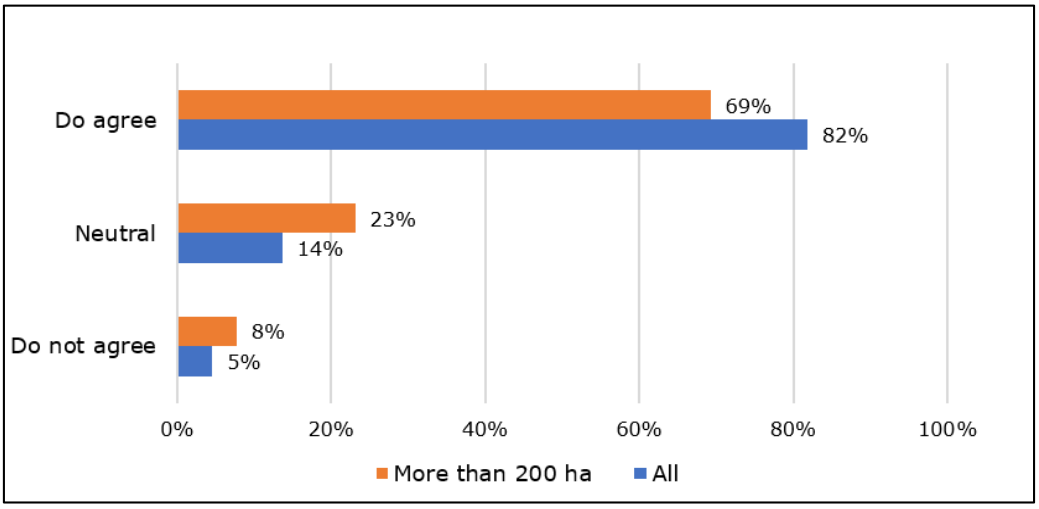


Figure 6.62. Influencing ability of innovation and optimization by subsidy payments (SiB)

Almost 82% of the farms and 69% of the farms with more than 200 ha agree that the subsidies provide with the capital for higher innovation and optimization. Since the farms were founded 25 years ago, due to the subsidy payments they have been given the chance to invest and to optimize their company.

6.4.4.3 Support in competition inside and outside the EU (SiB)

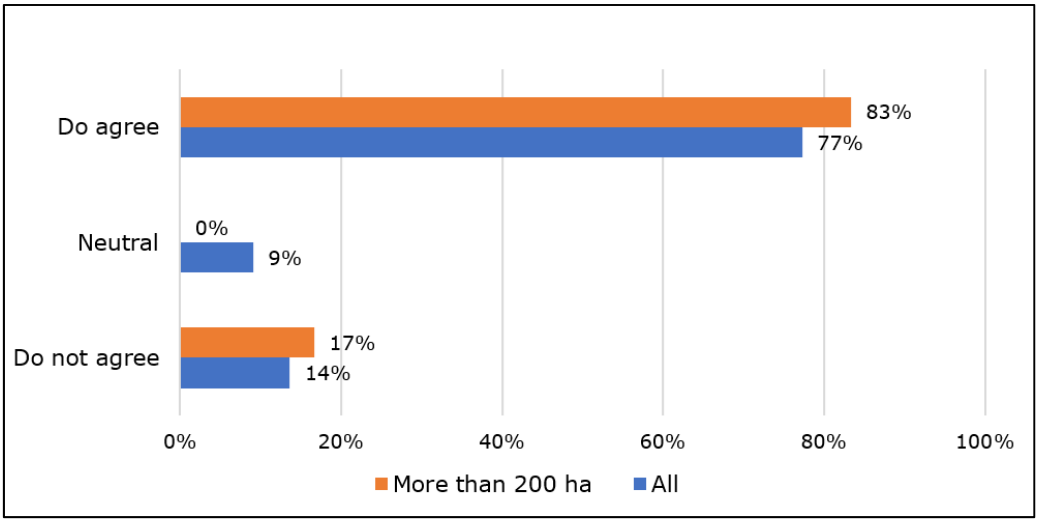


Figure 6.63. Support in European competition by subsidy relation (SiB)

With a similar very clear majority of around 80%, they express their feeling to be well prepared for the domestic and non-European competition as long as they are supported by subsidies. In this respect there are no discrepancies between small

farms and farms with more than 200 ha. One explanation for this could be that they have the opportunity to catch up with western farms in innovations and automation. It can be concluded that the farms feel well supported by the EU.

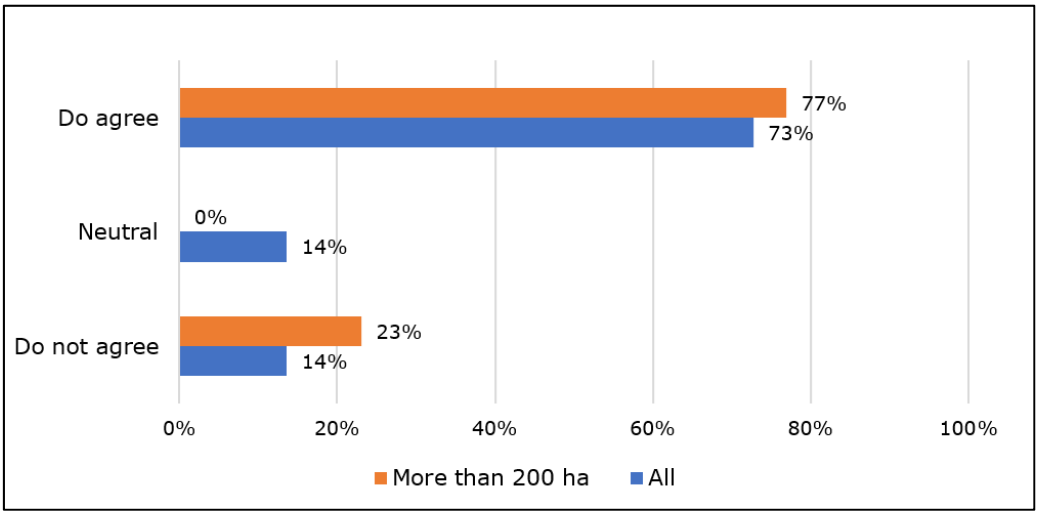


Figure 6.64. Support in competition by subsidy relation outside the EU (SiB)

6.4.4.4 The influence of subsidies on cost management (SiB)

In their answers to another question the farmers gave transparency to their cost management and what part subsidies play in it.

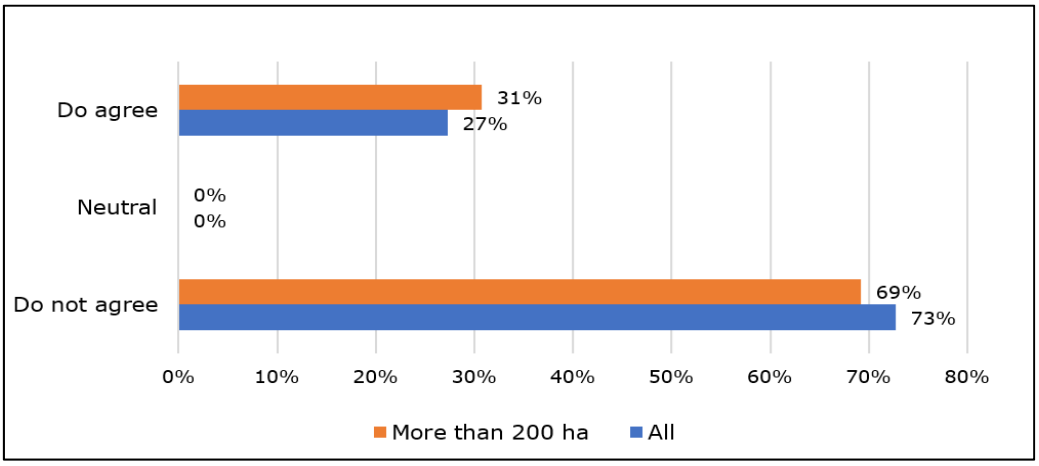


Figure 6.65. Influencing company cost management by obtaining subsidies (SiB)

Nearly 73% of the farmers do not think that subsidies influence their cost management. They declare their business decisions are made independently of the subsidies and that these subsidies do not change their calculation.

6.4.4.5 The operational significance of subsidies (SiB)

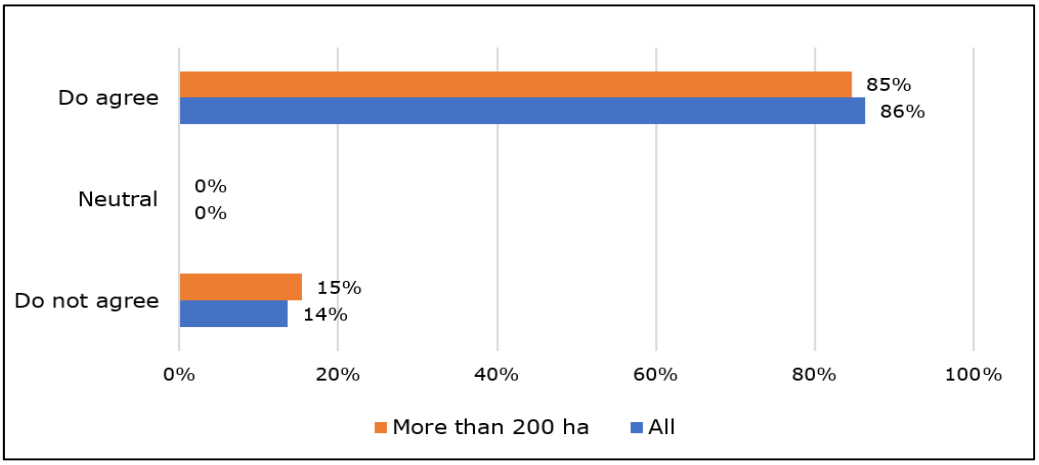


Figure 6.66. The high priority of subsidies for operation (SiB)

For 86% of the farms surveyed, the subsidies have a very high priority. Without these subsidies over three quarters of all enterprises would generate a loss and about two-thirds would have to shut down their businesses. So, the subsidies are not used for innovations but to make a living at the end. Without subsidies they would have no profit at all. That is why the farmers are dependent on being granted the subsidies.

6.4.4.6 The influence of subsidies on the product and sales planning (SiB)

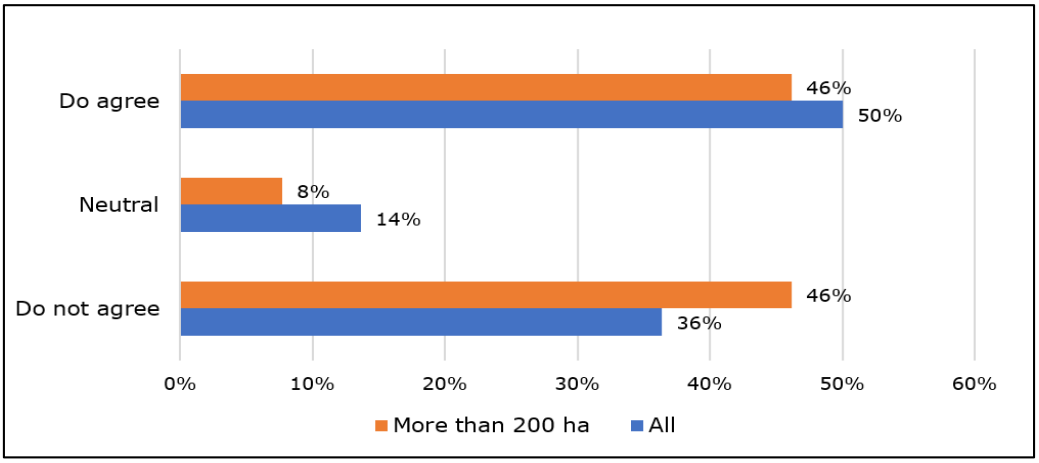


Figure 6.67. The influence of subsidy on budget planning and pricing (SIB)

In contrast to the previous uniform answers an influence of subsidy payments on product and sales payments is answered neither in the affirmative nor in the negative. The importance of subsidies concerning these topics cannot be distinctively defined.

6.4.4.7 The influence of subsidies on the economic (SiB)

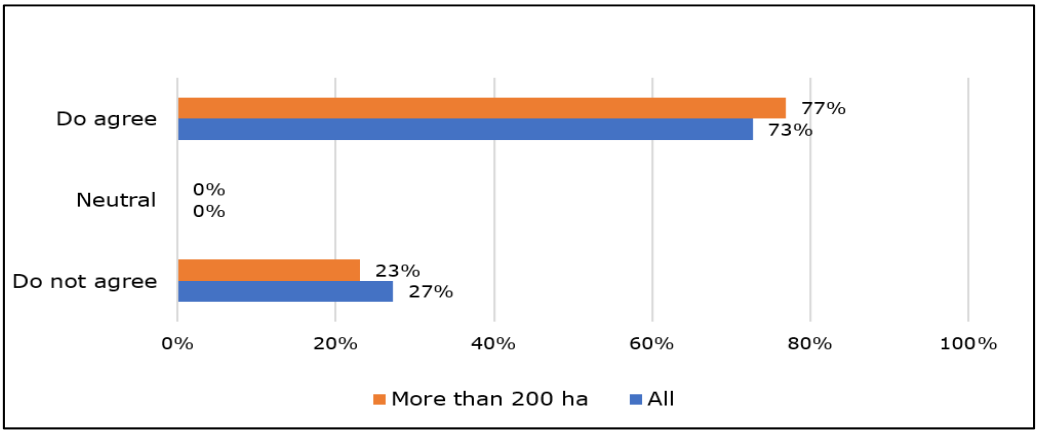


Figure 6.68. Losses without subsidies (SiB)

Although the vast majority of farms surveyed stated that they were able to enforce their price expectations on the market, nearly 80% of farms now claim that they cannot generate any operating profit without subsidies. This leads to the conclusion that costs and prices in farms are not properly calculated knowing that the subsidy payments provide the necessary compensation. If necessary, the required prices cannot actually be enforced on the market via the predominantly indirect distribution channel.

6.4.4.8 The influence of subsidies on the continuation of the company (SiB)

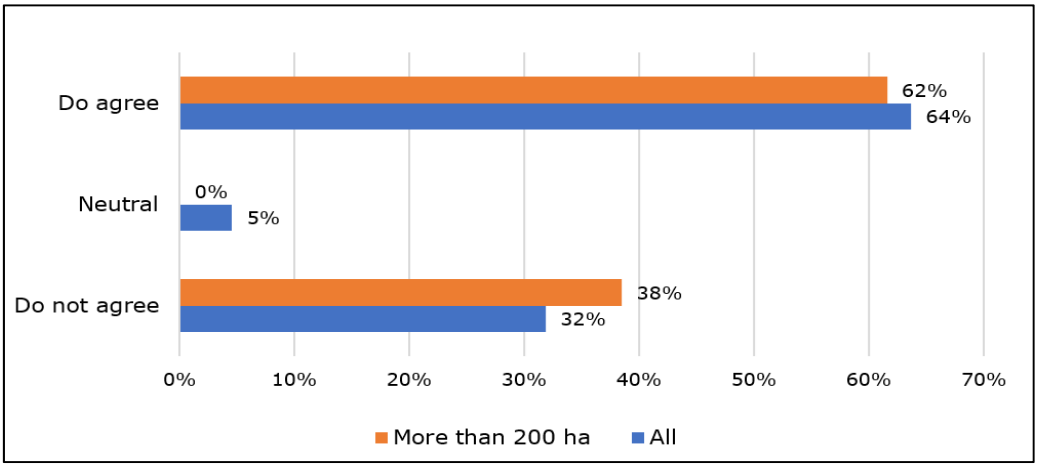


Figure 6.69. Shutdown of the production plant in case of subsidy failure (SiB)

Nearly exactly 64% of the farms surveyed would generate such a loss without subsidies that they would have to stop operating completely without the current subsidy payments. This result is a clear indication of their very high dependence on subsidy payments which are hardly used for modernization that would be able to create a higher degree of efficiency.

6.4.4.9 The change to organic farming (SiB)

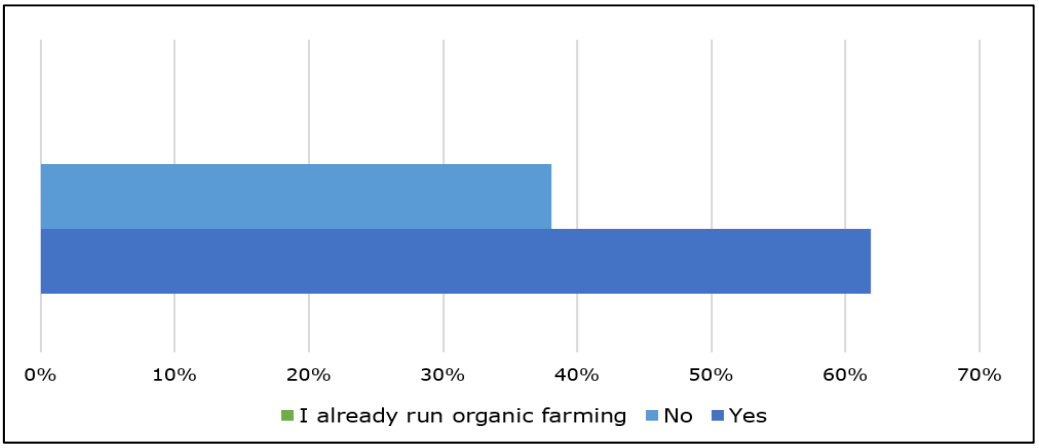


Figure 6.70. Will there be a change to organic farming with increased subsidy payments? (SiB)

Furthermore, 62% of the farms surveyed would be willing to convert their production to organic farming if they were given higher subsidies. This answer is directly related to the questions regarding the consumers' reward for organic farming and to their willingness to invest in their companies with the help of higher subsidies.

As seen before, most of the farms agreed that organic farming and environmentally friendly production is more valuable, because the customers would pay more for bioproducts. So, it is not surprising that the majority of farms would shift to organic farming, if there were an increase of subsidies. Even with more money, over a third of the farms would not like to change to organic farming. As mentioned before, no company surveyed was involved in this field of business. It can be said that higher subsidies in this field would lower the entrepreneurial risk for the farmers.

6.4.4.10 The influence of subsidies on the investment behaviour (SiB)

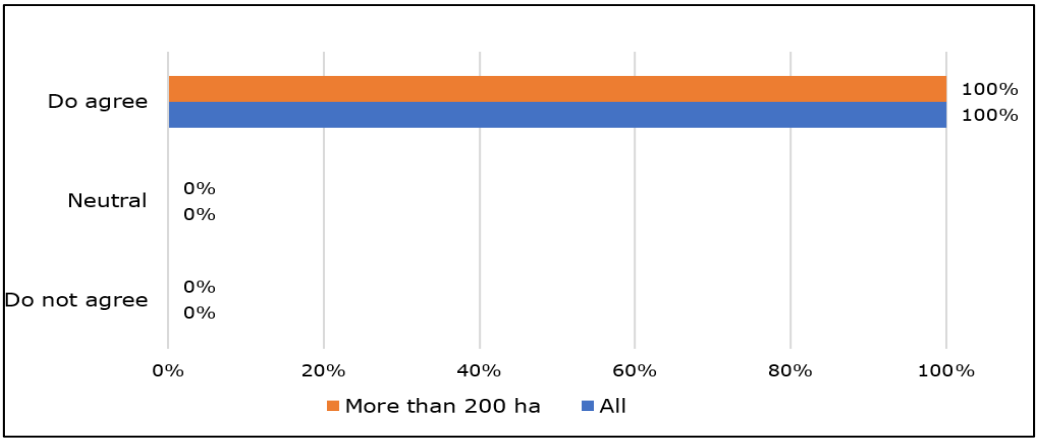


Figure 6.71. The expansion of investment activity with increased subsidy coverage (SiB)

It is outstanding that 100% of all farms surveyed would invest more in their

own farms if they received an increase in subsidies. Everyone would favour investing in new machines or technologies. The reason for that behaviour is understandable, because without investments, in a higher degree of automation or new innovations the farms would lose their competitiveness. They have all learned from their history. During the time of communism, the state farms invested hardly anything at all. In 1990, after the farms had been privatized, the gap in technology between western and eastern Europe was so big in agriculture too, that eastern European farms were decades behind in comparison to western European farms. These missing investments were caused by the communistic system. So today, the farmers know that they have to keep pace with their competitors worldwide. Looking at the importance of current subsidies to secure the farmers' existence these subsidies cannot bring about a decisive change at the moment. That is why, the modernization of the Romanian agriculture cannot be broad about adequately. Against this background, Romanian farmers continue to lose their competitiveness in the international agribusiness.

6.4.4.11 The influence of subsidies on the labour market in agriculture (SiB)

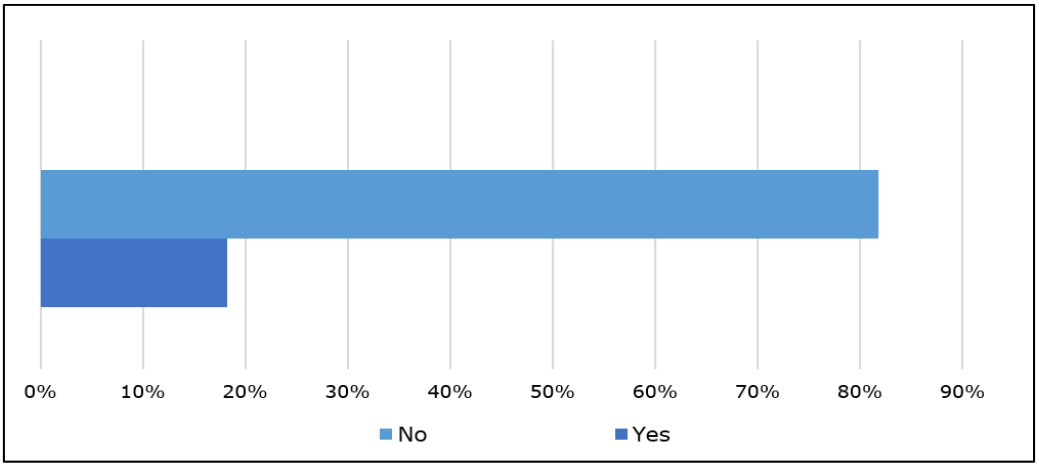


Figure 6.72. Job creation due to the granting of subsidies (SiB)

Concerning the labour market in agriculture, 82% of businesses would not use possible extra funds to create additional jobs. At least half of the farms surveyed with more than 200 ha are willing to spend extra subsidies on creating jobs. Most of the farms prefer investing in other fields. For most of the farms, there is no need for new employees, because the farms are run as family businesses. There is their fear of having a part of their capital tied up, which limits their momentary freedom of investments and their flexibility. In all family run farms the workload is shared so that there are no additional salary obligations.

6.4.4.12 Conclusion of the 3rd category (SiB)

In this sub-section , the influence of subsidies on the current management of farms was investigated. Regarding the impact of subsidy payments on production and sales planning, the answers are ambiguous. Around 46% of all respondents and 46% of larger farms do not see such an influence. With regard to the remaining questions, this ambiguity is found again.

For 85% of the farms surveyed subsidy payments are of great importance.

The funds come mainly from the EAFDR. Additional EU funding is given to farmers in cooperation with national funds. There are no significant differences between all farms surveyed and those with an area of more than 200 ha.

Based on the information that farms are able to enforce their price expectations on the market, it is now very interesting to find out how far farms are free to arrange their remaining operational management in terms of costs, innovations, investments and profitability in order to compete in the market. This also includes the necessary technical modernization of the farms as a presupposition for surviving in the market.

In the domestic and extra-European competition, farms feel very well supported by the subsidy they receive. The approval rate averages 75% for all and 80% for larger family run businesses. 82% of all farms also believe that their ability to innovate and optimize can be improved by receiving subsidies. In this regard, especially the smaller farms are convinced of the positive effects of the subsidies. The approval rate among the larger farms is only 69%.

With an approximate proportion, both among smaller and larger farms, the farmers are convinced that receiving subsidies has no impact on their cost management. Furthermore, all of the farmers would increase their investment activities, if their subsidies were increased. There are no effects on modernization, efficiency and effectiveness and the associated competitiveness visible as a consequence of subsidy payments.

The comments regarding the economic situation confirm this statement. Without receiving subsidies, 73% of businesses would make a loss. For the larger farms this value is with 77% even higher. Apparently smaller farms in particular believe in a greater potential, if they have direct sales in order to avoid losses. An almost equal number of 69% and 62% would have to stop the production operation immediately without receiving subsidies. The other farms apparently hope to be able to compensate for the loss in the medium or long term.

An adjustment to organic farming is considered appropriate for 69% of all farms and 62% of larger farms, if subsidies are increased fundamentally. In view of the importance of the current subsidy funds to secure the operating success, there is obviously a lack of funds for a conversion to organic farming as farms are reluctant to run the entrepreneurial risk associated with a changeover.

The amounts of the subsidies cannot give any additional stimulus to the labour market either. Around 82% of all farms surveyed would not create additional jobs, if subsidies were increased.

All in all, it can be said that subsidies are very important and essential for agricultural farms in Romania. Without subsidies, most of the agri-SMEs would have to disappear from the market. Even farms with more than 200 ha could hardly survive in the competition without subsidies. Subsidies are currently used to secure a livelihood. As there is a lack of funds today to invest in modern equipment for catching up to the worldwide standards and thus to strengthen or maintain competitiveness or to gear production methods to the requirements of organic farming. Only, if there were a raise of the subsidies, the farms would be willing to invest in new machines, technologies or automation and would be willing to create new jobs. However, the subsidies only help the farms to compete against farms inside and outside the EU. With the subsidies, the farms generate profit and thus they can survive in the market, at least for the time being.

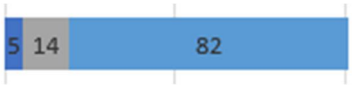
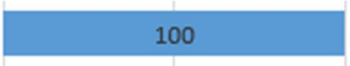
C. Subsidy measures in your agricultural business				
Figure	Designation	Distribution in %	Average rating by all farms	Average rating by farms with > 200 ha
6.61	*Subsidy payments influences the innovation and optimization ability*		4,7	4,3
6.62	*Subsidies support to compete within the EU*		4,3	4,2
6.63	*Subsidies support to compete outside the EU*		4,3	4,2
6.64	*Receiving subsidies will not affect the existing cost management*		2,5	2,7
6.65	*The subsidies have a high priority*		4,5	4,5
6.66	*Product and sales planning are not influenced by subsidy payments*		3,5	3,3
6.67	*Generating a loss without subsidy payments?*		4,0	4,2
6.68	*Shutdown the operation without receiving subsidies*		3,8	3,7
6.70	*Expand investments measures by increasing subsidies*		5,0	5,0
Legend: Do not agree Neutral Do agree				

Figure 6.73. Sum up of the 3rd category (SiB)

6.4.5 The results of the 4th category 'Personal assessment of subsidies' (SiB)

In the fourth category the farmers were asked about their personal opinions concerning the importance of subsidies.

6.4.5.1 The significance of subsidies (SiB)

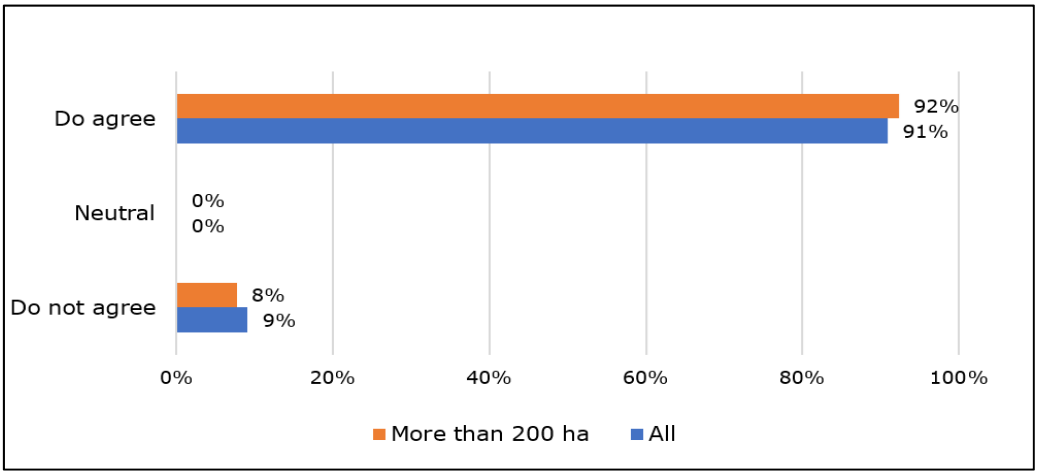


Figure 6.74. The importance of agricultural subsidies (SiB)

Regarding the impact of subsidies on the operational business, it is not surprising that for 91% of the farms surveyed agricultural subsidies are considered very important. They need the subsidies to generate an income for a living.

6.4.5.2 Influence of subsidies on the situation of income (SiB)

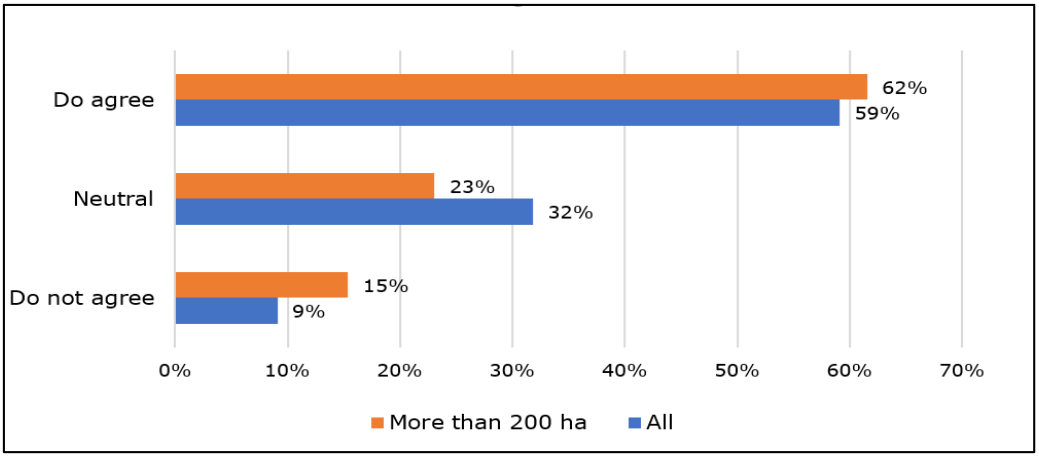


Figure 6.75. Obtaining a fair income due to subsidies (SiB)

After that there was the question if subsidies help to obtain a fair income. A third of the farms were undecided, but the majority did agree to that question.

As mentioned before, the farms in Romania would generate a loss without subsidies. So, these subsidies close the gap between a loss and a profit. They also bridge the gap between an insufficient and a fair income.

6.4.5.3 The farms' dependency on subsidies (SiB)

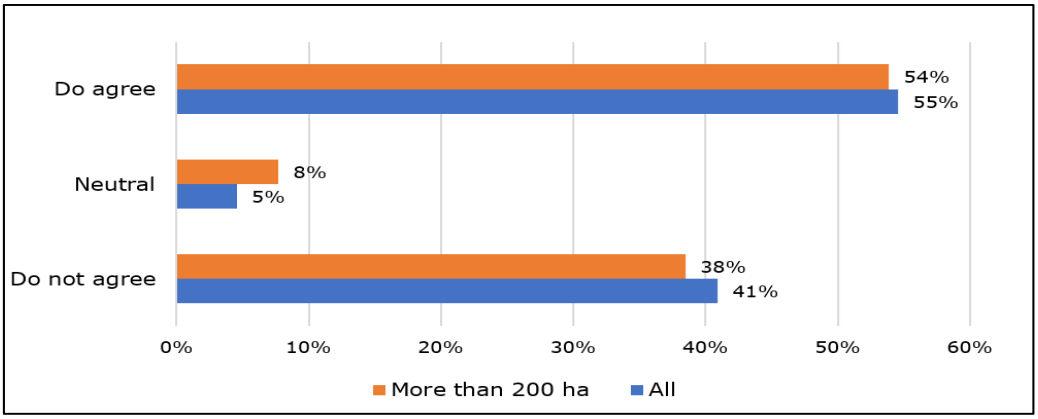


Figure 6.76. The survivability of Romanian agriculture without subsidies (SiB)

The next question deals with the future existence of the Romanian agriculture without subsidies. This question has been asked because big foreign agrarian businesses have already started buying Romanian farms. That is attractive for investors because the production in Romania is cheap, the land size of a single farm is large, and Romania is part of the EU with all advantages that are connected with it.

Most of the farmers (namely 55%) assume that their existence is in danger without subsidies. As mentioned before, the farms need the subsidies for achieving a sufficient income. Without subsidies, they cannot run their farms at all. It is remarkable anyway, that 41% of the farmers surveyed believe that they are not dependent on the subsidies. This approximately corresponds to their opinion on the survivability of their own enterprise.

6.4.5.4 The distribution of subsidies (SiB)

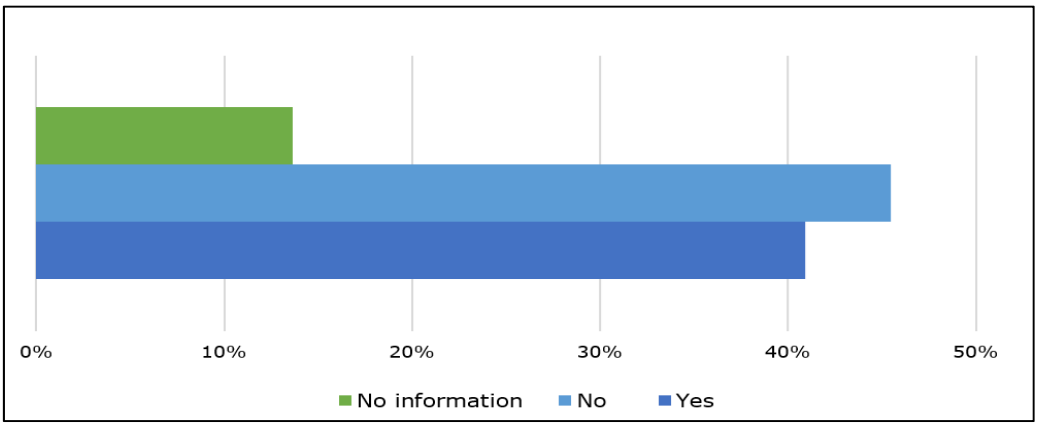


Figure 6.77. A fair distribution of subsidies (SiB)

The farmers had to evaluate how fair the system of subsidy distribution is. All in all, the answers were balanced (50:50). The system of distribution is regarded to be unfair in some cases.

6.4.5.5 Fairness in the distribution of subsidies by the size of area (SiB)

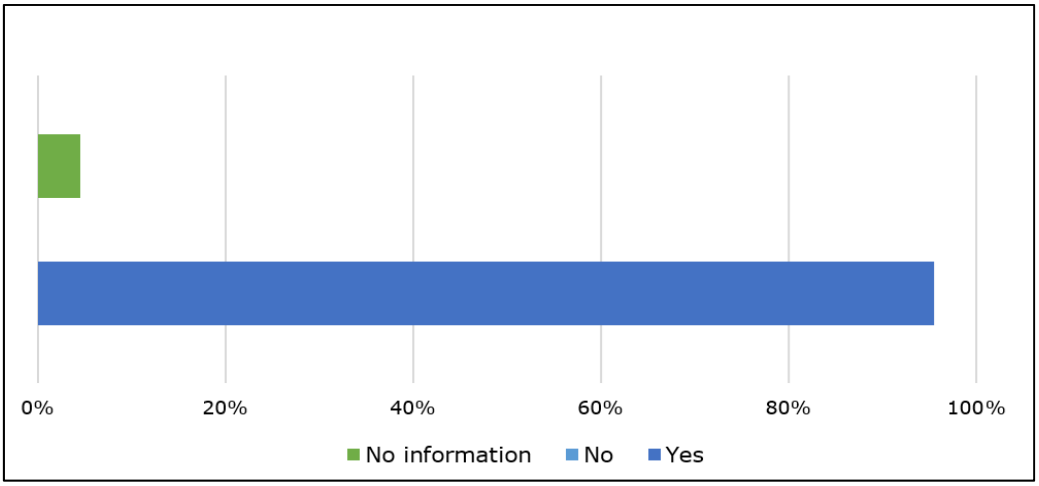


Figure 6.78. The distribution of subsidy payments by farm size is fair (SiB)

European subsidies were mainly distributed according to the size of the farms. This circumstance is regarded to be unfair to smaller farms. The reason for this unanimous answer is obvious because many farms have more than 200 ha, or at least more than 100 ha. This farm size is much larger than in most other European countries. The average size of the farms in Western Germany is below 50 ha. Therefore, Romanian farmers get many subsidies in for their farms in comparison with German farmers.

6.4.5.6 The necessity of subsidies for modernization (SiB)

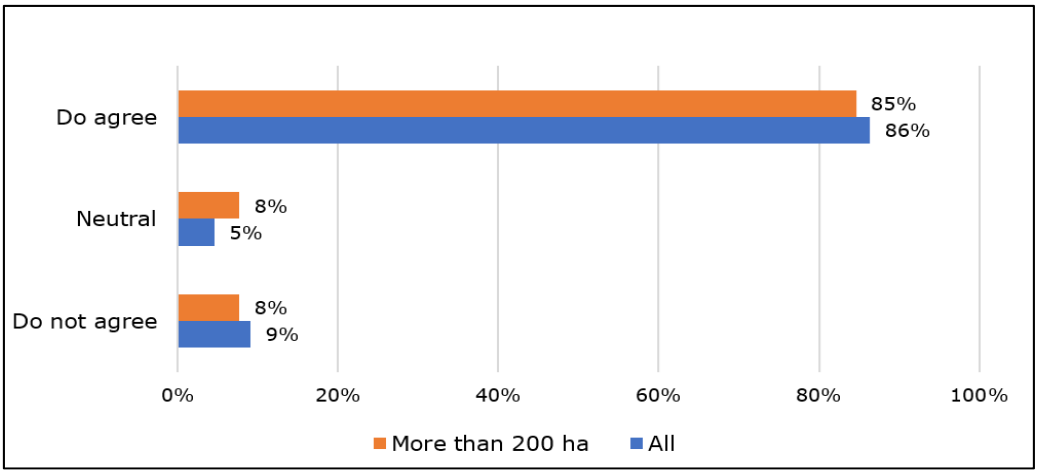


Figure 6.79. Subsidy payments are necessary for required plant modernizations (SiB)

The next question was asked to find out the opinions of the farmers on the correlation of subsidies and plant modernizations. For the farmers, the subsidies are essential for being able to pay for modernizations. The approval of this issue is higher than 80%. Without the subsidies, new technologies or new automation techniques would never be realized. This is one of the reasons why subsidies were introduced and why the EU distribute money to farmers.

6.4.5.7 The influence of subsidies on the competition ability (SiB)

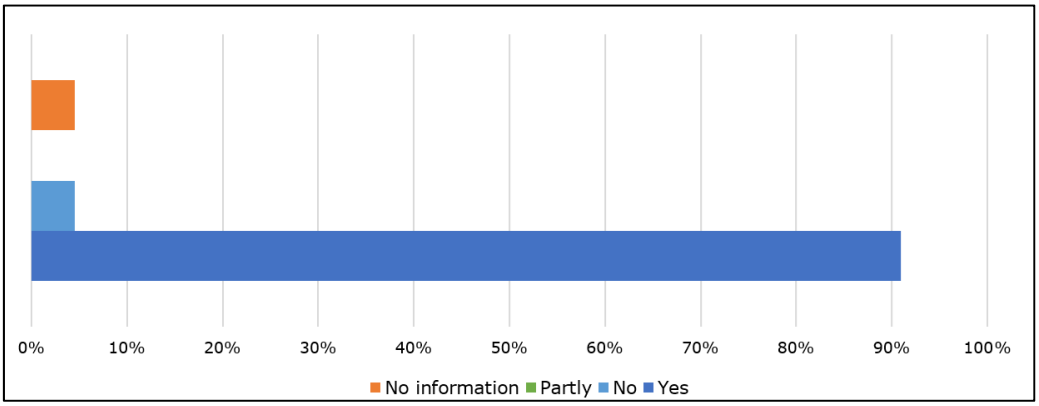


Figure 6.80. Advantages for large farms due to subsidies (SiB)

With regard to the competition, the family businesses surveyed are united. Over 90% of the farmers believe that an increase of competitiveness is determined by the size of the company. If the farmers use the subsidies consistently to buy more land, however, nothing will change in their situation. Since there are already mainly foreign investors running very large agricultural businesses for years. Because of their size and as these farms can dispose of a lot of capital, they dominate the market, regardless of the land purchase intentions of the surveyed farmers, now and in the long term.

6.4.5.8 Profit opportunities in organic farming (SiB)

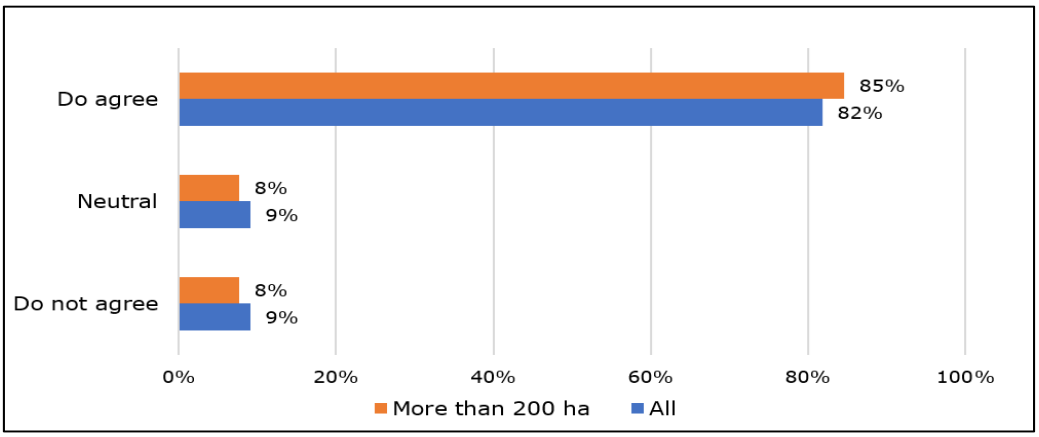


Figure 6.81. Higher profit opportunities in organic farming (SiB)

The next part deals with organic farming. As mentioned before, the farmers think that organic farming is more profitable. Today, they grow normal goods, like cereals. If they did organic farming, they could grow a great variety of agricultural products, which are bought by the customers for a decent price. So, their opportunities would grow in the market. In addition to that, they could also cultivate niche products, which the big agricultural businesses cannot do, because a lot of labourers are needed whose work cannot be replaced by machines. This would enable them to operate in areas where there is not such a strong competition.

6.4.5.9 Product-specific differentiation as an alternative (SiB)

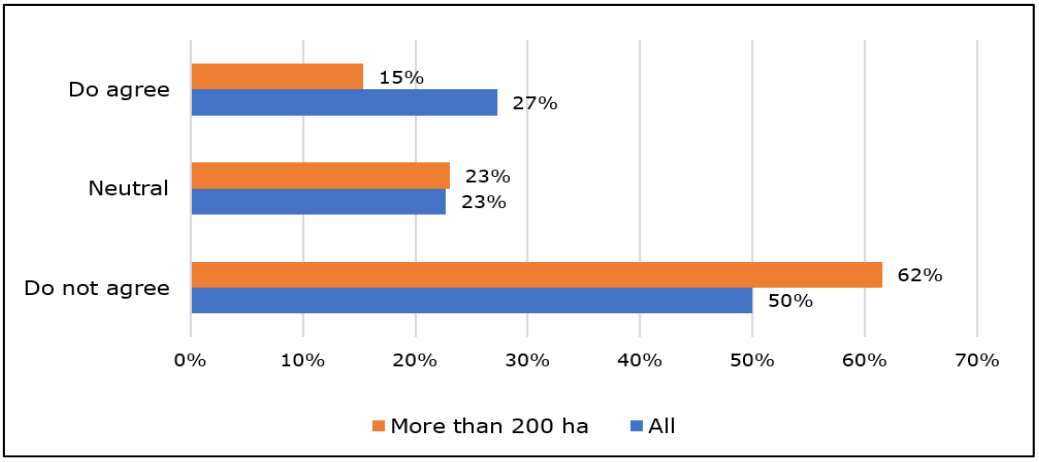


Figure 6.82. Product specific distinguishing of subsidy payments is more advantageous (SiB)

Another form of subsidies with a product-specific differentiation of subsidy payments is not regarded to be more advantageous by the majority of the farmers. This refusal it is even stronger among farms with more than 200 ha, as these farms grow cheap mass products with hardly any product-specific differentiation.

6.4.5.10 The limitation of the amount of subsidies (SiB)

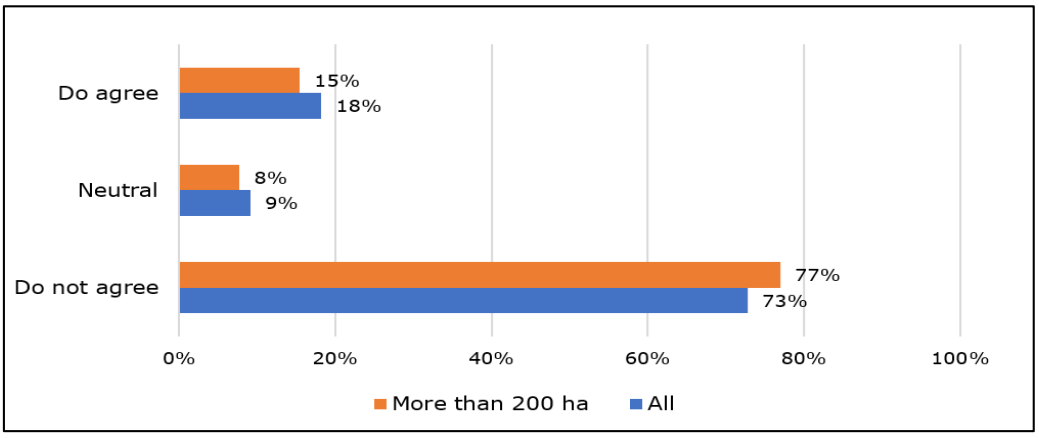


Figure 6.83. The limitation of the amount of subsidy payments is not an option (SiB)

As assumed before, the farms do not want any limitation of subsidies. They need every financial support they can get to have a reasonable income and to make a profit. With a limitation of the amount of subsidies, the farmers would generate a loss or have much lower income, which would have negative impact on their current competitiveness. Under the current system of subsidies, it is easy to get more money just by increasing one's land size, which is what international large-scale farming enterprises do.

6.4.5.11 The limitation of the duration of subsidies (SiB)

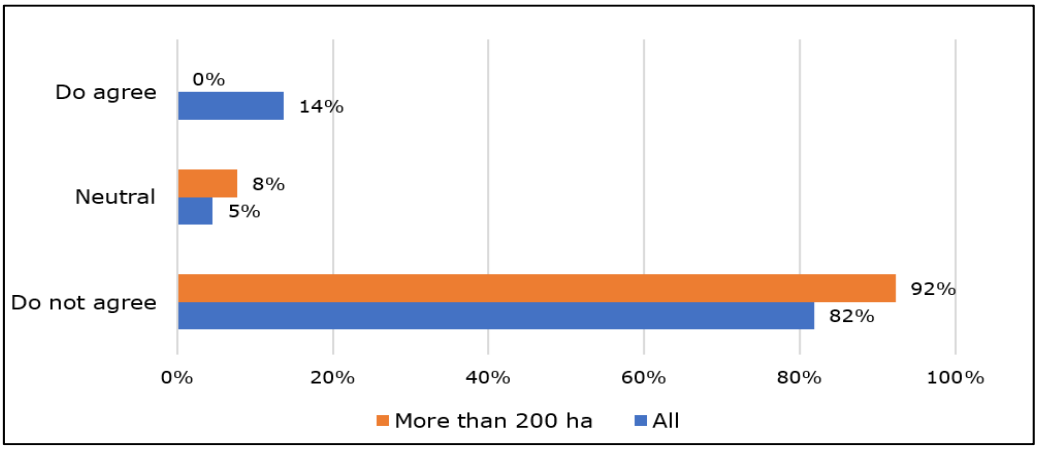


Figure 6.84. The limitation of the duration of subsidy payments is rejected (SiB)

With a limitation of the duration of subsidies, the farmers would be forced to develop a new business plan in order to get independent of the subsidies. The future would be unsafe for them, and some of them would have to shut down their farms as a consequence of the risks they have to take.

6.4.5.12 Possible adjustments (SiB)

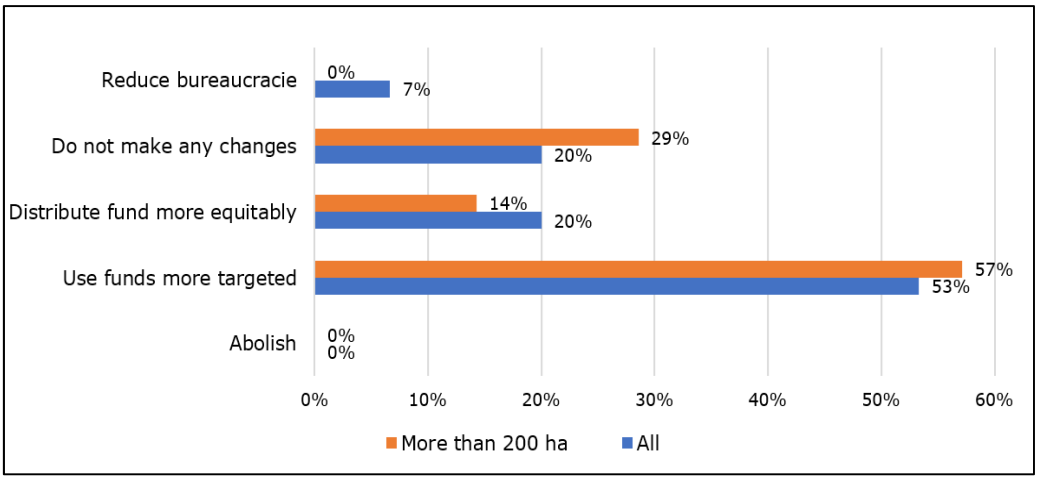


Figure 6.85. What would farms' change about the subsidy policy? (SiB)

Figure 6.85 shows what the farms would like to have changed concerning the current subsidy regulations. The wishes of the farms are to have a more targeted use of funds, which are more equally distributed. Some would not like to have change anything and no one wants to have subsidies abolished. The bureaucracy is not a big problem for farmers in Romania. As seen before, the momentary distribution of subsidies is not fair for everyone. The regulations though, are seen as good in the way they are granted now. Many farmers demand a more targeted distribution of subsidies, which would mean that the EU does not only concentrate on direct payments.

6.4.5.13 Reasons for the market exit of farms (SiB)

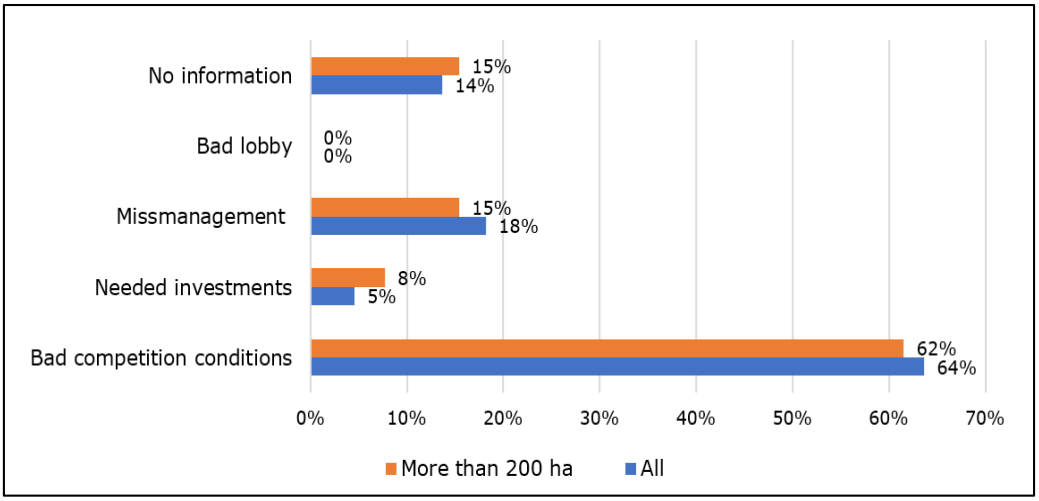


Figure 6.86. Why are there less farms nowadays? (SiB)

As seen in the diagram, some farms admit mismanagement being a problem on some farms, other farmers demand more investments for new farms to enable them to exist in the market. But the majority of farmers see bad competitive conditions as the main reason for the difficulties. Although the subsidies help them competing inside and outside the EU this competitive situation is regarded to be the main reason for the disappearance of farms. The competition between the middle-sized family run farms is not fundamental. When company only speak of the big agrarian businesses, they do not refer to family run business but to farms which work the help of international capital and afford a high degree of automation in their farms. With these modern production methods, they are able to produce agrarian goods more efficiently and to offer them at lower prices. Facing such a competition the small farmers have no chance to survive on the long run without subsidies.

6.4.5.14 Conclusion of the 4th category (SiB)

In the 4th category, the farmers' personal assessments of the effectiveness and impact of agricultural subsidies were examined. Again, the responses of farmers with farms larger than 200 ha were recorded separately to investigate whether the impact of subsidy payments on the operational activities of these farms differs from the impact of subsidy payments on smaller medium-sized farms. For the most part, the opinions of the farmers on large farms were in line with the opinions of those on

other farms.

Subsidies are very important for 91% of agricultural enterprises in Romania. For many farms, they are even essential as for 59% of the farms, the subsidy payments guarantee a decent income and for 86% of the farms surveyed subsidies are indispensable to carry out modernization measures. Approximately 55% of the farms surveyed assume that without subsidies many farms would have to cease their operations and agriculture in Romania could not survive in the highly competitive market. In this context, organic farming is seen by more than 80% of the farmers as a way to increase profits, but the farms are currently unwilling to bear the entrepreneurial risk associated with switching to organic farming or there is a lack of the necessary financial resources entirely.

The distribution of subsidies is currently perceived by 45% as unfair. The distribution by area size, on the other hand, is accepted as a fair distribution key. The farms hope for advantages in the market compared to their competitors due to their relative commercial size and the associated subsidies that go with it. Respectively, the limitation of subsidies relating to the amount and the duration as an alternative medium to control the subsidization are clearly rejected by the vast majority of the farms surveyed. The possibility of a product-specific funding is not uniformly rated by the farms. Overall, 50% of businesses regard this as an alternative control option for distributing subsidy funds. At least 62% of the larger farms are in favour of such an alternative.

Compared to the international big agrarian businesses, the surveyed family agri-SMEs are clearly at a disadvantage due to the current competitive conditions. The subsidies received help businesses to compete with large farms by helping to close the gap between loss and profit. However, a strengthening of long term, competitiveness will not be achieved since they are not able to invest in new technologies for their farms. The bottom line is that subsidies only secure the margin of their business and thus the income of the farmers.

In order to be able to compete with international and industrialized large agricultural enterprises, the farms surveyed would like to see a fairer distribution of the subsidy money or a targeted promotion in favour of their family businesses. Only by increasing subsidies for family businesses it will be possible to achieve a continuous modernization and the associated strengthening of competitiveness. Bureaucratic obstacles only play a minor role for the farms surveyed.

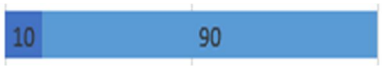
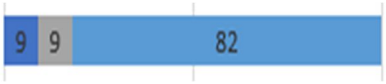
D. Personal assessment of subsidies				
Figure	Designation	Distribution in %	Average rating by all farms	Average rating by farms with > 200 ha
6.73	*Subsidizing agriculture is important*		4,7	4,7
674	*Subsidies guarantee achieving a reasonable personal*		4,2	4,2
6.75	*Agriculture would not exist without subsidies in Romania*		3,5	3,5
6.78	*Subsidy payments are necessary to carry out necessary modernization and investment in operating and office equipment*		4,7	4,7
6.80	*In organic farming, there are opportunities for higher profits*		4,5	4,5
6.81	*Expenditure on subsidies should be differentiated product-specifically*		2,8	2,5
6.82	*Expenditure on subsidies in agriculture should be limited in amount*		2,5	2,3
6.83	*Expenditure on subsidies in agriculture should be limited in duration*		2,2	1,7
Legend:	Do not agree	Neutral	Do agree	

Figure 6.87. Sum up of the 4th category (SiB)

6.4.6 Summary of the survey in the region of Banat

Following a survey on the impact and importance of subsidy payments for agri-SMEs in the Westmünsterland region on the background of the ongoing market crowding out of agri-SMEs, the same survey was conducted in the Romanian region of Banat in order to find comparable developments and to investigate similarities and deviations.

The farms surveyed in the region of Banat are family run agri-SMEs and are mainly active in farming. Since more than half of the farms have a size of more than 200 ha and this size is rather large in comparison with the German farms surveyed, this group of farms was presented separately with regard to the essential questions in the evaluation. Thus, it was possible to investigate whether the competitiveness of agri-SMEs, especially with international and industrialized large-scale agricultural enterprises, is better with a larger area size than for smaller farms. Significant differences, however, could not be found in the evaluation.

Regardless of the size of the area, all farms surveyed dispose of a relatively modern equipment, which is not older than five years on the average. The majority of the farms have existed for 10 to 25 years and employ up to ten people. The current degree of automation is very low. Only 6% of the farms surveyed stated that they had a high degree of automation. More than 95% of the holdings run their businesses as full-time farming and more than two thirds of their products are distributed indirectly. Despite this high rate, 73% of the farms are convinced that they are able to enforce their price expectations on the market. Most of the farms regard their operational survivability to be guaranteed due to the size of the farm and the existing equipment. Accordingly, about two-thirds of the farms expect good economic prospects in agriculture for the future. Organic farming is of secondary importance in this context. Although about 45% of farms are aware of the fact that the production of organic products would be rewarded by the consumer, especially the family farms with more than 200 ha are rather indecisive about this production alternative and with its related sales opportunities. Their lack of experience in organic farming and the ignorance of the extent of the entrepreneurial risk can be a reason for this indecision.

The subsidy payments come primarily from the EAFDR and are of great importance to 85% of the enterprises surveyed. Further subsidies from the EU are paid to farmers by national funds. By receiving subsidies, farms feel well supported in the domestic and non-European competition. With the help of subsidy payments, they can secure their present existence. In order to be able to participate permanently in the market, subsidies should also enable investments so that the technical backlog to modern enterprises in Western Europe can be made up. As a result, farms also see their own ability to innovate and optimize their farms strengthened by receiving subsidies. So, they are convinced of the necessity of subsidies for operational modernization being unavoidable. However, an increase in investment is only possible if the current subsidy amounts are increased. Increased incentives to switch to organic farming can also only be achieved by increased subsidies. After all, just over two-thirds of the farms surveyed can imagine a change of production under these circumstances. Accordingly, the farms also recognize an influence of subsidies on their own production and sales planning. Since more than 70% would continue to make a loss without subsidies and must close their businesses, the plight of the farms will obviously be to modernize their businesses in order to exist on the market permanently. As a result, it is not surprising that, with 18%, only a few farms are willing to create additional jobs in the case of rising subsidies, especially as the majority of farms cannot confirm the influence of the subsidies on their own cost

management.

Thus, subsidies represent an important component of the livelihood for almost all businesses. The amount of income, which they have, is considered as fair. The means for progressive investments and modernization, conversion to environmentally friendly production methods or a complete change to organic farming are not available, although it is considered to be more profitable than the previous, conventional production. Limitations of subsidy payments in duration and amount or a differentiated, product-specific subsidizing, as alternative control options for an area-based subsidizing system is rejected by the majority of farmers or discussed controversially, especially as the majority expect the continuation of Romanian agriculture to be dependent of the current system of subsidizing. In the competition, smaller farms are disadvantaged compared to larger ones. Accordingly, a majority rate the current distribution of subsidies as unfair, whereas area size is accepted as a distribution key. As far as the competitive situation is concerned, it should be noted that family businesses are certainly in competition with one another, but that the greatest danger comes from international, industrialized large agricultural enterprises. These large-scale farms have expanded extensively in recent years in Eastern Europe and this also true for Romania. In Romania farmland is cheap to buy and wages are low. In conjunction with the EU domestic market and area-based subsidizing, favourable conditions have to be made for these large corporations to produce on the basis of mass production and to sell their products at low prices. These framework conditions with a steady growth of the large agricultural enterprises promote the cutthroat competition.

The objectives of the European Common Agricultural Policy with regard to diversity, price stability and quality risk, for example, are missed under the current conditions in Romania. Accordingly, 70% of the farms surveyed state that the main reasons for the continuous market exit of family agri-SMEs are the absence of investment opportunities and poor competitive conditions. The improvement of competitive conditions can only be achieved by political decisions. Adjustments are needed in the current subsidy system, which will allow Romanian agri-SMEs to invest in order to strengthen their competitive conditions and to reach the technical status of farms in Western Europe.

6.4.7 Essential findings of the survey in the region of Banat

The evaluation of the survey has shown that Romanian farms are heavily dependent on subsidies and in particular direct payments. Without being subsidized, a large proportion of businesses would incur losses or even must shut down their businesses. For the vast majority of the farms surveyed, modernization, adaptations to the competition or changes in production to organic farming can only be achieved by increasing current subsidies. The entrepreneurial venture is currently avoided although there are certain opportunities besides the necessary funding is missing. However, on the labour market, the subsidy payments will hardly create any more jobs.

In view of the current dependency, the farms also show no acceptance for possible changes to the current subsidy system. Only the possibility of a product-specific financial support is controversially discussed. Although the farms are well aware of the threat posed by international and industrialized large agricultural enterprises, they hope for further protection by the EU, in particular on the basis of increased subsidy payments.

The separate analysis of the larger family businesses shows that in spite of

their size, they cannot operate better in the competition than the smaller family businesses. Moreover, these farms think they are more at risk of disappearing from the market without subsidies and evaluated possible alternatives to the current system significantly more critically, as this is shown by the survey of all farms.

6.4.7.1 The approval of the surveyed farms to the five essential topics (SiB)

	Topic	Rating by all farms	Rating by by farms with > 200 ha
1	Expectation of good economic prospects in agriculture	▭	▭
2	Subsidizing agriculture is important	■	■
3	Obtaining a fair income due to subsidies	▭	▭
4	Cessation of the production plant in case of subsidy failure	▭	▭
5	Expansion of investment activity with increased subsidy coverage	■	■

Legend: ▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average

Figure 6.88. The approval to the essential topics (SiB)

Figure 6.88 shows the extent of agreement on important topics of the survey among all surveyed and family businesses with a size of more than 200 ha. The agreement on all topics is above the average reference value and there are no differences in this between the surveyed groups of enterprises. Although the economic development of the agriculture is rated as good, their economic activity and actual market participation is not possible for the enterprises without subsidies.

6.4.7.2 The five topics with the highest approval of the farms surveyed (SiB)

The five topics with the highest approval are shown in figure 6.89 and deal with the Romanian farmers need for subsidies. Subsidies are essential and if they were stopped, some farms would have to shut down their business entirely. It is striking that for the farms surveyed, modernization is only possible with the help of subsidies and increasing the subsidy funds is necessary to intensify any investment efforts. Furthermore, the profitability of organic farming is seen by the farms. The influence of subsidy payments on the ability to innovate and optimize is rated somewhat more critically by the larger family agricultural companies.

Rank	Topic	Rating by all farms	Rating by by farms with > 200 ha
1	Expansion of investment activity with increased subsidy coverage	■	■
2	Subsidizing agriculture is important	■	■
3	Subsidy payments are necessary for required plant modernizations	■	■
4	Influencing the innovation and optimization ability due to subsidy payments	■	▭
5	Higher profit opportunities in organic farming	■	■
Legend:	▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average		

Figure 6.89. The five topics with the highest approval (SiB)

6.4.7.3 The five topics with the lowest approval of the farms surveyed (SiB)

Rank	Topic	Rating by all farms	Rating by by farms with > 200 ha
1	The limitation of the duration of subsidy payments	△	△
2	The limitation of the amount of subsidy payments	○	△
3	Influencing company cost management by obtaining subsidies	○	○
4	Product-specific differentiation of subsidy payments is more advantageous	○	○
5	Product and sales planning are not influenced by subsidy terms	▭	○
Legend:	▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average		

Figure 6.90. The five topics with the lowest approval (SiB)

The topics with the lowest approval first of all refer to possible limitations on the current subsidy payments concerning amount and duration. This emphasizes the importance of these supports for the farms. A product-specific support as a further alternative is discussed and given an average rating, but not considered a solution to the existing competition problems. Influences of the subsidies on operational activities such as cost management and sales planning are assessed differently. Until further notice there will have to be subsidies for the farms. Although subsidies are desired,

an impact on farm management is said to be undesirable. They want to remain independent in their business management and make entrepreneurial decisions independently of the receipt of the subsidies.

6.4.7.4 The three topics better rated by family farms with more than 200 ha (SiB)

Compared to all farms surveyed, there are only three topics that were rated better by the larger family businesses. First the larger family farms see a better economic development of agriculture in the future. At the same time, these businesses would increasingly generate a loss without subsidies. Furthermore, the influence of subsidy payments on the farms' cost management is regarded more significantly than by the other agricultural enterprises.

Rank	Topic	Rating by all farms	Rating by farms with > 200 ha	Difference
1	The expectation of good economic prospects in agriculture	□	□	0,2
2	Generating a loss without subsidy relation	□	□	0,2
3	Influencing company cost management by obtaining subsidies	○	○	0,2

Legend: ▲ Far below average △ Below average ○ Average □ Above average ■ Far above average

Figure 6.91. The three topics better rated by farms > 200 ha (SiB)

6.4.7.5 The five topics worst rated by family agricultural companies with more than 200 ha (SiB)

Figure 6.92 shows the five topics that were rated lower by the larger family businesses. The larger family businesses are increasingly opposed to a limitation of any type of current subsidy payments. They are also more critical about product-specific sponsorship than the other farms. The influence on the ability to innovate and optimize is less pronounced by these farms. Finally, the chances of organic farming are rated slightly lower.

Rank	Topic	Rating by all farms	Rating by farms with > 200 ha	Difference
1	Limitation of the duration of subsidy payments	△	△	-0,5
2	Influencing the Innovation and Optimization Ability	■	□	-0,4
3	Product-specific differentiation of subsidy payments is more advantageous	○	○	-0,3
4	Limitation of the amount of subsidy payments	○	△	-0,2
5	Honouring environmentally friendly production	□	□	-0,1

Legend: ▲ Far below average △ Below average ○ Average □ Above average ■ Far above average

Figure 6.92. The five topics worst rated by farms > 200 ha (SiB)

The differences between farms with less or more than 200 ha are mainly negligible. This is based on the structure of the farms and they do not have the attributes of industrialized plants with a comparable size. Despite the fact that the owners of farms with more than 200 ha think that they are better prepared for the future, the owners of all evaluated farms answered basically in the same way. In spite of their size, they have to be regarded in the same way the family businesses with a lower size are seen.

6.4.8 Conclusion of the survey in the Banat region

Agriculture plays an important economic role in Romania. It is all the more important for Romania to stabilize the agricultural sector and to develop it in a modern way for the future.

Subsidies, therefore, play a central role for the respective farms. For around 90% of the farms surveyed, agricultural subsidies are generally important, 73% even stated that they would not be able to generate sufficient profit without subsidies, around 2/3 feared having to close their farm immediately without subsidies and 55% saw agriculture as a whole without subsidy payments in danger.

These figures impressively show that, despite decades of subsidization, an alignment of national agriculture in the EU has still not been achieved. However, the previous procedure, with predominant subsidization by direct payments, is more tempting for the farmers concerned than it can help in the long term. Since the majority of the farms surveyed reject any form of restriction on subsidy payments, the previous distribution is only viewed as fair to a limited extent, as well as upcoming investments or an increased focus on organic farming, which is viewed as very profitable, is only assessed as feasible with increasing subsidy payments.

The advantage of the existing system for large farms compared to agri-SMEs and the consequent worsening of the competitive conditions, which also has been led to a steady displacement of agri-SMEs in Romanian agriculture, is fully aware to the

farms surveyed. A clear majority of 73% accordingly also calls for an adapted and more targeted distribution of funds.

The analysis highlights, that Romanian farmers are very dependent on subsidy payments without being able to provide innovative impulses for the development of their farms or with regard to the creation of new jobs, and that the majority of them judged the current situation and future expectations without far-reaching reforms negatively.

Therefore, it is all the more important too, by reforming the current subsidy policy to stop the displacement trend in order to support and establish a modern, sustainable and diverse agriculture within suitable framework conditions.

6.5 Comparative analysis of the results of both surveys

Following the analyses of the surveys in the Westmünsterland and in the Banat, a comparative analysis of both surveys is carried out in this section. Here, the main differences or similarities of the farms surveyed are shown and discussed. The Romanian farms surveyed are discussed in comparison with the results of the survey in the Westmünsterland as a coherent unit because the farms surveyed in the Banat can all be described as family-run enterprises with a medium-size character and the responses received did not produce any significant conflicting results in relation to the size of the holding up to or greater than 200 ha. Based on the results obtained in the survey of German farms with their specific operating structures the German farms are discussed depending on their size as agri-SMEs or large enterprises. At the end of this section , the results are put in the context of the current influences of the Common Agricultural Policy and possible alternatives of the subsidy policy will be critically considered.

6.5.1 Differences in the structures

While the surveyed German farms with their average size of approximately 90 ha were slightly above the average size of about 60 ha of all German farms, the size of the farms surveyed in the Banat averaged approximately 136 ha, which was far above the average of 3 ha of all Romanian farms. This is due to the peculiarity that especially in the Banat large area farming can be operated, while in large parts of Romania due to the prevailing geography (mountainous regions) this is not possible. Furthermore, German farms are predominantly very old-established and have been operated for generations that means more than a hundred years. The majority of Romanian farms have only been in the possession of the farmers for the last two decades. However, the equipment of the Romanian farmer is much younger and due to the large areas usually five to ten employees are employed, whereas in Germany the farms are mainly operated by only up to five people. Both more than 90% of the Romanian and the German farms are full time and not part time businesses and are the main sources of family income. German farms however are run by a higher level of automation and the farmers are well skilled and highly specialized. In terms of distribution, the German farms, in contrast to the Romanian ones, do not only rely on indirect sales, but also predominantly try to sell their products directly. In contrast to the German farmers, most of the Romanian farmers surveyed believe that they can enforce their price expectations in the market. The surveyed Romanian farmers are almost exclusively active in arable farming, whereas the German farms provide the broad spectrum of agriculture. Their main activities in the Westmünsterland region are dairy cattle farming, arable farming, and fodder cultivation.

6.5.2 Different assessment of the situation in agriculture

Romanian farmers are far more optimistic about the future, as far as the viability of their own company is concerned, than German farmers. Around 62% expect good economic prospects. In comparison, only 12% of German farmers and 6% of agri-SMEs in the Westmünsterland region agree with this view. Also, with regard to the reward of environmentally friendly production methods, 45% of the Romanian farmers (RO) are more convinced that the customers honour environmentally friendly production than the German farmers (DE) do with only 16% and respectively 12%.

Table 6.1. Different assessment of the situation in agriculture

Do agree	All (RO)	All (DE)	Agri-SMEs (DE)
Expectation of good economic prospects	62%	12%	6%
Honouring environmentally friendly production processes by the consumer	45%	16%	12%

6.5.3 Comparative assessment of the impact of subsidy payments on daily business

The results of both surveys concerning this category are very contradictory. In eight out of eleven topics, the Romanian farmers' agreement is above 60% up to 100%, compared to only 10% up to 22% with most German farmers and 9% up to 35% for agri-SMEs.

Table 6.2. Impact of subsidy payments on operational business

Do agree	All (RO)	All (DE)	Agri-SMEs (DE)
Influencing the innovation and optimization ability due to subsidies	82%	18%	24%
Support in the European competition	77%	18%	21%
Support in the competition outside the EU	73%	22%	24%
Influencing company cost management by obtaining subsidies	27%	38%	32%
High priority of subsidies for operation	86%	14%	15%
Influencing product & sales planning by obtaining subsidies	36%	28%	29%
Generating a loss without receiving subsidies	73%	14%	15%
Abandonment of the agricultural company without receiving subsidies	64%	10%	9%
Implementation of a switch to organic farming with increased subsidies	62%	16%	21%
Increasing capital expenditure while receiving higher subsidies	100%	28%	35%
Job Creation due to subsidy payments	18%	10%	15%

That is why the Romanian farmers are increasingly dependent on subsidy payments and regard them as a support in the competition. Without subsidy payments, significantly more Romanian farms would have to cease operations or make a loss. Furthermore, Romanian farmers are significantly more aware of the influence of subsidies on their ability for innovation and optimization. Subsidies also give Romanian farmers a greater incentive to increase their investment (86%) and to switch to organic farming (62%). Only 28% of the German farmers are willing to increase their investment spending and not more than 16% would switch to organic farming. The agri-SMEs in the Westmünsterland are characterized by a slightly higher approval rate of 35% and 21%, respectively.

Concerning the topics on the influence of subsidy payments on cost management and product and sales planning as well as on the willingness to use subsidy money to create more jobs, there are agreement rates of 27% up to 35% respectively and of 10% up to 18% for job creation.

6.5.4 Comparative assessment of personal opinions about subsidy payments

Table 6.3. Differences in opinion about subsidy payments

Do agree	All (RO)	All (DE)	Agri-SMEs (DE)
The subsidization of agriculture is important	91%	28%	38%
Obtaining a fair income due to subsidies	59%	34%	44%
Without subsidies, there would be no agriculture	55%	24%	32%
The distribution of subsidy payments is fair	45%	8%	9%
The distribution of subsidy payments according to farm size is fair	95%	16%	12%
Subsidies are essential for operational modernization	86%	28%	38%
Area-based subsidization gives large businesses a competitive advantage over small businesses	91%	52%	62%
In organic agriculture there are higher profit opportunities	82%	20%	24%
Expenditure on subsidies should be differentiated product-specifically	27%	44%	53%
Expenditure on subsidies in agriculture should be limited in amount	18%	44%	41%
Expenditure on subsidies in agriculture should be limited in duration	14%	42%	32%

The trend of opposing approval rates continues to be overwhelming with questions about the importance of subsidy payments for agriculture and the benefits of organic farming. Approval levels for these topics range between 82% and 95% of Romanian and between 16% and 28% of German farmers. Here, too, the agri-SMEs with approval values of up to 38% in the Westmünsterland are above the values of all farmers surveyed.

Similarly, but not so clearly as it is described above, the approval rates for questions on the granting of a fair income and the future of agriculture vary among the groups surveyed. The relevant values are 55% to 59% and 24% to 34%, respectively. Here it is revealed that the agri-SMEs in Germany are more critical, as the approval rates of 32% and respectively 44% show, than the respective rates with all the German farms surveyed.

The approval rates are again very different with regard to the appropriate distribution of subsidy payments. As 45% of the Romanian farmers in general,

consider the distribution of subsidies to be fair. Even as many as 95% of Romanian farmers consider the distribution according to area size as appropriate, confirming the EU system of direct payments. In contrast, the approval rates of German farmers in total are only 8% and 16%, respectively.

It is therefore not surprising that the approval rates for a move to limit the current subsidy payments or to adjust the current area key are decreasing with the Romanian farmers and increasing with the German farmers. Astonishingly, the approval rates of agri-SMEs on these topics are at or above the level of all German farms surveyed, although they also have a higher approval rate in relation to their previously uttered opinions, which is paradoxical.

At the end of this sub-section there is still the consideration of the competitive situation with large and industrialized agricultural enterprises. The competitive disadvantage compared to these agribusinesses is perceived by all farms surveyed with 91% of the Romanian farmers surveyed, 52% of the German farmers surveyed and 62% of the agri-SMEs surveyed in the Westmünsterland. The overwhelming majority of all farms surveyed in the Westmünsterland and in the Banat consider this as a result of poor competitive conditions. Romanian farmers mostly want a more targeted use of subsidies as corrective measures. German farmers postulate with a share of 40% the abolition of subsidy payments. The agri-SMEs do not utter a consistent opinion in this respect. Around a quarter of the agri-SMEs postulate the abolition or a more targeted use of subsidies.

Table 6.4. Why are there fewer farms and what should be changed?

Do agree	**All (RO)**	**All (DE)**	**Agri-SMEs (DE)**
Fewer businesses because			
Bad competitive conditions	64%	58%	62%
Mismanagement	18%	4%	6%
Bad lobby	0%	6%	3%
Bureaucracy	0%	12%	12%
Changes			
Do not make any changes	20%	32%	35%
Abolition of subsidies	0%	40%	26%
Targeted use of subsidies	53%	16%	24%
Reduction of bureaucracy	7%	4%	6%
Fairer distribution of subsidies	14%	8%	9%

In view of the expressed high dependency on subsidies for especially Romanian farmers, the positive attitude for the future possibilities of the economic development is astonishing. That is also true for the insistence on the current way of subsidizing by predominantly direct payments.

6.5.5 Essential findings of the cross comparison

After the different perspectives of the farms in the Westmünsterland and in the Banat have been pointed out and discussed, the following ratings of the farms are presented comparatively.

6.5.5.1 The approval of the surveyed farms to the five essential topics

	Topic	Rating by all farms (RO)	Rating by all farms (DE)	Rating by agri-SMEs (DE)
1	Expectation of good economic prospects in agriculture	□	○	○
2	Subsidizing agriculture is important	■	△	○
3	Obtaining a fair income due to subsidies	□	○	○
4	Cessation of the production plant in case of subsidy failure	□	△	△
5	Expansion of investment activity with increased subsidy coverage	■	○	○

Legend: ▲ Far below average △ Below average ○ Average □ Above average ■ Far above average

Figure 6.93. The approval of the surveyed farms to the five essential topics

Figure 6.93 shows the agreement of the groups surveyed on the main topics. It is noticeable that in general Romanian farmers express a much higher approval than the farmers in the Westmünsterland. As mentioned before, Romanian farmers are more dependent on subsidy payments than farmers in Germany. They need subsidies in Romania to guaranty their farmers a reasonable income, otherwise they must close their farms. Further on they only feel empowered to expand their investment activities if the subsidy payments are increased. German farmers, on the other hand, are more likely to dare to survive on the market without being granted payments. Even if there is only an average economic outlook, their investment activities, and their efforts to achieve an adequate income are less dependent on the EU subsidy support.

6.5.5.2 The five topics with the highest approval of the Romanian farms surveyed

With very high approval, Romanian farmers have considered those topics to be important that show the related dependency on subsidy payments. So, it is obvious that Romanian farmers need compulsory long-term subsidies to survive on the market. It is a positive fact that the farmers are well aware of the opportunities offered by organic farming. The farmers surveyed in the Westmünsterland on the other hand are more independent on subsidies and generally rate the topics which are shown in figure 6.94 only with a below-average approval or, with regard to the agri-SMEs, with only an average approval. In this context the different experience in leading a market-based company and the different degrees of automation or the technical standard must be taken into account which means that the issue of agricultural subsidies is handled with more self-confidence by the German farmers.

Rank	Topic	Rating by all farms (RO)	Rating by all farms (DE)	Rating by agri-SMEs (DE)
1	Expansion of investment activity with increased subsidy coverage	■	○	○
2	Subsidizing agriculture is important	■	△	○
3	Subsidy payments are necessary for required plant modernizations	■	△	○
4	Influencing the innovation and optimization ability due to subsidy payments	■	△	○
5	Higher profit opportunities in organic farming	■	△	○

Legend: ▲ Far below average △ Below average ○ Average ▭ Above average ■ Far above average

Figure 6.94. The five topics with the highest approval of the Romanian farms surveyed

6.5.5.3 The five topics with the highest approval of the German farms surveyed

Rank	Topic	Rating by all farms (RO)	Rating by all farms (DE)	Rating by agri-SMEs (DE)
1	Limitation of the duration of subsidy payments	△	○	○
2	Limitation of the amount of subsidy payments	○	○	○
3	Influencing company cost management by obtaining subsidies	○	○	○
4	Product-specific differentiation of subsidy payments is more advantageous	○	○	○
5	Product and sales planning are not influenced by subsidy terms	□	○	○

Legend: ▲ Far below average △ Below average ○ Average □ Above average ■ Far above average

Figure 6.95. The five topics with the highest approval of the German farms surveyed

As can be seen in figure 6.95, the German farmers surveyed generally consider the topic of agricultural subsidy payments as being very critical, the approval values for their highest approval differ only marginally compared to the Romanian farmers surveyed. German farmers are increasingly in favour of subsidy payments being limited or the current system being adapted. In view of the different dependency on subsidies, which has already been mentioned, the German farmers are less influenced in their planning than the Romanian counterparts.

6.5.6 Conclusion

European agriculture is diverse and, like no other sector, is entangled with the design of habitats. It is an aspect of high significance in the EU and more than ten million farms have a major impact on environmental aspects such as biodiversity, soil and water protection, climate and health protection, animal welfare and animal husbandry. Furthermore, the labour market and local markets in the world are influenced by the European agriculture.

Agricultural changes have direct consequences as well on social and ecological systems. As agriculture is so closely linked to the climate, food, nature, and rural areas, these changes affect everyone, not just the farmers themselves. As a result, it is critical for the European society to decide in which direction agriculture should evolve, as well as how and by whom this process should be moulded politically, which services farmers should provide and which of these services should be subsidized by public funds are crucial issues in this context.

The European subsidy policy, in turn, influences the type of agricultural production methods. As such, agriculture and agricultural subsidy policy must always be viewed against the background of existing interactions in this complex system. To ensure this, common goals were formulated in the CAP. The CAP is the most important means of shaping change in agriculture and costs EU citizens almost EUR 60 billion

per year. However, these objectives and the measures adopted to achieve them have not been sufficiently adapted to the challenges of the recent past and present.

Therefore, the objective of income support for farmers remains the priority and is being over-dimensioned with the first pillar direct payments. Around three quarters of total subsidy payments are distributed through the first pillar. Modern, environmentally friendly, and sustainable production methods, essentially applied in organic farming, are funded almost exclusively through the second pillar of the CAP. However, as an ecological and social conscience of the CAP, this pillar is endowed with only 25% of the total subsidy payments compared to the first pillar, which means that only significantly lower financial resources are made available, in particular measures supported by the second pillar serve the common good.

The intensive support policy through the first pillar in the form of direct payments not only influences the effects of European agriculture on the above-mentioned aspects, but also leads to dislocations in the original agricultural market itself. As a result of the fact that only around 20% of agricultural holdings receive around 80% of direct payments, the EU, in the long term, supports the market pressure on agri-SMEs to the advantage of, in particular, industrialized large international farms, apart from other market effects such as lease increases.

The results of the surveys clearly show the difficulties of the current subsidy policy. Regional differences are also reflected in the predominantly different responses of the surveyed farmers in Romania and Germany. On the one hand, it can be seen that farms are generally dependent on subsidies and, on the other hand, that they clearly notice the resulting growing and system-based competitive disadvantage they face compared to the industrialized large agricultural enterprises.

From the answers of the Romanian farmers, it is obvious that the subsidies are used, almost exclusively to secure their livelihood. In comparison to German farmers, farms are still poorly equipped, lacking in technology and are run exclusively by families. Qualified specialist training is virtually unknown. A stronger investment activity or the switch to organic farming is for most farmers only feasible if the present subsidies are increased. Hardly anyone of the Romanian farmers would create additional jobs, not even if subsidies were increased. In order to reduce the competitive disadvantage to large industrial enterprises, the subsidies should be reviewed according to their intended use. However, system changes to the existing system must not lead to a worsening of the current income situation.

By comparison, German farmers are convinced that they are less dependent on subsidies, thanks to the structure of their farms, their training and market knowledge in contrast to Romanian farmers. The competitive disadvantage in comparison with large enterprises associated with the subsidy payments is seen and the nature of the distribution is assessed as unfair. A reform of the system is considered possible only by very few of the farmers surveyed. Accordingly, the abolition of subsidy payments as a whole is demanded by the majority and they rely on an unrestricted regulation by the market participants, regardless of the objectives of the CAP. The survey results illustrate that the existing impact of the current subsidy policy on market participants and on public goods requires an adaptation of the CAP’s objectives and a systemic alignment with regard to the granting of subsidies.

The existing CAP disregards the majority of agri-SMEs' concerns. Because of the existing principal support via direct payments and the ensuing distortion of competition, these farms have been facing increasing existential issues year after year. Furthermore, the critical issues of a diverse and sustainable agriculture, such as climate, biodiversity, animal welfare, soil, water, and health protection, are continually underfunded.

Due to the current sponsorship, large agricultural enterprises receive more and more money and agri-SMEs lose their economic alignment and are ultimately forced out of the market. This in turn jeopardizes the variety of products, product quality and the price stability. For this purpose, the negative effects of current agriculture on climate, environmental, soil, health, animal- and water protection will not be reduced. This is also true for abuses in international trade and for the current employment structure since the funds available for this purpose in the 2nd pillar in the relation to the direct payments of the first pillar are far too low. The existing conditions in conventional agriculture are not adapted to the current situation in order to promote the transition to organic farming.

Significant progress in this area has still to be made. Although agriculture appears to be more sustainable and equitable, the essential CAP instruments have not been consequently adjusted. As farms can offset cost items with the premium, the strategy of limiting direct payments to boost agri-SMEs has also failed [215]. There would be no additional benefits to public goods from granting direct payments in the budget period 2021-2027 for European societies in the absence of strategies which focus on socioeconomic and ecological concerns [172].

Europe must ask itself what type of agriculture it wants to promote in the future and must not evade the question of whether the control mechanisms currently in use are appropriate for fulfilling the CAP's goals. From the constant and consistent exit of agri-SMEs from the market, the ongoing concentration process towards a few ever-growing farms, to the solidified negative impacts of current production methods on animals, humans, nature, and the environment; all of which demonstrate the unsuitability of these instruments. With the aim of creating a modern, fairer and, with regard to the above-mentioned aspects, improved agriculture, it is obviously necessary and indispensable to turn away from over-dimensioned direct payments. For this purpose, direct payments should be reduced in favour of measures to support the provision of public goods in the areas of climate protection, environmental protection, and biodiversity, the funding of specific animal and environmental protection services, as well as providing targeted support for agri-SMEs, for young farmers, and for organic farming by strengthening their competitiveness and productivity, among other potentially viable and appropriate strategies.

Therefore, it is conceivable to limit direct payments in general and thus to protect agri-SMEs from the competition with large, industrialized enterprises in particular. That is, a maximum share should be fixed to guarantee the basic income support through direct payments.

Minimum subsidies could continue to be granted, for example, depending on the type of production (organic farming vs. conventional agriculture) and depending on their impact on the environment and climate, as well as on concrete objectives and measurable results. This means a granting of subsidies depending on production methods that increase the carbon content of soils, reduce emissions and the extensive use of fertilizers and pesticides and on encouraging species appropriate husbandry. In this context the consideration of fallow crops, the use of meadows and pastures, job creation and improvement of working conditions are further possible criteria for granting subsidies.

To do this, however, it is necessary that the objectives agriculture must fulfil are no longer determined by bureaucratic acts by the EU but are determined on the basis of a broad social discussion.

7 THE IMPACT OF THE DIGITISATION OF PRODUCTION METHODS ON THE COMPETITIVENESS OF FARMS

As previous studies have shown so far, CAP is unthinkable without making subsidy payments. Depending on the region within Europe, farmers are more or less dependent on receiving the subsidies. On the other hand, these payments do not automatically mean that the existence of agri-SMEs in competition is permanently secured. For this reason, the current type of subsidization is paradoxically rejected by the majority of the agri-SMEs.

Therefore, this chapter examines the extent to which there are starting points for a more targeted and thus in part fairer funding with a view to technical developments in the context of the current digitization processes. Hence, the essential operational competitive factors and strategies with their impact on the competition ability of a company in general are described first.

Afterwards, the phases of the industrial revolution that have been experienced so far are then explained, before specifically pointing out the technical development so far and the current status of digitization in agriculture.

7.1 Competitive factors and strategies

Competitiveness and competitive strategy determine the current and future survival of a company in the market. It is therefore of crucial importance for a company to know the factors that affect them and to derive or select the appropriate strategy from this knowledge. The content of section 7.1. consequently, explains these relationships in general, which are not specifically aligned to agriculture.

7.1.1 Definition and strategy development

The competitive situation of a company determines its economic success in the long term. The structures of the industry and the strategy of the companies operating on the market are decisive [223]. This principle also applies to the highly subsidised sector of agriculture. The pentagon of competitive factors with the dimensions of cost, quality, speed, reliability, and flexibility, forms the framework for the participating companies [239].

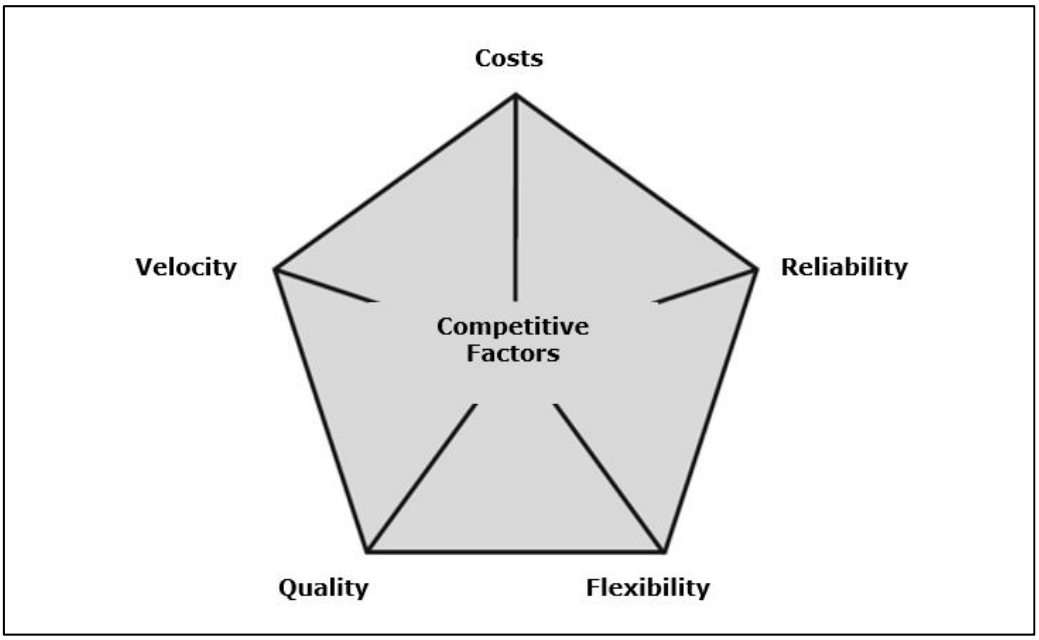


Figure 7.1. Pentagon of Competitive Factors for Operations Management [168]

Quality:

For the customer a relevant factor that is very easy to be measured. If the customer's own expectations are met or even exceeded, this has a positive effect on the company. If the expectation is not sufficiently met, the product or company will be poorly represented.

Quality can be regarded from two perspectives.

- External:
  Not only the specifications of a product to meet the quality are important, but also the expected time you have it in service. The individually related processes, from the consultation to the handover of the goods, are indispensable.
- Internal:
  In the company, it is important that all process steps are adhered to. Care must be taken to ensure that there is no error frequency or that work is carried out in duplicate. If processes are carried out correctly and quickly, then the products are usually of higher quality and the manufacturing costs are lower.

Velocity:

Generally speaking, many purchase decisions are made based on short delivery times. It is therefore important to speed up in-house information flows so that decisions can be made more quickly. Another point is the reduction of stocks or the profitability of a company [168].

Reliability:

The customer's expectations concerning the company‘s reliability are that short delivery times are generated, high delivery reliability are adhered to. Within a

company, there is a kind of customer-supplier relationship between the different sectors [168].

Flexibility:

A flexible company must be able to process and implement short-term external and internal changes. These can be actions or alternative decisions. Efficient and effective changes in production factors usually lead to competitive advantages [168].

Cost:

Costs are probably the most important competitive factor of a company, which only determines economic success. From the customer's point of view, the cost of expenditure is only considered when a purchase is made. Market prices are usually based on the benefits of the products and their competitive situation. From an entrepreneurial point of view, it is essential to keep the costs of a business as low as possible so that profits can be generated on a permanent basis. The most important cost types depending on the type of the company are, for example: personnel costs, storage costs, material, and operating equipment costs. However, it is also possible to achieve long-term profits through additional costs. An example of this would be investment in new technologies. Each of the five competitive factors is interlinked. These competitive factors do not always harmonize with each other. For example, quality improvements do not necessarily have to cause more costs. Quality management reduces costs caused by errors [168].

With the help of these defined competitive factors, companies can develop strategies for their company within the framework of an industry structure analysis, considering existing resources and market conditions such as the bargaining power of customers and suppliers, the threat of new suppliers and products, as well as the degree of rivalry. [223].

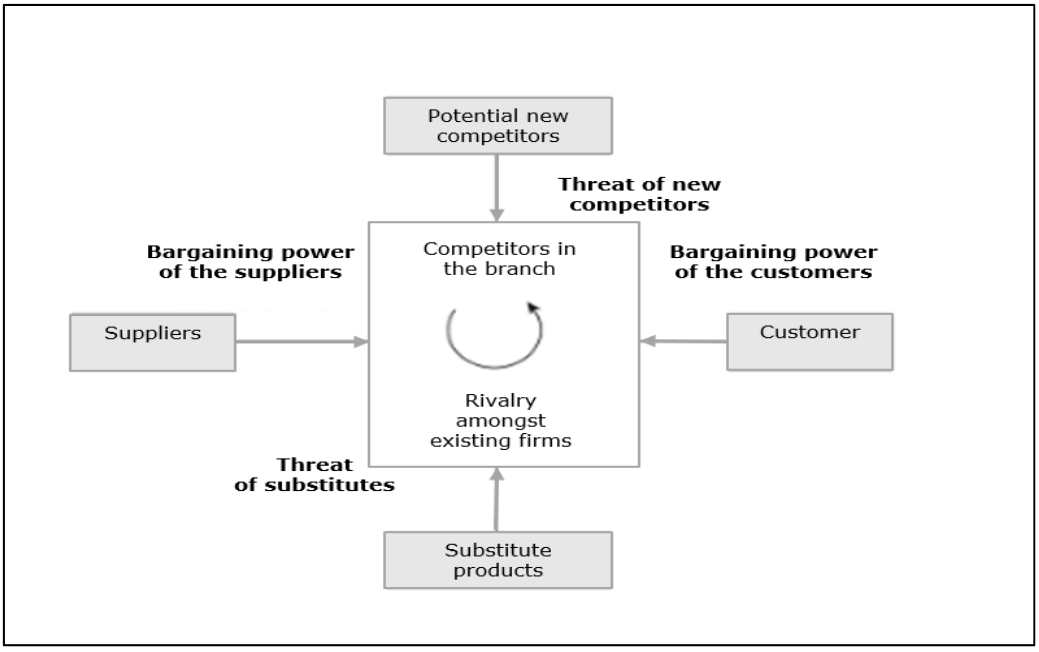


Figure 7.2. Influences on competition [224]

The intensity of competition is determined by the strongest factor, the importance of which may change depending on the sector concerned. The overall strength of the competitive factors indicates whether the average surplus of revenue is enough to cover the capital costs of the invested capital. For companies, this means gaining strategic advantages in the market in order to make the company competitive [222].

7.1.2 Elements of the branch structure

Threat from new suppliers:

The entry of new players in the market leads to price pressure on the part of the suppliers. In order to avoid this tightening of competition, the possible entry of further competitors is made difficult by barriers to entry such as government influences, capital requirements, absolute cost advantages, expected reactions of long-term suppliers, or switching costs, which usually binds the customer to long-term contracts [222].

Pressure from substitution products:

Substitutes meet the requirements of customer needs and thus make it difficult to sell one's own products. Customer attitudes to the replacement products or the relative price performance of the substitutes and the switching costs of the suppliers are essential factors influencing the threat to these products [223].

Supplier's bargaining power:

Every company depends on suppliers. If the bargaining power of a supplier is dominant, then the price of the respective goods increases, or the quality of the products decreases whereas the price remains the same. Thus, the degree of attractiveness of an industry is higher with low bargaining power of the respective supplier. Possible indicators of a high degree of negotiating power of a supplier are high conversion costs for the customer. The order volume for suppliers influences the company's dependency on the suppliers. The existence of a huge number of suppliers reduce their individual power in their respective branch of industry [222].

Bargaining power of the customers:

If customers are concentrated on the market and accordingly develop their bargaining power, this will either lead to price reductions or to a required increase in quality with the same conditions. For standardized and non-differentiated products, buyers have it easier to change the suppliers. Specialized products, on the other hand, lead to greater customer loyalty due to their attractiveness. Low conversion costs mean that customers are more likely to choose other providers. In addition, customers can produce the goods independently instead of getting them delivered by suppliers, which is a form of backward integration. So, the companies can then dispense with external suppliers [222].

Degree of rivalry among existing firms:

The quintessence of the industry structure analysis is the focus on the existing competitive situation on the market. It describes the intensity of competition between existing market participants. A high level of competition is influenced by price and performance competition. Price competition arises, when price advantages are generated in the industry through an increase in efficiency in the value chain. The performance competition is usually dominated by product quality and various other additional services. The possible determinants of a competitive intensity are, among other things, the number of competitors. In the face of strong competition, yields in

an industry will fall in the long term, unless the price elasticity of demand is high. Industry growth describes the lucrative nature of a market. A slowly growing industry will lead to competition for market share. Furthermore, the relationship between supply and demand has a strong impact on the lucrative nature of a market. A surplus in supply lowers prices and makes it more difficult for new entrants to enter the market. Existing market exit barriers and strategic risks determine the level of rivalry [222].

7.1.3 Competition strategy options

To gain strategic benefits, companies must distinguish from competitors. Subjective objectives and available resources are essential drivers of this process and are geared towards cost leadership, differentiation, and concentration as part of a competitive strategy [176,222,223]:

Cost leadership:

Rationalization, process optimization, centralization and economies of scale are intended to reduce common and variable costs without neglecting quality and service. The prerequisite for their implementation is an already correspondingly large market share, high supplier flexibility or access to input materials under preferential conditions.

Differentiation:

A clear unique selling proposition distinguishes products and services. Approaches to such a differentiation include design, technology, dealer network, customer service. Because of such a differentiation, possible substitution hazards are reduced. However, the cost item is negatively affected by higher expenses for example special materials, intensive customer support or increased research activities.

Concentration:

In this type of strategy, the focus is on priorities, either within the framework of cost leadership, differentiation or as a mix, such as production of high-quality sports vehicles. However, the successful implementation of this strategy depends on a sufficient market share and corresponding cost flexibility.

7.2 Industrialisation of modern society

On the Hanover Fair in 2011, the working group 'Communication of the Research Union Economy - Science BMBF' presented the term Industry 4.0. In October 2012, the Working Group 4.0, a constellation of experts from practice, associations and science, prepared a final report for the Federal Chancellor Angelika Merkel with implementation recommendations for the future project Industry 4.0. Through the emergence of the term Industry 4.0, three further phases of the industrial revolution can be defined by looking backwards, with the beginning of the 1st industrial revolution in the 18th century up to the present and regarding to the future the industry 4.0. As the Industrial Revolution progressed steadily, the level of complexity for further industrial development increased continually.

7.2.1 Stages of industrialisation

In the industrial history, individual inventions and changes in the working processes have led to profound changes and are accordingly classified as stages of

the industrial revolution. As complexity has increased, these changes have had an impact on the labour and economic sectors to this day.

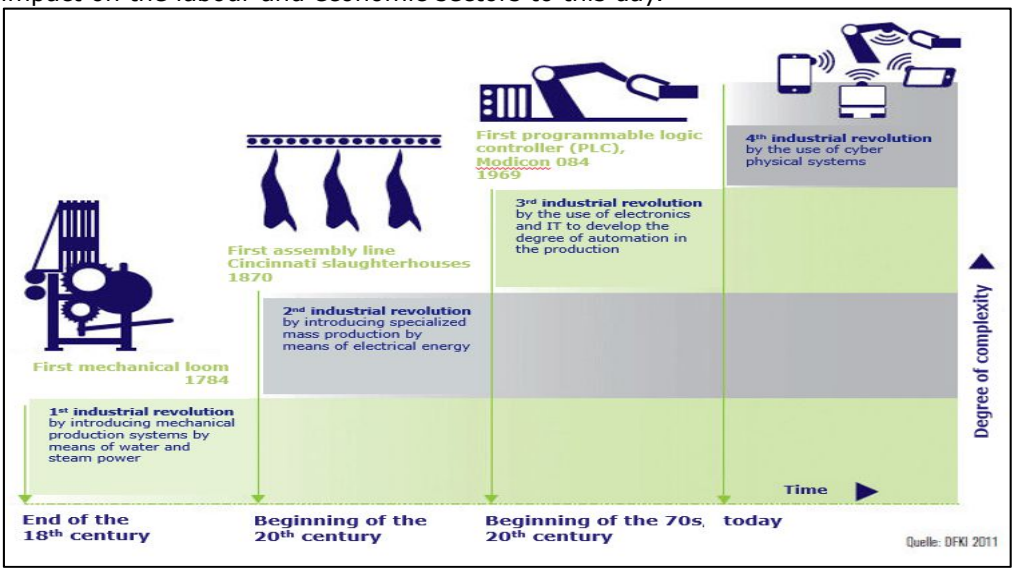


Figure 7.3. Stages of the Industrial Revolution [218]

The development of the steam engine at the end of the 18th century triggered the first industrial revolution. The previous human activity has now been replaced by machine work and new jobs in factories have been created for people. This development was linked to an increase in productivity of basic supplies on the one hand and a sharp decline in employment in the agricultural sector and the traditional craft sector on the other hand [297].

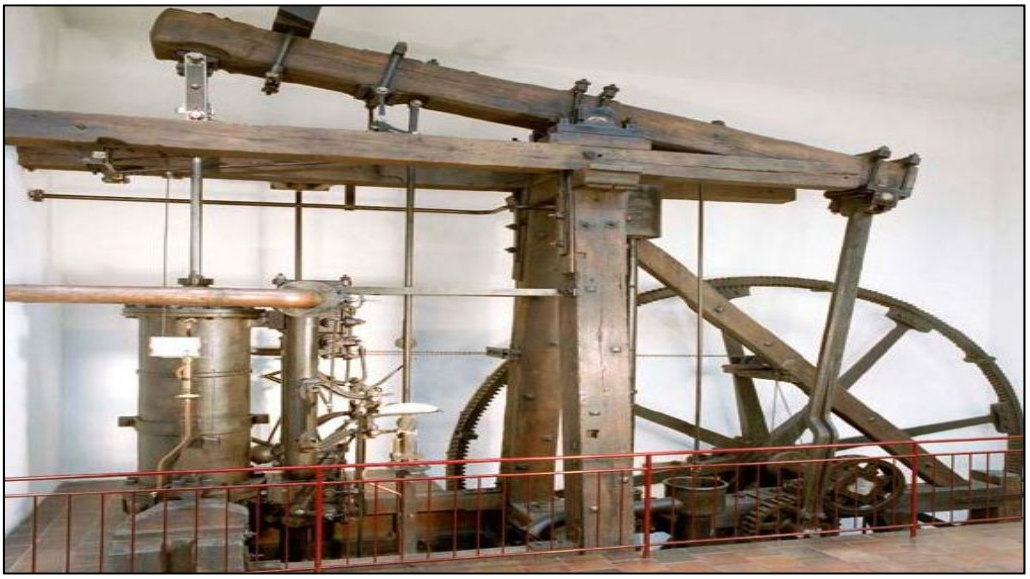


Figure 7.4. The first steam engine according to James Watt [63]

At the beginning of the 20th century, the development of internal combustion engines, the control of electricity and the introduction of mass production was established in the second industrial revolution. Assembly line production and the use of the raw material oil made it possible to increase the general level of prosperity and working conditions in the factories [17,299].

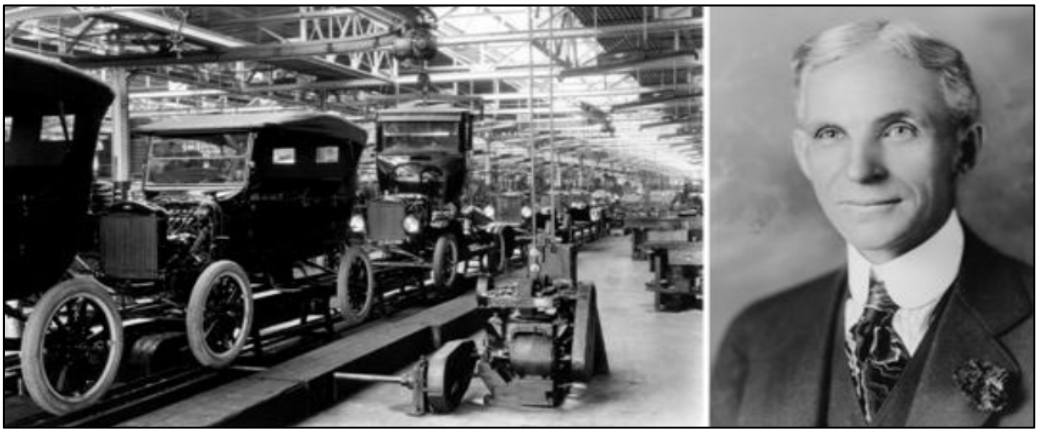


Figure 7.5. Model T assembly 1924 Henry Ford 1919 [299]

The use of electronics, information, and communication technologies in the 1970s shaped the third industrial revolution. The development work of the pioneers was followed by the first functional devices. The German civil engineer Konrad Ernst Otto Zuse developed the first functional computer in the world with the Z3 in 1941. A rapid development began, and the development cycles became shorter and shorter. The development process towards the personal computer for office and household founded a new branch for the whole industry. This made it possible to further increase the efforts to achieve automation and rationalization during this period [157].

The fourth industrial revolution has been present in the companies since the beginning of the 2nd decade of the 21st century and describes the desire to intelligently network production machines and processes with the help of information and communication technology. Since then, it has been tried to implement the following options in companies [219]:

- *Flexible production*
  Many businesses are involved in the production of a product, each of which contributes to the product's creation step-by-step. When these steps are digitally networked, coordination between each step improves, and the utilisation of the machines can be better planned.
- *Convertible factory*
  In the future, production lines will be created in modules. They can be swiftly assembled for a specific activity. As a result, production and cost-effectiveness improve, and individualised products can be manufactured in small quantities at lower costs.
- *Customer-centric solutions*
  Consumers and producers are becoming more intertwined. Customers can assist in the design of products based on their preferences; for instance, parts of sneakers can be designed uniquely and tailored to the individual shape of

a person's foot. Simultaneously, smart products which have already been delivered and are in use can communicate data to the producer. With usage data, the producer can improve product quality and provide new services to clients.

- *Optimized logistics*
  Algorithms determine efficient delivery routes; machines report independently when new material is required - smart networking ensures an optimal flow of commodities.

- *Use of data*
  Data from the manufacturing process and the condition of a product are combined and analysed; the data analysis provide further guidance to improve efficiency in product manufacturing. The use of data also advances the manufacturing process and serves as foundation for entirely new business models and services. Elevator manufacturers, for example, can give their clients "predictive maintenance," where the elevators are outfitted with sensors that continuously transmit data about their state. Wear & tear can be detected, recognized and remedied before it reaches a failing point.

- *Resource-saving circular economy*
  Products are considered data-driven throughout their entire lifecycle; their design dictates how the materials used can be recycled.

Industry 4.0 thus influences the entire value chain in terms of organisation and control. Important for the use of Industry 4.0 is the real-time data exchange across all the processes involved in a good in the value chain as well as the optimal implementation of the value flow with filtered data at any time. Dynamic and real-time-optimised as well as self-organising cross-company value-added networks are formed by connecting people, objects, and systems. These networks can be optimised based on many factors such as availability, cost, and resource consumption [183]. The central importance of Industry 4.0 is not computing, but the use of the Internet. The globalised networking of companies will raise the quality in the digitalization of production [219]. The coordination of individual production processes is still centrally managed or monitored today. In the future, such processes will be autonomously controlled by the adaptable value chain [186].

Industry 4.0 is essentially characterised by three characteristics:

- *Vertical integration*
  The network and integration functional area includes cross-divisional cooperation within the company and cross-company cooperation in value creation networks [3]. The end-to-end application of information technology is essential for the vertical integration in the value chain. What is needed is a common database with identical terminology and a uniform language code between product development and production engineering [17]. The wireless real-time communication is generated by the so-called Cyber-Physical-System (CPS). The optimization of these systems works completely independently [297].

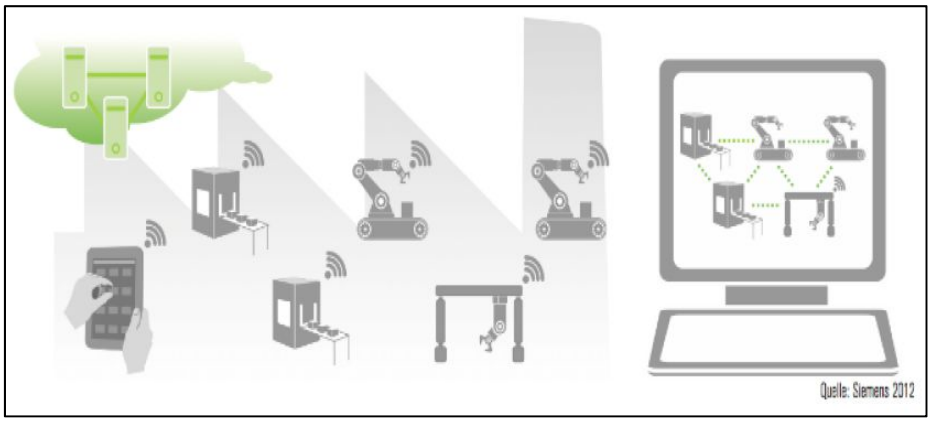


Figure 7.6. Vertical integration and networked production systems [35]

- *Horizontal integration:*
  The application of this integration extends to the entire value chain and is built on vertical integration. Technical processes are integrated into cross-company business processes [28].

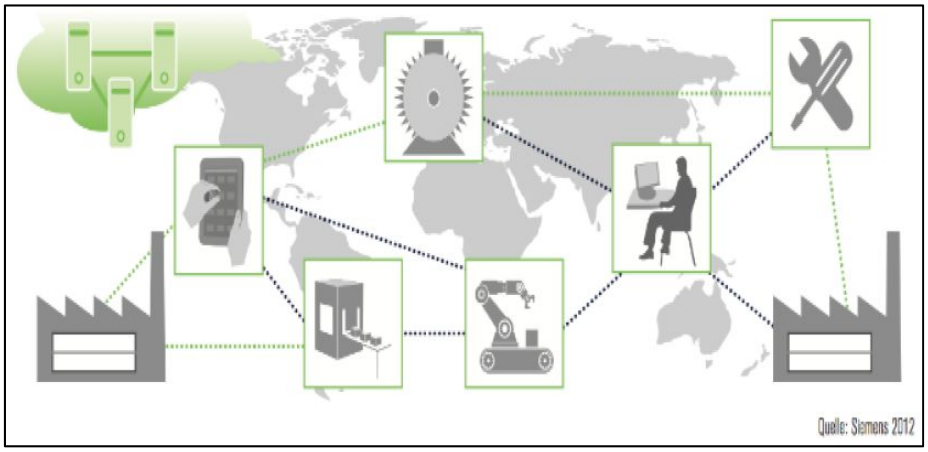


Figure 7.7. Horizontal and networked production systems [35]

- *The consistency of engineering across the entire value chain:*
  By optimizing the value chain by the end-to-end digital connection of system engineering, customers will be able to determine functions and components more individually in the future. Depending on a CPS system, model-based development is designed to create a methodology that implements customer requirements, product characteristics and manufacturing. The development of the product system is based on the same structure as that of the end-to-end engineering tool chain and can thus be better coordinated with the product development [35].

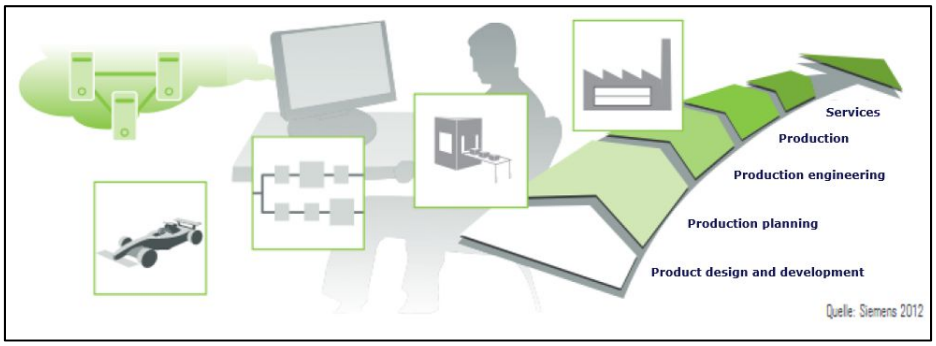


Figure 7.8. Engineering across the entire value chain [35]

7.2.2 Technological focal points of the 4th Industrial Revolution

Industry 4.0 technologies connect people, objects and services and are responsible for automating value creation.

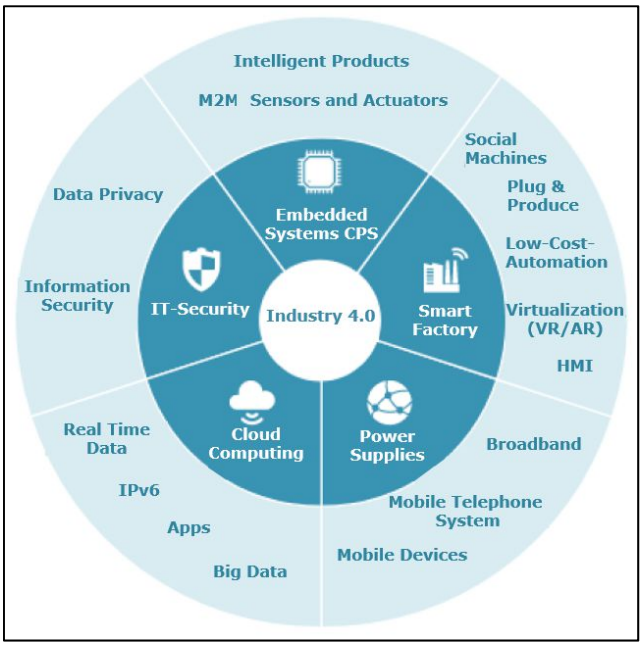


Figure 7.9. Technology fields of Industry 4.0 [24]

7.2.2.1 Cyber-Physical-Systems

The technological innovation of cyber-physical systems enables the integration and networking of the virtual with the real world, thus creating options to define new business models. Internet-based networking allows complex infrastructures to be controlled and coordinated. The data transfer or communication between the individual systems is ensured completely wireless, autonomous, in real-time and can even be optimized independently. Embedded systems could locate their

environment with the help of sensors, independently evaluate data and services, and control actors in the physical world. Communication between humans and CPS is carried out through multimodal human-machine interfaces and can be controlled voice-controlled or via touch display. In the future, it should be possible to control the system by gestures. By creating CPS platforms based on the three perspectives of the Internet (Internet of Man, Internet of Things and Internet of Service), the intelligent environment can be connected. Smart Grid, Smart Home, Smart Building or Smart Mobility refer to the connection between the three worlds (Internet) [17].

The characteristics of the CPS platforms are marked by [35]:

- flexibility and rapid integration of other CPS software, services, or applications,
- App Store similar structure of business processes in terms of commissioning and primitive distribution,
- business processes become reliable, secure, and complete,
- electronic aids such as sensors are reliable and safe,
- compatibility with mobile devices,
- support for common processes such as production processes.

Radio Frequency Identification (RFID) is now used for the networking of people, machines, services, or equipment and is indispensable in Industry 4.0. RFID has the advantage that the deposited data can be stored, localized, and uniquely identified. RFID transponders are often used in production lines when it comes to data transfer and communication between the individual machines, goods, and services. Such transponders can be included in objects and can therefore be traced back. Machine data can now be read out and status messages forwarded directly [240].

7.2.2.2 Internet of Things and Services

The Internet has become increasingly important in recent years. It serves as an exchange of information or communication and as an interface for entertainment. The fields of application are wide-ranging and can therefore be operated by various media. Through further development in the fields of electrical engineering, radio and network technology, interactions with other objects can be established by implementing sensors. Artificial intelligence is intended to enable autonomous action in conjunction with the competences of the actors, such as valves or switching relays, with the introduction of sensors that reflect state perception and enable autonomous action. The aim of the social network of machines and objects is to achieve an overall optimum in terms of lead time, quality and utilization [24]. Humankind is relieved and supported by these technical innovations [208]. In the future, more than 50 billion devices will be equipped with web access and will have the following characteristics: they are individually, identifiably, and intelligently designed. The provision of the new Internet protocol, Internet Protocol Version 6 (IPv6), is intended to enable the networking of intelligent objects. The capacity of 340 sextillions addresses offers enough space for this [10].

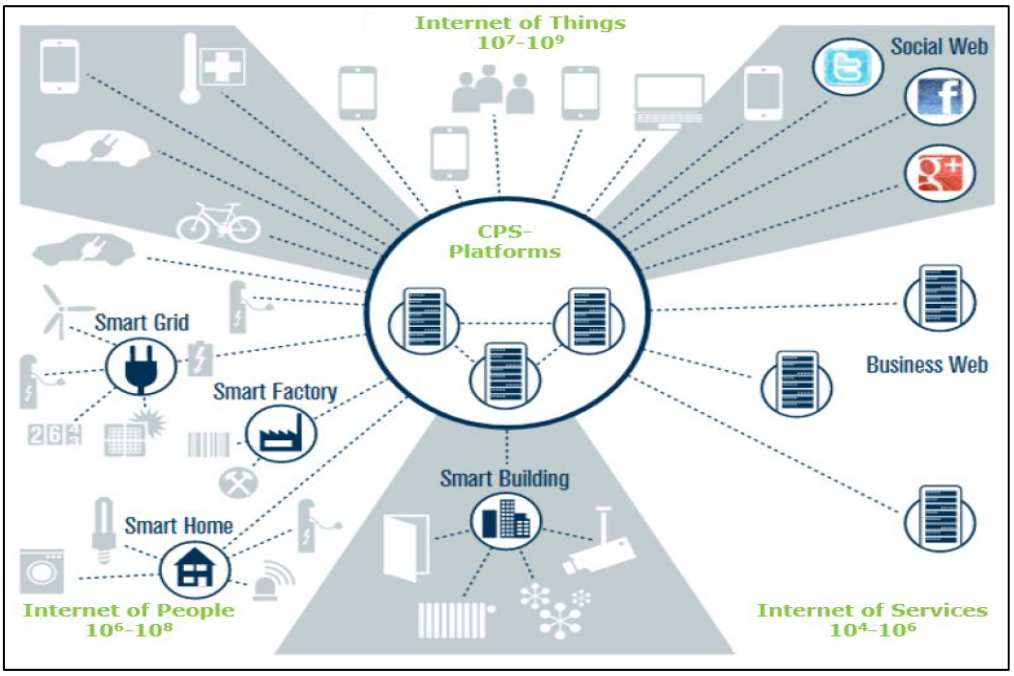


Figure 7.10. Internet of Things and Services [35]

7.2.2.3 Cloud Computing

Cloud computing, or big data, forms a platform for storing data, offering applications (apps) and running applications on the intranet or the Internet. The intelligent objects, products, machines, and internal ICT systems are connected to the cloud via communication networks. The capacity of cloud computing is greater than the capacity of conventional, operational servers. This means that data can be made available across companies as well as in-house. The central management of the application as well as the storage are available to each user at the same time and can rely on up-to-date data and information [24].

7.2.3 Success factors of Industry 4.0

The main characteristic of Industry 4.0 is digitalization and networking. With the further development in the fields of information and communication technologies in industrial production, the real world relates to the virtual one. Humans are now connected to machines and the individual processes and the data exchange takes place in real time. The result is a sustainable change in the existing industrial processes and thus enables the development of new business processes and innovations. The following success factors are important for the implementation in industry [160,194]:

- *The customer*
  The customer, who is becoming more and more prominent, is indispensable. The design and production are geared to the requirements of the customer, which is intended to generate a higher benefit in terms of customer value.

- *Industrial development*
  It is impacted by the ability to derive optimal value flow from data at any time and the availability of all necessary information in real-time. This is a result of the networking of all instances participating in the value chain.
- *Vision and technology*
  With the introduction of Industry 4.0, older technologies are becoming less and less important and are being replaced by novel and innovative technologies. With the help of a technology portfolio, the technologies used can be compared with those of the future and measures regarding appropriation, new acquisition and relevance can be derived.
- *Production/Value Added*
  The provision of data within a value chain must be carried out with maximum efficiency. In order to reduce resource consumption and machine optimization, the type of value creation must be made as transparent as possible, digitized and the control system linked to real-time data.
- *Business procedures*
  In order to be able to fulfil a timely delivery of a product, business processes must be correctly coordinated.
- *Skills*
  Due to future-oriented digitalization, machines are going to be intelligent, networked with each other and digitally controlled. Accordingly, employees must have the necessary capabilities to be able to programme, control and run the machines.
- *Business model*
  In agreement with the previous experiences concerning the history of the industrial revolution, it can be assumed that new business models can be developed and created again by integrating and networking the real world with the virtual world.
- *Leadership*
  Hard factors such as manufacturing costs and lead times of an order, as well as soft factors such as image, and actions will continue to have an impact on the company's success. Industry 4.0 is characterised by a process-oriented delegation of competences and responsibilities. Leadership must therefore be more cooperative.
- *Networks*
  The rapid development of technology requires the formation of cross-company networks and cooperation to solve problems.
- *Organization*
  Companies must choose between a broad corporate organisation and off-site strategic partnerships.
- *Implementation*
  When implementing Industry 4.0, it is not a project, but a process that is constantly adapting.

7.2.4 Funding situation

EU investments in research and innovation also provide funding for digital technologies and specific issues in the European agriculture. Within the second pillar of the central funding programme Horizon Europe (see sub-section 2.2.3.2) with a total funding budget of EUR 95.5 billion for the period from 2021 to 2027, around EUR 15.4 billion is available in Cluster 4 for the funding of digital technologies within the funding period up to 2027. Cluster 6 of the second pillar addresses agriculture directly. Around EUR 9.0 billion in funds are available for financial support for research and innovation topics during the funding period [109].

In addition, the development of digital technologies is also funded nationally. In Germany for example, the development of Industry 4.0 is supported with additional subsidies. The Federal Ministry of Education and Research has a budget of EUR 470 million for this purpose, which is spent through thematic funding programmes. Further funding is provided by the Federal Ministry of Economics. A total of EUR 80 million will be made available here [36]. Innovative SMEs will be explicitly supported by special support programmes [37]. Figure 7.11 outlines the formal application process for receiving funding.

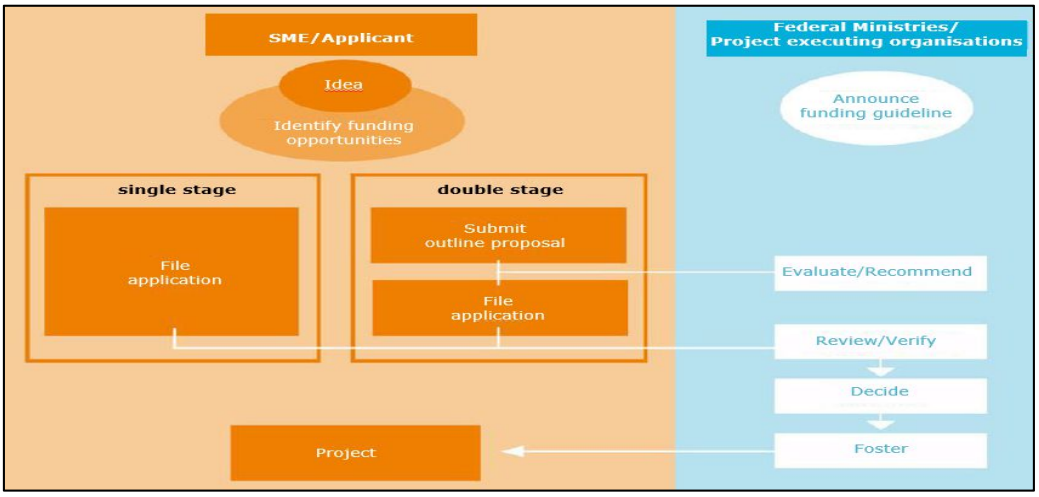


Figure 7.11. The way to funding [36]

7.3 Industrialisation of agriculture

The industrial development of agriculture, like the industrial revolution, can also be divided into four phases. The most important development steps from mechanization to the current digitisation are shown below.

7.3.1 The stages of development in agriculture

Agriculture has also undergone several steps in its development in recent centuries. Figure 7.12 shows an overview of the main steps in its development.

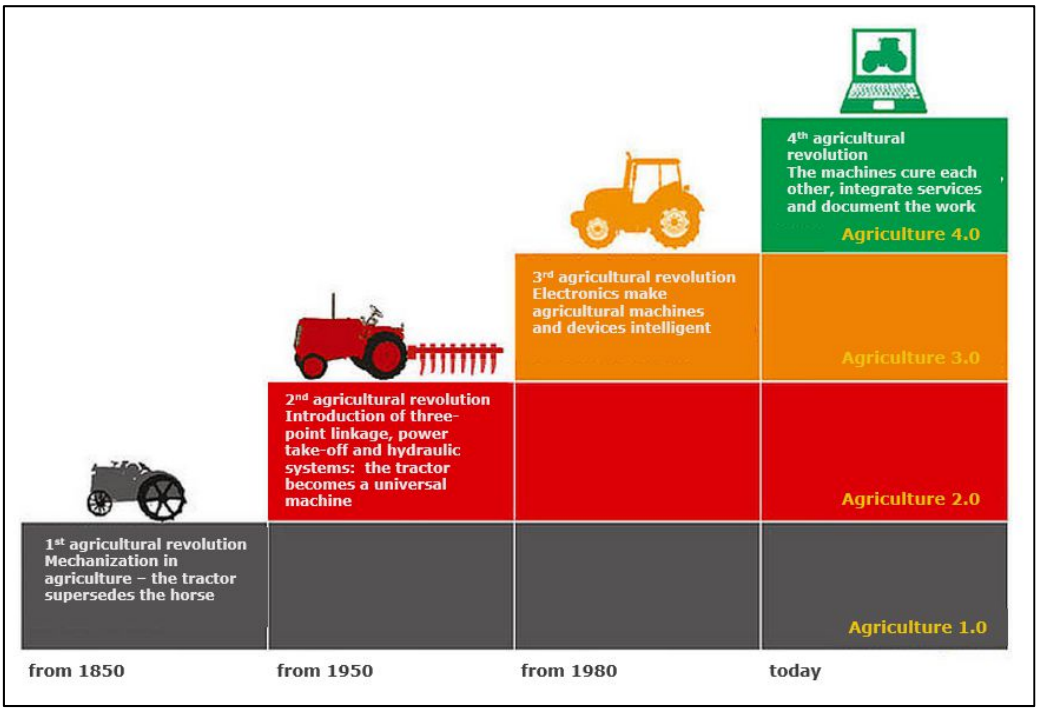


Figure 7.12. Stages of agricultural development [59]

In the middle of the 19th century, the steam tractor supported the previous working method by means of draught animals. Agriculture began to be mechanized [16].

In the course of this mechanization, for example, new fields of work were created with the industrial production of agricultural work equipment. However, due to the low efficiency of the mechanical work equipment, manual drives, towing animals and horse and cart techniques still dominated the daily work processes during this phase. Steam drives were mainly used stationary to process the quantities previously produced by hand in the mobile areas [190].

From the middle of the 20th century and with the introduction of the internal combustion engine, mechanization has also extended to the mobile areas. With the introduction of the standard tractor, the production processes were made more efficient and the overall production yield has increased. Electric drives supported the optimization of stationary areas. In this context, the demand for energy has increased significantly, sometimes by 20 times. However, the expansion of mechanisation was accompanied by a significant decline in employment. In this respect, agriculture has lost its previous social importance [190].

In the 1980s, the use of microelectronics and information technology enabled the computer-aided control of process sequences. This precision farming was the first approach to combine such processes and to coordinate them regarding the use of raw materials and other production conditions. Diagnosed performance data collection in animal husbandry to optimise treatment measures and animal feed use, as well as the development of the milking robot, drove automation with the associated efficiency gains [190].

In the course of general digitisation, the companies were able to network their

machines used, including service integration and work documentation, and to enable the fusion of precision farming and digital decision support. Examples of digital decision support would be agricultural apps, information systems and digital marketplaces. The areas of precision farming cover the areas of automation, agricultural robotics, and sub-area management. Platform-compatible objects can be used to connect the technological trends and thus provide a network within Agriculture 4.0 [158].

With the digitisation of the entire agricultural value chain, there is also the possibility to reconcile economy and ecology in this sector more strongly than before [170]. By simultaneously optimizing work processes and the use of resources through the increased use of sensors, location determinations, optical recognition systems and data visualizations, farms are able to monitor and supply livestock automatically, manage arable land more precisely and produce the associated production documentation [1].

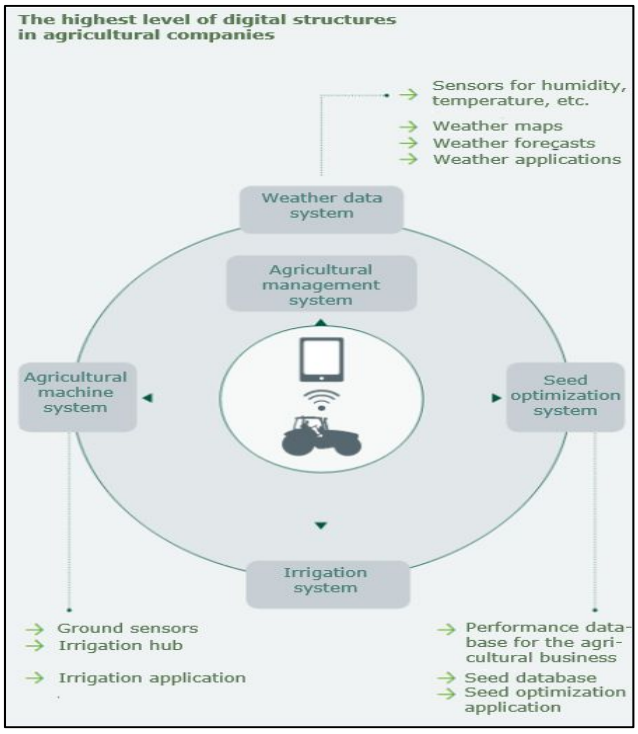


Figure 7.13. Digital structures in agricultural companies [1]

7.3.2 Barriers to the implementation of digitisation

In operational practice, barriers remain in order to cope with the implementation and to be able to make full use of the digitisation potential.

The main obstacles can be described as follows [1]:

- *Analogical agricultural technology*
  The importance of tractors in the agricultural sector is great. The average age of tractors is 27.5 years. Due to the long lifespan and the high investment

costs of tractors, it is usually not possible to connect older machines due to their lack of technological standards.

- *Lack of media literacy*
  In order to master technological innovations, continuous training of farmers is required. Many farmers cannot or do not want to provide the necessary energy or efforts and time.
- *Deficits in the infrastructure of telecommunication*
  Especially in rural areas, there is no comprehensive and modern structure of telecommunication, which is indispensable for the digitisation of agriculture. For this reason, the digital application is still being developed in its application in terms of possible cost savings and resource efficiency and can therefore only be used to a limited extent at the moment.
- *Uncertainties in operational data protection*
  In agriculture, large amounts of data are processed, linked, and coupled with automated processes to support and make decisions in production processes. An adequate security of these data is not always guaranteed at the time being. But it is precisely this security that is essential for a successful implementation of these data.
- *Dealing with big data in agriculture*
  In order for raw data to be processed from the amount of data collected in Agriculture 4.0. these data must be collected, bundled, and organised in a standardised manner and made accessible – authorized by the owner. From this knowledge clear recommendations for action can be derived through the meaningful link, analysis, and interpretation. Digital insular solutions must be avoided.
- *Isolated solutions*
  Many digital applications offered in agriculture are usually not cross-user or network adaptable. These methods are isolated solutions. By using standards and interfaces, they would be circumvented so that farm management can make better use of, and the potential of digitisation remains.

7.3.3 Prospects for success for digitised agriculture

In the digitisation of agriculture, the application of cyber-physical systems is also used in order to optimize the respective work processes and to increase productivity and improve quality. Electronics and information technology are integrated with machine systems and locations. Captured process and machine data is routed to a server, evaluated, and then made available to all stakeholders in real time [220]. RFID technology is intended to enable the identification and localization of animals and objects. RFID technologies are currently being extensively tested in operational use [1].

Tracking transmitters and Bluetooth-technology support data transmission. Special apps can then collect and evaluate this data on a smartphone, tablet or computer [1].

The use of the Internet (of things) in the context of digitisation offers many opportunities for optimization, especially for agriculture. For example, tracking collars enable health and safety control as well as feeding control in the context of livestock farming. The use of drones reduces the spread of diseases in plant production by enabling continuous monitoring of crops with permanent data matching through

surveillance flights [189].

The development of the current rural infrastructure is essential for rapid data transmission. However, continuous data collection and processing requires the use of cloud computing. Especially the use of drones to detect the most diverse parameters such as air and soil moisture, requires enough storage space. Cloud computing offers this space to a sufficient extent. At present, there is still a need for action with regard to data security that is in accordance with the usual standards. But solutions to this are foreseeable soon [198].

Environmental influences, farm resources and training are the main success factors in agriculture. Competitiveness will be maintained either through cost leadership or expansion and growth, or through differentiation in terms of regional brands, organic products, and the like. Digitisation and precision farming enable farmers to increase their competitiveness by enormously increasing their efficiency as a result of networked process optimizations. In this context, operational resources and training are becoming increasingly important as factors for success [174].

7.4 Conclusion

Digitisation provides many benefits in terms of increasing efficiency, real-time data transparency, and maximizing profits. The companies of the future are smart and are linked to platforms or apps. In this way, all processes can be digitally recorded, released for analysis purposes, and presented to all actors in the value chain. The form of 'The Internet Protocol Version 6' provides enough space for smart object networking.

In Agriculture 4.0 or also called smart farming, the implementation of digitisation has not yet progressed in comparison to the entire industrial sector. However, the degree of digitisation in agriculture will continue to increase. CPS is already being used in farms to locate and clearly identify livestock. Drones are increasingly being used for data collection of a wide range of data parameters and for pest control. Tractors are increasingly involved in networked processes.

High investment costs, compatibility problems, uncertainties regarding data security in cloud computing and infrastructure that is not yet sufficiently and widely available are hampering further development. However, the expansion of digitisation is not the focus of CAP's current funding policy. Increasing the focus of support on technological development would certainly help to increase the overall competitiveness of farms and to address market distortions created by the existing support policy.

However, in order to develop a sustainable agriculture and to achieve essential objectives of the CAP, such as the provision of a wide range of good quality services at affordable prices, the income security of farmers and, last but not least, the preservation of producer diversity, needs special support concerning measures that only organic farming can offer. Spending public money essentially only on public services, not neglecting the further technological development of agriculture, must be the basis for reforming the current system. Otherwise, existing developments in the current farm extinction, negative impacts on the climate, the environment, biodiversity, animal welfare, soil, water, and health protection cannot be stopped. So, such a development would end in the failure of the CAP’s main objectives. Few suppliers could ultimately produce few products at inflationary prices, of moderate or poor quality with significant adverse effects on the environment, and they would decisively determine the diet of the population.

8 SUMMARY, PERSPECTIVES FOR THE FURTHER DEVELOPMENT OF THE RESEARCH AND PERSONAL CONTRIBUTIONS

In order to get an overview of the thesis, the contents of the main chapters are described in this chapter. Furthermore, possible future research perspectives are outlined and finally the personal contributions of the author are pointed out.

8.1 Thesis summary

Chapter 1 of the present work serves as an introduction. This introduction provides an initial overview of the current funding situation in Europe and its impact on particularly agri-SMEs and thus introduces the reader to the problem. Nevertheless, the set research goal, the problem and the research methods used, as well as the overall approach are explained in a comprehensible and detailed manner.

In the second chapter, the existing European funding system is described and analysed in detail. First of all, the growth strategy, the objectives of European subsidy policy and the integration of agricultural subsidies into the European subsidy system are presented. In addition, the composition of the EU budget, the application of the multiannual financial framework and the financial instruments used are explained as essential components of the European financial structure before the structure of the common agricultural policy is finally explained on this sub-aspect. This is followed by an analysis and description of the valid approval and decision-making processes. In particular, this part of the chapter describes the administration and allocation of subsidies, the criteria to be observed by the applicants and the decision-makers in the processes. Finally, the chapter provides an insight into the control and monitoring of granted subsidy payments in order to ensure their effectiveness, before it concludes with the presentation and analysis of the announced system adjustments for the new funding period.

Chapter 3 uses the example of German agriculture to show the effects of subsidy payments on farms and their economic environment. To illustrate this, statistical data from German farmers for the years 2000-2014 were evaluated and analysed. In detail, the development of the subsidy payments in total and according to the acreage, the development of subsidy payments and the profits generated according to the company size, the development of the number and size of farms, the influence of subsidies on organic agriculture, the price development of the procurement and sales markets, as well as that Farmers' investment behaviour are shown. In the second part of this chapter, the systematics and effects of CAP presented so far are compared with the subsidy methods of US agriculture as a comparable agricultural market. For this purpose, there is an introduction to standardized key data and a historical analysis of the US agriculture’s development and its system of subsidization. This is followed by an analysis of the impact of subsidy payments, particularly with regard to the competitiveness of agri-SMEs and on organic farming. The chapter ends with a list of comparative key data between European and US agricultures and an analysis of the extent to which negative developments in US agriculture that have already been experienced can be expected for European

agriculture if the development of the CAP remains unchanged.

Chapter 4 gives an insight into the importance and historical development of Romanian agriculture. In addition to data on the development of GDP, land use, the products produced and exports, the infrastructural conditions and operational structures are also described and analysed in detail. Furthermore, the procurement and sales markets accessible to the farmers, the investment behaviour of the farmers and the importance of organic farming are considered. The acquisition of agricultural land by foreign investors and the resulting concentration processes in farm structures are dealt with in detail in this chapter, too. The chapter closes with an analysis of the development of agricultural subsidies from 1991 to the present and their impact on agricultural holdings.

Chapter 5 provides an in-depth analysis of the impact of the current CAP on farms, market participants, consumers, and European society as a whole. Key figures to achieve a better understanding of the reader with regard to farm structures per member state, scope, amount and allocation of subsidies granted per source of funding, the effects on the current concentration process in farm structures, the remuneration of agricultural work, the development of land prices, the impact on the Biodiversity, the use of pesticides and fertilizers, organic farming, animal husbandry and animal welfare, the climate, world trade and, last but not least, human health and social justice are shown and assessed.

Chapter 6 provides a comprehensive and in-depth analysis of agricultural subsidies and their impact on market participants. Based on a developed questionnaire with 39 questions in 4 categories, especially for agri-SMEs are highlighted and assessed. For comparison purposes, the survey was carried out in the Westmünsterland region in Germany and in the Banat region surrounding the city of Timişoara in Romania. The importance of agriculture in both regions is also briefly described in this context. The survey results are analysed, assessed and presented individually in Chapter 6, i.e. for each survey as well as in a comparative way. The relevant key findings and the best or worst ratings of the farmers surveyed are also dealt with separately. The chapter closes with a critical appraisal of the research results against the background of the current European subsidy policy.

Chapter 7 describes the basic possibilities and the current importance of digital applications to enable agri-SMEs to survive in an increasingly concentrated market and to reduce European agricultural subsidy payments in the medium to long term. For this purpose, the essential constraints of the current competition theory to which a company is generally subject to the market are described and explained in compact form for a better understanding. In the further course of the chapter, the historical development of the industrial revolution up to today's Industry 4.0 and the necessary success factors are examined. This is followed by an analogous consideration for the agricultural sector. Chapter 7 ends with a comparative analysis of both developments and an assessment of the extent to which digital applications are already suitable for enabling agricultural businesses to survive on the market.

Chapter 8 summarizes the contents of this dissertation chapter by chapter. In addition, five possible solution models for the future financing of the CAP are described in order to be able to use the funds more purposefully and adapted to regional needs. These models should be examined by further research for their suitability and feasibility.

Furthermore, the research results are checked for their validity by updating essential characteristics. Finally, the personal contribution of the author within this thesis is summarized, briefly.

8.2 Outlook into future optional funding models for future research

Subsidies in agriculture are still of great importance, especially for agri-SMEs. However, the current subsidy system does not particularly support these farms. On the contrary, the predominant direct payments under the first pillar of the CAP will increase the support given to large agricultural enterprises. Agri-SMEs lag behind in this competition and are constantly disappearing from the market [197]. This unbalanced funding between pillars one and two of the CAP does not only fail to stop the death of farms and permanently prevent it, but also inhibits the development and establishment of sustainable agriculture based on organic farming. Measures to strengthen animal welfare, climate, soil and water and health protection cannot be adequately financed by the substantial second pillar funds allocated to this purpose [29]. The changes of the CAP concerning the new funding period, which is due to end in 2027, although sustainability aspects will generally be strengthened, will unfortunately not lead to a significant improvement in the overall situation in European agriculture. Too many exceptions for farms and too much room for manoeuvring in terms of implementation by the Member States, as well as the continuing imbalance between the two funding pillars of the CAP, do not describe a real change in the course of support policy and are not able to eliminate the negative shortcomings mentioned above. [105,106,172,215].

But what approaches are there to make agricultural support fairer and environmentally sustainable in terms of competition? Obviously, this requires a significant financial strengthening of the second pillar of the CAP to the detriment of the flat-rate direct payments.

The following design models can be derived from this measure, which are described in qualitative terms below.

1. The limitation of the funding level in favour of agri SMEs.
   In this case, it would be conceivable to grant direct payments only up to a defined size in favour of agri-SMEs. Thus, funds saved could then be used to increase the funding per ha. Alternatively, the saved money could be used to improve the financing of the second pillar. Such a measure could be implemented immediately and without great costs.

2. Increased funding for organic farming products
   Also, in this respect it would only be necessary to reallocate funds between the two pillars. This could be achieved by reducing the amount of aid per ha for conventionally produced goods for the benefit of a preferential support of organic farming. The implementation could also be carried out in a timely manner. However, an increased administrative burden would have to be expected and financed.

3. Needs-oriented support.
   The implementation of this model requires a high level of interdisciplinary cooperation. Nutritional science could be used to deduce what food a person would have to consume in order to eat healthily, depending on the level of development. Since the statistical availability of population patterns, it would

be possible to define quantity quotas and product types, which can contribute to the coverage of this particularly healthy diet. Furthermore, the production of the defined quantities of such healthy diet must be allocated to the farms that produce these needed products. The financial support should be granted depending on the size of the holding. In this process of such a financial support agri-SMEs must be privileged. The complexity contained in this approach is likely to result in high implementation efforts and administrative costs and will not be able to be implemented in the short term. That is because of the great need for coordination.

4. Exclusive funding of sustainable agriculture
   This thought model would require exclusive support through the second pillar of the CAP. To reach this aim, the necessary funds must be redistributed from the first pillar to the second pillar. In this way the objectives of a more sustainable and fairer agriculture would also be achieved with this model. However, farms would also have to be granted appropriate transitional periods during, which they could switch from the conventional production of food to organic farming. Therefore, this model could only be implemented in a medium-term period, with a rather constant administrative burden.

5. Promoting technical solutions to strengthen competitiveness
   The core of this model is the idea of providing special help for existing farms with the implementation of technical innovations. In particular, this means first providing a sufficient infrastructure (grid connection) and supporting the farms specifically in their need to get better access to the technology of digitisation within the framework of Agriculture 4.0. But still the associated costs and implementation time must be taken into consideration. Whereas a quick and successful implementation is dependent on the farmers' previous experiences. In spite of that, this type of support would not interfere with the system of competition. Small firms would be more focused on finding a niche and the large firms would continue dominating the market. Thus, production processes would be improved, and overcapacity could be reduced. However, this model lacks the component of a direct influence on the development of a sustainable agriculture. Improvements of this kind would continue to result only in the further development of existing production processes considering the market needs in demand.

The classification of all models described is shown in figure 8.1.

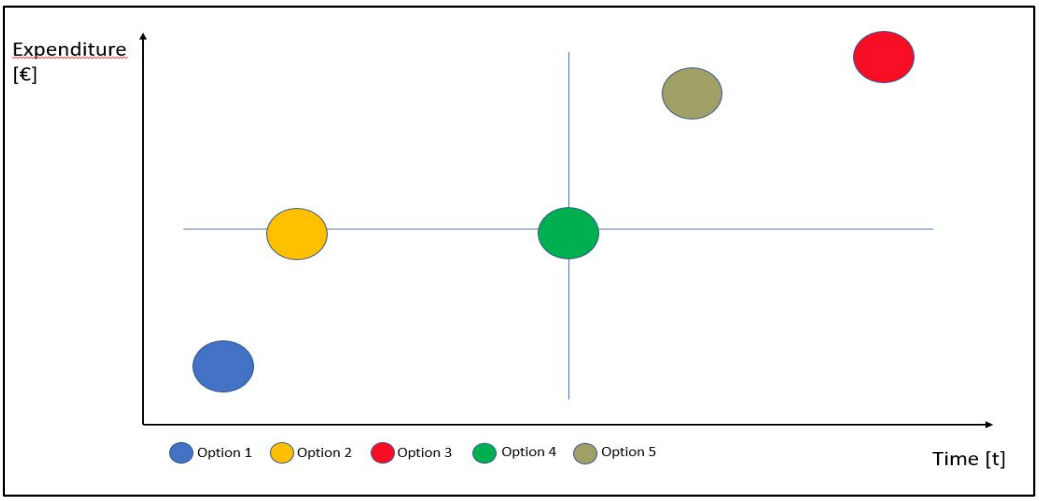


Figure 8.1. Qualitative model classification in terms of cost and implementation time

However, it must be observed in all considerations that the European society will have to choose how to farm in the future. This is a choice between keeping a form of agriculture with its predominantly industrial and cheap food production with all its known disadvantages shown in this thesis and starting to support traditional forms of ecological family farms and thus to preserve the natural landscape.

8.3 Validation of the research results under the influence of the current CAP

At the end of this elaboration, it is necessary to review the relevance of the research results obtained regarding the effects of the present CAP (period that will end in 2027).

For this purpose, the development of Romania, Bulgaria and Germany within the EU is examined regarding the economic performance of these countries and the development of the number of farms and their size as key indicators. In addition, a comparative analysis is made about the development of agriculture in the USA. The results of this analysis allow conclusions to be drawn as to which extent the situation of agricultural holdings and the effects of CAPs described in the preceding chapters has changed compared to the current CAP and whether the results, statements and derivations developed so far are still valid.

8.3.1 Economic performance

As key indicator for the economic performance we consider GDP per capita. Especially in the very agricultural countries of South-Eastern Europe such as Romania or Bulgaria, there is a close connection to the development of agriculture. Although the figures are declining, roughly a quarter of the Romanian workforce is employed in agriculture (see sub-section 4.2.1).

The statistical data [141] show a positive development from 2016 to 2021 for the EU in general as for the countries under regard, which was only interrupted in

2020 by the outbreak of the corona pandemic. In terms of absolute change, Romania records a very positive development of plus EUR 1,710 per inhab over the period under consideration. This value is well above the EU value of plus EUR 1,400 per inhab and the values of Bulgaria (plus EUR 780 per inhab) and Germany (plus EUR 680 EUR per inhab). This positive development is also reflected in the changed percentage data, which reveal an increase by 22.29% in Romania compared to Bulgaria with 13.20%, Germany with 1.96% and the EU with 5.3%. However, this clearly positive development has only a marginal influence on its status within the EU as a whole. In both 2016 and 2021, Germany plays a dominant role with around 131% and 127% respectively in relation to the EU value. Although Bulgaria was able to increase its share of GDP per capita of the EU from around 22% in 2016 to 24% in 2021 and Romania from around 29% to 34%, the situation concerning this indicator has not changed significantly for these countries within the EU.

8.3.2 Number of farms and farm size

A negative development regarding the number of landscape farms and a development towards ever larger farms have been identified as a significant change in the previous sections. The current statistical factsheets of the European Commission provide information on the extent to which the framework conditions of the CAP examined in the previous sections have changed compared to the present time. It has to be noted that the last data collection took place in 2016 [110,111,112]. Newer data are therefore not available.

For the EU [110], Germany [111] and Romania [112], the aforementioned trends are confirmed.

With around 1.8 million units a further 15% of farms disappeared from the European agricultural market between 2010 and 2016. Again, smaller farms up to 100 ha in size were mainly affected. By contrast, the number of farms with a size of more than 100 ha increased by 7% over the same period. The average farm size increased by about 3% from 14.8 ha to 15.2 ha [110].

A comparable development can be observed for German agriculture over the same period. Overall, the number of farms decreased by about 23 thousand to about 276 thousand. This corresponds to a decrease of 8%. In German agriculture, the number of farms with a farm size of more than 100 ha grew by 9%, while the number of smaller farms decreased by 10%. Analogous to the pan-European development, the average farm size of German agriculture also increased in the same period. With an increase of about 9%, the average farm size in 2016 was about 61 ha. [111].

For Romanian agriculture, a slightly different development from this trend is visible during this period. The number of farms in Romania as a whole fell by 13% from around 3.9 million to 3.4 million. However, this development mainly affected small farms with a holding size of less than 5 ha. Farms up to 30 ha in size increased in number by 8%, while the number of larger farms with a farm size of 100 ha or more also fell by 10% to 12.3 thousand. Despite this slightly different development, the average farm size increased overall by 18% from 3.4 ha to 4.0 ha. Regardless of this development, the continuous decline in the number of farms, as well as the increase in the average farm size, still exists as a threatening trend for the agricultural development of Romania [112].

8.3.3 An update of the comparative look at the agricultural economy of the USA

A look at the agricultural economy of the USA in section 3.3 reveals that without fundamental reforms of the CAP, the trend towards fewer and larger farms will continue in the EU, too. The annual reports of the United States Department of Agriculture for the previously unconsidered years 2019, 2020 and 2021 show that the trends depicted in section 3.3 continued.

From 2019 to 2021 the number of farms declined by 17,150 farms to a total of 2,012,050, a decrease of almost 1%. In the same period the average farm size increased from 443 acres by a further 3 acres to 446 acres, i.e., an increase of 0.69%. [293,294,295].

8.3.4 Conclusion

The results of the updated selected indicators allow the conclusion that the general framework of the surveys carried out have not changed essentially thanks to the effects of the current subsidy policy. In addition the fact that the EU also publishes essential data on the development of European Agriculture to the middle of the last decade substantiates this assessment.

It should therefore be noted that the characteristics and boundary conditions examined in the previous sections, which influence the agricultural development of the individual holdings are still valid. Accordingly, the results and conclusions of the surveys carried out, as well as the prospects described in section 8.2, stress the relevance of this research topic.

8.4 Personal contributions within the thesis

The main contributions of the author to the present thesis are as follows:

1. Thorough description of the current European subsidy process and the given funding structure, as well as the adjustments from 2021 to 2027
2. Explanation of the historical development and current objectives of the CAP
3. Description of the European financial instruments and growth targets
4. Elaboration of a comprehensive analysis of the development of subsidies and their influence on the business structures of German farmers over a long-term period up to 2014
5. Presentation of the interacting market contexts and the resulting consequences to which farms have to assert themselves to on the market
6. Detailed description and presentation of the importance of US agriculture and subsidy methods such a comparative analysis of the CAP
7. Deriving analogies and deviations from both subsidy systems, especially with regard to the dangers of unchanged subsidy practices in the CAP
8. Presentation of the correlation between the current subsidy system and the existing market displacement of especially agri-SMEs

9. Compilation of an overview of the development, importance and subsidization of Romanian agriculture and presentation of its specific problems
10. Development and presentation of the consequences of the CAP on essential components of European agriculture and social life in Europe
11. Creation of a review of the importance of organic farming
12. Derivation of recommendation to adapt and reform the current system of subsidies without direct payments
13. Development of a questionnaire
14. Carrying out a survey in the Westmünsterland region and another survey in the Banat region to identify and assess the impact of the CAP on farms
15. Analysis and presentation of the survey results and their critical appraisal
16. Compilation of a comparative analysis of both surveys
17. Elaboration of conclusions and critical appraisals of the results
18. Development of a contextual reference to the CAP including a recommendation for future action
19. Presentation of the current state of development of digital applications in industry and agriculture
20. Thorough analysis with regard to the use of digital applications for supporting agri-SMEs in particular and for reducing subsidy payments in agriculture in the medium to long term
21. Development and presentation of recommendations for future research activities
22. Evaluation of the research results and conducting a review on their current significance

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