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Changes in Austria's agricultural structures since the accession to the EU in 1995

Abstract: *Since joining the EU in 1995, Austria has been subject to EU regulations including the Common Agricultural Policy (CAP). The opening of the markets to consumers and producers and the reduction of producer prices to EU level represented big challenges in the early years. Vast adaptation measures were adopted in Austria's agricultural sector and compensatory measures were financed by both Austria and the EU. The CAP, however, has continued to develop and the periodic new objectives, programs and measures also had to be implemented, thereby affecting the economy, agricultural and regional structures as well as landscapes. This article analyses the regional development of agrarian structures in the context of the historical CAP stages. Detailed regional statistical analyses of the Austrian situation have been carried out based on data from IACS and statistical censuses for the eight Austrian agricultural production zones, for specific years with sound and comparable data on development. Absolute numbers, rates of change and indices for specialisation and concentration for numbers of businesses, livestock and areas are presented to illustrate changes in Austria's agricultural structures.*

Keywords: *Agricultural Structures, Austria, EU-Accession*

Since 1995 the Austrian agricultural policy has been subject to the guidelines laid out in the EU's Common Agricultural Policy (CAP). In § 1 the Austrian agricultural law sets out profitability, productivity and the competitiveness of agricultural businesses, a farming structure as well as a settlement and maintenance of the functionality of rural areas as goals of its agricultural policy. Even before joining the EU social orientation and ecological components were also included (BGBl. Federal Law Gazette No. 375/1992 version of 03.03.2014). Since then the goals in the federal law have not been changed but the measures to attain these goals have been changed a lot. The great challenges of the accession to the EU were the reduction of producer prices to EU level and the opening up of the market both for the producers and the consumers. This resulted in comprehensive measures for adaptation and compensation with amendments to the details of agricultural policy measures. The periodic reformulation of the goals and measures of the EU CAP have formed the basis for national implementation since 1995 and have a profound effect on the development of the regional structures of Austrian agriculture (e.g. Kaufer et al. 2013) state that the economic and ecological development as well as the landscape of rural regions depend on the orientation of agricultural and regional policy).

This paper analyses structural and regional changes in Austrian agriculture since joining the EU. It aims to present the changes as tangibly as possible using annual rates of change as well as absolute figures.

Methods

EU agricultural policy as well as the development of EU agricultural structures as a basis for Austrian developments have been extracted in a research of literature and the main points illustrated. A concrete statistical analysis was carried out for the Austrian situation. The basis for these statistics was mainly provided by regionally aggregated IACS data from the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLUFW). This data only covers the subsidised businesses and not the total population of agricultural and forestry businesses. Nevertheless this does provide very detail annual data which is relatively up-to-date, something which is not provided by the complete inventory census of Statistics Austria. In 2010, however, 96% of the land used for agriculture, 93% of the permanent pasture, 98% of the organic businesses and 99% of the organic area were included in IACS (Schneeberger 2014). Depending on the availability of consistent time series the current situation is portrayed in absolute figures, annual rates of change and various coefficients for regional distribution and specialisation or concentration tendencies. The Herfindahl-Hirschman Index (Delago, Kück 2014) as a measure for the absolute regional concentration of a characteristic (here in the year 2013) is able to show concentration tendencies in deviation for the years 1999 and 2013. The regional factor (Müller 1973) compares regional changes in quota with changes in quota for the whole area over a particular time span and thereby territorial shifts in agricultural production.

Due to the availability of consistent data the period under consideration in the analysis is mostly 1999 or 2007 – 2013 with reference from the literature to the developments during the previous periods. The agricultural structure censuses of 1995 and 2010 from Statistics Austria are available for the purposes of differentiation according to types of economic activity. The regional survey was done according to main agricultural production sectors which are better suited to the different natural landscape prerequisites than, say, provinces (classification: www.awi.bmlfuw.gv.at/index.php?id=produktionsgeb&D=0 [3.3.2014]). The area data have always been interpreted without alpine pastures and meadows since there are no long term consistent figures for their comparison.

Agricultural policy frame conditions

The Common Agricultural Policy of the EU, with its more or less strict national scopes of action depending on the measure, has been stringently implemented in Austria since 1995. After the enormous challenge of EU accession with massive interventions into the agricultural policy for Austria the CAP was periodically developed and adapted to fit changes in the economic and social situation.

At the time of Austria's joining the EU the CAP was still being influenced by the MacSharry reform of 1992 which marked the beginning of producer subsidies (in contrast to producer price support) and introduced direct payments as well as accompanying set-aside schemes, environmental programmes and diversification in order to compensate for the significantly reduced guaranteed prices. As well as the improvement in the competitiveness of agriculture, the stabilisation of both market and budget were also designated as goals together with environmental protection (European Commission 2014).

Agenda 2000 was the next major reform. The concept of sustainability and the two pillar structure, which is still valid today, were introduced. Economic, social and environmental goals were explicitly defined. Producer prices were reduced further and other product groups included in the direct payment system (first pillar). The second pillar involved measures for rural development with environmental measures, amongst others, payments to disadvantaged areas as well as for modernisation and diversification. (European Commission 2014).

The CAP reform of 2003 brought further steps in the direction of competitiveness, market-orientation, sustainability and rural development. Decoupled from production, subsidies to farmers were introduced similarly to cross compliance conditions, the modulation of subsidy payments as well as subsequent simplifications of the market organisation measures.

The 2008 health check of the CAP led to reductions in direct payments. Climate change, water management and bioenergy became increasingly impor-

tant topics of the agricultural policy. The health check was the foundation of the CAP reform 2014-2020. This now increasingly follows a holistic approach with a complex calibration of the measures according to a hierarchical system of goal, priority, focus and measure. In the mid-term quantitative limitations will disappear, the two pillar model will be somewhat softened, for instance, through the “greening” measures in the first pillar and increased scope for action for the member states. Greater flexibility is being accorded to member states in the arrangement of the first pillar. Increased importance is now being given to education and innovation measures, cooperation, relief for small farmers as well as resource efficiency and social aspects in the second pillar (European Commission 2014).

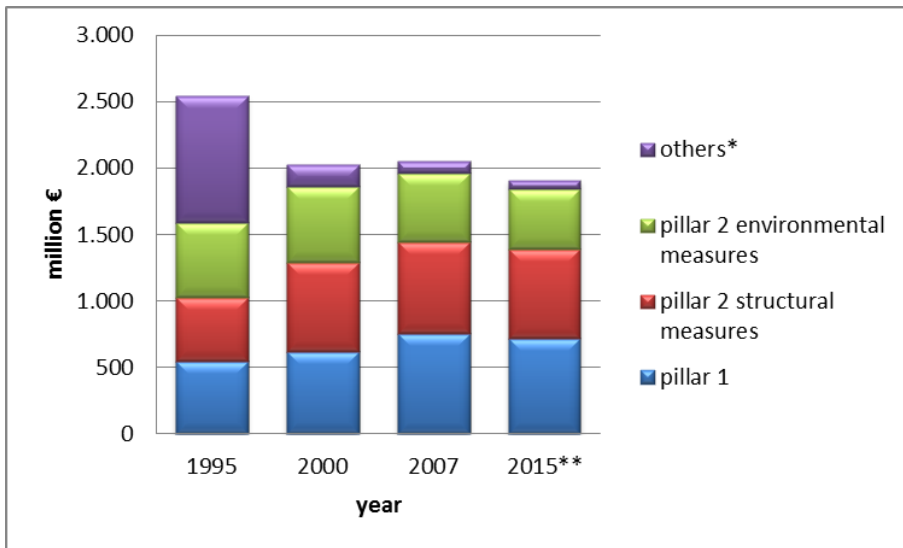


Figure 1. CAP Implementation in Austria during individual key years

* e.g. compensatory payments, market regulations

** provisional

Source: BMLFUW 1995, BMLFUW 2000, BMLFUW 2008, European Commission 2014a, BMF 2014.

The implementation of the CAP in Austria began in 1995 with the introduction of the transition measures set out in the accession treaty to the tune of € 0.85 billion per annum as well as the introduction of compensatory payments, environmental programmes and structural measures as the most important elements, coming to a total of € 2.5 billion (BMLFUW 1995). With the introduction of Agenda 2000 the subsidies came to a total of € 2.0 billion, whereby the amounts for environmental measures rose slightly compared to 1995, payments in the first pillar increased somewhat more and the structural measures of the second pillar were considerably expanded (BMLFUW 2000). In the year 2007, the first year of the next period, the subsidies came to € 2.1 billion with an expansion of the first pillar, a slight expansion of the structural mea-

asures in the second pillar and small cutbacks in the environmental measures compared with the previous period (BMLFUW 2008). At the beginning of the period 2014-2020 an annual sum of under € 2 billion is planned. Overall savings in funding measures are planned compared to the previous period; the distribution of the funds is now less clearly classifiable (greening in pillar 1, environmental measures in various priorities of pillar 2).

Goals of the agricultural policy and immanent conflicts of aims

The current period of the EU structural policy including the CAP would try to create as consistent a system of strategies, goals and measures as possible in order to avoid conflicts and to promote synergies – also to increase the efficiency of subsidies. In the Europe 2020 strategy (European Commission 2010) the priority of intelligent, sustainable and integrated growth was established. The concrete subordinate goals on employment, research and development, climate change and energy efficiency, education as well as poverty and social exclusion were formulated. At the next level down the Common Strategic Framework 2014-2020 (European Commission 2012) formulates 11 thematic goals that should bring consistency and integration for all cohesion funds.

A further level down the CAP, financed from the European Agricultural Fund for Regional Development (EAFRD), comes into play. It contains further guidelines with three general goals (viable food production, sustainable husbandry, well-balanced territorial development) and three interdisciplinary issues (innovation, environmental protection and climate change). The next level down formulates 6 priorities especially for rural development (knowledge transfer and innovation, viability of agricultural businesses, organisation of the food chain, ecosystems, resource efficiency, social inclusion and combating poverty), (European Union 2013). These in turn are divided into a total of 18 focus areas. It is only after this stage that concrete funding measures are mentioned which are now supposed to correspond to – or at least not contradict - a total of 41 goals, priorities, focus areas etc.. The example of the ex-ante evaluation of the rural development measures in Austria clearly showed how difficult it is to get all these interests and goals – which naturally do not always manifest one to one dependencies – under one roof. Some social goals are simply divergent and cannot be reduced to a single common denominator. Polarities apply, for example, to the balance between social aspects and efficiency criteria or also between economy and ecology. Kaufer et al. (2013) analysed the CAP's regulatory potential and attested that there were strong potentials in economy and ecology but only moderately strong potentials in the social field. They also point out that the goal formulations are not always congruent with the financial instruments.

Even the Commission papers themselves indicate immanent conflicts of goals (European Commission 2013a). For instance the support for competitiveness is aimed at large businesses, efficiency and marketing to obtain a good market

position against the very concentrated up and down-stream industries. On the other hand measures such as direct payments, subsidies for young farmers and certain simplification schemes are aimed at small businesses. In the same way there are different possible approaches to the subject of sustainability itself: large businesses use the advantages of size, can increase their investments in new environmentally friendly technology as well as minimise inputs and usage. On the other hand small businesses operate on smaller areas with probably a higher total diversity. Nevertheless they cultivate much less total surface area thereby limiting the overall positive environmental effects. The goal of intelligent, sustainable and integrated growth for rural areas should promote the desirability, employment and diversification in rural areas. Large businesses work with less labour force per unit of area and output and are therefore less important for the promotion of these aspects. In this respect conflicting goals also concern the increasing of productivity versus the creation or preservation of jobs. There is no clear solution to the question, for example, as to whether one would achieve more in the end with less costly measures but a wider level of acceptance than with very stringently targeted measures which often find little acceptance. A continuous monitoring and adapting of the measures and payments is necessary here.

Other polarities at various levels apply to market liberalisation tendencies versus market regulation tendencies, general liberalisation approaches versus nationalisation tendencies, structure preservation measures versus structure reform measures, globalisation approaches versus regionalisation/localisation or even “Eco social” versus “market radical” as Radermacher (2013) put it. Principally the question in agricultural, spatial planning and regional politics is with what intervention or fiscal measures are particular goals to be achieved efficiently and how is regional equity to be defined. If one strengthens growth poles with a strategy based on exclusiveness one can deploy funds very efficiently and expect positive dissemination and cumulative effects (Bökemann 1999, pg. 300). Alternatively one uses up front fiscal measures to aim at a spatial equilibrium and balanced regional growth since many studies have determined that regional disparities tend to increase if there is no state control. The marginal utility, however, of the funds deployed should generally be set lower (c.f. Bökemann 1999, pg. 405). In reality the CAP measures are a conglomerate of many of these aspects and have grown for the main part due to historical reasons. They pursue all kinds of interests and are difficult to put into one pot aimed at following only one goal and one theory. There is also the danger that existing payments be continued and legitimised with new justifications even if the original intention no longer actually exists as, for instance, is discussed by Tangermann (2014) using the example of direct payments.

Structural changes in Austrian agriculture

The structures in agriculture are continually changing due to economic circumstances, technical developments, natural landscape conditions, changing social and environmental standards and the political regulations. If, for instance, there

were still 68 consumers per farmer in 2000, in 2011 there were already 77 consumers per farmer due to structural changes. (BMLFUW 2013, pg. 31).

In the year 2013 the number of businesses with agricultural land came to 126,000 – the average land area per business was 19.0 ha. In the year 1995 there were still 224,000 businesses with an average land area of 15.3 ha (BMLFUW-IACS). This corresponds to an annual drop in the number of businesses of 4,300 (-2.34%) with an annual increase in size of business of +1.21%. This puts Austria below the EU average increase in size of business of +3.8% (European Commission, 2013a). Between 1980 and 1995 the average decrease per year in number of businesses was lower, namely -1.80%.

Comparing before and after joining the EU, there were clear changes in the differences between types of economic activity of the businesses (these figures are taken from the agricultural statistics of Statistics Austria 1980, 1995, 2010). In 1980 there were still 140,000 full-time farming businesses and 174,000 part-time farming businesses in Austria, in the year 1995 there were only 89,000 full-time farming businesses but still 150,000 part-time farming businesses (Statistics Austria 1995). By the year 2010 the number of full-time farming businesses had shrunk to 74,000 and that of part-time businesses to 94,000. This equals an annual rate of decline of the full-time farming businesses before EU accession of -3.16% and after EU accession of only -1.25%. In the case of part-time farming businesses the opposite was true, the rate of decline increased from -0.98% before accession to -3.07% after accession to the EU.

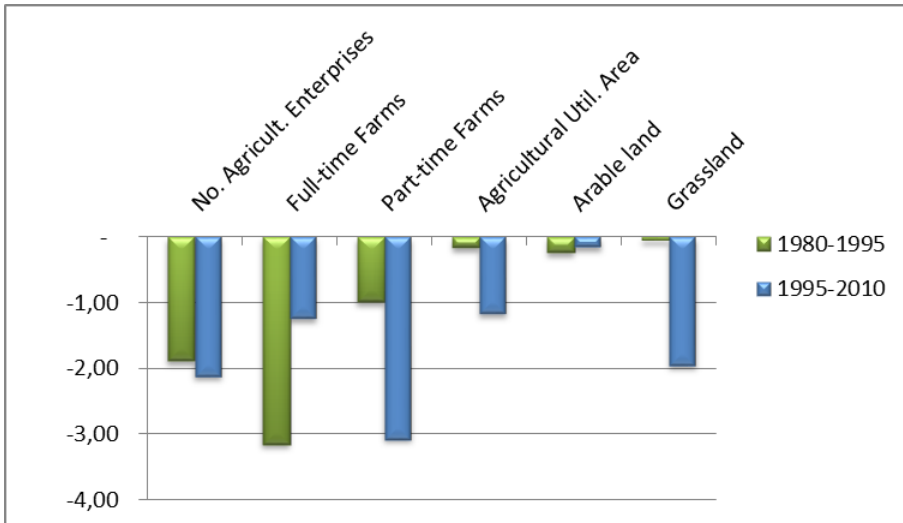


Figure 2. Average annual rate of decline in the numbers of businesses and hectare surface area, respectively

Source: Statistic Austria 1980, 1995; BMLFUW 2013a.

The total surface area used for agriculture declined between 1950 and 1995 by an annual -0.16% and between 1995 and 2013 by an annual -1.17% . Arable land and pasture land have, however, developed differently. While the rate of decline in arable land decreased after accession to the EU, it increased for pasture land.

In the year 2013 there were 93,700 livestock holdings with an average of 20.2 livestock units (LU) per holding recorded in IACS. In the year 1999 there were still 130,400 holdings with an average of 16.2 LU. This equals an annual rate of decline of -2.33% among the livestock husbandry holdings. The rate of change in cattle holdings was pretty similar before and after joining the EU, pigs and sheep holdings, however, displayed considerably higher rates of decline after accession, poultry farms on the other hand had a lower rate of decline. The average livestock figures per holding rose since 1999 annually by $+0.8\%$. The rates of decline in the livestock figures remained the same before and after accession for cattle, the number of units for pigs declined more after accession than before and in the case of sheep the rate of increase dropped in comparison to before accession.

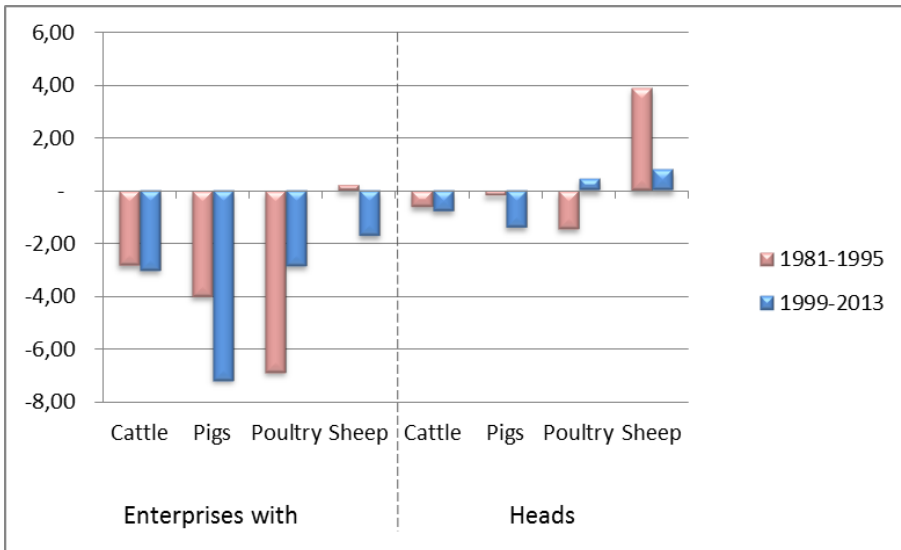


Figure 3. Average annual rates of change in the number of businesses and livestock

Source: Handschur, Wagner, 1997; BMLFUW-IACS 2013.

Regionally different developments since joining the EU

The structures in Austria's agriculture have also developed very differently corresponding to the very different geographical conditions in Austria. The average surface area of land per agricultural business ranges from 10.3 ha in high alpine areas to 39.7 ha in the North-Eastern Hills and Plains which are

dominated by arable farming. In the High Alps areas the annual rate of decline in number of holdings is only -1.0% compared to -3.8% in the North-Eastern Hills and Plains (c.f. Fig. 5). In total, therefore, some 3,500 holdings per year or 10 per day have stopped farming since 1999. This development is also reflected in the average sizes per holding. While an annual increase in size of land of only 0.33% per holding was recorded between 1999 and 2012 in the High Alps, this increase came to 3.73% in the North-Eastern Hills and Plains (corresponding to +1.1 ha per annum). The number of holdings with arable land is in particular decline, the number of farms with intensive grazing less so. On the other hand in comparison to 1999 the statistics of 2013 show more holdings with extensive grazing. Similarly in the case of organic farms – here both farms with arable land and those with pastures have recorded growth rates.

In the same way there are considerable regional differences in the developments of full-time farming and part-time farming businesses. In the year 1995 the ratio of full-time to part-time farms laid at 35 to 65, in 2010 it was 42 to 58. At both points in time the highest proportion part-time farming was found in the small structured areas of the south-eastern plains and hilly country and the High Alps.

Between 1995 and 2010 the number of full-time farming businesses declined by a total of -958 per annum (-1.29%), the number of part-time businesses by -3,737 (-3.07%). Both absolutely and percentually the strongest decline was displayed in the non-mountainous areas. The lowest decline was in the High Alps. In the Alpine Foothills and in the North-Eastern Hills and Plains the number of full-time farms is already only just in the majority albeit that when joining the EU in nearly all regions the number of part-time businesses still made up more than two thirds.

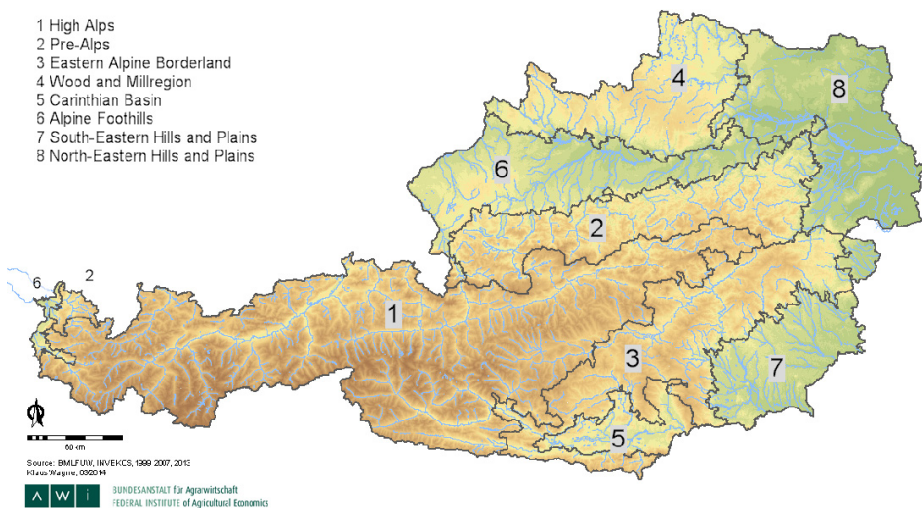


Figure 4. Agricultural Production Zones in Austria – overview

Agricultural Enterprises

Number of agricultural enterprises 2013, by agricultural production zones, without alpine farming areas

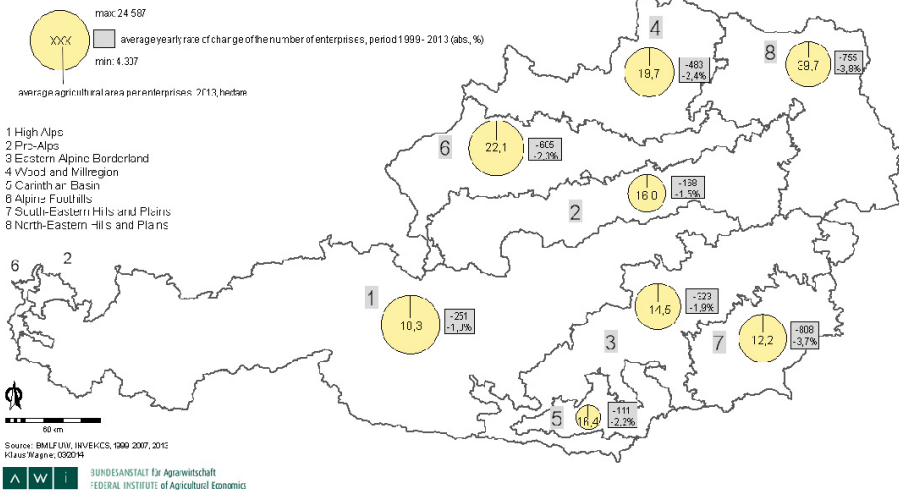


Figure 5. Businesses with agricultural land

The agricultural land in Austria is decreasing annually by around 10,000 ha (-0.42%) or daily by 28 ha. Percentually the strongest declines are again to be found in the small structured areas of the South-Eastern Hills and Plains (-0.78%) and the High Alps (-0.62%), the weakest with 0.21% in the North-Eastern Hills and Plains dominated by arable farming. Arable land is decreasing in Austria overall by an annual -0.17%, whereas permanent pasture is decreasing by -0.73%. However, while intensive pasture is only decreasing by -0.19% per annum, the rate of decline of extensive pasture (without mountain pastures and meadows) is only at 0.19% per annum. The decline is particularly prevalent in extensive pasture in the alpine areas with heavy cultivation difficulties. At the same time the intensive pasture is increasing in some areas (c.f. fig.6).

The majority of the organic arable land is located in the crop cultivation and mixed farming regions in the North-Eastern Hills and Plains (with 88,000 ha the largest absolute value), in the Alpine Foothills as well as in the Wood and Mill Region. The majority of the organic pasture land is found in the High Alps (with 85,000 ha the largest absolute value), the Alpine Foothills, the Eastern Alpine Borderland as well as in the Wood and Mill Region. Organic pasture land displayed an overall growth rate of +0.86% per annum between 1999 and 2013, the highest absolute growth was found in the Wood and Mill Region and the Alpine Foothills. Organic croplands grew annually by +8.18%, especially prevalent in the North-Eastern Hills and Plains and, similarly to pasture, in the Wood and Mill Region and in the Alpine Foothills (c.f. fig.7). There was a regressive tendency in the High Alps both in organic croplands and in the quite high proportions of organic grazing pasture.

Development of Agricultural Areas

Agricultural utilized area 2013, by agricultural production zones

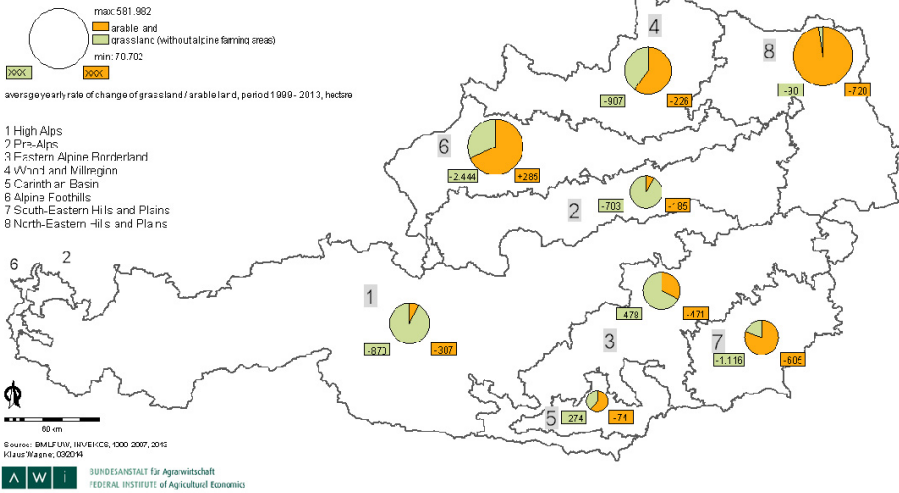


Figure 6. Development of agricultural land

Development of Organic Farming Areas

Organic farming areas (without alpine farming areas) 2013, hectare, by agricultural production zones

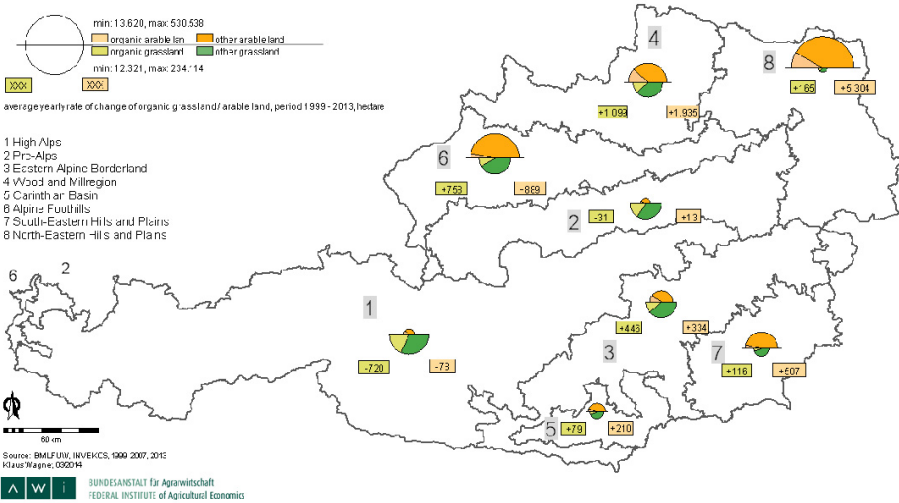


Figure 7. Organic Farming

The processes of change in farms, land-use and animal husbandry occur very differently regionally due to the different locational and structural effects. Independently of the individual absolute rates of increase or decline in agricultural farming the changes and displacements of production between the regions are of interest for a regional survey. The Herfindahl-Hirschman Index

as a measure for regional concentration in Austria identified for 2013 – considered according to main areas of agricultural production - orchards and vineyards, sunflowers, oil pumpkins, sugar beet and even winter wheat as having relatively high concentrations with values > 0.4 . Organic pasture is more regionally concentrated than conventional pasture, in the same way that organic arable land is more regionally concentrated than conventional cropland.

Compared to 1999, concentrations have increased for orchards but decreased for vineyards. Sunflowers, soybeans and also extensive pasture land are now somewhat less concentrated. The cultivation of oil pumpkins is considerably less concentrated than in 1999. The concentration in the case of organic pasture land has declined following land expansion in various different production sectors, however it has increased in the case of conventional pasture land since this proportion only increased in the alpine regions but lost out in all other regions. The concentration has increased in the case of organic crop cultivation because there was a lot of land expansion in the North-Eastern Hills and Plains.

In the case of livestock husbandry pig production has the strongest regional concentration by a long chalk, followed by poultry. Cattle husbandry has the lowest concentration, which has scarcely changed since 1999. Strong concentration tendencies are shown by pig farming and especially the keeping of horses with strong increases in the high alpine areas. Sheep and goat farming was much less regionally concentrated in 2013 than in 1999, with ups and downs in several areas of production for both.

Summary and conclusions

The statistical evaluations show in which sectors and regions structural changes occur more or less rapidly, where there are shifts, new emphases and changes in competitive relationships. It is not possible to make generalisations as to what influence agricultural policy, the market situation and the given topographic structures with their mutual interplay have on these changes. One would have to conduct work on individual sectorial and regional analyses. The agricultural and regional policy goals should be paired off with the following factors:

- The overall decline in the number of agricultural and forestry businesses in Austria are stronger than before joining the EU. There has been a structural change since accession above all among the part-time businesses in the non-mountainous areas and in crop cultivation which has led to an increasingly strong polarisation in Austria with relatively small pasture farms in mountainous areas (full-time and part-time businesses) and relatively large arable farms (emphasis on full-time farming) in the non-mountainous areas.
- Decline in area of agricultural land is occurring almost everywhere, increasingly in small structured areas such as the south-eastern plains and hilly

country and the high alpine regions. The decline is stronger in pasture land (above all extensive pastures) than in cropland.

- The most commonly occurring crops in Austria are wheat, grain maize, fodder maize and silage maize, barley, depending on region also soybeans, winter rape and sunflowers. Since joining the EU the cultivation of soybeans, triticale, oil pumpkins, and grain maize has markedly increased. Grain maize as well as silage and fodder maize have not shown any regional shifts over the last years. Conversely sunflowers and soybeans have been increasingly expanding into the North-Eastern Hills and Plains, into the Wood and Mill Region and into the Alpine Foothills. In particular the cultivation of oil pumpkins has established itself now in the southern and North-Eastern Hills and Plains, in the Carinthian Basin, the Eastern Alpine Borderland and in the Wood and Mill Region. Overall this means a strong diversity of use of the croplands in Austria.
- Organic agriculture shows growth nearly everywhere. After the strong growth in the period before 1999 the increase since then has only been marginal. Expansions in land area are, above all, prevalent in the Alpine Foothills and the Wood and Mill Region. Organic cropland has increased especially in the North-Eastern Hills and Plains. Organic farm land has declined in the high alpine regions where formerly the highest absolute and relative values were recorded. Saturation appears to have been reached under the market and subsidy conditions currently reigning and organic crop farming is increasingly relocating to the favoured conditions. Organic pasture farming is now spread over more different areas.
- Livestock husbandry displays a relatively stable situation in the case of cattle farming, strong decline in the numbers of pigs and pig farms, less decline in the number of poultry farms parallel to a slight increase in the levels of poultry stock. The sheep stock is increasing slightly (compared to marked increases before EU accession), the number of farms however is decreasing dramatically.
- Cattle farming is, of course, very important in the mountainous areas, the largest absolute unit figures and sizes of herd as well as farm growth are, however, found in the Alpine Foothills. In the arable regions there are only few, but very large, cattle farms to be found.
- The Alpine Foothills also lead in pig keeping, the highest LU stock/ha is found in the South-Eastern Hills and Plains. Overall there is a decrease in the number of farms and stock to be seen. The pig stock which up to now has been very regionally concentrated is showing further concentration tendencies.

- Poultry production is also showing similar regional concentrations to pig farming, the concentrations, however, are not as marked as the latter. The number of farms has dropped, the stocks, on the other hand, have increased in the Eastern Alpine Borderland, in the Alpine Foothills and in the South-Eastern Hills and Plains.
- One third of the sheep and goat stock is concentrated in the High Alps, the largest herds are, however, found elsewhere. Overall there is a noticeable expansion in sheep and goat keeping resulting in a dropping regional concentration index.

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