

## Land use changes in Czech border regions (1845–2000)

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### Abstract

In this study, we examine land use changes in border regions of Czechia during last 160 years. We assume that the proximity to a border has influenced the state and development of population, economy and institutions of these regions, and therefore also the structure and changes of their agriculture, landscape and land use. Our research benefits from the database of land use in Czechia, in which shares of eight basic land use categories are known for four time horizons (1845, 1948, 1990 and 2000) in 8903 so-called Basic Territorial Units (BTU's).

For the purpose of our study, we have defined four basic sub-sets of BTU's in relation to their position towards the state border. Set "At border" (A) are BTU's adjoining the border ( $n = 395$ ); set "Intermediate" (B) are BTU's adjoining the BTU's of set A ( $n = 571$ ); set "At interior" (C) are BTU's adjoining BTU's of set B ( $n = 580$ ); and set "Interior" (O) are remaining BTU's ( $n = 7357$ ). It is obvious that land use changes in border regions depend on overall geopolitical situation and on political relations with respective countries. Thus, the above-mentioned sub-sets A, B and C (together  $n = 1546$ ) were further divided according to which country they adjoin – former West Germany ( $n = 288$ ), former East Germany ( $n = 316$ ), Poland ( $n = 491$ ), Slovakia ( $n = 168$ ) and Austria ( $n = 283$ ).

This article seeks to examine and explain land use changes between the years 1845–1948–1990–2000 in these sub-sets of BTU's. We focused on five most important and interesting land use categories – arable land, meadows and pastures (together permanent grasslands), forested areas and built-up areas. Besides that, two aggregate characteristics – Index of Change (IC) and Coefficient of Ecological Stability (CES) – served us for a complex assessment of changes of landscape macrostructure in border regions. Our results are depicted in graphs.

However, the delimitation of these sub-sets strongly correlates with other natural and socio-economic characteristics that influence land use changes. Border regions of Czechia are typical of worse natural conditions, peripheral geographical position and lower socio-economic activity. We showed this fact by cross-correlations with two representative characteristics of BTU's – one natural (official price of agricultural land) and one socio-economic (density of population).

**Key words:** land use changes – border regions – Czechia – driving forces – agricultural land

### 1. Introduction – underlying assumptions and objectives

Land use structure and its changes are influenced by a wide range of factors, so-called "driving forces" (Jeleček 2002). According to Mather (2002) or Lambin and Geist (2007) economy, technology, politics, institutions and culture work on a general level – as "underlying" factors. They determine general functioning of nature-society

interaction in a broader system (e.g., country). On the other hand, each locality has its own specific characteristics that work as “proximate” factors – they determine what impacts the general underlying factors will have on land use in respective locality. We have basically two main clusters of proximate factors – natural conditions (altitude, slope, soil fertility, climate etc.) and socio-economic characteristics (density of population, economic structure, spatial exposedness etc.). Another, although possibly less important proximate factor, influencing local land use, is proximity to or position relative to political borders.

We assume that regions in the vicinity of state or other political borders (simply “border regions”) should have specific functions, and hence also specific land use structure and changes. Several reasons underpin this assumption:

Firstly, borders (not only in Europe) were established generally in less favourable natural conditions (mountains, swamps etc.). Consequently, with the core of national population and economy being far away in the country’s interior, remote border regions became peripheral, marginalized and underdeveloped. These facts can however become a source of false correlation when examining land use changes in border regions – their specific features can simply result from natural and socio-economic disadvantages, not from the vicinity of a border itself. Thus, these effects of borders on land use can be understood as “indirect”.

Secondly, borders serve as a “political divide” and can therefore influence surrounding landscape directly. For example, the Iron Curtain, established by the totalitarian regimes during the era of “communism” (ca 1948–1990) between the East and the West in Europe determined land use changes in those Czech regions lying along the borders with Austria and the former West Germany. The Iron Curtain was not only a political divide, so named by Sir Winston Churchill, but also a very concrete barrier with fences, walls and guard posts. Large areas along this border had to be abandoned, depopulated, afforested and they served as military zones where the Czechoslovak army “faced” the phantom enemy from the “evil capitalist West”. A special zone was the area between the Iron Curtain and the border itself which was totally inaccessible and excluded from any economic use (e.g., Bičík and Štěpánek 1994). Here, the afforestation was mostly spontaneous.

The Iron Curtain is an extreme example. But similar landscape changes often appear in any border region where a country borders “enemies” or at least “unfriendly states”. More generally, land use changes in broader border regions are always influenced by the geopolitical and geo-economic orientation of a country. For instance, the establishment of independent, and to a large extent anti-German Czechoslovakia after the fall of the Austro-Hungarian Empire (1918) meant a general neglect and underdevelopment of areas adjoining Germany and Austria during the so-called “First Republic” (1918–1938). This major political change possibly led to a significant effect on land use.

Similarly, political and economic orientation of Czechoslovakia shifted from the East towards the West after the “Velvet Revolution” (1989). The break-up of the country followed (1992) with a new state border established between the Czech and Slovak Republics. As a result, the whole eastern Moravia, previously a geographical “centre” of the country (and, in a broader sense, even of the whole communist Central

Europe), became a periphery. This had also large impacts on its economy and presumably land use changes as well.

All these factors can result in a specific land use structure and its changes in border regions. Border regions can be used less intensively, i.e., they can be exposed to a weaker anthropogenic impact – less arable land and areas connected with urbanisation (built-up areas, gardens etc.) and more forested areas, permanent grasslands and abandoned or unused land. Furthermore, border regions could exhibit a stronger extensification (decrease of anthropogenic activity), especially in specific time periods of radical political influences, e.g., when the borders were closed by the Iron Curtain (see e.g., Štěpánek 2002).

In our article, we examine land use changes in the border regions of Czechia during the last 160 years (1845–2000). It was the era of large-scale modernisation of economy and society, and turbulent and often violent political changes. Our approach is statistical, but we try to explain our findings by considerations of a number of “driving forces”.

## 2. Data sources and methods

Our research benefits from the database of land use changes in Czechia (LUCC UK Prague) derived from cadastral statistics. See e.g., Bičík et al. (2001) or Bičík and Jeleček (2003) for more details. In this database, the whole area of Czechia is divided into 8 903 Basic Territorial Units (BTU’s), each consisting of one or more cadastres. Land use structure of each BTU is recorded in four time horizons, representing the main milestones of modern Czech history – 1845 (before first impacts of complex modernisation on land use structure), 1948 (communist coup), 1990 (the “Velvet Revolution”) and 2000 (after ten years of transformation). Eight basic land use categories are distinguished in this database – arable land, permanent cultures (gardens, vineyards, orchards and hop-gardens), meadows and pastures (together, permanent grasslands), forested areas, water areas, built-up areas and remaining areas (non-productive land, bare land, infrastructure, mines etc.). These basic categories can be aggregated into three general categories – agricultural land (first four basic categories), forested areas and other areas (last three basic categories).

For the purpose of our study, we have defined several sub-sets of BTU’s in relation to their degree of proximity to the state borders (see figs. 1a and 1b). The selection was done automatically in ArcView according to the rules defined below and then manually adjusted.

Firstly, we have defined three “lines” or “belts” of BTU’s along the borders (fig. 1a). Sub-set “At border” (A) consists of BTU’s adjoining / touching the border (n = 395). Sub-set “Intermediate” (B) consists of BTU’s adjoining the BTU’s of sub-set A (n = 571). Sub-set “At interior” (C) consists of BTU’s adjoining the BTU’s of sub-set B, excluding the BTU’s of sub-set A (n = 580). And finally, the remaining BTU’s create sub-set “Interior” (O, n = 7357). This selection served to show how land use does change from the borders to the interior – in other words, what the general impact is of borders on land use structure and its changes.

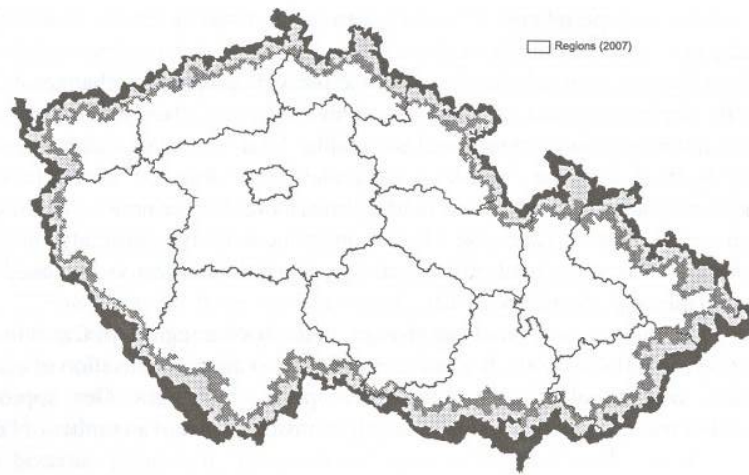


Fig. 1a Delimitation of sub-sets of BTU's according to their distance from borders  
Colours: black – A (at border), light grey – B (intermediate), dark grey – C (at interior), white – O (interior)  
Sources: own calculations; see text for explanation

Secondly, we wanted to show how land use structure and changes differ in border regions adjoining different countries – it means, how land use is influenced by concrete political and economic settings. Thus, the three above-mentioned sub-sets A, B and C (together  $n = 1546$ ) were further divided according to which country they adjoin (fig. 1b). Five sub-sets were defined in this way – former West Germany ( $n = 288$ ), former East Germany ( $n = 316$ ), Poland ( $n = 491$ ), Slovakia ( $n = 168$ ) and Austria ( $n = 283$ ). However, we have to bear in mind that neighbours of Czechia, and also relationships with them, have changed many times during the last hundred years of Central Europe's turbulent history. Austro-Hungarian Empire was divided and new independent countries were established on its ruins (1918); borders between Germany and Poland changed (after 1945); Germany was divided (1945/1949) and then re-united (1990); Slovakia gained independence (1992); etc. Thus, this second division of BTU's is only general and should serve for illustration of political influences in different regions and time periods.

Land use structure was calculated in each sub-set for each time horizon and the results are depicted in graphs (figs. 6 to 17). Because of lack of space here, we concentrated only on five most important and interesting land use categories – arable land, meadows and pastures (together, permanent grasslands), forested areas and built-up areas. Arable land and forested areas cover together about 2/3 of Czechia and one or another constitutes the landscape “matrix” in almost every BTU (Lipský 2000). The ratio between arable land and forests shows us the intensity of use of land for agriculture, the general transformation/alteration of landscape by society, the ecological stability of each respective region. Permanent grasslands (particularly pastures) are very dynamic parts of landscape and their fluctuating share speaks of changing “mode of production” (Jeleček 2002) and agricultural policy. The share of

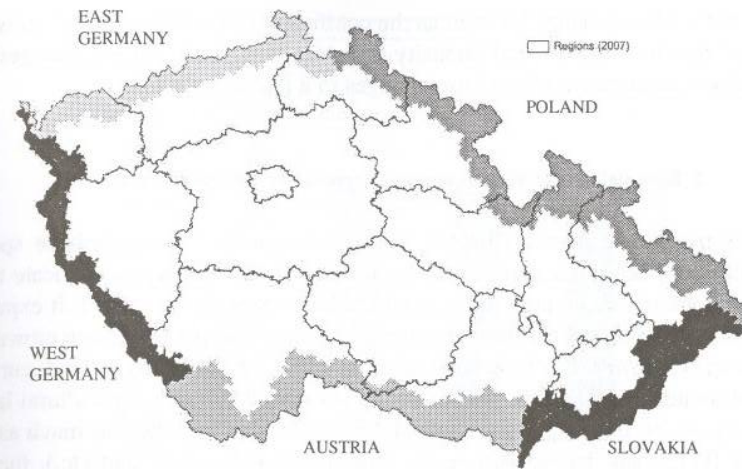


Fig. 1b Delimitation of sub-sets of BTU's according to which country they adjoin  
Sources: own calculations; see text for explanation

built-up areas, finally, tells us about the rate of urbanisation, socio-economic development and direct anthropogenic transformation of landscape.

To collect the land use information scattered among those different five categories, and to provide a more comprehensive picture of landscape pattern and its changes, two aggregated characteristics were used – Coefficient of Ecological Stability (figs. 18 and 20) and Index of Change (figs. 19 and 21).

Coefficient of Ecological Stability (CES) is a complex indicator, describing the structure of land use in one unit and one time horizon by one number. Shares of the eight basic land use categories on the whole area of a spatial unit are weighed by given coefficients, which schematically express ecological “stability” / “quality” of the given category (highest 1.0 for forests, lowest 0.0 for built-up areas). CES index ranges from 0 to 100. The higher the CES, the more ecologically “stable” the unit. This means it is less “colonized” by society, has lower anthropogenic impact and is closer to a “natural” state. See e.g., Bičík (1995) or Kabrda (2004) for more details and discussion.

Index of Change (IC, %, see e.g., Bičík 1995 for details) describes by one number the overall intensity of land use change in one spatial unit during one time period. The number, ranging from 0.0 to 100.0, shows, in a nutshell, on how many percents of the whole area of the given unit any land use change occurred between two time horizons. The higher the index, the more intensive were the changes that took place (with no regard to their quality or direction). Average Annual Index of Change (AAIC) is more suitable when comparing time periods of different length. In that case, the index of change is divided by the number of years within the period. However, we have to bear in mind that the index of change is only a hypothetical construction based on summed cadastral data. A BTU is a “black box” (Bičík and Kupková 2002) where internal changes (e.g., spatial transfers of land use categories without changes in their total areas) within a BTU are invisible.

Thus, the index of change (as well as the coefficient of ecological stability) is only a statistical tool to assess overall intensity of macro-structural land use changes. It is not a precise measurement of land use changes in a particular BTU.

### 3. Basic natural and socio-economic characteristics of border regions

As was mentioned above (Chapter 1), border regions of Czechia have specific natural and socio-economic conditions. We used two characteristics to indicate this.

The first one is official price of agricultural land from the year 1992. It expresses a theoretical financial income from farming on a given land-plot, in Czech crowns per square meter (CZK/m<sup>2</sup>). It is based on estimated natural productivity of land, enriched by several monetary indicators. We have to bear in mind that only agricultural land is taken into account. It is important especially in border regions where as much as 90% of area of BTU's can have a non-agricultural use (forests, bare land etc.), the land quality of which is not included in this indicator. Despite this fact, official price can still be used as a complex characteristic of land's suitability for agricultural activities from the viewpoint of natural conditions; or, simply as an aggregate indicator of natural conditions themselves (see Kabrda 2004 for discussion or Bičík and Kupková 2002).

Fig. 2 shows a map of official price of agricultural land in Czechia; its dependence on distance from borders and adjoining country is statistically expressed in fig. 3.

The second characteristic is density of population (inhabitants/km<sup>2</sup>), based on the last Czechoslovak census of population (1991). Density of population in different sub-sets of BTU's is depicted in fig. 4. Although it is obvious that population density had changed significantly during the monitored period – in border regions especially after the expulsion of Czech Germans after WWII – it can serve as an indicator of general anthropogenic pressure on landscape and of rate of socio-economic activity in a given BTU.

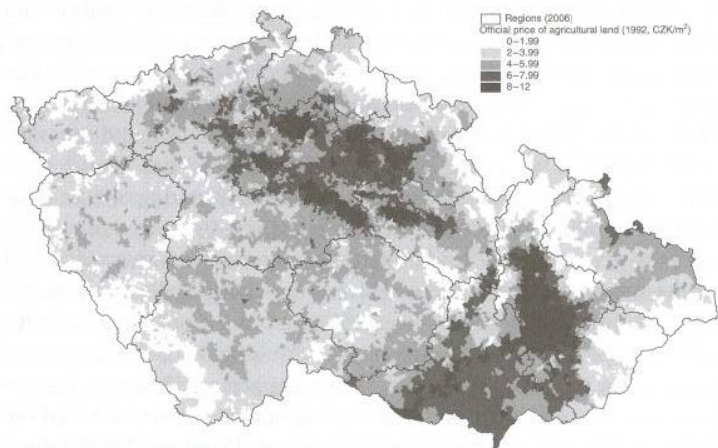


Fig. 2 Average official price of agricultural land (1992, CZK/m<sup>2</sup>) in the BTU's of Czechia  
Source: LUCC UK Prague – own calculations

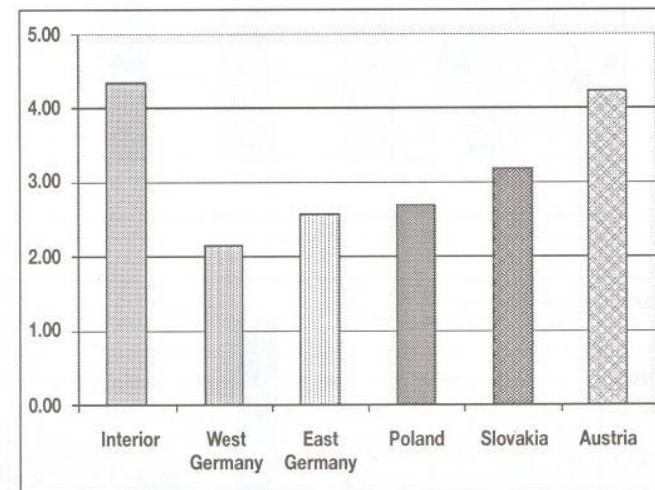
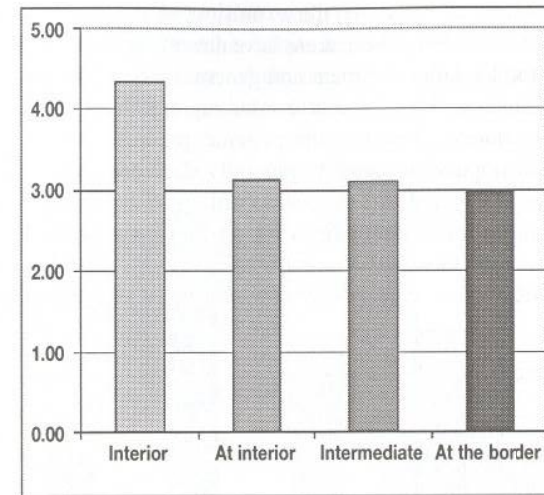


Fig. 3 Average official price of agricultural land (1992, CZK/m<sup>2</sup>) in border regions of Czechia according to distance from border (up) and adjoining country (down)

Source: LUCC UK Prague – own calculations

Besides that, we have also included a map (fig. 5) of basic socio-economic differentiation of the Czech territory. It depicts two important variables – spatial exposedness in 1980s (BTU's position towards the country's main cores of settlement and economy and to important traffic lines) and the area of "Sudetenland". This controversial term (considered incorrect by some scholars) is used for those territories that were joined to the Third Reich after the Munich Treaty (1938–1945). We have defined it in (just a slightly) different way: as BTU's with prevailing population of German nationality according to

the 1930 Census of population. After the expulsion of the circa three million Czech Germans in the years 1945–1947, these areas have never been fully re-populated and have thus become subject to land abandonment and general marginalization.

It is obvious from figs. 3 and 4 that border regions are typical of worse natural conditions and consequently lower anthropogenic pressure – both official price of agricultural land and population density generally decrease from interior to borders. However, there exist significant differences according to adjoining country. The worst natural conditions can be found along the borders with Germany and Poland, because of

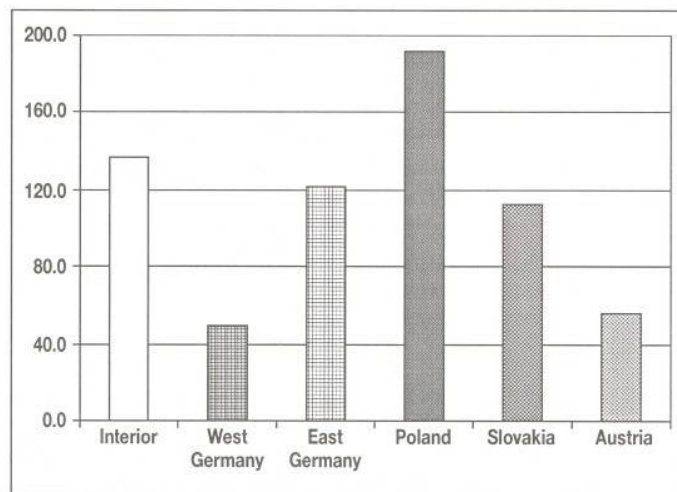
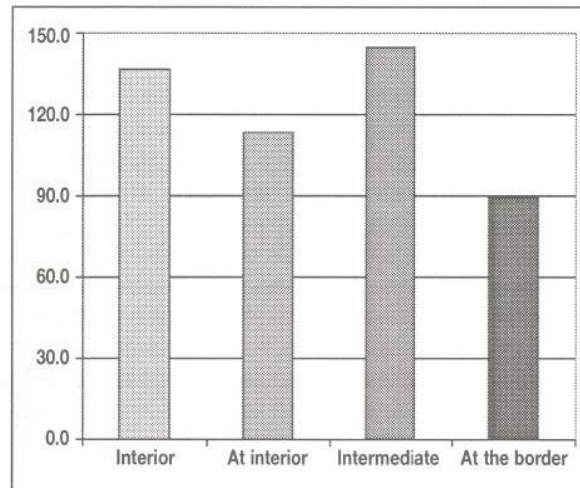


Fig. 4 Average density of population (1991, inhab/km<sup>2</sup>) in border regions of Czechia according to distance from border (up) and adjoining country (down)  
Source: LUCCK Prague – own calculations

mountain ranges with peaks between 1000 and 1600 metres a.s.l. (Šumava, Krušné hory, Krkonoše, Jeseníky, etc.). On the other hand, large lowlands lie along the border with Austria, especially in its eastern part, where one of the most fertile soils of Czechia are intensively used for crop farming, orchards and vineyards (see fig. 2 and chapter 4.2).

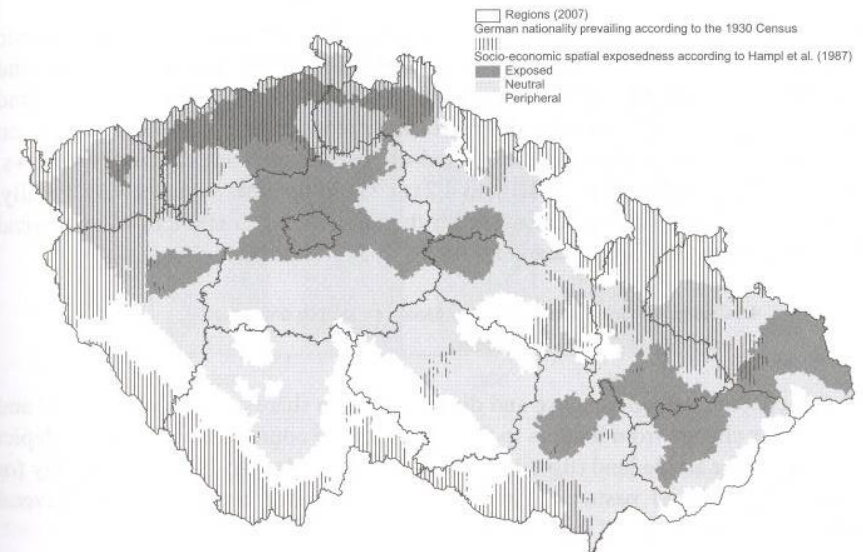


Fig. 5 Basic socio-economic differentiation of Czech territory: “Sudetenland” and spatial exposedness  
Source: LUCCK Prague – own calculations, Hampl et al. (1987); see text for explanation

Differences in population density are higher (see fig. 4) and do not fit the natural conditions fully. This supports the findings of Hampl (2000) stating that generally lower natural differences serve as a starting point for development and growth of generally higher differences socio-economic. The trends of marginalization, depopulation and extensification which influenced almost every mountain or remote region in Europe in the 20<sup>th</sup> century, and especially after WWII (e.g., Sporrang et al. 1996 for Sweden), being a result of economic pressures, worked also in Czechia, although under totally different political and societal conditions during the totalitarian era. In Czechia, the driving forces were not only the processes of concentration, competition and selection, but also political influences.

In fig. 4 we can see that population density is lowest along the borders with former West Germany and Austria, where the Iron Curtain existed between the years 1948 and 1990, leading to a large-scale depopulation and economic neglect. Also the re-population of areas lying empty after the expulsion of Czech Germans (fig. 5) was ineffective and even politically undesirable here. Depopulation was not so strong along the borders with “friendly” East Germany and Slovakia, although natural conditions are less favoured here as well (see figs. 2 and 3). On the contrary, population density is extremely high along the border with Poland because of large mining, industrial and

urban centres of Upper Silesia's black-coal basin in the eastern part of this border (cities of Ostrava, Karviná, Těšín, Havířov, Opava, etc.).

#### 4. Results and discussion

In the previous sections, we have discussed natural and socio-economic characteristics of border regions as “proximate” factors of their land use changes, and driving forces as “underlying” factors. Now, let us turn our attention directly to land use structure and its changes in border regions. As mentioned, we will concentrate on the five most important and interesting land use categories – arable land, meadows, pastures, forested areas (chapters 4.1 and 4.2) and built up areas (chapter 4.3). Finally, we will try to generalize our findings with the help of the Coefficient of ecological stability and Index of change (chapter 4.4).

##### 4.1 Changing share of arable land, permanent grasslands and forests according to distance from border

In this chapter, we will analyse and discuss how the shares of agricultural land and forested areas change from borders to the interior of the country. Several graphs depict our findings – for arable land (fig. 6), permanent grasslands (fig. 7), then separately for meadows (fig. 8) and pastures (fig. 9), and for forested areas (fig. 10). Several conclusions can be deduced from these figures:

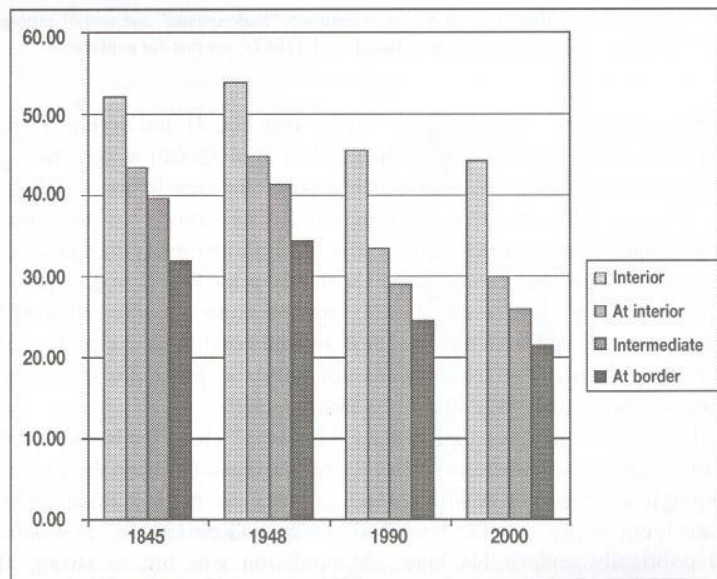


Fig. 6 Changing share of arable land (%) in Czechia according to distance from border  
Source: LUCS UK Prague – own calculations

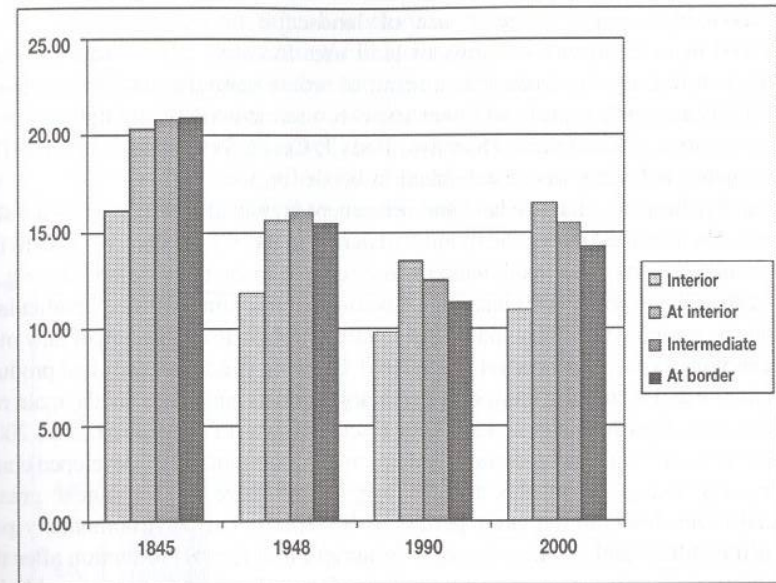


Fig. 7 Changing share of permanent grasslands (meadows and pastures, %) in Czechia according to distance from border  
Source: LUCS UK Prague – own calculations

Firstly, and most generally, the share of arable land decreases from the interior to the borders, whereas the share of forested areas increases in the same direction. The differences seem to be really significant (twofold in the case of arable land, see fig. 6) and gradual, going step-by-step between the sub-sets.

This pattern is, however, not so obvious in the case of permanent grasslands, including both meadows and pastures. Their share is lower in the interior of the country, but fluctuates between the three border sub-sets. These findings can have two explanations. Firstly, the differences between border areas adjoining different countries are too high to create a pattern when summed (see chapter 4.2). Or, secondly and more likely, the pattern within the border region has changed during the monitored period.

In 1845 (and partly in 1948) the share of permanent grasslands (especially of pastures) was logically increasing from the sub-set “at interior” to the sub-set “at border” as a result of decreasing intensity of agriculture. But, to the contrary, in the later time horizons (1990 and 2000), the share of permanent grasslands (especially of meadows) was surprisingly decreasing from the sub-set “at interior” to the sub-set “at border”. Reasons probably lie in growing extensification of agriculture in more marginal areas, resulting in forests overgrowing permanent grasslands. Radical technological changes in agriculture, especially in animal husbandry, during the totalitarian period (particularly since the 1960s) were likely the main cause for this.

However, the general pattern – interior with more arable land vs. border areas with more permanent grasslands and forests – remains unchanged. It proves a generally

lower intensity of anthropogenic use of landscape in border regions. They are specialised in more extensive forms of land use: forestry, country tourism, pastoral farming, nature protection, etc. It is a result of worse natural conditions (in the sense of suitability for agriculture) and lower socio-economic activity and the attractiveness of these regions. Natural parks (Šumava, Podyjí, České Švýcarsko) and other (lower) types of protected areas were established in border regions.

Secondly, the share of arable land and permanent grasslands decreased and the share of forested areas increased during the monitored period in the whole country – both in interior and in border regions. This trend, which was discussed many times before (see e.g., Bičík et al. 2001) is a result of changing “socio-economic metabolism,” particularly of modernization and industrialization of agriculture (through an application of new methods and technologies) during the period 1845–1990. Growing yields, intensity and productivity of agriculture and increasing transport of primary products and goods are the main reasons for it. See e.g., Krausmann et al. (2003) or Fischer-Kowalski and Haberl (eds., 2007) for quantification and explanation of these general trends, common for all developed countries.

The only exception to this rule is a growing share of permanent grasslands (especially meadows) in the latest period (1990–2000). This environmentally positive trend is a result of both a sharp decrease of agricultural (crop) production after the fall of totalitarian regime, and a set of new policies focused on grassing-over arable land in more vulnerable and sensitive areas. However, this trend can be easily reversed in following decades with soaring food demand in Asia (mostly India and China) and growing World demand for bio-fuels (rape seed, ethanol etc.) – see also Jeleček (2002).

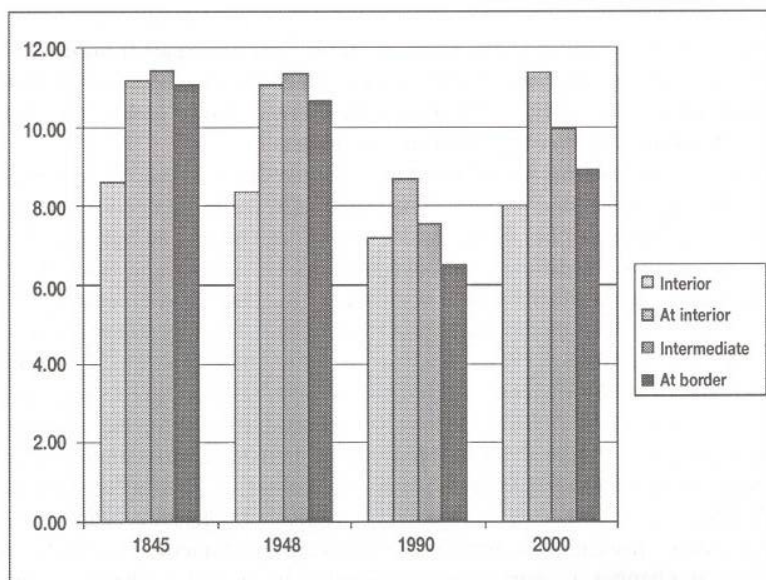


Fig. 8 Changing share of meadows (%) in Czechia according to distance from border  
Source: LUCCK UK Prague – own calculations

Thirdly, and most importantly, it is obvious that land use changes were more significant in border regions than in the interior. The decrease of arable land and the growth of forests were stronger in border regions. Permanent grasslands, once more, are an exception to this rule; their development was more complex with a less obvious pattern. Shortly – decrease of meadows was faster in border regions because of strong extensification and afforestation; on the other hand, less pastureland disappeared in border regions than in the interior, yet the differences are not significant.

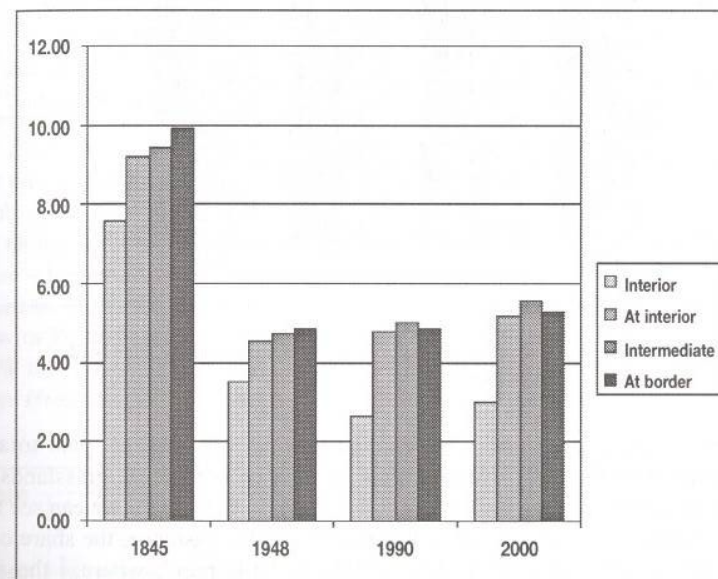


Fig. 9 Changing share of pastures (%) in Czechia according to distance from border  
Source: LUCCK UK Prague – own calculations

But let us get back to the stronger decrease of arable land and corresponding stronger growth of forests in border regions and the forces driving this trend. During the years 1845–1948 this was a result simply of growing spatial and functional differentiation and concentration based on natural conditions and geographical position. In other words, it was the effect of growing importance of the so-called “differential rent I” (see Jeleček 2002 for explanation).

Then, during the totalitarian period (1948–1990), these “driving forces,” common for all industrialised countries, were weakened (although not fully destroyed, even in the socialist system of spatial homogenisation), and were accompanied, or even replaced to some extent, by specific political factors. It was especially the expulsion of Czech Germans and the installation and existence of the Iron Curtain that caused a large-scale extensification and afforestation of border regions of Czechia during these times.

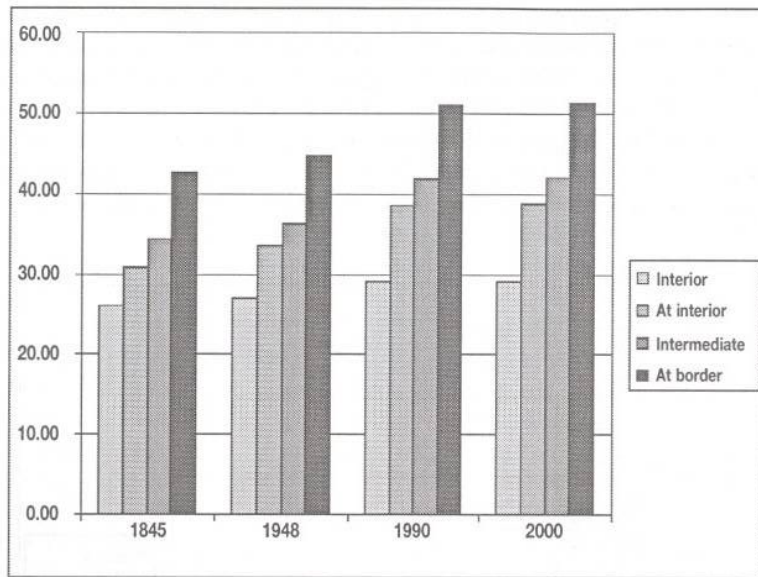


Fig. 10 Changing share of forested areas (%) in Czechia according to distance from border  
Source: LUCCK UK Prague – own calculations

The most important land use change during the era of post-totalitarian transformation (1990–2000) was a growth in area of permanent grasslands, to the detriment of arable land (see e.g., Bičík et al. 2001). In figs. 6 to 9 we can see that this trend was stronger in border regions than elsewhere. For instance, the share of arable land dropped to only 22% in the belt of BTU's "at border", whereas the share of meadows returned to its level from the year 1845 (11.4%) in the sub-set "at interior". This trend was caused not only by a restoration of functioning of "natural" economic forces (competition, differentiation) after the Velvet Revolution, but also by state agricultural and environmental policies aimed at extensification (grassing-over, afforestation) in border regions. The growing share of permanent grasslands along borders can be considered positive from the viewpoint of ecology – it will hinder water erosion from agricultural land on steep slopes and support both nature conservation and ecological forms of tourism in these mountain and other less-favoured regions.

This last time period (1990–2000) was probably too short for other land use changes and processes (afforestation, suburbanisation etc.) to occur, at least in the cadastral statistics that were not very up-to-date in Czechia during the 1990s.

#### 4.2 Changing share of arable land, permanent grasslands and forests according to adjoining country

As was shown in chapter 3, border regions are not one "homogenous mountain region" – they differ both in natural and socio-economic conditions. Therefore, figs. 11 to 15 depict changing share of arable land, permanent grasslands and forested areas in

the sub-sets of BTU's adjoining different countries. These figures underpin our previous assumptions about specifics and consequent specialization of each of these regions:

The lowest intensity of use of land for agriculture appears along the borders with both East and West Germany. The share of arable land is lowest (11 and 15% in 2000) and the share of forested areas highest (55%) here. Also the share of permanent grasslands is above average (18%), especially of meadows. Moreover, these regions saw a very sharp decline in share of arable land, especially the BTU's adjoining East Germany: from 28% in 1845 to 11% in 2000. The share of permanent grasslands was relatively stable, or even growing along the border with East Germany – pastures from 3% in 1948 to 7% in 2000 and meadows from 8% in 1990 to 12% in 2000.

Reasons for this low anthropogenic press can be found in bad natural conditions (mountains and highlands – see figs. 2 and 3), depopulation after WWII (expulsion of Czech Germans – see fig. 5) and existing Iron Curtain along the border with West Germany during the totalitarian period. Another loss of arable land along the border with East Germany came with industrialization and large-scale open-pit mining in the North-Bohemian brown-coal basins after WWII (see further and chapter 4.3).

Areas along the border with Poland and Slovakia exhibit somehow higher intensity of land use – higher share of arable land and lower share of permanent grasslands and forested areas. However, this intensity is still significantly below the Czech average. Borders with Poland saw a sharp decline of arable land during the totalitarian period (from 45% in 1948 to 27% in 1990), supplemented with an interesting growth in area of pastures (from 3% to 6%). This was a result of less favoured natural conditions and

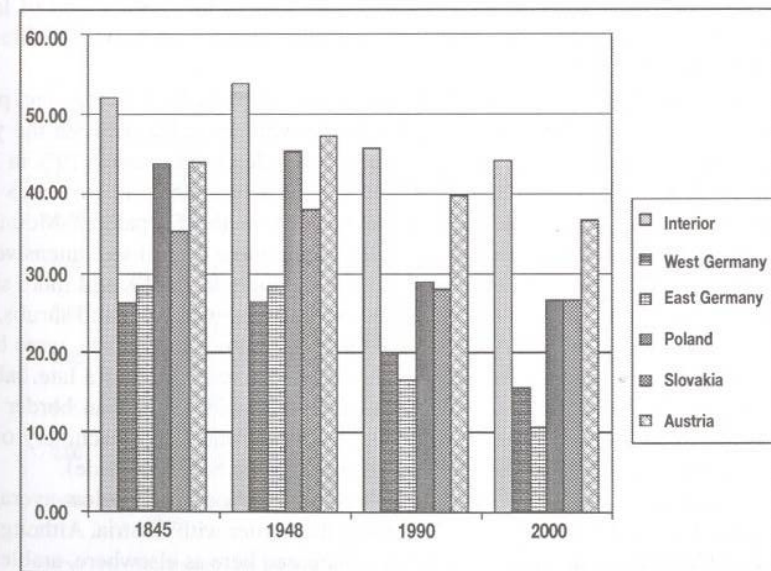


Fig. 11 Changing share of arable land (%) in Czechia according to adjoining country  
Source: LUCCK UK Prague – own calculations



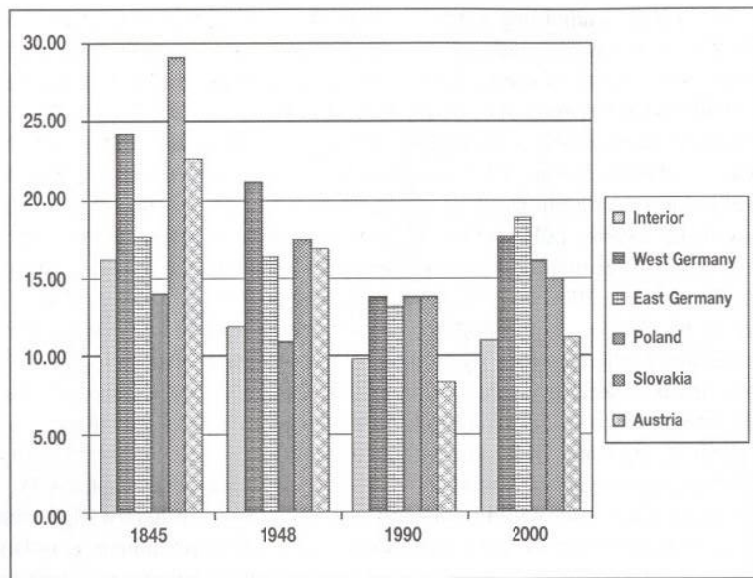


Fig. 12 Changing share of permanent grasslands (meadows and pastures, %) in Czechia according to adjoining country  
Source: LUCC UK Prague – own calculations

expulsion of Germans in the mountainous western part of this border, and of large-scale mining, and industrial and urban development in the eastern (Upper-Silesian) part of this sub-set of BTU's.

Interesting, but specific, is a significant conversion of pastures to forests (and partly to other uses such as arable land) along the border with Slovakia between the years 1845 and 1990 (but mostly prior 1948). Pastures had fallen from extreme 19% in 1845 to 6% in 1990, whereas forested areas had grown from 31% to 45%. These trends were a result of a decline of traditional pastoral farming in the Carpathian Mountains (Beskydy, Bílé Karpaty). As agriculture was becoming more centralised, intensive and even "industrialised", as cattle were moved from outdoors to stables and more silage and grain than hay was needed, old meadows and pastures with trees and shrubs, rich in flowers, and ecologically very important for high biological diversity, were being abandoned and overgrown by forests. Another driving force here was a late, labour-intensive industrialization along both sides of the Moravian-Slovakian border after WWI (shoemaking industry) and WWII (electronics, chemical and machinery on the Czech side; heavy machinery and clothing industry on the Slovakian side).

The highest intensity of use of land for agriculture (although still below-average in Czech conditions) can be found in BTU's along the border with Austria. Although the share of arable land has decreased and forests increased here as elsewhere, arable land still covers 37% of the area, and forests "only" 35%. The share of permanent grasslands is average nowadays, because it had dropped rapidly prior to 1990 (from 23% in 1845 to 8% in 1990). In this instance, two general processes can easily be

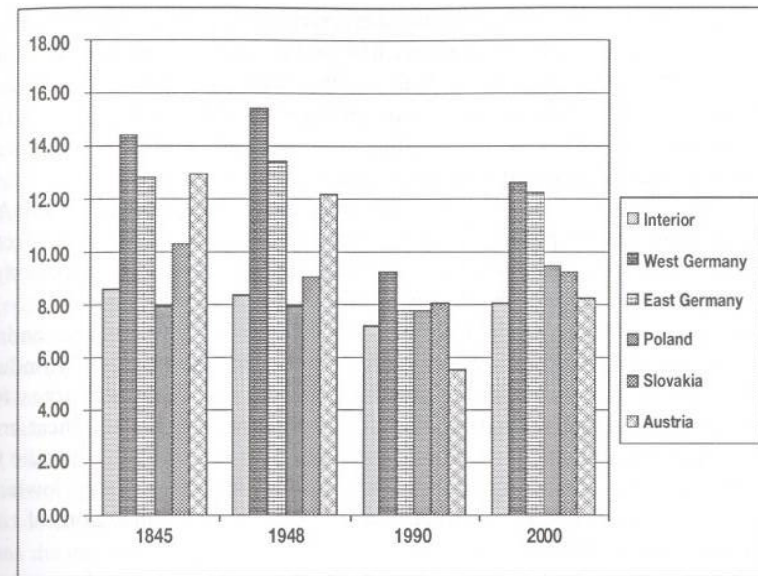


Fig. 13 Changing share of meadows (%) in Czechia according to adjoining country  
Source: LUCC UK Prague – own calculations

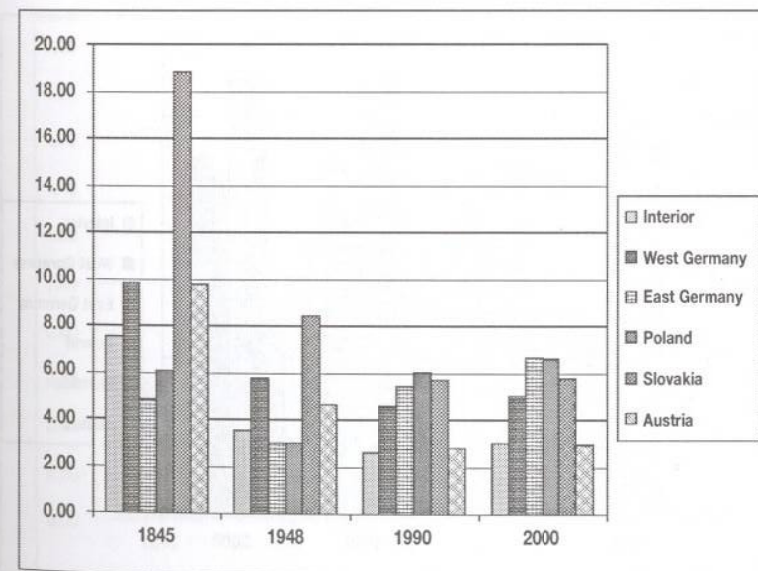


Fig. 14 Changing share of pastures (%) in Czechia according to adjoining country  
Source: LUCC UK Prague – own calculations

documented, and these can be found almost everywhere. On the one hand, the decrease of pastures in the years 1845–1948 (from 10% to 4%) marks the end of pre-industrial mixed crop-pastoral farming (arable land together with pastures). And, on the other hand, the decrease of meadows between the years 1948–1990 (from 12% to 5%) marks a total mechanization of socialist agriculture, accompanied by ploughing of meadows in better natural conditions and their afforestation in less favoured ones.

Nevertheless, we can distinguish two different regions along the border with Austria (see fig. 2). In its western part, landscape is hilly and mountainous and was affected by depopulation after the expulsion of Germans post WWII. Extensification, grassing-over and afforestation were typical in this area, called therefore “Czech Canada”.

To the contrary, the eastern half of this border territory consists of large and fertile lowlands along the rivers Morava, Dyje and Svatka, and of only gently undulating hills. Here, the repopulation after the expulsion of Germans was more successful and the landscape is still largely ploughed, used for growing cereals (maize, wheat, malting barley), sugar-beet, and also for orchards and vineyards. Hence, it is a specific Czech border region – low, fertile, agricultural, and also wide open to large lowlands of south-western Slovakia and Lower Austria, and to the metropolitan regions of cities of Brno, Bratislava and Vienna.

The figs. 11 and 13 also document that the most important change during the post-totalitarian period (1990–2000) – the grassing-over of arable land – was most intensive along the borders with Germany (and also with Austria, to some extent). As was commented above, these are mostly mountainous regions, affected by the expulsion of

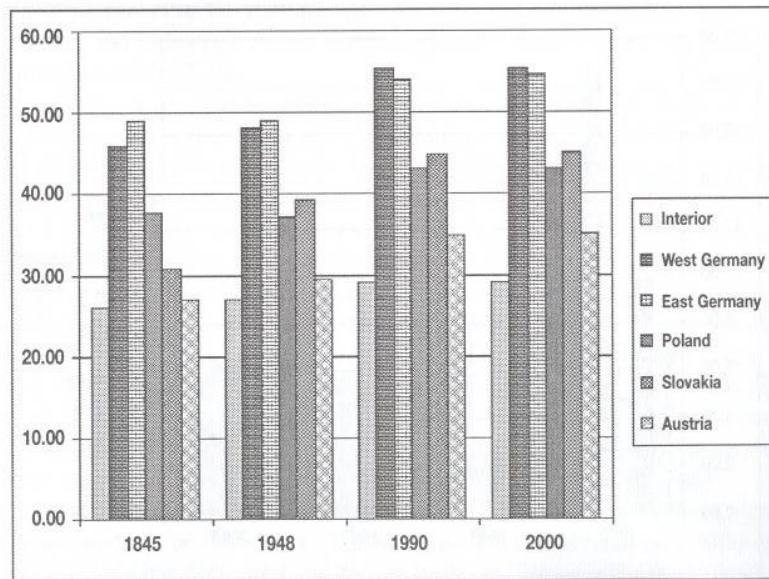


Fig. 15 Changing share of forested areas (%) in Czechia according to adjoining country  
Source: LUCCK UK Prague – own calculations

Germans. We can see that this event, that took place more than 60 years ago, will continue influencing the structure of our landscape for many decades or even centuries coming.

#### 4.3 Changing share of built-up areas in border regions

Share of built-up areas tells us something about urbanization and general socio-economic development of border regions. Changing share of built-up areas according to the distance from borders is depicted in fig. 16 and according to adjacent country in fig. 17. Several general facts can be deduced from these figures:

Firstly, the share of built-up areas has been growing significantly during the whole monitored period in all sub-sets of BTU's. This is a general result of modernization, urbanization and industrialization of Czechia (see e.g., Bičík et al. 2001 for details).

Secondly, the differences between sub-sets have grown rapidly. Share of built-up areas was almost independent on both distance from borders and adjoining country in 1845, but the differences became significant in 2000. In other words, it was a process of increasing heterogeneity of a once homogenous system. This finding supports the conclusions of Hampl (2000) about growing specialization and differentiation of regions during the era of industrialization. Moreover, the differences between sub-sets according to the share of built-up areas have been growing faster than according to the share of arable land, permanent grasslands or forested areas (compare figs. 16 and 17 with figs. 6 to 15). Hence, the share of built-up areas can be considered a more “progressive” characteristic (Hampl 2000).

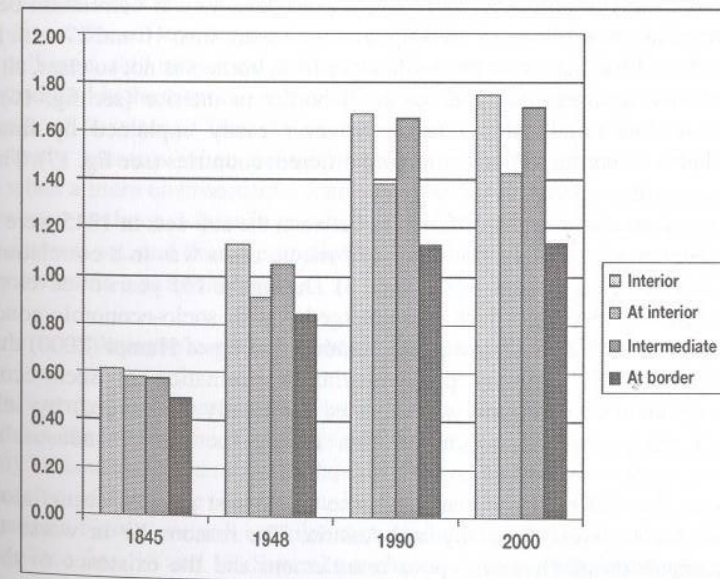


Fig. 16 Changing share of built-up areas (%) in Czechia according to distance from border  
Source: LUCCK UK Prague – own calculations

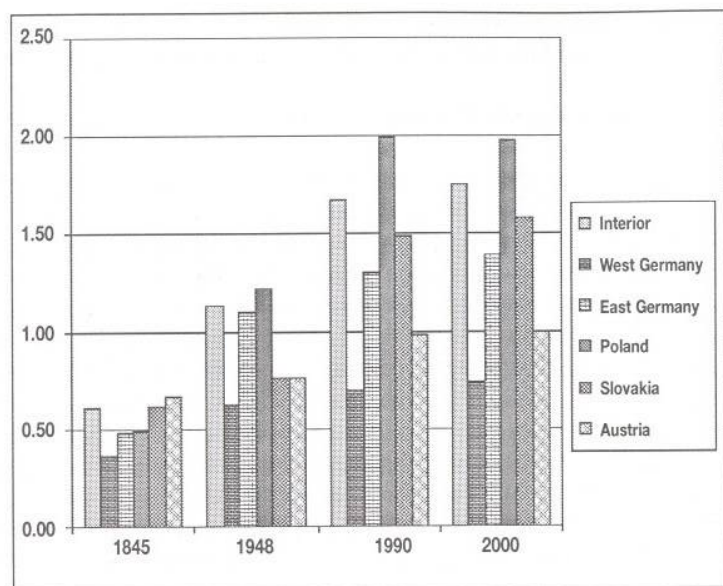


Fig. 17 Changing share of built-up areas (%) in Czechia according to adjoining country  
Source: LUCC UK Prague – own calculations

Thirdly, and most importantly, there exists nowadays a clear correlation between density of population and share of built-up areas (compare figs. 16 and 17 with fig. 4). The dependence of built-up areas on the distance from borders is not so clear, although the share of built-up areas really drops from border to interior (see fig. 16). Low significance of this relationship can be however easily explained by important differences between border regions adjoining different countries (see fig. 17). This fact is worth a deeper discussion.

As was mentioned above, the differences between the sub-sets in 1845 were not so significant. However, strikingly, the share of built-up areas was in a correlation with natural conditions then (compare figs. 17 and 3). During the 155 years of development, this correlation was lost and a new one emerged – with socio-economic conditions (density of population). This also supports another finding of Hampl (2000) that was already mentioned: the original pre-industrial determination of socio-economic differences by natural conditions was adjusted (or totally exchanged) by selective processes of competition and concentration during the era of industrialization (urbanization, modernization).

The lowest share of built-up areas, and also its slowest growth, occurs along the borders with former West Germany and Austria. The reasons lie in worse natural conditions, expulsion of Germans, poor resettlement and the existence of the Iron Curtain. Moreover, these regions are traditionally peripheral (see fig. 5), rural and typical of a “pre-industrial” dense network of villages and small towns. Therefore, even those BTU’s in the eastern part of the border with Austria, which are still very

agricultural and intensively ploughed (see the end of chapter 4.2), have only a low degree of urbanization.

The share of built-up areas was always average along the border with Slovakia, and it grew significantly only during the period 1948–1990. This change was a result of urbanisation and “socialist” industrialization in this traditional and previously underdeveloped mountainous and agricultural (pastoral) region (see chapter 4.2).

Very intensive development occurred along the borders with former East Germany and Poland. Right here, the influence of socio-economic conditions totally prevailed over the influence of the natural ones and fully determined the unprecedented increase of built-up areas. Share of built-up areas is even above the Czech average in the BTU’s along the Polish border. Both these regions were affected by a large-scale industrial development in the two main Czech coal-basins: the North-Bohemian basins (Most, Sokolov, Cheb) along the borders with former East Germany (Saxony), where brown coal is mined in open-pit mines, and the Silesian (Ostrava-Karviná) basin at the borders with Poland (Polish Silesia), where black coal is mined in deep mines. Both these basins are parts of the spatially exposed “core” of the country (see fig. 5).

In both these regions, mining began during the 19<sup>th</sup> century but saw its fastest growth during the era of extensive totalitarian “development” (1948–1990). Tens of settlements and hundreds of square kilometres of agricultural land had to be destroyed and reverted into open-pit mines in the North-Bohemian basins. Mining was followed by a massive urbanization and industrialization (steel, heavy machinery and chemical industry, coal/steam power plants) and development of traffic lines. It resulted not only in losses of fertile agricultural land (see chapter 4.2), but especially in a large-scale devastation of environment on a regional and even national level (soil, air and water pollution, acid rains, heavy damages to forests etc.). A special land use category was introduced in these times – “agricultural land temporarily out of use”. It represents thousands of hectares of land destroyed by mines and waste deposits. Environment only slowly recovers after political and consequently technological changes in 1990s when a more environment-friendly approach started to be followed.

However, we have to bear in mind that the share of built-up areas does not exceed 2% in any sub-set, and thus the importance of all these land-use trends should not be overestimated on a national level.

#### 4.4 Aggregate assessment of land use changes in border regions of Czechia

Two aggregate characteristics were used to sum the information on land use changes in border regions. Coefficient of Ecological Stability (CES) expresses the intensity of landscape alteration by human society, and Index of Change (IC) speaks of intensity of land use change during a given time period (see chapter 2 for explanation). Firstly, we will examine these indicators according to the distance from borders – see figs. 18 and 19. Several conclusions can be drawn from these figures:

Intensity of land use generally decreases from the interior to the borders (fig. 18). The main reasons are worse natural conditions and lower level of socio-economic activity – in other words, functioning of the so-called “differential rent” (Jeleček

2002). These “indirect” effects of borders (see chapter 1) are supplemented by “direct” effects – e.g., the existence of the Iron Curtain as a “political divide,” etc.

It is not fully correct to compare coefficients of ecological stability in different time horizons because of changing environmental “quality” of individual land use categories, and also changing landscape microstructure – Lipský (2000). However, we can use CES to assess changes in spatial pattern of land use intensity. In this instance, we can say that spatial differences in landscape macrostructure tended to grow: in 1845, CES in the two extreme sub-sets (“interior” and “at border”) reached 45 and 62 respectively (a difference of 17). In 2000 the figures were 46 and 67 respectively (difference, 21). This is a typical result of processes of selection, concentration and differentiation during the era of modernization of “socio-economic metabolism” (Krausmann et al. 2003).

The intensity of land use changes (fig. 19) was always higher in border regions than in the interior, especially in the two later periods (1948–1990 and 1990–2000). The main trends were afforestation of arable land and meadows (in 1948–1990) and grassing-over on arable land (in 1990–2000) – see above. Border regions act as “hot-spots” of land use changes. As a result of general modernisation of “socio-economic metabolism,” border regions are being strongly extensified, put out of traditional agricultural use, and transformed to satisfy other needs of modern society (nature protection, recreation, etc.). Productive function, necessary in every locality in the era of closed, local material and energetic cycles of pre-industrial economy, is being replaced by non-productive functions in the era of open national or even global cycles of industrial and post-industrial economy.

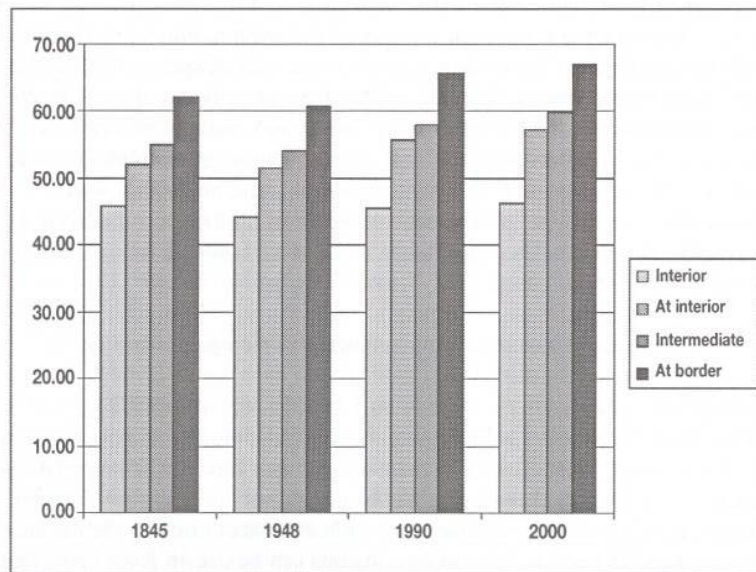


Fig. 18 Changing Coefficient of ecological stability (CES) in Czechia according to distance from border  
Source: LUCC UK Prague – own calculations

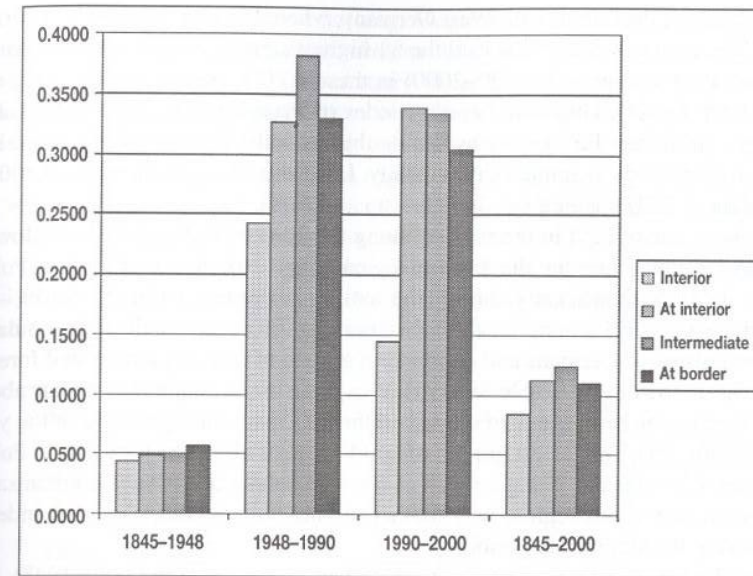


Fig. 19 Average annual Index of change (IC, %) in Czechia according to distance from border  
Source: LUCC UK Prague – own calculations

We can also see (fig. 19) that the intensity of change was relatively low in the first time period (1845–1948), in the times of a free-trade economy with a conservative character. To the contrary, the two later time periods (1948–1990 and 1990–2000) are marked by deep and radical land use changes: land use changed on 0.3 to 0.4% of area of BTU’s in border regions annually. Slow evolutionary pace of changes gave place to much faster revolutionary changes (from capitalism to socialism, from individual to “collective” ownership and use of agricultural land, etc.; and then, after 1990, back again).

Fig. 19 also supports our previous finding that land use changes are still more and more concentrated into the “hot-spots” of border regions. The difference in IC between the interior and border regions tends to growth. Especially the grassing-over in the latest time period (1990–2000) was strongly concentrated into the border regions.

However, as observed above, land use structure and its changes differ strongly between BTU’s adjoining different countries (chapter 4.2 and 4.3). These differences stem not only from differing natural and socio-economic pre-conditions, but also from political relationships with respective countries. This can also be seen in figs. 20 and 21, which can lead us to the following conclusions:

Landscape in the regions along the borders with both Germanys was always used least intensively (fig. 20) – having the lowest share of arable land, average or above-average share of permanent grasslands and the highest share of forested areas. The reasons can be found especially in less favoured natural conditions (see figs. 2 and 3) and also in the expulsion of Czech Germans and consequent poor re-population,

particularly along the border with West Germany, where the Iron Curtain existed (figs. 4 and 5). These factors also influenced the far highest significance of land use changes during the latest time-period (1990–2000) in these BTU's, particularly grassing-over of arable land (fig. 21). The annual average index of change was even the highest along the border with former East Germany during this era – the highest among all the sub-sets and time periods examined in this study. Land use changed on more than 0.6% of area of these BTU's annually.

Intensity of use of land in the regions along the borders with Poland and Slovakia was always average among the border regions (fig. 20). Areas adjoining Poland improved its CES significantly during the totalitarian period (from 52 to 59 – the highest change of CES among all the sub-sets in fig. 20), as a result of depopulation after the expulsion of Germans and consequent growth of area of pastures and forested areas to the detriment of arable land. This explanation is supported by an above-average (second highest) index of change in the BTU's adjoining Poland in the years 1948–1990 (fig. 21). The fastest growth of build-up areas along the border with Poland (see chapter 4.3 – fig. 17), being a result of massive industrialisation and urbanisation in the eastern part of this region, was another driving force feeding that high index of change during the totalitarian period.

During the first and longest time period studied in our research (1845–1948), land use changed far most intensively in the BTU's along the border with Slovakia (fig. 21). It was a result of the above-mentioned transformation of pastures to forests, arable land and other forms of land use (see chapter 4.2 – fig. 14 and others), marking the

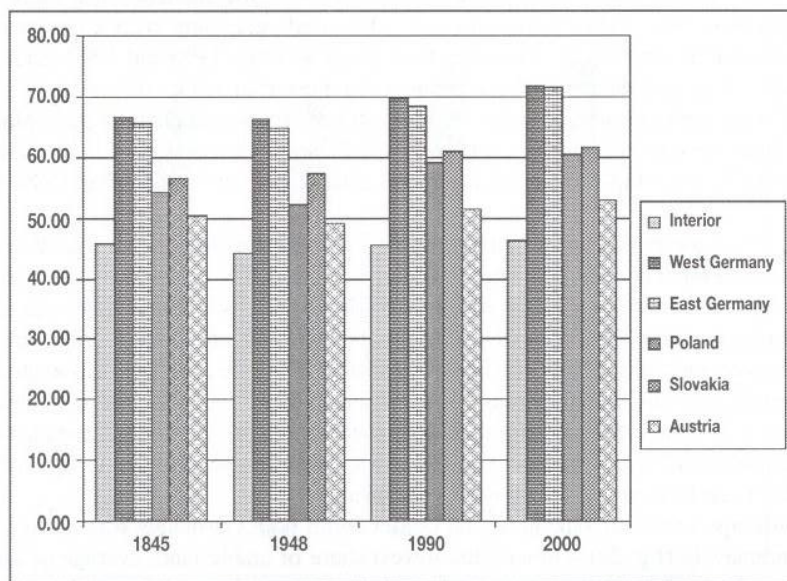


Fig. 20 Changing Coefficient of ecological stability (CES) in Czechia according adjoining country  
Source: LUCCK Prague – own calculations

diminution of traditional pastoral farming. Because of the length of this first period, the index of change for the whole studied era (1845–2000) was the highest in the areas adjoining Slovakia as well. To the contrary, these BTU's saw the lowest intensity of land use change during the latest time period (1990–2000, see fig. 21). This can be explained by the fact that it was the only sub-set of BTU's not influenced by the expulsion of Germans and therefore a region with a high density of rural settlements and with a strong institutional and agricultural tradition. Private farming (part-time and semi-subsistence agriculture) existed to some extent along the border with Slovakia, both in its northern (pastoral sheep breeding) and central and southern parts (large family gardens and orchards) even under the regime of socialist agriculture, and so the tradition of private farming survived until our days.

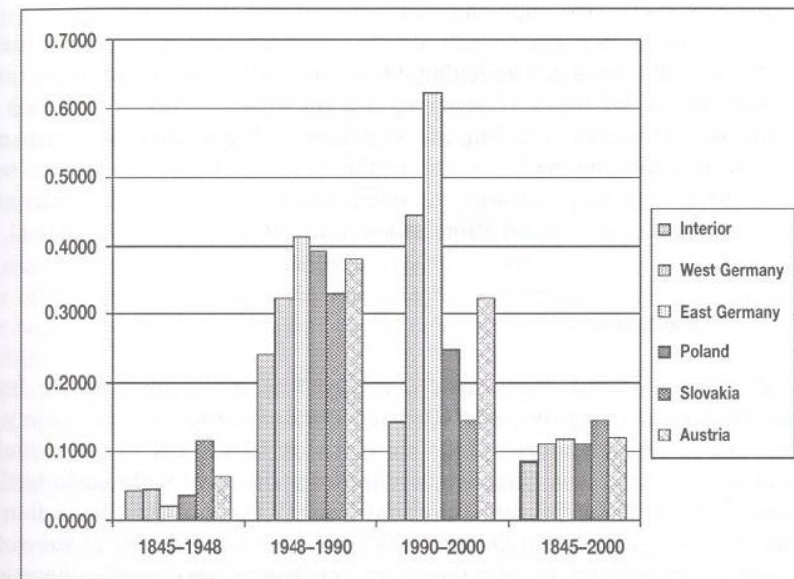


Fig. 21 Average annual Index of change (IC, %) in Czechia according adjoining country  
Source: LUCCK Prague – own calculations

Anthropogenic impact on landscape was always highest along the border with Austria (fig. 20), although still below the figures for the interior of Czechia. Large fertile lowland in the eastern part of this border region (fig. 2) with a high share of arable land and a low share of permanent grasslands and forests (see chapter 4.2) was probably the main cause. However, the BTU's adjoining Austria have undergone very intensive land use changes during last two time periods (1948–1990 and 1990–2000) – see fig. 21. The main reason lies in a strong extensification of use of landscape (arable land to meadows and meadows to forested areas) in the western part of this border region, which is mostly hilly and mountainous and suffered strongly after the expulsion of Germans and erection of the Iron Curtain.

On a general level, the latest time period (1990–2000) is typical of a deep differentiation of intensity of land use change (fig. 21) between the sub-sets of BTU's – deeper than ever before. These differences, which are based both on natural and socio-economic conditions, are likely to prevail in the future. Some areas (adjoining Germany and western parts of Austria and Poland) are mostly mountainous and were badly hit by the expulsion of Germans and consequent collapse not only of population density, but also of the relationship to land and landscape, agriculture and private farming. Grassing-over will probably continue here, supplemented by a stronger afforestation.

Other border regions were also influenced by the expulsion of Germans, but possess a high quality of fertile agricultural land (in eastern parts of the borders with Poland and Austria). Here, we may expect continuation of the large-scale conventional crop farming on arable land, supplemented with some degree of urbanisation.

And finally, the border regions with Slovakia, with its steep mountains on the one hand and long institutional and agricultural tradition, undisturbed by the expulsion of Czech Germans on the other, are standing at a crossroads. Either the tradition will survive and agriculture (with the help of national and EU subsidies) will remain as an important feature forming the landscape, or the farmers will start leaving the sector and countryside, migrating to towns and cities, and the landscape will undergo the same course of abandonment and afforestation as that seen in the "Sudetenland".

## 5. Conclusions

In this article, we have statistically assessed land use changes in the border regions of Czechia during the last 160 years of the modernization of society and economy and political and institutional changes. The LUCCK Czechia database was used in the assessment. This database includes shares of eight basic land-use categories for each of 8 903 Basic Territorial Units (BTU's) of Czechia in four key time horizons – 1845, 1948, 1990 and 2000. We have defined several sub-sets of BTU's in terms of their relative distance from state borders and specific character of neighbouring country. Consequently, we compared land use changes in the defined sub-sets with changes in the rest of the country (i.e., the interior). We focused on five most important and interesting land use categories – arable land, meadows and pastures (together permanent grasslands), forested areas and build-up areas. In addition, two complex indicators of the land use structure and its changes were considered – the coefficient of ecological stability and the index of change. We made also an attempt to explain the calculated statistical results. The following general conclusions can be drawn.

The border regions of Czechia show a distinctively different structure and different changes in land use patterns when compared to the interior of the country. The border regions are less intensively used, with more forests and permanent grasslands (especially pastures) and less arable land and built-up areas. Moreover, the changes in border regions are faster and more intensive. It means that particularly the extensification trend (mainly the afforestation of arable land), which is common for

the whole area of Czechia, has been faster in the border regions than in other parts of the country. The only significant land use trend in the latest time period (1990–2000) – the grassing-over of arable land – was also much stronger in the border regions.

Regionally, the areas on the borders with Germany show the lowest intensity of land use (i.e., less arable land, more forested areas and permanent grasslands, especially meadows). Moreover, the pace of the land use changes has been highest here, especially in the latest time period. To the contrary, the highest anthropogenic impact (although still below the average for whole Czechia) can be found along the border with Austria, especially in its lower eastern part. The lowest index of change during the period of transformation (1990–2000) was reached along the border with Slovakia – the only border region not changed by the post-war transfer of the Czech Germans.

However, the identified effects were not caused solely by political factors in the sense of a geometrical proximity of a BTU to the border as a "political divide". In fact, a complex cluster of factors, both "proximate" and "underlying", have been influencing the land use changes. In our case, other "proximate" factors seem to be more important as regards the specific land use changes in the border regions. These factors are especially the less favoured natural conditions (e.g., altitude, slope, climate, soil fertility) and key local socio-economic characteristics (e.g., spatial marginality, the areas of transfer of Germans following the WWII, or large-scale mining). In the case of "underlying" factors, the economic ones seem to have the most profound significance – in brief, the agriculture becomes less and less viable in worse natural conditions.

The direct political influence was stronger along the borders with Germany and Austria, especially with former West Germany during the era of "socialism" when the Iron Curtain existed. But the borders were dividing landscapes not only during the totalitarian period (1948–1990), but before it as well, even though not so strongly. This was true, for instance, during the inter-war period (1918–1938), when the economy of the so-called First Czechoslovak Republic had to operate in Europe with strictly protected national markets, surrounded by foe, or at least less-friendly nations.

Nowadays, in the times of the enlarged European Union, the importance of borders in some sense has tended to decrease: the Czech Republic joined the Schengen Treaty area in December 2007. By contrast, the borders also serve for meetings, exchanges and cooperation. Besides that, tourism together with a multifunctional non-productive agriculture becomes increasingly important in these regions. Also agricultural policies of both the EU and the Czech Republic are currently orientated on creating a multifunctional rural space. New functions, stronger than the conventional food production, tend to develop in the specific border landscapes. For example, these include such activities as groundwater protection, nature conservation, establishment of sport zones, rural tourism, organic farming, agro-tourism, etc. Such activities and their effects are in particular visible along the borders with Austria and former West Germany that were in the past (1948–1990) closed by the Iron Curtain.

## Acknowledgements

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## Résumé

### Změny využití ploch v českém pohraničí (1845–2000)

Cílem tohoto příspěvku je popsat a vysvětlit změny využití ploch v českém pohraničí za uplynulých 160 let modernizace společnosti a ekonomiky a politických a institucionálních zvrátů. Předpokládáme, že blízkost hranice ovlivnila současný stav i historický vývoj populace a hospodářství pohraničních regionů, a tím i strukturu zemědělství, krajiny a využití ploch v nich. Použitý přístup je kvantitativní a využívá databázi historických změn využití ploch Česka. Ta obsahuje pro každou z 8903 tzv. Základních územních jednotek (ZÚJ) údaje o rozloze osmi základních kategorií využití ploch ve čtyřech časových horizontech (1845, 1948, 1990 a 2000).

ZÚJ jsme na základě jejich polohy vůči státní hranici rozdělili do čtyřech souborů. Soubor „U hranic“ (A) tvoří pás ZÚJ přímo se dotýkající hranice (n = 395); soubor „Přechodný“ (B) obsahuje ZÚJ jež se dotýkají ZÚJ souboru A (n = 571); soubor „U vnitrozemí“ (C) je tvořen ZÚJ jež se dotýkají ZÚJ souboru B (n = 580); zbývající ZÚJ tvoří soubor „Vnitrozemí“ (O, n = 7357). Změny využití ploch v pohraničí závisí také na celkové geopolitické situaci a na politických vztazích s jednotlivými sousedními zeměmi. Proto jsme tedy soubory A, B a C (celkem n = 1546) rozdělili na soubory ZÚJ podle toho, se kterou zemí sousedí – s bývalým západním Německem (n = 288), bývalým východním Německem (n = 316), Polskem (n = 491), Slovenskem (n = 168) a Rakouskem (n = 283).

Jádrum tohoto příspěvku je analýza změn využití ploch mezi léty 1845–1948–1990–2000 v uvedených souborech ZÚJ (tři podle vzdálenosti od hranice a pět podle sousední země), respektive jejich srovnání se souborem „Vnitrozemí“. Zaměřili jsme se na pět plošně nejvýznamnějších a/nebo nejzajímavějších kategorií využití ploch – ornou půdu, louky a pastviny (dohromady trvalé travní porosty), lesní plochy a zastavěné plochy. Kromě toho jsme použili dva agregátní ukazatele využití ploch – Index změny (IZ) a Koeficient ekologické stability (KES). Ty nám umožnily komplexně zhodnotit změny krajinné makrostruktury v pohraničních regionech. Veškeré výsledky byly znázorněny v grafech.

Vymezení uvedených souborů ZÚJ ovšem silně souvisí s jinými přírodními a socio-ekonomickými charakteristikami, jež ovlivňují změny využití ploch. České pohraničí je typické obecně horšími přírodními podmínkami, periferní geografickou polohou a nižší úrovní hospodářské aktivity. Tento fakt jsme dokumentovali charakterizováním jednotlivých souborů ZÚJ pomocí dvou reprezentativních ukazatelů – jednoho přírodního (úřední cena zemědělské půdy) a jednoho socio-ekonomického (hustota zalidnění).

Z našeho výzkumu vyplynulo několik zajímavých závěrů. České pohraniční regiony mají, ve srovnání s vnitrozemím, podstatně odlišnou strukturu využití ploch. Jsou využívány méně intenzivně – mají více lesních ploch a travních porostů (především pastvin) a naopak méně orné půdy a zastavěných ploch. Změny krajinné makrostruktury v nich byly navíc rychlejší a intenzivnější. Konkrétně to znamená, že například trend extenzifikace (zejména zalesňování orné půdy), společný v uplynulém století většině českých regionů, byl v pohraničí silnější než ve vnitrozemí. Také jediný významný trend změn využití ploch v transformačním období (1990–2000) – zatravňování orné půdy – byl v pohraničí rychlejší než jinde.

Velké rozdíly ovšem existují mezi regiony sousedícími s různými zeměmi. Území ležící podél hranice s Německem vykazuje nejvyšší intenzitu využití ploch (méně orné půdy, více lesních ploch a travních porostů, zejména luk). Navíc zde byly změny daleko nejrychlejší, zvláště v posledním sledovaném období

(1990–2000). Nejsilnější (ačkoli stále podprůměrný oproti vnitrozemí Česka) antropogenní vliv na krajinu můžeme naopak nalézt v pohraničí s Rakouskem, především v jeho nížinné východní části. Nejnižší index změny během transformačního období (1990–2000) byl dosažen podél hranice se Slovenskem – jediným pohraničním regionem nezasaženým poválečným vyhnáním Němců.

Výše uvedené skutečnosti nebyly nicméně způsobeny výhradně politickými vlivy ve smyslu geometrické blízkosti ZÚJ k hranici jako „politickému rozvodu“. Změny využití ploch jsou ve skutečnosti ovlivňovány složitým souborem faktorů „bezprostředních“ (na lokální úrovni) a „základních“ (na úrovni státní). V našem případě, jak se zdá, existují „bezprostřední“ faktory, které měly pro změny využití ploch v pohraničí větší význam než samotná blízkost hranice. Máme tím na mysli zejména horší přírodní podmínky (např. nadmořská výška, sklonitost, klima, úrodnost půd) a místní socio-ekonomické charakteristiky (např. perifernost, vyhnání Němců po 2. světové válce, těžba uhlí). Mezi „základními“ faktory má zřejmě největší význam ekonomika – zjednodušeně řečeno, zemědělství se v horších přírodních podmínkách pohraničí stává stále méně a méně výdělečné.

Přímé politické vlivy byly silnější podél hranic s Německem a Rakouskem, a to zejména se západním Německem během totalitního období (1948–1989), v dobách existence železné opony. Ale hranice oddělovaly krajiny a ekonomiky i před rokem 1948, i když třeba ne tak silně. Bylo to například v meziválečném období (1918–1938), kdy hospodářství československé první republiky, obklopené nepříliš přátelskými zeměmi, muselo fungovat v prostředí přísně chráněných národních trhů jednotlivých evropských států.