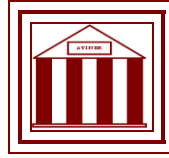


**Athens Institute for Education and Research
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**ATINER's Conference Paper Series
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**Assessment of Slovak Rural Landscape
Problems in Globalization and Economic
Transition**

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Abstract

The Slovak agricultural landscape has undergone great changes in recent times. Multiple ensuing problems include; the disintegration of economic entities, changes in agricultural structure, farmland abandonment with subsequent negative effects on landscape biodiversity, a decline in agricultural production, excess synanthropic species, increased pressure on agricultural land occupation by particular investment plan enforcement, difficulties in inducting the unemployed into operating labour markets, with attendant psychological and social deterioration and population change by emigration of rural inhabitants seeking job opportunities elsewhere and the migration of urban population to rural communities pursuing better environmental quality. These processes radically changed demographic structure via life-style alteration, engendering a new Slovak rural landscape. These new phenomena have created inter-connected problems requiring rapid solution. These connections include; (a) land use changes which considerably affect biodiversity and landscape stability and pollution of individual environmental entities; both of which require investment to eliminate their effects and to implement new technology, and (b) the termination of industrial operations which negatively affect the environment and exacerbate social problems. These latter include increasing unemployment and negative psychosocial impact. This paper analyses current Slovak agricultural landscape problems, and determines the basic drivers and effects of these changes.

Keywords: Agricultural landscape, Rural development, Slovak agricultural landscape changes.

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Introduction

Slovakia is typical rural landscape. Demonstration of this is the character of the landscape and settlement structure and patterns. Only 136 of the 2,891 Slovak settlements are towns, with the remainder forming rural settlements and 95.3% of our national structure (SR Statistical Yearbook, 2010). In 2013 lived in rural areas 55,4% residents of Slovakia. Agricultural and forest produce are critically important determinants in rural land use management because these form the principal economic base for most rural settlements. Agricultural production dominates the following Slovak lowlands and basin areas; (1) The Podunajská and Záhorská Lowlands in the west; (2) Juhoslovenské basins in the south; (3) The Východoslovenská Lowland in the east and (4) The Turčianska, Popradská, Žilinská and Liptovská Mountain basins in central and northern areas. The forest economy, meanwhile, prevails in the foothills and mountains in central, northern and eastern Slovakia.

The national rural landscape has been subjected to continuous change from past eras when country inhabitants depended almost entirely on the local landscape for their livelihood. This provided subsistence, and local inhabitants rationalised and economized natural resources in a relatively humble relationship with their landscape. Landscape was then a respected source of inspiration and people lived in harmony with it (Kršáková, 2010). Increased anthropogenic activity introduced new landscape elements and resultant altered landscape structure, and remaining original elements testify to past developments. These latter portray the valuable cultural and historical heritage of our nation and fulfil the following functions as

- important carriers of biodiversity and landscape diversity;
- relics of traditional forms of management;
- symbols of beauty and aesthetics;
- home for many species and associations;
- positive environmental factors;
- sources of knowledge and objects of study in landscape processes and relationships;
- sources of inspiration; and artists' muse;
- a testimony of harmony between man and nature.

Methods and Data

Investigation on selecting main driving forces of rural landscape change in Slovakia was temporally delineated in the period between the Second World War and the recent years. The basic methodology used in our research was the documents analysis and sociological survey. For the evaluation of statistical data and data from a sociological survey we used the standard statistical

methods. In order to categorise the historical milestones and trends of the changes in the landscape several sources and data were used (Table 1).

Table 1. *Various Sources Used for Identification of the Driving Forces of and Pressures on Landscape Change*

Source	Description
Literature	papers or documents related to specific economic sectors or disciplines
Projects	results or outputs from various research projects
Maps, atlases	cross-historical map information
Statistical datasets	data collected from the historical national statistical yearbooks
Data from sociological survey	data collected from the various sociological survey (questionnaire survey, personal interviews with basic groups stakeholders)

Source: Author's own table

Results

Drivers of Rural Landscape Change

Despite these values, custodians showed little respect for the natural landscape and began to recreate it; often with negative effects. The following outline the most historical anthropogenic interventions in the Slovak landscape;

Farmland Collectivisation Period (1950's-1960's)

This period began with the seizure of individual farmer's property. The concurrent formation of cooperatives heralded land concentration and consolidation, and a mono-functional agricultural landscape. Balks and small terrace fields were ploughed, and meadows and pastures eliminated. Some farmers joined the cooperatives voluntarily, some forcibly, and the remainder left their fields to work in urban industrial plants and services. Private farming in foothill and mountain regions successfully resisted collectivisation, adhering to typical traditional forms of meadow and pasture-based farming combined with small terrace field cultivation. Similar nationalising processes promoted forest management where land-owners gradually diminished and state-owned forest area increased.

"Normalisation" Period (1960's-1970's)

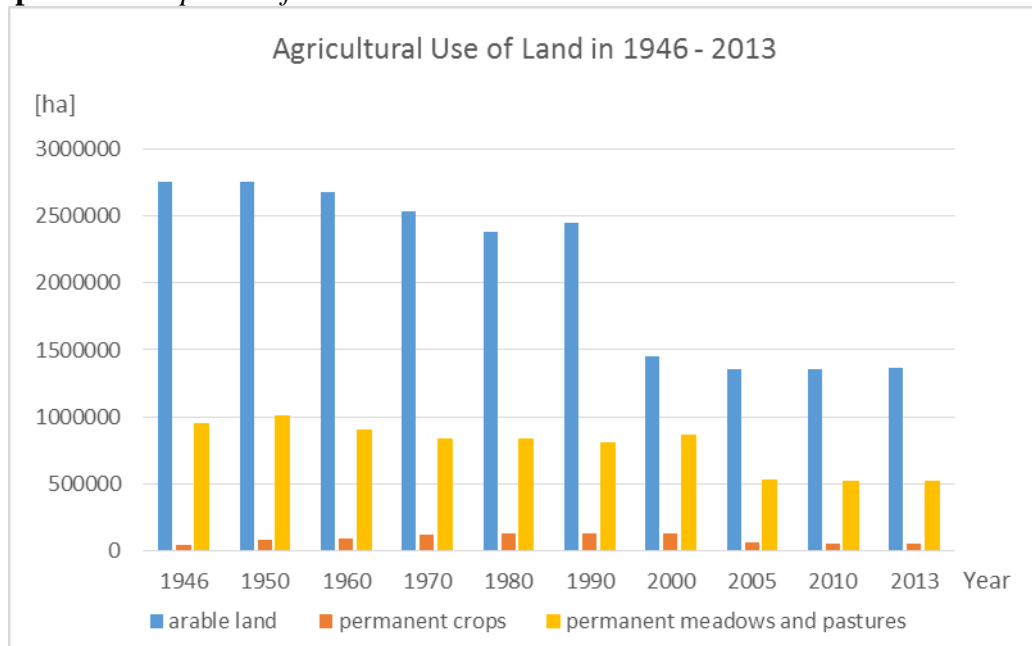
Socialist agricultural ambitions to increase land yield per hectare led to the foundation of huge agricultural entities by merging individual enterprises under regional management. Division of labour by task and upgraded technology were accompanied by new pressures on land acquisition and occupation. Permanent grassland, forest remnants were taken; swamps and ponds were filled-in, river courses were altered with meanders and valuable bank vegetation destroyed and rows of trees along roads were felled. Agricultural production intensified, with efforts to obtain top yields increasing chemical usage, and modern technology introducing more machinery. Landscape

structural consequences were extremely adverse; with erosion processes, soil desiccation and compaction and contamination of individual environmental components. Indiscriminate fruit tree eradication in orchards and gardens was typical of this period, and these areas changed to arable land; a fatal process for the fruit growing tradition. Likewise, small vineyards became large-block viticulture with their vines grown on wire mesh. In this way, the last remnants of formerly eco-stabilizing areas were removed and the entire lowlands and plains surface changed into a monotonous intensively agriculturally exploited landscape with low ecological stability. Forest timber-harvesting increased dramatically and clear-cuts from intensive felling impaired forest ecosystem stability. Heavy machinery and forest road construction accelerated soil erosion, while heightened chemical use threatened vegetation and wildlife in many forest ecosystems.

Urbanisation and Recreation Development (1970's-1980's)

Development of the cooperative economy also brought changes in employment structure; where part of the population worked in cooperatives and some inhabitants sought work in services and industry. Organised employment was evident in new lifestyles, where people with fixed and regular income began saving, investing and improving their housing. Cooperatives encouraged housing development throughout the countryside by constructing blocks of flats for their members and offering “irretrievable loans” for construction of single-family homes. These new opportunities triggered a construction boom in rural settlements. New houses and new streets sprang-up with blocks of flats previously untypical for rural environments. Inappropriately located and hideous uniform houses, cooperative buildings and industrial and construction plants, such as sawmills and poultry farms, invaded natural rural settings. Agricultural land was often occupying the construction of housing, agricultural and industrial buildings. The graph no. 1 shown development of the land use in 1946 – 2013.

Graph 1. Development of the Land Use in 1946 –2013



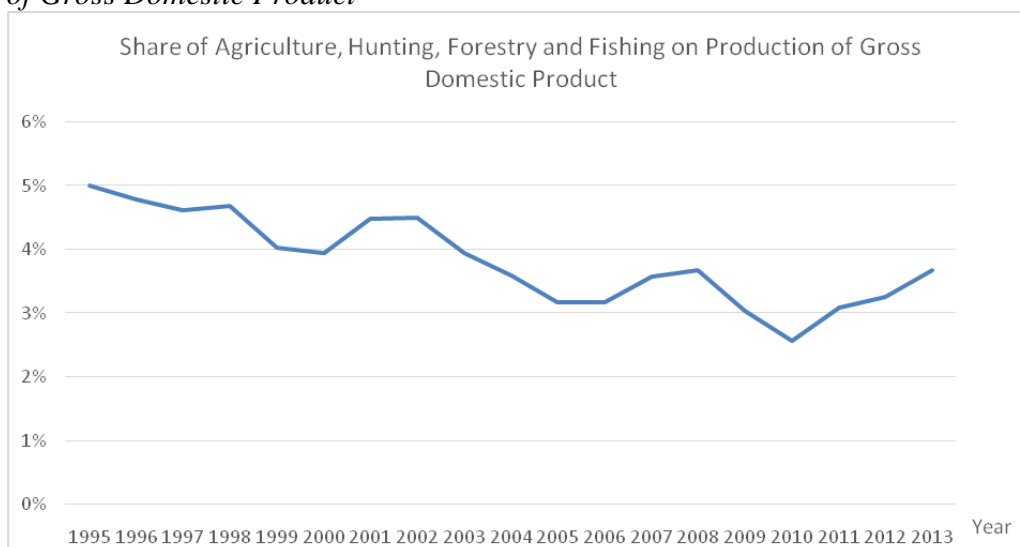
Transition (after 1989)

Transformational changes could be considered to be another significant milestone, For this period typical was transition from centrally governed society to civil society built on the principles of freedom and democracy (central planning - free market), An important milestone in the development of the Slovak rural landscape was also Slovakia's accession to the European Union in 2000.

Impact of the Transition and Globalisation

Transition and globalisation after 1989 also affected agricultural and forest economic development. The change from central directive management to a market economy had negative as well as positive effects. Accession to the EU and globalisation has exposed Slovak farmers to adverse socio-economic conditions. Economic analysis in the Programme of Rural Development of 2014-2020 -Programming Period 2014- highlights the decreased proportion of agriculture and forestry in gross domestic product (graph No. 2).

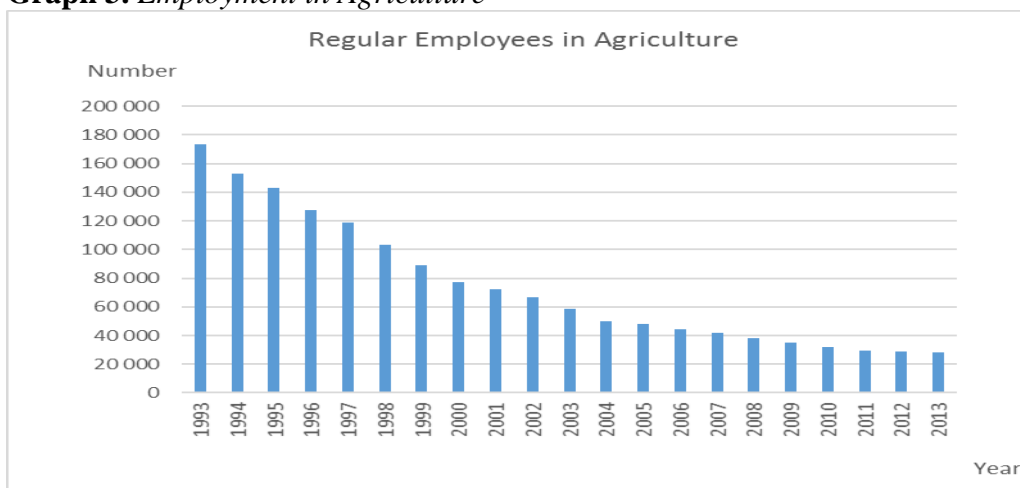
Graph 2. *Share of Agriculture, Hunting, Forestry and Fishing on Production of Gross Domestic Product*



The added value from production is low, there is declining work productivity with the local share of domestic food products falling below 50%, and rising national unemployment (graph No. 3.).

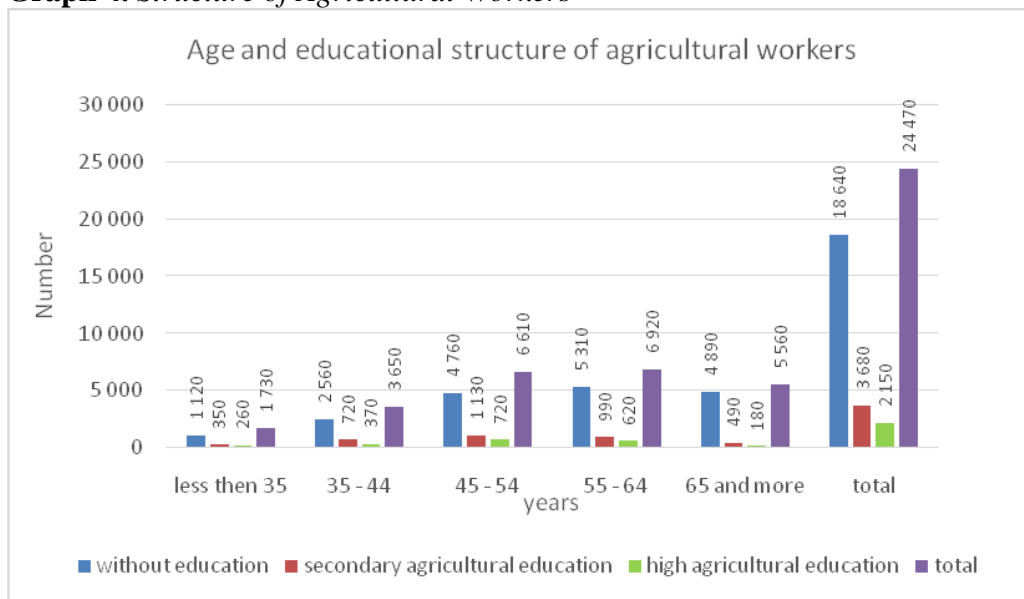
The loss of traditional markets, an almost not-existent land market and rapid agricultural price increase in inputs over outputs weakened Slovak farmers' competitiveness, so that even formerly successful cooperatives were bankrupted. Animal production was first to weaken, as labour costs negated competition with imported products. Cattle, sheep and pig numbers fell by 70, 66, and 30% respectively from 1990 figures (SR 2006 and 2010 Statistical Yearbooks). Plant production gradually decreased, heralding the cooperatives' demise, with cooperative and state premises abandoned and dilapidated.

Graph 3. *Employment in Agriculture*



The disintegration of agricultural enterprise considerably weakened many rural settlements' economic base because the cooperatives were often the sole source of local employment and income. Only older employees survived, increasing agricultural workers' mean age, and younger generations lost all interest in agricultural ambition. However, agriculture remains one of the few endeavours with available employment for older and less qualified workers who are unable to find work elsewhere. Graph No. 4 shows the structures of agricultural workers, Settlement of land ownership also featured in transitional changes. Land title reverted to original owners, but these became disinterested in working the land or they lacked the funds, technology and human resources to prosper.

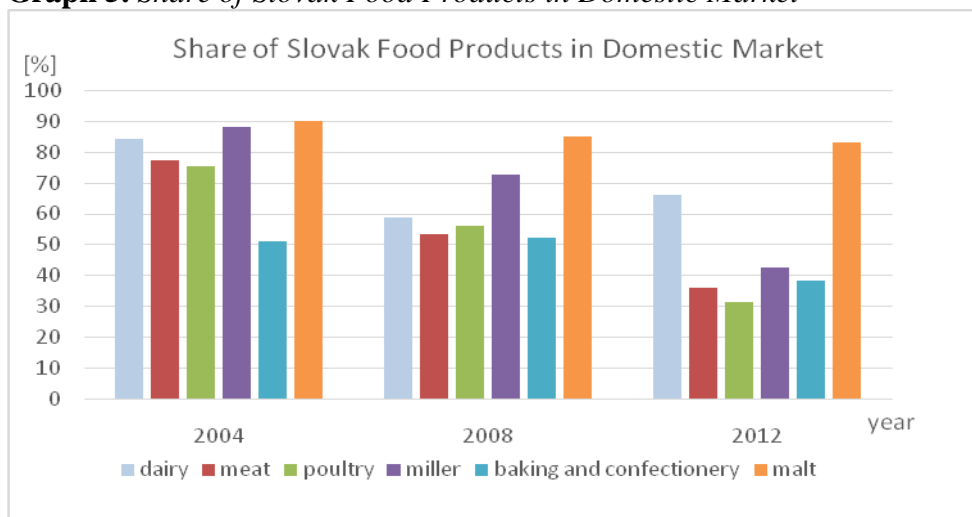
Graph 4. *Structure of Agricultural Workers*



These socio-economic changes were accompanied by altered management principles. Crop structure varied; with economical crops preferred. Currently popular crops such as cereals and the sunflower and rape energy crops prospered; with energy crops dominantly increasing their cultivation area by 181% and cereal regions diminishing by only 5% (SR 2006 and 2010 Statistical Yearbooks). This resulted in fodder plants, sugar beet and potatoes cultivation enduring the largest decline, with random and uncoordinated energy crop production threatening both the natural ecosystem and individual landscape-forming components. A distinct decrease was also observed in viticulture and fruit growing after 1990; where vineyards and plum, pear and cherry trees decreased by almost half, and walnut tree cultivation fell 30%,. Only apple trees maintained stable numbers. Grape-vine and fruit growing was discouraged in adverse socio-economic conditions, in conjunction with climate change and increasing plant disease and vermin numbers. Concomitant negative trends were observed in forest environments where 2001 timber-harvesting exceeded that in 1991 by 110% (SR 2006, 2010 Statistical

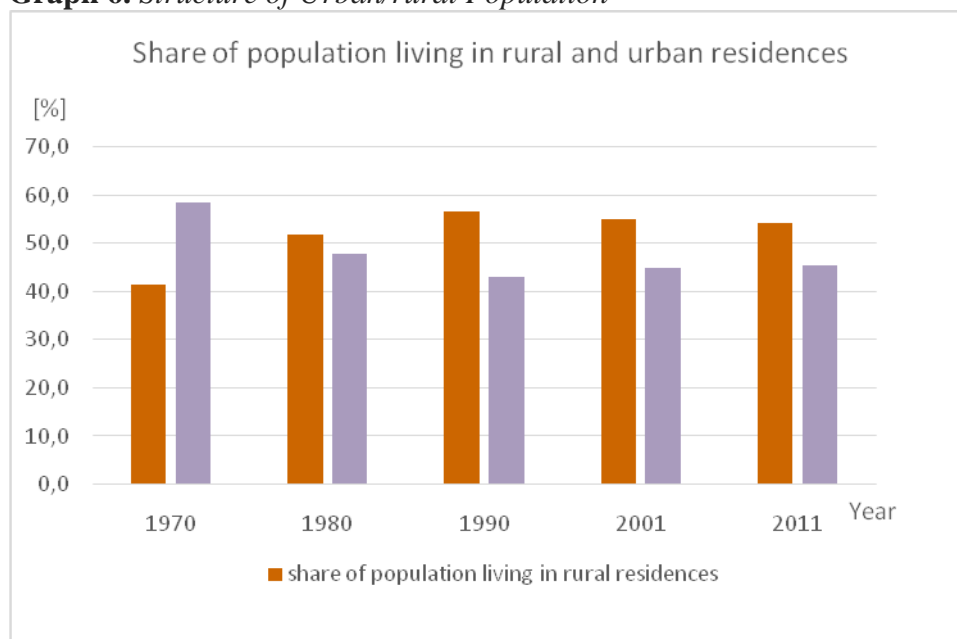
Yearbooks). Transition and globalisation processes introduced international production pressure on Slovak markets, with negative Slovak import/export ratio; especially where foreign food and fruit imports by supermarket chains drove local producers out of the domestic market (graph No. 5).

Graph 5. *Share of Slovak Food Products in Domestic Market*



The reasons of that state lie in the liberalization of the EU market, in the concentration of the retail network and persistent demand for the products in lower price ranges. Through multinational retail chains to Slovakia is imported too many competing foreign food. In 2012 the import of foreign food was up 77.4%. The situation significantly affects the weaker patriotism Slovak consumers who, given the level of their income prefers food in the lower price ranges, whatever their provenance. Structural agricultural changes also highlighted new problems in social and economic stability. These resulted in loss of employment for farm workers unskilled in other pursuits, and problems in re-employing them, Ageing of remaining agricultural workers, a rise in national unemployment and decline in real income, together with low purchasing power and lowered living standards influenced deterioration in psycho-social conditions. The sociological research in several areas in Slovakia showed that 75% of people said that life under socialism was better and happier than the current (Izakovičová at. All, 2008, Moyzeová at. All, 2014).

Distinct changes are noted in population movement; with working age rural population moving to employment in towns, cities and neighbouring countries, and urban migration to the countryside in search of better environmental quality. Migration urban population is much higher than the rural population out-migration, which is reflected in the growth urban population (graph No. 6.).

Graph 6. *Structure of Urban/rural Population*

These processes effected rural-settlement demographic change, with altered life-style and a new rural image (Moyzeová, 2014). While new residential quarters, entertainment centres, golf courses, ski slopes, water parks and environment-threatening businesses emerged in some villages, marginal rural areas requiring economic incentives fell behind. Ever-increasing trends saw the younger rural population pursuing employment elsewhere and older generations unable to finance investment in business activities. Hence, depopulation and lack of finance caused stagnation and abandonment of some villages, while others were converted into holiday-cottage colonies. An example of a marginal region is of Biosphere Reserve Eastern Carpathians, where all villages experienced population decrease, many of them up to 30% (Izakovičová, Oszlányi, 2007).

Limited local government resources and lack of investment-friendly credit schemes hindered appropriate application of local development programmes, with resultant ongoing deficit in amenities, a low level of services and inadequate transport services, especially in more out-lying settlements.

Environmental changes engendered both positive and negative results. Slovak Republic accession to the EU required environmental legislation commitments. Ecological and environmental limits were applied, with chemical usage and machinery reductions imposing burdens on individual landscape-forming components. Although the 1990 NPK 123,1 metric ton application reduced to 45 metric tons in 1995, subsequent increase took this figure to 67,9 metric tons by 2009. This was accompanied by 3,867 metric tons of pesticides, 2,347 metric tons of herbicides, 574 metric tons of fungicides and bactericides and 389 metric tons of insecticides used by 2009 (SR 2006 and 2009 Statistical Yearbooks).

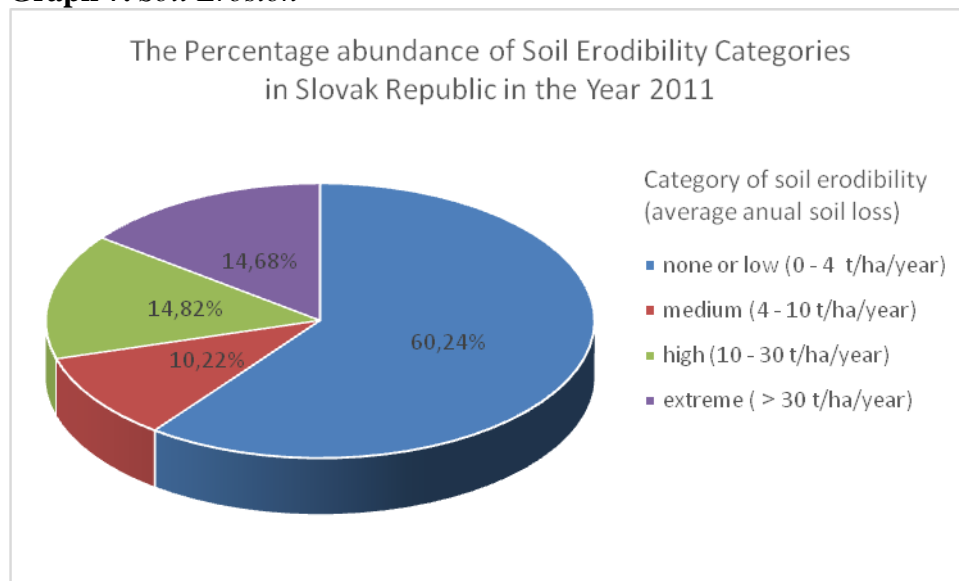
Many communes commenced landscape restoration and revitalisation after 2000 by applying ecological management fundamentals. In 2013 it was in the organic farming system in Slovakia 341 registered entities working on the 162 028 ha of agricultural land, which represents 8,4% of agricultural land. Although the majority implemented and sustained management principles based on landscape-ecological documentation with economic and social development plans guiding territorial development by revitalising and planting eco-stabilising vegetation, others discontinued this documentation and concomitant appropriate planning.

The most conspicuous emerging environmental problems include; taking of agricultural land of high quality to construction the technical facilities, landscape degradation, negative impacts of abandoned land for biodiversity, increased synanthropic species, loss of traditional landscape management, the disappearance of rare historical landscape structures and progressive changes in rural landscape character (Špulerová, 2013). Invasive alien species represent to biodiversity SR significant threat. Currently in Slovakia is registered 126 invasive species of higher plants and 79 potential invasive species (National Strategy for biodiversity protection, 2013). Appropriately managed is only 13% permanent grassland, inappropriately and badly managed 78,2% permanent grassland. A significant part of the original natural meadows is due to lack of care overgrown of raid plants and weeds, and there is a disruption to their original natural grass ecosystems (Bezák, Halada, Petrovič, Boltžiar, Oszlányi, 2007, Programme of Rural Development of 2014-2020 Programming Period, 2014).

Soil degradation from erosion, compaction, nutrient deficiency and loss of humus and microbial activity by contamination and acidification were consequential to inappropriate land management practices. Almost 39% of farmland is potentially threatened by water erosion (graph No. 7) and nowadays there is in total 1,4% of contaminated and 0,4% of severely contaminated soils in Slovakia. A part of our agricultural soil pool is threatened by compaction. At present, 457 thousand ha of land is potentially threatened by compaction processes and 19 thousand ha of farmland is already compacted. The causes are attributable to inappropriate management especially use of heavy mechanisms.

Individual socio-economic developments conflicted with soil and natural resource protection, and confrontation frequently emerged between land pool protection policies and NATURA 2000 networks. These and similar problems were typical of social changes in Slovak international border landscapes, and these remain unsolved and accentuated by contemporary economic and financial crises.

Graph 7. Soil Erosion



Conclusion

The basic aim of the paper was restricted to investigate crucial rural landscape change in Slovakia, specification of the main driving forces of these changes, and thus to identify basic problems accompanying these changes .

The key driving forces for the changes in the Slovakian landscape after the Second World War were defined, in particular collectivisation in agriculture and industrialisation during communistic era (mainly in 1950s and 1960s), transitional period following the change of political and socio-economical regime in 1989 and recent period of pre-accession and accession of Slovakia to the EU from 2000 (Lieskovský, J., Bezák, P., Špulerová, J., Lieskovský, T., Koleda, P., Dobrovodská, M., Burgi, M., Gimmi, U, 2015, Izakovičová, Oszlányi, 2013). Slovak rural landscape is also affected by the current globalization trends (Buchecker, Dobrovodská, at. All, 2010).

The each change is linked to the occurrence of certain problems, whether social or environmental. If you want to ensure the sustainable development of the rural landscape we must identify current problems, know their underlying causes and relationships. Since individual solutions catering mainly to economic sectors, are counter-productive, an integrated approach focused on assessed

causes and consequences in all spheres of economic, environmental and social life must be implemented. Although the principles are simple and widely accepted their application in everyday practical life remains rare. The basic barriers to successful sustainable development agriculture in Slovakia are (Izakovičová, at. All, 2008):

- The lack of human resources, ageing farmers and younger generation disinterest in traditional management practices,
- Inappropriate economic conditions comprised; low farming profitability, high inputs and low returns for agricultural production, low market prices for agricultural products, with low wages and adverse competitive conditions,
- Unavailability of suitable farming technology and insufficient financial resources to improve current methods,
- Legal and administrative barriers including; lack of support in grant schemes, administrative difficulties in funding subsidies and insufficient protection for rare and important landscape structures,
- External investment pressures on shot of important landscape ecosystems and natural resources.

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