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Original article

Landscape effects of conflicts in space management. A historical approach based on the Silesian and Żywiec Beskids (West Carpathians, Poland)

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ABSTRACT

A land use regime undergoes much change over time depending on the growth in the importance of various interest groups. Spatial conflicts repeatedly accompany this growth. The aim of the article is to determine the relationship between spatial conflicts and landscape changes. On the basis of the Silesian and Żywiec Beskid mountain ranges, it has been proven that conflicts arising between mountain grazing, agriculture, forest management, contemporary building and tourism development have significant impacts on the landscape. To this end, archive and contemporary cartographic materials, historical scientific works and archive photographs were used. The conflicts between mountain grazing and other types of human activity in the study area were analysed. Subsequently, their influence on the landscape was determined. As a result of the study, the primary sources of conflicts were indicated and correlated with historical periods and the predominant landscape use regime. The imprints of historical space conflicts and the rivalry for land use between different entities for their own purposes are still visible in the landscape. The historical conflicts have arisen between entities seeking ways to use different environmental resources occurring in the same area. Contemporary conflicts arise between entities seeking ways to use environmental resources (tourism) and between entities conscious of the hazards of the landscape sustainability resulting from the utilization of environmental resources (nature conservation services). Both historical and contemporary conflicts usually have a violent course resulting from the lack, or deficiency of, legislation concerning land management.

KEY WORDS: landscape, spatial conflicts, land use optimization, Western Carpathian Mountains, Silesian and Żywiec Beskids

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1. Introduction

Landscape may be treated as a record of past events which have left their imprint in space (RASZEJA, 2013). BOGDANOWSKI (1976, p. 35) claimed that *cultural landscape is (...) the reflection of humans' good and bad management on particular areas, therefore, it constitutes the physiognomy of their economic skills*. The current form of landscapes often depends not only on contemporary processes, but also on past ones (PLIT & PLIT., 2015). Relative proportions of arable land, meadows, pasture lands, forests and built-up areas in rural landscapes, as well as their area and borders, are a record of the management model existing in a particular historical period, a level of knowledge, technology development, a possibility of land utilization for farming and the profitability of agricultural

production. Land use regimes underwent much change in the past depending on the growth in importance of various interest groups. Spatial conflicts repeatedly accompanied this growth.

Space may be treated as a resource which is the object of rivalry of various entities. Its limitation is the basis of competition between different entities seeking ways to take over the largest chunk of land for their own needs. In this peculiar battle for land, the "business" having the greatest clout, wins. The possibility of fulfilling two or more functions by a particular area and competition between different interest groups connected with that is often a source of space conflict (BAŃSKI, 1998). The concept of spatial conflicts includes land use conflicts. Their general definition may be quoted after JANELLE & MILLWARD (1976) who suggest that land use conflicts are situations in which the parties of the conflict

have contradictory interests towards land use regimes on a particular territory. Contradictory interests do not always indicate conflicts. However, they occur more frequently in cases when the parties in the conflict try to maximize their profits from land use, simultaneously creating negative external effects influencing adjacent areas. Conflict situations take place when one of the conflicted parties wants to maintain a specific function on a particular area, whereas the other one seeks ways to change it. Similarly, spatial conflicts take place in cases where both parties seek the means to change the land use, but their aims and ways of making the changes are different (FURMANKIEWCZ & POTOCKI, 2004). In such types of conflicts, space resources, quality and functions may be the essence of the dispute (PRZEWOŹNIAK, 2007). In terms of time, historical, contemporary and potential conflicts may be listed. Historical conflicts are significant for documentation purposes and they, by analogy, may be helpful in solving current and potential problems.

Potential conflicts arise from planned investments or forecasted anthropogenic and natural processes.

Verification of the suitability of various areas for fulfilling specified functions and, as a consequence, determination of optimal land use, may lead to a reduction in the occurrence of spatial conflicts (TELEGA & BIEDA, 2015). This activity is the basis of land planning which enables reconciliation of the contradictory interests and conflict prevention. Identification of the conflicts and their better recognition may be the basis for modelling the optimal land use. The optimal land use minimizes negative effects which are mainly results of different land user interests. To this end, social participation is necessary. It reduces the risk of making improper decisions and allows us to identify existing conflicts (BAŃSKI, 1998; PAWŁOWSKA, 2010). An environment free from conflicts as a result of land management will create a local identity. As a consequence, it will be preserved and will form a harmonious landscape (CHMIELEWSKI, 2002).

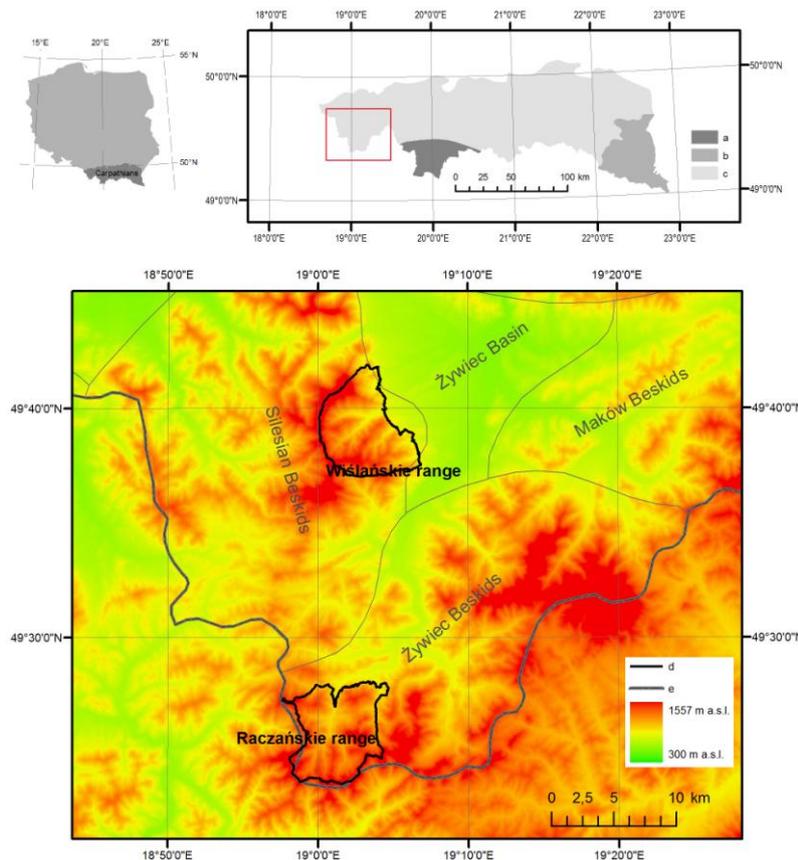


Fig. 1. Location of the study area (source: author's own elaboration)

a – The Central Western Carpathians, b – The Outer Eastern Carpathians, c – The Outer Western Carpathians, d – the study area boundary, e – state border

2. Study area, materials, research methods

The aim of this article is to determine the relationship between spatial conflicts and landscape changes. On the basis of the Silesian and Żywiec

Beskid mountain ranges (Fig. 1), it was proven that the conflicts arising between mountain grazing, agriculture, forest management and contemporary building and tourism development have significant impacts on the landscape. To this end, archive and

contemporary cartographical materials, historical scientific works and archive photographs were used. The spatial scope of the work includes two study areas of similar surface area (about 45 km²): a part of the Wiślańskie mountain range located in the Silesian Beskids and a part of the Raczańskie mountain range located in the Żywiec Beskid range (Fig. 1).

The following cartographic materials were used: Austrian cadastral maps from 1848 scaled at 1:2 880; a *Spezialkarte der österreichisch-ungarischen Monarchie* map from 1879-1885 scaled at 1:75 000; a WIG military map from 1933 scaled at 1:100 000; a military topographic map from 1960-1975 scaled at 1:25 000; a topographic map from 1979 scaled at 1:10 000; a contemporary land use map made by the author on the basis of land use mapping and an orthophotomap from 2009.

These materials were converted (i.e. calibration, on screen digitalization) in accordance with methods presented in the literature (AFFEK, 2012, 2013; WOLSKI, 2012; KAIM ET AL., 2014; SOBALA, 2012). Subsequently, the maps were analysed using GIS methods. This allowed a comprehensive database about land use and land cover to be created. As a result of the study, the primary sources of conflicts

were indicated and correlated with historical periods and the predominant landscape use.

3. The historical conflicts in land use on the higher parts of the Silesian and Żywiec Beskid ranges

As shown above, determination of the optimal land use may lead to a reduction in the occurrence of spatial conflicts. A land use optimization study has been carried out in the Polish Carpathians since 1960. SOBALA (2015) proved that forestry and mountain grazing are the optimal ways of using land in the study area because of natural environmental conditions. These results confirm the generally accepted view that mountain grazing should be the predominant type of agricultural activity in the Polish Carpathians (i.e. STARKEL, 1972, 1990; KOSTUCH, 1976; JAGŁA ET AL., 1981; KOPEĆ, 2000). Taking this into account, the conflicts between mountain grazing and other types of human activity in the study area were analysed. Their influence on the landscape was determined (Table 1). It was assumed that escalation of these sorts of conflicts lead to a landscape transformation.

Table 1. Historical conflicts between mountain grazing and other types of human activity (source: author's own elaboration)

The subjects of the conflicts	Duration	Reasons	Landscape effects	Contemporary record in landscape
Mountain grazing – agriculture/settlement	the 16 th century	Migration of the Vlach population in search of pasture lands (including Carpathians foothill)	Settlement development in the valleys of smaller mountain streams	Still visible record in the morphology of rural settlement (forest village)
	17 th -19 th centuries	Rural population growth and its pauperization	Glade settlement development, pastures turned into arable fields, pasture forming within woodland in the higher parts of the mountains, forest-field boundary height increasing, dense cart track network	Mountain pastures and glades, hamlets, stone banks and mounds on wastelands and in forests, ruderal vegetation
Mountain grazing – forest management	16 th -18 th centuries	Implementation of the restrictions in forest utilisation	Mid-forest arable fields (<i>cerchle</i>) turning into meadows in order to obtain fodder	Glades
	19 th -20 th centuries	Increased demand for wood – industry development – liquidation of the easements	Pasture lands decreasing, clear cutting occurrence, forest hamlets, gamekeeper's cottages, dense forest road network	Spruce monocultures, destruction of the gamekeeper's cottages, huts and sheds

An analysis of the historical spatial conflicts in the study area leads to distinguishing two types with particular effects which were related to:

1. Mountain grazing – agriculture/settlement conflicts which caused:
 - a) the necessity to adopt a sedentary lifestyle by the Vlach population in the 16th century. It was due to a comparatively dense settlement network in the Polish Carpathian foothills that were precluded from continuing their nomadic lifestyle

(furthermore, the environmental factors had an influence also on, e.g. insufficient areas of pasture lands, unfavourable climatic conditions in comparison with areas which had been utilized by the earlier Vlach population)¹;

¹ It should be noted that according to Jawor (2000) the Vlach population did not provide a nomadic lifestyle in the Polish territories. However, conflicts occurred with the local agricultural society

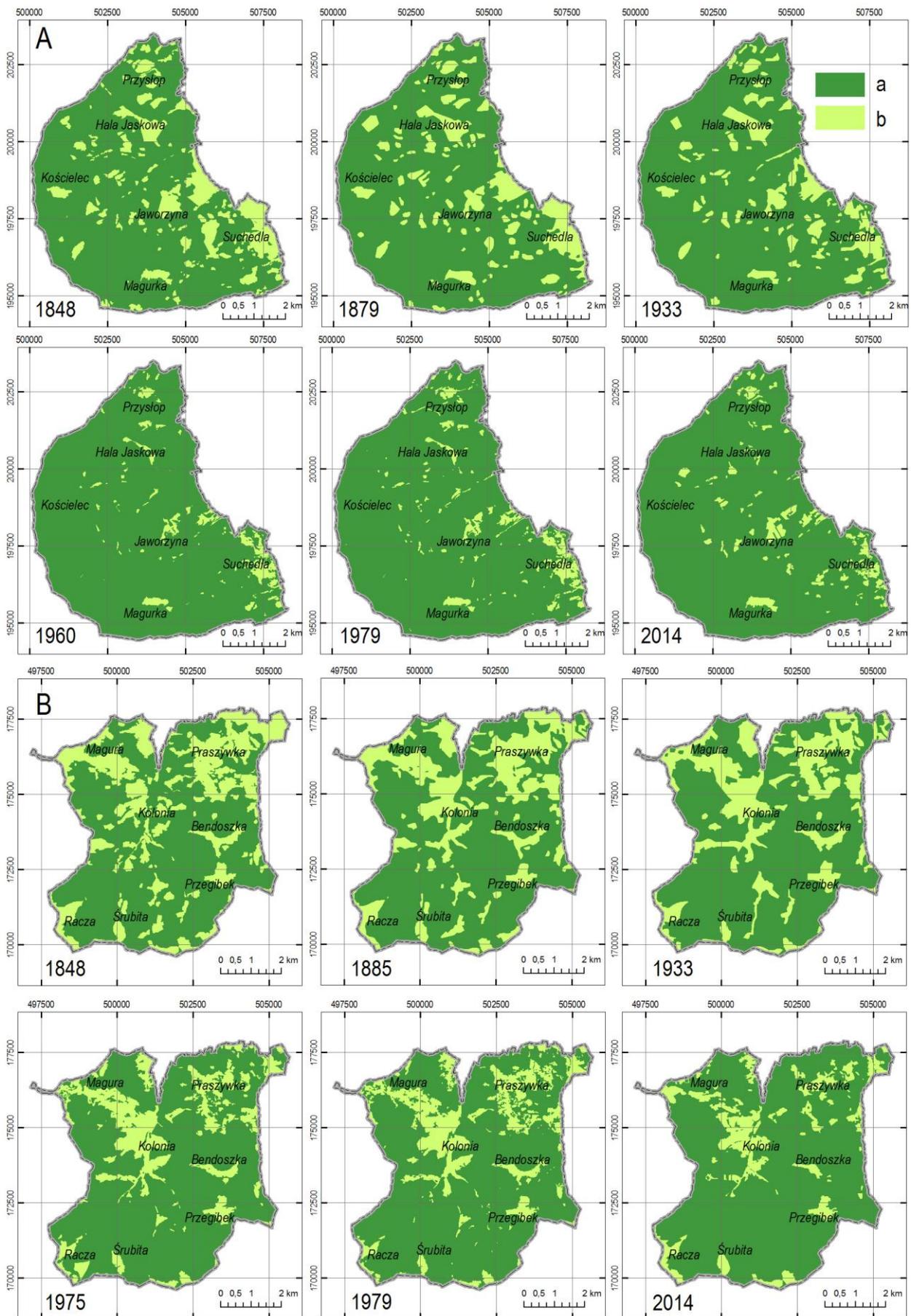


Fig. 2. Land cover changes between 1848-2014: A – the Wiślańskie mountain range, B – the Raczańskie mountain range (source: author's own elaboration based on cartographic materials mentioned in the text)
a – forests, b – non-forested land

- b) the necessity to relocate pasture lands to higher parts of mountains beginning in the 17th century as a result of development of glade settlement encroaching from the valleys.
2. Mountain grazing – forest management conflicts which caused:
- a) the necessity to increase the meadow areas because of a ban on obtaining fodder for farm animals from forests in the 17th and 18th centuries;
- b) the collapse of mountain grazing beginning in the mid-19th century due to the intensification of forest management (Fig. 2).

As a result of overlap in the above mentioned conflicts, the tendency of built-up areas to increase at the expense of the lower situated meadows was

visible, the meadow areas increased at the expense of the mountain pastures and the forest areas increased at the expense of the mountain pastures and glades (KUBIJOVICZ, 1927; KAWECKI, 1936; ZAWIEJSKA, 1986; ŁAJCZAK, 2004). As a result of these processes the storey system of landscape use was formed: the lower storey (below 900 m asl) included the so-called *spodki* (meadows and pastures) and glades (meadows, pastures, arable fields and residential buildings) and the upper storey (above 900 m asl) – utilized as mountain pastures (so-called *hale*). In some cases the fields were also tilled in the upper storey – constantly or in a bush following system (Fig. 3).

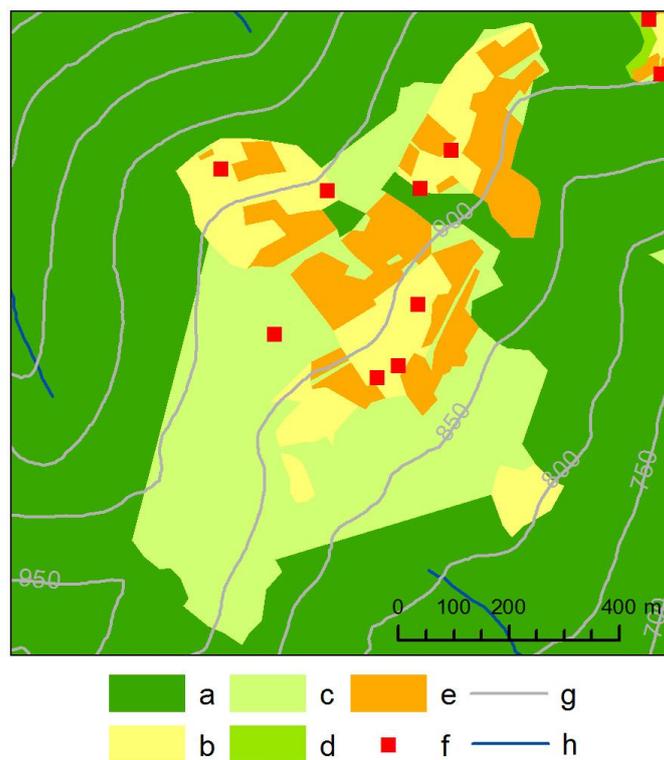


Fig. 3. Land use on Hala Jaworzyna (the Wiślańskie mountain range) in 1848 (source: author's own elaboration on the basis of Austrian cadastral maps)

a – forests, b – meadows, c – pastures, d – overgrown pastures, e – arable fields, f – farm buildings, g – contour lines, h – watercourses

Historical conflicts in the study area were connected with a phenomenon known as “the hunger for land” (*głód ziemi*). Over population in rural areas and the pauperization of peasants forced various entities to rival for land use in accordance with their own needs guaranteeing the possibility of existence. The gradual improvement in living conditions connected with the possibility of employment in industry caused a decline in importance of the higher parts of the Silesian and Żywiec Beskids to feed living needs. The process of agricultural abandonment has been occurring in the areas characterized by unfavourable natural

conditions since the mid-19th century. An increasing communication accessibility (construction of railways) and the growth in social mobility related with that, and, as a consequence, the possibility of income realization other than from agriculture, led to a decline in the population living off agriculture and agriculture abandonment. Simultaneously, the conflict between mountain grazing and forest management mounted. It led to a rapid decline in the importance of mountain grazing². The major part of the mountain pastures was not utilized for

² Sheep headage had decreased tenfold from the mid-19th to the end of the 19th century (Sawicki, 1919)

grazing in the Inter-War Period (KUBIOWICZ, 1927). As a consequence of agricultural land abandonment and grazing restrictions, the process of secondary succession of the forestry vegetation had been occurring. Simultaneously, intentional reforestation had been occurring, which resulted in an increase in forest areas. This process is typical of mountain areas all over the world and is called *forest transition* (BALDOCK ET AL., 1996; RUDEL ET AL., 2000; MACDONALD ET AL., 2000; MÜLLER & ZELLER, 2002; KOZAK, 2004; GELLRICH ET AL., 2007; GRIFFITHS ET AL., 2014; MUNTEANU ET AL., 2014).

Tourism started to develop in the Inter-War Period. In the study area, mountain hostels were built on the Przegibek pass, the summit of Skrzyczne and the summit of Wielka Racza, and the first trails were paved along the former sheep and cattle tracks wrangling. However, moderated tourism did not cause situations of conflict.

4. Current and potential conflicts in land use on the higher parts of the Silesian and Żywiec Beskids

Current and potential conflicts have a different character. Nowadays, the study area is not the subject of a wider interest of the foregoing users (Fig. 4). Unfavourable environmental conditions have caused tilling to be unprofitable. Forests fulfil predominantly protective functions. Nevertheless, mountain grazing has been revived over the last few years. Its environmental impact is not as significant as in the past. What is more, sheep grazing serves the landscape and nature conservation (SOBALA, 2014). Nature conservation is based on extensive sheep grazing fulfilling a significant function in maintaining biodiversity and the landscape (Fig. 5)³. This dependence results in no spatial conflicts between nature conservation and mountain grazing. The whole study area is conserved by landscape parks as well as partially by the Natura 2000 sites and nature reserves.

On the other hand, the accessibility of this area has increased because of the development of the communication infrastructure. This has resulted in an influence on the local economy based on a touristic function. Nowadays, improper relations between nature conservation and a need for economic development cause spatial conflicts. Nature conservation and the landscape are their

focus (HIBSZER, 2004, 2013). Contemporarily, the competition for spatial resources is connected with tourism development in the Polish Carpathians. Although, in the case of this study area there are mainly potential conflicts, in many other areas of the Polish Carpathians, also adjacent, spatial conflicts are widespread. The probability of their occurrence in the study area should be assessed as very high. The study area is located in one of the most attractive regions of the Polish landscape (KISTOWSKI & ŚLESZYŃSKI, 2010). In turn, the visual attractiveness of the landscape is the factor taken into account by tourists and investors (HALL & PAGE, 2002).



Fig. 4. Wasteland in Rycerka Dolna (the Raczańskie mountain range) 2014



Fig. 5. Sheep grazing as a nature conservation tool – Hala Radziechowska (the Wiślańskie mountain range) 2013

The dynamic, and not always controlled development, of the tourist infrastructure and a corresponding increase in communication intensity connected with it affect land utilization. In mountain areas, the appropriation of the dynamic landscape for tourism and recreation investments occur in a highly blatant way. Apart from the direct impact on the environment, it essentially changes the mountain landscape (MYGA-PIĄTEK & JANKOWSKI,

³ This relates to the Provincial Programme of the Economic Activation and Cultural Heritage of the Beskids and Kraków-Częstochowa Upland “Owca Plus” and the Life+ programme “The conservation of the non-forest communities in the Beskids Landscape Parks” implemented by the Silesian Group of the Landscape Parks

2009). Selling the grounds for recreational buildings on valuable natural areas as well as a strong investment pressure in these areas are common and negative. Numerous “second home” estates have been built in the stream valleys away from built-up areas (Fig. 6). As a result of the expansion of tourist settlements, there are permanent land use changes. These changes involve the abandonment of agricultural land and the scattering of buildings on slopes with a simultaneous blurring of the regional architectural style. New buildings are characterized by a distinct architectural dissonance in comparison with traditional rural buildings. KOWICKI (2004) described the cause of this phenomenon in an interesting way as “appetite for the land” (“*apetyt na ziemię*”). Conflicts between tourism development (especially ski tourism) and nature conservation arise in many conservation areas, e.g. around Babia Góra (HOLEKSA & HOLEKSA, 1981) and Pilsko in the Żywiec Beskids (ŁAJCZAK ET AL., 1996; ŁAJCZAK, 2007), on Jaworzyna Krynicka



Fig. 6. Second home estates – Bory in the Raczańskie mountain range 2014

The landscape transformations connected with tourist impact are common in many mountain areas all over the world. The development of typical urban infrastructures on summer pastures in the French and Swiss Alps can be an example (BAKER, 1982; HERBIN, 1995).

Proper land management should be able to prevent the conflicts mentioned above. It should be enhanced by the occurrence of landscape parks and Natura 2000 sites. Meanwhile, Polish legislation and land management practices have been widely criticized by many entities for more than a decade. According to numerous studies (e.g. KISTOWSKI, 2008; ŚLESZYŃSKI ET AL., 2007; ŚLESZYŃSKI & SOLON, 2010; BÖHM, 2008; OZIMEK ET AL., 2013), there are no coherent or congeneric land management systems in Poland. Furthermore, taking the objective

slopes in the Sądecki Beskids (POTONIEC, 2001) and in the Silesian Beskids (ABSALON ET AL., 1990; MIKA, 2004). The spatial extent of the landscape effects of tourism involves only certain areas, but the principal problem is that tourists utilize the most valuable natural areas. Furthermore, local councils claim that the development of a tourist infrastructure is the only way to commune development. The number of ski resorts has increased dynamically i.e. in Wisła over recent years. Alternative projects of ski resort extensions or their construction sprout up in many hill stations in the Silesian and Żywiec Beskids, i.e. three ski resorts in Ujszoły commune (Lipowski Wierch, Okrągłe, Szczytkówka) or “the National Centre of Active Recreation in Brenna with integration of the tourist potential of Brenna and Szczyrk communes” (Fig. 7). It should be noted that conflicts arise within the tourist activity as well. These conflicts occur between intensive tourist development and mountain sightseeing tourism.



Fig. 7. Beskid Sports Arena ski resort in Szczyrk (Silesian Beskids) 2016

environmental conditions in planning processes into consideration are limited (no obligation on ecophysiological study and an environmental impact assessment compilation on certain planning levels). Without analysing these conditions, the land management optimization leading to decreasing the spatial conflicts is not possible. However, taking the environmental conditions into consideration is not sufficient in those cases when it is required by regulations (KISTOWSKI, 2008). Deficiency in the systemic approach to landscape conservation and landscape policy are also a problem (MYGA-PIĄTEK & NITA, 2015). Furthermore, the weakness of the implementing instruments of nature conservation (BADORA, 2014; FOGEL, 2014, 2015; WAŃKOWICZ, 2015) often leads to illegal activities in planned and ongoing investments. What is more, the lack

of cooperation of local authorities with the landscape parks management, as well as common opinion about development limitations for nature conservation is also a problem (KOMOROWSKA, 2000; ZAWILIŃSKA, 2007). The land sale for second home construction is treated by the local community as a fast way to generate income (MIKA, 2004). The low-level of social participation, which is a recommended means to prevent potential spatial conflicts, represents additional obstacles (PAWŁOWSKA, 2010).

5. Conclusions

The landscape transformations in the study area are a result of spatial conflicts arising from the domination of different entities rivalone another

for the use of environmental resources (mountain grazing, agriculture, settlement, forest management, tourist development). The imprints of the historical space conflicts and the rivalry for land use between different entities for their own purposes are still visible in the landscape. The clout of particular entities participating in the peculiar “game for space” (GÓRKA, 2010) was variable and depended on overall political and socio-economic conditions as well as on prevailing needs (Vlach population migration, overpopulation and land fragmentation, industry development and the possibility of working outside agriculture, demand for wood and sheep products, tourism development). This study allowed the basic sources of conflicts to be specified which may be correlated with the historical periods and the predominant landscape use regime (Fig. 8).

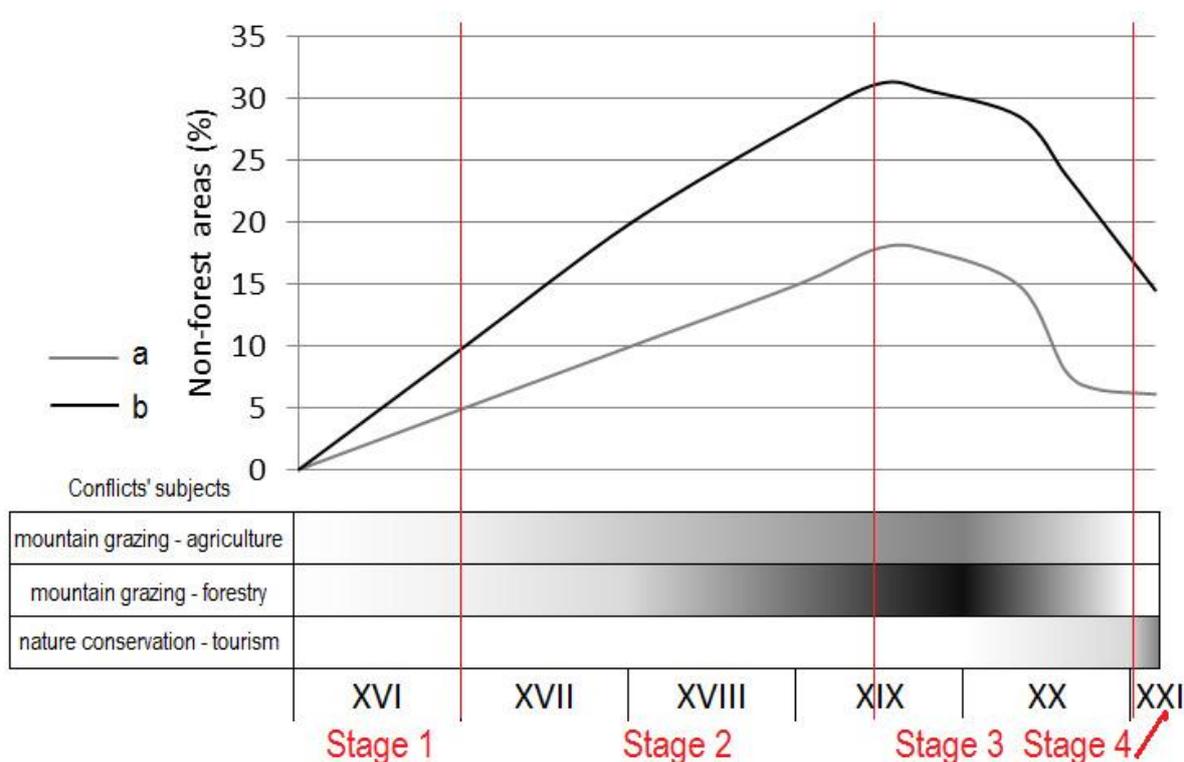


Fig. 8. A diagram of the correlation of landscape evolution stages with conflict sources (source: author's own elaboration) a – the Wiślańskie mountain range, b – the Raczańskie mountain range. Non-forested areas percentage interpreted on the basis of source materials. Colour intensity in the bars relates to the intensity of the conflicts between mountain grazing (nowadays also nature conservation) and other types of landscape use

Stage 1 (16th century) – a non-forest area increase associated with mountain grazing (a conflict between mountain grazing and agriculture/settlement in the Carpathian foothills causing the necessity to adopt a sedentary lifestyle by the Vlach population – so-called second settlement phase⁴);

Stage 2 (17th century – mid-19th century) – a non-forest area increase associated with mountain

grazing, agriculture and settlement expansion (a conflict between mountain grazing and agriculture/settlement – so-called glade settlement phase; a conflict between mountain grazing/agriculture and forest management);

Stage 3 (mid-19th century – 20th century) – a non-forest area decrease associated initially with forestry intensification and agriculture and settlement expansion (a conflict between mountain grazing and agriculture, settlement and forest management);

⁴ The first settlement phase occurred in the 13th century in the adjacent Żywiec Basin

from the 20th century, associated with agricultural land abandonment;

Stage 4 – (21st century) – a non-forest area decrease associated with agricultural land abandonment (a conflict between nature conservation and tourism).

Analyses of historical and current conflicts in the Silesian and Żywiec Beskids allow us to draw the following conclusions:

1. The historical conflicts arise between entities seeking ways to use different environmental resources occurring in the same area (mountain grazing, agriculture, settlement, forest management); the exploitation of one of the environmental resources reduces the possibility of its use by the other one.
2. The contemporary conflicts arise between entities seeking ways to use environmental resources (tourism) and between entities being conscious of the hazards of landscape sustainability resulting from the utilization of environmental resources (nature conservation services).
3. Both historical and contemporary conflicts usually have a violent course resulting from a lack, or deficiency, of the legislation concerning land management.

A proper spatial policy should be the basic factor limiting these conflicts. The overall aim of this policy should fulfil the overall social interest, not only the commercial interests of individual entities. This aim should be pursued by the optimization of land use consisting of the following phases: identification of the possible ways of land use, specifying the possibility of conflicts occurring because of the different aims of particular entities and specifying the land use regime taking the main and complementary functions into account. Land use optimization, in accordance with sustainable development principles, by including the environmental, social and economic conditions, will minimize spatial conflicts.

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