Management of Cultural Landscapes: What Does this Mean in the Former Soviet Union? A Case Study from Latvia

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Management of cultural landscapes: what does this mean in the Former Soviet Union? A case study from Latvia

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Abstract
Concern about changing cultural landscapes has increased recently, with the advent of the European Landscape Convention placing signatory countries in a position of having to develop action for protecting and managing cultural landscapes. In countries of the former Soviet Union the landscape underwent many changes as a result of agricultural collectivisation and its aftermath. This situation has been analysed for six sample rural municipalities (pagasts) in Latvia, one of the three former Soviet countries to join the European Union (EU), using maps from the period 1901 to 1927, (to represent the "traditional landscape")and 1997 orthophotographs updated to 2000, (to represent the "post-Soviet landscape") and field assessment of their character. It was found that all sampled pagasts had experienced significant landscape change during the Soviet times which replaced the pre-Soviet, traditional character with a new "ideological landscape". The implications for the protection and conservation of such landscapes created by a previous foreign occupying power are many, raising questions of what landscapes or elements to conserve under the requirements of the Convention.

Key words
Collectivisation; landscape character; landscape change; European Landscape Convention.

Introduction

Concern about vanishing cultural landscapes and new emerging landscapes has increased over recent years (Antrop, 2005). Many people see landscape change as a threat for a number of reasons, for example, the loss of identity of the existing landscape. However, as Antrop also notes, landscapes are always subject to change and as such they express the way that natural and cultural processes interact with one another. The protection, management and conservation of cultural landscapes has also become more important as a result of the European Landscape Convention coming into force (Council of Europe 2000), with signatory countries committed to the development of concomitant programmes. The definition of the landscape within the Convention is "… an area, as

perceived by people, whose character is the result of the action and interaction of natural and/or human factors".

Under Resolution 128 (2002) of the Council of Europe, on the problems of Europe's countryside, the Council noted, amongst other things, that **"**Europe's countryside, and the people who live in it, are a highly valued and varied asset for the whole population of the continent: the largest part of rural Europe is covered by agricultural land and forests, which have a strong influence on the character of European landscapes; the great diversity of nature and of human culture enriches the quality of life for all Europeans. It is our duty to understand, protect and enhance this heritage; at present, in many parts of Europe, the rural heritage is being rapidly eroded and even destroyed by social or technological changes, modern agriculture, urban growth, neglect and other forces" (Council of Europe, 2002).

As noted by Nikodemus et al. (2005), Europe has experienced rapid social transformations over the course of the 20th Century, which presents a range of threats to the continuing presence of what might be described as the traditional European cultural and historical rural landscape. The European Environment report (European Environmental Agency, 1995) identities seven factors currently having an impact on the rural landscape, though to different degrees in different places:

- Intensification of agriculture;
- Overgrowth of agricultural lands;
- Urbanisation and development of infrastructure;
- Standardisation of building materials and designs;
- Tourism and recreation;
- Excavation of mineral resources and establishment of land-fill sites;
- Disappearance of natural biotopes, habitats and ecosystems.

It is the social and economic impacts that often determine the types of land use within a given region and which in turn affect environmental aspects (Ojima et al., 1993; Mander and Palang, 1994; Melluma, 1994) including the landscape in the sense of the European Landscape Convention definition quoted above. In the former Soviet Union, and other Central and Eastern European (CEE) countries, centralised land planning systems were more important than in other countries and have had a marked effect on the way that the countryside has developed since, as a result of the legacy of land ownership, land use, infrastructure and communications. The three countries of Estonia, Latvia and Lithuania are the only former countries of the Soviet Union to join the EU, although the Council of Europe (responsible for the European Landscape Convention) also covers other former Soviet Union Countries including Belarus, Ukraine, the Russian Federation (the European part) and the Caucasus states.

This paper will explore the landscape that resulted from changes that took place between the period 1901-1927, from when baseline data are available, representing the "traditional landscape", and 2000, concentrating on the Soviet period, 1945 to 1991, representing the "post-Soviet landscape", in a case study of selected rural municipalities (known as "pagasts") from Latvia. While land abandonment is a trend that started after Latvia

regained independence in 1991 (see below), in terms of the overall landscape structure and the implications for what can be termed the cultural landscape of Latvia, it is the impact of the period of the so-called Soviet Occupation which in many ways remains a driver of the pattern and structure of the cultural landscape of Latvia's countryside. The resulting landscape and its continuing change presents an interesting challenge for implementation of the European Landscape Convention, to which Latvia is a signatory.

During the 20th century Latvia experienced several major transformations in land use. In 1935, agricultural land covered 57.3% and forests occupied 26.6 % of the land area. By 2000, the agricultural area was only 38.5%, at the expense of which woodland had almost doubled in area, then occupying 44.4% of the territory (Ministry of Agriculture, 2001; Latvian Environmental Agency, 2002). This period covers several major upheavals, including the Second World War, when Latvia was invaded several times and fought over with damaging consequences for the landscape and population (around a third of the population died, were exiled or fled abroad during the war period and many houses were destroyed in the battles). Thus, the current changes, visible and ongoing as they are, have to be seen in the context of the much more considerable changes which happened, more in some areas than others, as a result of pre-war activities, wartime depredations and Soviet land use policies, the last of which in particular continue to affect the character and appearance of the landscape. The broad statistics stated above do not reflect the diversity of landscape, nor the different degrees to which agriculture changed over the whole period, including the major era of the Soviet period, in different places and as a result affected and in turn helped to shape the current character of the cultural landscapes.

For the purposes of this study, landscape character is defined as a "distinct and recognisable pattern of elements that occur consistently in a particular type of landscape" (Countryside Agency and Scottish Natural Heritage 2002). Character makes each part of the landscape distinct, and gives each its particular sense of place. In Latvia no comprehensive assessment of landscape character yet exists, although a simplified version based on dividing the landscape into zones on the basis of topography and land cover has been adapted for guiding forestry planning (Bell and Nikodemus, 2000). As well as topography (including geology), land use pattern (land use types and configuration, ecology etc), landscape scale, settlement pattern (traditional house types and location patterns), the cultural landscape character is informed by historical aspects, communication patterns and key features such as churches, castles, unique landform or historical events and persons. The condition of the landscape is also important because this can often determine trends for the future and the need for conservation. This definition forms the basis for an analysis of the Latvian landscape of the sample pagasts in this paper.

The main ways that the Latvian landscape changed under the Soviet system are as follows:

- Farms were nationalised and amalgamated into one of two varieties of collective farms (kolkhoz or sovkhoz, terms being short for kollektivnoe khoziaistvo or sovietskoe khoziaistvo). A kolkhoz was collectively run by the members, whereas a sovkhoz was centrally administered and the workers were not members. In

practice these were bureaucratic differences and made no difference to the way they were managed or the resulting landscape. They were run as a business and all the former landowners (who were not deported to Siberia as "kulaks") became members (kolkhoz) or workers (sovkhoz).

- The previous dispersed settlement pattern was changed as people were moved into blocks of flats constructed in the new village centres.
- Large production facilities were constructed in the centres, such as barns, heating plants for the houses and flats, grain silos, intensive pig sheds, dairy facilities, machine tractor stations and storage units.
- Land capable of being drained or improved ("ameliorated") by drainage or levelling to allow large machines to operate was brought into production in large contiguous fields that ignored the original field patters or ownership boundaries.
- Land deemed marginal and inefficient for mechanised agriculture was left uncultivated and allowed to become colonised with forest.
- Old houses of former land owners were in many cases left empty, some were demolished to make way for large fields while others remained in use, perhaps as storage or where some people continued to live, sometimes several families being moved into what were originally single family houses.
- Some forest areas were also drained and improved in terms of productivity.

This can be clearly seen as a large-scale and pervasive restructuring of the land and landscape in order to meet an ideological requirement, centrally planned and carried out by an administrative process (Melluma, 1994).

Subsequent to the collapse of Communism and the restitution of land to the original landowners, many of whom are old, non-resident or not interested in agriculture, land abandonment started and has continued to the present day. This is manifested by scrub growing on many fields, a sign of their eventual transformation into forest. Of the seven factors named in the European Environment report noted above, the main one affecting Latvia is overgrowth of agricultural lands. This is in marked contrast to many other countries in Western Europe, for example, although it also occurs in eastern European countries and some, such as Portugal, in Western Europe (Nikodemus et al, in press). Urbanisation and the development of infrastructure are also occurring but are comparatively limited in extent to date. This land abandonment is one of the main aftermaths of the Soviet era and in many ways is one of its enduring legacies to the landscape.

Furthermore, in relation to one specific cultural aspect of landscape character, that of settlement pattern, a study in the 1980s of the Latvian settlement pattern types (Šteins, 1986) showed that there were originally a number of distinct traditional regional settlement patterns which became altered as a result of the Soviet changes. These can be broadly classified as follows:

1. Homogeneous dispersed farmsteads, found in open and mainly arable plains in Zemgale and Kurzeme;

2. Areas of dispersed farmsteads with occasional linear concentrations along valleys, for example, found locally around the town of Alūksne in northern Latvia;
3. Most farmsteads in small hamlets with a few scattered ones in between, found in the more forested landscapes of north-west Vidzeme;
4. Almost all farmsteads in small hamlets, found in several locations;
5. Clusters of houses in hamlets, found along the coastal areas;
6. Linear settlements along roads.

The implications of these changes to settlement pattern will also be explored in the paper.

The European Landscape Convention requires signatories to protect and manage the cultural landscape, which means conserving and keeping up the characteristic features as justified by its heritage value. However, what exactly does this mean in the context of landscapes which were mainly formed during the time of occupation by another power? If many of the built structures from such a period are derelict or destroyed, and if many of the landscape elements which are, arguably, more traditional and of more importance culturally are also in a poor condition or were destroyed, what does conservation and management mean? Moreover, in situations where the population do not identify with the Soviet landscape and where a sense of national identity is associated with the older, traditional elements of the landscape (Bell et al., 2008), what are the options for landscape policies? Furthermore, since the Soviet era is a historical reality and part of the cultural history of the country and landscape, regardless of how people perceive it, how should it be taken into account?

In order to explore the range of aspects described in the introduction and to assess the deeper aspects of these significant landscape changes and the processes and influences that are most significant, research using several complementary approaches was carried out and is described in this paper. In order to delve more deeply into the subject and to compare how the changes have manifested themselves in different ways in different regions, research into the changes that have taken place in the Latvian landscape and its character was conducted in six pagasts. The research questions are as follows:

1. What has been the impact of changes to the land use and landscape character of Latvia as a result of the Soviet land use planning system?
2. How does the aftermath of these changes continue to affect the development of the landscape?
3. How does the understanding of this situation help in defining goals for landscape protection and management under the requirements of the European Landscape Convention?

Materials and Methods

A small sample of Latvian pagasts was selected for study. These were located in each of the historical divisions of the territory that is now Latvia (Kurzeme, in the west, Vidzeme in the north and centre, Zemgale, in the south and Latgale in the east), and selected to reflect the main differences in land use and soil quality, topography and landscape character. The selection criteria were limited by the availability of data on historical land

use, which is not available comprehensively across the country. The locations were, therefore, chosen because good data from the period 1901 to around 1927 were available (topographic maps and archival materials still extant in the municipalities) showing the land use before the land reforms of the first period of independence, before numerous new farmsteads were constructed and before the Second World War and the subsequent Soviet Occupation. Six locations were chosen, two in Vidzeme (Dzerbene and Vecpiebalga), one in Zemgale (Vecsaule), two in Kurzeme (Barta and Priekule) and one in Latgale (Nautreni) Table 1 summarises the main features of the samples. Fig. 1 shows the location of the study areas.

Table 1: The sample areas chosen for the study

Location	Characteristics of the sample area
Dzerbene	Lies in the hilly region known as the Vidzeme Uplands. The soils tend to be Luvisols or Cambisols, loamy sand or sandy loam.
Vecpiebalga	Lies in the hilly region known as the Vidzeme Uplands. The soils tend to be Luvisols or Cambisols, loamy sand or sandy loam.
Vecsaule	Located in the flat plain of Zemgale. In most of Vecsaule Luvisols and Stagnosols on loamy soils are dominant except in the north eastern part of where Arenosols and Cambisols on sandy soils are to be found.
Barta	Located in the Kurzeme region, in the south west of the country where the terrain is fairly flat or undulating. Luvisols and Cambisols on loamy sand or sandy loam dominate and sandy soils occur in the western part known as the Piejuras lowland.
Priekule	This area is the second example from Kurzeme and is different because it has a town, Priekule, located in the middle of the pagast. The natural conditions are similar to those as Barta, except that the very eastern part falls into the so-called Rietumkursa upland.
Nautreni	Lies in the east of Latvia, the area known as Latgale. This area traditionally has a different character owing to its history which included a period under Polish rule and the scale of land use has always been smaller. The southern part of the area is hilly with poorer soils, lying in the Latgale upland while the northern part is flatter and more fertile and lying in the Austrumlatvijas lowlands.

The study of landscape involves not only the physical aspects of the land use and settlement which can be identified from maps but also the underlying processes that created it (and continue to affect it) and its perceptual aspects (see the definition of "landscape" from the European Landscape Convention as noted in the Introduction). Therefore the research used both map-based and visual-description-based approaches to analyse the landscapes under investigation. The understanding of landscape character

flows logically from the analysis of changes to land use and settlement patterns – how these are changed landscapes experienced on the ground.

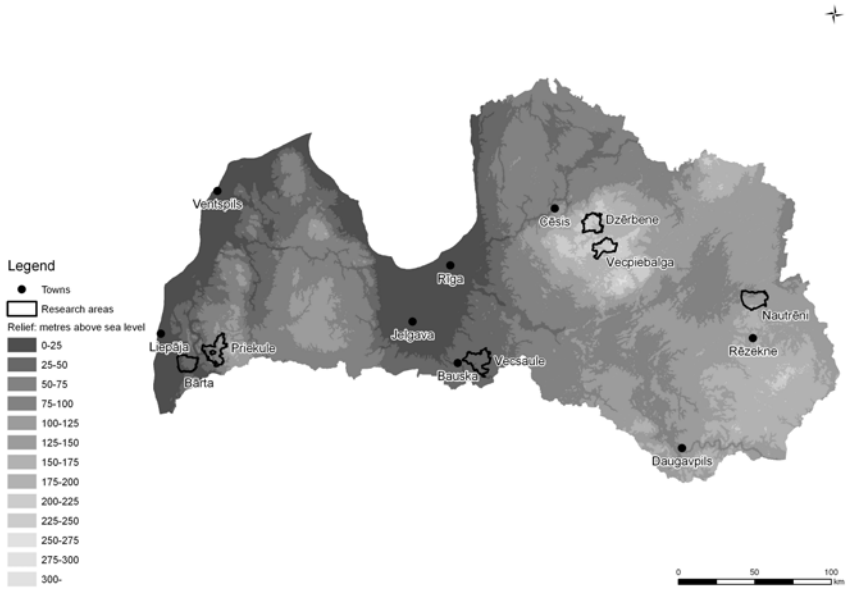


Fig. 1. Location of the study areas. The legend also shows the relief, demonstrating how the samples are found in different landform types.

Using the ARCView Geographical Information System (GIS), datasets were complied from two sources: historic maps from the early 20th century (supplemented by archival material such as local maps and survey reports) to provide a picture of the landscape before the First World War and aerial orthophotographs from the late 20th century (to show the post-Soviet land use and settlement) (updated by field survey to show the current extent of the process of land abandonment).

The historic maps were produced by the then Russian Imperial cartography service with some updating in the time of the First Latvian Independence period. They were of a scale of 1:75 000 dating from 1901 to 1927, depending on the mapping date (there is only one set of maps for each area for the early 20th century, with a wide range of survey dates), supplemented with some local data available for each pagast, mainly local maps and some survey reports) to provide more detailed information about land use at that time. Table 1 shows the dates of the maps used for each of the sample pagasts. Frequently the maps were only updated to show additional roads in the 1920s but the basic survey was of the early 1900s, except for Latgale, where a new survey was undertaken in the early 1920s. Although new farmsteads were built after the land reforms of 1920 none were included in the updated surveys as few if any would have been constructed by the time the survey field work was carried out. Thus, for all practical purposes the maps show the situation of land use and settlements before the First World War, if not earlier, and will be referred to as the "1900s" era maps.

Table 2: The map data for the 1900s era map bases.

Pagast	Survey date	Updating	Comments
Dzerbene	1911	1927	Updating of roads only
Vecpiebalga	1911	1927	Updating of roads only
Vecsaule	1907 and 1927	1926	The western section is the newer map, the eastern section was updated to show additional roads
Barta	1901	1927	Updating of roads only
Priekule	1904	1930	Updating of roads only
Nautreni	1916 and 1925	1927	The northern section is the newer map, the southern section was updated to show additional roads.

Aerial orthophotographs from 1997, were used to create the maps of land use in the post-Soviet era. Some of the changes in the landscape since 1991, such as some land abandonment, could be identified from the aerial photographs or from pagasts surveys, by the age of the vegetation structure; for example, scrub and young trees growing on fields show land that was abandoned 10 years ago at the most. Therefore, the picture is more accurately that of the landscape emerging from the Soviet era, from which it may be possible to interpret trends resulting from its aftermath. Field surveys in 2007 allowed the state of land abandonment to be updated and recent statistics verify that the process continues (Nikodemus et al, in press). The updating of the land abandonment data helps to show how the trends of land use change are continuing, rather than presenting a study that is already historical. It was not possible to identify from these maps what changes had occurred before or during the Second World War. However, from the knowledge of the type of changes undertaken during the Soviet era (as noted above) and their scale, it was fair to assume that most were from this time, apart from the land abandonment evidenced by the scrub growth. The exception is the housing pattern, as some of the farmsteads built in the 1920s and 30s survived the war and Soviet Era and therefore appear on the later maps. This fact presented difficulties for analysis of the changes to settlement (see results section below). The maps therefore represent the basic land use pattern as it emerged from the Soviet era with land abandonment representing the main changes that have occurred since. They will be referred to as the "2000s era maps".

The spatial data recorded in the GIS included forest cover (no information on forest type or age was available from the 1900s), fens (which may also include bogs and mires) houses/farmsteads, roads, rivers and streams, ditches (recording land amelioration) and features such as collective farm centres, quarry pits and other elements. The remaining land was identified as agricultural land but not divided into pasture, meadow or arable types as no specific data from the pre-First World War period were available. Two comparative datasets were therefore prepared at the same scale and using the same classifications, one for the 1900s era and one for the 2000s era. The maps for the 2000s ear also include the abandoned land surveyed in 2007. The areas are identified as percentages of the agricultural land, a class to which they still technically belong rather than being identified as a separate class. This enables the 2000 land cover and settlement pattern to be seen and analysed separately from the issues of abandonment Figures 2-7).

Although both sets of maps show houses/farmsteads (divided into active farms and smaller farmsteads in the 2000s era maps, in order to indicate the extent of commercial, as opposed to semi-subsistence farming and its correlation to land abandonment) this is more indicative of the pattern because the earlier maps do not clearly show the function and status of all buildings marked on them. Therefore, the farmsteads and houses marked on the maps are mainly used to show the changes in the pattern and distribution of settlement rather than an analysis of numerical changes. The Encyclopaedia of Pagasts (Anon, 2001, 2002) describes the main factors which affected the settlement of each area and have been used to help understand the character and significance of the changes visible on the maps.

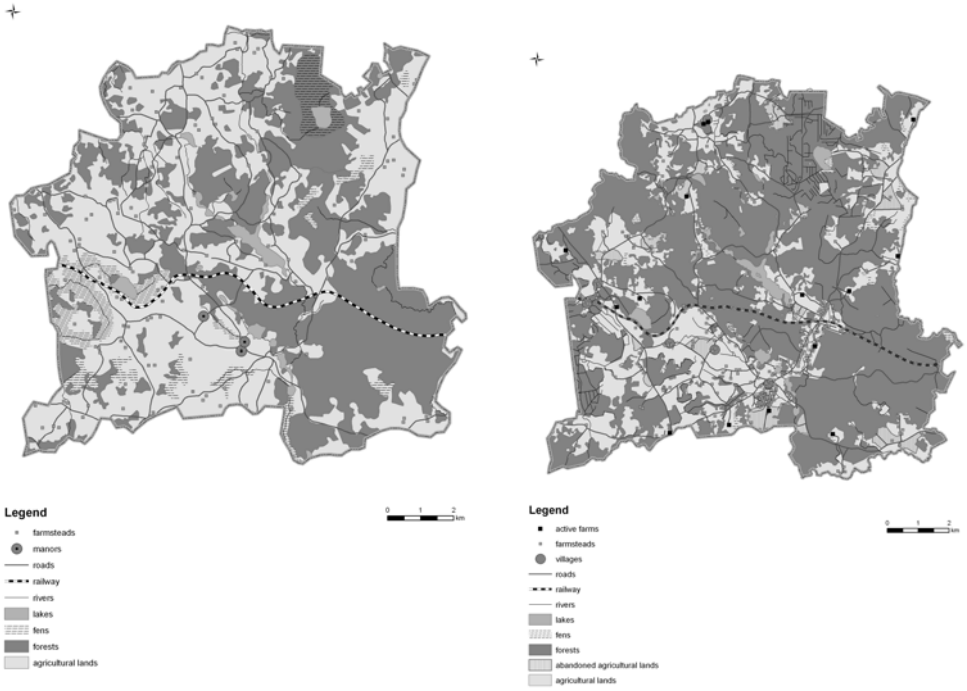
In order to collect data on the landscape character and the condition of the elements of the landscape each of the sample pagasts was visited by car to obtain a sense of its character, and a number of photographs and notes taken of the main features of each, in relation ot the evidence presented by the 2000s era maps. As the visits took place in 2003 the contemporary features observed on the ground reflect those extant at that date. However, the key aspects noted above were readily visible and many of the major changes such as abandonment of the collective farm centres had already taken place well before 2003, shortly after the collapse of Communism. Although now some 5 years old, recent updates of data on land abandonment show that the character remains the same and that the trend for land abandonment continues (see also Nikodemus et al, in press). The landscape character survey recorded how the landscape appeared, using the criteria noted in the introduction: landform, land use pattern, landscape scale, settlement pattern, land use condition and key features. There is clearly a correlation between the mapped information and what is visible on the ground. The landscape character information however, provides more on the perceptual or experiential aspects and reveals more than maps alone.

Results

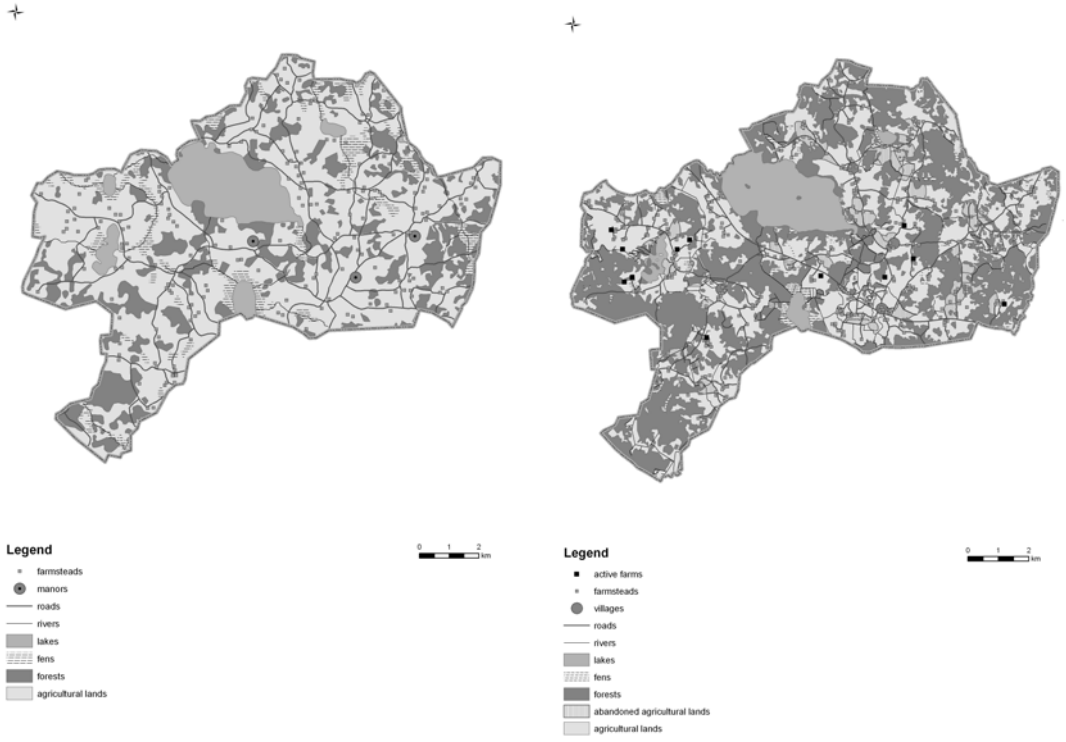
The results are presented in a number of summary tables which allow comparison between the pre-Soviet and post-Soviet situations in each of the sampled pagasts.. This is followed by the results of the landscape character surveys to give a more in-depth interpretation of character.

Land use change in the sample pagasts

Table 3 presents a summary of the changes from one land use class to another, expressed as percentages in the 1900s era and then in the 2000s era, followed by the overall percentage change of each land use type over the period. Figures 2-7 show the maps of land use for each of the periods. This shows a range of scales of land use change, depending on a number of factors, such as the initial landscape conditions. The key reasons for many of the changes are linked to the political changes as well as the agricultural planning of the collectivisation period. All these aspects are intimately connected as part of the larger Soviet political project (see below).



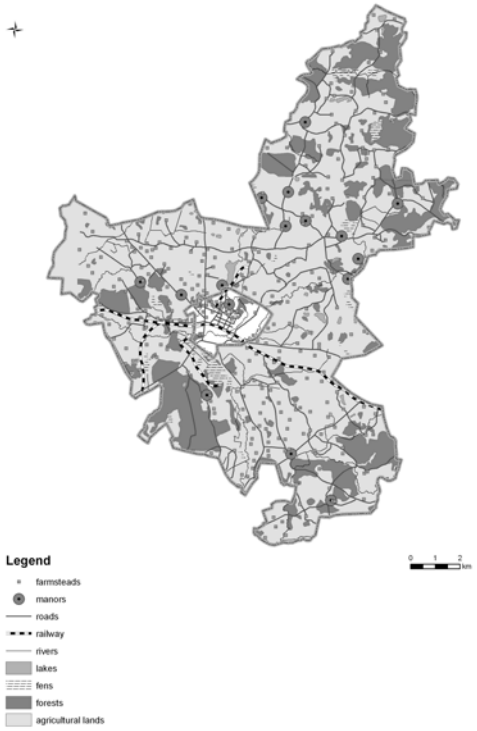
Figs. 2a and b: the land use at Dzerbene in the 1900s and 2000s, with abandoned land as at 2007

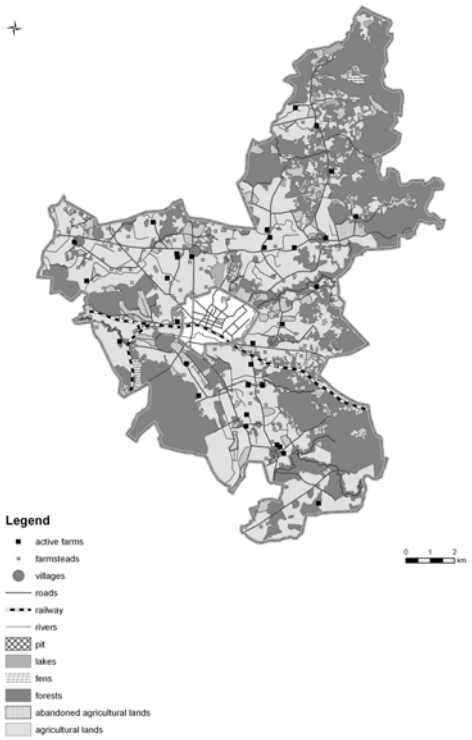


Figs. 3a and b. the land use changes between the 1900s and 2000s at Vecpiebalga, with abandoned land as at 2007.

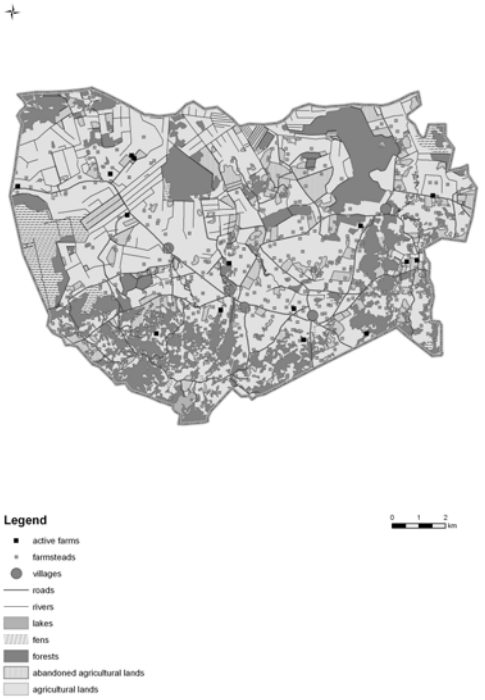
Figs 4a and b. the land use changes between the 1900s and 2000s at Vecsaule, with abandoned land as at 2007.

Figs 5a and b: the land use change between the 1900s and 2000s at Bartas, with abandoned land as at 2007.





Figs. 6a and b: the land use change between the 1900s and 2000s at Priekule, with abandoned land as at 2007.



Figs. 7a and 1b: the land use change between the 1900s and 2000s at Nautreni, with abandoned land as at 2007

Table 3: Summary of the land use changes in the six sample areas, together with some of the characteristics of the changes.

Sample area	Land cover class	% in 1900s	% in 2000	% change over period	Characteristics of land use change
Dzerbene (12428.1 ha)	Agricultural land	50.45	32.94	-17.51	The area was already heavily forested in the1900s. Land rationalisation caused the forest to increase to a high proportion by Latvian standards. There was a large, single, expanse of forest in the east of the territory in the 1900s, with small patches amongst the mainly agricultural west. By 2000 many of these smaller patches had merged into much larger areas. Many small patches of meadow in the forest had disappeared; farming tended to become concentrated into four or five areas. Some wetland drained and converted to forest. Significant areas of land abandonment.
	Forest	41.99	64.16	+22.17	
	Lakes	1.94	3.73	1.36	
	Fens	7.17	1.04	-6.13	
	Abandoned agricultural land*		13.81		
Vecpiebalga (11004.3 ha)	Agricultural land	63.84	47.11	-16.73	The 1900s landscape was of open farmland, with a scattering of forest patches throughout the landscape. By 2000, the forest had coalesced into larger, more continuous areas, the switch being entirely from farmland to forest, with the farmland also more concentrated as a result. Forest has more than doubled in area, suggesting that the landscape has changed very significantly, becoming almost balanced between the two land uses of farm and forest. Also more forest around the lakes, making them more enclosed.
	Forest	20.71	42.84	22.13	
	Lakes	9.21	8.03	-0.91	
	Fens	7.17	2.04	-5.13	
	Abandoned agricultural land*		12.06		
Vecsaule (16174.7 ha)	Agricultural land	69.47	65.71	-3.76	A much smaller area of forestry in the 1900s than for other sample areas, and much smaller increase in forest area. Significant areas of fen were drained, mainly more farmland but also for more forest in places. In the 1900s forest was mainly in concentrated areas. By 2000 these areas had expanded with some additional areas around the fen margins. Forest had more than doubled in area, reduction in agriculture from land changing to forest being, in part, compensated by the drainage of the fens into highly productive arable land. Example of major land rationalisation under the collective farm system.
	Forest	10.11	25.70	15.59	
	Lakes	0.00	0.41	0.41	
	Fens	20.42	8.04	-12.38	
	Abandoned agricultural land*		13.82		
	Gravel pits		0.14	0.14	
Barta (11605.9 ha)	Agricultural land	50.01	38.55	-11.46	Landscape is clearly divided into two major zones – extensive forest in the northern and eastern half of the area, with open agriculture in the southern and western section. The forest expanded between the 1900s and 2000 in those marginal areas where the farmland was small and distant from the collective farm centre. As a result some settlements have disappeared altogether. The fens have reduced in size, transferring to forestry. Wetter forest areas were drained to improve production.
	Forest	46.90	58.51	11.61	
	Lakes	0.00	0.05	0.05	
	Fens	6.02	2.30	-3.72	
	Abandoned agricultural land*		19.12		
	Gravel pits		0.60	0.60	
Priekule (15295.2 ha)	Agricultural land	75.50	56.40	-19.10	Dramatic land use changes from a highly agricultural landscape with a few isolated, though substantial, areas of forest in the 1900s to the forest becoming almost equal to the agricultural land
	Forest	22.58	41.86	19.28	

	Lakes	0.71	0.96	0.25	in area due to the land rationalisation. Land abandonment also significant in 2000. The most dramatic changes have been in the north where abandonment is also concentrated, showing an infilling of remaining farmland, leading to a large expanse of forest instead of the much more mosaic character of the 1900s. The extent of forest has also increased in the southwest.
	Fens	1.54	0.81	-0.73	
	Abandoned agricultural land*		17.71		
	Gravel pits		0.02	0.02	
Nautreni (15641.8 ha)	Agricultural land	75.75	71.70	-4.05	Dramatic change very different in character from all the other examples. Agricultural land appears to have reduced in area by only a small amount, while the forest has increased by a significant amount. Forest expanded at the expense of agriculture, which in turn expanded at the expense of the fens through large-scale land drainage. The forest, which was a negligible component of the landscape in the 1900s, confined to a handful of isolated blocks, has predominantly expanded in the southern area of hilly sandy soils of less interest for agriculture compared with the fertile drained fens. An area of the landscape which was largely open is now significantly enclosed.
	Forest	5.17	23.79	18.62	
	Lakes	0.30	0.26	-0.04	
	Fens	18.77	4.25	-14.52	
	Abandoned agricultural land*		11.79		

*Abandoned agricultural land as a percentage of agricultural land in 2007
(all the other cells except abandoned agricultural land should make 100%)

The figures presented in Table 3 describe the quantitative aspects of the changes, and summarises the significant aspects of these patterns for each sample area, showing how the land use changes are in many cases very dramatic and, as will be seen below, have also changed the landscape character. The maps, Figures 2-7, present the visual pattern of these changes.

Settlement pattern changes

Settlement patterns are a key aspect of the cultural landscape, representing a many social and cultural aspects of an inhabited place. Table 4 summarises the main characteristics and reasons for the changes to the settlement pattern in terms of the numbers of houses and also their location. One of the major changes to occur during the Soviet period, as noted in the introduction, was the rationalisation and centralisation of dwellings into blocks of flats in new village centres. The influence of this can be seen quite clearly, although there were also other reasons for the loss of houses and farmsteads in some areas, such as war damage, deportation of the population or the large-scale land amelioration programmes as shown in Table 4.

Table 4: Summary of changes to settlement patterns in the six sample areas.

Location	Changes to settlement pattern	Main reasons for changes
Dzerbene	In the 1900s most farmsteads were scattered amongst the farmland, close to the road system. By 2000 the number had increased (including the 1920s and 30s new farmsteads) concentrated in the new village centre and the road leading to the station. A number of the original farmsteads marked on the early maps had disappeared.	The houses built during Soviet times were in blocks of flats or small houses centred on the village. However, fewer houses were abandoned in Soviet times because the area (together with Vecpiebalga) was a popular location for artists favoured by the Soviet system to have summer houses. Main reasons for change: 1.deportations in 1940 and 1949; 2.collectivisation and 3.some land amelioration.
Vecpiebalga	General reduction in the total number of farmsteads, while the village centre, which existed in pre-Soviet times (in contrast with the other areas) a large number of houses and blocks of flats were constructed.	Increase in buildings is less the new farms of the 1920s and 30s, more the blocks built during the time of the collective farms. One of the reasons for this is that no building outside the village was allowed. Main reasons for change: 1.deportations, 2.collectivisation and 3.land amelioration.
Vecsaule	Pattern has changed little, mainly because there has been no large scale conversion of farmland to forest. Some reduction in the number of farmsteads since the 1900s, even with the addition of new ones in the 1920s and 30s. The spatial	Large-scale agricultural areas were established in the Soviet era and hundreds of farmsteads were simply demolished (the former owners were deported to Siberia, mainly in 1949). New villages were built in the Soviet era.

	distribution is broadly similar for each date.	Main reasons for change: 1deportations, 2.land amelioration, 3.collectivisation.
Barta	Pattern retains its overall distribution, with some concentration into village centres. A relatively small loss of houses overall, some being added in the 1920s and 30s).	Forest development and land rationalisation. New construction now compensates for the differences. Main reasons for the change: 1.deportations, 2.amelioration and 3.collectivisation.
Priekule	Major changes to the settlement patterns. The increase in forest has resulted in a loss of some farmsteads completely from the northern area.	The area was on the frontline for a period of the Second World War and suffered extensive damage and losses to houses, while some areas remained difficult to cultivate owing to unexploded munitions. The presence of the town in the centre has probably played a role because it was an existing concentration of settlement.
Nautreni	Pattern has changed with a reduction in the number of houses in much of the ameliorated northern area and an increase in the hilly southern section (some of this may have been of new farms in the 1920s and 30s).	A significant reduction overall owing much to 1.the scale of amelioration and 2.deportations (the area was active in ant-Soviet activities).

From the analysis of the land use changes summarised in above, it will be seen that each area has fared differently under the impact of the Soviet planning system at the time of the collective farms. The reasons for this are partly because, while all planning was done centrally according to pre-established targets (Melluma, 1994), other factors also influenced the degree to which standardisation was possible. Table 5 compares some of the major influences on agriculture and the possible reasons that led to the changes in land use in different places being different from one another. It takes the main aspects which influence agricultural production and compares the scale and nature of the changes to a range of factors.

Table 5: Summary of land use change factors for the six sample areas.

Location	Topography	Soil type and quality	Percentage of farmland in the 1900s	Proportion of land suitable for amelioration	Resulting land use change	Percentage of farmland in 2000
Dzerbene	Hilly, with cooler climate and more snow in winter	Luvisols or Cambisols, loamy sand or sandy loam	53.63	Very little	Reduction in amount of farmland and increase in area of forest. Scale of forest increased	30.03

Vecpiebalga	Hilly, with cooler climate and more snow in winter	Luvisols or Cambisols, loamy sand or sandy loam	70.35	Very little	Farmland reduced as forest expanded from small patches	47.38
Vecsaule	Flat plains, lowland	Luvisols and Stagnosols on loamy soils except in the north eastern part with Arenosols and Cambisols on sandy soils	73.80	Large areas of fens suitable for drainage	Overall area of farmland reduced but substitution of poor land by drained fens	63.10
Barta	Flat plain, lowland	Luvisols and Cambisols on loamy sand or sandy loam dominate and sandy soils occur in the western part	51.50	Very little	Moderate reduction in the amount of farmland and increase in forest	36.40
Priekule	Rolling or flat plain, lowland	Luvisols and Cambisols on loamy sand or sandy loam dominate and sandy soils occur in the western part.	76.70	Very little	Large reduction in the proportion of farmland and increase in forest.	46.30
Nautreni	Partly hilly, partly plain.	Fertile loamy clay and fen peat on plain, sandy podsols on hills	75.80	Large areas of fens suitable for drainage	Significant substitution of drained areas for poor soils, allowing forest to expand in these areas.	68.10

The results from this comparison tend to suggest that the driving force for increased productivity was mainly based on the capacity for production of the soil, the suitability of the topography for large-scale operations, and the potential to increase available agricultural land through large-scale amelioration. Thus, those flatter areas with potentially fertile fens, such as Vecsaule and Nautreni, saw the largest scale amelioration based largely on the drainage of these fens. Soil does not vary much between sample areas and it is noticeable that those areas which saw large-scale drainage of fens also saw some of the poorer soils converted to forest and the newly drained areas replacing and substituting for the land which went to forest. No afforestation programme was carried out in Soviet times, so that the increase in forest is all as a result of abandonment, which was clearly a force for change during that period as well as at the present time. In some places wet forest was also drained to increase timber productivity. What is also noticeable is that forest expanded everywhere but it did so most in the areas with little scope for amelioration and large-scale mechanised agriculture, although topography is not an especially significant factor (Barta is quite flat but saw a similar drop in agricultural land to Dzerbene, which is hilly).

This degree of land use change is only possible at the scale demonstrated here if the land can be treated as a single unit. It is not so easy when the land is owned and managed by many small farmers – cooperation is more difficult. The same applies to rationalisation and movement of settlements, afforestation and reorganisation of roads. The starting point of the land use pattern also affected subsequent patterns, for example Dzerbene was already heavily forested and Barta already had a large area under forest, restricting to some extent the amount of change that was possible. Once the land was handed back to the original owners and a smaller-scale farm unit pattern was re-established, the centrally organised elements such as drainage systems, which require maintenance, started to break down and individual land use decisions such as maintaining cultivation or allowing abandonment became more important, as seen in the patterns of abandonment on the maps from the 2000s, which are in small scattered patches, though often more associated with already heavily forested and enclosed areas than large-scale open ones. Another study (Nikodemus et al, in press) shows that the reasons for abandonment are not related to soil types but are largely due to social factors, such as the age of the landowners. The 2000s maps showing "active farms" demonstrate that these are not in places where abandonment has been significant. There are large numbers of farms in Latvia classed as "semi-subsistence" and which do not produce anything for the market).

The picture from the changes to settlement is not so clear. Table 6 compares the pre- and post-Soviet housing situation and notes some of the changes in distribution across the territories of the pagasts.

This picture only tells part of the story as far as the effects on landscape character are concerned. Firstly, as already noted, the number of dwellings (whether active farms, farmsteads, houses or flats) does not tell us anything about the type of building, whether significant number of older traditional houses survived, how many new farms were built in the 1920s and 30s or how many were replaced with newer versions on the same site. The known pattern of change to settlements was broadly that, during the 1950s, farming

activities were moved to the centres of the newly established collective farms (Nikodemus at al., 2005). This process was intensified after the "Resolution of 1961" on the displacement of inhabitants to villages and multi-storied blocks of flats and manufacturing units. Urban building types such as blocks of flats began to appear. The construction of central villages and the elimination of individual farmsteads continued until the 1980s (Lūse and Jākobsone, 1990; Grāve and Lūse, 1990; Riekstiņš, 2001).

Table 6: Summary of the changes to the settlements in the six sample areas.

Pagast	Comments
Dzerbene	Some increase but dwellings concentrated in village centre. The number of larger farmsteads has declined
Vecpiebalga	Very big decrease in numbers of dwellings, Many Soviet era constructions are in the village centre
Vecsaule	Large decrease, little change in distribution, some concentration in the centre.
Barta	Small decrease in number of dwellings plus a concentration in the centre and a reduction in density in the arable areas.
Priekule	Increase in total of dwellings, with main removal in the northern section but replaced elsewhere. The presence of the town probably has an influence on the concentration of housing.
Nautreni	Huge reduction in number of dwellings and some redistribution from the main arable area to the hilly zone in the south.

The building of new residential areas comprising multi-storied blocks of flats and so-called "Līvāni-type" detached houses (a form of standard design) tended to take place only in the centre of each pagast and on the bigger collective farms, if there was more than one per pagast (they tended to be amalgamated over time). To assess the stock of older, traditional farmsteads and other building remains that might be worth conserving it would be necessary to conduct site surveys. Such surveys have not so far been undertaken. However, the sample areas were visited and some information is available for them (see below). As a result of the changes to the settlements it can be observed that the traditional types no longer exist in any of the studied pagasts. Table 7 shows how the settlement patterns have changed with respect to the types categorised by Šteins (see the introduction).

Table 7: Summary of the changes to the traditional settlement pattern types for the six sample areas.

Pagast	Original pattern type	Post Soviet pattern type	Main characteristics of the change
Dzerbene	6	3	The linear pattern changed with more houses built in the central village or other smaller clusters
Vecpiebalga	6	3	The concentration of houses in the village and other smaller centres is very dominant now.

Vecsaule	3	6	The amelioration moved houses from the clusters and concentrated them along the roads
Barta	1	6	The dispersed pattern with no centre was replaced by linear clusters and new villages
Priekule	1	6	As for Barta but the town also has a lot of influence on the pattern
Nautreni	3	2	The clusters became more linear in pattern and more dispersed farmsteads emerged.

Landscape character surveys

Table 8 presents a summary comparison of the main features observed during the surveys to assess landscape character. Figures 8a-f show typical views of the landscapes of these study areas.

Fig. 8a-f Views of the landscapes of the six study areas.


8a Shows a view in Dzerbene looking from an open area to an extensive forested background. The house is a recent addition, not on an original site.
8b Shows the hilly landscape of Vecpiebalga where an old collective farm centre is located on a high point so as to demonstrate the advances of the collective farm system.
8c Shows the open flat landscape of Vecsaule with a surviving traditional farmstead with large trees surrounding it.
8d Shows the rolling landscape of Barta, a very open scene with forest behind and farmsteads in the distance.
8e Shows the open, undulating landscape of Preikule with large-scale arable land and an absence of farmsteads.
8f Shows the hilly southern section at Nautreni, with substantial forest areas on what were open lands in pre-Soviet times.

Table 8. Summary of the landscape character aspects assessed for the six sample areas.

Pagast	Landform	Land use pattern	Landscape scale	Settlement pattern (see also Table 7)	Landscape condition	Key features
Dzerbene	Hilly landform with lakes in hollows. Rolling, rounded landforms of moraine origin.	Farmland tends to be on the ridges. Heavily forested elsewhere, with a lot of forest cutting taking place. Strong mosaic pattern in the main farming areas	The small areas of farmland give a small-scale feel contrasted with wide views from the open ridges	Much settlement concentrated in the centre and along the main roads. Away from the centre there remain numbers of old farmsteads set back from the roads.	The old collective farm infrastructure is derelict. The older wooden houses which still dominate often have asbestos roofs and are in need of repair. Much land is abandoned and covered with bushes.	Several interesting lakes, an important manor house and church and the river Gauja give a sense of identity to the pagast.
Vecpiebalga	Hilly landform with several large lakes, including the major Alauksts lake, one of the largest in	Farmland tends to be concentrated along the ridges. Forest lies on lower ground in	The forest is set back from the roads and houses but provides enclosure and constrains	Settlement is concentrated along the roads and in the main and lesser centres. The older houses are	The collective farm structure is mainly derelict except where some animal sheds have continued in use.	Vecpiebalga is a protected landscape (since Soviet times) due to its cultural heritage. Alauksts and the other lakes

	Latvia	between.	views except from tops of prominent hills	set back up short lanes.	Houses vary in condition, many older wooden ones, still quite dominant outside the centres having asbestos roofs or in need of repair. Land is abandoned in places.	dominate the landscape and give it a sense of identity. Several of the collective farm building complexes were sited on prominent hilltops and remain as landmarks.
Vecsaule	Flat with some low undulations in places.	Farmland is the dominating element with forest in isolated patches. Some wetlands still remain.	The open character and smaller isolated quality of the forest patches produces a large scale landscape.	Settlement is in part distributed across the landscape, though tending to be aligned along roads.	Collective farm elements are derelict. Some land is abandoned and covered in bushes. Houses are in a mixed condition. Lines of bushes are starting to appear along the lines of the drainage ditches.	The landscape is not notable for special features. Some wetlands and a small lake give some character
Barta	Divided into rolling landform, with streams between the ridges and low lying flat areas	A major split between the large-scale forest in the north and the farmland in the south. Forest contains lots f cutting.	The roads passing through the forest give a strongly enclosed character except where it is opened from forest cutting. The farmland is large-scale and open.	Housing is concentrated along the roads or set back up short tracks. Some is also concentrated along the edge of the forest.	Collective farm elements are derelict. Many houses are of brick, replacing older ones. Traditional houses are in mixed condition. Some remaining open areas in the forest are becoming scrubby and bushes are appearing along the river	The Bartas River valley adds to t he local distinctiveness of the area.

Priekule	A rolling landform, with ridges divided by small valleys and many streams.	The land use pattern is a mosaic, with areas of woodland among the fields. However, the northern area is more forested while the southern area is somewhat more open	The scale of the landscape varies from being open and quite large scale, with some extensive views from higher ridge tops, to being enclosed among the heavier forested areas.	The settlement pattern is affected by the town in the centre, with quite a dispersed pattern in the west and a lower density in the east and north.	There are very significant amounts of abandoned land in the north and east of the area and the collective farm remains are derelict.	The wide and meandering streams add to the character but there are no special landmark features.
Nautreni	The landform is divided into two distinct zones – the flat plains to the north and the small-scale hills to the south.	The land use pattern falls into three types: the open arable areas to the north, interspersed with isolated patches of forest; an open hilly area and a forested mosaic hilly area to the south	The scale of the landscape varies according to the topography and land cover, the northern plains being open and large scale and the hilly forested section being much smaller in scale. The open hilly area offers some long distance views.	The settlement patter falls into two main types. The flat open plain as a sparse pattern with houses along roads and along the edges of the ameliorated fields. The hilly section has a dense dispersed pattern.	The remains of the collective farms are derelict. There is abandoned land covered in bushes in several areas, notably the hilly section but also next to forested areas on the plains. Many of the older houses in the hilly area are in poor state of repair. Bushes are also appearing along the lines of the drainage ditches.	The hilly section is quite characteristic but there are no other key landmarks.

The analysis shows that the current landscape character is dominated by the changes that took place during Soviet times which have in most cases created a different pattern and scale from the landscape of the 1900s. This landscape is in some cases much more enclosed, with fewer open views than would have been possible before. Most of the wet fen areas have been drained, removing a significant element from the landscape of those areas where they were extensive in the 1900s era, such as Vecsaule and Nautreni. The landscape also contains the buildings of the collective farms, in some cases located in dominant positions in the landscape, such as at Vecpiebalga (Figure 8b). In some ways the landscape has become more diverse, with more patches of forest in places such as at Vecpiebalga or Nautreni. In terms of condition, in all areas there are derelict collective farm buildings and houses in varying states of repair. This all suggests that there is no such thing remaining as a Latvian traditional landscape in these areas, assuming that the scene pre-war still represented a traditional type as a result of the land management and

tenure system of manor estates with small tenant farms that had lasted for several centuries, allowing for the addition of the new farmsteads in the 1920s and 30s.

The period between 1991 and 2007 shows that land abandonment is also occurring as evidenced by the area of scrubby bushes recorded in the data and visible in the photographs. Some of these scrub areas are also concentrated along the lines of the drainage ditches, suggesting that maintenance of the drainage systems may not be kept up, leading to eventual water-logging and loss of the land to production. The condition of the remaining older landscape elements is also poor, suggesting that the losses of the remaining traditional elements are continuing.

This character as observed on the ground is the reality of the landscape today and there will probably be few people alive today who remember what it was really like in pre-war years. The changes wrought by the Soviet era are a reality and many of the elements have been there for several decades. The implications of this for landscape management and conservation, especially in the context of the European Landscape Convention will be discussed below.

Discussion

Latvian people have a strong sense of what elements constitute a typical or traditional Latvian landscape (Bell et al., 2008). Separate farmsteads, orchards, lines of oak or lime trees, ponds and bath houses (saunas) and storks nests feature in this list. It is perfectly possible to find many examples of these elements but from the analysis of landscape change it is difficult to conclude that they constitute a traditional landscape. These elements have to be set into the context of fields and forests and settlement patterns which, as we have seen, are now very different from how they appeared in the 1900s era. So, while there may be small-scale locations where the landscape has changed little and where it is possible to find the archetypal farmstead with its associated features, extensive cultural landscapes tend to reflect the Soviet character overlaid by recent abandonment.

The same study found that rural inhabitants also identified with the current reality of the Latvian landscape, naming abandoned fields and derelict buildings among other aspects they saw as being associated with living in the country. However, it was also clear that only the oldest people could claim to remember the landscape from before the Second world War and that the younger generations who only really remember the post-Soviet times accept the landscape as it is and do not perceive it as Soviet, apart perhaps from the sight of ruined collective farm buildings and the flats where many of them live. The lower intensity of management has also tended to allow a more natural–appearing landscape to develop, although, in the 2007 study noted above, many older people preferred the Soviet era landscape because it was tidier and better managed. The sight of abandonment is not liked by most people, especially other farmers living in the countryside.

According to Antrop (2005), history is full of examples of major landscape changes, most of which were the result of initiatives by landowners or other powers at the time. A prime example of this is the enclosure movement of England and parts of north-west Europe in

the 18th and 19th centuries which transformed large-scale open landscapes into geometric hedged fields. In so doing a large proportion of the rural population were displaced, causing many people to move to the towns and cities (Hoskins, 2005; Rackham, 2000). Thus, a dramatic change such as witnessed by collectivisation is another example of major landscape change undertaken by the ruling power of the time.

Antrop (2005) goes on to identify three main periods of landscape development in Europe. The first of these is the traditional landscape, consisting of pre-18th century remnants going back to a remote past. The second type is the landscape of the revolutionary age, mainly the 19th century agricultural revolution and industrialisation leading up to the Second World War. The third type is the post-modern landscape of the post-Second World War period to the present day which results from globalisation and urbanisation. This classification begs the question "where does the Soviet collectivisation era fit?"

It is possible to see some elements of the pre-Soviet Latvian landscape as falling into the type of the revolutionary age landscape, with the influence of the landowners on agricultural practices, at least in the areas of better land (Anon 2001, 2002). The land abandonment and recent changes from 1991 clearly fall into the classification of post-modern landscapes, with the farmers coming under the influence, firstly, of the open markets once the Soviet Union collapsed and, more recently (post 2004), within the Common Agricultural Policy (CAP) of the EU (identified by Antrop as an example of the forces of globalisation). However, the collectivisation, rationalisation and amelioration processes analysed in this paper are not revolutionary, in the sense defined by Antrop, nor post-modern. It is necessary, for this part of Europe, to introduce a new category of 'Ideological Landscapes', defined by the combination of state planning control, nationalisation of land, social control and classification of the population (into kulaks and non-kulaks) driven more by ideology than a need to improve agricultural output (collective farms were notoriously inefficient across most of the Soviet Union).

Such a type of landscape can be found in other countries which were subjected to the Soviet collectivisation system, such as the East Germany, Czech Republic or Slovakia, though not to Poland, which retained its small-scale farms, at least in the original territory; collective farms were established in the lands taken from Germany after the Second World War. Nor are ideological landscapes necessarily a feature solely of communist systems. In Germany in the 1930s and the early part of the Second World War it was the aim of the Nazi regime to redesign the conquered territories of Poland and other lands into model landscapes suitable for Aryan Nazi settlers (Lekan and Zeller, 2005). It is even possible to consider the clearances of people from the Scottish Highlands in the 18th and 19th centuries (Prebble, 1965) to make way for economic sheep production as a product of an ideology (capitalism perhaps?) and for the survey grid of the American west (the so-called "Jeffersonian Grid") and its use as a vehicle for giving land to settlers as part of the ideology of "Manifest Destiny" promoted by President Andrew Jackson (Cronin, 1983). It can be argued that these landscapes are as much a part of historical reality as traditional vernacular landscapes which, in many places, were not produced by free peasants but were part of a feudal or estate landscape affected by factors

such as serfdom, agricultural improvements and the power of the estate owner or landlord. This is the case for many landscapes held in high regard today, such as the hedgerow landscapes of England noted above, which were also the product of an ideology of land-owing capitalism (Rackham, 2000).

If the post 1991 situation falls under the type of post-modern landscape, then it is a kind that has started to develop over 40 years later than in Western Europe. However, it fits into one of the four trends identified by Klijn and Vos (2000). These are: intensification and at the same time an increase in the scale of agriculture (which may occur in the large-scale arable areas such as at Vecsaule if the land is bought by entrepreneurial farmers, but is otherwise unlikely); urban sprawl (not an issue in the areas studied but possible around the capital, Riga); tourism development based on the quiet, natural landscape, wildlife and charming though not dramatic scenery (started in a small way but increasing, the offer being for country cottages and saunas by lakes, for example); and land abandonment and extensification in remote rural areas (such as in Barta and Priekule, where the abandonment is most significant). It could be argued that intensification and increase in scale of agriculture was what took place in the collectivisation period, and that this has gone into reverse with the restitution of land to the previous owners or their descendents and the restoration of small-scale semi-subsistence farming (seen in the maps of the 200s era by the small numbers of "active farms" compared with the farmstead numbers as a whole).

It is not necessarily only the loss of the traditional landscape that is an issue. Many of the traditions and practices have gone with it. In a study in Estonia, Latvia's northern neighbour, where the same Soviet system was applied, Kaur et al. (2004) noted that the 50 years of the landscape of the collective farms put pressure on traditional practices which resulted in "uninformed" landscape patterns and has tended to undermine rural identity. They found that many farmers who reclaimed the land after the restoration of the Estonian Republic failed to meet the economic challenges which led many to cease farming and then abandon the land. This abandonment not only caused traditional practices to disappear, such as cattle husbandry or haymaking, but has caused an identity crisis among rural people (Kaur et al., 2004).

This research has been limited by data availability and only looked at a small number of pagasts in Latvia. A time step of only two periods, approximately 90 years apart is also a potential problem for analysis. Studies of landscape change are always dependent on the availability of data. In a study from Switzerland, Schneeberger et al., (2007) were able to look at 11 time steps for an area between 1885 and 1996. The availability of such data allows for the identification of the precise timing of step changes in the landscape. In another study of rural France, however, Eetvelde and Antrop (2004) looked at two time steps of sample sections from two sets of aerial photographs, although these were only 30 years apart. Frustratingly, for Latvia a third set of data exists which would bridge the wide gap between the 1900s and 2000 with a snapshot of around 1970 – old Soviet army maps. These maps are highly detailed (1:10 000 scale) but the resources were not available to digitise them at the time of the project. They would be very useful additional layers in any further studies of the Latvian landscape.

Nevertheless, methodological and data issues notwithstanding, some significant aspects of the Latvian cultural landscape have been revealed. The results suggest that there is no longer any extensive traditional cultural landscape left from before the Soviet era and that, whilst smaller relicts may survive, the dominant character is formed from the activities of the collectivisation period. Furthermore, the aftermath of this, including the difficulties faced by the landowners after restitution of the land and the resulting continuing process of abandonment in many areas, is not only part of the effects of globalisation but also a direct consequence of the collectivisation era. This leads to the scenario of extensification and abandonment identified by Klijn and Vos above which appears to be a continuing trend according to the most recent data (Nikodemus et al, in press).

Antrop (2005) considers how to control changes in the landscape. He notes that this is difficult because the landscape consists of many individual pieces of property owned by people with different interests. Landscape therefore includes many parcels owned by different people but is, itself, a common asset not limited by property boundaries. If each owner has a degree of freedom over how they manage their land, this can lead to chaotic development. In the countryside (as opposed to urban areas, where there is usually more control over the main aspects of built development) planning and management of the landscape is mainly possible through the use of instruments to promote different land management practices, such as agri-environment schemes under the CAP. The current instruments are the Single Area Payment and the Less-favoured Area Payment schemes, which are paid to farmers who keep land in a cultivated condition (including cutting the grass on meadows and pasture to prevent scrub forming). A recent study addressed the success of these schemes in halting or reversing land abandonment in Latvia, using a selection of pagasts, including Vecsaule and Nautreni. It found that so far the schemes, introduced in 2004 after Latvia joined the EU, are having little effect, largely due to the attitudes of and level of support given to older, smaller land owners (also mostly non-active farmers) whose land is most likely to be undergoing abandonment (Nikodemus et al, in press). This aspect is therefore in need of urgent review.

Conclusions

This paper aims to address three research questions:

What has been the impact of changes to the land use and landscape of Latvia as a result of the Soviet land use planning system? From the research on six sample pagasts the evidence suggests that land use, in terms of the proportions of farmland and forest as well as other elements such as fens and settlements, has changed greatly in all areas, although more in some than others. The landscape, in terms of the character of the areas, has also changed considerably, with many features having been lost (old houses) or added (collective farm buildings). The landscape is largely a product of this era, though traditional elements of a small scale remain, such as old houses with orchards and storks nests.

How does the aftermath of these changes continue to affect the development of the landscape? The aftermath includes the upheavals caused, in part, by restitution of land to

the former owners, and a delayed exposure of the agricultural sector to the forces of post-modernism (globalisation and EU membership) caused by the isolation of the Soviet system from the global economy until 1991. This has already led to the dereliction of many of the common assets of the collective farms, which remain as rusting monuments to the collective farm era, and is also resulting in land abandonment and marginalisation of remoter areas. This continues to the present day.

How does the understanding of this situation help in defining goals for landscape protection and management under the requirements of the European Landscape Convention? If the landscape is a product of the Soviet system, which, as noted in the introduction, was a system imposed by a foreign occupying power, then apart from this era being understood and recognised as a historical reality, is it appropriate to conserve it in the same way that hedgerow landscapes in England, for example, might be conserved, restored or managed. As part of the historical reality and an inescapable part of the layers that make up the landscape this probably cannot be avoided. Indeed, the conservation of at least some representative examples of collective farm building complexes should also be considered. As argued above, the landscape is similar in some respects to the other ideological landscapes of which the hedgerow landscape of parts of England is arguable also an example. However, no systematic inventory of any aspect of the cultural landscape of Latvia has yet been undertaken and no criteria for what aspects of the landscape or built heritage of whatever era have been established.

Under the European Landscape Convention some kind of landscape character assessment is probably necessary if the conditions are to be fulfilled. In the case of the more valued traditional landscapes, as part of the palimpsest of the broader Latvian landscape, a different approach is probably needed, based on a broader survey of character and an identification of where and to what extent traditional landscapes remain and can be conserved or restored. Certainly, the broad pattern of land use and the scale of the landscape cannot be put back to what it was before the Second World War, so that it has to be accepted as being the current cultural landscape. The rate of change through abandonment is perhaps a different issue, where it might be feasible to reduce the rate of further losses due to land abandonment, through the more targeted and supported use of agri-environment programmes such as the Single Area Payment scheme, and to help rural inhabitants to conserve and restore traditional farmsteads and associated features, especially the oldest examples.

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References
Anon, (2001) Encyclopaedia of Latvian Pagasts. Pagasts, Regions, City's and Region's Rural Areas I . Riga: A/S Preses nams.

Anon (2002) Encyclopaedia of Latvian Pagasts. Pagasts, Regions, City's and Region's Rural Areas II . Riga: A/S Preses nams.

Antrop, M., 2005. Why landscapes of the past are important for the future. Landscape and Urban Planning 70 (2005) 21–34.

Bell, S. and Nikodemus, O., 2000. Handbook of forest landscape planning and design. State Forest Service, Riga.

Bell, S., Penēze, Z., Nikodemus, O. and Montarzino. A., 2008. Perceptions of the Latvian landscape during social and economic transitions. In: *Place and Location VI*, Näripea, E., Sarapik, V. and Tomberg, J (Eds.). Place and location, Tallinn.

Council of Europe, 2000. European Landscape Convention. http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm visited on 2 November 2008.

Council of Europe, 2002 Resolution 128 on the problems of European countryside https://wcd.coe.int/ViewDoc.jsp?id=822605 visited on 2 November 2008.

Countryside Agency and Scottish Natural Heritage, 2002. Landscape Character Assessment – Guidance for England and Wales, Countryside Agency, SNH, Battleby.

Cronin, W (1983) Changes in the land. Hill and Wang, New York

Eetvelde, V. van and Antrop M., 2004. Analyzing structural and functional changes of traditional landscapes—two examples from Southern France. Landscape and Urban Planning 67, 79–95.

European Environmental Agency, 1995. European Environment: The Dobriš Assessment. 1995. European Environmental Agency. Copenhagen.

Grāve Z. and Lūse M., 1990. Designing and practice of rural settlement in Latvia (in Russian). Proceedings of the Latvian Academy of Sciences, A, 7: pp.76-85.

Hoskins, W.G., 2005. (New Edition) The making of the English Landscape. Hodder & Stoughton Ltd., London.

Kaur, E., Palang, H. and Sooväli, H., 2004. Landscapes in change - opposing attitudes in Saaremaa, Estonia. Landscape and Urban Planning 67, 109–120,

Klijn, J. and Vos, W., 2000. A new identity for landscape ecology in Europe: a research strategy for next decade. In: Klijn, J., Vos, W. (Eds.), From Landscape Ecology to Landscape Science. Kluwer Academic Publishers, WLO, Wageningen, pp. 149–161.

Latvian Environmental Agency, 2002. Environmental Indicators in Latvia 2002. Latvian Environmental Agency. Riga.

Lekan, T and Zeller, T(Eds) (2005) Germany's Nature: Cultural Landscapes and Environmental History. Rutgers University Press. New Brunswick, NJ

Lūse M. and Jākobsone A., 1990. Development of the idea of country villages (in Russian). Proceedings of the Latvian Academy of Sciences, A, 7: pp.87-97.

Mander Ü. and Palang H., 1994. Changes of landscape structure in Estonia during the Soviet period. GeoJournal, Vol.33, No 1: pp.45-54.

Melluma A., 1994. Metamorphoses of Latvian landscapes during fifty years of Soviet rule. GeoJournal, Vol.33, No 1: pp.55-62.

Ministry of Agriculture, 2001. Agricultural Report (in Latvian). Ministry of Agriculture Riga.

Nikodemus, O., Bell, S., Grīne, I. and Liepiņš, I., 2005. The Impact of Economic, Social and Political Factors on the Landscape Structure of the Vidzeme Uplands in Latvia. Landscape and Urban Planning, 70, 57-67.

Nikodemus, O., Bell, S., Penēze, Z. and Rasa, I. (in press)The influence of European Union single area payments and less favoured area payments on the Latvian landscape. Geojournal.

Ojima D.S., Valentine D.W., Mosier A.R., Parton W.J., and Schimel D.S., 1993. Effect of land use change on methane oxidation in temperate forest and grassland soils. Chemosphere, 26: pp. 675-685.

Prebble, J. (1965) The highland clearances. Penguin Books, London.

Rackham, O., 2000. (New edition) The history of the countryside. Phoenix. London.

Riekstiņš J., 2001. From individual farms to socialist villages (in Latvian). The Latvian Herald, 134.

Schneeberger, N., Burgi, M. and Kienast, P.D.F., 2007 Rates of landscape change at the northern fringe of the Swiss Alps: Historical and recent tendencies. Landscape and Urban Planning. 80 (2007) 127–136.

Šteins, V. (1986) Lietišķā apdzīvoto vietu ainavu ģeorāfija (Applied landscape geography of settlement patterns) (in Latvian). P. Stučkas Latvijas Valsts Universitāte, Riga.