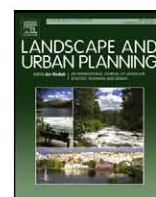




Contents lists available at ScienceDirect

Landscape and Urban Planning

journal homepage: www.elsevier.com/locate/landurbplan

Changes in farming system and population as drivers of land cover and landscape dynamics: The case of enclosed and semi-openfield systems in Northern Galicia (Spain)

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ARTICLE INFO

Article history:

Received 10 March 2008

Received in revised form 1 August 2008

Accepted 31 October 2008

Available online 13 December 2008

Keywords:

Landscape dynamics

Integrative approach

Field system

Dominant land cover

Farming system

Cultural landscapes

ABSTRACT

In this study, we aimed to document the changes in the *bocage* and semi-openfield landscapes of Northern Galicia from the second half of the 20th century and analyse the factors driving landscape changes. In particular, we examined (1) the dynamics of the field systems characteristics in these landscapes and (2) the interrelations with changes in dominant land cover, population and farming systems (in terms of productive structure, land use system and farming practices) dynamics. The picture of the 1950s showed mainly semi-openfield field systems and nucleated villages that extended through valleys in the lowland, with banks in rough coastline sectors. In the highlands we found enclosed fields and scattered hamlets interspersed within large extensions of scrubland. In between both systems, a transitional area with mixed characteristics appeared. In 2000, the transitional area expanded from the former semi-openfields and banks areas, while the highlands still retain the enclosed character. The dominant land cover has experienced significant changes throughout the area, following an increase in woodland. A reorientation of the farming system was observed, a shift in which cropland lost importance with regard to grassland, the use of scrubland became marginal and forestry increased. The decrease in the number of farms and livestock shows decline in agricultural activity. This can be closely related to changes in dominant land cover and cropping patterns. Despite recent changes, this area still retains characteristic features of traditional landscapes such as the spatial pattern of field systems and ancestral cultural practices (e.g. extensive grazing of the scrubland).

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1. Introduction

Europe offers a great diversity of traditional *agrarian* landscapes, resulting from the natural and cultural diversity, and the variety of land uses that have overlaid, refined or replaced each other along its long and complex history (Antrop, 2005; Plieninger et al., 2006).

By traditional *agrarian* landscapes we refer to those cultural landscapes which possess a distinct structure reflecting the long-term relationship between human beings and the surrounding environment resulting in characteristic patterns of settlements, infrastructures, land use and field systems (Antrop, 1997; Van Eetvelde and Antrop, 2004; Vos and Meeke, 1999). They include the traditional techniques of land management, as well as the linear (e.g. stonewalls, terraces, hedgerows) and other cultural features such as place names or oral traditions related to ethnographic

knowledge and symbolism (Kizos and Koulouri, 2006; Moreira et al., 2006).

Traditional *agrarian* landscapes usually involve an integral use of the land by farmers, and their land use system is considered in some cases as labour extensive with low nutrient input (Bignal and McCracken, 1996) and in other cases as labour intensive (Sancho Comins et al., 1993), both having low technological resources and generating low productivity and income (Plieninger et al., 2006). Some examples of traditional *agrarian* landscapes are the *montados-dehesas* agroforestry land use systems (Eichhorn et al., 2006), the enclosed field systems or *bocage* that extend all along Atlantic Europe, the openfields of central Western and Eastern Europe and the complex cultivation systems of the *coltura promiscua* and terraced landscapes in Southern Europe (Jordan, 1973; Lebeau, 1979; Meeus et al., 1990; Meynier, 1970; Zimmermann, 2006).

In terms of time period, traditional *agrarian* landscapes are those prior to the industrialisation period that have still preserved characteristic features from older times (Antrop, 2005; Vos and Meeke,

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