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Territories at Risk of Depopulation in Andalusia. Heritage Protection and Urban Territorial Planning in the North of Huelva

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Abstract

This paper aims to identify some of the critical factors that have motivated the recent evolution of the cultural districts of Sierra de Aracena and Andévalo from the perspective of urban-territorial planning and heritage protection. Located in the north of the province of Huelva (Andalusia, Spain), these regions are facing population loss. The study parameterises the demographic evolution experienced by their municipalities while analysing the different urban and territorial planning instruments. This study also includes environmental management plans, given the number of protected natural areas that characterise this region. Nevertheless, real demand for urban growth inexorably conditions the need to draw up an urban planning instrument and so the demographic data has been compared with the urban growth experienced by these municipalities. On the other hand, the heritage legacy may represent a crucial resource for the economic and social development of these territories in keeping with the relevance of the cultural heritage that precisely characterises these districts. In this sense, the research evaluates the additional protection provided by urban planning instruments compared to those deployed by the cultural administration. The research has found that both districts face an added complexity as it is necessary to align different administrative contexts due both to sectorial heterogeneity and diverging municipal interests. Thus, this study seeks to generate solid knowledge capable of serving as the foundations for future guidelines on preserving, managing, and enhancing these territories.

Keywords: Demographic evolution; heritage system; territorial management; urban and regional planning

Citation

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Territorios en riesgo de despoblación en Andalucía. Protección patrimonial y planificación urbana territorial en el norte de Huelva

Resumen

Este trabajo pretende identificar algunos de los factores clave que han motivado la reciente evolución de las comarcas culturales de la Sierra de Aracena y el Andévalo desde la perspectiva de la planificación urbano territorial y la protección del patrimonio. Situadas en el norte de la provincia de Huelva (Andalucía, España), estas comarcas se enfrentan a la pérdida de población. El estudio parametriza la evolución demográfica experimentada por sus municipios, a la vez que analiza los diferentes instrumentos de planificación urbanística y territorial. Se incluye también los planes de gestión medioambiental, dado el número de espacios naturales protegidos que caracterizan a esta región. No obstante, la necesidad de elaborar un instrumento de planeamiento urbanístico está inexorablemente condicionada por la demanda real de crecimiento urbano, por lo que se han comparado los datos de evolución demográfica con el crecimiento urbano experimentado por estos municipios. Por otro lado, el legado patrimonial puede ser un recurso crucial para el desarrollo económico y social de estos territorios, cuando precisamente estas comarcas se caracterizan por la relevancia de su patrimonio cultural. Por ello, la investigación evalúa la protección adicional que proporcionan los instrumentos de planificación urbanística frente a la de la administración cultural. La investigación ha constatado que ambas comarcas se enfrentan a una complejidad añadida, ya que es necesario alinear diferentes contextos administrativos dada la heterogeneidad sectorial e intereses municipales divergentes. Así, este trabajo ha pretendido generar un conocimiento sólido que pueda servir de base a futuras directrices para la conservación, gestión y puesta en valor de este territorio.

Palabras clave: Evolución demográfica; gestión territorial; sistema patrimonial; urbanística y ordenación territorial

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1. Introduction

The rural districts of Sierra de Aracena and Andévalo represent the western limit of Andalusia and are therefore inherently border regions. This condition reflects in their urban structures and the territory's occupation network (González Jiménez, 2005). The Guadiana River, often entrusted to turn real the imaginary borderline between Portugal and Spain, connects one same landscape unit across the two countries. The landscape here is composed of mountain terrain and peneplains in the region of Andévalo, with large areas of *dehesa*, Cork oak and Holm oaks forest. The Guadiana Valley was united in the same administrative area in the times of Roman Lusitania and Gharb during the Al-Andalus period but would be split between Spain and Portugal before the end of the 13th century (Boiça, 2018).

The Sierra de Aracena area is marked by hilly terrain combined with steep slopes and rising to a maximum altitude of around 1,000m. Due to its exposure to Atlantic winds, the precipitation rates are higher than the regional average and enabling the growth of forests of holm oaks, cork oaks and chestnut (Moreira Madueño *et al.*, 2018). The slopes of Sierra de Aracena run in the direction of three different drainage basins: the Guadalquivir, Guadiana and Odiel rivers.

In the Andévalo, the steepness of the terrain decreases and with the territory composed of peneplain hills with thin soils. Both areas belong to the Csa climate of Köppen (typical Mediterranean climate). Along the Lower Alentejo region, the Andévalo is located above easily extractable mineral reserves, the Iberian Pyrite Belt. The easy access to minerals motivated the occupation of this territory since the Iron Age (Torres, 1992). Mineral extraction in the region began in pre-Roman times with the extraction of copper oxides and carbonates (Pérez Macías, 2008, p. 10). Extracting other metals, such as silver, lead, zinc, and gold, would start in Imperial Roman times (Pérez Macías, & Delgado Domínguez, 2014). Minerals ensured the inclusion of the region on inter-regional trading routes since the Iron Age (Torres, 1992), for example, the land routes leading to Seville or the river port of Mértola.

In the Sierra de Aracena, the settlement of the territory is structured by a network of rural centres and hamlets. The network of hamlets (also called *montes* or *cortes*) directly relates to the agricultural productivity of the fertile soils with this same relationship contributing to the population losses from the 1950s to the 1970s (Feria Toribio *et al.*, 2002). The network of rural centres, both in Sierra de Aracena and Andévalo, is of strategic importance. Although the area shows signs of ancient human occupation, the delimitation of the border between Spain and Portugal in the 13th century reflects the main influence on the distribution of towns and the urban network hierarchy. The urban network was then concentrated in inner frontier areas, unlike the contemporary situation with urban concentrations in coastline areas.

In Andévalo, "a hegemonic tension appears with the Portuguese-Spanish border in the earliest moments of the Christian presence, in the first half of the 13th century. That tension leads to a dichotomy between the needs of occupying the frontier zones with population and the existence of factors that lead to the depopulation of those areas, such as their insecurity and the occurrence of battles resulting from frictions between the two Crowns" (Feria Toribio *et al.*, 2002).

The same authors (Feria Toribio *et al.*, 2022) recognise that the morphology of rural centres such as Aracena, Almonaster, Cortegana, Aroche or El Cerro del Andévalo would be determined by their border position: with their origins resulting from the fortification of strategic hilltops. Aspects of defensive urbanism are especially prominent around the *Banda Gallega* (frontier area) with its dispersed urban network of dense and fortified towns located on hilltops. Urban settlements would grow downwards, outside the wall perimeters, structured by the main pathways to produce a morphology of radial and concentric streets, with narrow streets and deep blocks.

E-ISSN 1886-4805

The effective separation of this territory, located on the ancient road between Hispalis and Pax Julia, and polarised between Seville and Beja, would not take place until the 16th century. The territory's fortification was completed like a mirror on both banks of the Chanza River, with the settlements of Aroche, Cortegana, Aracena and El Cerro del Andévalo facing those of Mourão, Moura and Serpa in Portuguese Alentejo (Costa Rosado *et al.*, 2021). From 1640, the wars of Portuguese independence would increase the intensity of conflicts in the region and thus contribute to its depopulation and poverty. On both sides of the border, the importance of these defensive structures to the rural centres and their urban layouts would remain through to the 19th century. Nevertheless, the ancient roads on the route Hispalis - Pax Julia would remain in use despite such conflicts and with trading, migrations and family relations prevailing over time (Cosme, 2000).

2. Objectives and methodology

The research intends to analyse the Cultural Districts (comarcas) of Sierra de Aracena and Andévalo, areas of great cultural and natural heritage relevance. The Cultural Districts, defined by the Regional Ministry of Culture of the Government of Andalusia, encompass more complex aspects than strictly geographically based districts. Cultural Districts include historical and cultural conditions that surpass administrative delimitations, which do not necessarily coincide with cultural boundaries (Instituto Andaluz del Patrimonio Histórico, 2012).

Like so many other rural areas, this territory has faced and still faces population loss due to rural-urban migration processes. Depopulation leads to extra administrative complexity as it demands that different administrative contexts align to tackle a common problem. Those different public administrations result from heterogeneous regulation sectors and diverse municipal interests. This work intends to identify, from a sustainable territorial planning and heritage safeguarding point of view, some of the drivers that have motivated the recent evolution in these districts. This knowledge may support future delimitations and strategies designed to slow depopulation, especially regarding safeguarding, management, and valorisation of regions whose relevance exceed their own boundaries. It is a fragile territory where there are a number of resources that could help to reverse the situation of depopulation, as is the case of other geographical areas (Ravagnan *et al.*, 2021).

In this sense, cultural heritage, of diverse nature, is understood as a mean to develope resilience and social improvement (Sánchez-Montañés y Castilla, 2020), in the case of this region, to fix population. To this end, the research listed and characterised the municipalities in both districts of Sierra de Aracena and Andévalo according to different documental sources. Firstly, the investigators calculated the demographic evolution between 1950 and 2019, analysing growth and shrinkage by decade. This population data was retrieved from the Institute of Statistics and Cartography of Andalusia (IECA), part of the Regional Ministry of Economic Transformation, Industry, Knowledge, and Universities of the Government of Andalusia. These data have also allowed for the calculation of the current population density of each town.

Following this demographic analysis, the research examines the different planning tools applied on the territorial scale encompassing the study area, including environmental sustainability plans as a large proportion of the study area falls under the auspices of the Network of Protected Natural Spaces of Andalusia (RENPA). Regarding urban and territorial plan, we would mention there are three overlapping types of plans: Urban Land Delimitation Projects (Proyecto de Delimitación de Suelo Urbano - PDSU), Subsidiary Municipal Planning Standards (Normas Subsidiaras de Planeamiento Municipal - NNSS), and General Urban Plans (Plan General de Ordenación Urbanística - PGOU). Some of these predate Law 7/2002 on Urban Planning in Andalusia (LOUA), a rule already revoked by Law 7/2021 for the promotion of the sustainability of the Andalusian territory (LISTA).

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We obtained Urban and territorial data from the public records of the Regional Ministry of Development, Infrastructure and Urban Planning (Consejería de Fomento, Infraestructuras y Ordenación del Territorio, n.d.). The Protected Natural Spaces are under the administration of the Regional Ministry of Agriculture, Fishing and Sustainable Development. It should be recognised that the need for establishing planning tools is inextricably conditioned by the demand for urban land. This research reflects this fact by analysing urban land growth in these municipalities since 1900. To accomplish these measurements, the research retrieved the 1896 historical cartography indexed in the Digital Catalogue of Historical Cartography of Andalusia of the Institute of Statistics and Cartography of Andalusia (Instituto de Estadística y Cartografía de Andalucía, n.d.a). Current cartography was used in the form of *shape layers* (.shp) retrieved from ideAndalucía, a tool from the Institute of Statistic and Cartography of Andalusia (n.d.b). The urban growth rate was measured by comparing the historic and the current data.

Multiple heritage realities have shaped this territory. Besides the above-mentioned natural heritage, further analysis was carried out regarding the heritage protected by Law 14/2007 on the Historical Heritage of Andalusia as Assets of Cultural Interest (BIC) or General Cataloguing (CG). The General Catalogue of Andalusian Historical Heritage (CGPHA) allowed for evaluating the list of built, archaeological, and dispersed heritage for each municipality (Consejería de Cultura y Patrimonio Histórico, n.d.).

All the information gathered was registered in a database which simultaneously systematised both the workflow and its management by the Geographic Information System (GIS). In particular, the research applied the open-access QGIS software. It should be noted that the graphic representation of the data has served as another tool of analysis in addition to representing the collected data in cartographic form.

3. Downward dynamics in the districts of Sierra de Aracena and Andévalo

One of the main challenges facing the regions of Sierra de Aracena and the Andévalo is the loss of population because of the rural-urban migratory processes that have characterised urban-territorial dynamics in the area over the last century. This is not a problem exclusive to the area but rather a reality shared by other regions of Andalusia, including most territorial units organised around rural centres: Sierra Norte de Sevilla, Pedroches-Valle del Guadiato, Cazorla, Segura y las Villas, Magina - Montes de Granada, Alpujarras-Sierra Nevada, Altiplanicies Orientales, Sureste Árido-Almanzora y Serranías de Cádiz and Ronda.

The area analysed extends over 44 municipalities covering slightly over 5,500 km^2. As shown in table 1, 29 of these localities belong to the cultural district of Sierra de Aracena, with an area of approximately 3,000 km^2 belonging to the sub-regional area of Sierra de Aracena, in which a total of 38,037 inhabitants currently reside according to data from the 1st January 2022 municipal census. In addition, there are 15 municipalities in the cultural district of Andévalo and the sub-regional area of Andévalo y Minas, with a total of 37,864 inhabitants distributed over approximately 2,500 km^2. Consequently, there are 75,900 residents in this territory, which represents an approximate density of 20 inhabitants per km^2, a figure significantly lower than the Andalusian average of 96 inhabitants/km^2.

The sample includes municipalities of different scales and, therefore, with different roles in the territorial structure of both districts. According to the classification of the settlement system in the Spatial Plan of Andalusia (Junta de Andalucía, 2006), the vast majority of municipalities are small settlements that act as municipal head settlements (ACM), with five classified as rural centres (CR), one as first level (Aracena) and the remaining four as secondary (Cortegana, Alosno, Calañas and

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Puebla de Guzmán), while Valverde del Camino plays a significant role in the district of Andévalo as a medium-sized city (CM), correspondingly a pole for the immediate territory, clustering goods and services both for the municipality and those adjoining it (Bellet Sanfeliu & Beltrão Sposito, 2009).Table 1. Demographic characterisation of the municipalities analysed: (ACM - municipal head settlements | CR - rural centres | CM - medium-sized city)

Table 1. **Demographic characterisation of the municipalities analysed: (ACM - municipal head settlements | CR - rural centres | CM - medium-sized city)**

Ref	Municipalities	Cultural District	Classification POTA	Extension (km²)	Population (hab.)	Density (hab./km²)
H01	Rosal de la Frontera	Sierra de Aracena	ACM	210.0	1682	8.0
H02	Aroche	Sierra de Aracena	ACM	499.5	3046	6.1
H03	Encinasola	Sierra de Aracena	ACM	178.1	1292	7.3
H04	Cumbres de San Bartolomé	Sierra de Aracena	ACM	144.9	374	2.6
H05	Cortegana	Sierra de Aracena	CR2	173.4	4635	26.7
H06	Almonaster la Real	Sierra de Aracena	ACM	321.9	1786	5.5
H07	La Nava	Sierra de Aracena	ACM	61.1	255	4.2
H08	Jabugo	Sierra de Aracena	ACM	25.0	2247	89.9
H09	Santa Ana la Real	Sierra de Aracena	ACM	26.6	489	18.4
H10	Cumbres de Enmedio	Sierra de Aracena	ACM	13.6	53	3.9
H11	Cumbres Mayores	Sierra de Aracena	ACM	121.8	1734	14.2
H12	Valdelarco	Sierra de Aracena	ACM	14.9	236	15.8
H13	Galaroza	Sierra de Aracena	ACM	22.3	1373	61.6
H14	Fuenteheridos	Sierra de Aracena	ACM	10.9	751	68.9
H15	Castaño del Robledo	Sierra de Aracena	ACM	13.0	230	17.7
H16	Alájar	Sierra de Aracena	ACM	41.5	814	19.6
H17	Cortelazor	Sierra de Aracena	ACM	40.0	303	7.6
H18	Los Marines	Sierra de Aracena	ACM	10.0	410	41.0
H19	Linares de la Sierra	Sierra de Aracena	ACM	29.3	268	9.1
H20	Hinojales	Sierra de Aracena	ACM	26.8	338	12.6
H21	Aracena	Sierra de Aracena	CR1	184.8	8215	44.5
H22	Cañaveral de León	Sierra de Aracena	ACM	34.8	401	11.5
H23	Corteconcepción	Sierra de Aracena	ACM	49.2	571	11.6
H24	Puerto Moral	Sierra de Aracena	ACM	19.9	281	14.1
H25	Higuera de la Sierra	Sierra de Aracena	ACM	24.5	1326	54.1
H26	Arroyomolinos de León	Sierra de Aracena	ACM	87.1	950	10.9
H27	Zufre	Sierra de Aracena	ACM	341.1	785	2.3
H28	Cala	Sierra de Aracena	ACM	84.1	1158	13.8
H29	Santa Olalla de Cala	Sierra de Aracena	ACM	203.2	2034	10.0
A01	Paymogo	Andévalo	ACM	214.1	1149	5.4
A02	Puebla de Guzmán	Andévalo	CR2	337.2	3154	9.4
A03	El Almendro	Andévalo	ACM	171.1	835	4.9
A04	El Granado	Andévalo	ACM	97.8	517	5.3
A05	Sanlúcar de Guadiana	Andévalo	ACM	96.8	380	3.9
A06	Santa Bárbara de Casa	Andévalo	ACM	147.0	1055	7.2
A07	Villanueva de los Castillejos	Andévalo	ACM	264.7	2849	10.8
A08	Cabezas Rubias	Andévalo	ACM	108.9	716	6.6
A09	El Cerro de Andévalo	Andévalo	ACM	286.8	2320	8.1
A10	Alosno	Andévalo	CR2	191.5	3929	20.5
A11	San Bartolomé de la Torre	Andévalo	ACM	56.8	3846	67.7
A12	Villanueva de las Cruces	Andévalo	ACM	34.5	385	11.2
A13	Calañas	Andévalo	CR2	238.3	2763	11.6
A13[1]	La Zarza-Perrunal	Andévalo	ACM	44.7	1252	28.0
A14	Valverde del Camino	Andévalo	CM2	219.1	12714	58.0
	TOTAL	**-**	**-**	**5,522.60**	**75.901**	**19.8**

Source: Compiled by authors based on data of the Institute of Statistics and Cartography of Andalusia.

[1] La Zarza-Perunal was split off from Calañas in 2018.

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Although analysis of the data leads to the impression of a relatively low population density, detailed scrutiny reveals some particularly worrying situations, whether in terms of their individual analysis or when compared to the other municipalities studied. Of the 44 municipalities, 18 register a density of below 10 inh./km^2.

In Sierra de Aracena, the towns of Zufre, Cumbres de San Bartolomé, Cumbres de Enmedio, La Nava, Almonaster la Real, Aroche, Encinasola, Cortelazor, Rosal de la Frontera and Linares de la Sierra report densities of 2.3, 2.6, 3.9, 4.2, 5.6, 6.1, 7.3, 7.6, 8.0 and 9.2 inh./km^2 respectively. In the case of Andévalo, the towns of Sanlúcar de Guadiana, El Almentro, El Granado, Paymogo, Cabezas Rubias, Santa Bárbara de Casa and Cerro de Andévalo return densities of 3.9, 4.9, 5.3, 5.4, 6.6, 7.2 and 8.1 inh./km^2 respectively. This list of municipalities does not necessarily coincide with the largest municipalities. These include Aroche, Zufre, Almonestar la Real or Rosal de la Frontera but not Cumbres de Enmedio, Linares de la Sierra or Cortelazor nor are these the locations with the highest percentage of their land under municipal protection through the Network of Protected Natural Spaces. While every municipality of the Sierra de Aracena has a certain percentage of protected municipal area, this reaches 100% in many cases (for example, La Nava, Cortelazor, Encinasola, and Cumbres de San Bartolomé) while in Andévalo, Valverde del Camino has only 3% of its surface area protected.

Facing opposite situations are Jabugo (88.9 inh./km^2), Fuenteheridos (68.9 inh./km^2), Galaroza (61.6 inh./km^2), Higuera de la Sierra (54.1 inh./km^2), Aracena (44.5 inh./km^2) and Los Marines (41.0 inh./km^2) in Sierra de Aracena as well as Valverde de Camino (58.0 inh./km^2) and San Bartolomé de la Torre (67.7 inh./km^2) in Andévalo. In all these cases, the settlements are characterised by densities of over 40 inh./km^2 but below 90 inh./km^2. These municipalities are, once again, very different in size and number of inhabitants, ranging from 12,714 inhabitants and 219 km^2 in the case of Valverde del Camino to 410 inhabitants and 10 km^2 in Los Marines. Equally significant are the rates of protected land that are particularly significant in most cases and reaching 100% in Jabugo, Fuenteheridos, Galaroza and Los Marines.

The study of growth dynamics inexorably involves looking back to identify the trends in the models of urban growth/decline observed in the municipalities of these two districts in Huelva province (see table 2). In general terms, we would note that, taking a 70-year period of analysis, these territories have lost approximately 50% of its population. Of the 44 municipalities, only three report positive gains: San Bartolomé de la Torre (48.7%) and Valverde del Camino (23.8%), in Andévalo, and Puerto Moral (1.4%) in the Sierra de Aracena. Furthermore, it is worth analysing the municipalities in their entirety according to their demographic trends.

The first level includes those municipalities that have experienced relatively constant growth over the past seven decades. This is the case of the above-mentioned towns of San Bartolomé de la Torre (48.7%) and Valverde del Camino (23.9%), both in the Andévalo district. The first town is located a mere 29 kms from the capital city of Huelva and 15 kms of Gibraleón, next to highway A-49 that connects Sevilla and Huelva with southern Portugal. Because of this proximity to large urban areas and good access routes, its economic activity is turning from traditional agriculture and livestock farming to services. The latter has historically occupied a strategic position alongside the mining clusters in the province of Huelva: the capital and Riotinto. Ahead of other towns in the district, it consolidated and expanded the leather and shoemaking industries. There is evidence of shoemaking here since the end of the 18th century even while the first factory dates to 1912. From that time onwards, the industry has undergone a clearly upwards trend (Parreño Hidalgo, 1988; García del Junco & Espasandin Bustelo, 2001). Even while the shoemaking industry accounts for the greatest weighting in Valverde's industrial structure, the 20th century also saw an important expansion in the furniture industry, which has also generated satellite industries and services (González Romero, 2005; Sánchez Corralejo, 2015).

E-ISSN 1886-4805

Table 2. **Trends in demographic growth/shrinkage in the municipalities analysed (1950-2020)**

Ref	Municipalities	1950 1959	1960 1969	1970 1979	1980 1989	1990 1999	2000 2009	2010 2019	1950 2019
H01	Rosal de la Frontera	-8.7	-31.0	-10.5	-2.7	-4.0	0.5	-9.7	-52.6
H02	Aroche	0.7	-24.6	-20.7	-11.2	-2.1	-11.5	-1.3	-54.3
H03	Encinasola	-10.3	-27.4	-31.2	-22.1	-10.8	-13.5	-18.2	-78.0
H04	Cumbres de San Bartolomé	-4.0	-24.6	-30.1	-17.0	-14.4	-19.1	-17.7	-76.0
H05	Cortegana	13.3	-4.4	-30.3	-6.2	-2.1	-3.3	-6.0	-37.0
H06	Almonaster la Real	11.3	-18.0	-43.7	-12.8	-4.6	-8.1	-1.6	-61.4
H07	La Nava	30.4	-33.0	-42.5	-11.4	-6.9	-1.5	-17.1	-66.2
H08	Jabugo	0.9	-11.2	-17.6	0.7	3.2	-7.5	-6.1	-33.3
H09	Santa Ana la Real	-7.6	-22.8	-12.3	-22.2	1.8	-6.2	-1.2	-54.1
H10	Cumbres de Enmedio	-6.9	-40.4	-46.7	-20.5	8.6	-17.5	7.7	-77.3
H11	Cumbres Mayores	4.5	-3.6	-37.3	-12.3	-4.3	-7.7	-10.9	-56.5
H12	Valdelarco	-11.4	-22.1	-36.0	-8.0	-8.1	-6.6	-6.3	-67.3
H13	Galaroza	2.2	-15.8	-17.1	-13.1	-0.2	1.1	-14.8	-46.7
H14	Fuenteheridos	-6.5	-28.3	-18.8	-3.6	-0.8	-2.0	7.3	-45.2
H15	Castaño del Robledo	-15.7	-31.9	-22.6	-13.7	6.2	8.2	-0.4	-56.2
H16	Alájar	-13.2	-21.1	-25.1	-10.4	-7.2	4.1	-6.4	-58.4
H17	Cortelazor	-7.9	-14.5	-23.0	-25.8	4.1	-4.3	-4.5	-57.1
H18	Los Marines	-2.2	-28.2	-17.1	-10.2	-7.4	9.8	10.6	-41.2
H19	Linares de la Sierra	-9.7	-34.2	-21.1	-9.9	9.2	-3.2	-12.0	-60.7
H20	Hinojales	-5.3	-35.4	-23.4	-10.6	-5.8	-25.2	-0.3	-70.6
H21	Aracena	-5.6	-9.0	-11.7	5.7	2.6	14.1	6.5	-0.1
H22	Cañaveral de León	-6.1	-19.2	-21.6	-6.1	-11.9	-17.1	-5.8	-61.6
H23	Corteconcepción	-14.1	-18.7	-15.0	-9.3	0.1	-13.7	-9.7	-58.0
H24	Puerto Moral	9.4	11.2	-35.2	7.8	6.4	8.4	3.7	1.4
H25	Higuera de la Sierra	-3.2	0.3	-25.2	-8.9	-5.3	14.0	-10.4	-36.1
H26	Arroyomolinos de León	-9.6	-26.5	-22.1	-1.7	-5.5	-11.4	-8.4	-61.0
H27	Zufre	-8.9	-2.6	0.6	-35.1	-15.9	-12.5	-17.0	-64.6
H28	Cala	-12.9	-15.9	-23.6	-1.2	-1.8	-8.9	-12.1	-56.5
H29	Santa Olalla de Cala	20.2	-35.2	-22.4	0.5	-1.9	-4.8	-8.5	-48.1
A01	Paymogo	-3.6	-28.5	-18.0	-12.8	-11.7	6.7	-12.1	-59.1
A02	Puebla de Guzmán	-4.5	-30.2	-20.9	-9.5	1.2	-4.4	-0.8	-54.2
A03	El Almendro	3.4	-21.6	-28.6	-9.2	3.6	-0.8	-4.7	-48.6
A04	El Granado	13.1	-27.5	-12.6	-11.1	-2.2	-15.9	-9.9	-52.8
A05	Sanlúcar de Guadiana	0.1	-31.9	30.0	-51.6	-2.9	-7.6	11.4	-57.1
A06	Santa Bárbara de Casa	8.2	-39.6	-13.6	-1.8	-5.3	-15.2	-10.8	-60.3
A07	Villanueva de los Castillejos	2.8	-24.0	-14.7	-0.1	3.6	3.9	0.3	-28.2
A08	Cabezas Rubias	9.2	-33.8	-10.6	-1.8	0.0	-10.7	-15.6	-52.2
A09	El Cerro de Andévalo	12.2	-12.2	-29.3	-12.4	-3.6	-10.2	-4.6	-49.6
A10	Alosno	38.4	-18.9	-27.5	-0.9	1.4	-9.5	-10.5	-33.7
A11	San Bartolomé de la Torre	5.1	-8.3	0.7	18.0	0.7	19.7	7.7	48.7
A12	Villanueva de las Cruces	3.2	-12.0	-24.7	-9.3	-0.2	-3.5	-10.1	-46.3
A13	Calañas[2]	23.0	-29.2	-33.2	-6.5	-4.3	-12.1	-5.3	-56.6
A14	Valverde del Camino	5.4	-0.9	6.7	7.1	1.4	2.2	0.3	23.9
	AVERAGE	**0.9**	**-21.1**	**-20.9**	**-9.1**	**-2.3**	**-4.7**	**-5.5**	**-47.9**

Source: Compiled by the authors based on data from the Institute of Statistics and Cartography of Andalusia.

The second level encompasses the municipalities that underwent virtually no changes in their populations over the past 70 years.

[2] Calañas includes data from La Zarza-Perunal that split off in 2018.

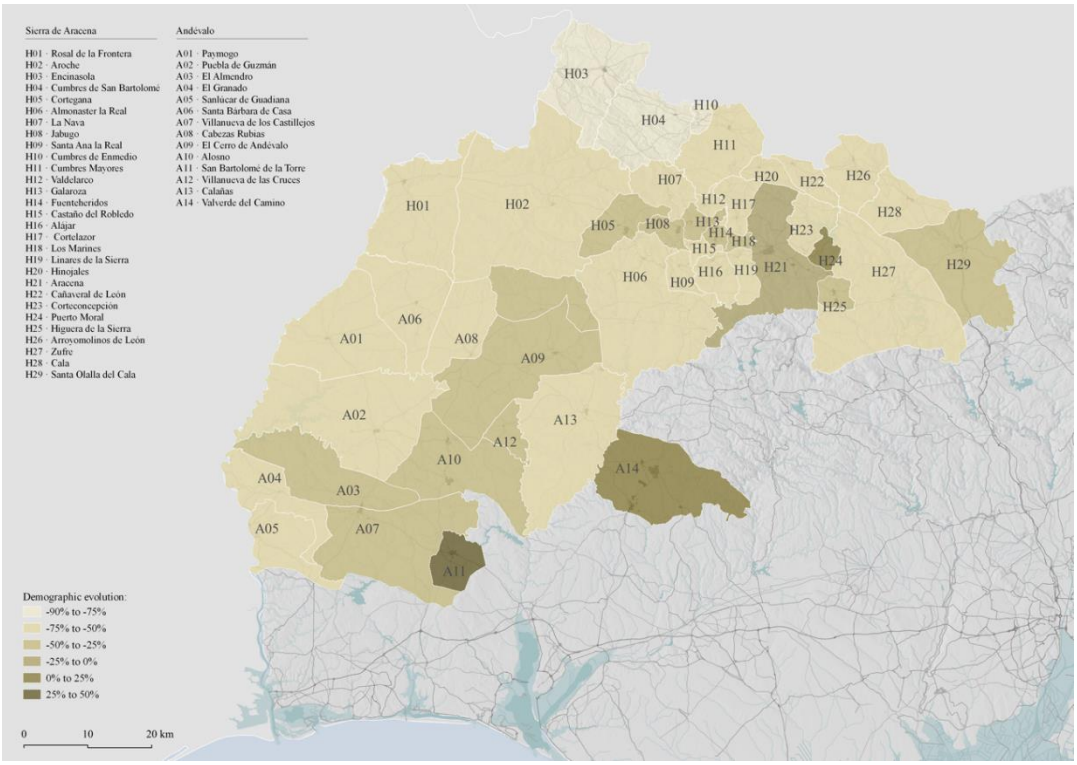
E-ISSN 1886-4805

This represents the case of Puerto Moral (1.4%) and Aracena (-0.1%), municipalities on the Sierra de Aracena border. The former is only small in expanse, at 19.9 km^2, with its population varying from 338 to 219 inhabitants. Its trajectory was influenced by the construction of the Aracena Dam, inaugurated in 1970 (Aguilar Alba & Moral Ituarte, 2008).

This project would justify the increase in population in the decades prior to the conclusion of the works and the decrease seen in the years immediately after. On the other hand, Aracena went through a significant loss in population in the decades prior to the 1980s because of the agriculture crisis that affected all primary sector workers in Sierra de Aracena. From then on, this downwards trend is reverted, and the number of inhabitants recovers to levels akin to those of 1950 thanks to the surge in tourism in the area resulting from the protection status attributed to Aracena and Picos de Aroche as Natural Parks (Law 2/1989) and the opening of the outdoor Museum of Contemporary Art "Andalucía" (Camacho & Roldán 2011).

The remaining municipalities analysed have experienced significant population losses. The first level in this class includes municipalities with losses of below 50%, a total of 12 municipalities, such as Villanueva de los Castillejos in Andévalo, with its population falling by 28.15%, and Olalla de Cala in Sierra de Aracena that lost 48,1% of its inhabitants. The second level groups cases with demographic shrinkage of between -50% to -75%. This reflects the case of 24 of the 44 municipalities studied. At the lower range in this band come Cabezas Rubias, Rosal de la Frontera and El Granado with values close to -52% while in the upper reaches are settlements such as La Nava, Valdelarco and Hinojales that experienced variations of -66.2%, -67.3 and -70.6% respectively. In the most extreme class, there are the towns of Cumbres de San Bartolomé, Cumbres de Enmedio and Encinasola that had shed over 75% of their population since 1950. They are also precisely the three most northern municipalities of those analysed.

Figure 1. **Demographic trends in the analysed municipalities (1950-2020)**



Source: Compiled by the authors based on data of the Institute of Statistics and Cartography of Andalusia.

E-ISSN 1886-4805

Georeferenced analysis of these data provides for the identification of territorial patterns, especially regarding mobility infrastructures, in addition to the raw numeric data described above (see figure 1). In Sierra de Aracena, municipalities with the lowest decreases in their population are located along the Puerto Moral - Aracena – Cortegana axis, the N-433 road that crosses into Portugal at Rosal de la Frontera. In Andévalo's case, a clear influence on the demographic evolution of Valverde del Camino stems from its strategic location on the N-435 road connecting the Huelva Metropolitan Area with the Sierra. As already pointed out, the driver behind the growth of San Bartolomé de la Torre arises from its proximity to the A-49 highway connecting Seville with the Portuguese Algarve that combines with the fact that San Bartolomé de la Torre represents the starting point of the A-495 to Alosno and the A-490 to Villanueva de los Castillejos.

The economic development of Huelva province in the second half of the 20th century interlinks with two government initiatives that would define the future of the inland-coastline demographic dynamics (Pérez Cano *et al.*, 2020). Firstly, Law no. 197/1963 regarding cities and areas of touristic interest promoted the development of touristic settlements to strengthen tourism as one of the Spanish economy pillars of growth. Touristic centres declared as such by the said law were converted into products of great interest for private investors due to the economic and legal advantages that the law granted to promotors (Galiana Martin & Barrado Timón, 2006).

Between 1966 and 1975, 75 touristic attraction centres were established in Spain with 27 in Andalusia. The Huelva province coastline was reconverted as a seaside tourism attraction centre with the development of four settlements along the coast, separate to any previously existing urban settlement (García Sánchez, 2012): Isla Canela (Ayamonte – 1964), Matalascañas (Almonte – 1969), Mazagón (Palos de la Frontera – 1968) and El Portil (Cartaya y Punta Umbría – 1968). We would also note the distance of these settlements from the tourist centres simultaneously declared in the neighbouring Cadiz province, with most located in Campo de Gibraltar, facing Costa del Sol.

Further attention should also be paid to the launching of the Huelva Industrial Development Cluster (Polo de Desarrollo Industrial de Huelva) in 1964 under the auspices of the first Economic and Social Development Plan of the dictatorship. The intention was to boost the province's economy by concentrating industrial activities in Huelva. Several authors (Monteagudo López-Menchero, 1986; Ruiz García, 2001; Sánchez Domínguez, 2009) recognise the economic depression and lack of investment in the districts of Sierra de Aracena, Andévalo, and the mining areas following the transfer of activities and population towards the Huelva Industrial Cluster and thereby disregarding the potential of the remaining municipalities for the industrial development of the province. The only exception comes with the already mentioned case of Valverde del Camino, with its shoemaking and furniture industries.

Another variable framing the territorial imbalance of the province is the increase in agricultural activities around Doñana since the 1980s. They have occupied both arable soils and fragmented areas of forest to produce intensive crops of strawberries and other red fruits (Junta de Andalucía, 2016), replacing the traditional cereal, olive, and vineyard cultures. Consequently, the area of agricultural usage expanded by approximately 5,000 hectares in the first decade of the 21st century (Junta de Andalucía, 2001, 2014).

Nowadays, intensive agriculture occupies over 4,000 hectares and employs over 50,000 persons in Doñana (Márquez Domínguez, 2020). While falling beyond the scope of this paper, the repercussions of this agricultural sector on the conservation of native forests in the protected area of Doñana cannot be ignored and especially as regards the aquifers due to the overexploitation of underground water (Worldwide Fund for Nature, 2019). In any case, the increasing labour needs of Doñana have attracted residents from the province's inland, including the districts studied in this research.

E-ISSN 1886-4805

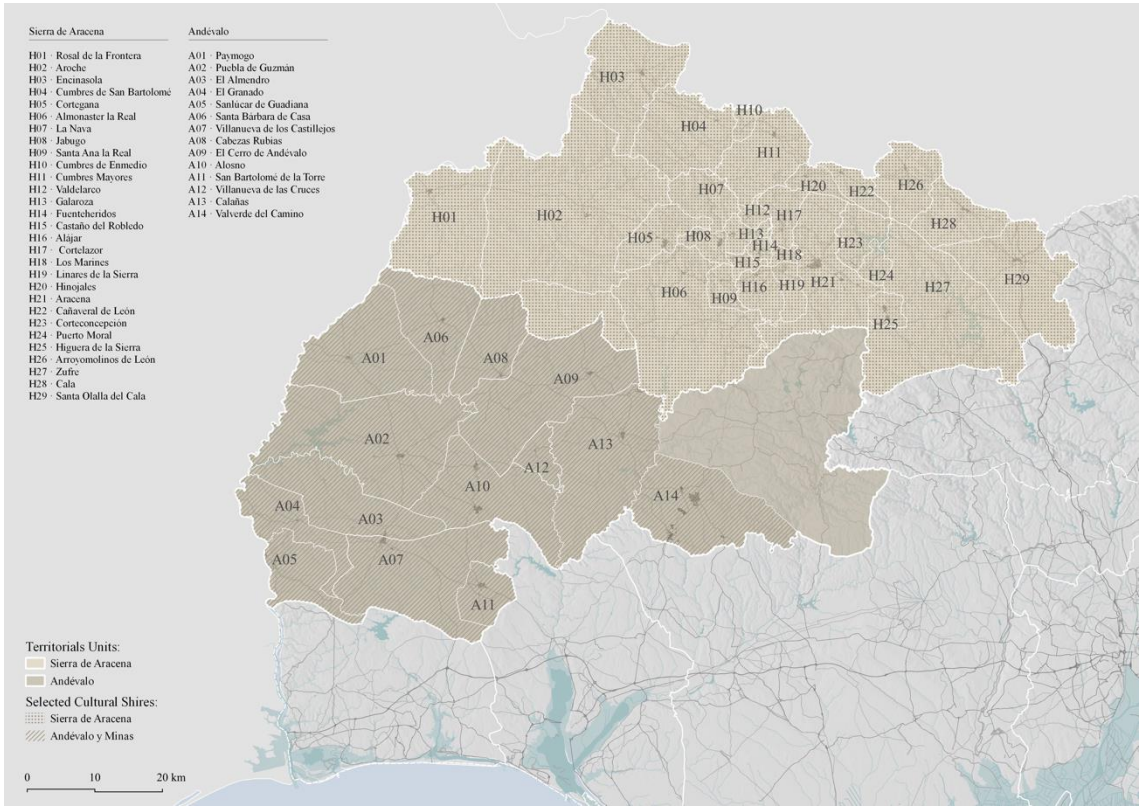
4. Urban and territorial planning and their effects on urban land growth

The urban dynamics of a given territory are not exclusively a consequence of the population development and include the opportunities for urban growth, understood as expanding the land eligible for construction in accordance with the planning requirements that shape the development of any given place. Before entering the particularities of the planning approval process in the districts of the Sierra de Aracena and Andévalo, we first need to understand the structure of the Urban and Territorial Planning system in Andalusia.

Recently approved, Law no. 7/2021, on promoting sustainability in the Andalusian territory, groups territorial and urban planning under the same legislation. Hitherto, the two aspects had been developed through separate legislation.

The law thus inherits the guidelines established by Law no. 1/1994 on Spatial Planning in the Community of Andalusia (LOTA) and Law no. 7/2002 on Urban Planning in Andalusia (LOUA). Among other considerations, this legislation continues to define the Spatial Plan of Andalusia (Plan de Ordenación del Territorio de Andalucía - POTA) as the territorial reference framework for other plans and planning instruments, sectoral regulation as well as for public actions in general, establishing the basic framework for the organisation and structure of the entirety of the Andalusian territory. Despite the new legislative framework, the Spatial Plan of Andalusia currently in force dates to 2006. This document structures the community into 34 territorial units based on their physical and functional homogeneity to which their landscape characteristics and cultural identity must be added.

Figure 2. **Relationship between territorial units and cultural districts**



Source: Compiled by the authors based on data from the Regional Ministry of Development, Infrastructure and Territory Planning.

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The municipalities addressed by this research are grouped into two different territorial units (see figure 2). Of all the municipalities, 29 are located in the territorial unit of Sierra de Aracena, which coincides with the cultural district of Sierra de Aracena: Rosal de la Frontera (H01), Aroche (H02), Encinasola (H03), Cumbres de San Bartolomé (H04), Cortegana (H05), Almonaster la Real (H06), La Nava (H07), Jabugo (H08), Santa Ana la Real (H09), Cumbres de Enmedio (H10), Cumbres Mayores (H11), Valdelarco (H12), Galaroza (H13), Fuenteheridos (H14), Castaño del Robledo (H15), Alájar (H16), Cortelazor (H17), Los Marines (H18), Linares de la Sierra (H19), Hinojales (H20), Aracena (H21), Cañaveral de León (H22), Corteconcepción (H23), Puerto Moral (H24), Higuera de la Sierra (H25), Arroyomolinos de León (H26), Zufre (H27), Cala (H28) and Santa Olalla del Cala (H29).

The remaining 14 are located in the territorial unit of Andévalo y Minas: Paymogo (A01), Puebla de Guzmán (A02), El Almendro (A03), El Granado (A04), Sanlúcar de Guadiana (A05), Santa Bárbara de Casa (A06), Villanueva de los Castillejos (A07), Cabezas Rubias (A08), El Cerro de Andévalo (A09), Alosno (A10), San Bartolomé de la Torre (A11), Villanueva de las Cruces (A12), Calañas (A13) and Valverde del Camino (A14). In this case, the territorial unit is larger than the Andévalo district and encompasses the mining district (Cuenca Minera).

Both the revoked LOTA and the currently in force LISTA establish that determining and setting out POTA must involve the development and enlargement to each territorial unit at a sub-regional spatial level. However, both territorial units lack any corresponding sub-regional plan. This instrument is key to defining the territorial objectives to be achieved in the corresponding territory, among other aspects, specific actions, and measures for halting the decline or promoting urban-rural interconnections in the area. The study area also lacks any special plans on a supra-municipal scale, the main purpose of which involves implementing systems of open spaces of interest to two or more municipalities as well as protecting areas of special heritage, agricultural, environmental or landscape value.

As recognised, firstly by LOUA and afterwards by LISTA at the supra-municipal level this study also considers those planning instruments and sectoral strategies which, due to their content and scope and in accordance with the specific applicable legislation, generate direct impacts on the relationships and activities carried out in the territory. This is the case with environmental planning, such as the Natural Resource Management Plans (Planes de Ordenación de los Recursos Naturales - PORN) and the Directive Plans for Usage and Management (Planes Rectores de Uso y Gestión - PRUG). Furthermore, there are the Management Plans for Special Conservation Areas (Zonas Especiales de Conservación - ZEC) within the framework of the European Ecological Network Natura 2000. These environmental planning instruments are regulated by Law 42/2007 on Natural Heritage and Biodiversity and with their purpose involving the planning and/or management of natural areas. Within the scope of this study, the PORN and PRUG of the Natural Park of Sierra de Aracena and Picos de Aroche extends their respective scopes to 27 of the 29 municipalities in the Sierra de Aracena (except for Alájar and Rosal de la Frontera), while the PORN for the Sierrra Pelada, Rivera del Aserrador and Peñas de Aroche is limited to the municipalities of Aroche, Cortegana and Rosal de la Frontera.

This study also incorporates considered the guidelines of the Management Plans for Special Areas of Conservation that cover, partially or completely, some of the analysed municipalities. Such is the case of western Andévalo (El Almendro, El Granado, Paymogo, Puebla de Guzmán, Sanlúcar de Guadiana, Villanueva de los Castillejos), the Guadiana River (El Almendro, El Granado, Puebla de Guzmán, Sanlúcar de Guadiana), the Chanza River (Aroche, Rosal de la Frontera, Santa Bárbara de Casa, Paymogo), El Jure (Alosno), Mina Carpio (Cortegana), Mina Sotiel Coronada (Calañas) and the Ecological Pathways of the Guadimar River (Zufre) and the Tinto River (Valverde del Camino). Other Junta de Andalucía planning activities of a territorial nature must be coherent with the Spatial Plan of Andalusia and the respective sub-regional plans.

E-ISSN 1886-4805

These are documents of a very diverse nature, and some require specific identification given their impacts on the area of study: the Master Plan for the Pastures of Andalusia, the Andalusian Mining Strategy, the Andalusian Strategy for Sustainable Development, and the Integrated Strategy for the Promotion of Sustainable Inland Tourism in Andalusia. However, these represent only some of the different plans with impacts on land management currently in effect.

Regarding municipal planning regulations, the reality is widely disparate. As table 3 details, urban growth is regulated in the least populated municipalities whether by Urban Land Delimitation Projects (Proyectos de Delimitación de Suelo Urbano - PDSU) - 9 municipalities - or by Subsidiary Municipal Planning Standards (Normas Subsidiaras de Planeamiento Municipal - NNSS) - 24 municipalities -.

These state legislative instruments predate the entry into force of LOUA, which opted for the general plan as the only valid urban planning instrument. However, in its Second Transitional Provision, it then establishes the maintenance of the NNSS and PDSU in force, up until their revision or full compliance and admits the possibility of adapting them, whether partially or totally, to the stipulations of LOUA. This fact has meant that these small municipalities do not yet have a general planning instrument and instead opting for the route of adaptation: 21 NNSS and 1 PDSU.

Other municipalities opted to approve new PDSUs as is the case of El Granado (2006), Valdelarco (2010), Cumbres Mayores (2014) and Hinojales (2019). Thus, we may point out how most NNSSs have been adapted to the LOUA, except for the case of Linares de la Sierra (1985), which began processing a new General Plan after the entry into force of LOUA but this has not yet been definitively approved.

On the other hand, many PDSUs are still pending adaption to LOUA, for example, Alájar (1984), Castaño del Robledo (1985), Galaroza (1986), Puerto Moral (1986) and Fuenteheridos (1993). As in the previous case, these municipalities have also embarked on developing new General Plans, but they have yet to be definitively approved.

It is worthwhile reflecting here on the new municipal planning role that LISTA attributes to municipalities with less than 10,000 inhabitants (except for those in coastal locations or that form part of a metropolitan region). In those cases, the General Municipal Development Plan (Plan General de Ordenación Municipal – PGOM) and the Urban Development Plan (Plan de Ordenación Urbana – POU) may be replaced by a Basic Municipal Development Plan (Plan Básico de Ordenación Municipal – PBOM), which should contain the determinations for general and detailed urban planning. Accordingly, it may be concluded that the new law restores the obsolete Subsidiary Standards.

Ten of the municipalities analysed here have set out General Urban Plans: Cumbres de Enmedio (2003), Los Marines (2004), Cumbres de San Bartolomé (2004), Santa Ana la Real (2004), Cortelazor (2006), Cañaveral de León (2006), Aroche (2009), El Cerro de Andévalo (2013), Aracena (2013) and Santa Bárbara de Casa (2013). All of them were approved after LOUA came into force and are therefore correspondingly adapted to its provisions (see figure 3).

In total, 28 municipalities have general planning procedures in process, according to the registry of the Regional Ministry of Development, Infrastructure and Territorial Planning (Consejería de Cultura y Patrimonio Histórico, n.d.). Of these, Encinasola, Cortegana, Higuera de la Sierra, Zufre, Santa Olalla de la Cala, El Almendro, Villanueva de los Castillejos, Cabezas Rubias, Alosno and Villanueva de las Cruces apparently refused to continue drafting their new plans and instead opting to adapt their PDSU or NNSS to LOUA.

E-ISSN 1886-4805

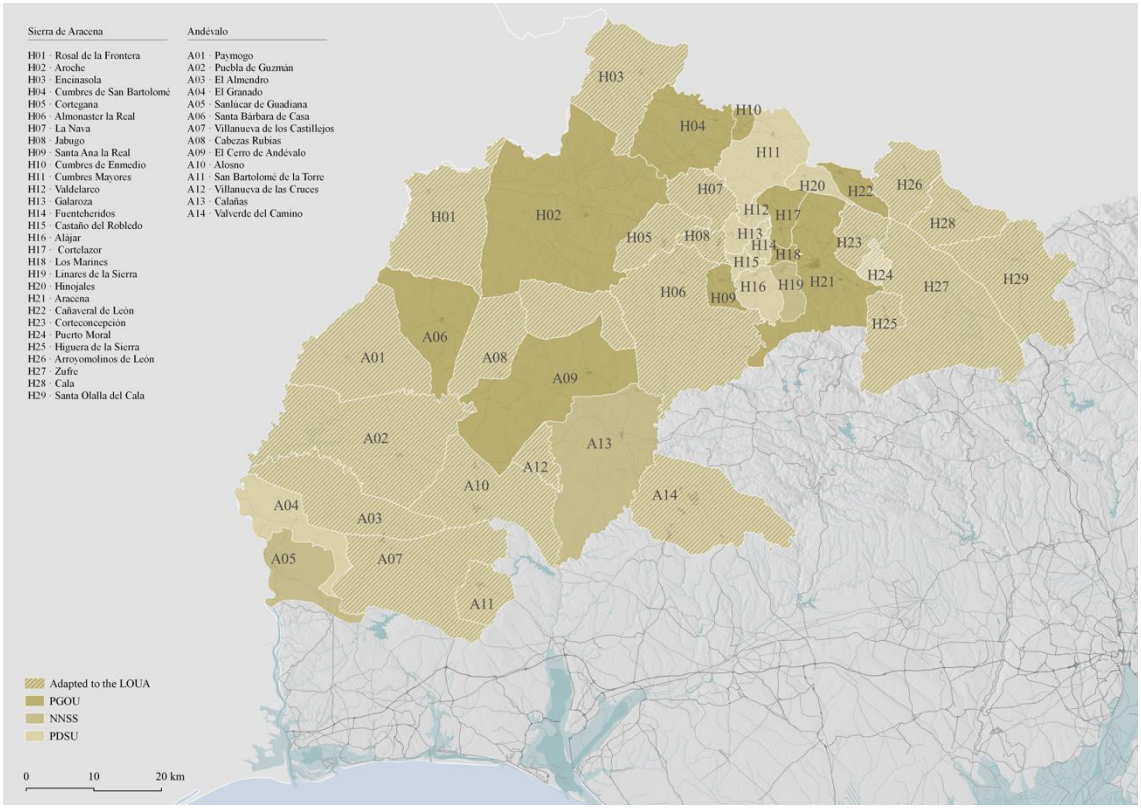
Table 3. **Urban Planning instruments in force in the analysed municipalities**

Ref	Municipalities	PDSU	NNSS	PGOU	Adap. LOUA	PGOU in process (Not definitively approved)
H01	Rosal de la Frontera	-	2004	-	2011	-
H02	Aroche	-	-	2009	-	-
H03	Encinasola	-	1997	-	2010	Preliminary Document (2006)
H04	Cumbres de San Bartolomé	-	-	2004	-	-
H05	Cortegana	-	1981	-	2012	Preliminary Document (2011)
H06	Almonaster la Real	-	1993	-	2011	Initial Approval (2019)
H07	La Nava	-	1999	-	2012	Initial Approval (2016)
H08	Jabugo	-	1995	-	2010	Preliminary Document (2021)
H09	Santa Ana la Real	-	-	2004	-	-
H10	Cumbres de Enmedio	-	-	2003	-	-
H11	Cumbres Mayores	2014	-	-	-	Preliminary Document (2013)
H12	Valdelarco	2010	-	-	-	-
H13	Galaroza	1986	-	-	-	Preliminary Document (2005)
H14	Fuenteheridos	1993	-	-	-	Provisional Approval (2012)
H15	Castaño del Robledo	1985	-	-	-	Initial Approval (2009)
H16	Alájar	1984	-	-	-	Initial Approval (2013)
H17	Cortelazor	-	-	2006	-	-
H18	Los Marines	-	-	2004	-	-
H19	Linares de la Sierra	-	1985	-	-	Initial Approval (2009)
H20	Hinojales	2019	-	-	-	Provisional Approval (2014)
H21	Aracena	-	-	2013	-	-
H22	Cañaveral de León	-	-	2006	-	-
H23	Corteconcepción	-	1991	-	2010	Preliminary Document (2020)
H24	Puerto Moral	1986	-	-	2008	Initial Approval (2019)
H25	Higuera de la Sierra	-	1995	-	2009	Preliminary Document (2005)
H26	Arroyomolinos de León	-	1992	-	2009	-
H27	Zufre	-	1999	-	2011	Preliminary Document (2008)
H28	Cala	-	2004	-	2010	Preliminary Document (2014)
H29	Santa Olalla de Cala	-	1994	-	2013	Initial Approval (2011)
A01	Paymogo	-	2007	-	2012	Preliminary Document (2009)
A02	Puebla de Guzmán	-	1995	-	2013	Initial Approval (2014)
A03	El Almendro	-	2002	-	2010	Initial Approval (2008)
A04	El Granado	2006	-	-	-	Provisional Approval (2018)
A05	Sanlúcar de Guadiana	-	1985	-	-	Provisional Approval (2019)
A06	Santa Bárbara de Casa	-	-	2013	-	-
A07	Villanueva de los Castillejos	-	2002	-	2010	Preliminary Document (2009)
A08	Cabezas Rubias	-	1992	-	2009	Preliminary Document (2008)
A09	El Cerro de Andévalo	-	-	2013	-	-
A10	Alosno	-	1991	-	2012	Preliminary Document (2009)
A11	San Bartolomé de la Torre	-	2004	-	2010	-
A12	Villanueva de las Cruces	-	2002	-	2013	Initial Approval (2006)
A13	Calañas	-	1985	-	-	Initial Approval (2013)
A14	Valverde del Camino	-	1999	-	2009	-
	TOTAL	**9**	**24**	**10**	**21**	**28**

Source: Compiled by the authors based on data from the Regional Ministry of Development, Infrastructure and Territory Planning.

E-ISSN 1886-4805

Figure 3. **Urban Planning instruments in force in the municipalities analysed**



Source: Compiled by the authors based on data from the Regional Ministry of Development, Infrastructure and Territory Planning.

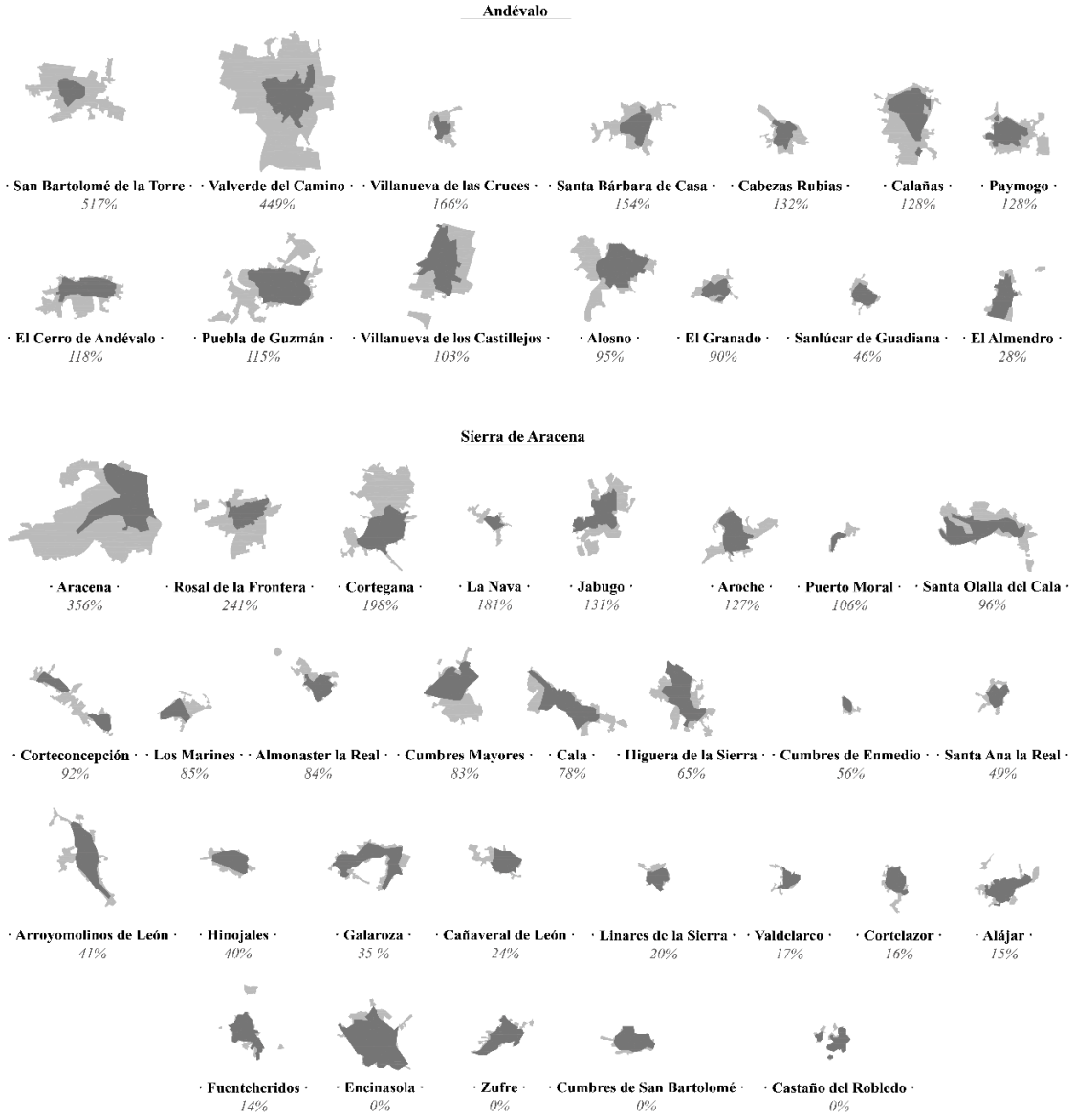
Only Fuenteheridos (2012), Hinojales (2014), Puerto Moral (2019), El Granado (2018) and Sanlúcar de Guadiana (2019) provisionally approved their new General Plans, which have long been pending final approval. It is worth highlighting the case of Jabugo that spent 15 years producing an Urban Development Master Plan, which has itself been provisionally approved on up to three occasions, adapting to the regulations and requirements of the various sectoral reports, even while not yet definitively approved due to not having passed the Strategic Environmental Assessment required of plans since 2015. Consequently, Jabugo recently embarked on the processing of a new planning instrument (Ayuntamiento de Jabugo, 2021).

It must be recognised that the need for planning instruments is inexorably conditioned by the demand for urban land. As already mentioned, in most of the municipalities analysed, population growth has been negative. Therefore, *a priori*, there would seem to be no clear demand for urban growth. However, the aim is to contrast this fact by analysing the actual growth in urban area experienced by these municipalities since 1900 (see figure and table 4). In general terms, we would note that these municipalities have obtained average growth of 105%. However, in accordance with the data obtained, we may establish five clearly differentiated growth patterns. Firstly, five municipalities have retained their original urban boundaries: Castaño del Robledo, Cumbres de San Bartolomé, Encinasola and Zufre. On a second level are those municipalities with a growth rate of up to 50% of the urban land covered at the beginning of the 20th century: Fuenteheridos (14%), Alájar (15%), Cortelazor (16%), Valdelarco (17%), Linares de la Sierra (20%), Cañaveral de León (24%), El Almendro (28%), Galaroza (35%), Hinojales (40%), Arroyomolinos de León (41%), Sanlúcar de Guadiana (46%) and Santa Ana la Real (49%).

E-ISSN 1886-4805

The third level includes municipalities with growth of over 50% but not exceeding 100%: Cumbres de Enmedio (56%), Higuera de la Sierra (65%), Cala (78%), Cumbres Mayores (83%), Almonaster la Real (84%), Los Marines (85%), El Granado (90%), Corteconcepción (92%) and Santa Olalla de Cala (96%). The fourth growth cluster is defined by the municipalities that have more than doubled in size: Villanueva de los Castillejos (103%), Puerto Moral (106%), Puebla de Guzmán (115%), El Cerro de Andévalo (118%), Aroche (127%), Paymogo (128%), Calañas (128%), Jabugo (131%), Cabezas Rubias (132%), Santa Bárbara de Casa (154%), Villanueva de las Cruces (166%), La Nava (181%) and Cortegana (198%).

Figure 4. **Urban growth in the analysed municipalities since 1900**[3]



Source: Compiled by the authors based on data from the Institute of Statistics and Cartography of Andalusia.

[3] The research only considers the growth of the main nuclei. Scattered nuclei were excluded because many have experienced significant growth due to the construction of second homes.

E-ISSN 1886-4805

Table 4. **Urban growth of the analysed municipalities since 1900**

Ref	Municipalities	Urban area in 1900 (m2)	Urban area in 2020 (m2)	Urban growth (%)
H01	Rosal de la Frontera	158,664	541,369	241.2
H02	Aroche	183,746	417,596	127.3
H03	Encinasola	439,760	439,760	0.0
H04	Cumbres de San Bartolomé	146,226	146,226	0.0
H05	Cortegana	298,533	889,490	198.0
H06	Almonaster la Real	99,091	182,647	84.3
H07	La Nava	35,767	100,457	180.9
H08	Jabugo	199,923	462,276	131.2
H09	Santa Ana la Real	70,339	104,786	49.0
H10	Cumbres de Enmedio	22,017	34,395	56.2
H11	Cumbres Mayores	242,453	444,061	83.2
H12	Valdelarco	52,232	61,089	17.0
H13	Galaroza	246,069	331,764	34.8
H14	Fuenteheridos	154,002	175,084	13.7
H15	Castaño del Robledo	82,162	82,162	0.0
H16	Alájar	147,484	169,526	14.9
H17	Cortelazor	93,573	108,938	16.4
H18	Los Marines	81,544	150,542	84.6
H19	Linares de la Sierra	70,470	84,383	19.7
H20	Hinojales	120,574	169,150	40.3
H21	Aracena	541,427	2,470,811	356.4
H22	Cañaveral de León	114,630	142,373	24.2
H23	Corteconcepción	110,732	212,344	91.8
H24	Puerto Moral	25,941	53,496	106.2
H25	Higuera de la Sierra	261,002	431,889	65.5
H26	Arroyomolinos de León	239,433	338,565	41.4
H27	Zufre	154,833	154,833	0.0
H28	Cala	266,721	474,407	77.9
H29	Santa Olalla de Cala	284,646	557,661	95.9
A01	Paymogo	165,462	377,138	127.9
A02	Puebla de Guzmán	380,297	816,378	114.7
A03	El Almendro	149,987	192,610	28.4
A04	El Granado	82,257	156,291	90.0
A05	Sanlúcar de Guadiana	78,038	113,878	45.9
A06	Santa Bárbara de Casa	145,666	369,663	153.8
A07	Villanueva de los Castillejos	335,464	682,433	103.4
A08	Cabezas Rubias	91,413	212,072	132.0
A09	El Cerro de Andévalo	208,084	453,183	117.8
A10	Alosno	320,317	623,164	94.5
A11	San Bartolomé de la Torre	103,830	640,837	517.2
A12	Villanueva de las Cruces	51,526	137,105	166.1
A13	Calañas	281,338	642,447	128.4
A14	Valverde del Camino	374,872	2,057,691	448.9
	AVERAGE	**179,362**	**404,813**	**105.1**

Source: Compiled by the authors based on data from the Institute of Statistics and Cartography of Andalusia.

Finally, there are municipalities with the most significant rates of urban expansion. Such is the case for Rosal de la Frontera (241%), Aracena (356%), Valverde del Camino (449%) and San Bartolomé de la Torre (517%). We would again recall that, out of the entire sample, only San Bartolomé de la Torre and Valverde del Camino have experienced significant population growth. The cases of Aracena, with practically no change in the number of inhabitants, or Rosal de la Frontera, which has reportedly lost more than 50% of their population, are thus surprising.

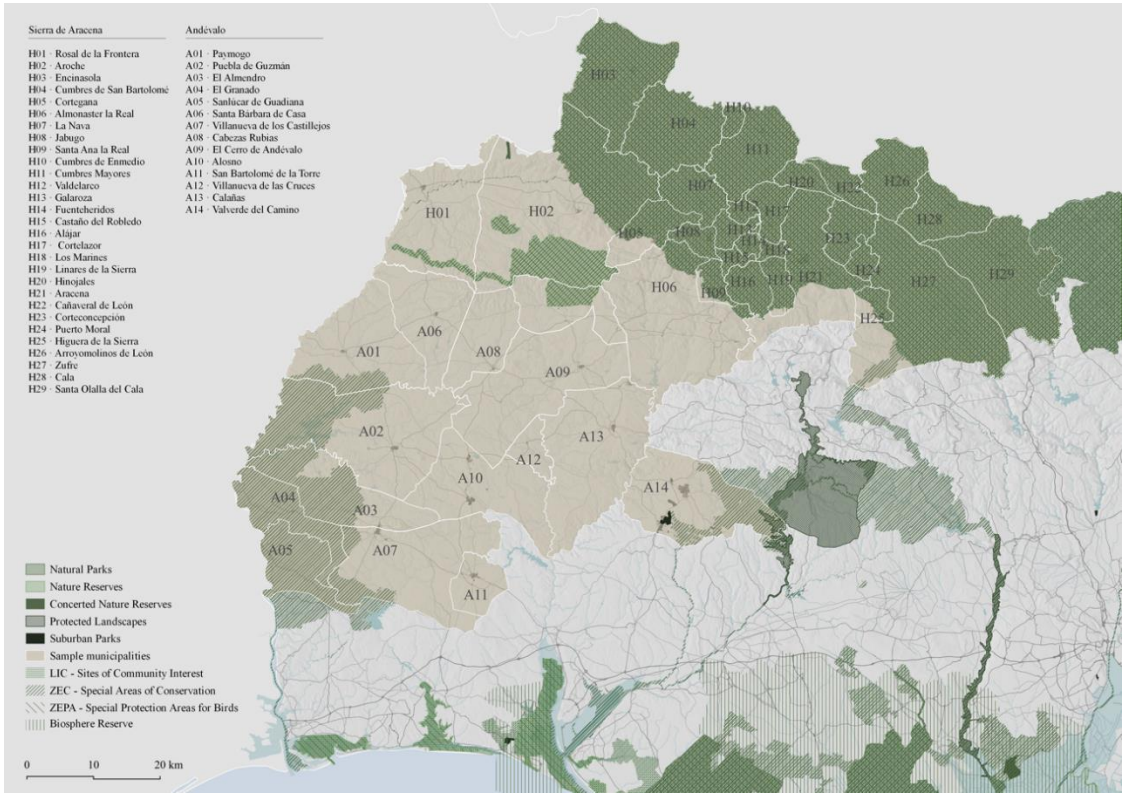
E-ISSN 1886-4805

5. Heritage characterisation of Sierra de Aracena and Andévalo from an urban-territorial planning perspective

As recognised in the Spatial Plan of Andalusia (POTA), the Andalusian Territorial Heritage System is conceived as a coherent network of natural and cultural spaces and assets, as well as a series of axes that interlink them and make them accessible. This, therefore, contains the cultural assets in keeping with the cultural legislation, the natural spaces protected by the environmental rules, plus those derived from urban planning tools.

The territory analysed is characterised by a significant number of protected natural spaces (see figure 5). The Natural Park of Sierra de Aracena y Picos de Aroche (1989), the Natural Monument of Holm Oak Dehesa de San Francisco, the Natural Sites of Peñas de Aroche (1989), Sierra Pelada and Rivera del Aserrador (1989), the Concerted Natural Reserve of Puerto Moral (2004) and the Suburban Park of El Saltillo y Lomero Llano (1999) have all received national or regional protection. We would point out that the Protected Natural Spaces of Andalusia are regulated by Law 2/1989, which includes the classification of Natural Sites, Suburban Parks, and Concerted Nature Reserves, in addition to those already recognised under national law, Natural Parks, Nature Reserves, Natural Monuments and Protected Landscapes.

Figure 5. **Protected Natural Spaces of Andalusia**



Source: Compiled by the authors based on data from the Regional Ministry of Agriculture, Livestock, Fisheries and Sustainable Development.

The Protected Areas of the Natura 2000 Network (see table 5) form a European ecological network of biodiversity conservation areas, including Special Protection Areas for Birds (Zonas de Especial Protección para las Aves - ZEPA) and Sites of Community Interest (Lugares de Interés Comunitario - LIC), which have mostly also been declared Special Areas of Conservation (Zonas Especiales de Conservación - ZEC).

E-ISSN 1886-4805

It should also be noted that the Natural Heritage of the Sierra de Aracena has also gained global recognition. The Sierra de Aracena, together with the Sierra Norte de Sevilla and the Sierra de Hornachuelos in Cordoba, joined the World Network of Biosphere Reserves in 2002, as the Biosphere Reserve of Dehesas de Sierra Morena.

Biosphere Reserves constitute territories whose objective is to harmonise the conservation of biological and cultural diversity with economic and social development through the relationship between people and nature. They are ecologically representative areas or places of unique value in which the integration of human populations and their activities into safeguarding is essential. They are structured in three distinct areas: the core zone, for conservation, the buffer zone, and the transition zone, which allows for the sustainable development of the area.

The complete reserve must contribute not only to the conservation of biodiversity and the ecosystems it contains but also to the socio-economic development of the local populations by promoting sustainable activities as well as research, training, and communication, understanding these as places of experimentation for the implementation of sustainable practices necessarily based on the involvement of the local community (Castaño Quintero, 2020).

Table 5. **Nature Network 2000 Protected Areas**

Protected Spaces	Code	LIC	ZEC	ZECA
Sierra de Aracena y Picos de Aroche	ES0000051	1997	2012	1989
Sierra Pelada y Rivera del Aserrador	ES0000052	1997	2016	1989
Peñas de Aroche	ES6150007	1997	2016	2002
Andévalo Occidental	ES6150010	1997	2015	-
Río Guadiana y Ribera de Chanza	ES6150018	1999	2015	-
Corredor Ecológico Rio Tinto	ES6150021	2000	2015	-
Ribera de Chanza	ES6150022	2000	2015	-
El Jure	ES6150024	2000	2015	-
Mina Carpio	ES6150025	2000	2015	-
Mina Sotiel Coronada	ES6150026	2000	2015	-
Corredor Ecológico Guadiamar	ES6180005	1999	2015	-

Source: Compiled by the authors based on data from the Regional Ministry of Agriculture, Livestock, Fisheries and Sustainable Development.

As detailed in figure 6, environment protection is thus particularly significant in the Sierra de Aracena region, where most municipalities have more than 75% of their municipal area located inside protected areas, either by regional or state legislation, and many cases reach the 100% of protected land. Localities such as Higuera de la Sierra (H25), Aracena (H21), Aroche (H2) or Cortegana (H5) still maintain a high percentage of protected land, respectively 63,8%, 57,7%, 49,9% and 38,2%.

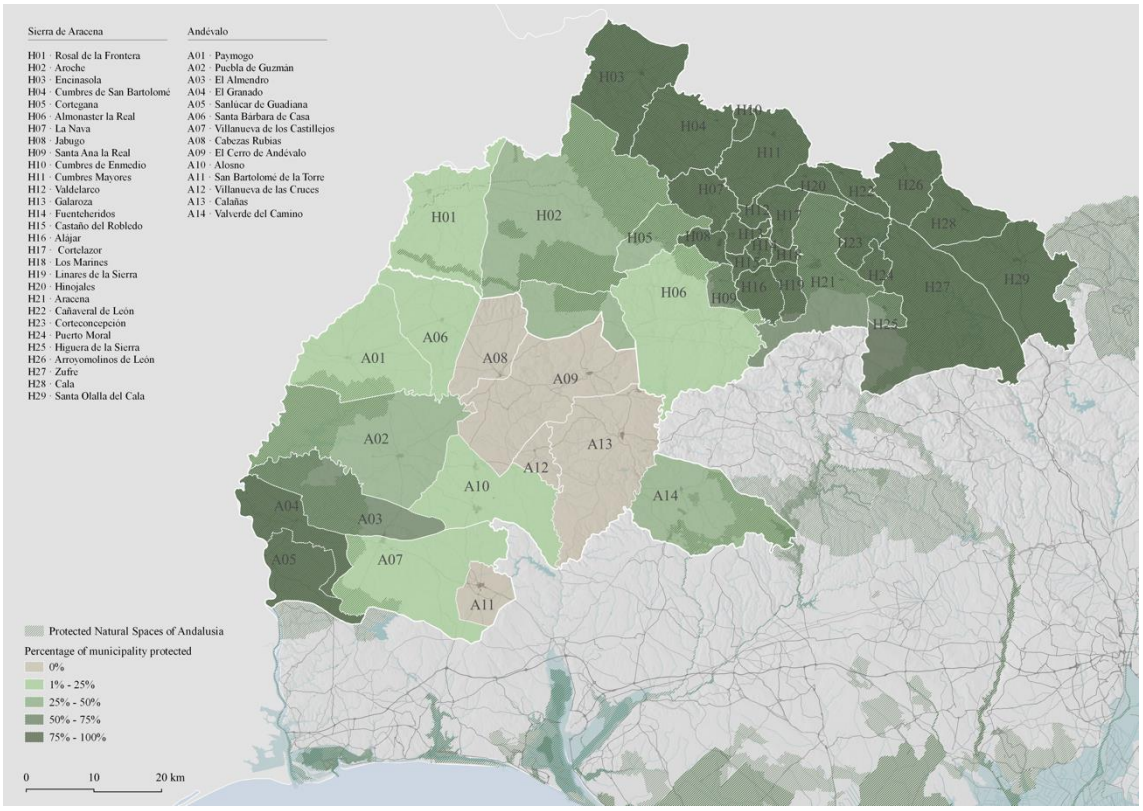
Finally, Almonaster la Real and Rosal de la Frontera, with 7,8 % and 6,5% of their surface area protected, respectively. In the Andévalo region there are no large areas protected by regional or state legislation, but there are Nature Network 2000 sites. Particularly noteworthy are the municipalities of El Granado (A04), Sanlúcar de Guadiana (A05), El Almendro (A03), Puebla de Guzmán (A02), Paymogo (A01) and Villanueva de los Castillejos (A07), through which the ZEC Andévalo Occidental runs. Respectively, 99,7%, 99,7%, 60,8%, 35,8%, 14,8% and 12,92% of their territory is protected. Besides, 34% of the municipal surface area of Valverde del Camino (A14) is in a protected natural area.

In the rest of the cases, the percentage of protected municipal territory is minimum, as in Alosno (A10), or completely nil, as in Cabezas Rubias (A08), El Cerro de Andévalo (A09), San Bartolomé de la Torre (A11), Villanueva de las Cruces (A12), and Calañas (A13).

E-ISSN 1886-4805

In addition to the natural spaces, the anthropisation processes, the usage of the land, the mining, agricultural and livestock trajectories of the region, in short, the relationship between man and the environment in this territory has generated a wide variety of types of tangible and intangible assets, of different natures, positions and chronologies clearly worthy of urban cataloguing (see figure 7). The number of features protected by urban planning instruments totals 1,095 assets. However, there is a very uneven distribution among municipalities and to a large extent depending on the type of urban planning figure (PDSU, NNSS or PGOU), whether this contains a Protection Catalogue (CAT) and its respective date of approval. Out of the whole sample, Aroche stands out significantly. The heritage catalogue of the PGOU (2009) includes 292 assets, of which 120 are in the town centre, seven are scattered throughout the territory and 85 are archaeological in nature. This is trailed at a long distance by Zufre with 94 assets and Encinasola with 82. Their protection catalogues date from 2011 and 2010 respectively, when the Subsidiary Standards were adapted to LOUA. In the first case, 81 are urban in nature, three are territorial and with 30 archaeological assets protected. In the second case, 18 assets of an urban nature and 64 of an archaeological nature are under protection.

Figure 6. **Municipality's Surface protected by regional or state legislation**



Source: Compiled by authors based on data of the Regional Ministry of Agriculture, Livestock, Fisheries and Sustainable Development.

At the opposite extreme, there is the list of municipalities without any heritage catalogue due to differing situations. Firstly, there are those lacking the features protected by urban planning instruments: Alájar, Castaño del Robledo, Fuenteheridos, Galaroza, Hinojales, Puerto Moral, Valdelarco in Sierra de Aracena, and Calañas, El Granado and Sanlúcar de Guadiana in Andévalo lack any protected assets. Secondly, the LOUA adaptation included a list of assets for preservation. This list is shorter in the case of Jabugo (2 assets), Cumbre Mayores (5 assets), La Nava (8 assets), Alosno (11 assets) and longer in the case of Cortegana (42 assets). Finally, there is the case of Linares de la Sierra with its Subsidiary Standards (1995) protecting only one property within the urban area.

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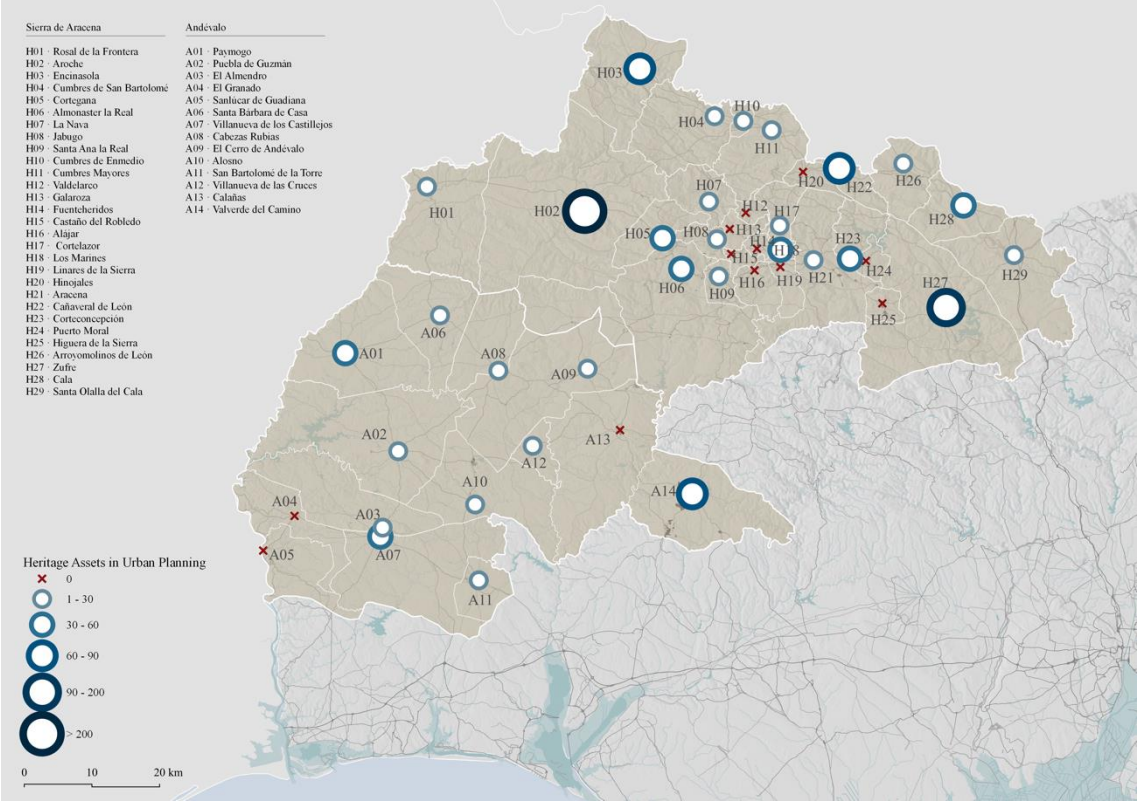
The variety of municipalities, their historical importance and territorial range over the centuries generate diverse heritage realities even though we would also recognise the evolution in the conceptualisation of just what urban heritage preservation means as a key reason for such a disparity of criteria.

Figure 7. **Number of assets listed by urban planning instruments**



Source: Compiled by the authors based on data from the Regional Ministry of Development, Infrastructure and Territory Planning.

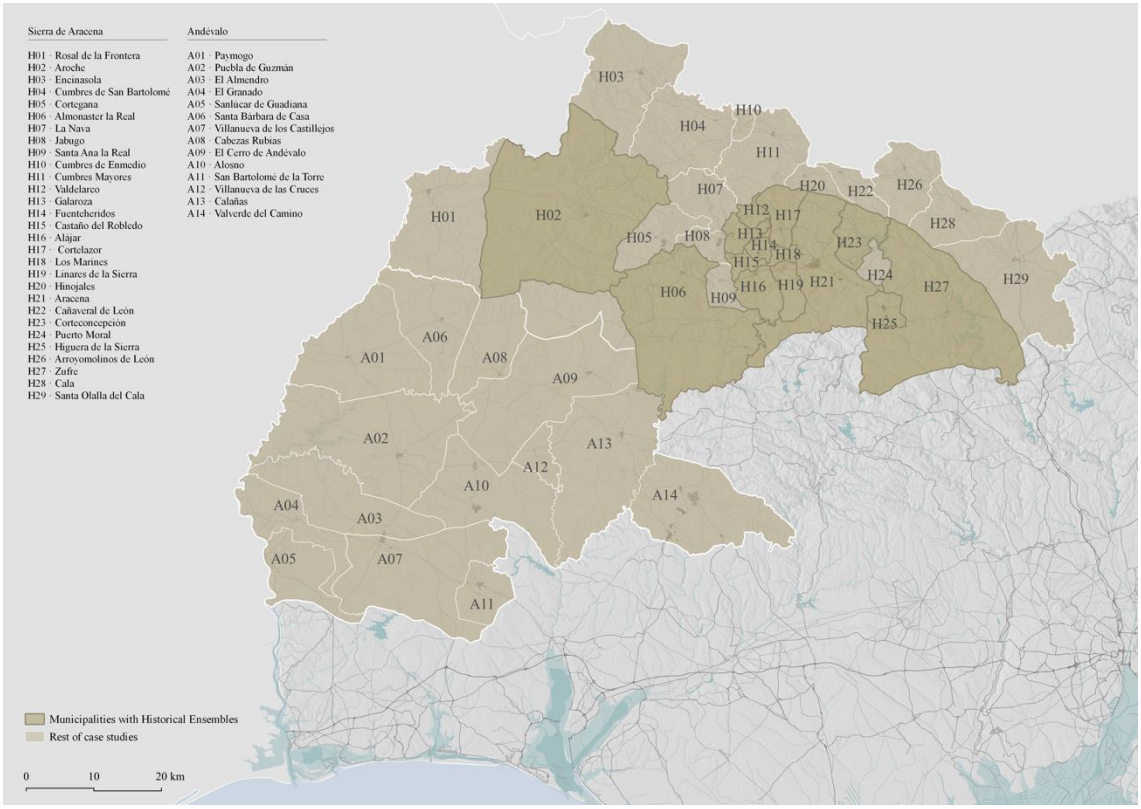
However, it is worth comparing these data with the protection granted by the cultural administration. Fourteen municipalities have been declared Assets of Cultural Interest (BIC) in the Historical Ensemble typology (see figure 8): Aroche (H02), Almonaster la Real (H06), Valdelarco (H12), Galaroza (H13), Fuenteheridos (H14), Castaño del Robledo (H15), Cortelazor (H17), Alájar (H16), Los Marines (H18), Linares de la Sierra (H19), Aracena (H21), Corteconcepción (H23), Higuera de la Sierra (H25) and Zufre (H27). Furthermore, some of these municipalities fall within the Heritage Area of Cuenca Minera de Tharsis-La Zarza. As stated in Law 14/2007, a Heritage Area is a diverse and complementary group, made up of diachronic assets representative of human evolution, which hold value for usage and enjoyment by the community and, where appropriate, landscape and environmental values. Specifically, this BIC category brings together 66 assets in Alosno (A10), 52 in Calañas (A13), seven in El Cerro de Andévalo (A09) and in Villanueva de las Cruces (A12), five in San Bartolomé de la Torre (A11), four in Almonaster la Real (H06) and three in Villanueva de los Castillejos (A07).

In addition to these urban and territorial scale assets, there are others of an archaeological nature: seven Archaeological Zones, four in Aroche (H02), one in Almonaster la Real (H06) and one in Aracena (H21). Intangible assets also require inclusion, specifically El Ruedo and the hydraulic complex of La Laguna, in Cañaveral de León, declared an Asset of Cultural Interest in the Site of Ethnological Interest typology.

E-ISSN 1886-4805

A total of 44 assets have been protected under this category, including fountains, pillars, mills, irrigation ditches, pools, caves, paths, and other functional features of the hydraulic complex and the built cultural landscape, comprising an area of homogeneous character through the recourse to irrigation. This reflects the variety and richness of these heritage territories.

Figure 8. **Municipalities with Historical Ensembles**



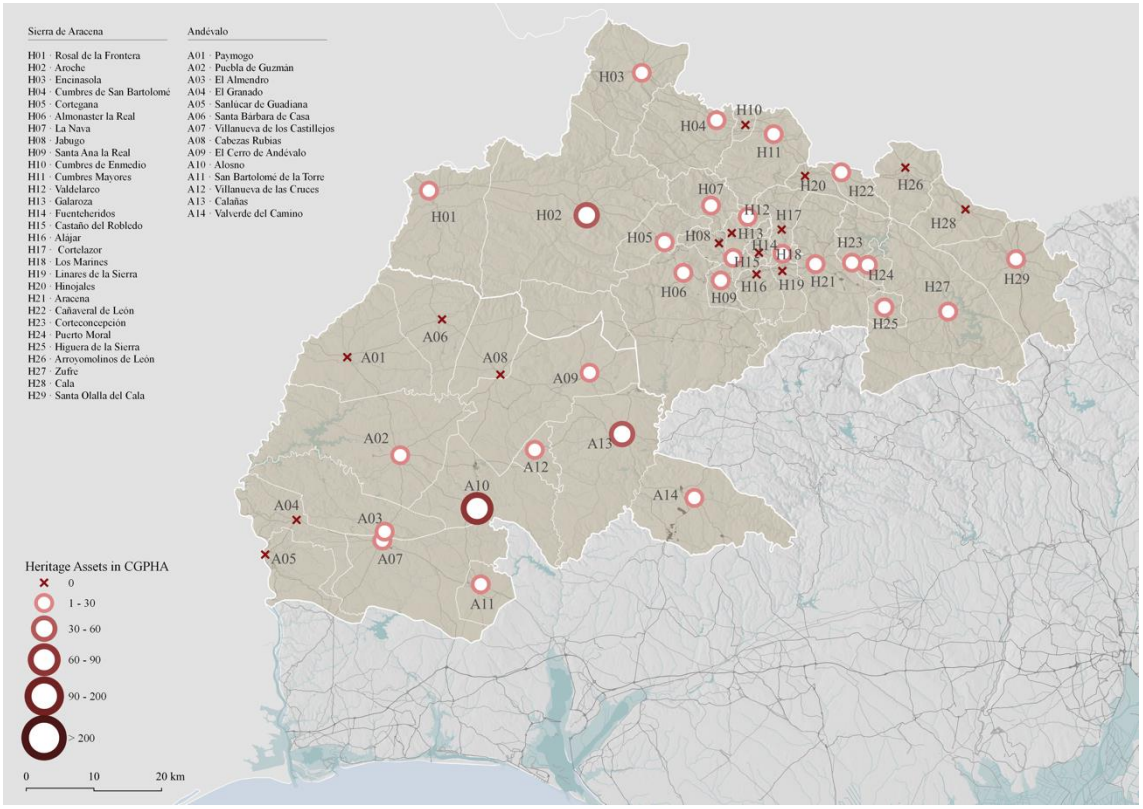
Source: Compiled by the authors based on data from the Regional Ministry of Culture and Historical Heritage.

The area is also characterised by the many Assets of Cultural Interest listed in the Monument typology, a total of 70 elements, reflecting the level and quality of the region's heritage. From the highest to the lowest number of assets, Aroche contains nine assets, Almonaster la Real six assets, Santa Olalla de Cala, Zufre and Encinasola five assets, Aracena, Calañas and Valverde del Camino four assets, Cortegana, Cumbres de San Bartolomé, El Cerro de Andévalo, Puebla de Guzmán three assets, Cumbres Mayores and El Almendro two assets, while Cala, Castaño del Robledo, Higuera de la Sierra, La Nava, Los Marines, Puerto Moral, Rosal de la Frontera, Santa Ana la Real, Paymogo, San Bartolomé de la Torre, Sanlúcar de Guadiana and Villanueva de los Castillejos have only one BIC. Finally, it is also important to highlight the total of 69 General Catalogue assets, with the case of Aroche particularly significant. This municipality has 30 assets in this category, the majority of which belong to the Municipal Archaeological Collection.

As detailed in figure 9, the total number of assets inscribed in the General Catalogue of Historical Heritage of Andalusia (CGPHA) is very high. Across the entire sample, three cases must be highlighted: Alosno, with 66 assets, Calañas with 56 and Aroche with 44. Also worthy of reference are Cañaveral de León with 28, Almonáster la Real with 17, and Cerro del Andévalo and Zufre with ten apiece. A total of 31 municipalities contains between one and eight assets listed in the CGPHA, while five municipalities lack any assets protected by this cultural legacy framework.

E-ISSN 1886-4805

Figure 9. **Number of assets listed in the General Catalogue of Historical Heritage of Andalusia**



Source: Compiled by the authors based on data from the Regional Ministry of Culture and Historical Heritage.ç

6. Conclusions

The districts of Sierra de Huelva and Andévalo must cope with significant reductions in their populations. This region has lost approximately 50% of its population since 1950. As identified by this research, only 3 of the 44 municipalities analysed report positive values and, while two have maintained their population numbers, the rest all turn in negative trends. Furthermore, in some cases, these decreases have exceeded 75%. The research has attributed some of the causes to the economic development in the south of the province: its industrialisation, the coastal tourist developments, and the promotion of intensive agriculture. It is clearly no coincidence that the only municipalities that have halted their depopulation are located at the confluences of relevant mobility infrastructures, particularly connecting with the south. The demographic evolution of this territory should also be understood in terms of the opportunities that urban and territorial planning provides for growth and development. Surprisingly, this territory lacks sub-regional planning. This type of instrument should be playing a fundamental role in balancing the territories and encouraging their sustainable development given its role as a link between territorial and urban planning. In most cases, urban planning instruments have not incorporated the new urban planning needs. The situation of many small municipalities is particularly worrying. While many have initiated the drafting of new urban plans, these processes have been inexplicably delayed and not subject to definitive approval. This region is characterised by its significant number of protected natural areas. For many sectors of the population, protecting environmental values can mean limitations on economic development and correspondingly perceived as a restriction with detrimental consequences for the collective well-being.

E-ISSN 1886-4805

These needs overcoming and ending this idea pitting environmental conservation against the eventual economic and social development of a territory. On the contrary, heritage legacy is nowadays valued as a fundamental resource for sustainable territorial development. It is therefore important to recognise the artificial boundaries of protected natural areas alongside the inexorable impacts that management plans may have on preserving their cultural values and the future of these territories.

This study corroborates how many of these municipalities are characterised by the reduced growth of their urban limits, not having experienced the urban pressures of many other territories. This fact has contributed to maintaining their valuable heritage, understood as the balance between the natural environment and the society that inhabits it, respectively recognised by the cultural and environmental administration.

In the case of cultural heritage, the local administrations of many municipalities are also playing a fundamental role in conservation through urban planning. These actions have positively impacted on conserving the cultural identity that makes this area unique and requires configuring as a primary vector for development.

In conclusion, the imminent challenge for the management of this complex region is to understand it as a complete territorial system. In other words, it must be approached through holistic approaches that necessarily help to harmonise and unite government actions and the views of the populations. This represents the only way to achieve higher levels of individual and collective well-being. Therefore, the research concludes by advocating the implementation of a regional management model based on enhancing strategic heritage assets, promoting biodiversity, and encouraging cultural richness as the articulating axis of this territory.

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