

Cultural Heritage and Sustainable Rural Development: The Case of Tàrbena, Spain

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Abstract: The population decline of small villages is a very serious problem for our society. This situation is not easy to reverse. The challenge is to generate consensus among the inhabitants of small villages to develop projects that have both a link with social and cultural heritage and the aid of the regional and local authorities. This framework can be successful when it also has the capability to provide new lines of development growing from this initial seed that can attract new inhabitants. In this paper, we present research that follows these requirements. Our proposal is based on a traditional agriculture resource, which is the art of building dry stone walls. We study the case of Tàrbena (642 inhabitants in the province of Alicante, Spain). Stone artifacts are recovered: some of them are still useful for agriculture, and others are cataloged and transformed into a product for cultural tourism. This project is expected to develop local, manual, and specialized work through the development of workshops, crafts, and small businesses. This will provide more income for the municipality and the private sector and more opportunities to attract new inhabitants.

Keywords: depopulation of rural areas; cultural heritage; dry stone walling art; sustainable development

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1. Introduction

The depopulation of small villages is a very serious problem for our society to such an extent that it is a matter of concern for the European Union [1]. The consequences of depopulation are both worsening living conditions in the villages and problems that arise in cities as a result of the arrival of new inhabitants. The depopulation of rural areas causes a loss in the basic services offered (health, education, transport, etc.). Young people leave the towns since they cannot find job opportunities, and the aging of the remaining population does not allow economic dynamism to be maintained [2]. Rural depopulation also causes desertification and environmental degradation. This entails a greater risk of fire since the abandonment of the field due to lack of care, and the cattle that no longer graze lead to the growth of bushes and vegetation that burn and hinder the ability to control it.

The depopulation of rural areas also has a severe impact on cities as a result of the constant arrival of new inhabitants. Overpopulation makes it difficult for public administrations to provide services that are essential for the population's well-being. The prices increase due to the increase in housing demand. This leads to rising rent. The same occurs in the labor market: the wages decrease due to the supply of constantly arriving workers and more, and this may trigger higher unemployment. Finally, there is a drop in the quality of life aggravated by increasing air pollution in cities, which has a detrimental effect on people's health [3,4].

Both depopulation of rural areas and overpopulation of cities must be overcome in order to meet an equilibrium and preserve the sustainability of the planet. To design an appropriate solution for each case, it will be necessary to carry out an in-depth study to avoid quick and ineffective solutions, as referred to in [5]. The first mistake comes from

considering the smart village as the rural version of a smart city, that is to say, promoting the copy of solutions that are suitable for cities without maintaining a serious reflection on such an important topic [6,7]. The danger of this approach is that it leads to implementations that are unworkable and may not be desired or understood by the rural population.

Tourism is generally seen as an essential way of mitigating the effects of depopulation in rural areas [8]. Sun and beach tourists have begun to enter inland areas to discover a different world without crowds, to be in contact with nature, and to enjoy the village atmosphere and local traditions. Visitors can enjoy various activities such as wine tourism, agro-tourism, gastronomy, history, and cultural heritage [9–14]. These industries inject economic benefits that complement those that come from rural hotels that have been created from the arrival of new customers [15]. It has been a good thing to avoid the drastic flight of inhabitants from rural areas since new businesses opened and revitalized the business structure of the villages, but it is insufficient in the face of a longer-term solution. It must be highlighted that despite tourism having a beneficial impact that slows the exodus to the big cities, it does not increase the census directly and then cannot increase the basic services or the creation of new housing or other types of facilities for the public good.

Another common idea of the smart village concept is that technological progress if effectively integrated with rural development initiatives, can create new opportunities to increase incomes, provide services, and improves the quality of rural life [16,17]. Farming activities should be recovered but adding diversity to attract businesses and workers. This means that the promotion of local products supported by ICT, such as specializations in agri-food projects and cultural activities, may be considered. Suitable Internet bandwidth is essential for boosting employment in rural areas [18,19]. This may also attract people who have the option to work remotely. The COVID-19 pandemic has shown that it might be safer to work in a healthier and calmer environment than in a big city environment. However, on the one hand, it is clear that rural communities show a lower level of accessibility and openness toward the use of new information technologies than urban communities, and on the other hand, the number of people who have left the cities and have moved to the countryside has not been so important and therefore the repopulation effect has had less impact than expected. Therefore, the commitment to new technologies by itself is not enough. Since we cannot find a simple and complete solution to a complex problem, the best idea is to favor more than one partial solution in the short term, taking advantage of the synergies that exist between them in order to generate viable long-term global solutions.

This paper aims to explore the question of depopulation reversion based on the specific contexts in which rural villages are located. This allows better design making for suitable development strategies linked to real tangible experiences of individuals inhabiting rural space. We study the case of Tàrbena (642 inhabitants), in the province of Alicante, in southeast Spain. Following the introduction, Section 2 analyzes previous works that highlight important keys for the proposal of projects addressing the problem of depopulation. Section 3 presents Tàrbena as a case study. Both the weaknesses (depopulation, aging population, lack of some public services) and the strengths (cultural and environmental heritage, cohesion between inhabitants) are outlined. The preservation, restoration, and reuse of the dry stone artifacts, ancient vestiges of agriculture, is the purpose of the work. Section 4 presents the materials and the methodology that will guide the elaboration of the project, highlighting the agents that have to intervene, the functions that they will carry out as well as the time that they will dedicate and the evaluation of expectations. Section 5 summarizes the interest in the project. It also points out new and enriching experiences gained during the study and presents future research lines and conclusive remarks.

2. Previous Research

New approaches to the depopulation problem have been implemented. In [20], an interesting proposal is presented. It deals with the comparative analysis of two territories: Saint-Camille (529 inhabitants in 2016, Quebec, Canada) and Aras de los Olmos (381 inhabitants, also in 2016, Valencia, Spain), with the theoretical perspective of social innovation. In both cases, a series of common elements have been found that have influenced social, economic, and environmental dynamism. The methodology is the multi-site analysis, which consists in setting a comparison of variables such as demographic changes, resource mobilization by local actors, institutional environment, social organization and participation, and main socioeconomic features of the territories. The comparison offers the opportunity to detect which elements are at the base of the success of these experiences. In conclusion, the authors claim that collaboration between the population and social agents is crucial. In [21], the authors analyze two specific initiatives: the Almadén Mining Park, an amazing UNESCO world heritage site in Ciudad Real (Spain), and the Molina-Alto Tajo District Geopark (province of Guadalajara, Spain), which belongs to UNESCO Global Geoparks. From these examples, the authors demonstrate, as their main objective, that the territorial revival processes take advantage when it initiates by institutions (top-down approach) and then backs up by increasing participation of the local communities (bottom-up approach), encouraged by, among other factors, rural development programs. The Cultural Heritage Agency of The Netherlands commissioned a survey of the approach taken in a number of German, French and British regions to address the problem of depopulation by focusing on heritage. The results of the study have been published on the Cultural Heritage Agency's website, and ref. [22] is an abridged version of that report. The authors highlight four main functions of the heritage. The heritage serves as a billboard when a local authority attempts to tackle decline by using tourism to provide an economic boost that can attract new residents. Heritage serves as a totem pole when it creates a link between residents and their environment. This may strengthen their will to fight against depopulation by giving it meaning and motivation. The heritage serves as a seedbed when it prompts new activities in an empty emblematic building or area, and the heritage serves as a meeting place when it encourages residents to pull together and launch new activities, restoring the social ties in a village, neighborhood, or region.

These examples reveal some important keys for the proposal of projects that can address the problem of depopulation. Success is more probable when the population is involved, when a social and identity bond exists between people, and when authorities support the projects. Another main feature is when heritage can be "reused" or "recycled" in an imaginative and creative way. For example, historic landscapes can be combined with new ecological values and new economic drivers such as leisure and tourism, an ancient prison can be reused as a historic museum, or an old and obsolete factory can be transformed into a picture gallery. This depends on the concrete case.

3. A Case Study: Tàrbena (Spain)

Tàrbena is a little village situated in the province of Alicante, in a place between mountains but close to the coast, in southeast Spain. Currently, it has 642 inhabitants, and the main income comes from agriculture. The economy has traditionally been the result of the rainfed extensive agriculture (vineyards, almond, carob, olive trees) in the terracing of the slopes of the mountains. People supplement their depleted income with wages from tourism on the Mediterranean coast or exercise liberal professions, or are civil servants outside of Tàrbena even though they reside in Tàrbena.

3.1. Weaknesses

Emigration to the USA began in the mid-nineteenth century due to the *Phylloxera* plague of the vineyards, which was, at that time, the main source of income. Emigration

for political reasons (1940–1950) after the civil war, as well as economic emigration due to the poverty of the people in the post-war period (1950–1960) to Algeria and France, continued to lower agriculture production. Finally, the rural exodus due to the progressive mechanization of agriculture and the difficulty of surviving in a place where there are only smallholdings caused a hard reduction in the population and jeopardized the situation of agriculture, as shown in Figure 1. Despite this sharp decline, depopulation eased in the 1980s due to the arrival of new inhabitants. Most of European origin (currently 36%) were attracted by the advantages of Spain, which had entered the European community. This was also the moment of the development of tourism, with the creation of the first rural houses, some of them with a state subsidy. Meanwhile, the economy has not undergone major changes, agriculture has been slowly declining, and recently, in 2017, Tàrbena, as well as the surrounding villages, experienced a major plant pest caused by *Xylella fastidiosa* that destroyed all the almond production, which was one of the families' important source of income. Tourism has also not developed as much as was thought in the 1990s due to the boom in sun and beach tourism and the young population, with more academic training, prefers to go to the city where they have more opportunities.

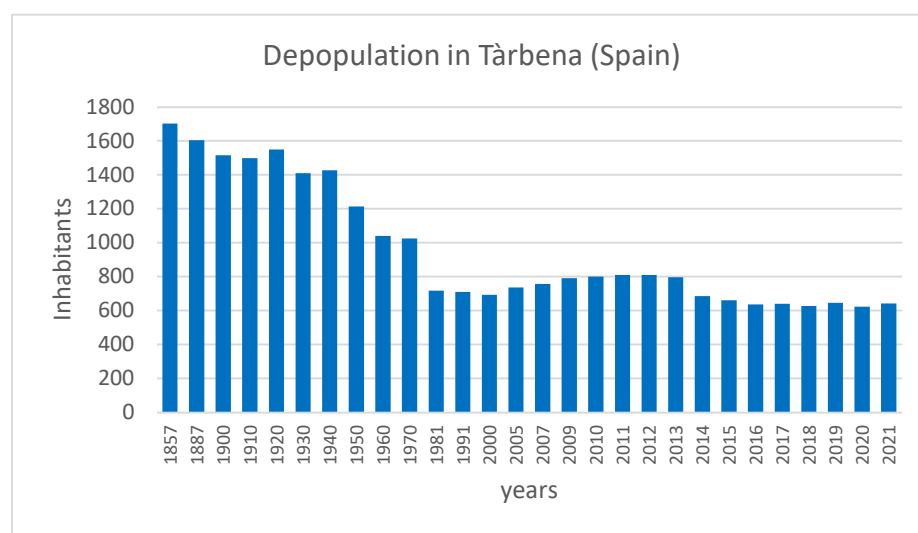


Figure 1. Depopulation in Tàrbena (Spain) between 1857 and 2016.

Figures 2–5 show the age structure of the inhabitants, the unemployment rate, and the economics data of Tàrbena. Figure 2 shows us that the population in Tàrbena is now in a very advanced process of aging; in 2021, the percentage of people aged over 65 years old was 32,7% of the total population which is more than 20 percentage points above what is considered the aging threshold value (12%). The percentage of children under 15 years of age is 7%. Figure 3 shows that the unemployment rate in Tàrbena follows an increasing trend during the pandemic and decreases now. Figure 4 shows that the average income of the population is low due to the very high proportion of retirees who receive a pension of about 800 euros per month. The comparison between the average values of the income of Tàrbena, the province of Alicante, the Valencian community, and Spain shows that in Tàrbena, the lack of young people with high incomes explains the lowest result. The number of economic entities operating in Tàrbena is now about 40, as shown in Figure 5. Some of these companies are hotels (3), rural houses (5), pharmacies (1), bakeries (1), supermarkets (1), carpentry (2), metalwork (1), hairdressing (1), almond breaker (1), oil press (1), photovoltaic installation (1), communications (1), cleaning (2), and construction (2), all them with less than five permanent employees and many with a single employee. Nevertheless, for now, basic health, education, and welfare services have been fully maintained

in the village, but communication by road with the important towns on the coast is defective since there is no public transport, only school transport works. There is no more banking service: only two banking entities keep the ATM.

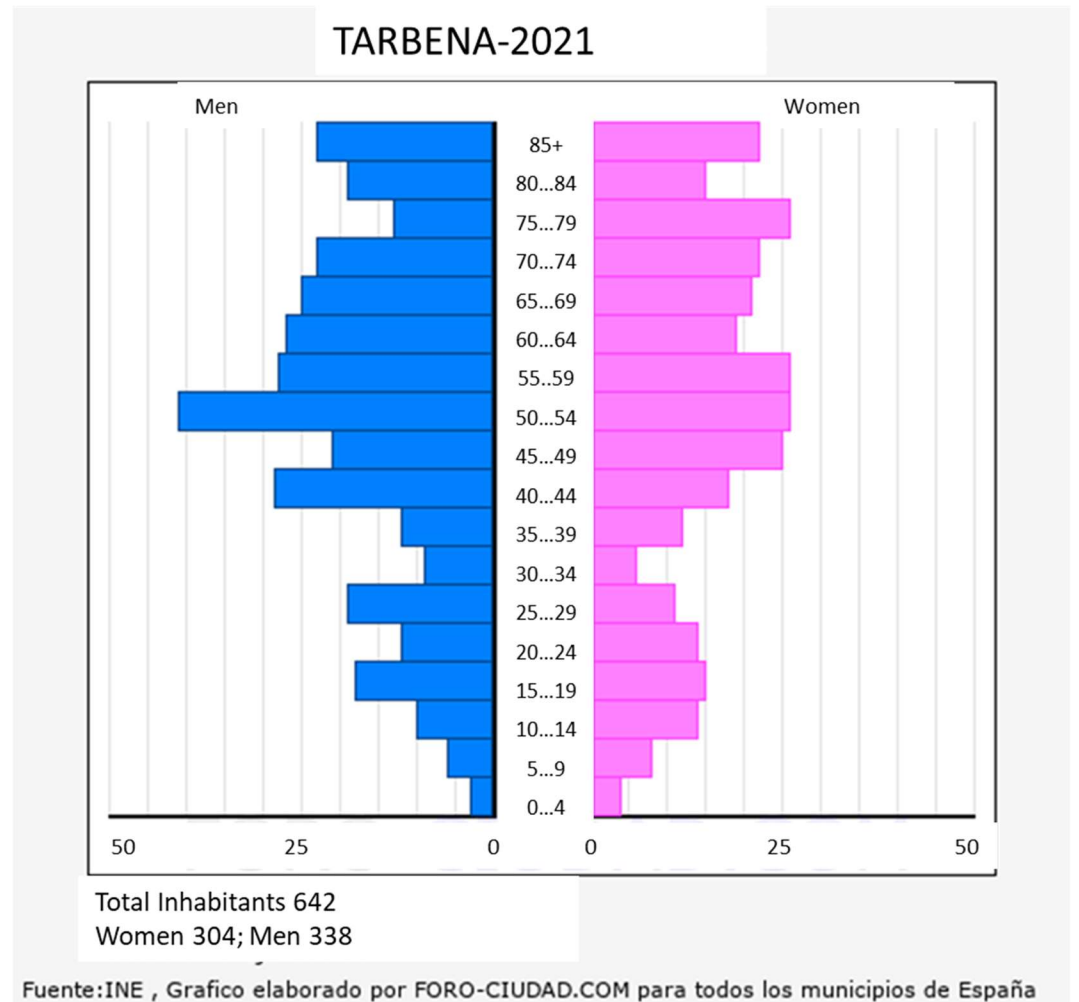


Figure 2. Population pyramid of Tàrbena in 2021. Blue color for men and pink for women (source: Instituto Nacional de Estadística. Accessed 7 October 2022).



Figure 3. Unemployment percentages in Tàrbena between 2006 and 2022. (source: Expansión. Datosmacro.com. Accessed 7 October 2022).

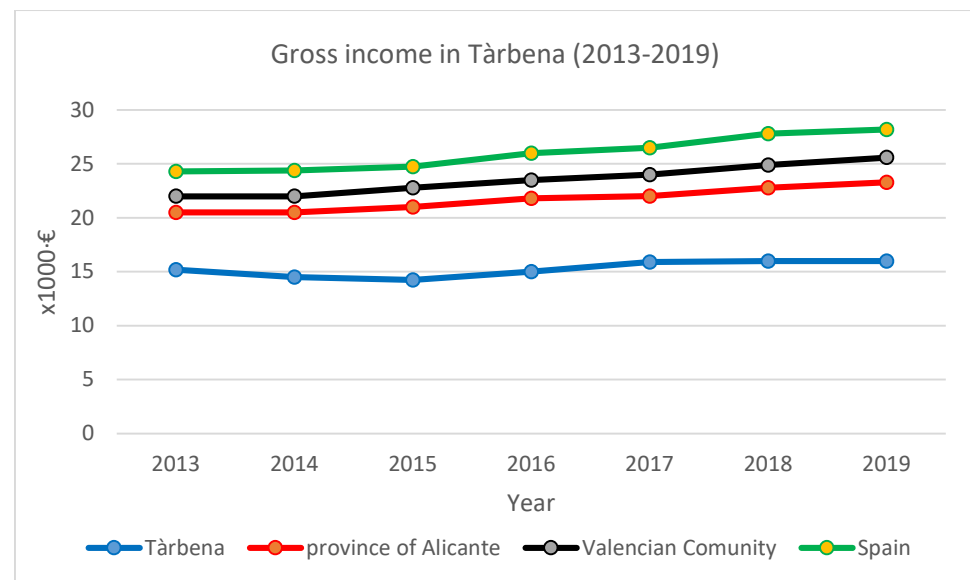


Figure 4. Comparison of the evolution of gross income in Tàrbena between 2013 and 2019 (source: Instituto Nacional de Estadística).

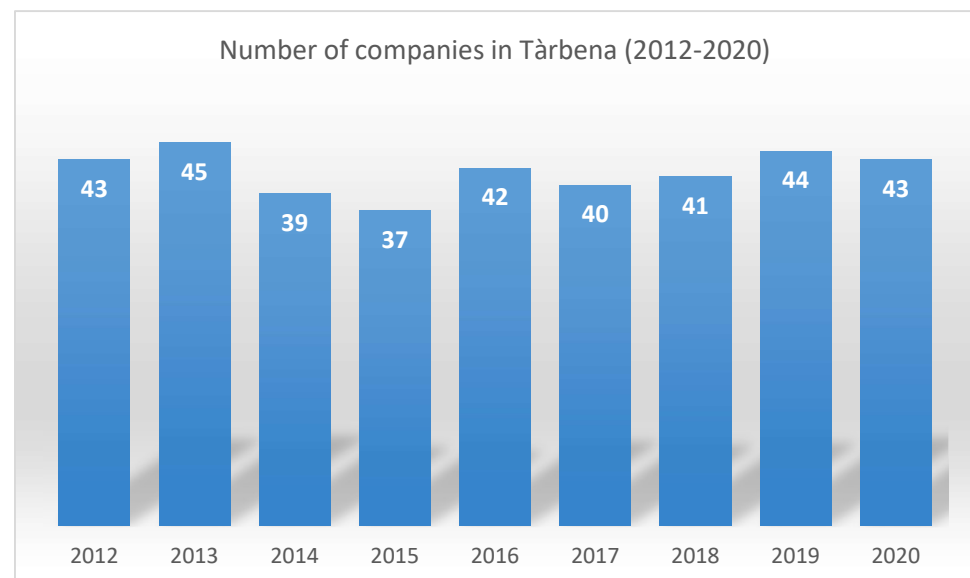


Figure 5. Companies in Tàrbena between 2012 and 2020 (source: Instituto Nacional de Estadística).

3.2. Strengths

Tàrbena's greatest wealth is its cultural and environmental heritage, as well as the cohesion between inhabitants coming from their esteem for their signs of identity.

Along with the cultivated areas, the mountain landscape invites hiking and enjoying the great biodiversity of plants, birds, and insects. Also notable is the popular architecture linked to agriculture (roads, terraces, wells, etc...). Dry stone structures are mainly found in rural areas, on steep land, both in and outside of inhabited areas. History is also very rich. The first signs of settlement are from the Neolithic period, with many cave paintings that are part of the Mediterranean arc protected by UNESCO (1998). In Muslim times (XIth century), the population lived around the castle of Tàrbena, which is the best vestige they left. It is an 'asset of cultural interest' (Spanish acronym: BIC). After the expulsion of the Moors, between 1610 and 1615, 17 families coming from the Balearic Islands arrived and

repopulated the town, which had been completely deserted. They left their language, their culture, and their gastronomy, which are still very much alive in the population. Since 1997, there has existed a twinning between Tàrbena and Santa Margalida in Majorca because the vast majority of repopulating Majorcans came from this city.

Despite the significant drawbacks it faces, the population of Tàrbena is quite dynamic and resilient. Between 1993 and 2003, the largest restoration project of the parish church occurred. It was a successful project because it brought together all the necessary ingredients: the motivation of the people, the will of the priest, and the support of the municipal and regional authorities. It served at the same time to strengthen links between inhabitants, mobilize public resources, and create a new interesting place for many tourists.

Currently, there are seven non-profit cultural associations that add great value to the life of the town. Since 2016, the cultural association Amics des Museu (15 members) has dealt with the management of the Ethnological Museum of the town and plans together with the town council to develop a project that encompasses agriculture, culture, tourism, education, and training. A similar project that has to do with the freshwater springs is also underway [23]. The project presented in this paper concerns the dry stone structures. In addition to the terraces supported by dry stone walls, many stone constructions such as ditches, aqueducts, wells, refrigerators, and even the Moorish Castle (Sa Caseta des Moros) remain as vestiges of the culture of the past and can be recovered. As follows, Figures 6–9 show photos taken by one of the authors of this paper, which represent the landscape of Tàrbena, the slope terracing by dry stone walls for tree cultivation, and some details of the technics and tools for the construction of a dry stone wall at the Ethnological Museum in Tàrbena. In Figures 10–15, we show images taken by a member of the association that represent the ancient agricultural resource and the castle we plan to convert into a new cultural tourism resource [24–26].



Figure 6. Landscape of Tàrbena. Dry stone walls.



Figure 7. Slope terracing by dry stone walls for the almond trees cultivation.



Figure 8. Detail of the technics and tools for the construction of a dry stone wall. Ethnological Museum, Tàrbena.



Figure 9. Stone oven (Forn) to make raisins. Inside the boiler (Caldera) the water is boiled with an alkaline plant and the grapes are introduced through a strainer (Cassa) to be treated. Ethnological Museum, Tàrbena.



Figure 10. Aqueduct at Sa Falzia (Tàrbena).



Figure 11. Steps of the path of Ses Roques (Tàrbena).



Figure 12. Well cover at the Pouet de Ses Peres (Tàrbena).

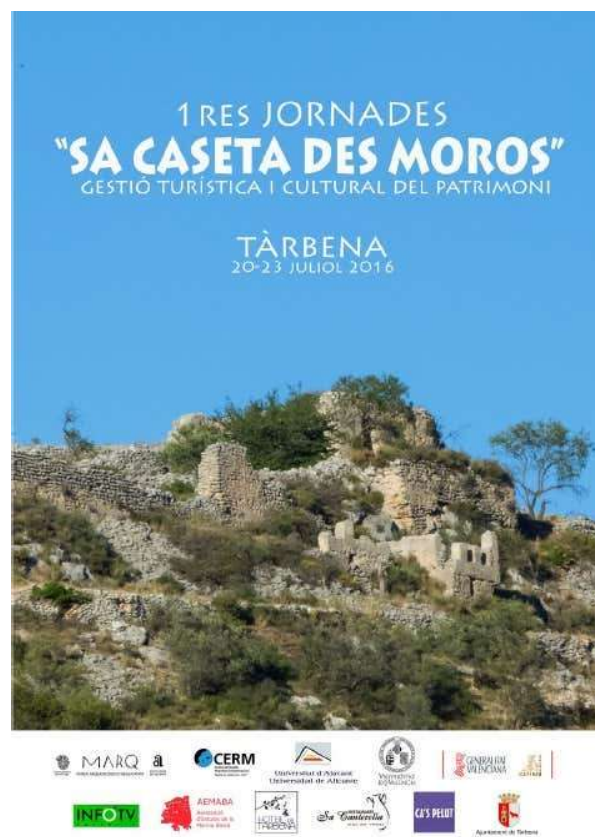


Figure 13. First workshop “Sa Caseta des Moros”: Tourism and Cultural Heritage Management. Tàrbena, 20–23 July 2016.



Figure 14. Remains of the castle battlements (Tàrbena).



Figure 15. View of the castle (Tàrbena).

The results of this previous analysis show us that the recognition, restoration, and reuse of dry stone heritage may be an appropriate initial strategy to contribute to the fight against depopulation in Tàrbena. There are several reasons for this choice. The dry stone construction is a characteristic of the town that arouses esteem among its inhabitants due to the agricultural vocation of the town. There is a firm consensus around the idea that it is necessary to preserve and care for cultural heritage to transmit it to future generations. This foundation leads to meeting the goals through social innovation and social entrepreneurship, and this can be a brake on depopulation and also an incentive for new settlers. We summarize the methodology by a scheme; see Figure 16.



Figure 16. Scheme of the summarized methodology.

Figure 16 shows that the main goal, which is the fight against depopulation, will be achieved through social innovation and social entrepreneurship. These are born from the recovery of an ancient technique that is dry stone work.

4. The Project

In this section, we first present an overview of the art of building dry stone walls. Then we indicate the materials and methods necessary to execute the project. Finally, we present a schedule that summarizes the main goals, actions, tools, and expected impact of the project.

4.1. *The Art of Building Dry Stone Walls: An Overview*

The art of building dry stone walls, traditional in rural areas in the Mediterranean basin, was inscribed in November 2018 by UNESCO on its Representative List of the Intangible Cultural Heritage of Humanity. Spain occupies a very prominent place along with Croatia, Cyprus, France, Greece, Italy, Slovenia, and Switzerland. The art of dry stone walling refers to the knowledge related to the construction of stone structures by piling them on top of one another without using any other material to hold them together. The stones are placed based on shape and size. They are joined by the effect of gravity, without using mortar or cement, which allows the passage of water between their interstices, minimizing possible landslides and floods. The constructions also have environmental implications in terms of the prevention of fires and avalanches. They protect from erosion and desertification, improve biodiversity, and create microclimatic conditions suitable for agriculture. Dry stone structures are mainly found in rural areas, on steep land, both in and outside of inhabited areas. They also have given shape to numerous and varied landscapes, creating various forms of useful elements for agriculture and livestock farming [27–31].

We also must outline a very important circumstance, which is the close link between this construction technique and the natural and social environment [32]. This causes a strong identification of this heritage and the inhabitants based on the identity of the places, the materials, and the operators. Indeed, the site of the work is at the same time the place of extract; the stone is the only construction material, and finally, the same person carries out the work from the collection of materials to construction.

More, the knowledge and technique of building in dry stone, as intangible cultural heritage, is also linked to the maintenance of a sustainable organization of rural space. Stones are used in the place, which prevents a possible impact of the constructions on the ecosystem. This non-aggressive architecture has no degradation impact due to abandonment and so does not contaminate the ecological balance. The useful life of stones is much longer than other more artificial materials, and the tools and machinery that are used have a low energy consumption [33].

Several projects are already at work. Namely, in the Balearic Islands (Majorca), a net of routes (91.7 km) through the Tramontana mountains connect the ancient dry stone constructions with other tourist resources such as landscape, history, folklore, and gastronomy. The stages of the GR-221 in the western sector of the Tramuntana travel through the agricultural culture inherited from the Arabs and developed during the Middle Ages, improving the old ditches, the dry stone terraces, and the construction systems of the roads [34].

We also must consider more individual projects that are carried out thanks to rural development programs (RDPs) depending on The European Network for Rural Development (ENRD) which serves as a hub for the exchange of information on how rural development policy, programs, projects, and other initiatives are working in practice and how they can be improved to achieve more [35]. In the database, we can find several projects related to dry stone constructions. We mention as examples the case of two recent projects. The first was in Siggiewi (Malta, 2019–2021). An organic farm used Common Agriculture Policy (CAP) funding to mitigate soil erosion and enhance biodiversity by restoring traditional dry stone walls and planting new olive trees [36]. The second was in Ibiza (Balearic Islands, 2016). A young farmer received RDP support to build stone wall terraces, helping him to improve the farm's productivity while protecting its soil from erosion. The

fundamental benefits of this type of non-productive investment are the maintenance of the landscape and prevention of erosion or loss of soil, which slow down the desertification of the area. Overall, thanks to RDP support, the beneficiary managed to restore his family's farm and secure an income that allows him to stay in the area [37]. All these considerations encourage us to develop the present project.

4.2. Materials and Methods

The project is divided into four parts: (1) identification and cataloging of all the artifacts, which must be available in a database; (2) restoration of the damaged parts and preservation of the different elements; (3) creation of a tourist product that must be made known, and finally; (4) development of handicrafts and small businesses. These parts are detailed as follows.

1. The identification and cataloging of all the artifacts is the first task currently performed. Volunteers, as well as members of the association Amics des Museu, provide measurements, photographs, drawings made by hand, and their locations on the map. Then, the materials are incorporated into an archive, which also provides the coordinates of the artifacts. All the elements are inventoried and informed to request the declaration of cultural interest by the Valencian government (see Figure 17a–e).
2. The restoration of the dry stone walls or artifacts is expensive, but it can be assumed in an important proportion by the regional authorities when the Valencian government has granted recognition as an asset of cultural interest. In the meantime, theoretical courses and practical training workshops on dry stone work have been organized by local authorities to start training people who can dedicate themselves in the future to repairing damaged stone elements (see Figure 17f).
3. To create a tourist product, a solid supporting infrastructure must be put in place. Accommodation facilities are sufficient in Tàrbena, but there is no public transport, and the banking service is insufficient: only two banking entities keep the ATMs. This represents a serious drawback. The only communication is by road with your own car. The road is in the mountains, with many curves and great scenic beauty. This can be an advantage too. In what refers to telecommunications, 5G mobile phone antennas are available.
4. The development of handicrafts and small businesses is the final stage and the consequence of previous long and laborious work. This will be the indicator that economic activity has begun to settle down and that depopulation has slowed down.

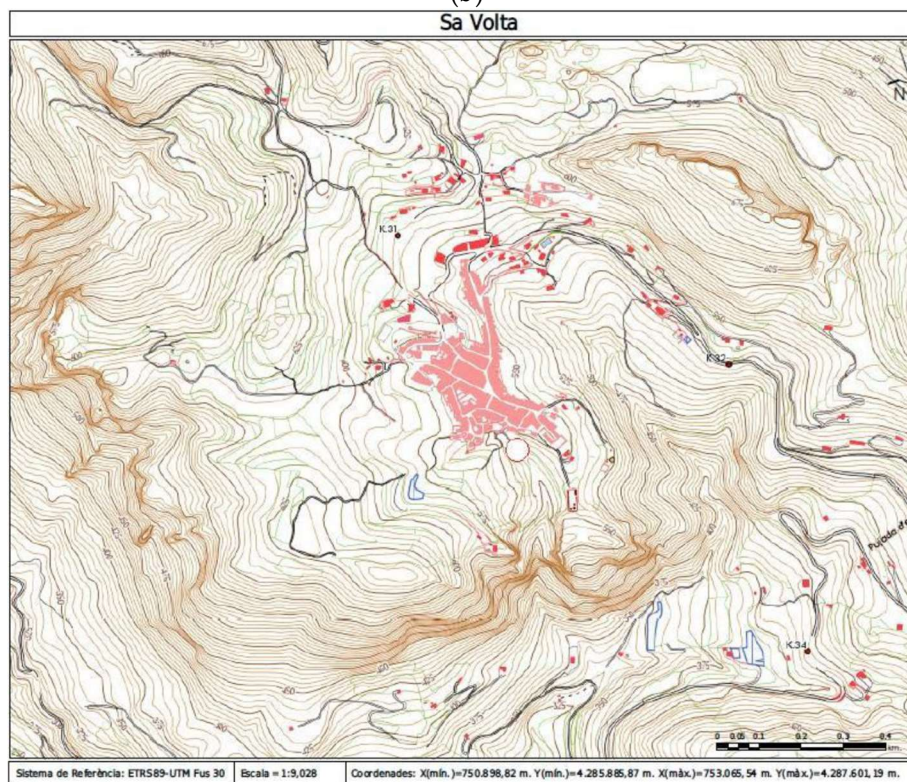
INVENTARIO DE CONSTRUCCIONES EN PIEDRA EN SECO EN TÀRBENA

FICHA Nº:	5
DENOMINACION	Sa Volta
TIPOLOGÍA	Construcciones ligadas al agua
UBICACION	Tàrbena (Alicante) Polígono 8 Parcela 322 Coordenadas UTM: X: 752108-Y: 4286624 Cota: 530 m
RUta DE ACCESO	Senda que une los barrios de la Placeta i Es Llogaret, antiguamente camino de Ses Vinyes
USO	Canalización de aguas en subterráneo
PROPIEDAD	Juan Molines Ripoll
ESTADO CONSERVACION	Bueno
DESCRIPCION DEL ELEMENTO	Alcavón de bóveda de cañón que cubre parte del barranco que baja de ses Vinyes. El alcavón principia en la Font des Garrofer, lugar donde la boca a sido remodelada con cemento, que sale a la luz unos 59'20 metros aguas abajo, que después de 10'2 metros vuelve a transcurrir en subterráneo, durante 118'76 metros, por debajo de un bancal de almendros.
MIDAS	Boca 1: 1'10 de ancho por 1'20 de alto Boca 2: 0'80 de ancho por 2'2 10 de alto Parte descubierta: de 1' 10 a 0'80 de ancho, de 1'00 a 2'10 de profundidad y 10'32 de largo
AMENAZAS	
CITAS HISTORICAS, RESEÑAS Y COMENTARIOS	Según la tradición oral local, esta canalización se inicia en sa Font Santa y transcurre por debajo de las calles y casas hasta llegar a sa font des
NOMBRES Y CONTACTO DEL AUTOR/ES DE LA FICHA, Y FECHA	Toni Pont Sifre, José Francisco Ginart Ripoll Associació Amics des Museu y Ayuntamiento de Tàrbena 19-04-2019
ANEXOS	Croquis y mapa de situación Fotografías

(a)



(b)



(c)



(d)



(e)

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Mantenimiento de elementos del paisaje en explotaciones agropecuarias. Construcción con piedra seca

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lunes 04/07/22

17:00 a 18:00 **Parte teórica: Introducción a la técnica de construcción en piedra seca. Historia. Tipos de piedra. Herramientas. Diferentes tipos de construcción.**
IVANA PONSODA. Arquitecta y paredadora.

18:00 a 21:00 **Parte práctica: Reconstrucción de un muro de contención afectado por las lluvias.**
IVANA PONSODA. Arquitecta y paredadora.

martes 05/07/22

18:00 a 21:00 **Parte práctica: Reconstrucción de un muro de contención afectado por las lluvias.**
IVANA PONSODA. Arquitecta y paredadora.

miércoles 06/07/22

18:00 a 21:00 **Parte práctica: Reconstrucción de un muro de contención afectado por las lluvias.**
IVANA PONSODA. Arquitecta y paredadora.

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(f)

Figure 17. (a): Inventory of constructions in dry stone Tàrbena; (b,c): locations on the map of Sa Volta; (d,e): images of Sa Volta; (f): program of the theoretical course and practical training workshop on dry stone work organized by local authorities and taught by Ivana Ponsoda, architect and waller, on 4–6 July 2022 with the participation of 25 persons. The title of the workshop is Maintenance of landscaping elements on farms. Dry stone construction. The theoretical part focused on an introduction to the dry stone construction technique, history, tools and types of stone and the different types of construction, the practical training was devoted to repair a retaining wall affected by the rains

4.3. Planning the Project

Information and communication technologies (ICT) will be crucial to the achievement of the project, namely to the first, third, and fourth parts. We need to identify the locations and map the stone artifacts of the past, recreate the past through technological solutions such as augmented reality (AR) [38–41], and ensure that new generations learn and appreciate this heritage that can provide them with a job and business opportunity and help them stay in their villages instead of migrating to the cities. This planning is designed for a minimum duration of 5 years. During this time, regular meetings will hold with all the actors involved in order to monitor and correct the development of the project if necessary. As follows, Table 1 summarizes the main goals, actions, tools, and expected impact of the project.

Table 1. Main goals, actions, tools, and expected impact of the project.

Goals	Actions	Materials/Tools/Methods	Expected Impact
1. Identification and mapping of the locations	1.1 Establish a dry stone-themed route: the locations will be available on an interactive map downloaded from the City Council website.	On the site, all artifacts will be identified by a QR code. Historical information will be loaded into these codes. At the museum, AR reproductions of the stone artifacts will be available.	High impact is expected thanks to the almost immediate effect of presenting a new tourism product to the market and advertising it on social networks.
	1.2 Organization of dramatizations in the courtyard of the museum	Professional actors aided by volunteers (inhabitants of Tàrbena)	
2. Creation of a tourist product that must be made known	2.1 Include our route in the network that other nearby towns have already formed in terms of dry stone to enhance the overall product	Currently, a blog is associated with the website of the museum, and the association is present on social networks. A specific platform will be created to share experiences with other towns.	Medium impact is expected because the school currently has few students. Medium impact is expected. Local research will be later shared by international scientists. It takes more time.
	2.2 Collaboration with the Tàrbena school	Implement in situ activities for students (guided visits, scavenger hunts using the QR code...) Provide online games and activities.	
	2.3 Encouraging scientific research	Attract researchers from Alicante and Valencia Universities in order to enhance local research and promote scientific publications.	
3. Creation of complementary work to agriculture that would avoid the rural exodus	3.1 Organization of stonework workshops with the few remaining artisans that practiced the art of the dry stone walls.	Create a group of experts among young people to continue with this disappearing profession to create new artifacts and repair ancient ones.	Medium impact on the development of handicrafts and small businesses is expected since the creation process is slow.
	3.2 Organization of conferences on entrepreneurship with advice from government technicians	Help startups and newly created companies grow. They provide a support structure to these companies, facilitating entrepreneurs' access to some essential services	
	3.3 Contact with business incubators	to carry out their activities.	

As shown in Table 1, an immediate result in what refers to depopulation is not expected since the success of the actions is usually slow. However, tourism, education, ICT, entrepreneurship and cooperation with other towns with similar projects, together with the support of regional and local authorities, can create synergies that result in the advancement of the project and the fulfillment of the objectives.

5. Conclusive Remarks

In the context of sustainable rural development, we have presented a framework project to achieve the reversion of population decline in Tàrbena, a village in southeast Spain, through social innovation and social entrepreneurship. The project is based on the restoration of dry stone constructions. There are many reasons that support this initial choice: the important heritage wealth of the town and the attachment that older people feel for it,

the dynamism of the rest of the population, and its ability to organize itself into associations that pursue social and cultural goals. The project is also interesting because it may be a strong complement to the Levantine (macroschematic) art of the painting rocks of Tàrbena, which are on UNESCO's list of World Heritage Sites.

The main contribution of this research is to provide a framework to meet the desired goal. The steps of the project have been detailed with the main goals, actions, tools, and expected impact. Since it is assumed by the inhabitants and by the local authorities, this project is expected to be successful and provide local, manual and specialized work for the youngest people, as well as higher income for the city council and the private sector such as hotels, crafts and small businesses, and further development of existing communications. This framework can be improved by sharing information, knowledge, and resources with other villages with similar projects in order to create networks of territorial cohesion. Moreover, experiences might be shared with other towns in the Mediterranean area. This research clearly reflects how cultural heritage and sustainable development are linked since recovering dry stone constructions and doing proper management of all the activities that it entails is a powerful tool to stop depopulation, supported by the inhabitants of Tàrbena. We also have to point out new and enriching experiences gained during the study, such as the launch of co-working spaces for digital nomads or the birth of a group of people interested in recovering the health of the soil, excessively punished by the use of pesticides, through a cure that consists on planting oaks in the empty fields after the eradication of the almond trees, to produce truffles that regenerate the soil. These may be important future lines that improve the present research.

We highlight the qualitative excellent results obtained so far in what refers to social innovation because of the progressive involvement of different segments of the population. In what refers to social entrepreneurship, the deployment is now starting, it will surely be slower, and it will also need the help of local and regional governments.

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