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# The strategic position of health and wellness tourism in the development of the Douro Demarcated Region World Heritage Site

In a wine producing region like the Douro Valley (NE Portugal), embedded in the schist-greywacke complex of the Douro-Beira district and the source of high-quality mineral and spring waters, what is the strategic positioning of health and wellness tourism? What is the importance of thermal baths in the revitalisation of rural areas, and who are the main agents behind these dynamics? These are the main questions we will address in this article.

Relatively overlooked until recently, health and wellness tourism has been growing in relevance in Europe and Portugal in the 21<sup>st</sup> century and is now considered a strategic product. Thermal baths were traditionally restricted to therapeutical treatments, but well-being has become a core concern today. Thermal bathhouses and resorts can be found throughout Portugal, four of which are located in the Douro region. Furthermore, their revitalisation bolsters sustainable development of Portugal's inland regions, "reclaiming" an activity with a centuries-long history under a new paradigm.

To achieve the study's goals, we have combined documentation research with fieldwork, including semi-structured interviews conducted with the main actors involved in these dynamics.

**Key words:** health tourism, rural development, thermal baths, territorial sustainability, world heritage, Douro region, Portugal

Kakvo je strateško pozicioniranje zdravstvenoga i wellness turizma u vinorodnoj regiji poput doline Douro (na sjeveroistoku Portugala), koja se nalazi na području regije Douro-Beira, građene od škriljavca i grauvake, s bogatim izvorima visokokvalitetne mineralne i izvorske vode? Kolika je važnost toplica u revitalizaciji ruralnih područja i tko su glavni nositelji toga procesa? To su glavna pitanja kojima se bavimo u ovom članku.

Donedavno relativno zanemaren, zdravstveni i wellness turizam postaje sve važniji u Europi i Portugalu u 21. stoljeću i sve se više smatra strateškim turističkim proizvodom. Toplice su u prošlosti bile ograničene na liječenje, ali danas se u žarište ovoga oblika turizma sve više stavlja blagostanje. Toplica ima po cijelom Portugalu, a četiri su na području regije Douro. Štoviše, njihova revitalizacija koristi se kao poticaj za razvoj područja u unutrašnjosti Portugala na način da se oživljava djelatnost s višestoljetnom tradicijom u okviru novoga koncepta.

Ciljevi rada ostvareni su kombinacijom istraživanja sekundarnih izvora i terenskoga istraživanja, koje je uključilo polustrukturirane intervjue s glavnim sudionicima ovoga procesa.

**Ključne riječi:** zdravstveni turizam, ruralni razvoj, toplice, prostorna održivost, svjetska baština, regija Douro, Portugal

## Introduction

A centuries-old activity in Portugal and Europe, thermal baths can play a fundamental role in the development of peripheral spaces and especially in rural areas. In constant flux, peripheral spaces have had to adapt and reimagine themselves in the face of manifold problems and obstacles. Particular attention should be paid to what distinguishes such rural areas and their endogenous resources, as well as to the new roles they can play in rural entrepreneurship and innovation. Thus, the production and trade of agricultural products have increased, as well as other businesses that interconnect these territories, especially with urban areas. Health and wellness tourism, therefore, comprise a pillar of sustainable development of such spaces.

Thermal bathing dates back to antiquity, especially to the Roman period, when the defenders of the benefits of mineral waters became famous. Aimed primarily at treating illnesses and recovery, thermal baths faced multiple obstacles in the Middle Ages to regain their social and convalescence role in the 18<sup>th</sup> and 19<sup>th</sup> centuries. A noteworthy example is the Vichy thermal baths, attracting kings such as Napoleon III, who nationalised hot springs and encouraged their use based on scientific and professional evidence.

A unique endogenous resource, European thermal springs have been historically regulated under various legal, organisational, and technical frameworks. Traditionally, thermal spas were restricted to therapeutical use, attracting mostly local or regional populations. Nowadays, however, wellness has taken on a highly relevant role, fostering the development of resorts and their surrounding regions, thus attracting other types of bathers.

The evolution of thermal baths in Portugal, located mainly in the northern and central parts of the country, followed a similar path (Cortez, 2012; 2017). The Douro Demarcated Region (DDR) is home to four thermal baths, which have undergone many changes over the centuries as they evolved from strictly medicinal facilities to include leisure and wellness. With this paradigm shift, they have been modernised, bolstering the development of the areas in which they are located.

This article starts with an introduction to rural spaces and thermal spa tourism as a driver of local development. After which, there is a brief methodological notes and a review of relevant literature on rural spaces and thermal tourism. We will focus on the Douro region, which was listed as a UNESCO world heritage site in 2001. Despite its landscape and cultural, architectural, oenological, and gastro-nomic heritage, this region faces persistent obstacles to its development, such as poor land use structure and demographic decline. Indeed, the population is ageing and undercapitalised, and the abandonment of agricultural activities proliferates, including viticulture. Strategies aimed at regional revitalisation have been developed to mitigate this situation, encompassing multiple endogenous aspects and local actors. In this context, we will analyse the impact of thermal activities in the revitalisation of this region.

We will briefly describe thermal bath activity on a European scale and then focus on the DDR, assessing various impact factors (logistical, economic, social) and the main agents driving the changes. The DDR is home to four thermal baths. We will begin with Caldas do Moledo (*caldas* means “hot springs”), located in the municipality of Peso da Régua in the westernmost part of the Douro region, which closed in 2010 following a legal dispute. However, a municipal project for their renovation has recently been approved. Next, the privately-run Caldas de Carlão are located in the municipality of Murça, while Caldas de S. Lourenço are operated by the Carrazeda de Ansiães municipality, where they are located. Finally, the completely renovated Longroiva Thermal Baths and Spa, located in the Mêda municipality on the south bank of the Douro River, are also privately run.

This study is a preliminary approach to thermal tourism in the DDR, so we will end with some considerations, hoping to present more in-depth results in subsequent research.

## Methodology

To achieve the study's goals, qualitative methodology was applied, combining research and analysis of bibliographic and cartographic documentation, consultation of websites of the authorities in charge of regional development, agriculture, tourism and thermal springs in the Douro region. Extensive fieldwork was also conducted between September and December 2019, including semi-structured interviews with several agents involved in local development, such as, for example, municipal authorities and the managers of the four thermal facilities, regardless of whether they were operational at the time of writing. The Longrovia resort was the main focus of our research, given its complete renovation, whereas the other three thermal bathhouses have not yet executed their approved renovation projects (with or without EU funds).

We interviewed three municipal officials, the president of Longrovia's parish council, the managers of the four thermal baths. In the case of Longrovia, we also interviewed representatives from the previous management board. We interviewed the head of the Tourism Board regarding Caldas de S. Lourenço, while in the case of Caldas do Moledo, we interviewed Peso da Régua municipal authorities, though it was closed at the time of writing pending execution of its approved renovation plan. Thus, 8 interviews in total were conducted (4 with local authorities and 4 with managers of the thermal bath facilities).

In structuring the interviews, we recorded the profiles of the respondents, their motivations for embarking on this activity, the obstacles they encountered, and how they overcame them by combining their efforts with those of the municipal authorities and the local population. We also examined the existing interconnections between the different actors (public and private), and their implications for local development.

From an evolutionary perspective, we also recorded the characteristics of the previous bathhouses, as well as the current and prospective scenarios based on approved renovation projects, which have pending institutional, legal, or socio-economic resolutions. It should be noted that although the spas' history and characteristics were the focus of these interviews, the surrounding landscape and socio-economic framework, namely the agricultural sector, were not ignored. We also focused on the local population and heritage issues, aiming to develop a sustainable, holistic approach to local development.

Following the interruption caused by the COVID-19 pandemic, this research has now been resumed.

## Rural spaces, their problems and dynamics

Since thermal baths are usually located in idyllic rural settings, it was necessary to frame them in territorial, economic and social terms. Generally peripheral and in decline, such areas require thorough territorial, multifunctional and holistic planning that encompasses a range of activities such as services and tourism (Woods, 2011; Cloke, 2006; Chaléard et al., 1999; Berger, 2017; Krol et al.; 2012; Westlund, 2017). In constant flux, the rural spaces of today are also the most peripheral, suffering rapid demographic and economic decline (Cawlay, 2012; Shucksmith, 2010; Mathieu, 2017; Morgan & Sannino, 2010; Pahnke et al., 2015).

Although Portugal suffers from heterogeneous levels of development, environmental and socio-economic issues have gradually gained greater relevance. Land use is based on small family farms (< 3 ha) marked by abandonment, low investment rates and a lack of entrepreneurship, but also resilience (Silva, 2012, Pinto, 2015; Pinto, 2019). Even so, in the last three decades, investments have been made in access routes, which mitigated isolation and increased connections between urban centres and rural areas.

Different levels of rural development persist, where traditional low-density spaces coexist with those bolstered by 'innovation and large capital movements' (Pinto, 2015, p. 26). Thus, these rural spaces are

being revived based on the existing endogenous resources and new emerging dynamics that drive a paradigm shift, increasing their competitiveness and investment opportunities. Still, regional inequalities and the lack of territorial cohesion are evident (Covas, 2017; Pinto, 2019).

Today, rural spaces have reinvented themselves, enhancing endogenous resources, tourism and leisure, in addition to activities such as 'agro-forestry, hunting, agrotourism, recreation, housing, and agro-energy' (Covas, 2008, p. 246). Consequently, residents have been encouraged to return and there has been an influx of tourists and visitors. New actors have emerged as well, such as the "neo-ruralites" who recover the built environment, invest in eco-buildings and energy efficiency (Pinto, 2015), and value modern access routes and new technologies (Reis, 2014; Pina and Teixeira, 2017; Pinto, 2019). In short, rural spaces are becoming multifunctional, encompassing a stunning landscape, as well as culture and social capital associated with support from initiatives such as LEADER or the PDR2030<sup>1</sup>.

Rural development has become increasingly bottom-up and should aggregate all local agents to promote sustainable endogenous development. The aim is to improve the residents' quality of life and economic competitiveness, fostering coordination between municipal authorities and rural stakeholders (Regueiro, 2014; Silva and Barros, 2008; Pina, 2020; Pinto, 2019).

Tourism is of strategic importance to the sustainable development of the DDR. In particular, health and wellness tourism, which is the focus of this article.

## **Thermal baths and health and wellness tourism in Europe, Portugal and the Douro region**

### Brief historical background

Regardless of the potential of rural territories, relationships and connections change over time, involving multiple public and private actors in these processes (Shucksmith, 2010; Cawlay, 2012; Mathieu, 2017). It is in this context that one should observe the rural environment and its modernisation and preservation, as well as its endogenous resources beyond the agricultural ones, such as hot springs (Hall et al., 2003; Rienks, 2008; Rosset, 2013; Woods, 2015; Pina, 2018). Thermal baths have undergone transformations, combining their medicinal benefits with leisure and well-being, which are increasingly sought by urban dwellers as an antidote to stressful lifestyles.

It is a paradigm shift, transforming the old thermal bathhouses into resorts with spas and other facilities, frequented throughout the year, especially by city dwellers, national and foreign, seeking medical benefits and well-being. With this change, local organic agricultural products are spreading among spa-goers and members of the Portuguese diaspora, but also among the local hotel units.

Undeniably, activities such as thermal spas bolster the revitalisation of rural spaces (Berger, 2017; Krol et al., 2012; Westlund, 2017) and the existing connections between the rural and urban world (Woods, 2011; Calway, 2012; Pahnke et al., 2015), as is the case of the thermal baths located in the Douro Demarcated Region (Pina, 2017, 2018; 2020).

The thermal baths are situated in the schist-greywacke geomorphological complex of the Beira-Douro region (Dias et al., 2013), on major tectonic faults such as the Régua-Verin and the Manteigas-Bragança faults (Lourenço, 2017). Rich in mineral and thermal waters, therapeutical treatments are practised in pleasant, physically and emotionally invigorating places. We will first briefly frame thermal baths in Europe, Portugal and the Douro Demarcated Region.

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<sup>1</sup> Plano de Desenvolvimento Rural (Rural Development Plan) 2020-2030.

Mineral springs have long been used empirically in medicinal treatments, e.g. plunge pools, which differed according to the waters' temperature and physical and chemical composition (Caetano, 2005). The perception of the qualities of such waters goes deep into history. According to Chabrol (1933), Herodotus was the “father of thermal bathing” because he defined the basis of crenotherapy<sup>2</sup> as early as 450 B.C.E.

Fabrino (1949), in turn, divided the evolution of mineral water use into stages. He started by highlighting the religious period when the supernatural justified the use of mineral waters, followed by the dogmatic period, in which the Greeks sought explanations for the cures they observed. In the Roman period, with the empirical perception of the therapeutical properties of these waters, their use was encouraged, and large baths were built for recuperation and treating illnesses.

In the following predominantly Christian period (Middle Ages), the Catholic Church vehemently opposed this practice which consequently led to its decline. This trend was only broken in the second half of the Middle Ages, when thermal baths were revived in Europe due to their medicinal properties. Thermal baths started to spread, particularly from the 18<sup>th</sup> century, based on scientific studies of the benefits of these waters on individuals. Later, a period of physical and chemical analysis of the waters confirmed their curative properties, reinforced in the following periods by the discovery of the waters' ionisation at the abstraction point.

In short, thermal baths have had an intermittent history of dark periods interspersed with more auspicious ones, until the therapeutical properties of thermal waters were scientifically proven. This evidence was further strengthened when reigning monarchs and noble elites joined in. A noteworthy example was the French government's determination of 1839, which created a commission of medical professors who “sent” patients to Vichy to be examined before and after thermal treatments. The results were so positive that they triggered a generalised demand for thermal treatments throughout Europe (Cantista, 2010; Fabrino, 1949). At the same time, in the location of the springs, settlements were set up to welcome bathers.

In Portugal, it was during the Roman period that the best use was made of these mineral resources, especially in Chaves<sup>3</sup> and S. Pedro do Sul<sup>4</sup>. They developed bathing establishments and used the springs with a multidimensional approach that encompassed health and leisure. However, it was only after the Kingdom of Portugal's foundation that successive kings recognised the importance of spring waters, despite resistance from the Catholic Church.

Thermal practices became more widespread due to their curative properties, which led the Catholic Church to ultimately accept them (Cantista, 2010). Thus, religious orders such as the Knights Templar and, later, the Order of Christ instituted and managed thermal establishments (e.g. Longroiva). At the same time, inns were built to lodge the bathers as well as “assistance hospitals” for the poor and indigent who needed treatment (Cantista, 2010).

In the 15<sup>th</sup> century, as the curative properties of thermal waters became known amongst all social classes, including the nobility, royalty and clergy, awareness of the need for healthcare grew. Health and sanitary concerns drew the attention of queens such as Leonor (1458–1525), who founded the *Misericórdias* (charities) in Portugal<sup>5</sup> and the first thermal hospital in the world, located in Caldas da Rainha (central Portugal).

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2 Crenotherapy – medical treatments based on mineral waters that have therapeutical effects.

3 Located in northern Portugal, near the Spanish border.

4 Thermal baths located in the centre of Portugal.

5 Institutions created to provide assistance to the indigent have a history that goes back more than five centuries. These institutions are highly prestigious and there are currently 388 *Misericórdia* charities active in Portugal (Cantista, 2010).

Given the empirical interest, systematic surveys of Portugal's thermal springs and their physical, chemical, and therapeutical properties were conducted, with the first scientific publications being edited by court physicians. For example, in 1726, Francisco da Fonseca Henriques published *Aquilégio Medicinal*, the first systematic classification of mineral springs in Portugal (Cantista, 2010). In 1758, Jacob de Castro Sarmiento wrote about the chemical constitution of spring waters, while in 1772, the first laboratory studies on mineral-medicinal waters in Portugal were conducted.

Following a similar trend in Europe, the "Court went to baths" in the 18<sup>th</sup> century, giving rise to the "thermal bathing season" (e.g. Vichy in France, Vigado in Northern Portugal). Under aristocratic influences, sumptuous hotels sprang up, such as the Palace Hotel in Vidago<sup>6</sup>, or even in Caldas do Moledo (DDR), after Antónia Adelaide Ferreira invested in these baths (Pereira, 1996; Pina, 2017; Ramos, 2020).

It was, however, in the 19<sup>th</sup> and 20<sup>th</sup> centuries that thermal bathing spread rapidly in Europe and Portugal, driven by the aristocracy and bourgeoisie. The impact of the physical-chemical analyses of these waters was unquestionable, especially after identifying microbes and bacterial contaminations and how to control them. Technological and hygienic-sanitary innovations were also developed, which served as the basis for the technical and legal principles and regulations to safeguard hot springs<sup>7</sup>.

This golden period was shaped by the two World Wars, the rise of pharmacological therapies, and the spas' inability to compete with the recreational appeal of seaside resorts and beaches. Nevertheless, in the Portuguese case, the most worrying period was in the 1980s, when state subsidies for thermal treatments were suspended, leading to a drastic reduction in the number of spa-goers. Subject to financial, technical, and human disinvestment, the thermal bathhouses deteriorated, as did the surrounding hotels, frequented mainly by the elderly who continued their traditional medicinal therapies.

The early 21<sup>st</sup> century witnessed the rise of awareness of naturalistic and ecological issues, including the revival of thermal baths, but now as a 'holistic therapy and even a health experience' (Cantista, 2010, 84). In fact, given the scientific evidence of the power of crenotherapy, combined with the recreational dimension, thermal springs, local hotels and thermal services were revitalised and renovated, allied to recreational activities. Thermal baths expanded, fostering healthy habits, disease prevention, and decompression from city stress, leading to a paradigm change. Previously associated only with medical and therapeutical treatments, thermal baths are today reborn, focusing on prevention and physical and psychological well-being. Consequently, health and wellness tourism has been institutionalised as a component of regional development in rural areas.

Based on four fundamental pillars (medical, thermal, wellness and senior), health and wellness tourism relies on quality human, structural and logistical resources, defined in legal and therapeutical terms in legislation. For example, in Portugal, Decree-Law no. 142/2004, of 11<sup>th</sup> June, and Decree-Law no. 186/2015, complemented by Order no. 1443/2016, of 29<sup>th</sup> November, established the norms that support the establishment and maintenance of thermal baths. Thermal activities are considered strategic in Portugal, as we can see in the PENT (National Strategic Tourism Plan, Review and Objectives 2013-2017) and the "Strategic Objectives 2030" (Tourism of Portugal, 2017).

Thus, these thermal structures are being restored under municipal or private management, taking advantage of EU funds. Projects for four thermal baths have been approved in the Douro region, of which only Longroiva has completed its modernisation.

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6 Located in NW Portugal.

7 Although not the subject of this article, it should be noted that, associated with thermal tourism and its therapeutical success, a mineral water market emerged at the turn of the 19<sup>th</sup> century, particularly in Portugal.

## The thermal springs of the Douro Region and their impact on local/regional development

We shall now turn our attention to the Douro thermal springs. Implanted in the schist-greywacke complex of the Douro-Beira districts (Dias et al., 2013), they are associated with major tectonic features, namely the Manteigas-Vilariça-Bragança fault and the Verin-Régua-Penacova fault. This has given rise to sulphuretted, carbonated, sodic and fluoride-rich waters (Lourenço, 2004; 2017) (Fig. 1), set amongst terraces full of vineyards. The hot springs are also surrounded by the superb architectural, gastronomic, and cultural heritage in the DDR (Pina, 2017; Pina, 2018), which UNESCO listed as a “Living Evolutionary Landscape” and World Heritage Site (December 2001).

Despite this distinctive scenario, obstacles to regional development persist, calling into question the conservation of the landscape and local heritage. This situation is aggravated by demographic decline, the structural ageing of residents, and decapitalised small wine producers. On the other hand, the poor land use structure of farms, their scarce mechanisation and farmers’ lack of technical training, despite improvements, remain insufficient to sustain necessary development (Pina, 2017). The abandonment of agricultural areas is evident, especially in non-viticulture areas (Pina, 2013).

This situation needs to be corrected. According to the General Population Census (INE), the DDR has lost population since the 1950s. The only exceptions are the county seats and parishes where viticulture is a major factor or farms that have developed multifunctional activities, such as tourism, diversified products or spas (Pina, 2017). However, not even these parishes have escaped the demographic recession unscathed. In the last decade alone, the population has declined 10–35%, particularly in rural parishes with poor access routes and ageing populations. In contrast, the recession is clearly slowing down in parishes offering more economic attractions and a diversity of activities.

Despite this problematic situation, investments have been made in restructuring and mechanising vineyards, developing tourism in the region (Pina and Queiroz, 2017) and restoring historical heritage. Particularly noteworthy are the investments in health and wellness tourism, as is the case of the four thermal baths located in the Douro region: Caldas do Moledo, Caldas de Carlão, Caldas de S. Lourenço, situated on the right bank of the Douro River, and the Longroiva Thermal Baths and Spa on the other bank (Fig. 2). These case studies combine information obtained from bibliographical and other documents, as well as interviews with representatives of the thermal facilities and local authorities.

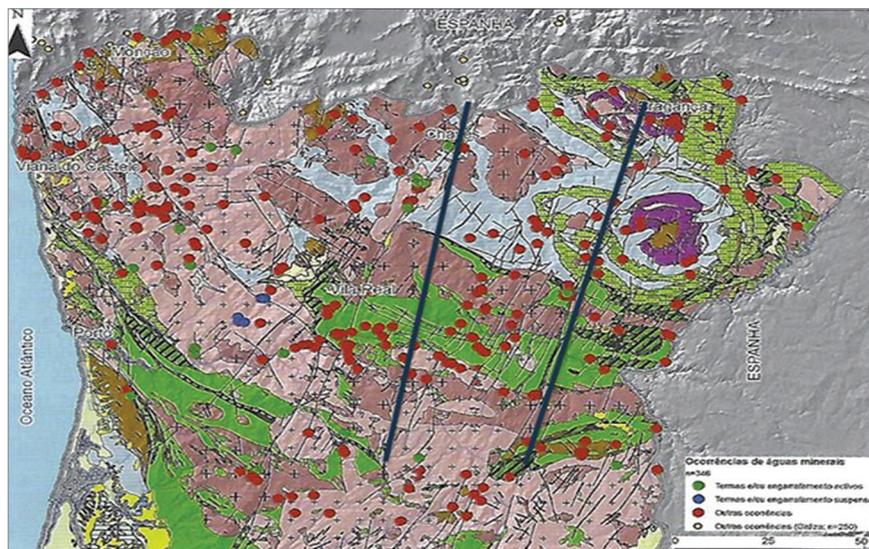


Fig.1 Occurrence of Mineral and Thermal Waters in the North and Centre of Portugal.

Source: Cortez (2017, 130)

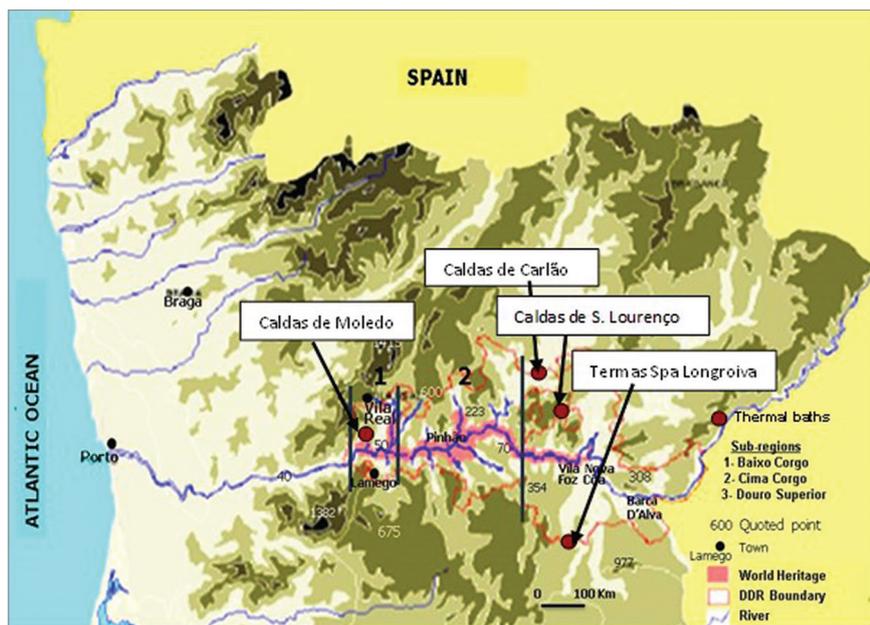


Fig. 2 The Douro Demarcated Region and its thermal baths

#### a) Caldas do Moledo

We will start with Caldas do Moledo. Located in the municipality of Peso da Régua (Fig. 2), in the town of the same name, these baths are considered one of the “gateways” to the DDR. These are sodic, sulphuretted, carbonated, and fluoride-rich waters with a pH of 9.3. The hot springs’ surface temperature is 45° C, emerging from the Verin-Penacova fault with low mineralisation (263 mg/l) (Directorate-General of Energy and Geology).

Despite their long history, these thermal baths have experienced periods of recession interspersed with golden periods. This thermal bathhouse became institutionalised on the national and international scene in 1863, when Antónia Adelaide Ferreira<sup>8</sup> acquired the hot springs and the adjoining farm (Pereira, 1996). Aware of its therapeutical properties, she invested in improving the lodgings after the railway was built in 1879, attracting noble elite and affluent bourgeoisie. She was granted the concession licence for the Moledo Thermal Baths in 1895 (Pereira, 1996).

The popularity of the Caldas do Moledo waters and their curative powers spread, leading to expansion and development. The Grande Hotel, Vilhena Hotel and Petit Hotel appeared, as well as commercial establishments, a telegraph/post office and a casino, which were an indication of the profile of the baths’ clientele (Fig. 3). Its development followed a similar path to other major thermal facilities in Portugal and Europe.

This boom faded in the second half of the 20<sup>th</sup> century due to the growing popularity of the Vidago and Chaves thermal springs<sup>9</sup>, restricting bathers to the local and regional population. The Caldas do Moledo baths suffered further decline when the government cancelled subsidies for thermal treatments in the 1980s. But the main blow came after a legal dispute between the Peso da Régua municipal council and the Douro Regional Tourism Board in 2009, leading to their closure in 2010. Now that the dispute has been settled, the thermal springs will be revitalised under the management of the Peso da Régua municipal council<sup>10</sup> and

<sup>8</sup> A 19<sup>th</sup>-century Portuguese businesswoman, she was dedicated to the Douro region and viticulture. She adopted multiple innovations during the phylloxera period and implemented numerous social and welfare actions in the DDR. She died in 1896.

<sup>9</sup> Thermal spas in northern Portugal.

<sup>10</sup> Information obtained from an interview with administrators at the Peso da Régua Tourism and Culture department - December 2019.



Fig. 3 The main street of Caldas de Moledo at the end of the 19<sup>th</sup> century and in 2019

Tourism of Porto and North Portugal, acknowledging their predictable impact on local and regional development. This project includes renovation of the thermal springs, the old hotel, and several very dilapidated dwellings that the municipal council acquired to accommodate future guests/tourists. Even though several hotel units in the county are located less than 6 km away, providing local accommodation is essential to the success of this enterprise<sup>11</sup>, particularly in demographic terms. At the end of the 2010s, only about 70 inhabitants remained in Caldas de Moledo; it was home to more than 350 inhabitants in its golden age at the beginning of the 20<sup>th</sup> century.

#### b) Caldas de Carlão

Caldas de Carlão (Fig. 2), a privately-run enterprise, is located in the village of Caldas, parish of Candedo (Murça). According to Cortez (2017), the waters are sulphuretted, carbonated and sodium-rich but poorly mineralised. Their surface temperature is 36° C and they have a pH of 8.25. They are hypothermic and bacteriologically pure waters, indicated for skin, rheumatic, and musculoskeletal illnesses.

The thermal baths are located on the banks of the Tinhela River, a tributary of the Douro River (Fig. 4), in a valley often afflicted by floods, which has interfered with its promotion. Although its history dates back to the Roman period, in the 18<sup>th</sup> century, the Caldas were frequented mainly by the local population, taking therapeutical plunge baths in cabins built for this purpose, as recorded in *Memórias Paroquiais* (Parish Mem-

<sup>11</sup> Information provided by the Head of Tourism and Culture at Peso da Régua Municipal council, September 2019.

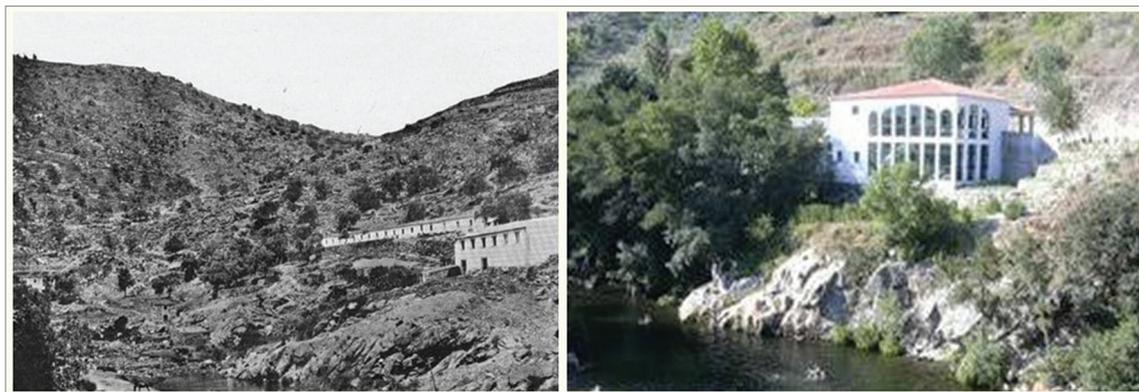


Fig. 4 Caldas de Carlão at the end of the 19th century and in 2020

Source: Empresa Termal de Caldas de Carlão, Lda

oires). In 1810, Francisco Tavares, physician to Queen Maria I, referred to the quality of these waters. Later, the systematic survey of thermal waters in Portugal at the end of the 19<sup>th</sup> century determined that these hot springs were beneficial in treating rheumatic diseases (Directorate-General of Mines).

Following new analyses in the 20<sup>th</sup> century, the Caldas de Carlão bathhouse was built to take advantage of the nearby railway and winding municipal road. It was restored in 1980 when the current owners acquired the buildings and the concession area<sup>12</sup>. In 2010, they applied for EU funds to restore and develop the baths. The project included a hotel with 30 rooms, landscaping, improving access routes and renovating thermal facilities<sup>13</sup>.

With the new project, the staff would increase from 4 to 10 members, apart from the owners and their children<sup>14</sup>, opening this spa to new clients. However, following the construction of the Foz do Tua dam<sup>15</sup>, the project was suspended given the baths' proximity to the reservoir, raising multiple issues. Its future hangs on the approval of the *Plano de Ordenamento da Albufeira da Foz do Tua* (Foz do Tua Reservoir Management Plan), meaning that Caldas de Carlão has been effectively "put on hold".

### c) Caldas de S. Lourenço

Caldas de S. Lourenço are another of the Douro's major hot springs (Fig. 2). Located in the village with the same name in the parish of Pinhal do Norte (Carrazeda de Ansiães), the springs are accessed by means of a steep road that crosses the Tua Valley Natural Park and its breath-taking landscapes. S. Lourenço consists of about 20 modest dwellings, built in the late 19<sup>th</sup> and early 20<sup>th</sup> century, perched on a steep slope over the Tua River (Fig. 5).

According to Cortez (2017), Caldas de S. Lourenço are sulphuretted, carbonated, sodium-rich waters of low mineralisation, rising to the surface with a temperature of 30° C and a pH of 8.01. They are beneficial for respiratory, rheumatic, and musculoskeletal illnesses.

12 Source: Empresa Termal de Caldas de Carlão, Lda.

13 Information provided by the current owner, December 2019.

14 Information provided by the current owner, in an interview carried out in December 2019.

15 Started in 2006 and completed in 2017.



Fig. 5 St. Lourenço Thermal Baths

These Caldas are mentioned in the *Aquilégio Medicinal* (1725), and the waters cured nervous, muscular, and skin ailments that were very common at the time. The baths continued under precarious conditions. In the 1940s, two bathhouses were mentioned, one for cold baths operated by the parish council and another for hot baths awarded to Campilho Gonçalves and C<sup>a</sup>. This spa was frequented by local and regional residents, mainly farmers and their families, and was known for its achievements in the treatment of dermatological illnesses<sup>16</sup>.

Profound changes began in the 1990s when the parish council built a new bathhouse. The Association for the Development of Caldas de S. Lourenço was founded in 1993, constituted by representatives of the residents, the parish council and the Carrazeda de Ansiães municipal council. Supported in new catchments, the concession of the waters was renewed (Directorate-General of Health)<sup>17</sup>.

However, the obstacles to S. Lourenço's renovation continued. Serious financial problems in 1998 forced the Municipal council to intervene. Taking advantage of the compensation for the construction of the Tua dam, the Municipal council created adequate access routes and remodelled the bathing facilities. The Municipal council also submitted a project for EU funds, which was approved. It encompasses the entire slope, from the banks of the Tua River to the top of the village, now abandoned since the residents resettled in the village of Pombal. Thus, S. Lourenço is considered a "ghost village", especially after the closing of the Tua railway line<sup>18</sup>.

Thus, the future of the Caldas de S. Lourenço is dependent on the combination of several interests: local homeowners<sup>19</sup>, the baths' concessionary (parish council), and the Carrazeda de Ansiães Municipal council. Meanwhile, the project and the community funds await execution.

16 Information provided by Manuel Monteiro, an engineer at the Carrazeda de Ansiães municipal council, October 2019.

17 Information provided by Manuel Monteiro, an engineer at the Carrazeda de Ansiães municipal council, October 2019.

18 Information provided by Manuel Monteiro, an engineer at the Carrazeda de Ansiães municipal council, October 2019.

19 "When the owners found out about the municipal council's project and its intention to create here a quality thermal centre, they inflated the price of the houses (or shacks!) that the municipal council was buying because of the project, postponing its execution!" (Information provided by Manuel Monteiro, December 2019).

#### d) Longroiva Thermal Baths and Spa

Finally, we will focus on Longroiva, a parish in the municipality of Mêda (Fig. 2). Located on the left bank of the Douro River, its mineral and spring waters emerge from the Manteigas-Vilariça-Bragança fault.

The history of these springs dates back to the prehistoric period, and in the Middle Ages the baths belonged to the Order of the Knights Templar and, later, to the Order of Christ (14<sup>th</sup> century) (Rodrigues, 2002). They comprised a rudimentary bathhouse that was maintained until the 19<sup>th</sup> century when the first thermal building was built.

These waters were used on an empirical basis for the treatment and prevention of musculoskeletal, rheumatic, respiratory, and dermatological ailments. The old facilities were transformed into a two-storey public bathhouse (Fig. 6), with the baths themselves on the ground floor. It was run by 3 or 4 local workers, a doctor and a couple in charge of the baths<sup>20</sup>. The bathers were local or regional, mainly farmers and their families. From the 1980s, their descendants also became clients but now resided primarily in the major urban centres. The external guests rented rooms in private houses or stayed on the upper floor of the thermal building<sup>21</sup>.

In the 21<sup>st</sup> century, when public subsidies were cancelled, these thermal springs declined and eventually closed. This situation was changed when the parish council president joined forces with private investments in the Longroiva Rural Hotel and the Thermal Spa, under concession to Natura Empreendimentos S.A.

Surrounded by vineyards, the hotel has 44 rooms and attracts many visitors and tourists, besides members of the Portuguese diaspora and spa-goers<sup>22</sup>. Thus, the old spa, managed by the parish council and open only between May and October, was transformed into the Longroiva Thermal Baths – Hotel and Spa, an eco-hotel (Fig. 6). It has its own geothermal heating and was built and decorated using local wood and materials. It employs around 50 young and trained workers, some of whom are locals. The manager mentioned that around 35 workers are from the metropolitan areas of Lisbon and Porto, as well as Coimbra. They settled with their families in the municipal capital, given the lack of accommodation in Longroiva. This is yet another obstacle to development.

Although the thermal baths are open year-round, their peak season is the summer<sup>23</sup>. Thus, since the hotel and spa reopened in 2016, the influx of tourists from the Lisbon and Porto metropolitan areas and Portugal's northern and central district capitals has increased. The majority are young or adult couples (25 to 50 years old), with higher education, from the middle/upper class, and immigrants who visit their relatives in the summer. The older clients (50 to 70 years old) prefer traditional thermal treatments. Last, we should mention foreigners, mostly Spanish, with a profile very similar to that of Portuguese tourists from the metropolitan areas<sup>24</sup>.

At the same time, the demand for endogenous products has increased, reviving the commerce of local products such as wine, olive oil and fruit. Besides leisure and wellness services, nature lovers also have access to thematic hiking trails.

Thus, the local heritage has been restored and the agricultural sector revitalised based primarily on tourism and the thermal sector, which have revolutionised the local economic and social framework<sup>25</sup>.

20 Information provided by the former concession holder of the bathhouse in September 2019.

21 Information provided by the previous concession holder of the bathhouse, Maria da Luz Lemos, corroborated by the President of the parish council - September 2019).

22 Information provided by Cristina Mota and Maria João Soares - September 2019.

23 Information provided by Cristina Mota and Maria João Soares, in charge of the spa unit and the hotel, respectively - September 2019.

24 Information provided by Cristina Mota and Maria João Soares, in charge of the thermal unit and the hotel, respectively, in an interview carried out in September 2019.

25 Information obtained in the interview carried out with the President of the Longroiva parish council, December 2019.



Fig. 6 The old building of the Longroiva Thermal Baths (1999) and the Longroiva Rural Hotel and Thermal Baths (2019)

Source: Longroiva Rural Hotel (2019)

## Discussion of the results and some concluding remarks

Despite the fact that the DDR boasts exceptional heritage, it continues to be shrouded in problems that have led to its economic stagnation and degradation. Viticulture is the region's economic mainstay, but investments are being made in multifunctional activities, including increased tourism associated with wine production.

The hot springs located in the DDR have distinct histories and trajectories. Despite their importance in regional conservation and dynamics, thermal baths were neglected and rundown until the 1980s. This situation required urgent attention and efforts were made to restore the baths, adding the wellness dimension and taking advantage of the EU funds available.

Although there are only four thermal baths in the DDR, they are important for its development, as is the case of the long-established Caldas de Moledo, which closed in 2010 following a legal dispute. A recovery project has since been approved, pending execution.

The region is also home to Caldas de Carlão, under private management, and Caldas de S. Lourenço, managed by the Carrazeda de Ansiães Municipality. On the other bank of the Douro River, we find the Longroiva Thermal Baths, an ancient thermal spa that has been completely remodelled into a centre of health and wellness tourism. In fact, due to the growing demand from the urban population for these spas, both private agents and local authorities have been encouraged to invest in their recovery. Projects were submitted to EU funding programmes, which have been approved. As mentioned previously, the legal dispute involving Caldas do Moledo was settled recently, making it possible to reanimate the project to build the Douro Thermal Resort<sup>26</sup>. However, Caldas de Carlão and S. Lourenço, affected by the Foz do Tua dam, have been “put on hold” pending the approval of the Foz do Tua Reservoir Management Plan. The revival of these thermal baths is eagerly awaited, under public management in the case of Caldas de S. Lourenço and private in the case of Caldas de Carlão<sup>27</sup>.

Longroiva are the only thermal baths that have been completely renovated and expanded. After municipal intervention, the thermal facilities were modernised, comprising an eco-hotel associated with health and wellness tourism. Thus, its thermal springs have been revitalised, employing around 50 workers in specialised jobs. The parish has also been revitalised, especially via trade of local organic agricultural products, preserving traditional agro-food systems and increasing the local farmers' income.

Furthermore, several rural tourism facilities have also appeared in Longroiva, with new players and innovations that will help holistically sustain the region's development. They include not only vineyards but also the thermal baths, the landscape, and even the cultural dimension, in which several thematic trails have been established, increasingly used by tourists and water lovers<sup>28</sup>. However, it is clear that the lack of local accom-

<sup>26</sup> Interview with the Head of Tourism at the Peso da Régua municipal council, September 2019.

<sup>27</sup> In the case of Caldas de Carlão, a hotel is planned, as well as recreational activities for thermal enthusiasts.

<sup>28</sup> Information provided by the President of the parish council in an interview conducted in September 2019.

modation for the thermal baths' employees and guests, especially those of lower income, poses an obstacle to Longroiva's development. Despite this, subsidies and technical support from the municipality and the EU may encourage residents to create an association to remodel totally or partially available lodgings, following the emigration of younger populations who only return in the festive seasons. This could serve to welcome more bathers and tourists in a family environment.

Investments are also required in recreational activities to attract more visitors, such as concerts, film screenings, cultural events, etc., combining municipal and private efforts. According to the parish council president, Longroiva's accommodation and the hotel are fully booked during the Festivals of Our Lady of Torrão, the village's patron saint. It is evident that although the thermal baths are an engine of local development, the lack of accommodation and a well-structured cultural programme are obstacles that must be overcome, as they are the cornerstone of the sustainable, holistic development of Longroiva. The same conditions apply to the other thermal units.

Therefore, there is an urgent need for all actors to join forces to develop the thermal units once the legal and institutional obstacles have been removed. The Longroiva thermal baths are an example of the success of such strategic investment, bringing together the main stakeholders and endogenous potential. They have contributed to improving access routes, increasing accommodation, and fostering cultural and recreational programmes.

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