

An Analytical Study Of Drivers Of Thermal Tourism: A Case Study Of Hammam Rebbi In Saïda Province, Algeria

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Abstract

Thermal tourism in Algeria represents a future pillar of a sustainable economic alternative to hydrocarbons. Algeria has developed numerous thermal sites, transforming them into tourist attractions zones. The Hammam Rebbi site stands out for its thermal nature and chemical composition.

waters, which possess effective therapeutic properties, along with diverse environmental and cultural surroundings, making it an outstanding tourist and therapeutic destination. This study employed SWOT analysis to assess the tourism attraction potential of Hammam Rebbi. The study highlighted strengths, including the integration of natural and hotel features, as well as the unique local culture, in addition to opportunities arising from government support and the trend toward domestic tourism. However, the study revealed weaknesses related to the lack of tourism planning and spatial development, weak tourism promotion and marketing, and high service costs. Threats have been identified in the context of environmental degradation due to pollution and climate change, as well as competition within diverse tourism markets. The results emphasise the importance of adopting sustainable tourism development plans that enhance natural resource protection and improve infrastructure, in addition to workforce training and the activation of specialised media campaigns. The study confirms that thermal tourism development is based on diversifying services between natural therapy, ecotourism, and cultural tourism, which increases the site's competitiveness at both the national and regional levels and improves the sector's contribution to local economic development, as well as integrating efforts between the public and private sectors.

Keywords: thermal tourism, tourism development, SWOT analysis, Hammam Rebbi, tourist attraction, Algeria

INTRODUCTION

Since independence, Algeria has relied predominantly on hydrocarbon revenues (Heidarian & Green, 1989; Haouas et al., 2024), resulting in insufficient attention to other economic sectors, particularly tourism. Tourism in the Mediterranean region contributes 10% of the gross domestic product, yet Algeria significantly underperforms this benchmark. According to Sari Hassoun et al. (2021), the impact of tourism on Algeria's national economy remains minimal, with the sector largely underutilised despite available capacities and opportunities (Boulhila et al., 2022). Algeria ranks 147th globally among 174 countries in terms of tourism's contribution to GDP (Bouadam, 2011).

In recent years, there has been a shift in government policy toward valuing tourism potential for developmental purposes (Kelfaoui et al., 2021), aiming to restore Algeria's regional tourist destination status and establish tourism as a fundamental component of sustainable economic development within economic diversification frameworks. This transformation is manifested through the establishment and development of tourism poles, as well as the adoption of a tourism development plan under the National Territorial Development Plan for Sustainable Development. This provides investors with opportunities to establish tourism infrastructure and promote investments in environmental assets, including beaches, mountains, deserts, and thermal springs.

Mineral baths at thermal spring locations constitute premier tourist and environmental attractions, characterised by hot waters containing therapeutic elements for treating various conditions, particularly dermatological ailments (Hojcska et al., 2024). Combined with cultural beliefs and rituals (Valeriani et al., 2018), these sites attract numerous visitors for recreation and relaxation purposes (Brandão et al., 2021). The importance of Algeria in thermal tourism stems from its numerous ecological systems, stunning natural landscapes, and diverse cultural traditions surrounding thermal springs, providing a unique character to recreational tourism alongside therapeutic benefits.

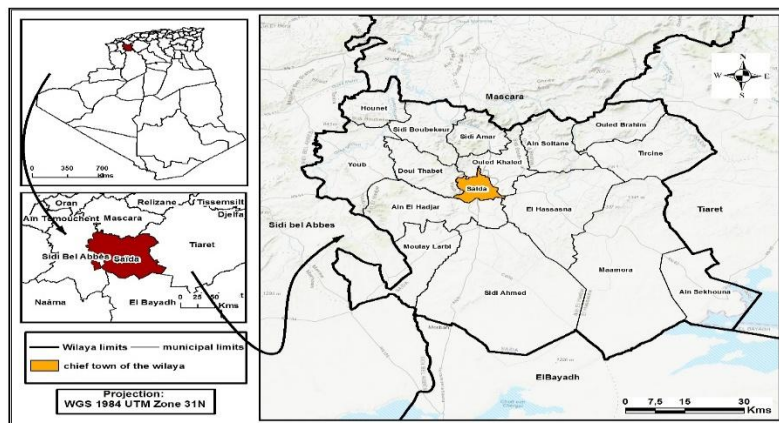
Algeria has over 240 thermal sites distributed nationwide (Saïbi et al., 2006), with a majority located in northern Algeria, offering significant therapeutic benefits and varying temperatures. Physical, chemical, and hydrogeological analyses have identified eight water types categorised into four mineral water source types on the basis of temperature: low-temperature, medium-temperature, therapeutically beneficial, and high-temperature (Guigue, 1940).

The Tourism Development Master Plan (SDAT 2030) prioritises domestic tourism development, emphasising thermal tourism as a pillar of the domestic tourism strategy. Hammam Rebbi Spring represents one of six thermal springs in the Ouled Khaled municipality, Saïda Province, western Algeria, and is among the country's oldest thermal facilities. According to Saibi et al. (2006), it belongs to the "Tlemcenian dolomites in the northwestern area" subgroup and is characterised by natural sulfur-rich hot waters reaching 49°C. The current bath facility, established in 1969 on the banks of Wadi Saïda, benefits from strategic positioning as the gateway to the Sahara, linking the northern, western highlands, and southern regions. Archaeological evidence indicates continuous human habitation since the Stone Age, with numerous shelters and caves at Ain Elmanaa, Tifrit, and Wadi Saïda, demonstrating a presence that spans more than 15,000 years. Notable discoveries include the human cave on the northern bank of Wadi Saïda (discovered in 1891, Middle Stone Age) and the Tifrit cave (located 30 km east of Saïda, Neolithic period) (Directorate of Tourism and Traditional Industries of Saïda Province).

STUDY AREA

Saïda Province, located in northwestern Algeria (Figure 1), represents an excellent thermal tourism destination because of its significant mineral bath resources. The province annually attracts thousands of visitors seeking rest, recreation, and treatment for various ailments, particularly those related to bones and joints.

Consequently, it has gained a national and international reputation, attracting tourists from Arab and European countries seeking natural treatment, including the renowned "Hammam Rebbi" mineral bath.



[Figure 1. Location of the thermal bath Hammam Rebbi (Source: Authors, 2025)]

Following Law No. 03/03 regarding tourism expansion zones and sites, Saïda Province identified five tourism expansion zones:

- **Saïda Tourism Expansion Zone:** Southern perimeter of provincial capital
- **Hammam Rebbi Tourism Expansion Zone:** 11 km north of Saïda city, Ouled Khaled municipality, Sidi Boubekr district (59 hectares)
- **Tifrit Tourism Expansion Zone:** 30 km east of Saïda city, Ain Sultan municipality, Ouled Ibrahim district (151 hectares)
- **El Marja Tourism Expansion Zone:** 22 km west of Saïda city, Ain Hajar and Doui Thabet municipalities (770 hectares)
- **Ain Sakhuna Tourism Expansion Zone:** 90 km west of Saïda city, Ain Sakhuna municipality, Hassasna district (150 hectares)

1. TOURISM ATTRACTION DRIVERS IN SAÏDA PROVINCE

In addition to Hammam Rebbi's tourism role in regional development, numerous natural and cultural elements stimulate general tourism and complement thermal tourism specifically (Figure 2):

1.1 Natural Attractions

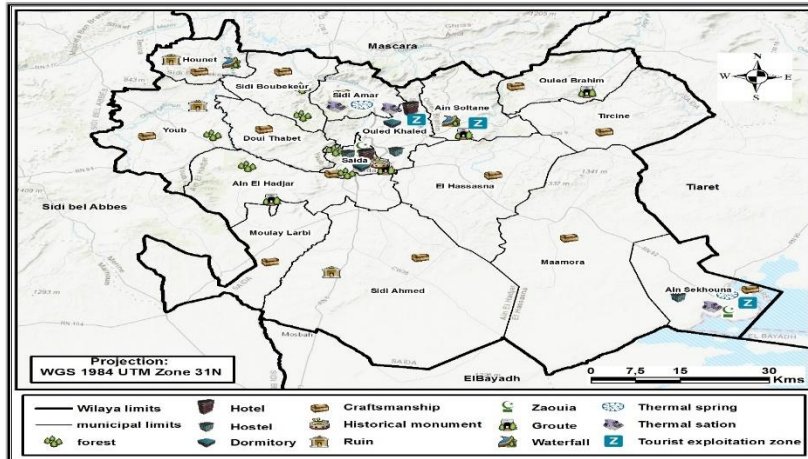
ELOGBANE Forest ("Old SAÏDA"): Located at the southern city exit via National Road No. 06 (Saïda-Mascara link), covering 35 hectares. Famous for its sweet freshwater springs, Oued Saïda, which serves as a recreational garden and relaxation haven, attracts hundreds of families seeking respite from urban noise daily, in addition to sports enthusiasts and walkers.

Hountte Area: 50 km northwest, characterised by forests and the Oued Hounette valley, plus ancient Roman civilisation remaining 7 km from the Hountte municipality centre.

TAFARNET Forest: Sidi Omar municipality, 22 km from Saïda, featuring a charming natural landscape and

mountainous heights that extend across the surrounding ranges, containing vast forests and spacious green meadows.

EL MARDJA Area: Doui Thabet municipality, Youb district, National Road No. 93 toward Sidi Bel Abbes Province, 19 km from Saïda city. This area is characterised by 768.5 hectares of dense forests, which serve as destinations for environmental tourism, camping, and hunting. This zone is classified as a tourism expansion zone by Executive Decree No. 232/88 (November 5, 1988).



[Figure 2. The most important tourist sites in the province of Saïda (Source: Authors, 2025)]

TIFRIT Caves: Ain Sultan municipality, Ouled Ibrahim district, National Road No. 92 toward Tiaret Province (Figure 3). Nationally listed archaeological site (classified September 11, 1996, number 52). The seven classified caves contain thick archaeological layers with artefacts, pottery pieces, and various rock drawings reflecting historical lifestyles and practices.



[Figure 3. The Tifrit Falls (Source: Authors, 2025)]

TIMEZWIN site: Northwest Saïda Province, Maata village, 12 km from Youb municipality toward Sidi Boubekr. Nationally listed archaeological site (classified December 8, 1999, number 87). Located at Wadi Barbour Heights, a double, fortress-like wall with a Roman surround remains, confirming historical data on Roman roads.



[Figure 4. Site of Timésouin "Lucu" (Source: Authors, 2025)]

AIN ELMANAA Cave: 24 km southwest of Saïda city, 3 km from Ain Elmanaa on Provincial Road 48. Nationally listed archaeological site (classified December 8, 1999, number 87). The rocky elevation is 150 m long and 50 m wide, with steep slopes of 5–6 m on the banks of Wadi Ain Elmanaa.



[Figure 5. Ain Elmanaa Cave (Source: Authors, 2025)]

OUED SAÏDA Cave: 3 km south of Saïda city, National Road No. 06, adjacent to the quarry on Wadi Saïda's left side. Nationally listed archaeological site (classified December 8, 1999, number 87). Covers 9 m² containing a corridor, a wide entrance, and two rooms.

The Sundial: Created in April 1935 by Dr REHM MARSEL, the initiative (city mayor 1931-1935). Located in central Saïda (Figure 6), this daytime timing tool features a cubic shape with multiple points and lines drawn on a rectangular marble plate.



[Figure 6. The Sundial of Saïda City (Source: Authors, 2025)]

2. HAMMAM REBBI THERMAL COMPLEX

The Hammam Rebbi thermal complex (Figure 7) occupies the Ouled Khaled municipality, 11 km from the provincial centre, adjacent to National Road No. 06 (Saïda-Mascara link). The boundaries include the Sidi Amar municipality (north), the Ain Sultan municipality (east), and the Rabachia district (south and west).



[Figure 7. Hammam Rabbi in Saïda Province (Source: Authors, 2025)]

The complex spans over one hectare (10,000 m²), with a built area of 3,040 m². The regional topography is flat, with slopes not exceeding 2%. Located on the banks of Wadi Saïda, this thermal water source has been known since ancient times. A mineral station was established under Saïda Province's special plan in late 1969, becoming operational in 1970 as a provincial institution serving local communities within local development frameworks. In 2003, complex supervision and management were transferred to the Public Tourism Management Institution of Tlemcen Province (EGTT) to provide a new character and developmental impetus for tourism.

Table 1. Thermal Characteristics of Hammam Rabbi

Parameter	Depth	Flow Rate	Temperature	Chemical Composition	Therapeutic Indicators
Description	/	6 l/s	49°C	Sulfur and sodium chloride	-Rheumatism, -skin diseases, -nervous diseases,

					-respiratory diseases, -digestive diseases
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Source: Hammam Rabbi Management Company, 2025

3. METHODOLOGY

This study analyses the thermal tourism conditions at Hammam Rabbi, Saïda Province, highlighting the tourism and therapeutic importance of mineral baths at the national level, which has not been sufficiently scientifically investigated.

This research explains, analyses, and dissects the existing gaps between natural and environmental potential and the recorded decline in the role of thermal tourism in achieving sustainable local development.

The study highlights the thermal tourism components and tourist attraction factors for Hammam Rabbi, utilising SWOT matrix analysis to examine its strengths, weaknesses, opportunities, and threats. Multiple studies (Fertas et al., 2022) have demonstrated the effectiveness of this analysis, despite concerns about its generality for some researchers (Valentin, 2001). However, it remains instrumental in environmental studies and related matters (Dyah Prasetyawati et al., 2024), particularly in tourism sector studies, such as those focusing on thermal tourism.

Fieldwork and scientific field trips are primary sources of information. Field research has examined the reality of thermal tourism in Saïda Province, collecting targeted information and data, which were subsequently analysed according to SWOT analysis patterns as follows:

- **Strengths:** The study area boasts thermal tourism advantages, represented by the Hammam Rabbi thermal complex, which opens up new growth and development horizons.
- **Weaknesses:** Factors and points identified in the thermal tourism sector as an economic sector facing intense competition from other types of tourism, as well as prevailing economic and social conditions.
- **Threats:** Current and potential external threats, including fierce competition between tourism types, as well as obstacles and challenges that prevent thermal tourism promotion.
- **Opportunities:** Available opportunities and natural, economic, human, cultural, and historical potential that can be exploited to improve thermal tourism conditions in Saïda Province.

4. RESULTS AND DISCUSSION

SWOT matrix analysis reveals the positive and negative effects of the thermal tourism sector in Saïda Province (Table 2) while identifying drivers and tourist attraction factors for valorisation, attempting to mitigate weakness factors, seizing opportunities and avoiding development-preventing threats.

Table 2. SWOT Analysis of Tourism in Hammam Rabbi

<p>Strengths</p> <ol style="list-style-type: none"> 1. Distinguished geographical location and easy access to Hammam Rabbi, Saïda province 2. Natural factors and a diverse ecological system with stunning landscapes 3. Hot waters and their chemical components with therapeutic properties 4. Availability of qualified hotel structures providing specialised medical therapeutic services of good quality, including reception, accommodation, catering, recreation, and entertainment 5. Tourism agencies with high experience 6. Cultural diversity, including traditional clothing, local folklore, local and international music, traditional products, handicrafts, and craftsmanship 	<p>Weaknesses</p> <ol style="list-style-type: none"> 1. Lack of natural area development 2. Hotel structures are insufficient to accommodate the large number of tourists, especially during winter and spring. 3. High prices of tourism services, including food and accommodation 4. Low worker wages and high local workforce turnover in the tourism sector, and a lack of tourists in the summer in the region 5. Lack of promotion for mineral water treatment benefits through social media platforms and media channels 6. Lack of exhibitions and festivals to promote traditional clothing, folklore, and traditional industries
<p>Opportunities</p>	<p>Threats</p>

<ol style="list-style-type: none"> 1. The Algerian state supports tourism projects and the development of mineral springs throughout the national territory, and simplifies tax procedures for tourism activities 2. Organisation of national and local exhibitions to promote tourism in general and thermal tourism specifically, and exhibitions for traditional handicraft products 3. Trend toward mineral water treatment as an alternative natural therapy 4. Agreements with specialised insurance companies 5. Technological progress and internet booking services for thermal tourism promotion 	<ol style="list-style-type: none"> 1. Region exposed to seismic activity risk 2. Increasing environmental risks due to climate change 3. Risk of mineral water pollution due to Wadi Saïda pollution 4. Intense competition in the tourism market through the emergence of new tourism patterns in the region
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Source: Authors, 2025

4.1 Analysis of Interrelationships

On the basis of field study results, a precise analysis and diagnosis of the mutual relationships between SWOT matrix variables are necessary for valuing strengths and leveraging available opportunities provided by various natural and environmental potentials while mitigating the impacts of threats and addressing weakness points at the Hammam–Rebbi complex level.

Strengths-Opportunities Integration: The study area contains a distinguished geographical location, stunning natural factors, rich ecological systems, and environmental diversity, contributing to the exploitation of internal and external demand opportunities for thermal tourism preferences over other types of tourism, such as coastal and desert tourism, through increasing awareness of the environment of tourists (Yuxi & Linsheng, 2017). Continuous support from higher authorities for tourism projects, especially domestic and therapeutic ones, along with simplified tax procedures under new investment laws, can help mitigate weaknesses such as inadequate development of natural areas. Luis Durán-Román et al. (2020) believe that tax procedures for tourists and tourism significantly contribute to sector performance.

Resource Utilisation: The study area boasts mineral waters with excellent physical–chemical compositions, offering specialised medical–therapeutic services, qualified infrastructure for high-quality tourism services, and experienced tourism agencies. Exploiting opportunities represented by the state's allocation of substantial financial resources for national mineral spring development, alongside agreements with specialised insurance companies (Ouali, 2007; Benziada, 2019), can help overcome weaknesses, including insufficient hotel infrastructure for accommodating large numbers of tourists, especially during the winter and spring seasons.

Cultural Heritage Integration: Based on available strengths such as cultural diversity, traditional products, handicrafts, and craftsmanship (Figure 8), and benefiting from opportunities in local authorities' emphasis on organising national and local exhibitions for tourism promotion (Endahyani, 2020) generally and thermal tourism specifically, Saïda Province maintains various handicraft industries in traditional textile industries (weaving), such as burnous sewing and embroidering using ancestral methods, saddle manufacturing due to widespread equestrian sports, and household utensil manufacturing exploiting natural resources characteristic of Saïda Province, such as clay and alfa grass. Many young people, especially homebound women, present handicraft products to Hammam Rebbi visitors and tourists, thereby enhancing thermal tourism promotion opportunities and reducing unemployment and local workforce turnover (Chikwe, 2009), particularly during the summer.



[Figure 8. Examples of handicrafts and traditional industries in Saïda Province (Source: Authors, 2025)]

Natural Treatment Trends: Benefiting from societal trends toward mineral water natural treatment for chemical–physical components, this approach potentially replaces other medical treatments, helping to address weaknesses such as the lack of mineral water therapeutic benefit promotion at Hammam Rebbi and the absence of training for tourism sector employees, especially in mineral water treatment.

Environmental protection: State determination to enact and implement environmental protection laws through several legal texts aimed at protecting the environment and natural resources and maintaining environmental balance, including Law No. 03-10 related to environmental protection within sustainable development frameworks protecting the environment and sources, maintaining natural balance, combating pollution and environmental degradation, and avoiding environmental damage from various development plans and programs, plus Laws 01-19 related to waste management, control, and removal, which focus on production reduction and recycling, alongside other laws and decrees protecting living organisms and natural habitats and preventing natural resource degradation for future generation preservation. These measures can help mitigate increasing environmental threats due to climate regression and the risk of mineral water pollution from agricultural chemical use and proximity to urban agglomerations, which can cause mineral water contamination with sewage water.

5. CONCLUSIONS AND IMPLICATIONS

The analysis of thermal tourism at the Hammam Rebi mineral complex highlights its advantageous strategic location and the cultural alignment of services with the local community as key strengths that should be reinforced through improving service quality and developing infrastructure. Opportunities lie in expanding the tourism offer to encompass both therapeutic and recreational activities, alongside intensifying awareness and promotional campaigns to generate tangible local development impacts. Potential threats, including competition from other destinations and economic or political fluctuations, necessitate the formulation of integrated, sustainable policies that involve governmental support and community coordination (Penjišević et al., 2024; Arisanty et al., 2019) to address environmental and social risks and safeguard the sector's sustainability. Previous studies on thermal tourism in general and the Hammam Rebi complex in particular emphasise the urgent need for comprehensive assessments of existing infrastructure and therapeutic services, as well as investigations into the causes of weak tourism activation, insufficient promotion, and limited innovation in tourism products—especially with respect to attracting new segments such as youth. Further attention should be given to the study of digital marketing strategies (Mkwizu, 2020) and the training of personnel in both the health and tourism sectors as critical factors for enhancing quality (Grenčíková et al., 2013; Ribeiro et al., 2020) and competitiveness (Romanova et al., 2016). Moreover, there is a pressing need to analyse the impact of governmental policies and development plans (Vujko & Gajić, 2014) on thermal tourism development in the region, with a focus on the economic, social, and environmental dimensions influencing the sustainability of this vital sector (García & López, 2024). This calls for integrated applied research to support the formulation of effective strategies for advancing tourism at Hammam Rebi.

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