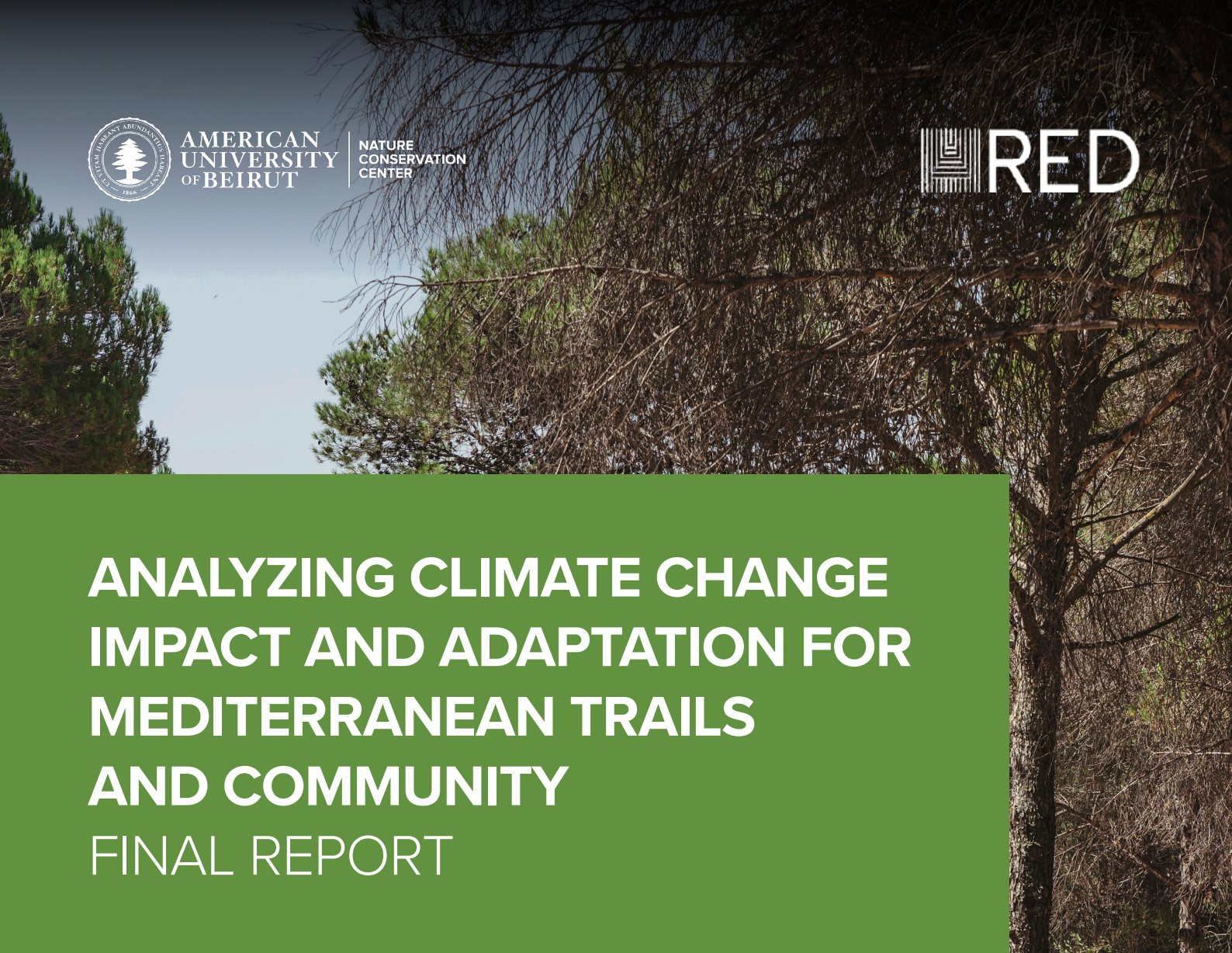

AMERICAN UNIVERSITY OF BEIRUT | NATURE CONSERVATION CENTER

RED

ANALYZING CLIMATE CHANGE IMPACT AND ADAPTATION FOR MEDITERRANEAN TRAILS AND COMMUNITY

FINAL REPORT

March 2025

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In partnership with

RÉPUBLIQUE FRANÇAISE Liberté Égalité Fraternité

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درب الأردن JORDAN TRAIL

درب الجبل اللبناني LEBANON MOUNTAIN TRAIL

مسار فلسطين التراثي Palestinian Heritage Trail

Tétraktys

الرؤيا الفلسطينية PALESTINIAN VISION

Med Trails Network

This report was developed in 2025 by the American University of Beirut – Nature Conservation Center and Agency RED for AFRAT and the members of the Med Trails Network.

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EXECUTIVE SUMMARY

This project aims to support members of the Med Trails Network in assessing how climate change is transforming community-based tourism along long-distance hiking trails in Lebanon, Jordan, and Palestine. By identifying key climatic threats, the research informs adaptation measures to enhance community resilience.

Using the Climate Vulnerability and Capacity Analysis (CVCA) framework, the research combines a range of sources to complement scientific knowledge with localized information. Data collection included secondary and primary sources such as desk reviews, participatory workshops with locals, and Key Informant Interviews (KIIs) with 13 stakeholders in climate change, tourism, agriculture, and gender. The collected data was then analyzed using descriptive, qualitative, and comparative methods to summarize the main climatic conditions and their impacts, identify themes around climate change, and highlight similarities and differences between the three cases.

Findings highlight that the main climatic changes in the three countries include irregular precipitation patterns, high heat and an increased frequency and intensity of extreme weather events. These changes have context-specific impacts on ecosystems, human health and wellbeing, infrastructure, food security, water availability and quality, tourism, and consequently the economy.

Amid these challenges, several governing bodies, supporting stakeholders and local actors are leading climate adaptation efforts. Response measures are being implemented both strategically at the national level through national adaptation plans and regulatory frameworks, and at the grassroots level through smaller actions such as the work of Civil Defense and local communities.

However, many common barriers are limiting the capacity of communities to adapt to climate change, including poverty, urban expansion, lack of awareness, lack of financial resources, unsustainable practices and inadequate governance. Additionally, some barriers are country-specific, for example the Israeli occupation is a unique restriction in Palestine.

A gender-sensitive lens was applied throughout the project to examine how structural inequalities exacerbate the vulnerability of women to climate change. Disparities linked to patriarchal norms, legal discrimination, and unequal access to resources limit women's participation in the labor market, decision-making, and climate adaptation. These intersecting barriers leave women disproportionately affected by climate change, and highlight the urgent need to address them to build resilient communities.

A report was produced summarizing key findings, followed by proposed actions for trail associations aimed at strengthening community resilience by raising awareness, creating and communicating localized knowledge, investing in infrastructure, building capacities, restoring lands and promoting gender equality.

This research contributes to a broader regional effort to develop climate adaptation tools for long-distance hiking trails. By combining scientific data with local insights, this work supports members of the Med Trails Network and equips them with actionable strategies to enhance the resilience of community-based tourism amid a changing climate.

PROJECT INTRODUCTION

The Levant region is increasingly vulnerable to a wide variety of threats, the most alarming being the growing impact of climate change. Globally, climate-induced deforestation, wildfires, water scarcity, biodiversity degradation and soil erosion, pose risks to hiking trails, hikers and surrounding local communities.

Despite the growing recognition of climate risks, there is limited research on how climate change specifically impacts long-distance hiking trails and community-based tourism in the Mediterranean region. To address this gap, Agence Française de Développement (AFD) funded the "Emergence of the First Trails Network for the Mediterranean" project, implemented in France, Jordan, Palestine and Lebanon. The project aims to create a common regional tool to address the challenges of managing, structuring, promoting, and revitalizing long-distance hiking trails especially in a climate change context. Ultimately, the project is designed to promote the sustainable development of rural areas through hiking-related tourism.

Among the consortium of associations implementing the project, The Association pour la Formation des Ruraux aux Activités de Tourisme (AFRAT) — a pioneering French organization in the development of rural tourism — sought to engage a consultant to provide technical assistance to members of the Med Trails Network to analyze climate change impact and adaptation for trails and community-based tourism in Mediterranean countries.

In collaboration with trail associations in the three countries, the "Technical Assistance to the Med Trails Network in Analyzing Climate Change Impact and Adaptation for Mediterranean Trail and Community-Based Tourism" project aimed to identify pressing climate-related threats, risks, and resilience capacities, while also highlighting sustainable adaptation practices for stakeholders in Lebanon, Jordan, and Palestine. The primary focus in each country was the long-distance hiking trail with an in-depth case study in Baskinta (Lebanon), Ajloun (Jordan), and Jericho (Palestine) respectively.

PARTNERS

The study was conducted collectively by the American University of Beirut Nature Conservation Center (AUB-NCC) and Agency RED. Building on AUB-NCC's multidisciplinary research and community-based initiatives, and RED's global action in development, a participatory approach was adopted to reflect the diversity and ensure the inclusion of all stakeholders. The multidisciplinary team aimed to optimize the impact of the research and ultimately contribute to empowering communities along the trails, equipping them with the necessary tools to confront climate change challenges.

METHODOLOGY

STUDY AREA

The study focuses on three long-distance hiking trails: the Lebanon Mountain Trail, the Jordan Trail and the Palestinian Heritage Trail. In addition to research happening at the national level, an in-depth case study is provided for each country. The selection of communities for the case studies was based on the following criteria:

- The strength of the connection between the community and the trail and land
- The diversity and active participation of community members, including women and youth
- The visibility of climate manifestations strongly affecting the natural environment

Following investigations and consultations with the trail associations, the three selected communities were respectively:

- **Baskinta (Lebanon)**
- **Ajloun (Jordan)**
- **Jericho (Palestine)**

The trail associations specifically requested a targeted focus on the impact of climate change on agriculture and agritourism within these areas.

Figure 1. Regional map of the 3 trails

Table 1. Contextual background of the 3 countries

Element	Lebanon	Jordan	Palestine
Altitudinal range	0-3088m	-408-1854m	-429-1030m
Main attractions	Mountains, forests and water bodies	Desert and highlands	Traditional agricultural orchards
Human development index ranking [1]	109	99	111
Population [2]	5.77 Million	11.4 Million	5.1 Million
Gross Domestic Product per capita [3]	$ 3,654.4	$ 4,455.5	$ 3,372.3
Main economic sector	Tourism	Trade	Agriculture

RESEARCH QUESTIONS

The research was guided by two leading questions based on the Terms of Reference and inception meetings held with AFRAT. The following primary questions were addressed in the project:

- How is climate change transforming community-based tourism along the Med Trails Network?
- How can the Med Trails Network enhance the adaptive capacity of tourism-dependent communities?

The research team started by exploring the impacts of climate change on community-based tourism in Lebanon, Jordan, and Palestine separately. These impacts were studied on different axes including its cultural components, tourism trends and patterns, trail infrastructure, economy, and the society with its cultural component. Moreover, the most vulnerable groups to climate change were identified. This baseline analysis helped the research team develop pathways to enhance the adaptive capacity of tourism communities.

DATA COLLECTION AND ANALYSIS

Data collection and analysis followed the Climate Vulnerability and Capacity Analysis (CVCA) framework. This method, developed by CARE International, relies on qualitative data collection across three axes to assess community perceptions of climate change, explore current and projected conditions, and identify adaptation pathways:

1. **Desk reviews,** combining academic literature and other secondary data from relevant sources to build a foundational understanding of climate impacts
2. **Participatory workshops,** with 35 community members in Lebanon, 13 in Jordan and 14 in Palestine, showcasing diverse local perspectives and allowing the extraction of existing knowledge from local communities about climate change and its effects
3. **Key informant interviews,** with 13 regional and national experts in tourism, climate change, agriculture and gender, to validate findings and ensure scientific accuracy

Figure 2. Photos from the Participatory Workshops in Baskinta, Ajloun and Jericho

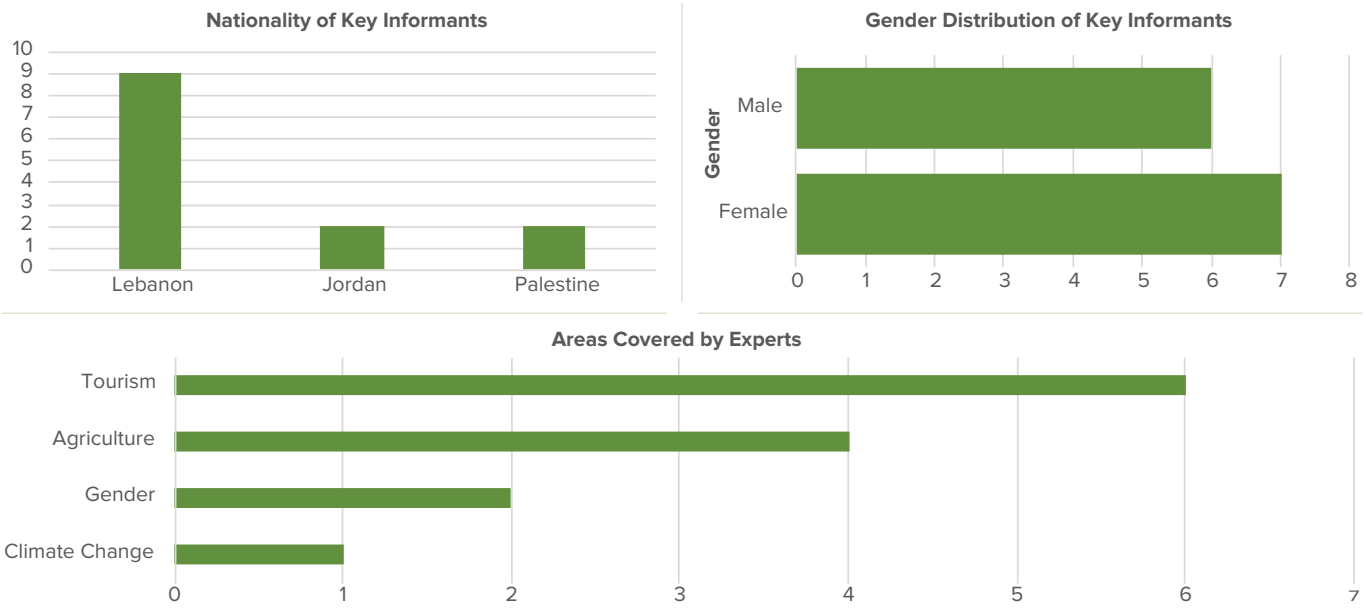


Figure 3. Demographics on Key Informant Interviews

The analysis phase of the CVCA framework combines the data collected from different sources to understand how communities are affected by climate change. This stage involves answering key guiding questions outlined in the CVCA Handbook using three main methods:[4]

- **Descriptive** summarizing the main climatic conditions and their impacts
- **Qualitative** identifying themes and narratives around climate change
- **Comparative** highlighting similarities and differences between the three cases

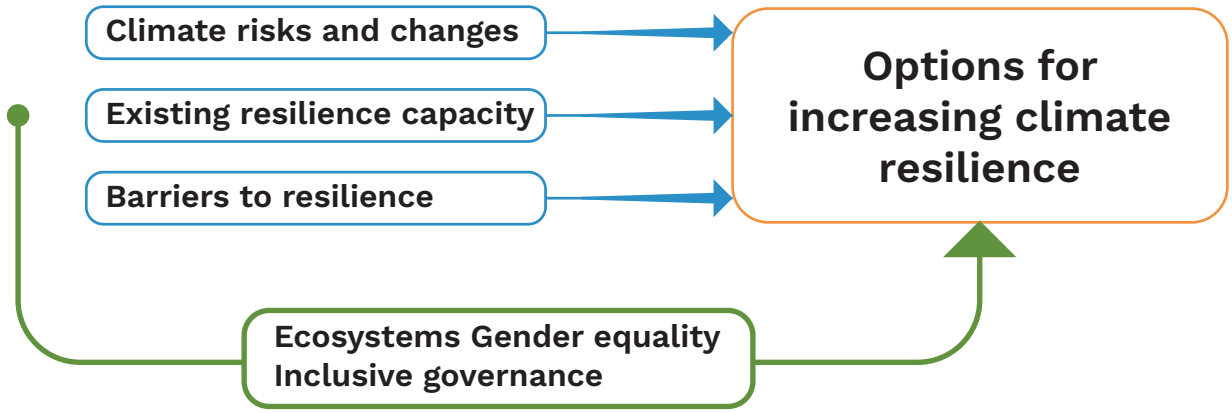


Figure 4. Key issues for analysis adapted from the CVCA Handbook

Once key findings have been analyzed and summarized, a list of proposed options to increase climate resilience for the specified community is developed.

Further details on data collection and analysis can be found in Appendix 1 (Vulnerability Assessment Tool).

ADVANTAGES AND LIMITATIONS OF THE METHODOLOGY

The main advantage of the CVCA is its ability to combine a range of data sources to provide a comprehensive understanding of the impacts of climate change on communities. By complementing scientific knowledge with localized information, adaptation strategies can be co-designed with communities and tailored to the specific context. Another key advantage is the participatory and inclusive approach adopted throughout to ensure that the local knowledge and capacities of communities are documented and preserved.

The following limitations were identified throughout the project:

- The absence of localized information and systematic open-access databases at the case study level, limited the historical and contextual depth of the desk reviews.
- Variation in community participation dynamics resulted in the limited involvement of important stakeholders including governmental actors who could have contributed valuable policy and strategic insights.
- Logistical and financial constraints hindered the inclusion of observational visits and led to workshops compressed schedules, leaving some aspects insufficiently addressed.

Together, these limitations underscore the need for future research to adopt a more integrated approach, incorporating diverse data sources, enhanced stakeholder engagement, and field-based observations to provide a more holistic understanding of the subject matter.

REPLICATION IN FUTURE RESEARCH

The success of the methodology helped us compile the recommendations below to engage local communities in future projects:

- **Unification of data collection processes**

  In case the methodology is replicated in multiple regions, the team moderating the participatory workshops must receive the same training to ensure that processes including tools, format and logistics are standardized.

- **Simplification of training material**

  Translate workshop material and tools into formats that are accessible to all participants. This may require the translation of content into local dialects, visualizing complex elements.

- **Creation of stakeholder databases**

  Develop a contact database to serve for data collection. This will help invite participants from the local community to the workshops and identify experts for interviews. In case of longitudinal studies, the same stakeholders should be engaged at different points in time.

- **Enhancement of stakeholder participation**

  Provide financial incentives, such as transportation allowances or per diems, to encourage broader stakeholder participation in workshops. Also, ensure the selection of diverse actors to represent different perspectives in the community.

- **Dissemination of Knowledge**

  Document and communicate best practices related to the methodology to facilitate its adoption in similar contexts. This includes using multimedia and various channels including websites, social media, and publications to communicate the benefits of the methodology and the findings it yields.

NATIONAL OVERVIEW OF CLIMATE CHANGE

CLIMATIC THREATS AND IMPACTS

Climatic Changes

The current and future climatic changes can be focused on three main trends in Lebanon, Jordan and Palestine:

1. Irregular precipitation

Lebanon has experienced an average annual decline of 11 mm in precipitation since 1950, with climate projections indicating a potential decrease of 10–45 percent by 2090.[5] Additionally, snow cover is expected to decline by 40–70 percent, the snowfall elevation may rise to 1,900 meters, and snow residence time could shorten from 110 days to 45 days.[6] Although total annual rainfall has not shown drastic changes across years, precipitation is occurring more intensely over shorter periods. This irregular rainfall disrupts groundwater recharge and contributes to water shortages in households.

In Jordan, precipitation is increasing slightly with less than 1 mm/month in the near-term (2021- 2040). The frequency of heavy rainfall events, with daily precipitation exceeding 20 mm, is also projected to increase. However, ESCWA's long-term climate projections modeling shows significant decreases in precipitation, increasing variability in the distribution, timing, and quantity of rainfall, and ultimately increased drought occurrence, length, and severity.[7]

In Palestine, there is very low confidence that annual and seasonal rainfall totals have changed over the past 50 years. However, climate projection models suggest that under high-emission scenarios, rainfall could decrease by approximately 20% by 2055 and 30% by 2090. In contrast, under low-emission scenarios, rainfall patterns are expected to remain relatively stable, with a slight increase in the likelihood of both flooding and drought periods.[8] [9] [10]

2. Extreme heat

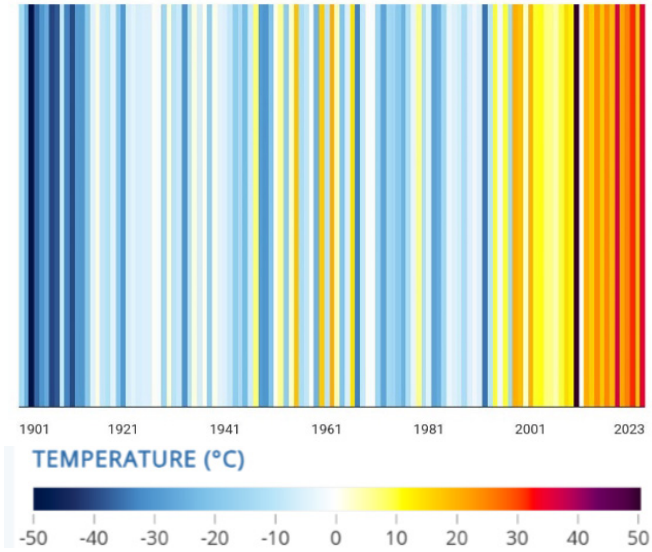


Figure 5. Observed annual average mean surface air temperature in Lebanon

Source: Climate Change Knowledge Portal

Lebanon has been experiencing an increase in average monthly temperature of 1.6°C since 1901.[62] Temperature is expected to continue increasing by up to 5°C by 2100.2 Additionally, the number of hot days with temperatures higher than 35°C will increase from 14 days in 2014 to reach 25 days by 2040.[9] [12]

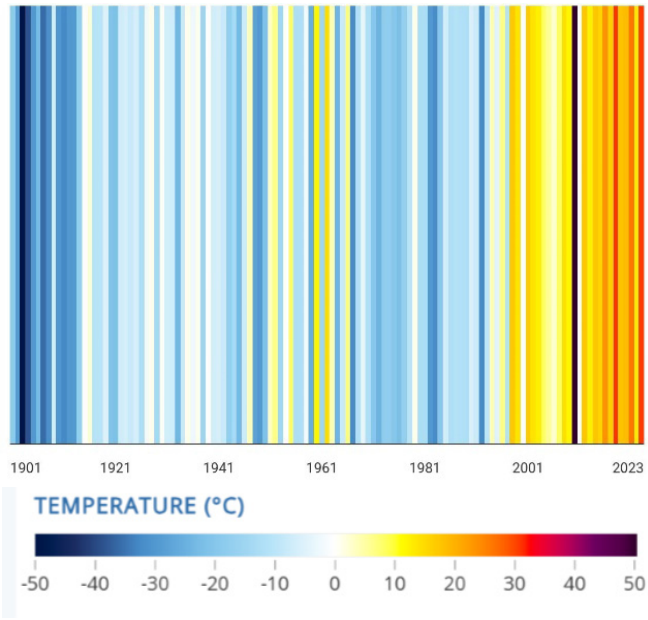


Figure 6. Observed annual average mean surface air temperature in Jordan

Source: Climate Change Knowledge Portal

In Jordan, various climate change scenarios expect average temperatures to become warmer and reach up to 2.5 °C by 2030, 3.1 °C by 2050 and up to 4.5 °C by 2080.[7] [61] Additionally, the number of hot days with temperatures above 35 °C is expected to increase all over Jordan. While the average was 15 extremely hot days in 2000, it is expected to reach 26 days by 2030, and up to 71 by 2080.[13]

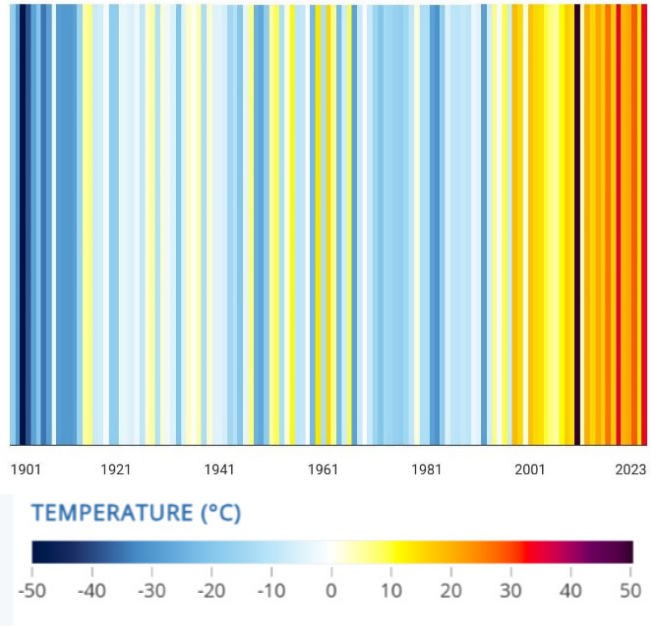


Figure 7. Observed annual average mean surface air temperature in Palestine

Source: Climate Change Knowledge Portal

For Palestine, data dating back to the 1960s indicates an annual average temperature increase of 1°C, with a more pronounced rise being observed since the 1990s.[10] [59] Based on climate projections, future temperatures in Palestine are expected to increase between 2 and 4.5°C by 2090, along with an increase in the number of hot days, exceeding 35°C.[8] [9] [60]

3. Extreme weather events

In Lebanon, the frequency of extreme weather events is projected to increase from 4 incidents to 25 incidents per year.[11] The occurrence of windstorms, floods, landslides and other natural hazards has significantly increased in recent years.[12] Heatwaves are also increasing with consecutive series of hot days occurring earlier in the spring and more frequently throughout the year.[9]

Similarly, in Jordan, the increasing frequency and intensity of droughts, driven by irregular precipitation, have worsened the risk of floods.[13] Both fluvial and pluvial floodings have been increasing throughout the country, impacting infrastructure, agriculture, water availability, and labor productivity.[14] There has also been a noticeable increase in the frequency of dust storms.[13]

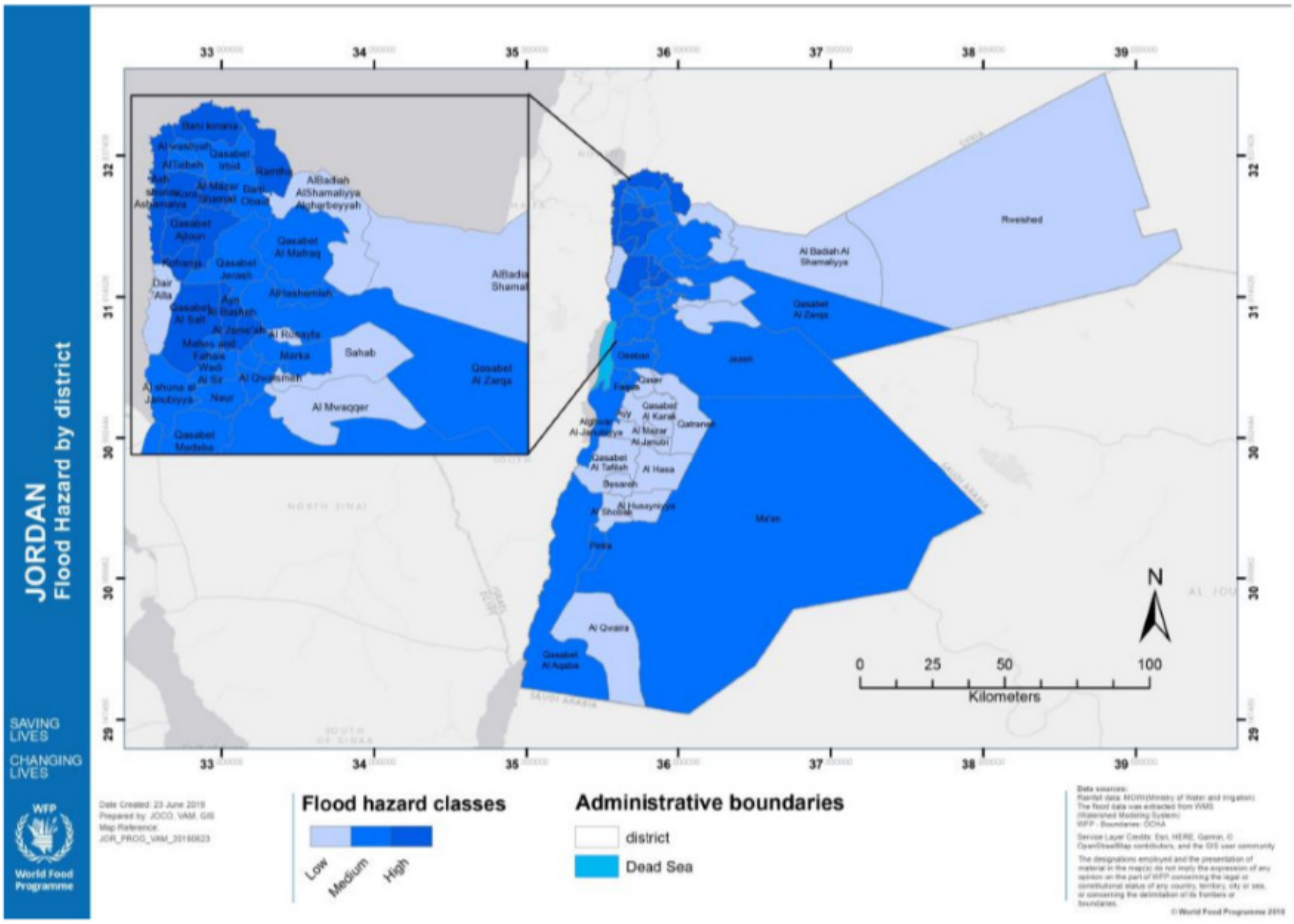


Figure 8. Flood hazard map for Jordan

Source: WFP, 2019 [20]

Whereas in Palestine, heavy rainfall has become more common, leading to an increase in the frequency of flash floods and the occurrence of storms, particularly in northwest Palestine.[15] The increasing exposure to natural hazards is especially linked to more frequent and intense droughts, heatwaves and floods.[10]

Climate Change Impacts and Pressing Threats

While climatic changes do not affect all sectors and all communities equally, what is common across all contexts is that existing vulnerabilities are accentuated and exacerbated by climate change.

Ecosystems:

Wildfires

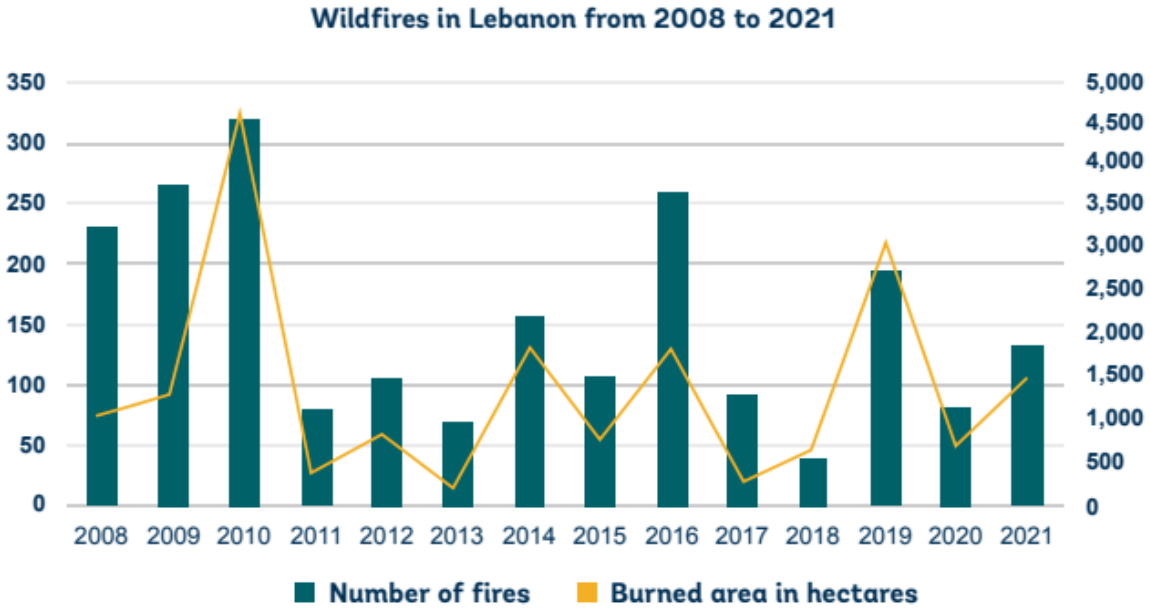


Figure 9. Wildfires in Lebanon from 2008 to 2021

Source: World Bank, 2023 [22]

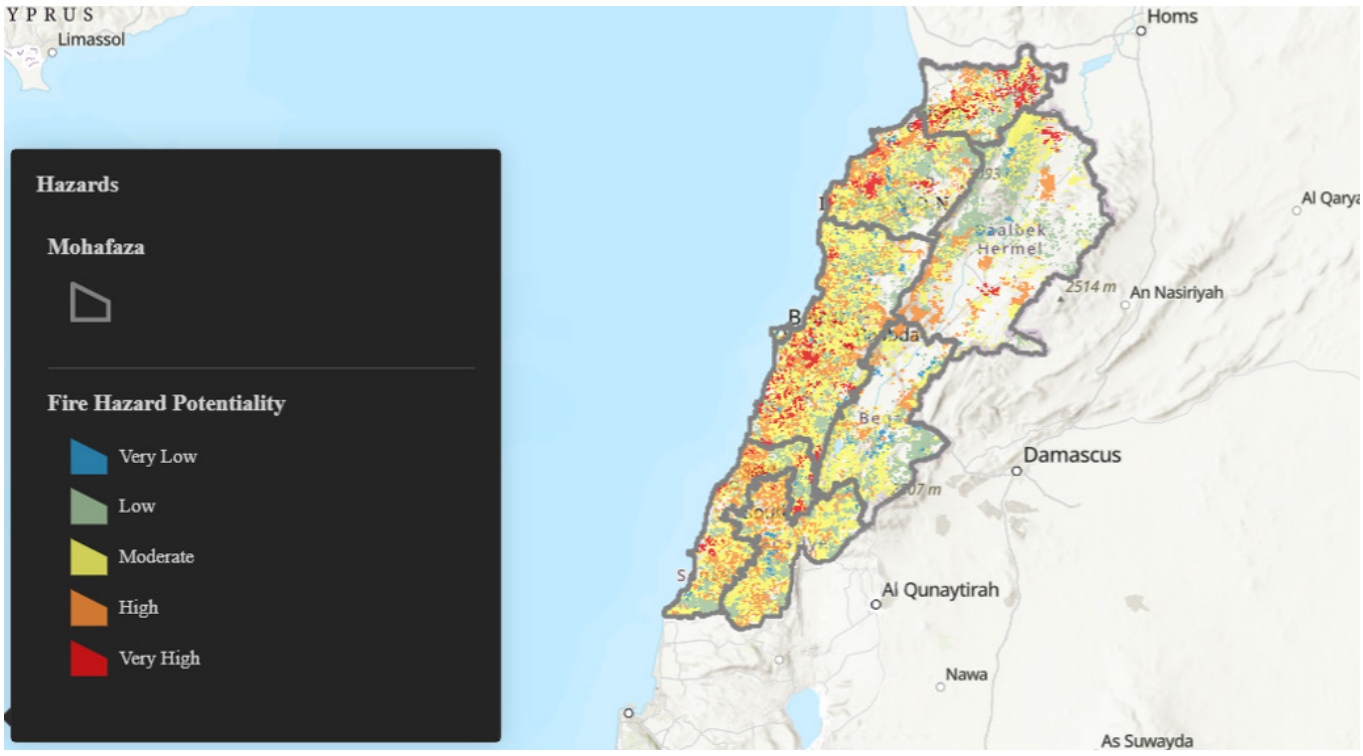


Figure 10 Fire hazard map in Lebanon

Source: CNRS, 2025 [23]

Climate change is expected to more than double the risk of extreme fire-weather conditions, further threatening Lebanese forests and the biodiversity they support.[16] Lebanon has lost approximately 1,500 to 2,000 hectares (equivalent to 2100-2800 football fields) of its forests annually to wildfires and deforestation in the past 50 years.[2] Many of the fires also affected hiking trails, especially in North Lebanon reducing the attractiveness of surrounding landscapes for tourism.

In Jordan's highlands, wildfires have also been occurring more frequently and with greater intensity as reported by locals. This threat leads to the degradation of ecosystems and natural touristic attractions.

Desertification

Climate change is also expected to exacerbate desertification in the region. In the Jordan valley, longer dry periods are degrading soil quality and reducing the length of time rangelands can be grazed, which threatens local livelihoods.[16] In Jordan and Palestine, reduced rainfall has also led to desertification and the transformation of forests into arid landscapes hosting a different biological diversity.[17]

Invasive species

Increasing temperatures are also expected to allow some species to thrive while others decline. Mice, rats and their predators like jackals and foxes are expected to thrive in hotter conditions in Lebanon. On the other hand, the Lebanese cedar and Cilician fir are predicted to recede, and many mammals that live in wetter environments such as otters are projected to face extinction.[18]

In Jordan, riverine systems and forests will become at higher risk of being converted into other habitats, with an increasing risk of invasive species. Projections of species richness on the medium (2050) and long-term (2080) indicate a significant decline of 14 and 19% respectively in comparison with 2010.[13]

Another aspect identified in Palestine is that increasing sea temperatures will facilitate the expansion of invasive species along the eastern Mediterranean, negatively impacting local fisheries.[19]

Sea level rise

Coastal water resources are also being impacted and will continue to do so in the future. Sea levels in Lebanon's coastal areas have been continuously rising and are expected to rise by 30 to 60 cm over the next 30 years. This increases the risk of seawater intrusion into aquifers, leading to their salinization. Additionally, coastal flooding and erosions will lead to the degradation of coastal ecosystems and natural reserves.[2]

Whereas in Palestine, rising sea levels, reduced rainfall, and saltwater intrusion are slowing the recharge of aquifers in the West Bank. This would exacerbate the West Bank's reliance on Israel for water, making Palestinian communities more vulnerable to climate change impacts.[10]

Human health:

Extreme weather events such as high heat, droughts, sandstorms, forest fires, and landslides cause health complications upon exposure. These include cardiovascular diseases, vector borne diseases, stress, respiratory problems, dehydration, direct injuries, and more.[13] [20] [21] [22] Local communities in the three countries also highlighted the impact of climate change on their well-being, productivity and mental health.

The impacts of climate change are not just limited to direct physical and mental health concerns; they also disrupt sanitation systems essential for public health. Floods, for example, can damage sanitation infrastructure, leading to outbreaks of waterborne diseases.[8] In Palestine, the lack of safe drinking water and inadequate sanitation services have particularly impacted vulnerable populations, especially women and children.[9] [10] [21]

The severity of these risks is underscored by tragic events, such as the flash floods in October 2018 along the Dead Sea. Unusually heavy rains triggered catastrophic flooding, resulting in the loss of at least 21 lives when a bus was swept away.[13] Similarly, in Petra and Wadi Musa, flash floods caused water levels to rise to dangerous heights, posing life-threatening risks, particularly to tourists.[25]

Infrastructure:

With high flood risk, Lebanon's road assets are increasingly vulnerable to climate impacts, with 54% exposed to landslides, which damage infrastructure, disrupting transport of goods and mobility of people.[9] Extreme rainfall particularly affects streets and highways with poor stormwater run-off infrastructure, causing yearly flash flooding, accidents, and vehicle inundation. Many sections of the LMT are prone to degradation because of heavy rain and erosion. Furthermore, Lebanese seaports and the airport are also vulnerable to sea level rise.[5] In fact, rising sea levels and extreme weather events can lead to coastal erosion damage to critical infrastructure.[29]

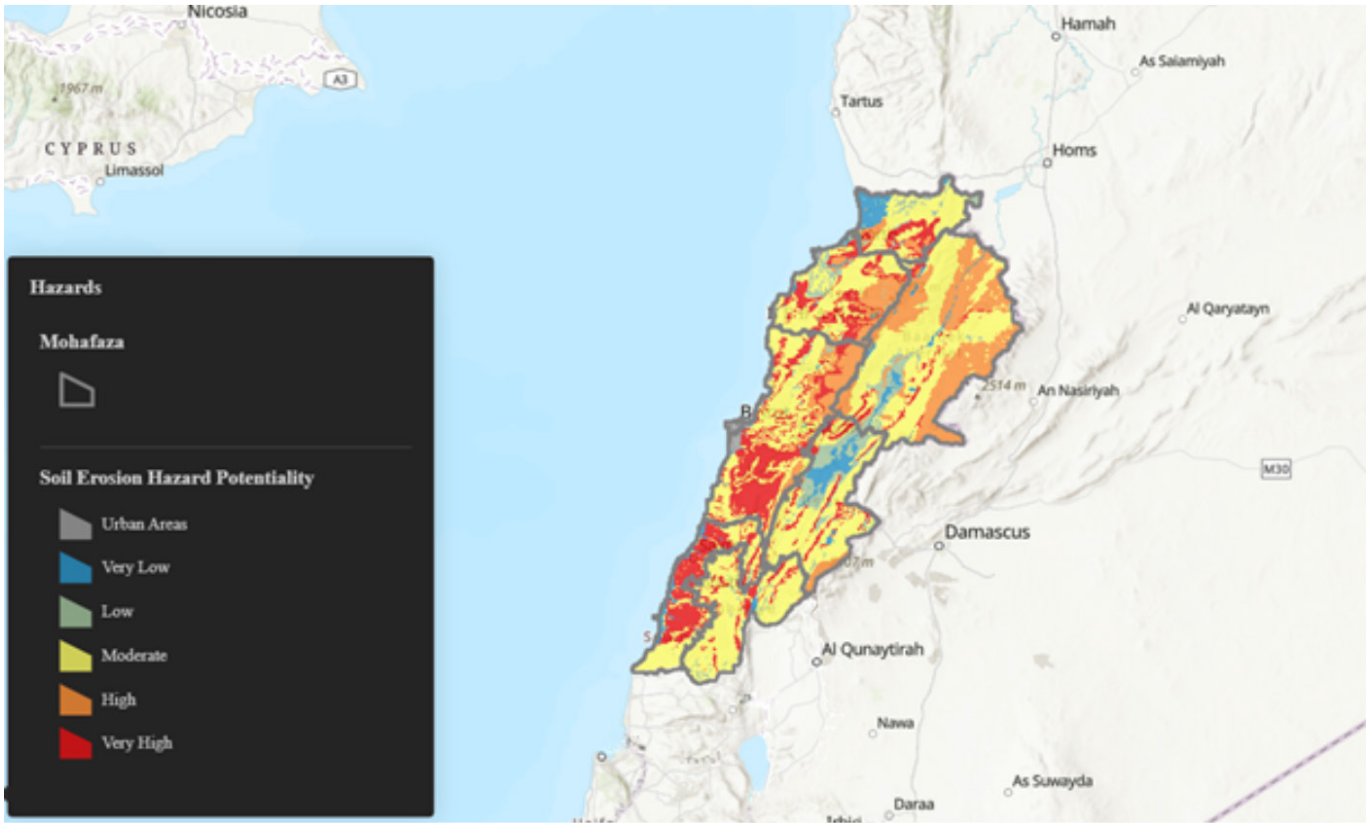


Figure 11. Soil erosion risk map in Lebanon

Source: CNRS, 2025

In Jordan, climate change is anticipated to negatively impact infrastructure— including buildings, transportation systems, and energy networks, particularly through extreme weather events such as floods and heatwaves. For instance, high temperatures can cause roads, bridges, and protective structures to crack and deteriorate more quickly, leading to significant maintenance and replacement costs.[13]

In Palestine, extreme weather events damage infrastructure and property, resulting in substantial economic losses.[10] [23] Floods for example have already led to the evacuation of thousands of people from their homes.[30] Moreover, they increase risks for vulnerable groups especially under conditions of water scarcity, agricultural pressures, and health risks.[24]

Food security:

In many regions, including the Levant, changing climatic patterns have led to reduced crop yields, intensified pest pressures, loss of pollinators, and altered growing seasons. These disruptions have placed a significant strain on farmers, ultimately resulting in food insecurity and economic distress for farmers.[26] [29] Additionally, wild edible plants that locals forage and rely on as an essential element in their diet are increasingly threatened by climate change as they fail to grow under changing conditions.

It is worth noting however, that some pantry products positively affected, to a certain extent, by climate change. For example, high heat allows faster and more efficient production and drying of 'Kishk', herbs and fruits that some rural livelihoods depend on.

In Jordan, the situation is similar as climate change exacerbates water scarcity, further degrading arable land and undermining agricultural productivity. Reduced water availability negatively affects Jordan's food security and economy.[13] Additionally, desertification threatens the honey industry, reducing both the quantity and quality of honey produced.[25]

In Palestine, reduced agricultural productivity leads to a loss of income for farmers, and increased food insecurity. Climate change directly exacerbates food insecurity, an issue already affecting vast populations in the West Bank and Gaza. As of April 2023, 63% of Palestinians were already food insecure due to limited arable land and water resources, as well as restrictions on movement and access to markets.[10] [32] Reduced agricultural output results in lost income for farmers and rising food prices, further deepening the cycle of poverty and insecurity.

Water availability and quality:

Irregular precipitation patterns will exacerbate existing water shortages that are already under pressure from urbanization and population growth. Moreover, water quality is at risk due to rising sea levels and the increasing threat of saltwater intrusion into groundwater aquifers.[10] A decline in water availability not only means reduced drinking water supply but also disrupted agricultural production, inefficient hydropower generation, and heightened risk of food insecurity.[29]

In Jordan, climate change is also exacerbating water scarcity, decreasing its availability for agriculture, households and industries. In fact, per capita water availability is projected to decline by 30% by 2040. Climate change is also increasing the frequency and intensity of droughts in Jordan. Multi-year droughts will become the new normal.[19] With the decrease in freshwater availability, Jordanian communities might also be compelled to use contaminated water or reduce their water usage for hygiene and sanitation, increasing the risk of water- and food-borne diseases such as diarrhea.[25] [26]

Climate change will likely worsen existing water stress challenges in Palestine and may lead to increased competition and tension with neighboring countries, especially ones that share transboundary river basins, such as along the Jordan and Yarmouk Rivers.[27] Moreover, as freshwater resources in Palestine are predicted to become scarcer, major inequalities in water availability between Palestine and Israel further intensify political tensions.[32]

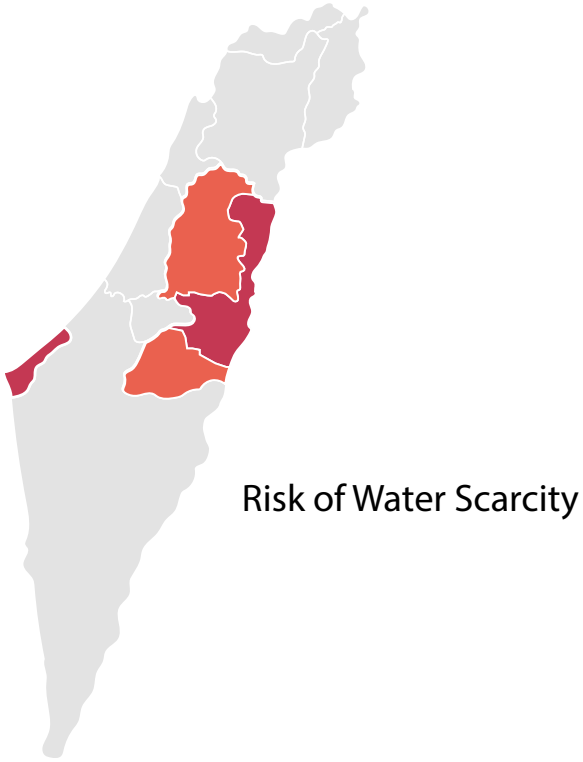


Figure 12. Risk of Water Scarcity in the West Bank and Gaza

Source: World Bank, 2023[10]

Tourism:

Climate change affects the entire value chain of community-based tourism; from tour operators, to tourists, service providers, guesthouses, local businesses, farmers, and others.

In Lebanon, spring (March-May) and fall (September-November) were mentioned as the most suitable seasons for hiking based on a survey conducted by LMTA. However, climate change and the loss of seasonality place this pattern at risk. Hikers have expressed growing concern over the long-term viability of their activities as extreme weather events become more frequent. Additionally, winter sports, a vital economic driver for mountain communities, face uncertainty due to reduced snowfall and shorter snow residence. Extreme weather events further exacerbate the situation by deteriorating trail conditions and reducing accessibility.[29]

In Jordan, climate change threatens the tourism sector as natural resources are undergo continuous degradation,, reducing their attractiveness to tourists.[28] Hotter summer temperatures discourage tourists from visiting outdoor sites during periods of extreme heat, while altered weather patterns have disrupted the flowering cycles of emblematic plants admired by tourists, such as Irises.[25 36] Moreover, extreme weather events such as storms and floods, have significantly affected tourism infrastructure and visitors' safety. These events have disrupted tourist activities, leading to the cancellation of trips and tours.[25]

Figure 13. Jordan Black Iris *(Iris nigricans)*

Source: Heleen Van Der Beek

In Palestine, tourism infrastructure limitations are further compounded by climate change. Visitors frequently choose to stay overnight in Israel, where facilities are more developed, and make short day trips to Palestine, leading to an economic imbalance. Rising temperatures make tourists less likely to spend time in under-resourced tourist markets.[29] Additionally, the agritourism sector is heavily influenced by changing agricultural patterns, as shifts in temperature and precipitation patterns affect agricultural cycles and expose farmers, outdoor laborers, and eco-tourism operators to severe health risks associated with extreme heat.[10]

Economy:

GDP

In Lebanon, the total estimated cost from direct damage and lost GDP that will be borne by the government by 2080 is projected at $44,300 million and the total amount the country is expected to lose around $23,200 million from climate change risks. On the household level, an average annual cost of $107,200 per household will be borne on families in 2080 due to increased energy demands.[10] These escalating costs pose a significant threat to economic stability, by increasing pressure on both public finances and local livelihoods.

Similarly in Jordan, climatic projections indicate that GDP exposure to heatwaves could range from 2.2% and 18.3%, with a best estimate of 8.45%, by 2080.[13] Additionally, water scarcity could reduce Jordan's GDP by 6.8%, amounting to $2.6 billion.[19] As water becomes scarcer, sectors like agriculture and tourism will face additional operational costs, constraining their potential for sustainable long-term growth.

In Palestine, climate damages are expected to cost approximately 4–6% of GDP annually between 2022 and 2040. This equates to over US$803 million per year from 2022 to 2025. In the absence of additional shocks, these damages would reduce annual GDP growth to an average of 3.0% per year over the period 2022–2030.[10]

Agriculture

In Lebanon, the cost of agricultural damages is estimated to be highest in the winter and summer, costing around USD 131 million and USD 129 million respectively.[30] In a worst-case scenario, the damage to Lebanese agricultural sectors in a year could reach USD 605 million.[38] Rising local temperatures are challenging the ability of beehives to survive hotter summers in Lebanon, which leads to losses in the economy. Similarly, shepherds have been forced to purchase fodder for their animals, due to the loss of pasture caused by reduced rain and high heat. This in turn delays agritourism activities that many households depend on for their livelihoods.

In Jordan, freshwater scarcity is currently impacting the productivity of the agricultural sector and promoting the spread of pests and diseases. For example, during the 1999/2000 drought, only 30% of the annual average precipitation was recorded, causing a 60% decline in rain-fed crop yields.[13] Moreover, with climate change, farmers are expected to increase irrigated agriculture by 5 to 20% by 2070.[34] In terms of olive oil production, climate change is expected to decrease yields from 5 to 10%, all while degrading the quality.[34] Without adaptation, Jordan's agricultural sector is at risk of increasing vulnerability, with potential consequences on food prices, rural employment, and exports.

In Palestine, changing climate patterns directly alter agricultural seasons and yields, with low rainfall postponing planting dates, and low temperatures delaying maturation and harvesting. The delay of the growing season reduces Palestine's global advantage as an early exporter of flowers, fruits and vegetables. This undermines Palestine's agricultural sector and its competitive advantage over countries in colder climates.[8 10]

Private sector

Lebanon's urban areas, where most firms are located, are highly impacted by high heat, which heightens energy demands (and costs) for cooling systems. Moreover, due to urban heat island, potential economic costs from reduced worker productivity and earnings are expected to rise from USD 43 million in 2020 to USD 1,400 million in 2080.[31]

Similarly in Jordan, climate change is intensifying operational costs and resource demand, especially in the tourism sector. Guesthouses, for example, must bear high air conditioning costs during extremely high or low temperatures, which directly impacts their profit margin.[25]

Climate change has also been posing serious risks to the Palestinian private sector. About 10% of firms in the West Bank and Gaza report having already experienced monetary losses due to extreme weather events such as storms, floods, droughts, and landslides.[10] Unlike Lebanon and Jordan, Palestine faces additional vulnerabilities due to restricted access to natural resources and infrastructure, which limits the capacity of its private sector to adapt.

CLIMATE ACTION FOR ADAPTATION

Stakeholders Involved

The main stakeholders involved in climate adaptation of community-based tourism in the three countries can be grouped as follows:

Governing Bodies		
Set policies, regulate land use, and oversee environmental protection and rural development		
Ministry of Tourism	**Ministry of Environment**	**Ministry of Agriculture**

Supporting Stakeholders				
Provide research, funding, technical expertise, and implement projects that enhance climate resilience				
Trail Associations	**Donors and Funding Agencies**	**NGOs**	**UN Agencies**	**Research Institutes**

Local Actors				
Preserve natural and cultural heritage, and contribute to local adaptive practices				
Municipalities and Unions	**Civil Defense**	**Local Guides**	**Businesses**	**Community Members**

Main Adaptation Measures

In all three countries, the government and civil society are playing an active role in climate adaptation on the governmental and grassroots level. However, it is worth noting that existing adaptation strategies such as National Adaptation Plans, emergency response measures and local know-how, are becoming less effective amid the constant landscape degradation.

Lebanon:

The Ministry of Environment (MoE) is considered the focal point of climate change development in Lebanon and is naturally most involved in these projects. Moreover, the United Nations Development Program (UNDP) works heavily with the MoE and supports it in carrying out project goals. Many projects involve the collaboration of other ministries and other external initiatives, centers, and funding bodies.[16]

Lebanon has been a Party to the United Nations Framework Convention on Climate Change (UNFCCC) since 1994, and ratified both the Kyoto Protocol and the Paris Agreement.[16] The Lebanese Government submitted its updated Nationally Determined Contributions in 2021, which serves as a guiding document for Lebanon's priorities and plans. However today, Lebanon does not have comprehensive piece of legislation that targets climate change directly, yet work is being done to submit National Adaptation Plan. Moreover, Lebanon has several laws issued to further develop environmentally sound practices across different sectors.

On a community level, there is a high level of awareness and concern about climate change and its negative impacts on people among tourism stakeholders.[29] However, in many cases, community responses are reactive and event-driven. For instance, as wildfires made landscapes less attractive along the LMT, the LMTA is now working on fire prevention and restoration of damaged areas.

Additionally, many farmers and businesses started implementing climate adaptation measures in their activities. Identified measures include harvesting rainwater, using smart agriculture (such as drip irrigation, heirloom seeds, mulching) and diversifying income to enhance resilience.

In Baskinta, the work of the civil defense in response to natural disasters is considered the most effective. The team includes a diverse group of local volunteers who are at the forefront of wildfires, landslides, and mountain rescues. Reforestation actions and wildfire prevention measures being undertaken by collectives and NGOs, are also key components in climate mitigation and adaptation. Additionally, the yearly Apple Festival organized in Baskinta promotes agritourism and facilitates the sale of excess apple produce. As a result, the festival improves the livelihoods of farmers and increases their financial resilience.

Jordan:

On a governmental level, Jordan's National Committee on Climate Change (NCCC) is responsible for implementing legal instruments, policies, and strategies related to climate change. The NCCC includes representatives from government sectors, sub-national agencies, civil society, research institutions, universities, and the private sector. In 2014, the Climate Change Directorate (CCD) was established within the Ministry of Environment in order to address climate change issues and establish appropriate policies and partnerships.

Jordan's National Climate Change Policy (NCCP) of 2013–2020 was the first comprehensive climate policy in the MENA region. As such, Jordan was an early mover in the region with regard to ratifying the UNFCCC and submitting its Nationally Determined Contributions (NDCs). Today, Jordan has an updated Climate Change Policy offering strategic orientations for 2022-2050. Jordan also submitted its National Adaption Plan (NAP) in 2021, reiterating the urgency of implementing adaptation measures. Additionally, Jordan has adopted many general and sector-specific climate-related policies and strategies to guide projects.[32] Moreover, the Global Green Growth Institute supports the Jordanian government in developing and implementing its national green growth agenda.

As per JTA's assessment, communities and governmental bodies in Jordan are responding to climatic challenges at an individual and collective level. However, these responses vary significantly from one region to the other.[25] In the agricultural sector, many climate adaptation practices have already been implemented to increase the resilience of farmers to climate change. These include drip irrigation, rainwater harvesting, protected agriculture, and integrated crop-livestock systems as mentioned by an expert from the National Agriculture Research Center (NARC). Moreover, community-based projects like the IFAD-funded ARDI, aim to enhance local resilience through trainings for farmers on sustainable practices.[33] Additionally, traditional agricultural practices such as terraces and ancestral knowledge related to seasonality of crops, passed on by generations of farmers, enable farmers to better prepare to deal with climatic threats to some extent. Similarly, AFD has invested in several projects to increase drinking water supply of the north governorates.[34]

In Ajloun specifically, besides adaptive measures taken by farmers, some households have switched to renewable energy for heating. Moreover, to address water scarcity, the community in Ajloun is collecting this natural resource and storing it in dams. The Royal Society for the Conservation of Nature (RSCN) is also implementing eco-tourism and socio-economic projects that create nature-inspired jobs, supporting both conservation efforts and local economic development to enhance the adaptive capacity of the community.[35]

Palestine:

As Palestine faces changes in annual rainfall, mean temperature, extreme weather events and sea level rise, the Palestinian National Authority (PNA), including all its ministries (Environmental Quality Authority, Palestinian Energy Authority, Palestinian Water Authority, Ministry of Agriculture, Ministry of Planning, and Ministry of Transport) has prioritized climate adaptation.

Other key actors are the United Nations Development Programme (UNDP) which supported the development of the climate change adaptation strategy in Palestine, and the United Nations Environment Programme (UNEP) which is working on Sustainable Consumption and Production.

Under the United Nations Framework Convention on Climate Change (UNFCCC) a Least Developed Country Fund and Expert Group supported Palestine in developing a National Adaptation Plan (NAP) in 2016, following the Palestinian Adaptation Programme of Action (PAPA) and complementary Climate Change Adaptation Strategy for the occupied Palestinian territory. Moreover, Palestine submitted its first Nationally Determined Contributions (NDCs) in 2017.

Palestine also has a National Action Plan to ensure a transition towards circular economy. This plan was created through a participatory approach, involving more than 300 stakeholders.[36] In addition to a National Strategy, an Action Programme and Integrated Financing Strategy to Combat Desertification in the Occupied Palestinian Territory were launched in 2012.

In Jericho, NGOs play a significant role in advancing climate adaptation by empowering local communities. Anera is among the leading NGOs, with a long-standing presence in the region and a broad portfolio of development projects across multiple sectors.[37] At the community level, locals in Jericho are implementing activities at the individual and collective levels to increase their resilience to climate change. For example, farmers are diversifying their income sources and adopting alternative livelihoods by modernizing agricultural practices and cultivating climate-resilient crops.

Moreover, the community has started exploring environmental technologies to address water scarcity and resource degradation. These include the use of renewable energy for heating and cooling, rainwater harvesting, water storage ponds, wastewater reuse, and the construction of channels and swales to divert and manage water flows.

COMPARATIVE CASE STUDIES

CONTEXTUAL BACKGROUND

Baskinta:

Baskinta is 40 kilometers northeast of Beirut with altitudes ranging between 700m and 2628m above sea level. To the east of the area lies the Massif of Mount Sannine, while the west and south are characterized by drainage valleys. Additionally, Baskinta has three natural springs: Nabaa El Laban, Nabaa El Assal, and Nabaa Sannine.[38]

The town is surrounded by about 2 million square meters of wild woodland, predominantly covered by Pine trees *(Pinus pinea)*. Notably, Baskinta has the highest pine forest in the Mediterranean region. Moreover, Baskinta contains rare and endemic plant species such as the Round-leaved sundew *(Drosera rotundifolia)*.[39]

A significant portion of the land is used for agriculture, where plant and animal products are sold raw or locally processed by community groups such as the Baskinta Women's Cooperative. Besides agriculture, tourism is a key sector in the village. Baskinta features three major hiking trails that are part of the Lebanon Mountain Trail (LMT), making it an attractive destination for ecotourism and outdoor recreation. The village is also home to 20 churches and convents, which contribute to the local economy through religious tourism. Furthermore, winter sports such as snowshoeing and skiing are popular seasonal activities in the area.[40]

Figure 14. Map of the Lebanon Mountain Trail

Figure 15. Map of the Lebanon Mountain Trail in Baskinta

Ajloun:

Ajloun lies in the highlands of northern Jordan and is known for its elevated terrain with an average altitude of 720m and peaks reaching up to 1,250m above sea level.[41] The region's climate supports the growth of endemic Mediterranean flora, predominantly composed of evergreen oak shrubs. This region also has the highest proportion of oak and pine forests in the country.[49] The area is also of great importance for 13 endangered plants, such as the Nazareth Iris.[42] [43]Moreover, Ajloun has a forest reserve which has been serving as a protected area for biodiversity conservation since 1978.[44]

The land in Ajloun has long been used for agriculture and livestock herding, sustaining the livelihoods of locals. Today, orchards and small fields are still cultivated using traditional farming techniques.[50]

A range of economic activities exists in the region. Approximately 73% of Ajloun's population is employed in the services sector, with a concentration in public administration and defense. Notably, 46.4% work in compulsory social security, while 15.5% are employed in the education sector.[45]

Figure 16. Map of the Jordan Trail

Figure 17. Map of the Jordan Trail in Ajloun

Jericho:

Jericho is situated at an altitude of 240 meters below sea level, making it the lowest permanently inhabited place on Earth.[46] Jericho's diverse landscape covers residential areas including valley houses, lands where Bedouin communities settle on a seasonal basis to graze their livestock, and fertile agricultural fields.[45]

Jericho was listed among the key biodiversity areas in Palestine as it hosts and abundance of native flora and fauna.[47] [48] Additionally, Jericho has around 80 archeological areas and religious sites that serve as tourist attractions.[56] [49]

Jericho experiences active domestic tourism annually between mid-November and the end of April which contributes significantly to the economy.[56] However, restricted mobility caused by Israeli walls and checkpoints has discouraged international tourism, despite the city's rich heritage.[45]

Figure 18. Map of the Palestinian Heritage Trail

Figure 19. Map of the Palestinian Heritage Trail in Jericho

VULNERABILITIES AND OPTIONS TO INCREASE RESILIENCE

The direct and indirect vulnerabilities at the case study level were linked to three primary climatic threats. Additionally, resilience-building options were identified across all three cases, covering existing and potential measures that could support locals in their adaptation.

Problem not relevant / Resilient community	
Problem requires intervention / Vulnerable community	
Prominent problem / Highly vulnerable community	

Climatic Threat	Threats	Relevance per country			Options to Increase Resilience
		Leb	Jor	Pal	
High intensity precipitation 100mm/hour in Lebanon, 45mm/hour in Jordan 45mm/hour in Palestine[12 53 58]	**Natural environment**				Improving infrastructure by maintaining water canals Rainwater harvesting and storage Using renewable energy for heating Reinforcing first response interventions to facilitate road mobility
	Erosion of soil				
	Harm to animals				
	Waste of water				
	Community				
	Reduced mobility				
	Damage to infrastructure				
	Reduced number of tourists				
	Survival risk				
	Spread of diseases and viruses				
	Displacement				
	Crop failure				
	Economic losses				
	Groundwater pollution				

Low precipitation <700mm/year in Lebanon <300mm/year in Jordan <450mm/year in Palestine With an estimated decrease of precipitation by 90 mm until 2100 under the RCP 8.5 scenario. *In Lebanon, a decrease of 3.1 mm of snow cover per year is projected	**Natural environment**		Investing in Green TVET to train the labor force on new technologies Wastewater treatment and the promotion of its storage and reuse Switching to alternative crops and sustainable agriculture with drip irrigation Harvesting rainwater Building capacities of the community to reduce water losses Diversifying incomes
	Water scarcity		
	Spread of dirt and dust which increases the risk of erosion		
	Deforestation due to lack of natural regeneration		
	Groundwater depletion due to higher dependence on it		
	Desertification		
	Community		
	Changes in land-use especially in agriculture		
	Increased cost of irrigation		
	Economic losses and increased costs		
	Loss of rangelands and reduced animal production		
	Displacement and demographic changes		
	Spread of waterborne diseases		
High heat above 30-35°C with an increasing number of heatwaves[60]	**Natural environment**		Preventing wildfires through strategies such as public awareness campaigns, roadside clearing, construction of watchtowers, deployment of early detection teams, and equipping SUVs with water tanks for fire suppression in rugged terrain Engaging in reforestation activities to restore damaged lands Using climate-smart techniques in agriculture Promoting alternative hiking packages such as night hikes Adapting the working hours of outdoor laborers to avoid exposure to high heat Monitoring and forecasting heatwaves to inform tourists in advance
	Wildfires		
	Direct harm to livestock and wildlife		
	Pest and disease outbreaks		
	Loss of biodiversity		
	Desertification		
	Community		
	Fatigue and reduced productivity		
	Higher energy consumption for cooling		
	Reduced number of tourists		
	Water scarcity		
	Change in agricultural seasons and productivity		
	Economic losses and reduced incomes		

Increasing temperature	Natural environment				Securing alternative water resources for times of deficits Adaptation of hiking programs to weather patterns and conditions which requires close monitoring of forecasts Identification of endangered ecosystems or trail point of interest that may be impacted
1.4 °C to 2.5 °C under RCP 4.5 and RCP 8.5 respectively by 2100;[60] with an increase by 2.5 °C in mountainous areas applicable only to Lebanon[61]	Rapid snow melting				
	Lower residence of snow cover				
	Decreasing water resources				
	Higher levels of evapotranspiration				
	Changes in habitats leading to biodiversity shifts				
	Community				
	Impact on water availability for guesthouses and trail related communities)				
	Health impacts				
	Increasing likelihood of water and food degradation				
	Increased period of water shortage in summertime				

ENABLERS TO CLIMATE RESILIENCE

Baskinta:

Baskinta relies heavily on the community-driven initiatives created by its community. One of which is the Baskinta Baytouna and Suburbs Organization (BBSO). This organization promotes sustainable development in Baskinta and its surrounding areas and helps many larger NGOs collaborate with the community to achieve those goals.[50] As a village directly connected to the LMT, the LMTA is involved in community development and local stakeholder engagement.

Other tangible enablers include the presence of the civil defense units and active community involvement, which work together voluntarily to prevent and respond to natural disasters. Ongoing initiatives include reforestation and cleaning of forests to prevent wildfires. Additionally, Baskinta is well equipped with heavy machinery and automobiles that withstand harsh climatic conditions including snow and ice. Finally, despite the absence of a hospital within Baskinta, the village has established an emergency room equipped with the necessary resources for first aid interventions.

Figure 20. Reforestation efforts in Baskinta

Source: LRI, 2021

Regarding the intangible factors contributing to climate resilience in Baskinta, one of the most significant points is strong local knowledge of how to respond to natural disasters, which gets passed on through generations. For example, as soon as youth start driving, they get taught how to drive in foggy weather and icy roads. Moreover, the educational system in Baskinta is well established, which allows a high level of literacy and excellence. On a cultural level, the yearly Apple Festival in Baskinta allows farmers to promote and sell their produce easily, which supports the economic resilience of farmers.

Ajloun:

Besides the government, the presence of active organizations supports climate action. The main organizations being RSCN, Jordan BirdWatch Association, Mercy Corps, AFD and the Food and Agriculture Organization of the United Nations.

At the community level, fully equipped civil defense response teams, forest rangers, and robust governmental institutions serve as essential enablers to climate action in Ajloun. The strong safety and security measures implemented by the government, are crucial to facilitating responses to climate risks.

Regarding the capacity of the local community, motivation, sense of responsibility, and active engagement of residents in government-led climate initiatives constitute a key pillar to build on. Locals in Ajloun support the public sector on the ground whenever there is a need for additional volunteers, especially when it comes to providing heavy machinery.

Additional tangible enablers include natural assets and key landmarks that strengthen the resilience of Ajloun's communities. These features—such as extensive forests, orchards, water springs, grottos, Wadi Al-Rayan, and the iconic eucalyptus tree—also serve as tourist attractions, directly supporting local livelihoods.

Figure 21. Civil Defense Teams that Secure the Resilience of People in Ajloun

Source: RMDA

Jericho:

Several actors contribute directly to community resilience, and indirectly to the development of adaptation strategies and emergency responses to climate risks in Jericho. Those include the PNA, especially the ministries of agriculture and tourism, the civil defense, and the Jericho Municipal Council, including its environmental police, who are the main actors on a governmental level. Other important actors include NGOs, cooperatives, local committees, educational institutes, healthcare centers, religious entities, funding agencies, and the local community level itself.

Other tangible enablers include the availability of emergency response machinery, equipment, and trained personnel. Moreover, natural resources such as springs and waterfalls provide essential water supplies for irrigating agricultural fields, meeting the needs of the needs of tourists and residents, and extinguish fires.

Moreover, forests and varying topography from sea level to mountains host hiking trails that attract tourists and local businesses. Additional man-made touristic attractions include the nomadic Bedouin communities and historic religious sites. Altogether, these attractions bring benefits and opportunities to the locals which improve their livelihoods and allow them to invest in preparedness for climate change.

Whereas intangible factors that help citizens be more resilient to climate change in Jericho include local knowledge and traditional agricultural practices passed down through generations. Farmers teach their children about traditional farming techniques that are inherently climate resilient such as terraces.

While the community is aware of climatic threats and their impacts this awareness requires further strengthening to enhance adaptive responses. Additionally, the workforce is skilled and was already able to develop small-scale adaptation strategies such as income diversification. Another fundamental element to the resilience of the community in Jericho is the resilience of people themselves against the occupation, and their unmatched connection to their land.

While some enablers were common across all three countries, others were specific to individual national contexts. The table below summarizes the enablers identified by community members during the participatory workshops.

Figure 22. Shepherd Using Traditional Herding Methods

Source: PHT

Enabler	Lebanon	Jordan	Palestine
Active community	x	x	x
Civil defense	x	x	x
Rich natural resources	x	x	x
Local know-how on dealing with disasters	x		x
Reforestation activities	x	x	
Strong connection to land	x		x
Trust in government		x	x
Continuous donor investments		x	
Support of trail association	x		
Wildfire prevention		x	
High level of literacy	x		

BARRIERS TO CLIMATE RESILIENCE

In addition to climatic risks, anthropogenic threats also undermine community resilience and exacerbate existing vulnerabilities. The following barriers were identified by local participants during participatory workshops held in the three communities:

- Poverty, which pushes people to illegally cut down trees for heating or overgraze lands. This in turn damages natural ecosystems and makes forest landscapes less attractive for tourists.
- Urban expansion and road construction transform lands from green spaces to residential areas. This poses a direct threat to hiking trails, pushing tourists to choose alternative destinations.
- Limited environmental awareness among locals makes it difficult for the community to understand the challenges they face and also weakens their ability to develop adequate solutions.
- Unsustainable tourism where tourists visit sites in large groups exceeding their capacity and exploiting natural resources by overconsuming water, damaging lands, and generating waste.
- Insufficient financial resources and limited funding from donors, international organizations, the public and private sectors, is preventing the development of projects and acquisition of the machinery needed.
- Inadequate governance and poor inter-organizational coordination are preventing a long-term vision for community-based tourism and leading to a duplication of efforts between organizations.

In addition to these common barriers, particular areas were identified in each community:

- In Baskinta, the economic crisis that the country has been going through, made it harder to acquire funding from donors, or even self-fund projects for climate adaptation.
- In Ajloun, although reserves are key actors, they have also been reported to take over lands that the community depends on for other land-use and designate them for strict conservation.
- In Jericho, the occupation and Israeli settlements are threatening vandalizing Palestinian lands and sites, which makes tourists fear or refrain from visiting these destinations.

Figure 23. Urban expansion in Baskinta Threatening the Trail

Source: Leila Rossa Mouawad

Figure 24. Water Scarcity in Jordan

Source: EcoMENA

Figure 25. Urban Expansion in Palestine Altering Natural Landscapes

Source: PHT

GENDER ANALYSIS

According to gender experts, gender disparities are cross-sectoral in Lebanon, Jordan, and Palestine. Many factors put women at a disadvantage, including patriarchal social norms, and discriminatory legal frameworks. These structural inequalities limit women's access to labor markets, political participation, decision-making power, rights, services, and control over resources. Gender experts add that these gender barriers result in women being disproportionately affected by other challenges. As climate change exacerbates existing vulnerabilities, women face additional layers of challenges in all 3 countries, further restricting their resilience and adaptive capacity.

The World Economic Forum Global Gender Gap Index 2024 rankings[51]		
Lebanon	**Jordan**	**Palestine**
133	**123**	**N/A**

In Lebanon, Jordan and Palestine, gender gaps were identified across several axes:

Contribution to livelihoods:

In Baskinta, both women and men were reported to have similar powers in decision-making when it comes to livelihoods, as they have equal access to information, services, employment opportunities, and resources. This indicates a relatively balanced gender dynamic in economic participation, largely shaped by the nature of economic activities available. However, further analysis is needed to determine whether this equality translates into equitable economic outcomes, such as income levels and job security.

Whereas in Ajloun, men are not aware of some key livelihood assets that women rely on, such as pantry production and hydroponics. This highlights that in many cases, women's economic contributions remain unnoticed, limiting access to market opportunities and support.

Finally, gender-based disparities in labor force statistics highlight the multifaceted constraints faced by Palestinian women in accessing decent employment opportunities, receiving equal pay, and contributing to livelihoods.[52] [53] These constraints not only impede women's economic empowerment but also undermine household resilience and broader community development.

Climate awareness:

In Baskinta, both genders show a high level of knowledge regarding climate change, its impacts and adaptation measures. However, women focused more on the effect climate change has on people and nature, while men focused on threats related to infrastructure and politics. This highlights that climate perceptions are shaped by gender-differentiated experiences.

However, in Ajloun, gender disparities emerged in the perception of climate risks. For example, reduced precipitation was not widely recognized by women as a climate threat, potentially leaving them less prepared to address its long-term consequences compared to men. During the workshops, women tended to associate climate risks with more immediate, life-threatening events, which may explain why water scarcity was not viewed as a priority concern. However, since women often play a central role in water management at the household level, their limited awareness of water scarcity as a climate risk could undermine resilience efforts.

Lastly in Palestine, environmental awareness including knowledge about climate change among women is dangerously low. Equity in climate understanding is limited due to social factors such as early marriage, weak political and security stability in the region, as well as economic factors such as unemployment, that all make women more vulnerable to climatic and non-climatic shocks.[54]

Access to resources:

In Baskinta and across Lebanon, women play a central role in community-based tourism, particularly in managing food services and accommodation within guesthouses and small businesses. Despite the significant contributions of women, ownership of these businesses often remains in the hands of men. This discrepancy is attributed to patriarchal social and cultural norms, particularly prevalent in rural areas. Similarly, women in Jordan are less likely to own lands and properties, have access to finance, or benefit from government subsidies. However, women are considered entrepreneurs in Jordan as they create small businesses and support each other within their community.

In Palestine, women face limited land ownership, restricted access to water and agricultural resources, and mobility constraints resulting from political instability. Despite these challenges, many women have successfully established small-scale businesses and cooperatives, playing an active role in supporting their communities and contributing to local resilience.

KEY FINDINGS

WATER AS THE MOST PRESSING CONCERN:

Water scarcity is the most frequently reported impact of climate change across communities. Water stress affects every aspect of daily life and is reflected on all other sectors particularly households, public health, agriculture, and tourism, making water security a top priority for adaptation efforts. However, the underlying causes of water insecurity and the associated adaptation challenges vary significantly across Lebanon, Jordan, and Palestine, highlighting the need for context-specific, locally tailored responses.

While Lebanon is considered a water-rich country due to its snowy mountains, it is facing issues of water availability and quality. These are not driven by water scarcity but rather by inefficient management, inadequate governance, outdated infrastructure, and increasing pollution of natural resources. As a result, heavy reliance on groundwater extraction has worsened the crisis.

On the other hand, Jordan is among the water scarcest worldwide, and the situation is further exacerbated by climate change. The country's heavy dependence on transboundary water resources, high urbanization rate, and growing strain of refugees, has placed additional pressure on its limited water supply. The government has already introduced pricing mechanisms and large-scale desalination projects to cope with the crisis, but challenges persist in ensuring equitable water distribution, particularly for marginalized and underserved communities.

In Palestine, additional to water access are closely tied to the ongoing occupation. Israeli control over water resources and infrastructure has led to an unequal distribution between settlers and local Palestinian communities. As a result, Palestinian communities are forced to rely on expensive water trucking or unsafe sources, limiting their ability to adapt to climate-induced water stress.

SAME REGION, DIFFERENT EXPERIENCES:

Despite being located in the same Levantine region and sharing the same Mediterranean climate, the three countries experience climate change differently. Differences in the manifestation of climate change are linked to variations in geography, governance

structures, and socio-political contexts. Today, Lebanon, Jordan and Palestine face different challenges, have different responses and require different interventions to increase the resilience of communities.

For example, the threat of wildfires is common throughout Lebanon, driven by multiple factors such as land mismanagement, urban encroachment on forests, and inadequate fire prevention. In contrast, wildfire risk is only restricted to specific zones in northern Jordan and the West Bank, where dry conditions and land degradation contribute to localized fires.

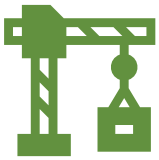
Furthermore, in all three countries, civil defense serves as the primary responder to climate-related emergencies; however, the capacity, resources, and operational scope of these institutions vary across contexts. In Lebanon, civil defense relies heavily on unpaid volunteers, while in Jordan and Palestine, it is a fully professionalized and state-supported force. These structural differences impact the effectiveness of disaster response and emphasize the importance of strategies tailored to each national context.

EXACERBATION OF EXISTING VULNERABILITIES:

The burden of climate change falls heaviest on those already vulnerable as it exacerbates existing vulnerabilities. Rural communities heavily dependent on natural resources for their livelihoods, are struggling with land degradation, while women, who already suffer from structural inequalities, face greater hardship.

For instance, farmers in all three countries are among the most vulnerable groups to climate change. However, the specific threats they face differ based on local environmental and socio-political conditions:

1. In Lebanon, farmers suffer most from pest and disease outbreaks induced by climate change. These outbreaks reduce crop yields, leading to economic losses and food insecurity. The government's limited capacity to respond further exacerbates the situation.
2. In Jordan farmers are most affected by water scarcity, exacerbated by reduced precipitation. As water becomes increasingly scarce, farmers struggle to maintain irrigated agriculture, which affects both crop yields and consequently their livelihoods.
3. In Palestine the impact of land degradation is particularly severe. The occupation restricts access to agricultural land, limits mobility, and prevents farmers from managing resources sustainably. As a result, declining land productivity contributes to reduced agricultural output, leading to heightened food insecurity.



WEAK INFRASTRUCTURE AS A BARRIER TO RESILIENCE:

Infrastructure is highly vulnerable to extreme weather events which cause direct threats to people's lives and livelihoods. Flooded roads, damaged buildings, and disrupted energy systems affect economies, isolate communities, and put tourism safety and attractiveness at risk.

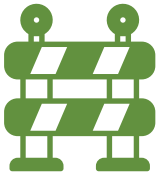
For example, Lebanon's mountainous roads erode quickly in winter, especially after long episodes of rain. Such incidents lead to road closure that isolate rural communities and limit tourism access.

Whereas in Jordan and Palestine, due to poor drainage systems in both urban and rural areas, the risk of flash floods is increasingly reported. Flash floods, often damaging homes, roads, and agricultural land, dissuade tourists from visiting, which in turn undermines local tourism-based economies.

LOCAL RESILIENCE ENABLERS RELATED TO COMMUNITIES:

Communities are not merely victims of climate change—they are also central to the solution. Community-driven responses where local organizations, citizens and authorities work together are a key enabler to climate resilience. Additionally, traditional local knowledge where know-how on climate response is passed down through generations, particularly in agriculture, guides the development of localized strategies.

For example, agricultural terraces are a common traditional practice that has demonstrated resilience to environmental threats in all three countries. These terraces are climate-resilient; they reduce the risk of erosion, increase biodiversity and enhance agricultural productivity. These features make agricultural terraces an essential practice for maintaining both food security and ecosystem health under climatic stress.



LAYERS OF BARRIERS TO CLIMATE RESILIENCE:

The three barriers below are common to Lebanon, Jordan and Palestine, limiting effective climate adaptation and resilience:

1. Weak governance structures and lack of cross-sector collaboration reduce the effectiveness of climate adaptation efforts. This leads to inefficient resource use and lack of integrated solutions. Promoting collaboration could improve the implementation of climate adaptation measures by aligning efforts across all relevant sectors.
2. Lack of environmental stewardship and climate awareness among communities is a challenge to the implementation of adaptation strategies. Overcoming this barrier requires environmental education, capacity-building, and community engagement to create a sense of collective responsibility for climate action.
3. The absence of localized climate data on impacts specific to hiking trails and surrounding areas limits the potential for developing tailored adaptation strategies. Implementing localized climate monitoring and data collection systems would provide valuable insights to develop more effective and context-specific adaptation plans.

RECOMMENDATIONS

PROBLEM SUMMARY

The table below summarizes key challenges that heighten the vulnerability of tourism-dependent communities in Lebanon, Jordan, and Palestine. It also presents recommendations and corresponding activities to be considered for integration into future projects.

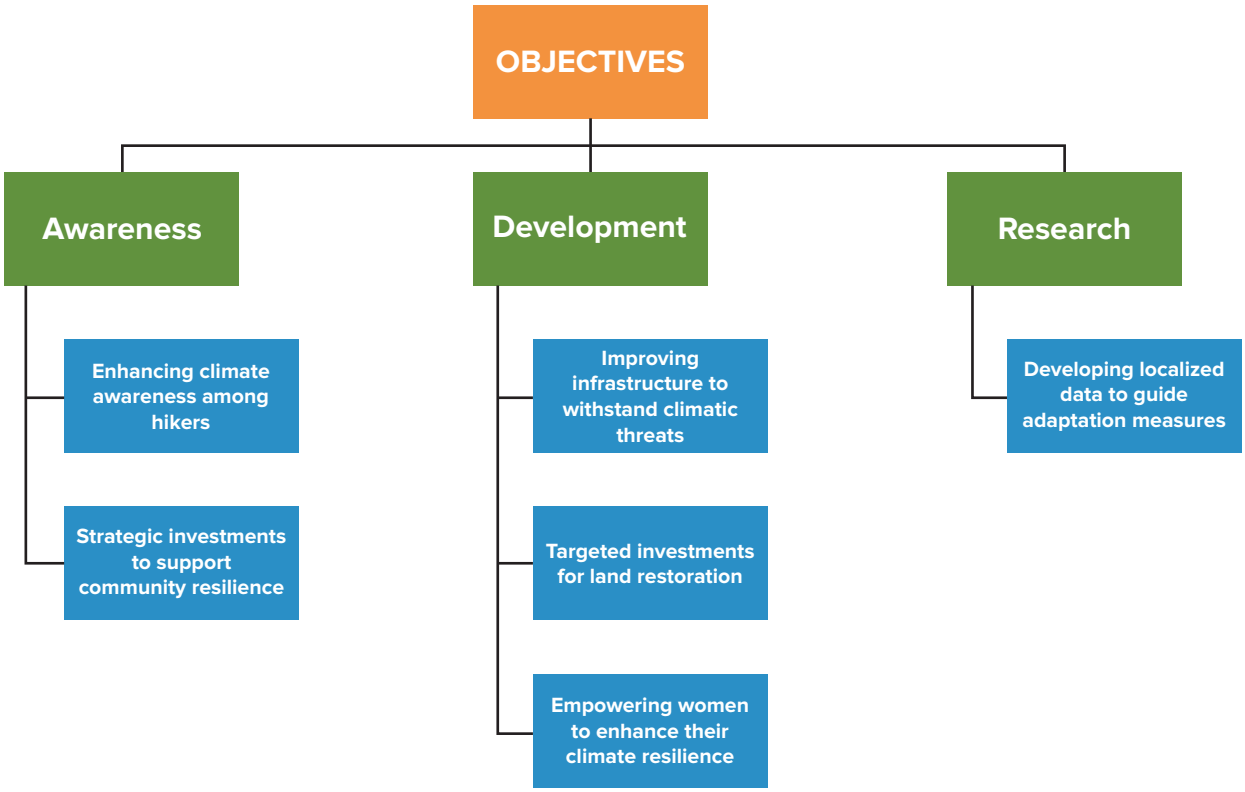
Identified problem	Problem statement	Areas of intervention
Restricted climate awareness	Hikers lack awareness of climate change, leaving them vulnerable to hazards that compromise their safety	**Enhancing climate awareness among hikers** a. Develop and implement multidisciplinary educational programs aimed at raising awareness among hikers about the impacts of climate change on human health and the natural environment b. Create and distribute informational materials (pamphlets, signage, application, online resources) on climate adaptation strategies, such as appropriate gear, route planning, and behavior on trails to minimize environmental impacts c. Partner with local hiking organizations associations to provide training for tour guides and other stakeholders on effective responses to climate change to increase the adaptive capacity d. Collaborate with academic institutions and research centers to develop awareness-raising programs and materials tailored to local contexts and specific target audiences
Limited availability of localized data	The lack of localized knowledge on the impacts of climate change limits the ability of communities to anticipate and adapt to its impacts, weakening local resilience	**Developing localized data to guide adaptation measures** a. Conduct and share localized climate impact studies specific to the hiking trails and surrounding areas, involving local communities in data collection b. Develop partnerships with research institutions to provide accurate, updated data on climate change impacts and best practices for adaptation to guide management. Fields of research include endemic biodiversity, water recharge, climatic data, sustainable tourism, and feasible adaptation measures) c. Offer training and workshops for local communities, stakeholders, and business owners to understand and address climate risks at the local level, ensuring they have the tools and knowledge to make informed decisions
Unsustainable practices	The lack of environmental stewardship and sustainable practices in communities weakens natural ecosystems and accelerates land degradation, making it more vulnerable to the impacts of climate change	**Targeted investments for land restoration** a. Promote and collaborate with local businesses and communities that implement sustainable practices, including waste reduction, recycling, and water conservation efforts b. Integrate environmental education and Green TVET into local schools to instill a culture of stewardship, focusing on climate change adaptation and sustainable resource use

Identified problem	Problem statement	Areas of intervention
Inadequate infrastructure	The high vulnerability of infrastructure to climate change including roads, guesthouses, and trails frequently damaged by extreme weather events, disrupts access to tourism sites and threatens the safety of visitors	**Improving infrastructure to withstand climatic threats** a. Invest in climate-resilient infrastructure for key tourism areas, including the development of flood-resistant roads, wildfire prevention, reinforced bridges, and erosion prevention measures on trails b. Collaborate with local businesses to create sustainable tourism models with climate-smart infrastructure that support local communities in their adaptation
Land degradation	The degradation of hiking trails and surrounding natural touristic attractions due to climate change reduces their attractiveness and touristic value, and threatens the sustainability of nature-based tourism	**Targeted investments for land restoration** a. Launch restoration and rehabilitation projects to repair damaged trails, reestablish native vegetation, and stabilize soil in erosion-prone areas b. Involve local communities in trail restoration projects, offering opportunities for employment and skill-building, while promoting eco-tourism as a source of sustainable income
Vulnerability of community	A high dependence on a single livelihood activity limits community resilience by reducing economic diversification, leaving families more vulnerable to sudden climate shocks or market disruptions.	**Strategic investments to support community resilience** a. Diversify local economies by developing alternative income streams that are climate-resilient, such as promoting agritourism, community-based tourism, and handicrafts b. Encourage local farmers and businesses to adopt climate-smart practices to mitigate risks and strengthen their resilience c. Invest in projects to build the capacities of local communities on developing concept notes and project proposals to secure funding for local adaptation measures d. Establish mechanisms to ensure the health of communities during and after climatic disasters and stresses such as exposure to heatwaves and
Gender disparities	Gender disparities in communities increase vulnerability to climate change, as women often face greater challenges in accessing resources, decision-making power, and economic opportunities	**Empowering women to enhance their climate resilience** a. Implement gender-sensitive climate adaptation programs that empower women through education, skill-building, and leadership opportunities in the context of trail tourism b. Provide targeted support to women-led tourism initiatives and businesses to increase their resilience to climate change c. Establish local networks and mentoring programs for Diversity Equity and Inclusion in the tourism and environmental sectors
Limited promotional activities	The limited marketing and communication of trail tourism as a driver for local economic development reduces investment in the sector, weakening the potential to support local livelihoods	**Enhancing climate awareness among hikers** a. Develop and implement a comprehensive communication strategy that highlights the benefits of sustainable trail tourism to local economies, showcasing case studies and success stories b. Foster collaboration between stakeholders to create region-specific campaigns that promote trail tourism and encourage complementarity instead of competition among businesses

Identified problem	Problem statement	Areas of intervention
Lack of financing	The lack of financial resources and funding from donors, international organizations, and the public and private sectors hinders the development of projects and the acquisition of essential machinery, limiting local capacity to adapt to climate change	**Strategic investments to support community resilience** a. Strengthen fundraising and proposal-writing capacities for local tourism businesses and community organizations to improve access to donor funding and international grant b. Foster partnerships with international development agencies and organizations to channel targeted support for tourism projects that enhance local livelihoods and environmental resilience
Ineffective governance	Inadequate governance and lack of collaboration prevent the development of a long-term vision for community-based tourism, leading to fragmented efforts and duplication of initiatives among organizations, ultimately weakening the sector's resilience and growth potential	**Strategic investments to support community resilience** a. Push for the establishment of a national coordinating body or task force to align the efforts of public institutions, NGOs, and private actors, facilitating information exchange and strategic collaboration b. Create a shared community-based tourism strategy through multi-stakeholder consultations, defining common goals, responsibilities, and priority projects c. Establish a database of involved partners with whom one can collaborate to develop climate adaptation strategies at the local and national level d. Develop a strategic, integrated approach to the management of water, food, health, and energy in collaboration with relevant governmental stakeholders, to ensure the active and constructive engagement of decision-makers.

INTERVENTION FRAMEWORK

An iterative process was adopted to co-design the recommendations with the project managers and trail associations. After reviewing drafts, the following recommendations were developed, targeting tourism stakeholders in the Med Trails Network, and focused on 3 axes: awareness, research and development. These recommendations can be implemented individually at the country level or collectively in the Mediterranean.



Enhancing climate awareness among hikers

Objective: Increase climate awareness among the hiking community to enhance their safety amid climatic hazards.

Outcome: Hikers and guides will better understand climate-related risks and adapt their behaviors to ensure safer experiences on the trail.

Outputs:

- Develop educational programs and workshops on climate change impacts on human health and ecosystems.
- Produce informational material (pamphlets, trail signage, mobile apps, social media posts) with guidance on climate adaptation measures.
- Develop emergency protocols to respond to different types of climatic hazards.
- Collaborate with hiking groups to provide training for tour guides on responding to climate risks.

Opportunities:

- Access to local and international environmental grants for climate education initiatives.
- Collaboration with universities, research centers and local experts to develop science-based educational content.
- Cross-border partnerships to share knowledge and resources and benefit from the lessons learned of each.

Specific focus:

Lebanon	Jordan	Palestine
Wildfire prevention	Heat stress management	Irregular rainfall adaptation

Developing localized data to guide adaptation measures

Objective: Enhance localized knowledge of climate change impacts to strengthen community resilience, particularly among those engaged in hiking and tourism sectors.

Outcome: Tourism stakeholders will have access to accurate, up-to-date climate data, enabling them to better anticipate and adapt to climate change impacts.

Outputs:

- Conduct and share localized climate impact studies specific to the hiking trails and surrounding areas, involving local communities in data collection. This baseline study will assess natural resources and identify areas suitable for tourism and those requiring strict protection.
- Develop partnerships with research institutions to provide accurate, updated data on climate change impacts and best practices for adaptation.
- Offer training and workshops for local communities, stakeholders, and business owners to understand and address climate risks at the local level, ensuring they have the tools and knowledge to make informed decisions.

Opportunities:

- Collaboration with universities and research centers to provide scientific expertise and secure funding for climate impact studies.
- Partnership with local governments or NGOs to incorporate findings into broader regional or national adaptation strategies.
- Opportunities for community-based monitoring and citizen science to involve local populations in data collection and increase awareness of climate change.

Specific focus:

Lebanon	Jordan	Palestine
Snow reduction	Desertification	Ancestral knowledge

Improving infrastructure to withstand climatic threats

Objective: Strengthen tourism infrastructure to withstand climate change impacts, ensuring safe and reliable access to natural sites and sustaining local tourism and livelihoods.

Outcome: Tourism areas will be more resilient to extreme weather events, reducing disruptions, protecting visitor safety, and supporting long-term sustainable tourism.

Outputs:

- Invest in climate-resilient tourism infrastructure including wildfire prevention systems, reinforced bridges, and erosion control measures on trails.
- Collaborate with local businesses to create sustainable tourism models with climate-smart infrastructure that supports communities in their adaptation efforts.

Opportunities:

- Access to international climate adaptation funds, private sector sponsorships and government grants for infrastructure development.
- Partnerships with engineering universities or research centers to design cost-effective nature-based solutions.

Specific focus:

Lebanon	Jordan	Palestine
Early warning systems for wildfire detection	Rainwater harvesting systems	Destination accessibility

Targeted investments for land restoration

Objective: Restore and protect natural touristic attractions and hiking trails to preserve their ecological and touristic value, all while supporting sustainable livelihoods.

Outcome: Hiking trails and natural sites will be restored and maintained, enhancing their resilience to climate change, sustaining tourism, and creating local employment opportunities.

Outputs:

- Launch restoration and rehabilitation projects to repair damaged trails, restore vegetation, and stabilize soil in eroded areas.
- Establish a regular maintenance schedule, including monitoring and assessment systems, to ensure trails are kept in good condition and protected from future damage.
- Involve local communities in trail restoration projects, offering opportunities for employment by promoting eco-tourism as a source of sustainable income.
- Promote environmental stewardship and sustainable practices in communities through workshops to reduce land degradation.

Opportunities:

- Collaboration with international environmental organizations for funding and technical expertise.
- Community engagement in projects that strengthen local ownership and stewardship of natural areas.
- Media exposure to raise awareness around sustainability and the long-term benefits of regenerative practices.

Specific focus:

Lebanon	Jordan	Palestine
Post-wildfire restoration	Reforestation of cut forests	Post-war land restoration

Strategic investments to support community resilience

Objective: Enhance community resilience by promoting economic diversification and equipping local populations with the skills and resources to access climate funds.

Outcome: Communities will have diversified, climate-resilient income sources, reducing their vulnerability to sudden climate shifts or market disruptions.

Outputs:

- Offer training and financial support for small businesses to develop alternative income streams, such as agritourism, community-based tourism, and handicrafts.
- Strengthen communication, fundraising and proposal-writing capacities for local tourism businesses and community organizations to improve access to international funding.
- Facilitate networking and collaboration between organizations to share resources, knowledge, and best practices.
- Invest in projects to build local community capacities for developing concept notes and project proposals to secure funding for local adaptation measures.

Opportunities:

- Partnerships with local NGOs, government agencies, and academic institutions to provide technical assistance and training.
- Potential for public-private partnerships to stimulate local innovation and sustainable business development.

Specific focus:

Lebanon	Jordan	Palestine
Climate-smart agriculture	Community-based businesses	Advocacy for climate adaptation

Empowering women to enhance their climate resilience

Objective: Promote gender equality in climate adaptation in tourism by empowering women with resources, skills, and leadership opportunities.

Outcome: Women will have greater access to education, economic opportunities, and decision-making roles, enhancing their ability to contribute to climate adaptation.

Outputs:

- Implement gender-sensitive climate adaptation programs that empower women through education, skill-building, and leadership opportunities, especially in agritourism and trail tourism.
- Provide targeted support to women-led tourism initiatives and businesses to increase their resilience to climate change.
- Establish local networks and mentoring programs for diversity, equity, and inclusion in tourism.

Opportunities:

- Collaboration with women's organizations, gender experts, and local leaders to co-design inclusive programs.
- Policy advocacy to mainstream gender considerations into national and local climate adaptation strategies.

Specific focus:

Lebanon	Jordan	Palestine
Empowerment and advocacy for rights	Climate awareness programs	Capacity building on business development

PROPOSED PROJECTS

Based on the suggested recommendations, the integrated strategic project ideas below can be developed into concept notes, to help mitigate the problems identified in Problem Summary section and empower tourism stakeholders in the Med Trails Network to seek seed funding.

Each project idea may tackle different problems at once, which results in proposed activities that address various recommendations.

1. Developing educational programs and workshops to raise awareness about climate change and its impacts (trail managers and stakeholders, and school communities)

Strategic Impact:

- Increasing climate literacy among hikers, students, and local communities
- Empowering municipalities and local stakeholders to implement climate adaptation measures

Impact Indicators:

- Number of schools, students, and community members participating in workshops
- Number of climate adaptation initiatives implemented
- Amount of funding secured for climate-related projects

Proposed Activities for Potential Funding:

- Establish partnerships with universities and environmental organizations
- Create educational materials on climate change and local adaptation strategies
- Organize school workshops and training sessions

2. Developing a biodiversity conservation program to identify, document, and protect endemic and threatened species along hiking trails

Strategic Impact:

- Enhancing knowledge of local biodiversity and its conservation status
- Engaging hikers and local communities in citizen science and conservation efforts
- Supporting policy and management decisions for biodiversity protection

Impact Indicators:

- Number of endemic and threatened species identified and documented
- Number of conservation actions implemented (e.g., habitat restoration, species protection)

Proposed Activities for Potential Funding:

- Conduct field surveys with researchers, citizen scientists, and local communities
- Organize awareness campaigns and workshops on biodiversity conservation
- Collaborate with local authorities to implement protection measures for critical habitats

3. Implementing decentralized wastewater treatment solutions and introduce incentives to promote sustainable water use

Strategic Impact:

- Improving water quality and reducing pollution along trails and surrounding communities
- Encouraging responsible water use and conservation practices
- Enhancing groundwater recharge and ecosystem health
- Providing alternative water resources for irrigation to enhance domestic water availability during periods of shortages

Impact Indicators:

- Number of wastewater treatment units installed
- Reduction in water pollution levels (measured by water quality parameters)
- Number of households or businesses adopting water-saving measures

Proposed Activities for Potential Funding:

- Install small-scale, nature-based wastewater treatment systems
- Provide financial incentives (e.g., tax reductions, grants) for households that reduce water abstraction
- Conduct awareness campaigns and training on sustainable water management

4. Developing a baseline assessment and early warning system to monitor environmental changes along trails

Strategic Impact:

- Establishing a scientific basis for conservation for evidence-based decisions
- Enhancing preparedness and response to environmental threats

Impact Indicators:

- Number of baseline assessments conducted
- Accuracy and reliability of early warning projections
- Number of stakeholders using early warning information for decision-making

Proposed Activities for Potential Funding:

- Conduct field assessments to collect baseline data on biodiversity, climate patterns, and ecosystem health
- Train local communities and stakeholders in data collection and response strategies
- Establish an early warning system using climate and biodiversity indicators
- Collaborate with research institutions and government agencies to integrate findings into policy planning

5. Developing a community-based land restoration initiative alongside hiking trails

Strategic Impact:

- Increasing vegetation cover to combat soil erosion and desertification
- Enhancing biodiversity along hiking trails
- Engaging local communities in land stewardship

Impact Indicators:

- Number of trees planted and survival rate
- Increase in biodiversity (species count) along reforested areas
- Number of community members and volunteers involved

Proposed Activities for Potential Funding:

- Collaborate with municipalities and environmental NGOs
- Organize tree-planting events with hikers and local communities
- Implement long-term monitoring and maintenance plans

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APPENDICES

VULNERABILITY ASSESSMENT TOOL

Multiple vulnerability assessment tools were identified through benchmarking, including, Vulnerability and Capacity Assessment (VCA), Climate Vulnerability and Capacity Analysis (CVCA), Participatory Capacity and Vulnerability Assessment (PCVA), Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL), as well as Dynamic Interactive Vulnerability Assessment (DIVA).

Based on our findings, the CVCA most closely suits the study's scope due to its focus on informing community-based adaptation and resilience to climate change. In general, the CVCA framework relies on qualitative data collection through secondary sources, complemented by participatory research with community members. The aim of this analysis is to measure vulnerability by assessing a community's adaptive capacity in the face of climate change. The results of this analysis can be used for community-level planning and action, for program design, and to identify options for awareness and advocacy campaigns. For this study, the general framework that we adopted is outlined below:

A. SECONDARY SOURCES

The national and community-level desk reviews include two main sections:

A.1 Climate Impacts

This includes pre-existing climate change reports (Intergovernmental Panel on Climate Change assessments, Country Climate and Development Reports) and localized climate data to the extent it is available. This desk review helped inform the baseline climate context and culminate in an inventory of studies on climate change's impact at the local or regional level.

A.2 Livelihood Context and Adaptation Measures

In this section sources on regional livelihood contexts, community strategies to increase resilience, and any existing community adaptation strategies were reviewed. Examples of reports on adaptation strategies include National Adaptation Plans (NAPs).

B. PRIMARY SOURCES

B.1 Interactive Participatory Workshops

On-site Interactive Participatory Workshops were conducted in Baskinta, Ajloun and Jericho to inform the research questions by understanding vulnerabilities, climate impacts, and effects on community-based tourism.

Following the CVCA method, the following 5 tools were used in the Interactive Participatory Workshops with 35 attendees in Lebanon, 13 in Jordan and 14 in Palestine:

1. Hazard Map: community members were provided with a map that has a linear trace of the trail. They then had to map the main landmarks, activities and assets that they rely on for their livelihoods in the marked area. After that, participants identified climatic and non-climatic hazards they have recently faced or think could affect their community in the future. They also discussed who the most vulnerable groups to these hazards are, and which areas could be considered as a refuge in times of natural disasters.

Figure 26. Hazard Map Sample from the Workshops Held in Jericho, Palestine

2. Impact chains: community members started by identifying the main climatic threats that affect the community which included high heat, heavy precipitation, and low precipitation. They then explored the different direct and indirect impacts that result from climate these events. Direct impacts are those that occur during the week of the threat, whereas indirect ones occur later as a consequent result.

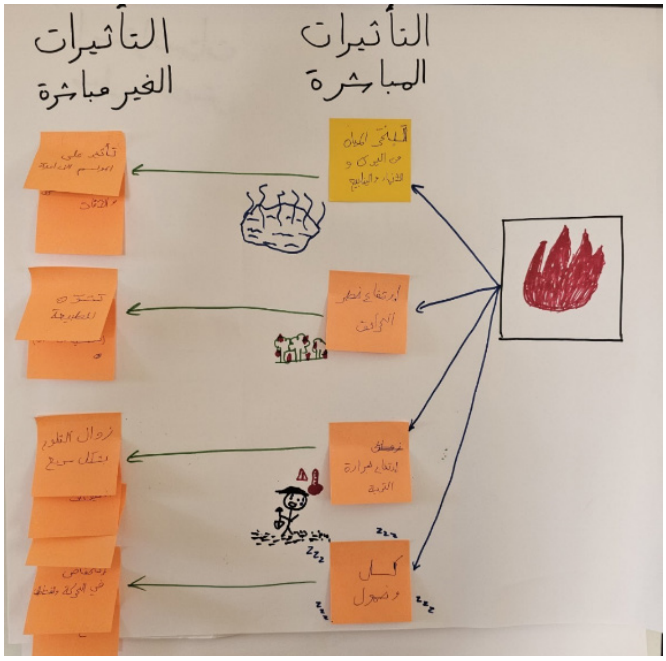

Figure 27. Impact Chains Sample from the Workshops Held in Baskinta, Lebanon

3. Adaptation pathways: after creating the impact chains, community members identified individual and collective options to address each of the climate change impacts. Additionally, these options were placed on an urgency scale from most to least urgent to guide future intervention priorities.

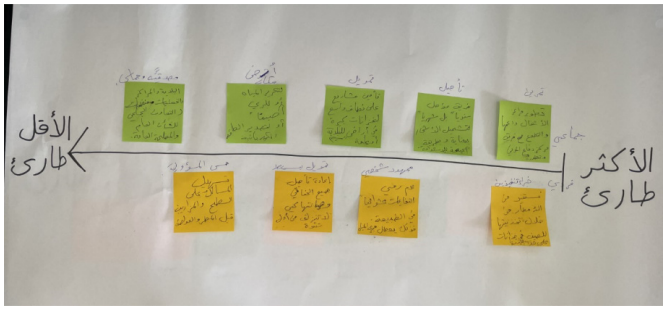

Figure 28. Adaptation Pathways / Urgency Timeline Sample from the Workshops Held in Baskinta, Lebanon

4. Vulnerability matrix: community members identified the highest-priority assets and activities that they rely on for their livelihood. After that they scored the impacts of climatic threats (high heath, heavy precipitation, and low precipitation) on these livelihoods. The selected scoring system is as follows: 1 refers to low impact, 2 moderate impact, and 3 high impact.

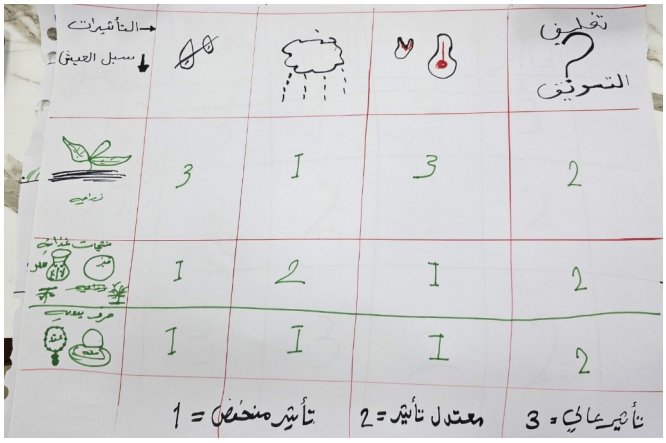

Figure 29. Vulnerability Matrix Sample from the Workshops Held in Ajloun, Jordan

5. Venn diagram: in the last activity, community members identified important institutions, actors, and services providers within their communities. These stakeholders were placed on different-sized cards as per their importance (the bigger the card, the more important the role of the actor). After that, the cards were placed in proximity or away from the center to indicate accessibility (the closer to the center, the more accessible the actor is). Lastly, a sign was added on each card to indicate how access to the actor changes after a climatic shock occurs (+ means access increases, - means access decreases).

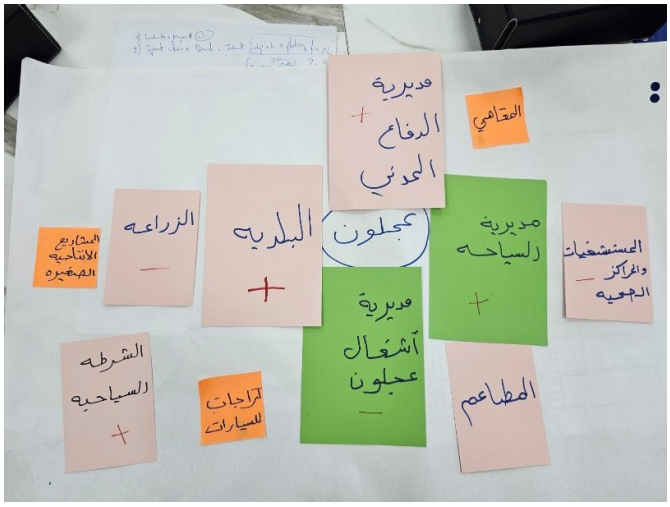

Figure 30. Venn Diagram Sample from the Workshops Held in in Ajloun, Jordan

B.2 Key Informant Interviews

13 virtual KIIs were conducted to fill identified research gaps and to supplement information in the three countries. These key stakeholders included, but were not limited to experts in climate change, tourism, agriculture, and gender.

In order to retain the anonymity and privacy of experts, only their position and affiliation are mentioned in the table below:

Table 2. List of Key Informants Interviewed in the Study

Position	Organization
Socio-economic and tourism expert	ECODIT
Director of Rural Development and Natural Resources	Ministry of Agriculture
Trekker and author	Independent
Agricultural Engineering	PalVision
Climate Modeller and Data Analyst	Independent/ Royal Scientific Society
Ecotourism and Outreach Officer	ESDU
Founder	Union for Sustainable and Ecotourism Institutions in Lebanon USEIL
Founder	Cezar's Projects
Storyteller and agriculture expert	Hakaya
Director	LLWB
Gender and Protection Consultant	Independent
Teaching Assistant	National Agriculture Research Center
Head of Youth and Local Entities Department	Lebanese Ministry of Tourism

DATABASE OF STAKEHOLDERS

Lebanon

Category	Stakeholder	Link
Civil Society	The Mountains Magazine Lebanon	https://mountainsmagleb.com/
Civil Society	Cezar's Projects	https://cezarsprojects.com/
Civil Society	Hana El Hibri	https://www.instagram.com/hanahibri/
Civil Society	Taste Wana	https://bethanykehdy.com/
Civil Society	Association for Bird Conservation in Lebanon	https://www.birdsoflebanon.com/#:~:text=ABCL,advocacy%2C%20outreach%20activities%20and%20stewardship.
Civil Society	Baskinta Women Cooperative	https://www.facebook.com/p/Baskinta-Women-Coop-100082676162098/
Civil Society	Baskinta Baytouna and Suburbs Organization	https://www.linkedin.com/company/baskinta-baytouna-suburbs-organization
Civil Society	Abdallah Ghanem Cultural Center	https://m.facebook.com/p/%D9%85%D8%B1%D9%83%D8%B2-%D8%B9%D8%A8%D8%AF%D8%A7%D9%84%D9%84%D9%87-%D8%BA%D8%A7%D9%86%D9%85-%D8%A7%D9%84%D8%AB%D9%82%D8%A7%D9%81%D9%8A-Abdallah-Ghanem-Cultural-Center-100057233298463/
Civil Society	Baskinta literature and sports association	
Civil Society	Society for the Protection of Nature in Lebanon	https://www.spnl.org/
Civil Society	Environment & Development magazine	http://www.afedmag.com/english/
Civil Society	Beity Association	https://www.facebook.com/beityassociation/
Civil Society	Lebanon Reforestation Initiative	https://www.lri-lb.org/
Experts & Research Institutes	AUB-NCC	https://www.aub.edu.lb/natureconservation/Pages/default.aspx
Experts & Research Institutes	Jad Abou Arrage	https://www.linkedin.com/in/jad-abou-arrage-30179513/?originalSubdomain=lb
Experts & Research Institutes	Union for Sustainable and Ecotourism Institutions in Lebanon USEIL	https://www.facebook.com/p/Union-of-Sustainable-and-Ecotourism-Institutions-in-Lebanon-USEIL-100077572023886/#:~:text=Union%20of%20Sustainable%20and%20Ecotourism%20Institutions%20in%20Lebanon%20%2D%20USEIL,-1.1K%20likes&text=The%20first%20union%20of%20professional,capital%20and%20highlighting%20experiential%20journeys.

Category	Stakeholder	Link
Experts & Research Institutes	Landscape Design and Ecosystem Management at the American University of Beirut	*https://www.aub.edu.lb/fafs/ldem/Pages/default.aspx*
Experts & Research Institutes	Lebanese American University	*https://www.lau.edu.lb/*
Experts & Research Institutes	United Nations World Tourism Organization	*https://www.unwto.org/*
Experts & Research Institutes	Saint Joseph University	*https://www.usj.edu.lb/*
Experts & Research Institutes	Environment and Sustainability Unit at the American University of Beirut	*https://www.aub.edu.lb/fafs/esdu/Pages/default.aspx*
Experts & Research Institutes	Antonine University	*https://ua.edu.lb/en/fss/university-diploma-in-mountain-guide-and-outdoor-activities*
Experts & Research Institutes	Charbel Maurice Hobeika	
Experts & Research Institutes	Assaad Tannoury	
Experts & Research Institutes	National Committee of International Council on Monuments and Sites	*https://www.icomos.org/en*
Experts & Research Institutes	Lebanese University	*https://www.ul.edu.lb/*
Experts & Research Institutes	Ghassan Tayoun	
Governmental Institutions	Ministry of Environment	*https://www.moe.gov.lb/*
Governmental Institutions	Ministry of Tourism	*https://mot.gov.lb/*
Governmental Institutions	Ministry of Agriculture	*https://regulations.agriculture.gov.lb/en*
Governmental Institutions	Civil defense in Baskinta	*http://www.civildefense.gov.lb/*
Service Providers	Lebanese Adventure	*https://www.lebanese-adventure.com/team.php*
Service Providers	33 North	*https://33-north.com/*
Service Providers	Shouf Biosphere Reserve	*www.shoufcedar.org*
Service Providers	Horsh Ehden Nature Reserve	*www.horshehden.org*
Service Providers	Tannourine Cedars Forest Nature Reserve	*www.arztannourine.org*

Category	Stakeholder	Link
Service Providers	Association for the Protection of Jabal Moussa	*https://www.jabalmoussa.org/association*
Service Providers	Guesthouses Lebanon	*https://www.guesthouseslebanon.com/?fbclid=PAZXh0bgN-hZW0CMTEAAaZToJ0AvWCM1M_aE_Ry408GLWBGtVTc3MR3p-Dj-V9YkOf4ncXzRuZXIQKw_aem_J8l3p5bnQp8E4c9PAaE2PQ*
Service Providers	Le Passeport Culinaire	*http://lepasseportculinaire.com/*
Service Providers	Tourleb	*https://tourleb.org/*
Service Providers	Cedarzing	*https://www.cedarzing.com/*
Service Providers	Terrapods	*https://terrapods.org/*
Service Providers	Tebeshrany Guesthouse	*https://www.bamleb.com/guide/guesthouses/tebechrani-guest-house*
Service Providers	Ski resort of Qanat Bakish	*https://www.skiresort.info/ski-resort/qanat-bakish/*
Service Providers	George Hobeika	
Service Providers	Akkar Trail	*https://akkartrail.com/*
Service Providers	Jaj Nature Reserve and Jbeil District Tourism Committee	
Service Providers	Vanture Program	*https://www.youtube.com/channel/UCuKNxCan6w8-R2AFVdQa-Tg*
Trail Associations	Lebanon Mountain Trail Association (LMTA)	*https://www.lebanontrail.org/our-team*

Jordan

Category	Stakeholder	Link
Civil Society	Tamkeen	https://tamkeen-jo.org/en
Civil Society	Ajloun Women Association	https://www.facebook.com/ajlounladies/?locale=ar_AR
Experts & Research Institutes	Amna Jrrar	https://www.linkedin.com/in/dr-amna-jrrar-1b5320223/?original-Subdomain=jo
Governmental Institutions	Jordan Tourism Board	https://international.visitjordan.com/
Governmental Institutions	Ministry of Environment	https://moenv.gov.jo/Default/En
Governmental Institutions	Ministry of Agriculture	https://moa.gov.jo/Default/EN
Service Providers	Experience Jordan Adventures	https://www.experiencejordan.com/about-us/our-projects/
Service Providers	Royal Society for the Conservation of Nature	https://www.rscn.org.jo/
Service Providers	BookAgri	https://bookagri.com/
Service Providers	Baraka Destinations	https://barakadestinations.com/
Service Providers	Rummana Experience	https://www.instagram.com/rummanajdeita/
Service Providers	Taybeh Farm	https://www.ardjordan.com/book-online-workshops-events
Service Providers	Bait al-Taboun al-Reefi	https://www.facebook.com/people/%D8%A8%D9%8A%D8%AA-%D8%A7%D9%84%D8%B7%D8%A7%D8%A8%D9%88%D9%86-%D8%A7%D9%84%D8%B1%D9%8A%D9%81%D9%8A/100072493115986/
Service Providers	Bait Al Aseelat	https://msha.ke/baytalaselatjerash
Service Providers	Bait Khairat Souf	https://www.facebook.com/beitkhairatsouf1881/
Service Providers	Bait Al-Nahl Al-Jarashi	https://www.asfarplus.com
Service Providers	Mountain Breeze Resort	https://mountainbreeze.jo
Service Providers	Iraq Al Amir	https://web.facebook.com/iraqalamircoop
Service Providers	Maida Farm	https://www.maidaoliveoil.com
Service Providers	Dar Al Shuneh	https://www.greeningthedesertproject.org/dar-al-shouneh-traditional-jordanian-restaurant/
Service Providers	Safi Crafts	https://www.saficrafts.org
Service Providers	Safi Kitchen	https://visitsafijo.com
Service Providers	Carob House	https://carob.earth
Service Providers	Mukawir	https://viavii.com/experience/weaving-basics-in-madaba
Service Providers	Bayt Al-Jameed Al-Karaki	https://web.facebook.com/profile.php?id=100064824485513&_rdc=1&_r

Category	Stakeholder	Link
Service Providers	Feynan Ecolodge	https://ecohotels.me
Service Providers	Shakriyeh	https://traveljordanian.com/explore/cultural-tourism/cooking-experience-at-wadi-rum
Service Providers	Shepherds Tours & Travel	https://shepherdstours.com/
Service Providers	Wadi Rum Protected Area	https://www.rumshines.com
Trail Associations	Jordan Trail Association (JTA)	https://www.jordantrail.org/about/
Service Providers	Bait Al Ward – Aqaba	https://www.bing.com/ck/a?!&&p=8975a8c-8b0e5f9ae7cc953d1a5f86d90f5c61a2dc-8b43a7776fed7d2521f7403JmltdHM9MTc0MDk2MDAw-MA&ptn=3&ver=2&hsh=4&fclid=0254a833-72f2-690c-1cc4-bcee738b6828&psq=Bait+Al+Ward+%e2%80%93+Aqaba&u=a1aHR0cHM6Ly93d3cuZmFjZWJvb2suY29tL2JhaXRhbHdhcmQuam8v&ntb=1
NGO	Salt Development corporation	https://www.bing.com/ck/a?!&&p=de32a90c756cf775ea7b-61f1a46826bf751bdc7af20f50e3f49e8d54d1a8f55bJmltdHM9MTc0MDk2MDAwMA&ptn=3&ver=2&hsh=4&fclid=0254a833-72f2-690c-1cc4-bcee738b6828&psq=Salt+Development+corporation&u=a1aHR0cHM6Ly93d3cuZmFjZWJvb2suY29tL1NhbHREZXZlbG9wbWVudENvcnBvcmF0aW9uLw&ntb=1
Service Providers	Dar Ne'meh	https://www.darnemeh.com/
Service Providers	Aqabawi	https://www.aqabawistudio.com/
Educational Institiute	JUST university	https://www.just.edu.jo/Pages/Default.aspx
Governmental Institutions	Ministry of tourism and antiquities	https://www.bing.com/ck/a?!&&p=410ecb6987f57931150fc4e-a1ea0cf0049dd61eb3eec10cecd159b5e158fe414JmltdHM9MTc0MDk2MDAwMA&ptn=3&ver=2&hsh=4&fclid=0254a833-72f2-690c-1cc4-bcee738b6828&psq=MOTA+jordan&u=a1aHR0cHM6Ly9tb3RhLmdvdi5qby9Fbi9QYWdlcy9BYm91dF9NT1RB&ntb=1
Governmental Institutions	Aqaba Special Economic Zone Authority	https://www.aseza.jo/
Governmental Institutions	Petra Development Tourism Regional Authority	https://pdtra.gov.jo/default/en
Service Providers	Jordanian Heritage Revival Company (JHRC)	https://jhrc.jo/

Palestine

Category	Stakeholder	Link
Civil Society	Tamkeen	https://tamkeen-jo.org/en
Civil Society	Ajloun Women Association	https://www.facebook.com/ajlounladies/?locale=ar_AR
Experts & Research Institutes	Amna Jrrar	https://www.linkedin.com/in/dr-amna-jrrar-1b5320223/?originalSubdomain=jo
Governmental Institutions	Jordan Tourism Board	https://international.visitjordan.com/
Governmental Institutions	Ministry of Environment	https://moenv.gov.jo/Default/En
Governmental Institutions	Ministry of Agriculture	https://moa.gov.jo/Default/EN
Service Providers	Experience Jordan Adventures	https://www.experiencejordan.com/about-us/our-projects/
Service Providers	Royal Society for the Conservation of Nature	https://www.rscn.org.jo/
Service Providers	BookAgri	https://bookagri.com/
Service Providers	Baraka Destinations	https://barakadestinations.com/
Service Providers	Rummana Experience	https://www.instagram.com/rummanajdeita/
Service Providers	Taybeh Farm	https://www.ardjordan.com/book-online-workshops-events
Service Providers	Bait al-Taboun al-Reefi	https://www.facebook.com/people/%D8%A8%D9%8A%D8%AA-%D8%A7%D9%84%D8%B7%D8%A7%D8%A8%D9%88%D9%86-%D8%A7%D9%84%D8%B1%D9%8A%D9%81%D9%8A/100072493115986/
Service Providers	Bait Al Aseelat	https://msha.ke/baytalaselatjerash
Service Providers	Bait Khairat Souf	https://www.facebook.com/beitkhairatsouf1881/
Service Providers	Bait Al-Nahl Al-Jarashi	https://www.asfarplus.com
Service Providers	Mountain Breeze Resort	https://mountainbreeze.jo
Service Providers	Iraq Al Amir	https://web.facebook.com/iraqalamircoop
Service Providers	Maida Farm	https://www.maidaoliveoil.com
Service Providers	Dar Al Shuneh	https://www.greeningthedesertproject.org/dar-al-shouneh-traditional-jordanian-restaurant/
Service Providers	Safi Crafts	https://www.saficrafts.org
Service Providers	Safi Kitchen	https://visitsafijo.com
Service Providers	Carob House	https://carob.earth
Service Providers	Mukawir	https://viavii.com/experience/weaving-basics-in-madaba
Service Providers	Bayt Al-Jameed Al-Karaki	https://web.facebook.com/profile.php?id=100064824485513&_rdc=1&_r

Category	Stakeholder	Link
Service Providers	Feynan Ecolodge	https://ecohotels.me
Service Providers	Shakriyeh	https://traveljordanian.com/explore/cultural-tourism/cooking-experience-at-wadi-rum
Service Providers	Shepherds Tours & Travel	https://shepherdstours.com/
Service Providers	Wadi Rum Protected Area	https://www.rumshines.com
Trail Associations	Jordan Trail Association (JTA)	https://www.jordantrail.org/about/
Service Providers	Bait Al Ward – Aqaba	https://www.bing.com/ck/a?!&&p=8975a8c-8b0e5f9ae7cc953d1a5f86d90f5c61a2dc-8b43a7776fed7d2521f7403JmltdHM9MTc0MDk2MDAw-MA&ptn=3&ver=2&hsh=4&fclid=0254a833-72f2-690c-1cc4-bcee738b6828&psq=Bait+Al+Ward+%e2%80%93+Aqaba&u=a1aHR0cHM6Ly93d3cuZmFjZWJvb2suY29tL2JhaXRhbHdhcmQuam8v&ntb=1
NGO	Salt Development corporation	https://www.bing.com/ck/a?!&&p=de32a90c756cf775ea7b-61f1a46826bf751bdc7af20f50e3f49e8d54d1a8f55bJmltdHM9MTc0MDk2MDAwMA&ptn=3&ver=2&hsh=4&fclid=0254a833-72f2-690c-1cc4-bcee738b6828&psq=Salt+Development+corporation&u=a1aHR0cHM6Ly93d3cuZmFjZWJvb2suY29tL1NhbHREZXZlbG9wbWVudENvcnBvcmF0aW9uLw&ntb=1
Service Providers	Dar Ne'meh	https://www.darnemeh.com/
Service Providers	Aqabawi	https://www.aqabawistudio.com/
Educational Institiute	JUST university	https://www.just.edu.jo/Pages/Default.aspx
Governmental Institutions	Ministry of tourism and antiquities	https://www.bing.com/ck/a?!&&p=410ecb6987f57931150fc4e-a1ea0cf0049dd61eb3eec10cecd159b5e158fe414JmltdHM9MTc0MDk2MDAwMA&ptn=3&ver=2&hsh=4&fclid=0254a833-72f2-690c-1cc4-bcee738b6828&psq=MOTA+jordan&u=a1aHR0cHM6Ly9tb3RhLmdvdi5qby9Fbi9QYWdlcy9BYm91dF9NT1RB&ntb=1
Governmental Institutions	Aqaba Special Economic Zone Authority	https://www.aseza.jo/
Governmental Institutions	Petra Development Tourism Regional Authority	https://pdtra.gov.jo/default/en
Service Providers	Jordanian Heritage Revival Company (JHRC)	https://jhrc.jo/

LIST OF MAIN SOURCES

Lebanon

Title	By	Year	Link
Country Climate and Development Report Lebanon	World Bank	2024	*https://documents1.worldbank.org/curated/en/099030624151542784/pdf/P179617111e46d05c187b91daa689f7b351.pdf*
Anticipating the effects of climate change on winter tourism in Lebanon	L'Orient Today - Mohamed Kayal	2023	*https://today.lorientlejour.com/article/1361300/anticipating-the-effects-of-climate-change-on-winter-tourism-in-lebanon.html*
Lebanon's 4th National Communication on Climate Change	Ministry of Environment	2022	*https://unfccc.int/documents/624754?gad_source=1&gclid=EAIaIQobChMI9qDLqJ_JhgMV4YRoCR3zKgKKEAAYASAAEgJHBfD_BwE*
Lebanon Climate Risk Analysis	US AID	2019	*https://pdf.usaid.gov/pdf_docs/PA00WZTT.pdf*
Supporting the Development of Lebanon's National Adaptation Plan Process	PlanAdapt	2023	*https://www.plan-adapt.org/wp-content/uploads/2024/01/lebanon-2023-good-practices-for-developing-lebanon-nap.pdf*
Climate-Proofing Lebanon's Development Plans	UNDP	2021	*https://www.undp.org/sites/g/files/zskgke326/files/migration/lb/Climate-ProofingLebanonsDevelo-20210922091855.pdf*
Adapt or Trapped: The urgent need for climate change adaptation in Lebanon	Triangle	2021	*https://thebadil.com/wp-content/uploads/2021/08/Adapt-or-Trapped-The-Urgent-Need-of-Climate-Change-Adaptation-in-Lebanon.pdf*
Regenerative Tourism & Nature Conservation Towards an Integrated Approach	AUB-NCC	2024	*https://www.aub.edu.lb/natureconservation/Documents/Regenerative%20Tourism%20White%20Paper.pdf*
Climate change in Lebanon: a Threat Multiplier	UN Lebanon	2021	*https://lebanon.un.org/en/142648-climate-change-lebanon-threat-multiplier*
Climate Change and Tourism in Lebanon	Heinrich Boll Stiftung	2011	*https://lb.boell.org/sites/default/files/uploads/2011/05/110526_climate_change_and_tourism_in_lebanon.pdf*
Educating for the Future Educational Programs Can Stimulate Positive Action on Climate Change in Lebanon, Palestine and Jordan	Anera	2023	*https://www.anera.org/wp-content/uploads/2023/12/OTG-Climate-Change-Education-1.pdf*

Title	By	Year	Link
Critical Investments in Key Sectors Can Help Lebanon Mitigate Climate Change Impact on Growth and Prepare for a Green Transition	World Bank	2024	https://www.worldbank.org/en/news/press-release/2024/03/13/critical-investments-in-key-sectors-can-help-lebanon-mitigate-climate-change-impact-on-growth-and-prepare-for-a-green-tr#:~:text=Climate%20change%20is%20projected%20to,US%2475%20million%2C%20threatening%20the
LMTA 10 Years In Review	LMT	2017	https://api.lebanontrail.org/content/uploads/TheLmtaDirectory/379~LMTS-Mag_6.pdf
Rural tourism in Lebanon: what does the market reveal ?	Ghadban, S., Shames, M., Abou Arrage, J. & Abou Fayyad, A.	2017	https://www.cairn.info/revue-management-et-avenir-2017-6-page-165.htm
Lebanon's National Biodiversity Strategy and Action Plan	UNEP / gef / Ministry of Environment	2016	https://www.cbd.int/doc/world/lb/lb-nbsap-v2-en.pdf
Tourism Sector in Lebanon Policy Recommendations	EU	2018	https://www.omsar.gov.lb/Assets/Tourism-Sector-Report.pdf
Rural Tourism "Economic Impact Analysis" Prepared by Jad Abou Arrage	USAID	2017	https://pdf.usaid.gov/pdf_docs/PA00TPX5.pdf
ILO/LMTA Trail Conservation and Employment Project	LMT	2020	https://api.lebanontrail.org/content/uploads/TheLmtaDirectory/209~Voices-of-the-LMT-Magazine-2021.pdf
UNHCR Lebanon Livelihoods Sector	UNHCR	n.d.	https://data.unhcr.org/en/documents/download/92672
REEF	REEF	2018	http://karianet.org/reef/#:~:text=Rural%20tourism%20in%20Lebanon%20holds,guesthouses%20and%20restaurants%2C%20crafts%20and
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Daskara	AUB-NCC and Fondation Diane	2010	https://www.daskaraapp.com/
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Empowering local municipalities and communities to preserve biodiversity and cultural heritage in Mount Lebanon, Lebanon	EFIMED / DIBA	2023	https://medforest.net/2024/01/17/bridging-the-disconnection-between-people-and-nature-a-success-story-from-lebanon/

Title	By	Year	Link
TER-BRAND: New project on ecotourism promotion and territorial branding launched in Lebanon	MedCities / Municipalities	-	*https://medcities.org/new-project-on-ecotourism-promotion-and-territorial-branding-launched-in-lebanon/*
Climate Change Vulnerability Assessment for the Lebanese Coastal Cities of Batroun and Tyre	Issam Fares Institute	2022	*https://www.aub.edu.lb/ifi/news/Pages/climate-change-vulnerability-assessment-for-the-lebanese-coastal-cities.aspx*
Anthropogenic Climate Change in Qadisha Valley and Horsh Arz el Rab, Lebanon	Sarah Naameh	2020	*https://www.researchgate.net/profile/Sarah-Naameh/publication/347489016_Anthropogenic_Climate_Change_in_Qadisha_Valley_and_Horsh_Arz_el_Rab_Lebanon/links/5fdddfa445851553a0cef982/Anthropogenic-Climate-Change-in-Qadisha-Valley-and-Horsh-Arz-el-Rab-Lebanon.pdf*
Vulnerability and Adaptation	UNDP/ Lebanon Ministry of Environment	-	*https://climatechange.moe.gov.lb/vulnerability-and-adaptation*
Findings from the Consultation Meetings for Lebanon's High Mountains Masterplan	AUB-NCC	2023	*https://www.aub.edu.lb/natureconservation/Documents/LHMM%20Final%20Report_AUB-NCC.pdf*

Jordan

Title	By	Year	Link
Jordan's 2022 - 2025 National Climate Change Policy	World Bank	2023	https://www.undp.org/jordan/publications/jordans-2022-2025-national-climate-change-policy
The National Environmental Awareness Plan	L'Orient Today - Mohamed Kayal	2017	https://www.greenpolicyplatform.org/sites/default/files/A%20National%20Green%20Growth%20Plan%20for%20Jordan.pdf
Responding to Climate Change in Jordan: understanding institutional developments, political restrictions and economic opportunities	Ministry of Environment	2023	https://www.tandfonline.com/doi/full/10.1080/13530194.2023.2279332
Ecotourism resilience to climate change in Dana Biosphere Reserve, Jordan	US AID	2018	https://www.tandfonline.com/doi/pdf/10.1080/09669582.2017.1360893
Jordan Ministry of Environment Website	PlanAdapt	-	https://moenv.gov.jo/AR/List/%D8%A7%D9%84%D8%AA%D8%BA%D9%8A%D8%B1__%D8%A7%D9%84%D9%85%D9%86%D8%A7%D8%AE%D9%8A
Domestic Tourism in Jordan: Patterns, Challenges and Opportunities	UNDP	2019	https://journals.aserspublishing.eu/jemt/article/view/3264
Climate Change Overview: Country Summary - Jordan	Triangle	2023	https://climateknowledgeportal.worldbank.org/country/jordan#:~:text=Aridity%20and%20water%20scarcity%20render,areas%20management%2C%20health%20and%20tourism.
JTA Newsletter	AUB-NCC	2020	https://jordantrail.org/wp-content/uploads/2021/01/JTA-Newsletter-2020-English.pdf
Reformist of Rural Tourism's Strategy in Jordan: Crucial Factors Towards Destination Appeals Among Tourists	UN Lebanon	2022	https://resmilitaris.net/index.php/resmilitaris/article/view/909/695
PERCEPTION OF LOCAL COMMUNITY TOWARDS TOURISM DEVELOPMENT: A STUDY ON RURAL TOURISM SITES OF JORDAN	Heinrich Boll Stiftung	2023	https://www.researchgate.net/publication/376951558_PERCEPTION_OF_LOCAL_COMMUNITY_TOWARDS_TOURISM_DEVELOPMENT_A_STUDY_ON_RURAL_TOURISM_SITES_OF_JORDAN
JORDAN'S TOURISM SECTOR ANALYSIS AND STRATEGY FOR SECTORAL IMPROVEMENT	Anera	2019	https://d-nb.info/1195898355/34
DESTINATION REVIEW FROM A SOCIO-ECONOMIC, POLITICAL AND ENVIRONMENTAL PERSPECTIVE IN ADVENTURE TOURISM	World Bank	2023	https://www.enicbcmed.eu/sites/default/files/2021-03/Destination%20Review-Jordan.pdf

Title	By	Year	Link
Managing heritage tourism in the Decapolis sites of Jordan: Planning opportunities and challenges	LMT	2015	*https://www.ingentaconnect.com/contentone/cog/tcc/2015/00000015/00000002/art00005?utm_source=TrendMD&utm_medium=cpc&utm_campaign=Tourism_Culture_%2526_Communication_TrendMD_0*
Trail tourism makes inroads across Jordan	Ghadban, S., Shames, M., Abou Arrage, J. & Abou Fayyad, A.	2023	*https://jordantimes.com/news/local/trail-tourism-makes-inroads-across-jordan*
Vulnerability assessment of the water sector to climate change in Jordan	UNEP / gef / Ministry of Environment	2022	*https://www.unescwa.org/sites/default/files/pubs/pdf/vulnerability-assessment-water-sector-climate-change-jordan-english.pdf*
Jordan's Bedouins take on the struggles of climate change	EU	2023	*https://www.aljazeera.com/news/2023/5/26/jordans-bedouins-take-on-the-struggles-of-climate-change*
WOMEN AND WORK IN JORDAN TOURISM AND ICT SECTORS: A CASE STUDY	USAID	2010	*https://www.etf.europa.eu/sites/default/files/m/BE3D52C73C5D0031C12578CC0056B2DA_Women%20and%20work%20in%20Jordan%20-%202011_EN.pdf*
Integrated vulnerability assessment of ecotourism to climate change in Dana Biosphere Reserve, Jordan	LMT	2016	*https://www.tandfonline.com/doi/full/10.1080/13683500.2017.1401982*
Country Climate and Development Report Jordan	UNHCR	2022	*https://openknowledge.worldbank.org/server/api/core/bitstreams/7c81ff9b-6f43-5648-be15-b2e2b25d1d33/content*
The National Climate Change Adaptation Plan of Jordan	REEF	2022	*https://www.moenv.gov.jo/ebv4.0/root_storage/en/eb_list_page/national_adaptation_plan.pdf*
The Potential for Developing Community-based Tourism among the Bedouins in the Badia of Jordan	UNDP	2008	*https://www.researchgate.net/publication/241731423_The_Potential_for_Developing_Community-based_Tourism_among_the_Bedouins_in_the_Badia_of_Jordan*
MY JORDAN JOURNAL STORIES OF ADVENTURE, CULTURE, AND FAITH IN JORDAN Pedaling Through Jordan: Local Communities Along the Jordan Trail	AUB-NCC and Fondation Diane	2023	*https://blog.myjordanjourney.com/jordans-hotels-and-inns-are-unlike-anywhere-else-in-the-world-0*

Palestine

Title	By	Year	Link
Alternative tourism: new forms of tourism in Bethlehem for the Palestinian tourism industry	Rami Khalil Isaac	2008	https://www.tandfonline.com/doi/full/10.1080/13683500802495677
Palestinian Reform and Development Plan	Palestinian National Authority	2008	https://www.un.org/unispal/document/auto-insert-208834/
Twenty-first-century climate change in the Middle East	Evans, J.P	2009	http://dx.doi.org/10.1007/s10584-008-9438-5
Energy profile and the potential of renewable energy sources in Palestine	Ibrik, I	2009	
Moving from pilgrimage to responsible tourism: the case of Palestine	Rami Khalil Isaac	2010	https://www.tandfonline.com/doi/pdf/10.1080/13683500903464218
Programme of Assistance to the Palestinian People	UNDP	2010	https://www.undp.org/papp/publications/palestinian-climate-change-adaptation-strategy
Moving from pilgrimage to “dark” tourism: Leveraging tourism in Palestine	Rami Khalil Isaac Gregory J. Ashworth	2011	https://www.ingentaconnect.com/content/cog/tcc/2011/00000011/00000003/art00002
Climate Change and Water in the Arab Region	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	2012	https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/africa/egypt-amp-libya/GIZ.-2012.-CC--Water-in-Arab-Region..pdf
Economic Impacts of Climate Change in the Southern Mediterranean	Bosello, F. and Eboli, F	2013	https://www.files.ethz.ch/isn/159586/MED-PRO%20TR25%20by%20Bosello%20&%20Eboli%20Final.pdf
Palestinian Climate Change Adaptation Strategy	UNDP	2013	https://www.undp.org/papp/publications/palestinian-climate-change-adaptation-strategy
Climate change 2014: Synthesis report	IPCC	2014	http://ipcc.ch/report/ar5/syr/
Trans-boundary climate security climate vulnerability and rural livelihoods in the Jordan river basin	Mason, M. and Mimi, Z	2014	http://dx.doi.org/10.13140/RG.2.2.30763.92961
Experiential Community-Based rural tourism potential in Palestine	Raed Saadeh	2015	https://www.taylorfrancis.com/chapters/edit/10.4324/9781315740508-9/experiential-community-based-rural-tourism-potential-palestine-raed-saadeh
Domestic and Outbound Tourism Survey 2014	Palestine Central Bureau of Statistics (PCBS)	2015	https://www.pcbs.gov.ps/PCBS-Metadata-en-v5.2/index.php/catalog/698
State of the Environment in the State of Palestine: Jerusalem	Applied Research Institute – Jerusalem (ARIJ)	2015	http://www.arij.org/files/arijadmin/2016/Final_SOER_2015_opt_r.pdf

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Palestinian Food Security Sector 2016 3rd Quarter Highlights	Food Security Sector	2016	*https://reliefweb.int/report/occupied-palestinian-territory/palestinian-food-security-sector-2016-3rd-quarter-highlights*
Initial National Communication Report to the UNFCCC	State of Palestine Environment Authority Quality	2016	*https://unfccc.int/sites/default/files/resource/Initial%20National%20Communication%20Report_%20State%20of%20Palestine.pdf*
National Adaptation Plan (NAP) to Climate Change	Smithers et al	2016	*https://unfccc.int/files/national_reports/non-annex_i_parties/application/pdf/national_adaptation_plan__state_of_palestine.pdf*
Social Vulnerability Assessment Tools for Climate Change and DRR Programming	UNDP	2017	*https://adaptation-undp.org/sites/default/files/resources/social_vulnerability05102017_0.pdf*
Resilience Series: Tourism in Palestine	UNDP	2017	*https://www.undp.org/sites/g/files/zskgke326/files/2022-11/tourism_-_draft.pdf*
Arab Climate Change Assessment Report: Main Report	ESCWA	2017	*https://www.riccar.org/knowledge-resources/main-reports*
The Economics of Climate Change in Palestine. ClimaSouth Technical Paper	Tippmann, R. & Baroni, L	2017	*http://www.climasouth.eu/sites/default/files/Technical%20Paper%20N.2%20Palestine%20%282.0%29_amend%20RT%20040717.pdf*
Transformational host communities: Justice tourism and the water regime in Palestine	Rami Khalil Isaac	2017	*https://www.ingentaconnect.com/content/cog/tcc/2017/00000017/00000002/art00006*
Securing water for development in West Bank and Gaza	World Bank	2018	*http://documents.worldbank.org/curated/en/736571530044615402/WP-P157979-Securing-Water-for-Development-in-West-Bank-and-Gaza-PUBLIC.pdf*
Country Programming Framework for Palestine 2018-2022	Food and Agriculture Organization of the United Nations (FAO)	2018	*http://www.fao.org/3/i8933en/I8933EN.pdf*
Climate Change, the Occupation, and a Vulnerable Palestine	Zena Agha	2019	*https://al-shabaka.org/briefs/climate-change-the-occupation-and-a-vulnerable-palestine/?generate_pdf=view*
Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine	Palestine Institute for Biodiversity and Sustainability (PIBS)	2019	*www.palestinenature.org/conservation/NGS-Initial-study.pdf*
Climate Change, Water Security, and National Security for Jordan, Palestine, and Israel	EcoPeace Middle East	2019	*https://ecopeaceme.org/wp-content/uploads/2022/03/climate-change-water-securityand-national-security-for-jordanpalestine-and-israel.pdf*
Challenges Facing the Tourism Sector in Palestine: A Chinese Perspective	Ghodieh, Ahmed & Abahre, Jafar & Abahre, Hardan & Huang, & Huang, Patrick	2019	*http://doi.org/10.15640/jthm.v7n1a2*

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State of Environment and Outlook Report for the oPt 2020 – UN Environmental Program Report	UNEP	2020	*https://www.un.org/unispal/document/state-of-environment-and-outlook-report-for-the-opt-2020-un-environmental-program-report/#:~:text=UNEP%20found%20substantial%20evidence%20of,solid%20waste%20and%20unregulated%20industries.*
Biodiversity Conservation and Community Development in Al-Makhrour Valley in Bethlehem, Palestine	Saadeh, R	2020	*https://almakhrour.palestinenature.org/wp-content/uploads/2020/05/Annex-14-Tourism-Business-plan.pdf*
Palestinian National Voluntary Review on the Implementation of the 2030 Agenda in 2020: Summary Report	State of Palestine	2021	*https://sustainabledevelopment.un.org/content/documents/20024VNR2018PalestineNEWYORK.pdf*
United Nations Common Country Analysis for the Occupied Palestinian Territory	United Nations	2022	*https://palestine.un.org/sites/default/files/2023-08/United%20Nations%20Common%20Country%20Analysis%20for%20the%20Occupied%20Palestinian%20Territory.pdf*
Palestinian Heritage Trail Guide Book	PHT	2022	*https://afrat.com/wp-content/uploads/2022/02/Atlas-Guidebook_26012022.pdf*
US$2.4 million to Maximize the Economic Impact of Community-Based Tourism in Rural Communities in the West Bank	The World Bank	2022	*https://www.worldbank.org/en/news/press-release/2022/03/31/us-2-4-million-to-maximize-the-economic-impact-of-community-based-tourism-in-rural-communities-in-the-west-bank*
West Bank and Gaza Country Climate and Development Report	World Bank	2023	*https://reliefweb.int/report/occupied-palestinian-territory/west-bank-and-gaza-country-climate-and-development-report*
The potential of ecotourism in Palestine. A Med Pearls article on the benefits of sustainable tourism practices.	ENI CBCMED / Med Pearls / EU	2023	*https://www.enicbcmed.eu/potential-ecotourism-palestine-med-pearls-article-benefits-sustainable-tourism-practices*
How Palestine is switching to a circular economy	UNEP	2023	*https://wedocs.unep.org/bitstream/handle/20.500.11822/43863/circular_economy_palestine.pdf?sequence=3&isAllowed=y*
Supporting sustainable tourism through the safeguarding, rehabilitation and promotion of the Agro-Cultural Landscape in Battir, Palestine	Saleh, A	2023	*https://gerusalemme.aics.gov.it/en/news/2023/6238/*
The Way Forward A Strategic Critique of the Palestinian Tourism Sector	This Week In Palestine	N/A	*https://thisweekinpalestine.com/the-way-forward/*
Sustainable Tourism in Palestine?	Anna Khdair - This Week in Palestine	N/A	*https://thisweekinpalestine.com/sustainable-tourism-in-palestine/*
Promoting Palestine as a Tourist Destination		NA	*https://www.rozana.ps/promoting-palestine-as-a-tourist-destination/?lang=en*