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HERIT ADAPT

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Transnational Sustainable and Resilient Tourism Strategy

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Abstract

This document presents the Transnational Sustainable and Resilient Tourism Strategy developed within the HERIT ADAPT project. The strategy establishes a common governance and operational framework supporting adaptive, climate-aware and evidence-based management of heritage tourism destinations across the Euro-Mediterranean region.

The strategy is based on the comparative analysis of pilot activities, cross-site clustering of measures and synthesis of strategic findings implemented across diverse heritage contexts, including UNESCO urban environments, archaeological sites, museums, cultural landscapes and mixed cultural-natural territories. It translates local pilot experiences into transferable strategic directions, implementation pathways and policy recommendations applicable across different territorial and institutional contexts.

The HERIT ADAPT approach is structured around three interconnected pillars:
• data and monitoring systems;
• governance and stakeholder coordination;
• strategy development and implementation.

The analysis demonstrates that sustainable tourism governance increasingly depends on the integration of digital transformation, environmental monitoring, climate adaptation, participatory governance and adaptive operational management.

The strategy identifies five integrated transnational strategic directions:
1. Digital Twins for Adaptive Visitor Management;
2. Narrative Connectivity for Visitor Redistribution;
3. Climate-Aware Heritage Management;
4. Co-creation and Participatory Governance;
5. Data-driven Decision Making and Monitoring.

The document additionally establishes a common KPI and monitoring framework supporting evidence-based decision-making, operational evaluation and transferability of HERIT ADAPT approaches across diverse heritage destinations.

The strategy ultimately demonstrates that resilient heritage tourism governance requires integrated approaches capable of connecting monitoring systems, climate adaptation, participatory governance and strategic decision-making into coherent and scalable governance ecosystems. In this way, HERIT ADAPT provides a transferable framework for strengthening the long-term sustainability and resilience of heritage destinations across the Euro-Mediterranean region.

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Project Partners

Organization	Abbreviation	Country
Region of Western Greece	RWG	GR
ATHENA, Research and Innovation Centre in Information, Communication and Knowledge Technologies, Industrial Systems Institute	ATHENA	GR
European Public Law Organization	EPLO	GR
Sapienza University of Rome	SDR	IT
Municipality of Genoa	COMGE	IT
Dubrovnik Development Agency DURA	DURA	HR
Limassol Tourism Development and Promotion Co Ltd	LTC	CY
Old Royal Capital Cetinje	PCT/ORCC	ME
University of Granada	UGR	ES
Regional Tourism Agency Occitanie	CRTL	FR
Ministry of Tourism of the Republic of Bulgaria	MTRB	BG

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Glossary

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0. EXECUTIVE SUMMARY

The HERIT ADAPT project addresses the growing challenges affecting Euro-Mediterranean heritage destinations exposed to tourism pressure, climate-related risks, environmental degradation and increasing governance complexity. Across the partnership, pilot sites demonstrate that traditional and fragmented approaches to tourism and heritage management are no longer sufficient to ensure long-term sustainability and resilience of cultural and natural heritage environments.

The Transnational Sustainable and Resilient Tourism Strategy developed within HERIT ADAPT establishes a common strategic and governance framework capable of supporting adaptive, evidence-based and climate-aware tourism management across diverse territorial contexts. The strategy is based on the comparative analysis of pilot activities implemented in different heritage environments, including UNESCO urban heritage sites, archaeological areas, museums, remote cultural landscapes and mixed cultural-natural territories across the Euro-Mediterranean region.

The strategy is grounded in the HERIT ADAPT Sustainable Tourism Model, which integrates three interconnected pillars:

- data and monitoring systems;
- governance and stakeholder coordination;
- strategy development and implementation.

The comparative pilot analysis demonstrates that sustainable tourism governance increasingly depends on the integration of:

- digital transformation;
- environmental monitoring;
- preventive conservation;
- tourism intelligence;
- participatory governance;
- adaptive operational management.

The pilot sites reveal several recurring cross-site challenges, including:

- tourism concentration and seasonality;
- uneven territorial distribution of visitors;
- environmental and climate-related vulnerability;
- fragmented governance structures;
- insufficient monitoring capacities;

- weak interoperability between tourism, conservation and digital systems.

At the same time, the pilots demonstrate strong opportunities for developing transferable and scalable governance approaches capable of strengthening resilience of heritage destinations across the Mediterranean region.

The analysis identified five integrated transnational strategic directions:

1. Digital Twins for Adaptive Visitor Management;
2. Narrative Connectivity for Visitor Redistribution;
3. Climate-Aware Heritage Management;
4. Co-creation and Participatory Governance;
5. Data-driven Decision Making and Monitoring.

These strategic directions collectively support the transition: from fragmented and reactive management toward integrated and adaptive governance systems capable of responding to rapidly evolving sustainability challenges.

Particular importance is given to the role of digital documentation, environmental monitoring and territorial intelligence systems as operational tools supporting preventive conservation, visitor management and climate adaptation. The project additionally demonstrates that technological innovation alone is insufficient without governance continuity, institutional coordination and long-term operational ownership.

The strategy also highlights the importance of participatory governance mechanisms, particularly Territorial Working Groups (TWGs), as key instruments for strengthening interdisciplinary cooperation between heritage institutions, tourism organizations, municipalities, environmental stakeholders, research organizations and local communities.

A central contribution of HERIT ADAPT lies in the development of a harmonized transnational monitoring and KPI framework supporting:

- evidence-based decision-making;
- operational monitoring;
- resilience assessment;
- comparability between pilot sites;
- transferability and scalability of implemented approaches.

The project further demonstrates that adaptive and resilient tourism governance does not require identical technological sophistication across all contexts. Many governance-oriented and narrative-based measures — including stakeholder coordination, participatory planning, territorial storytelling and visitor redistribution strategies — show strong transferability potential even in locations with limited financial and technical capacities.

The transnational dimension of HERIT ADAPT therefore represents one of the project's most important strategic values. By testing governance approaches, monitoring systems and resilience strategies across highly diverse territorial contexts, the project contributes to the development of a flexible Euro-Mediterranean governance model capable of supporting sustainable tourism management under conditions of increasing climate uncertainty, operational complexity and tourism pressure.

The strategy ultimately demonstrates that the future resilience of heritage tourism destinations will increasingly depend on the ability to combine:

- digital intelligence;
- environmental monitoring;
- preventive conservation;
- participatory governance;
- adaptive visitor management;
- climate-responsive planning;
- integrated operational coordination

into coherent and interoperable governance ecosystems supporting long-term sustainability of Euro-Mediterranean heritage environments.

1. INTRODUCTION

1.1 Background and Context

The Euro-Mediterranean region contains some of the world's most valuable and internationally recognized cultural and natural heritage destinations. At the same time, many of these destinations are increasingly exposed to growing tourism pressure, environmental degradation, climate-related risks and complex governance challenges affecting their long-term sustainability and resilience.

Historic urban centres, archaeological sites, museums, cultural landscapes and protected heritage environments across the Mediterranean are experiencing:

- increasing visitor concentration;
- strong seasonality;
- pressure on conservation-sensitive assets;
- environmental instability;

- climate-related deterioration risks;
- fragmentation between tourism, conservation and governance systems.

These challenges are particularly evident in UNESCO heritage environments and tourism-intensive destinations, where the balance between tourism development, heritage preservation and quality of life is becoming increasingly difficult to maintain.

At the same time, many heritage destinations continue to operate with:

- fragmented governance structures;
- limited monitoring systems;
- insufficient interoperability between datasets;
- weak operational integration of digital tools;
- reactive rather than preventive management approaches.

The HERIT ADAPT project responds directly to these challenges by promoting integrated, adaptive and resilience-oriented approaches to sustainable tourism governance across diverse Euro-Mediterranean heritage contexts.

1.2 Purpose of the Transnational Strategy

The purpose of the Transnational Sustainable and Resilient Tourism Strategy is to synthesize the experiences, pilot activities, governance approaches and strategic findings developed across the HERIT ADAPT partnership into a coherent transnational framework supporting sustainable and resilient heritage tourism governance.

The strategy does not function as a compilation of individual pilot strategies. Instead, it translates local pilot experiences into:

- transferable strategic directions;
- integrated governance approaches;
- common implementation pathways;
- harmonized monitoring frameworks;
- policy recommendations applicable across different territorial contexts.

The strategy therefore aims to:

- identify common cross-site challenges and opportunities;
- evaluate pilot measures and governance approaches;
- define scalable and transferable strategic directions;
- strengthen evidence-based and climate-aware tourism governance;
- support adaptive management of heritage destinations;

- contribute to future Euro-Mediterranean cooperation frameworks related to sustainable tourism and heritage resilience.

A central objective of the strategy is to ensure that HERIT ADAPT pilot activities evolve beyond isolated local interventions and contribute to the development of a broader governance-oriented resilience model applicable across the Mediterranean region.

1.3 Methodological Approach

The transnational strategy is based on a comparative and integrative methodological approach combining:

- pilot-level strategies;
- territorial profiles;
- pilot implementation data;
- HERIT ADAPT Use Cases (UC1–UC4);
- governance and monitoring assessments;
- stakeholder inputs;
- KPI frameworks;
- qualitative and quantitative analysis.

The methodology builds upon the HERIT ADAPT Sustainable Tourism Model and the structured data collection framework developed for all project partners. The strategy additionally incorporates findings from:

- pilot implementation activities;
- environmental and tourism monitoring systems;
- participatory governance processes;
- Territorial Working Groups (TWGs);
- transferability and scalability assessments.

Rather than reproducing detailed local analyses, the methodology focuses on:

- cross-site comparison;
- identification of recurring patterns;
- clustering of strategic measures;
- extraction of transferable governance approaches;
- synthesis of common strategic directions.

The comparative methodology additionally recognizes the strong diversity of pilot contexts across the partnership, including:

- UNESCO urban heritage sites;
- archaeological environments;
- museums and cultural institutions;
- remote rural heritage areas;
- mixed cultural-natural landscapes;
- regionally distributed tourism systems.

This diversity represents a major analytical strength of the HERIT ADAPT project because it enables testing of sustainable tourism governance approaches under highly different operational, environmental and institutional conditions.

1.4 Strategic Scope of the Document

The strategy addresses sustainable and resilient tourism governance through an integrated perspective combining:

- tourism management;
- heritage conservation;
- climate adaptation;
- environmental monitoring;
- digital transformation;
- participatory governance;
- territorial intelligence;
- adaptive operational management.

The document specifically focuses on:

- strategic clustering of pilot measures;
- governance and implementation models;
- monitoring and KPI systems;
- transferability and scalability potential;
- policy implications for sustainable tourism governance.

Particular emphasis is placed on:

- adaptive governance;

- evidence-based decision-making;
- interoperability between tourism and conservation systems;
- integration of climate resilience into heritage management;
- long-term operational sustainability of monitoring and digital infrastructures.

The strategy therefore moves beyond conventional tourism planning approaches focused primarily on visitor growth and promotion. Instead, it promotes integrated governance ecosystems capable of supporting long-term resilience of heritage destinations exposed to increasing environmental and tourism-related pressures.

1.5 Transnational Relevance of HERIT ADAPT

One of the major added values of HERIT ADAPT lies in its transnational dimension. The partnership brings together pilot sites with highly different:

- territorial typologies;
- tourism dynamics;
- governance structures;
- climate vulnerabilities;
- digital maturity levels;
- operational capacities.

Despite these differences, the comparative analysis reveals strong common challenges and strategic priorities across the Euro-Mediterranean region.

The project therefore demonstrates that sustainable tourism governance increasingly requires:

- interdisciplinary cooperation;
- integration of monitoring systems;
- climate-aware operational planning;
- participatory governance mechanisms;
- adaptive management approaches;
- evidence-based policy development.

The transnational strategy contributes to this objective by transforming local pilot experiences into transferable governance and resilience models applicable beyond the original HERIT ADAPT partnership.

In this sense, HERIT ADAPT functions not only as a project focused on pilot implementation, but also as a broader knowledge and governance platform supporting the future development of adaptive and resilient heritage tourism management across the Mediterranean region.

2. HERIT ADAPT SUSTAINABLE TOURISM MODEL

2.1 Introduction

The HERIT ADAPT Sustainable Tourism Model provides the conceptual and operational foundation for the development of sustainable and resilient tourism governance across the project partnership. The model was developed in response to the growing complexity of challenges affecting Euro-Mediterranean heritage destinations exposed to tourism pressure, environmental degradation, climate-related risks and fragmented governance systems.

The model recognizes that sustainable tourism governance can no longer rely on isolated sectoral approaches focused exclusively on tourism promotion, conservation activities or technological innovation. Instead, effective long-term management increasingly requires integrated governance systems capable of combining:

- monitoring and operational intelligence;
- participatory governance;
- adaptive strategic planning;
- climate resilience;
- preventive conservation;
- evidence-based decision-making.

The HERIT ADAPT approach therefore promotes a transition: from fragmented and reactive management toward integrated and adaptive governance ecosystems supporting long-term resilience of heritage destinations.

2.2 Structure of the HERIT ADAPT Model

The HERIT ADAPT Sustainable Tourism Model is structured around three interconnected pillars:

1. Data and Monitoring Systems;
2. Governance and Stakeholder Coordination;
3. Strategy Development and Implementation.

These pillars function as mutually reinforcing components of an integrated operational framework.

The model assumes that sustainable tourism governance depends on:

- reliable and continuous monitoring systems;
- institutional coordination and participatory governance;
- strategic translation of data and pilot activities into operational and policy frameworks.

The comparative pilot analysis demonstrates that none of these dimensions can function effectively in isolation. Monitoring systems without governance integration remain underutilized, while governance structures without reliable operational data lack the capacity for adaptive and evidence-based decision-making.

2.3 Pillar 1 – Data and Monitoring Systems

The first pillar focuses on the development and integration of data collection, monitoring systems and operational intelligence tools supporting adaptive management of heritage destinations.

Across the partnership, pilot activities demonstrate growing importance of:

- digital twins and 3D documentation;
- environmental monitoring systems;
- tourism intelligence platforms;
- visitor analytics;
- dashboard systems;
- integrated KPI frameworks;
- geospatial datasets and territorial observation systems.

The pilots additionally demonstrate strong diversity in digital maturity and operational readiness. While some sites operate advanced territorial intelligence systems and environmental monitoring infrastructures, others are still establishing baseline digital documentation and monitoring capacities.

Despite these differences, the comparative analysis confirms that monitoring systems increasingly represent a core operational requirement for:

- preventive conservation;
- climate adaptation;
- adaptive visitor management;
- operational risk assessment;
- evidence-based tourism governance.

A particularly important finding emerging from HERIT ADAPT is that monitoring systems should not function solely as technical infrastructures for data collection. Their strategic value depends on their integration into:

- operational management;
- governance coordination;
- strategic planning;

- maintenance protocols;
- decision-support environments.

The pilots additionally demonstrate the growing relevance of interoperability between:

- tourism datasets;
- environmental monitoring systems;
- conservation documentation;
- territorial intelligence platforms;
- governance and reporting systems.

2.4 Pillar 2 – Governance and Stakeholder Coordination

The second pillar focuses on governance coordination and participatory management structures supporting implementation and long-term operational continuity.

The HERIT ADAPT pilots consistently demonstrate that technological innovation alone is insufficient without:

- institutional ownership;
- governance continuity;
- interdisciplinary cooperation;
- stakeholder coordination;
- operational integration.

Across the partnership, pilot activities involved a broad range of stakeholders, including:

- municipalities and regional authorities;
- heritage institutions;
- tourism organizations;
- environmental actors;
- universities and research institutions;
- digital and technical experts;
- civil society organizations;
- local communities.

One of the most important governance innovations emerging from the project is the establishment of Territorial Working Groups (TWGs). These structures support:

- stakeholder engagement;

- interdisciplinary coordination;
- co-creation of pilot measures;
- strategic alignment between tourism and conservation objectives;
- integration of local knowledge into planning processes.

The pilots demonstrate that governance fragmentation remains one of the main barriers affecting sustainable tourism management across heritage destinations. Common challenges include:

- overlapping institutional mandates;
- fragmented operational responsibilities;
- weak integration between tourism and conservation sectors;
- limited staffing capacities;
- insufficient continuity after project completion.

The HERIT ADAPT model therefore positions governance coordination as a central enabling condition for:

- operational effectiveness;
- adaptive management;
- long-term sustainability of monitoring systems;
- implementation of resilience-oriented strategies.

2.5 Pillar 3 – Strategy Development and Implementation

The third pillar focuses on translating pilot activities, monitoring systems and governance mechanisms into strategic frameworks, operational pathways and resilience-oriented implementation models.

The HERIT ADAPT approach recognizes that pilot projects generate value only when:

- operational lessons are systematically evaluated;
- successful measures are clustered and synthesized;
- transferable governance approaches are identified;
- monitoring systems support long-term operational decision-making;
- implementation pathways are clearly defined.

The strategic dimension of the model therefore focuses on:

- strategic clustering of pilot measures;
- development of transnational strategic directions;

- establishment of implementation pathways;
- integration of monitoring and KPI systems;
- transferability and scalability assessment;
- formulation of policy recommendations.

The pilots additionally demonstrate that sustainable tourism governance increasingly requires:

- adaptive implementation approaches;
- phased digital maturity pathways;
- climate-responsive operational planning;
- evidence-based management systems;
- long-term maintenance frameworks.

Rather than promoting rigid standardization, the HERIT ADAPT model supports flexible and scalable implementation capable of adaptation to different:

- territorial contexts;
- governance structures;
- institutional capacities;
- digital maturity levels;
- tourism dynamics.

2.6 Role of HERIT ADAPT Use Cases (UC1–UC4)

The operational dimension of the HERIT ADAPT model is further structured through four Use Case categories (UC1–UC4), which support testing and implementation of different governance and technological approaches across pilot sites.

The Use Cases include:

- UC1 – Digital Documentation and Digital Twins;
- UC2 – Environmental and Structural Monitoring;
- UC3 – Dashboards and Decision-Support Systems;
- UC4 – Visitor Analytics, Territorial Intelligence and Participatory Governance.

The Use Cases function as practical implementation layers supporting:

- pilot experimentation;
- operational testing;
- evaluation of transferability;

- identification of strategic clusters;
- development of transnational governance approaches.

Importantly, the comparative analysis demonstrates that the Use Cases should not be treated as isolated technological categories. Their strategic value emerges through their integration into broader governance and operational management systems.

The pilots additionally demonstrate substantial differences in:

- implementation maturity;
- technological sophistication;
- operational integration;
- governance readiness.

This diversity provides an important analytical basis for evaluating:

- scalability;
- adaptability;
- transferability of HERIT ADAPT approaches across different territorial realities.

2.7 Integrated Logic of the HERIT ADAPT Model

The comparative pilot analysis demonstrates that the three pillars of the HERIT ADAPT model are strongly interconnected.

Monitoring systems generate operational intelligence. Governance structures enable coordination and implementation. Strategic frameworks translate pilot experiences into long-term adaptive management approaches.

The HERIT ADAPT model therefore functions as an integrated governance ecosystem combining:

- digital transformation;
- climate resilience;
- tourism intelligence;
- participatory governance;
- preventive conservation;
- adaptive operational management.

This integrated logic represents one of the project's main strategic contributions because it demonstrates how sustainable tourism governance can evolve:
from fragmented and reactive approaches
toward adaptive, evidence-based and climate-aware governance systems capable of responding to rapidly evolving sustainability challenges affecting Euro-Mediterranean heritage destinations.

3. OVERVIEW OF PILOT SITES

3.1 Introduction

The HERIT ADAPT partnership brings together nine pilot sites representing a diverse range of heritage and tourism contexts across the Euro-Mediterranean region. The pilots include UNESCO urban heritage environments, archaeological sites, museums, cultural landscapes, historic fortifications and regional tourism systems, providing a unique opportunity to test sustainable and resilient tourism approaches under different territorial, environmental and governance conditions.

The pilot sites differ significantly in terms of:

- territorial typology and scale;
- tourism intensity and visitor dynamics;
- climate and environmental exposure;
- governance structures and institutional capacities;
- levels of digital maturity and monitoring capabilities.

Some pilots operate within tourism-intensive environments facing challenges related to visitor concentration, congestion and pressure on heritage assets, while others are primarily concerned with visibility, accessibility and territorial integration. Similarly, the degree of technological development varies considerably, ranging from advanced digital documentation, monitoring and territorial intelligence systems to sites that are still establishing baseline digital and monitoring capacities.

Despite this diversity, the comparative analysis reveals a number of common challenges affecting heritage destinations across the partnership. These include increasing climate-related risks, the need for stronger integration between tourism and conservation objectives, fragmented governance structures, limited monitoring capacities and growing demand for evidence-based decision-making.

The diversity of pilot contexts represents one of the main strengths of the HERIT ADAPT project. It enables the identification of transferable solutions, governance approaches and strategic directions that can be adapted to a wide range of heritage destinations across the Euro-Mediterranean region. The following sections provide an overview of the pilot sites and their contribution to the development of the HERIT ADAPT Sustainable Tourism Model.

3.2 Pilot Typology and Territorial Context

The HERIT ADAPT pilot network includes a wide spectrum of heritage typologies and tourism contexts, ranging from highly urbanized UNESCO destinations to remote rural and archaeological heritage landscapes.

Table 1. Overview of HERIT ADAPT Pilot Sites, Challenges and Solutions

Pilot Site	Country	Typology	Main Challenges	HERIT ADAPT Solution	Use Case(s)
Temple of Apollo Epicurius (Bassae)	Greece	Archaeological site, mountainous heritage monument	Remote location, low visibility, limited integration into tourism flows, need for heritage preservation	High-resolution 3D documentation and digital modelling supporting conservation, interpretation and visitor redistribution	UC1
Temple of Apollo Hylates (Limassol)	Cyprus	Archaeological site	Heritage conservation, visitor interpretation, digital accessibility	Digital documentation and 3D representation of heritage assets supporting management and interpretation	UC1
Roman Houses of Celio Hill (Rome)	Italy	Archaeological and underground heritage site	Limited visibility of underground heritage, visitor engagement challenges	XR/AR technologies enhancing interpretation, accessibility and immersive visitor experiences	UC2
Museo Chiossone and Villetta Di Negro Park (Genoa)	Italy	Museum and urban cultural landscape	Visitor concentration in historic centre, low visibility of secondary cultural attractions, fragmented governance	Digitalisation of heritage assets, participatory mapping, accessibility improvements and visitor redistribution measures	UC1, UC2, UC4
Rector's Palace (Dubrovnik)	Croatia	Urban museum and UNESCO heritage attraction	Overtourism, conservation risks, climate-related impacts, need for data-driven management	Integrated 3D documentation, environmental monitoring, predictive conservation and adaptive visitor management approaches	UC1, UC4

Pilot Site	Country	Typology	Main Challenges	HERIT ADAPT Solution	Use Case(s)
Monumental Complex of Alhambra and Generalife (Granada)	Spain	UNESCO cultural landscape and heritage complex	Visitor concentration, need for tourism redistribution and enhanced storytelling	AI-supported storytelling, narrative connectivity and digital interpretation tools supporting sustainable visitor distribution	UC3 (potential UC2, UC4)
Canigó Grand Site / Villefranche-de-Conflent	France	Cultural landscape and mountain destination	Visitor management across dispersed territory, environmental pressures, climate resilience	Tourism observatory, data integration, monitoring tools and governance mechanisms supporting adaptive management	UC4
Žabljak Crnojevića Fortress	Montenegro	Archaeological site, rural cultural landscape	Difficult accessibility, lack of monitoring systems, fragmented governance, climate exposure	LiDAR-based 3D documentation, digital twin development and planned environmental and visitor monitoring systems	UC1
Mausoleum–Ossuary, Koprivshtitsa	Bulgaria	Memorial and cultural heritage site	Heritage preservation, environmental risks, limited monitoring capacity	Digital documentation, environmental monitoring and data-driven heritage management tools	UC1, UC4

The nine HERIT ADAPT pilot sites represent a diverse range of cultural and natural heritage contexts, including UNESCO World Heritage properties, archaeological sites, museums, memorial heritage, cultural landscapes and rural heritage assets. Despite their territorial diversity, all pilot sites address common challenges related to heritage conservation, tourism management, climate resilience, governance complexity and the need for improved monitoring and data-informed decision-making. Through the implementation of four complementary HERIT ADAPT Use Cases (UC1–UC4), the partnership tests a wide range of digital, governance and monitoring solutions that

collectively contribute to the development of a transferable framework for sustainable and resilient tourism management.

3.3 Comparative Characteristics of the Pilot Network

Although the HERIT ADAPT pilot sites differ considerably in terms of geography, scale and institutional context, several common characteristics can be identified across the partnership. These similarities provide an important basis for comparative analysis and the development of transferable strategic approaches.

Heritage Typologies

The pilot network encompasses a broad range of heritage typologies, including UNESCO World Heritage environments, archaeological sites, museums, cultural landscapes and mixed cultural-natural destinations. This diversity allows HERIT ADAPT solutions to be tested across highly different heritage management contexts, ranging from internationally recognized tourism destinations to remote and under-visited heritage areas.

Tourism Dynamics

Tourism dynamics vary significantly across the partnership. Some pilot sites operate under conditions of high tourism pressure and visitor concentration, particularly within UNESCO and urban heritage environments. Others face challenges related to limited visibility, accessibility constraints and low integration into regional tourism flows. Several pilots also demonstrate opportunities for visitor redistribution through territorial diversification, storytelling approaches and improved connectivity between flagship attractions and lesser-known heritage assets.

Governance Diversity

The partnership includes sites with different levels of governance maturity and institutional capacity. While some pilots benefit from established governance structures and strong cooperation between tourism, heritage and public authorities, others face fragmented responsibilities and limited operational coordination. Despite these differences, all pilot sites demonstrate the importance of stakeholder cooperation and participatory governance mechanisms for the successful implementation of sustainable tourism strategies.

Digital Maturity

Levels of digital maturity vary substantially across the pilot network. Some sites have implemented advanced digital documentation, monitoring systems, visitor analytics and territorial intelligence platforms, while others are still establishing baseline digital capacities. This diversity provides a valuable testing environment for assessing how HERIT ADAPT approaches can be adapted to different levels of technological readiness and institutional capacity.

Overall, the diversity of the pilot network represents one of the key strengths of the HERIT ADAPT project. It enables the testing of governance models, monitoring systems and strategic approaches across a wide range of heritage contexts, thereby strengthening the transferability and scalability of project results at the Euro-Mediterranean level.

4. CROSS-SITE ANALYSIS OF CHALLENGES AND OPPORTUNITIES

4.1 Introduction

The comparative analysis of HERIT ADAPT pilot sites reveals that, despite substantial differences in territorial context, heritage typology and levels of digital maturity, several common challenges and opportunities emerge across the partnership.

The most significant shared challenges relate to tourism pressure and seasonality, climate and environmental vulnerability, governance fragmentation, and limited integration of monitoring and data-driven management systems. While the nature and intensity of these challenges vary among pilot sites, they collectively highlight the need for more adaptive, evidence-based and resilient approaches to heritage tourism management.

At the same time, the pilots demonstrate significant opportunities for innovation through digital documentation, environmental monitoring, tourism intelligence, participatory governance and visitor redistribution approaches. Together, these experiences provide the foundation for identifying transferable solutions and developing a common transnational strategic framework.

The following sections present the main findings emerging from the comparative assessment of challenges, opportunities and implementation conditions across the HERIT ADAPT pilot network.

4.2 Tourism Pressure, Seasonality and Visitor Redistribution

Tourism pressure across the HERIT ADAPT pilot network does not appear as a uniform phenomenon. In some locations, the main challenge is overtourism and excessive concentration of visitors within limited heritage spaces. In others, the key issue is under-visitation, weak visibility and insufficient integration into wider tourism circuits.

Dubrovnik represents the most prominent example of high-intensity tourism pressure. The Rector's Palace operates within the UNESCO Old Town, where visitor concentration is strongly influenced by seasonality, cruise tourism and the limited spatial capacity of historic buildings. The main pressure points include entrance areas, the atrium and internal circulation spaces.

Granada presents a different but related challenge. The Alhambra and Generalife experience strong visitor concentration, while surrounding western territories such as Íllora, Montefrío and Moclín remain comparatively under-visited. This creates a clear strategic opportunity for territorial redistribution through digital storytelling, alternative routes and narrative connectivity.

Genoa also shows internal redistribution potential. Although the overall visitor volume of the Chiossone Museum is moderate, the pilot identifies poor visibility, accessibility constraints and under-used areas, especially upper floors, as relevant management challenges.

In contrast, the Temple of Apollo Epicurius, Žabljak Crnojevića and the Mausoleum–Ossuary in Koprivshtitsa face different forms of pressure. These sites are not primarily affected by overtourism, but by low visibility, seasonal visitation peaks, limited accessibility and weak integration into broader tourism products.

This confirms that visitor management within HERIT ADAPT should not be understood only as congestion reduction. It also includes:

- redistribution from saturated to under-visited areas;
- development of alternative heritage routes;
- off-season and shoulder-season activation;
- improved interpretation of lesser-known assets;
- digital access to fragile or remote sites;
- better connection between flagship attractions and surrounding territories.

4.3 Climate and Environmental Vulnerability

Climate and environmental vulnerability represents a second major cross-site challenge. The pilot sites are exposed to different risk profiles depending on their location, material composition, indoor/outdoor character and surrounding environmental conditions.

Outdoor archaeological and monumental sites are particularly exposed to temperature fluctuations, humidity, erosion, vegetation growth, rainfall, wind and extreme weather events. The Temple of Apollo Epicurius is affected by its remote mountainous location, harsh weather conditions, freeze-thaw cycles, thermoclasty and wildfire risk. Žabljak Crnojevića is exposed to erosion, vegetation overgrowth, stone degradation due to humidity, heavy rainfall, wind exposure and temperature extremes.

The Bulgarian pilot identifies thermal stress, high mountain moisture levels, ageing infrastructure and moisture-related biological growth as relevant environmental pressures affecting the Mausoleum–Ossuary.

Urban and indoor heritage sites face different but equally important vulnerabilities. Dubrovnik is exposed to humidity, salt corrosion, temperature fluctuations, visitor-induced indoor microclimate changes and wider climate risks associated with coastal heritage environments. Genoa identifies heat stress, extreme weather events, urban climate vulnerability and potential conservation impacts on indoor museum conditions.

Across the partnership, the analysis shows that climate resilience is still insufficiently integrated into routine heritage and tourism management. In several pilots, environmental monitoring systems are either absent, planned or only partially operational. This creates a critical implementation gap between climate risk awareness and operational climate adaptation.

The main opportunity therefore lies in strengthening preventive conservation through:

- environmental sensors;
- periodic digital documentation;
- climate vulnerability assessments;
- risk thresholds;
- dashboard-based monitoring;
- maintenance protocols informed by data.

4.4 Governance Fragmentation and Coordination Needs

Governance is one of the most important cross-cutting challenges identified across all pilot sites. Even where cooperation is assessed positively, long-term implementation frequently depends on multiple institutions with different mandates, capacities and decision-making procedures.

Several pilots operate within complex multi-level governance systems involving local authorities, national ministries, heritage institutions, tourism bodies, research organizations, technology providers and civil society actors. Dubrovnik, Granada, Greece and Montenegro all demonstrate the need for stronger coordination between heritage protection, tourism management, digital innovation and local development stakeholders.

The most common governance bottlenecks include:

- fragmented responsibilities;
- slow permitting procedures;
- unclear long-term ownership of digital tools;
- lack of dedicated operational staff;
- weak integration between tourism and conservation objectives;
- limited financial resources for post-project maintenance;
- insufficient institutionalization of participatory mechanisms.

The Territorial Working Groups established through HERIT ADAPT represent a major opportunity to address these issues. Across several pilots, TWGs have supported stakeholder engagement, co-creation, knowledge exchange and better alignment between institutions. However, their long-term value will depend on whether they remain active beyond the project period and become embedded into regular governance structures.

4.5 Digital and Data Gaps

Digital maturity differs significantly across the partnership. Some pilots have developed advanced digital tools, such as 3D models, LIDAR documentation, visitor data platforms and territorial intelligence systems. Others still lack basic monitoring infrastructure, integrated data systems or operational dashboards.

The most advanced examples include Dubrovnik's integrated digital documentation, environmental monitoring and predictive analytics approach; Occitanie's OTO territorial intelligence tool; and Montenegro's LIDAR-based documentation capacity.

However, even digitally advanced pilots face important challenges:

- data are often not fully interoperable;
- dashboards are not always operationally embedded;
- visitor data and environmental data are rarely integrated;
- predictive analytics remain limited;
- long-term maintenance responsibilities are not always clearly defined.

In less digitally mature pilots, the main gap is the absence of baseline monitoring systems. Several sites lack visitor counters, environmental sensors, dashboards or structured data archives. This limits their ability to evaluate tourism pressure, climate risks, visitor behaviour and the impact of implemented measures.

The transnational opportunity lies in developing a staged digital maturity pathway, allowing different types of sites to progress from basic digital documentation toward integrated monitoring and decision-support systems.

4.6 Key Opportunities Emerging Across Pilot Sites

Despite the diversity of challenges, the pilot sites reveal a strong set of shared opportunities for sustainable and resilient tourism development.

The first opportunity is the use of digital documentation and digital twins as a baseline for conservation, interpretation and long-term monitoring. This is particularly relevant for fragile, remote or conservation-sensitive heritage assets.

The second opportunity is the use of narrative and digital storytelling to redistribute visitors from overcrowded flagship sites toward under-visited areas. This is particularly visible in Granada, Rome, Greece and Montenegro.

The third opportunity is the integration of climate awareness into heritage tourism planning. Several pilots demonstrate that climate vulnerability cannot remain a separate environmental concern, but must be embedded into visitor management, conservation planning and governance frameworks.

The fourth opportunity is participatory governance. HERIT ADAPT has shown that TWGs can function as practical mechanisms for connecting tourism, heritage, environmental, research and community stakeholders.

The fifth opportunity is the development of common monitoring and KPI systems. Even when local data availability differs, a shared transnational monitoring logic can support comparability, learning and future replication.

Taken together, these opportunities demonstrate that the HERIT ADAPT model is not limited to technological innovation. Its added value lies in connecting data, governance, climate resilience and strategic implementation into an integrated transnational approach for sustainable and resilient heritage tourism.

The comparative analysis highlights a number of recurring challenges and opportunities that emerge across different pilot contexts. These findings are summarized in Table X and provide the analytical basis for the strategic clustering presented in the following chapters.

Table 2. Summary of Cross-Site Challenges and Opportunities

Theme	Key Challenges	Main Opportunities
Tourism Management	Overtourism, seasonality, uneven visitor distribution, limited visibility of secondary sites	Visitor redistribution, thematic routes, digital interpretation, territorial connectivity
Climate and Environment	Climate exposure, humidity, erosion, extreme weather events, insufficient monitoring	Environmental monitoring, climate adaptation measures, preventive conservation
Governance	Fragmented responsibilities, limited coordination, insufficient operational capacities	Territorial Working Groups, participatory governance, institutional cooperation
Data and Digitalization	Monitoring gaps, lack of interoperability, limited analytics capacities	Digital twins, dashboards, tourism intelligence platforms, integrated monitoring systems
Strategic Management	Fragmented data use, reactive management approaches	KPI frameworks, evidence-based decision-making, adaptive management

The comparative analysis demonstrates that, despite significant differences between pilot sites, many of the underlying challenges and opportunities are shared across the partnership. This common ground provides the basis for clustering pilot measures, identifying transferable solutions and formulating the transnational strategic directions presented in the following chapters.

5. FROM PILOT MEASURES TO STRATEGIC INPUTS

5.1 Introduction

The HERIT ADAPT pilot activities generated a wide range of measures, interventions and experimental actions addressing tourism pressure, heritage protection, climate resilience, digital transformation and governance coordination. Although the pilots differ significantly in territorial context, scale and implementation maturity, several measures demonstrate strong strategic relevance and potential for transferability across the Euro-Mediterranean area.

The purpose of this chapter is not to describe individual pilot actions in detail, but rather to identify which pilot measures provide broader strategic value for sustainable and resilient tourism governance. The analysis therefore focuses on measures that:

- address recurring cross-site challenges;
- demonstrate operational or strategic innovation;
- support evidence-based management;
- improve governance coordination;
- strengthen resilience capacities;
- show replication and scalability potential.

The chapter therefore functions as a bridge between local pilot implementation and the development of the transnational HERIT ADAPT strategic framework.

5.2 Digital Documentation as a Foundation for Adaptive Heritage Management

Several pilot sites implemented advanced digital documentation activities, including 3D modelling, photogrammetry, LiDAR surveys, UAV imaging and geospatial documentation. While the specific technologies and implementation approaches varied across the partnership, all pilots demonstrated the strategic value of digital documentation as a foundation for conservation, interpretation, monitoring and future adaptive management systems.

The comparative analysis confirms that digital documentation is not merely a visualization tool. Instead, it represents a long-term operational asset supporting preventive conservation, accessibility, knowledge preservation and evidence-based heritage management.

5.3 Visitor Redistribution and Narrative Connectivity

Across the partnership, visitor redistribution measures focused on improving interpretation, strengthening territorial connectivity and enhancing the visibility of secondary heritage assets. Different pilots applied a combination of storytelling approaches, thematic routes, digital

accessibility tools and alternative visitor itineraries to encourage more balanced spatial distribution of visitors and reduce pressure on heavily visited locations.

5.4 Environmental Monitoring and Preventive Conservation

Environmental monitoring emerged as one of the most strategically important but least operationalized dimensions of the HERIT ADAPT partnership.

Several pilots identified the absence of structured environmental monitoring systems as a major operational gap affecting preventive conservation and climate resilience capacities. Commonly identified needs include:

- temperature monitoring;
- humidity monitoring;
- air quality monitoring;
- wall moisture analysis;
- visitor-related microclimate monitoring;
- environmental threshold systems.

Although implementation maturity differs substantially between pilots, the strategic direction is consistent across the partnership: sustainable heritage tourism governance increasingly requires continuous environmental intelligence capable of supporting preventive rather than reactive management approaches.

Several pilot sites have already initiated the integration of environmental monitoring systems, while others identified environmental intelligence as a key future priority. Despite differences in implementation maturity, the partnership demonstrates a shared recognition that environmental monitoring should become a core operational component of sustainable tourism governance rather than remain solely a conservation tool.

5.5 Participatory Governance and Territorial Working Groups

Across the partnership, Territorial Working Groups proved particularly valuable for improving stakeholder coordination, facilitating knowledge exchange and strengthening the integration of tourism, heritage, environmental and governance perspectives. Although governance structures differ among pilot sites, the analysis confirms that long-term institutional cooperation represents a critical success factor for the sustainability of HERIT ADAPT solutions.

5.6 Data Integration and Territorial Intelligence

Another important strategic input concerns the growing role of territorial intelligence systems and integrated data ecosystems within sustainable tourism governance.

The Occitanie pilot represents the most advanced example through the OTO territorial observation platform integrating:

- tourism datasets;

- climate indicators;
- mobile network data;
- territorial observation systems;
- tourism intelligence analytics.

Across the partnership, there is a growing recognition of the need for integrated monitoring systems combining visitor analytics, environmental monitoring, KPI frameworks and operational decision-support tools. While implementation levels differ considerably, the comparative analysis highlights the importance of interoperability and data integration as prerequisites for adaptive and evidence-based tourism governance.

However, most pilots still operate with fragmented datasets and low interoperability between:

- tourism systems;
- conservation data;
- environmental monitoring;
- governance processes;
- operational management tools.

This indicates that one of the main strategic opportunities of HERIT ADAPT lies in developing interoperable monitoring ecosystems capable of supporting:

- adaptive management;
- predictive governance;
- climate-responsive planning;
- evidence-based tourism management;
- long-term resilience assessment.

Table 3. Strategic Measures Emerging from HERIT ADAPT Pilots

Strategic Measure	Representative Pilots	Main Challenge Addressed	Strategic Value
Digital Documentation and Digital Twins	Dubrovnik, Greece, Montenegro, Genoa, Cyprus	Limited documentation, conservation risks, accessibility constraints	Creates a baseline for conservation, interpretation, monitoring and adaptive heritage management

Strategic Measure	Representative Pilots	Main Challenge Addressed	Strategic Value
Visitor Redistribution and Narrative Connectivity	Granada, Genoa, Greece, Montenegro, Rome	Visitor concentration, territorial imbalance, limited visibility of secondary sites	Supports more balanced visitor flows and diversification of tourism benefits
Environmental Monitoring and Preventive Conservation	Dubrovnik, Greece, Montenegro, Bulgaria	Climate risks, environmental degradation, insufficient monitoring capacities	Strengthens resilience, risk detection and preventive conservation practices
Participatory Governance and Territorial Working Groups	All pilot sites	Governance fragmentation, limited stakeholder coordination, implementation challenges	Improves cooperation, ownership, institutional coordination and long-term sustainability
Territorial Intelligence and Data Integration	Occitanie, Dubrovnik, Montenegro and other emerging pilots	Monitoring gaps, fragmented datasets, weak interoperability	Supports evidence-based decision-making, adaptive management and strategic planning

5.7 From Pilot Measures to Strategic Clusters

The comparative analysis demonstrates that the pilot measures developed through HERIT ADAPT extend beyond isolated local interventions. Together, they form the basis of a broader transnational governance and resilience framework integrating:

- digital transformation;
- climate adaptation;
- tourism management;
- preventive conservation;
- participatory governance;
- territorial intelligence.

Importantly, the analysis also shows that the strategic value of the pilots does not depend solely on technological sophistication. In many cases, relatively low-cost and governance-oriented measures — such as stakeholder coordination, participatory mapping, signage systems or digital accessibility improvements — demonstrate equally important transferability potential.

The pilots therefore provide a diverse but coherent portfolio of strategic inputs that can be clustered, synthesized and transformed into integrated transnational strategic directions applicable across a wide range of Euro-Mediterranean heritage contexts.

While the individual pilot measures differ in scope, maturity and technological complexity, the comparative analysis reveals a number of recurring patterns that can be grouped into broader thematic clusters. These clusters provide the foundation for the transnational strategic framework presented in the following chapter.

6. STRATEGIC CLUSTERING OF MEASURES

6.1 Introduction

The comparative analysis of pilot measures demonstrates that, despite the diversity of territorial contexts and implementation levels, many interventions developed through HERIT ADAPT address similar structural challenges. The clustering process therefore identifies recurring strategic patterns emerging across pilot sites and transforms isolated pilot measures into broader thematic approaches with transnational relevance.

The objective of the clustering process is not to group pilots geographically or institutionally, but rather to identify:

- common operational logics;
- shared governance challenges;
- recurring tourism management needs;
- transferable technological solutions;
- comparable resilience-building approaches.

The clustering analysis demonstrates that the HERIT ADAPT partnership collectively contributes to the emergence of several interconnected strategic domains capable of supporting sustainable and resilient tourism governance across the Euro-Mediterranean region.

6.2 Cluster 1 – Digital Twins and Intelligent Heritage Documentation

The first major cluster groups measures related to:

- digital twins;

- 3D documentation;
- photogrammetry;
- LIDAR scanning;
- UAV/drone mapping;
- digital heritage visualization;
- geospatial documentation systems.

This cluster is strongly represented in the Greece, Montenegro, Dubrovnik and Genoa pilots.

Although the technical sophistication differs between pilots, the strategic logic remains consistent: digital documentation is increasingly treated not only as a conservation archive, but as an operational management tool supporting:

- preventive conservation;
- virtual accessibility;
- interpretation;
- climate adaptation;
- monitoring baselines;
- long-term heritage resilience.

The Montenegro and Greece pilots demonstrate large-scale spatial documentation of archaeological and monumental heritage environments using LIDAR and photogrammetry. Genoa demonstrates a smaller-scale but highly transferable model focused on museum artefacts and collections. Dubrovnik further expands this logic through integration of digital documentation with environmental monitoring and operational analytics.

Across the partnership, this cluster demonstrates particularly strong transferability potential because digital documentation:

- can be adapted to different scales;
- supports both conservation and tourism objectives;
- reduces pressure on fragile heritage assets;
- creates long-term digital records;
- establishes a baseline for future monitoring systems.

At the same time, common implementation challenges include:

- high storage requirements;
- interoperability limitations;

- long-term maintenance needs;
- need for periodic rescanning;
- limited institutional technical capacities.

6.3 Cluster 2 – Climate-Aware Monitoring and Preventive Conservation

The second cluster focuses on:

- environmental monitoring;
- microclimate observation;
- preventive conservation systems;
- climate risk assessment;
- environmental thresholds;
- resilience-oriented maintenance approaches.

This cluster emerged as one of the most strategically important dimensions of HERIT ADAPT, even though implementation maturity remains uneven across the partnership.

Dubrovnik currently represents the most operationally advanced example through the integration of environmental sensors, predictive analytics and dashboard-based monitoring systems supporting conservation-sensitive indoor heritage management.

Other pilots primarily identify environmental monitoring as a strategic priority for future implementation. Montenegro plans humidity, temperature and wall moisture monitoring systems for the protection of exposed fortress structures. Greece identifies strong need for monitoring due to freeze-thaw cycles, weather exposure and wildfire risks affecting the Temple of Apollo Epicurius.

Across the partnership, this cluster demonstrates a major transition:
from reactive conservation
toward preventive and climate-aware heritage management.

The cluster also reveals an important conceptual shift within sustainable tourism governance. Environmental monitoring is no longer treated solely as a technical conservation activity, but increasingly as an operational tourism management tool capable of informing:

- carrying-capacity assessment;
- visitor management;
- maintenance planning;
- risk anticipation;
- climate adaptation strategies.

The comparative analysis nevertheless shows that environmental monitoring remains constrained by:

- limited sensor infrastructure;
- insufficient operational funding;
- fragmented data systems;
- low technical capacities;
- lack of integrated operational dashboards.

6.4 Cluster 3 – Narrative Connectivity and Visitor Redistribution

A third cluster groups measures aimed at reducing spatial tourism imbalance through:

- interpretative storytelling;
- thematic routes;
- signage systems;
- digital accessibility;
- territorial connectivity;
- promotion of under-visited heritage assets.

This cluster responds directly to one of the most recurring cross-site challenges identified throughout the partnership:
uneven spatial distribution of tourism flows.

Granada provides one of the clearest examples of this approach through efforts to connect the highly visited Alhambra environment with less-visited inland territories and cultural landscapes. Genoa applies similar logic through signage systems, accessibility improvements and improved integration of the Chiossone Museum into wider visitor itineraries. Montenegro and Greece similarly seek to improve territorial integration and visibility of remote heritage sites.

The strategic significance of this cluster lies in the recognition that sustainable tourism management is not limited to reducing visitor numbers. Instead, it increasingly focuses on:

- redistribution;
- diversification;
- spatial balancing;
- creation of alternative visitor narratives;
- strengthening territorial connectivity.

Importantly, many measures within this cluster are relatively low-cost and governance-oriented, making them highly transferable even to sites with limited financial or technical capacities.

The cluster therefore demonstrates that digital storytelling, interpretation and narrative connectivity can function as practical tools for:

- congestion mitigation;
- territorial diversification;
- enhancement of lesser-known heritage areas;
- support for off-season tourism development.

6.5 Cluster 4 – Participatory Governance and Co-Creation

A fourth cluster groups governance-oriented measures focused on:

- Territorial Working Groups (TWGs);
- participatory planning;
- stakeholder workshops;
- collaborative mapping;
- co-design approaches;
- interdisciplinary coordination mechanisms.

Unlike technology-focused clusters, this cluster addresses institutional and governance capacities as the foundation of long-term resilience.

The establishment of TWGs across multiple pilots represents one of the most important governance innovations emerging from HERIT ADAPT. The pilots demonstrate that sustainable tourism governance requires continuous coordination between:

- heritage authorities;
- municipalities;
- tourism organizations;
- environmental institutions;
- research organizations;
- local communities;
- technology providers;
- civil society actors.

Participatory governance tools are particularly visible in:

- Genoa’s participatory mapping systems;
- Dubrovnik’s interdisciplinary coordination model;
- Occitanie’s territorial governance structures;
- Montenegro’s multi-level governance coordination.

Across the partnership, this cluster demonstrates that governance continuity and institutional ownership are critical enabling conditions for successful implementation of digital and monitoring systems.

The pilots additionally reveal recurring governance barriers:

- fragmented responsibilities;
- weak interoperability between sectors;
- limited staffing capacities;
- unclear post-project maintenance responsibilities;
- insufficient long-term funding structures.

As a result, participatory governance emerges not as a supplementary activity, but as a central strategic pillar of adaptive heritage tourism management.

6.6 Cluster 5 – Data-Driven Decision Making and Territorial Intelligence

The fifth cluster groups measures related to:

- tourism intelligence;
- dashboards;
- visitor analytics;
- territorial observation systems;
- KPI frameworks;
- integrated monitoring environments;
- evidence-based management.

This cluster is most strongly represented by the Occitanie pilot and, to a significant extent, Dubrovnik.

The Occitanie OTO platform demonstrates how integrated territorial observation systems can combine:

- tourism datasets;
- climate indicators;
- mobile network analytics;
- territorial monitoring;
- destination management intelligence.

Similarly, Dubrovnik demonstrates increasing integration between:

- environmental monitoring;
- visitor analytics;
- dashboard systems;
- predictive operational management.

The strategic importance of this cluster lies in the transition:
from fragmented data collection
toward integrated territorial intelligence ecosystems.

The pilots demonstrate that data-driven governance can support:

- adaptive visitor management;
- climate-responsive planning;
- preventive conservation;
- congestion mitigation;
- operational coordination;
- evidence-based policy development.

However, the comparative analysis also reveals major implementation barriers:

- lack of interoperability;
- fragmented ownership of datasets;
- limited analytical capacities;
- absence of shared standards;
- insufficient operational integration of dashboards into everyday management processes.

Despite these challenges, this cluster demonstrates some of the strongest long-term scalability potential within the HERIT ADAPT partnership because it directly supports the emergence of adaptive and predictive governance models for sustainable tourism management.

Table 4. Strategic Clusters Emerging from HERIT ADAPT Pilots

Strategic Cluster	Representative Pilots	Main Challenges Addressed	Strategic Contribution
Digital Twins and Intelligent Heritage Documentation	Dubrovnik, Greece, Montenegro, Genoa, Cyprus	Conservation risks, accessibility constraints, lack of baseline documentation	Supports adaptive heritage management, monitoring and interpretation

Strategic Cluster	Representative Pilots	Main Challenges Addressed	Strategic Contribution
Climate-Aware Monitoring and Preventive Conservation	Dubrovnik, Greece, Montenegro, Bulgaria	Climate exposure, environmental degradation, preventive conservation gaps	Strengthens resilience and risk-informed management
Narrative Connectivity and Visitor Redistribution	Granada, Genoa, Montenegro, Greece, Rome	Visitor concentration, territorial imbalance, low visibility of secondary sites	Promotes balanced visitor distribution and territorial diversification
Participatory Governance and Co-Creation	All pilots	Governance fragmentation, coordination challenges, implementation barriers	Strengthens stakeholder engagement and long-term governance capacity
Data-Driven Decision Making and Territorial Intelligence	Occitanie, Dubrovnik and emerging pilots	Monitoring gaps, fragmented datasets, weak interoperability	Supports evidence-based, adaptive and predictive governance

Taken together, the identified clusters illustrate the emergence of a shared HERIT ADAPT approach to sustainable and resilient tourism management. They provide the conceptual and operational basis for the transnational strategic directions presented in the following chapter, transforming pilot experiences into transferable and scalable governance solutions.

6.7 Cross-Cluster Findings

Although presented separately, the identified clusters are strongly interconnected. Digital documentation systems support environmental monitoring; monitoring systems generate inputs for dashboards; dashboards support governance coordination; governance mechanisms enable implementation of visitor redistribution measures.

The clustering analysis therefore demonstrates that the HERIT ADAPT model should not be understood as a collection of isolated technological tools. Rather, it represents an integrated governance ecosystem combining:

- digital transformation;
- climate resilience;
- participatory governance;
- tourism intelligence;

- preventive conservation;
- adaptive operational management.

The identified clusters provide the direct foundation for the development of the transnational strategic framework presented in the following chapter.

7. TRANSNATIONAL STRATEGIC FRAMEWORK

7.1 Strategic Approach

The transnational strategic framework developed within HERIT ADAPT is based on the identification, assessment, clustering and consolidation of measures implemented across pilot sites. Rather than proposing isolated local interventions, the framework translates pilot experiences into a coherent set of transferable strategic directions applicable across diverse Euro-Mediterranean heritage contexts.

The framework responds directly to the shared challenges identified through the comparative analysis of pilot sites, including:

- tourism concentration and seasonality;
- climate and environmental vulnerability;
- governance fragmentation;
- limited monitoring capacities;
- weak interoperability between tourism, conservation and digital systems;
- insufficient operational integration of data-driven management approaches.

The strategic framework therefore aims to establish integrated governance directions capable of supporting:

- adaptive tourism management;
- climate-responsive heritage protection;
- evidence-based decision-making;
- participatory governance;
- preventive conservation;
- territorial resilience.

The strategies are intentionally designed as scalable and transferable operational frameworks rather than fixed technical models. This allows adaptation to different:

- territorial typologies;
- governance structures;
- institutional capacities;
- digital maturity levels;
- tourism dynamics.

The framework additionally reflects one of the central conclusions emerging from HERIT ADAPT: technological innovation alone is insufficient without governance continuity, institutional coordination and operational integration.

Table 5. From Strategic Clusters to Strategic Directions

Strategic Cluster (Chapter 6)	Strategic Direction (Chapter 7)	Primary Objective
Digital Twins and Intelligent Heritage Documentation	Strategy 1 – Digital Twins for Adaptive Visitor Management	Support adaptive heritage protection and visitor management
Narrative Connectivity and Visitor Redistribution	Strategy 2 – Narrative Connectivity for Visitor Redistribution	Improve territorial balance and reduce visitor concentration
Climate-Aware Monitoring and Preventive Conservation	Strategy 3 – Climate-Aware Heritage Management	Strengthen climate resilience and preventive conservation
Participatory Governance and Co-Creation	Strategy 4 – Co-creation and Participatory Governance	Improve coordination and stakeholder engagement
Data-Driven Decision Making and Territorial Intelligence	Strategy 5 – Data-driven Decision Making and Monitoring	Enable evidence-based and adaptive governance

7.2 Overview of Strategic Directions

The clustering analysis resulted in the identification of five interconnected transnational strategic directions:

1. Digital Twins for Adaptive Visitor Management
2. Narrative Connectivity for Visitor Redistribution

3. Climate-Aware Heritage Management
4. Co-creation and Participatory Governance
5. Data-driven Decision Making and Monitoring

These strategic directions should not be interpreted as isolated thematic sectors. They function as mutually reinforcing components of an integrated adaptive governance ecosystem combining tourism management, climate resilience, heritage protection and digital transformation.

Table 6. Overview of HERIT ADAPT Transnational Strategic Directions

Strategic Direction	Main Objective	Key Tools and Approaches	Main Stakeholders	Expected Outcomes
Digital Twins for Adaptive Visitor Management	Improve heritage protection and visitor management through digital documentation and operational intelligence	Digital twins, 3D models, photogrammetry, LiDAR, UAV surveys, geospatial documentation	Heritage institutions, municipalities, conservation authorities, technology providers	Improved preventive conservation, reduced pressure on fragile assets, enhanced accessibility and monitoring
Narrative Connectivity for Visitor Redistribution	Reduce spatial tourism concentration and strengthen territorial balance	Storytelling, thematic routes, digital interpretation, signage systems, territorial branding	Tourism organizations, local authorities, heritage managers, destination management organizations	Better visitor distribution, increased visibility of secondary sites, diversified tourism products
Climate-Aware Heritage Management	Strengthen resilience of heritage sites to climate and environmental risks	Environmental monitoring, climate indicators, risk thresholds, preventive conservation protocols	Heritage managers, environmental authorities, municipalities, research institutions	Improved climate resilience, earlier risk detection, reduced environmental deterioration
Co-creation and	Strengthen stakeholder	Territorial Working Groups,	Municipalities, heritage	Improved coordination,

Strategic Direction	Main Objective	Key Tools and Approaches	Main Stakeholders	Expected Outcomes
Participatory Governance	involvement and governance coordination	participatory planning, co-creation processes, stakeholder engagement	institutions, tourism organizations, local communities, NGOs	stronger ownership, more effective implementation
Data-driven Decision Making and Monitoring	Support evidence-based tourism and heritage management	Dashboards, KPI systems, visitor analytics, territorial intelligence platforms, monitoring systems	Destination managers, municipalities, heritage authorities, tourism organizations	Better decision-making, adaptive management, improved monitoring and evaluation

7.3 Strategy 1 – Digital Twins for Adaptive Visitor Management

Rationale

The pilot activities demonstrate that digital twins and high-resolution heritage documentation systems are becoming increasingly important operational tools for sustainable tourism and preventive conservation. Digital environments support not only visualization and interpretation, but also adaptive management, conservation planning and resilience monitoring.

Several pilots demonstrated the strategic relevance of:

- photogrammetry;
- LIDAR scanning;
- UAV/drone documentation;
- geospatial modelling;
- digital reconstruction;
- 3D visualization environments.

The increasing availability of digital documentation creates opportunities for:

- reducing pressure on fragile heritage assets;
- supporting virtual accessibility;
- improving conservation planning;

- enabling future monitoring integration;
- strengthening operational preparedness for climate-related risks.

Key Components

The strategy includes:

- development of georeferenced 3D models;
- integration of digital twins into management systems;
- periodic rescanning and documentation cycles;
- interoperability between digital heritage datasets;
- integration with monitoring systems and dashboards;
- development of virtual interpretation environments.

Policy Implications

The strategy highlights the need for:

- standardization of digital documentation methodologies;
- institutional protocols for digital asset maintenance;
- integration of digital twins into conservation and tourism planning;
- support for long-term digital infrastructure financing;
- interoperability standards between heritage datasets and monitoring systems.

Implementation Pathways

Implementation may include:

- gradual scaling of digital documentation systems;
- establishment of periodic monitoring and rescanning protocols;
- integration of digital models into dashboard environments;
- staff training for digital heritage management;
- development of shared technical standards and repositories.

Expected Outcomes

Expected strategic outcomes include:

- improved preventive conservation;
- enhanced resilience planning;
- reduced physical pressure on fragile heritage assets;

- improved accessibility and interpretation;
- stronger operational preparedness for environmental risks;
- increased capacity for adaptive visitor management.

Unlike Strategy 5, which focuses on data integration and decision-support systems, this strategy primarily addresses the creation and operational use of digital heritage representations as tools for conservation, interpretation and adaptive management.

7.4 Strategy 2 – Narrative Connectivity for Visitor Redistribution

Rationale

Several pilot sites demonstrate strong spatial imbalance between highly visited flagship attractions and under-visited surrounding heritage areas. The pilots show that sustainable tourism management increasingly requires territorial redistribution approaches capable of reducing pressure on saturated locations while strengthening the visibility and attractiveness of lesser-known heritage assets.

The strategy therefore focuses on narrative connectivity and territorial integration through:

- storytelling;
- thematic routes;
- interpretative systems;
- digital accessibility;
- spatial diversification;
- alternative visitor itineraries.

The approach recognizes that visitor redistribution depends not only on infrastructure, but also on the creation of coherent territorial narratives capable of influencing visitor behaviour.

Key Components

The strategy includes:

- development of thematic cultural routes;
- digital interpretation systems;
- signage and wayfinding improvements;
- integration of lesser-known sites into broader tourism narratives;
- development of off-season and shoulder-season experiences;
- improved territorial connectivity between flagship and secondary attractions.

Policy Implications

The strategy requires:

- stronger integration between tourism planning and heritage interpretation;
- support for regional and cross-site tourism networks;
- inclusion of redistribution objectives within tourism policies;
- investment in interpretative infrastructure and digital accessibility.

Implementation Pathways

Implementation may include:

- development of narrative-based territorial itineraries;
- coordinated storytelling strategies;
- integration of digital interpretation tools;
- territorial branding aligned with sustainability objectives;
- partnerships between local tourism organizations and heritage managers.

Expected Outcomes

Expected outcomes include:

- reduced tourism concentration in overcrowded sites;
- increased visibility of under-visited heritage areas;
- improved territorial balance;
- diversification of tourism products;
- strengthening of local and regional tourism ecosystems;
- improved visitor experience quality.

7.5 Strategy 3 – Climate-Aware Heritage Management

Rationale

The comparative analysis demonstrates that climate-related risks increasingly affect both heritage conservation and tourism management across the Euro-Mediterranean region. Outdoor archaeological sites, coastal heritage environments and indoor museum spaces are all exposed to different forms of environmental vulnerability.

The pilots additionally demonstrate that climate adaptation cannot remain separated from tourism governance. Sustainable tourism management increasingly depends on:

- environmental monitoring;
- preventive conservation;

- climate-responsive operational protocols;
- risk anticipation systems;
- adaptive maintenance planning.

Key Components

The strategy includes:

- environmental monitoring systems;
- temperature and humidity observation;
- risk threshold definition;
- preventive conservation protocols;
- climate vulnerability assessment;
- environmental dashboards and alerts;
- periodic monitoring cycles.

Policy Implications

The strategy highlights the need for:

- integration of climate resilience into tourism policies;
- stronger links between conservation and environmental management;
- long-term support for monitoring systems;
- operational protocols for climate-related risks;
- climate-responsive maintenance planning.

Implementation Pathways

Implementation may include:

- installation of environmental sensors;
- development of monitoring protocols;
- integration of climate indicators into dashboards;
- staff training for environmental risk interpretation;
- integration of climate adaptation measures into heritage management plans.

Expected Outcomes

Expected outcomes include:

- improved resilience of heritage assets;

- earlier detection of environmental risks;
- reduced climate-related deterioration;
- stronger preventive conservation capacities;
- evidence-based climate adaptation planning;
- improved operational preparedness.

7.6 Strategy 4 – Co-creation and Participatory Governance

Rationale

The HERIT ADAPT pilots consistently demonstrate that governance coordination is a critical condition for sustainable tourism management. Technological tools alone cannot function effectively without:

- institutional cooperation;
- stakeholder alignment;
- operational coordination;
- long-term governance continuity.

The establishment of Territorial Working Groups (TWGs) across multiple pilot sites demonstrates the value of participatory governance mechanisms capable of connecting:

- tourism authorities;
- heritage institutions;
- municipalities;
- environmental actors;
- research organizations;
- local communities;
- digital and technical experts.

Key Components

The strategy includes:

- TWG establishment and formalization;
- stakeholder mapping and engagement;
- participatory planning processes;
- interdisciplinary coordination mechanisms;
- collaborative governance tools;

- co-creation workshops and consultation processes.

Policy Implications

The strategy requires:

- stronger institutional coordination frameworks;
- formal recognition of participatory governance mechanisms;
- clearer governance responsibilities;
- integration of tourism and conservation decision-making;
- support for long-term stakeholder cooperation.

Implementation Pathways

Implementation may include:

- regular TWG meetings and operational protocols;
- participatory workshops and consultation systems;
- collaborative mapping and planning tools;
- governance capacity-building activities;
- integration of governance monitoring indicators.

Expected Outcomes

Expected outcomes include:

- improved institutional coordination;
- stronger stakeholder ownership;
- more effective implementation of tourism measures;
- improved communication between sectors;
- stronger governance continuity;
- increased operational feasibility of digital systems.

7.7 Strategy 5 – Data-driven Decision Making and Monitoring

Rationale

The HERIT ADAPT pilots demonstrate that sustainable and resilient tourism governance increasingly depends on integrated monitoring environments and evidence-based management systems.

Several pilots identify major limitations related to:

- fragmented datasets;
- weak interoperability;
- lack of operational dashboards;
- absence of visitor analytics;
- insufficient KPI-based monitoring.

At the same time, pilots such as Occitanie and Dubrovnik demonstrate the strong strategic potential of territorial intelligence systems integrating tourism, environmental and operational data into unified decision-support environments.

The comparative analysis further confirms that governance capacity represents the principal enabling condition for the successful implementation of all other HERIT ADAPT strategic directions. Digital tools, monitoring systems, climate adaptation measures and visitor management interventions can only achieve long-term effectiveness when supported by stable governance structures, institutional ownership and continuous stakeholder cooperation.

Key Components

The strategy includes:

- integrated dashboard systems;
- visitor analytics;
- territorial observation platforms;
- KPI frameworks;
- operational reporting systems;
- data interoperability mechanisms;
- evidence-based planning tools.

Policy Implications

The strategy highlights the need for:

- harmonized monitoring methodologies;
- interoperability standards;
- long-term maintenance of data infrastructures;
- institutional ownership of monitoring systems;
- integration of data-driven approaches into tourism governance.

Implementation Pathways

Implementation may include:

- development of integrated dashboards;
- installation of visitor monitoring systems;
- integration of environmental and tourism datasets;
- establishment of shared KPI frameworks;
- development of operational reporting protocols;
- staff training in data interpretation and analytics.

Expected Outcomes

Expected outcomes include:

- stronger evidence-based decision-making;
- improved adaptive visitor management;
- better operational coordination;
- improved monitoring of tourism pressure;
- stronger resilience assessment capacities;
- increased effectiveness of heritage tourism governance.

7.8 Integrated Strategic Perspective

Although presented as separate strategies, the identified strategic directions are strongly interconnected and mutually reinforcing.

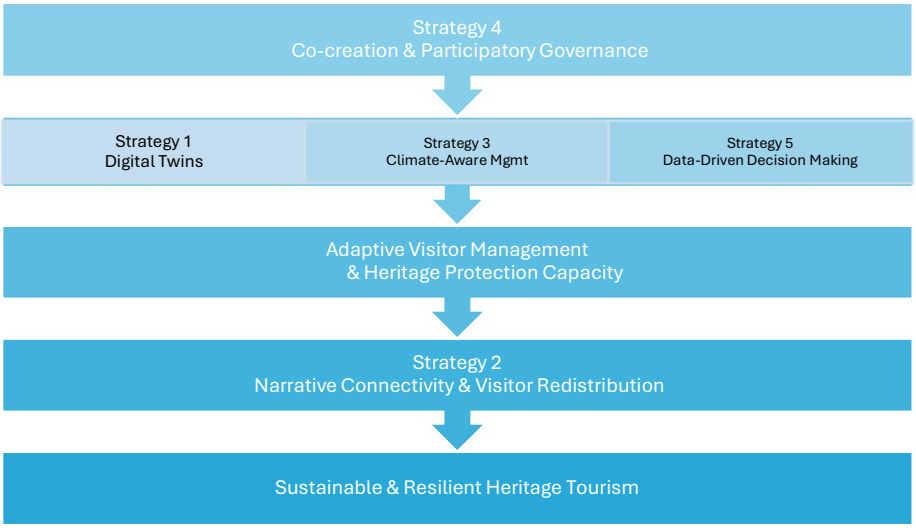
Digital twins generate monitoring baselines. Environmental sensors generate operational intelligence. Dashboards support governance coordination. Participatory governance structures support implementation and long-term sustainability. Narrative connectivity supports visitor redistribution and territorial balance.

The HERIT ADAPT framework therefore demonstrates that sustainable and resilient tourism governance increasingly depends on integrated systems capable of combining:

- digital transformation;
- tourism intelligence;
- climate adaptation;
- participatory governance;
- preventive conservation;
- adaptive operational management.

The resulting strategic framework provides a transferable governance-oriented model applicable across diverse Euro-Mediterranean heritage environments exposed to growing tourism, environmental and climate-related pressures.

Figure 1. Interrelationships Between HERIT ADAPT Strategic Directions



The five HERIT ADAPT strategic directions should not be interpreted as isolated interventions. Instead, they function as mutually reinforcing components of an integrated governance ecosystem. Participatory governance provides the institutional foundation for implementation, while digital twins, climate monitoring and data-driven management generate the operational intelligence required for adaptive decision-making. These capacities support visitor redistribution and territorial balancing measures, ultimately contributing to more sustainable and resilient heritage tourism destinations.

Together, the five strategic directions form an integrated and mutually reinforcing framework capable of supporting adaptive, climate-aware and evidence-based tourism governance. Their combined implementation provides a practical pathway toward more resilient heritage destinations across the Euro-Mediterranean region.

8. IMPLEMENTATION PATHWAYS

8.1 Introduction

The implementation of the HERIT ADAPT strategic framework requires flexible and context-sensitive operational pathways capable of responding to the diversity of Euro-Mediterranean heritage environments. The pilot sites demonstrate substantial differences in:

- governance maturity;
- institutional capacities;
- tourism intensity;
- digital readiness;
- environmental vulnerability;
- financial and operational resources.

For this reason, the transnational framework should not be understood as a fixed implementation model applicable uniformly across all territories. Instead, the framework establishes a scalable and adaptive implementation logic capable of supporting gradual operational development according to local needs and capacities.

The implementation pathways presented in this chapter therefore focus on:

- enabling conditions;
- governance readiness;
- operational capacities;
- phased implementation approaches;
- long-term sustainability requirements.

The chapter additionally reflects one of the key conclusions emerging from HERIT ADAPT: successful implementation depends not only on technological innovation, but equally on governance continuity, institutional ownership and long-term operational integration.

8.2 Governance Readiness and Institutional Capacity

The comparative analysis demonstrates that governance readiness is one of the most important enabling conditions for successful implementation of sustainable and resilient tourism strategies.

Pilots with stronger institutional coordination mechanisms, clearer operational responsibilities and established stakeholder cooperation structures generally demonstrate:

- higher implementation capacity;
- stronger integration of digital systems;

- greater operational continuity;
- more effective coordination between tourism and heritage management.

The establishment of Territorial Working Groups (TWGs) represents one of the most transferable governance mechanisms emerging from HERIT ADAPT. Across the partnership, TWGs supported:

- interdisciplinary coordination;
- stakeholder participation;
- knowledge exchange;
- alignment between tourism and conservation objectives;
- co-creation of measures and pilot activities.

However, the pilots also demonstrate that participatory governance mechanisms require:

- long-term institutional commitment;
- clearly defined operational roles;
- dedicated coordination capacities;
- continuous communication structures;
- integration into formal governance systems.

Implementation pathways should therefore prioritize:

- clarification of institutional responsibilities;
- establishment of governance coordination structures;
- strengthening of operational ownership;
- integration of tourism, conservation and environmental governance;
- long-term stakeholder engagement mechanisms.

8.3 Phased Digital Maturity Pathways

The HERIT ADAPT pilots demonstrate substantial differences in digital maturity and operational readiness. Some pilots already operate advanced monitoring and territorial intelligence systems, while others are still establishing baseline digital documentation capacities.

For this reason, implementation should follow progressive and scalable digital maturity pathways rather than assuming equal technological readiness across all sites.

Phase 1 – Baseline Digital Documentation

The first implementation phase focuses on establishing:

- basic digital heritage documentation;

- geospatial datasets;
- photogrammetry outputs;
- digital inventories;
- baseline tourism and environmental datasets.

This phase is particularly relevant for:

- remote heritage sites;
- smaller institutions;
- locations with limited digital infrastructure;
- pilots with low monitoring capacity.

Phase 2 – Monitoring and Data Integration

The second phase introduces:

- environmental monitoring systems;
- visitor counters;
- dashboard environments;
- integrated KPI frameworks;
- operational data collection systems.

At this stage, the focus shifts from static documentation toward dynamic monitoring and operational intelligence.

Phase 3 – Predictive and Adaptive Management

The third phase focuses on:

- predictive analytics;
- integrated territorial intelligence;
- interoperability between datasets;
- adaptive operational management;
- climate-responsive governance systems.

This phase represents the most advanced implementation level and requires:

- strong governance coordination;
- operational analytical capacities;
- long-term maintenance structures;

- institutional integration of monitoring systems into decision-making processes.

The phased approach allows different heritage sites to progressively strengthen digital and operational capacities according to their territorial context and implementation readiness.

The phased implementation logic can be translated into a strategic roadmap outlining key priorities across short-, medium- and long-term implementation horizons. The roadmap provides a practical framework for operationalizing the HERIT ADAPT strategic directions while allowing flexibility according to local capacities and territorial contexts.

Table 7. Implementation Roadmap

Strategic Direction	Short-term (1–2 years)	Medium-term (3–5 years)	Long-term (5+ years)
Strategy 1 – Digital Twins for Adaptive Visitor Management	Establish baseline digital documentation; initiate 3D modelling and geospatial data collection; develop technical standards and protocols	Expand digital twin applications; integrate monitoring systems and dashboards; implement periodic rescanning programmes	Develop fully integrated digital heritage management ecosystems supporting predictive conservation and adaptive visitor management
Strategy 2 – Narrative Connectivity for Visitor Redistribution	Identify under-visited heritage assets; develop storytelling concepts and thematic routes; improve signage and interpretation systems	Implement territorial visitor redistribution programmes; strengthen regional partnerships; develop digital interpretation platforms	Establish integrated territorial narratives supporting balanced year-round tourism development across wider heritage regions
Strategy 3 – Climate-Aware Heritage Management	Install environmental monitoring systems; define climate indicators and risk thresholds; establish monitoring protocols	Integrate environmental intelligence into operational management systems; develop preventive conservation procedures; strengthen climate adaptation planning	Implement fully operational climate-responsive heritage management systems integrated into tourism governance frameworks
Strategy 4 – Co-creation and Participatory Governance	Establish or formalize Territorial Working Groups; define governance responsibilities;	Strengthen institutional cooperation mechanisms; develop governance	Achieve long-term governance continuity through permanent multi-stakeholder coordination structures

Strategic Direction	Short-term (1–2 years)	Medium-term (3–5 years)	Long-term (5+ years)
	initiate stakeholder engagement processes	monitoring systems; support capacity-building programmes	and adaptive governance models
Strategy 5 – Data-driven Decision Making and Monitoring	Develop KPI frameworks; establish baseline monitoring systems; improve data collection and interoperability	Integrate tourism, environmental and governance datasets into shared platforms; deploy dashboards and reporting tools	Operate advanced territorial intelligence systems supporting predictive analytics, adaptive management and evidence-based policy development

8.4 Technical and Operational Requirements

The implementation of HERIT ADAPT strategies requires several interconnected technical and operational conditions.

Digital Infrastructure

Successful implementation depends on:

- reliable digital infrastructure;
- data storage capacity;
- connectivity conditions;
- interoperability between systems;
- secure long-term management of digital assets.

Several pilots identified infrastructure limitations as major implementation barriers, particularly in remote or environmentally exposed heritage areas.

Monitoring and Maintenance

Long-term sustainability additionally depends on:

- periodic maintenance of monitoring systems;
- calibration of sensors and digital tools;
- periodic rescanning and digital updates;
- operational dashboard maintenance;
- technical troubleshooting capacities.

The pilots demonstrate that monitoring systems cannot function effectively without dedicated operational maintenance protocols.

Human Capacities and Training

Implementation also requires:

- technical training;
- digital literacy;
- interdisciplinary operational capacities;
- interpretation of environmental and tourism data;
- governance coordination skills.

Several pilots identified lack of specialized operational staff as one of the main long-term sustainability risks for digital systems.

8.5 Financial Sustainability and Long-Term Continuity

A recurring challenge identified across the HERIT ADAPT partnership concerns the long-term financial sustainability of pilot solutions after project completion.

The implementation of monitoring systems, digital twins, dashboards and participatory governance structures requires:

- continuous operational funding;
- maintenance resources;
- staff capacities;
- periodic technological upgrades;
- long-term governance ownership.

The pilots demonstrate that short-term project funding alone is insufficient for sustaining adaptive heritage management systems over time.

Implementation pathways should therefore include:

- integration of operational costs into institutional planning;
- diversification of funding sources;
- alignment with regional and national policy frameworks;
- integration into future EU funding mechanisms;
- long-term budgeting for monitoring and maintenance activities.

Particular importance should be given to ensuring continuity of:

- environmental monitoring systems;
- dashboard infrastructures;
- stakeholder coordination mechanisms;

- KPI monitoring frameworks;
- operational reporting systems.

8.6 Climate Adaptation and Resilience Integration

The pilots demonstrate that climate adaptation must increasingly become an operational component of tourism and heritage governance rather than a separate environmental policy field.

Implementation pathways should therefore integrate:

- climate vulnerability assessments;
- environmental monitoring;
- preventive conservation protocols;
- adaptive maintenance planning;
- climate-responsive visitor management measures.

Several pilots additionally demonstrate the importance of linking climate resilience with:

- carrying-capacity assessment;
- tourism pressure monitoring;
- environmental thresholds;
- operational preparedness for extreme weather events.

The implementation framework therefore promotes integrated resilience planning capable of connecting:

- climate adaptation;
- heritage conservation;
- tourism governance;
- digital monitoring;
- operational management systems.

8.7 Enabling Conditions for Transferability

The transferability of HERIT ADAPT strategies depends on several enabling conditions identified through comparative pilot analysis.

Key enabling factors include:

- institutional willingness for cooperation;
- governance continuity;
- baseline digital readiness;

- availability of reliable data;
- stakeholder engagement;
- long-term operational ownership;
- policy alignment;
- financial sustainability.

At the same time, the analysis shows that transferability does not require identical technological sophistication across all sites. Many HERIT ADAPT approaches — particularly governance-oriented and narrative-based measures — can be adapted with relatively limited financial resources.

The implementation pathways therefore promote flexibility and scalability rather than rigid standardization.

8.8 Towards Adaptive and Integrated Governance Systems

The implementation experience of HERIT ADAPT demonstrates that sustainable and resilient tourism governance increasingly depends on integrated operational ecosystems rather than isolated projects or technologies.

Successful implementation requires continuous interaction between:

- monitoring systems;
- governance structures;
- tourism management;
- climate adaptation;
- preventive conservation;
- territorial intelligence.

The implementation pathways developed through HERIT ADAPT therefore support a transition:
from fragmented and reactive management
toward adaptive, evidence-based and climate-aware governance systems capable of responding to the rapidly evolving sustainability challenges affecting Euro-Mediterranean heritage destinations.

The HERIT ADAPT implementation framework therefore provides not only a pathway for deploying individual solutions, but also a governance model for integrating tourism management, heritage conservation, climate adaptation and digital innovation into coherent and resilient territorial management systems. Its flexibility and scalability allow adaptation across diverse heritage contexts while maintaining a common strategic direction toward sustainable and resilient tourism development.

9. KPI AND MONITORING FRAMEWORK

9.1 Introduction

The HERIT ADAPT transnational strategy requires a common monitoring framework capable of supporting:

- evidence-based decision-making;
- comparability between pilot sites;
- adaptive management;
- operational evaluation;
- long-term resilience assessment.

The comparative analysis of pilot activities demonstrates significant differences in:

- data availability;
- monitoring maturity;
- digital readiness;
- institutional capacities;
- operational integration of KPI systems.

For this reason, the KPI framework developed within HERIT ADAPT is designed as a flexible and scalable monitoring structure capable of adaptation to different territorial contexts while maintaining a shared transnational monitoring logic.

The framework combines:

- tourism indicators;
- environmental indicators;
- governance indicators;
- digital maturity indicators;
- operational resilience indicators.

Together, these indicators support continuous monitoring of tourism pressure, heritage vulnerability, climate resilience and governance effectiveness across the partnership.

9.2 Objectives of the Monitoring Framework

The HERIT ADAPT monitoring framework has several interconnected objectives.

First, it supports evaluation of pilot implementation and operational effectiveness.

Second, it enables comparison and aggregation of results across diverse heritage and tourism contexts.

Third, it supports adaptive governance by providing evidence for:

- operational decision-making;
- visitor management;
- climate adaptation;
- preventive conservation;
- governance coordination.

Fourth, the framework contributes to the long-term transferability and scalability of HERIT ADAPT approaches by establishing a common monitoring language applicable across the Euro-Mediterranean region.

Importantly, the framework is not intended solely as a reporting mechanism. It functions as a strategic management tool supporting continuous learning and operational adaptation.

9.3 Structure of the KPI Framework

The monitoring framework is structured around five interconnected indicator categories:

1. Tourism and Visitor Management Indicators
2. Environmental and Climate Resilience Indicators
3. Governance and Participation Indicators
4. Digital Maturity and Monitoring Indicators
5. Operational and Strategic Impact Indicators

This structure reflects the integrated nature of the HERIT ADAPT model, combining tourism management, climate resilience, governance coordination and digital transformation.

Table 8. HERIT ADAPT KPI Framework Overview

KPI Category	Monitoring Focus	Example Indicators	Strategic Purpose
Tourism and Visitor Management Indicators	Tourism pressure, visitor flows and spatial distribution	Annual visitors, peak season concentration, visitor density, visitor redistribution rate, off-season visitation, visitor satisfaction	Support adaptive visitor management and territorial balancing
Environmental and Climate Resilience Indicators	Environmental conditions, climate exposure and conservation risks	Temperature and humidity fluctuations, wall moisture levels, environmental threshold exceedances,	Support preventive conservation and climate adaptation

KPI Category	Monitoring Focus	Example Indicators	Strategic Purpose
		climate-related incidents, sensor coverage	
Governance and Participation Indicators	Stakeholder engagement and governance effectiveness	Number of active TWG members, frequency of meetings, stakeholder participation rate, collaborative actions implemented	Strengthen governance capacity and institutional coordination
Digital Maturity and Monitoring Indicators	Digital readiness and operational integration of monitoring systems	Number of digitalized assets, 3D documentation coverage, installed sensors, dashboard functionality, interoperability level	Assess digital transformation and monitoring capacity
Operational and Strategic Impact Indicators	Long-term outcomes and resilience-building effects	Congestion reduction, climate adaptation measures implemented, monitoring protocols adopted, management decisions supported by data, replication of HERIT ADAPT approaches	Evaluate strategic effectiveness, transferability and long-term sustainability

The HERIT ADAPT KPI Framework combines tourism, environmental, governance, digital and impact indicators into a common monitoring structure supporting adaptive and evidence-based management. While individual indicators may vary according to local contexts and data availability, the framework provides a harmonized transnational monitoring logic that enables comparability, continuous learning and long-term resilience assessment across diverse heritage destinations.

9.4 Tourism and Visitor Management Indicators

Tourism-related indicators focus on monitoring:

- visitor pressure;
- spatial distribution of tourism flows;
- seasonality;
- carrying-capacity dynamics;
- visitor redistribution effectiveness.

Key indicators may include:

- annual visitor numbers;

- peak season concentration rates;
- visitor density within critical heritage zones;
- visitor flow distribution between primary and secondary sites;
- off-season visitation levels;
- average length of stay;
- visitor satisfaction indicators.

The pilots demonstrate that tourism pressure cannot be evaluated solely through visitor volume. Monitoring systems should additionally assess:

- spatial concentration;
- temporal concentration;
- circulation bottlenecks;
- visitor behaviour patterns;
- redistribution effectiveness.

Where operationally feasible, indicators should increasingly be supported through:

- visitor counters;
- mobile data analytics;
- territorial observation systems;
- dashboard-based visitor analytics;
- GIS and spatial monitoring tools.

9.5 Environmental and Climate Resilience Indicators

Environmental indicators support preventive conservation and climate-aware tourism governance.

The pilot analysis demonstrates increasing need for:

- continuous environmental monitoring;
- risk anticipation;
- climate vulnerability assessment;
- operational resilience evaluation.

Key indicators may include:

- temperature and humidity fluctuations;
- wall moisture levels;

- environmental threshold exceedances;
- exposure to extreme weather events;
- deterioration risk indicators;
- environmental sensor coverage;
- operational uptime of monitoring systems.

Several pilots additionally identified the need to monitor:

- visitor-related indoor microclimate fluctuations;
- environmental degradation caused by tourism pressure;
- exposure of outdoor heritage sites to erosion and weathering processes.

Environmental indicators are particularly important for:

- climate adaptation planning;
- preventive conservation;
- maintenance prioritization;
- operational preparedness.

9.6 Governance and Participation Indicators

Governance indicators assess the effectiveness of:

- stakeholder coordination;
- participatory governance;
- institutional cooperation;
- operational continuity.

The HERIT ADAPT pilots demonstrate that governance capacity is one of the strongest determinants of successful implementation.

Key governance indicators may include:

- number of active stakeholders participating in TWGs;
- frequency of TWG meetings;
- level of institutional participation;
- number of collaborative actions implemented;
- stakeholder satisfaction and engagement;
- integration of monitoring systems into governance processes.

The framework additionally recognizes the importance of qualitative governance indicators assessing:

- interdisciplinary cooperation;
- institutional alignment;
- operational responsiveness;
- continuity of participatory mechanisms after project completion.

9.7 Digital Maturity and Monitoring Indicators

Digital maturity indicators assess the implementation and operational integration of:

- digital documentation systems;
- environmental monitoring;
- dashboards;
- territorial intelligence tools;
- interoperability mechanisms.

Key indicators may include:

- number of digitalized heritage assets;
- coverage of 3D documentation systems;
- number of installed sensors;
- operational status of dashboards;
- integration level between datasets;
- frequency of monitoring updates;
- use of predictive analytics;
- interoperability between monitoring systems.

The pilots demonstrate substantial variation in digital readiness. For this reason, the framework supports progressive implementation pathways rather than imposing uniform technological standards.

Digital maturity indicators are particularly important for evaluating:

- operational integration of technology;
- scalability potential;
- long-term sustainability of monitoring systems;
- transition toward adaptive management models.

9.8 Operational and Strategic Impact Indicators

The final indicator category focuses on broader operational and strategic impacts generated through HERIT ADAPT implementation.

These indicators assess:

- resilience-building capacities;
- operational effectiveness;
- policy integration;
- transferability potential;
- long-term sustainability impacts.

Key indicators may include:

- reduction of congestion within critical heritage zones;
- implementation of preventive conservation measures;
- integration of climate resilience into tourism planning;
- adoption of monitoring protocols;
- operational use of dashboards in decision-making;
- implementation of adaptive visitor management measures;
- replication of HERIT ADAPT approaches in other locations.

This indicator category is particularly important because it evaluates whether pilot measures evolve into sustainable governance practices rather than remaining isolated project activities.

Table 9. Examples of Strategic Impact Indicators

Strategic Objective	Example Impact Indicator
Visitor Redistribution	Reduction in peak visitor concentration
Climate Adaptation	Number of climate monitoring protocols implemented
Governance Strengthening	Active TWG participation rate
Digital Transformation	Operational integration of monitoring systems
Adaptive Management	Number of management decisions supported by monitoring data

9.9 Data Sources and Monitoring Mechanisms

The monitoring framework combines multiple quantitative and qualitative data sources.

Potential data sources include:

- visitor counters;
- environmental sensors;
- dashboard systems;
- mobile network analytics;
- GIS and spatial datasets;
- digital documentation systems;
- operational reports;
- stakeholder workshops;
- surveys and participatory consultation processes.

The pilots demonstrate that no single monitoring method is sufficient on its own. Effective monitoring increasingly depends on:

- integration of datasets;
- interoperability between systems;
- continuous operational reporting;
- combination of quantitative and qualitative analysis.

Where possible, monitoring systems should support:

- real-time observation;
- periodic reporting;
- predictive analysis;
- operational alerts;
- evidence-based management processes.

9.10 Common Challenges and Limitations

The comparative analysis identified several recurring monitoring challenges across the partnership.

These include:

- fragmented datasets;

- absence of baseline data;
- low interoperability;
- insufficient staff capacities;
- limited operational integration of dashboards;
- weak continuity of monitoring after project completion;
- insufficient funding for long-term maintenance.

Several pilots additionally identified challenges related to:

- remote site connectivity;
- sensor maintenance;
- calibration and technical troubleshooting;
- limited analytical capacities for interpreting monitoring outputs.

These limitations demonstrate that monitoring systems require not only technical infrastructure, but also governance ownership, operational continuity and long-term institutional support.

9.11 Towards Adaptive Monitoring Ecosystems

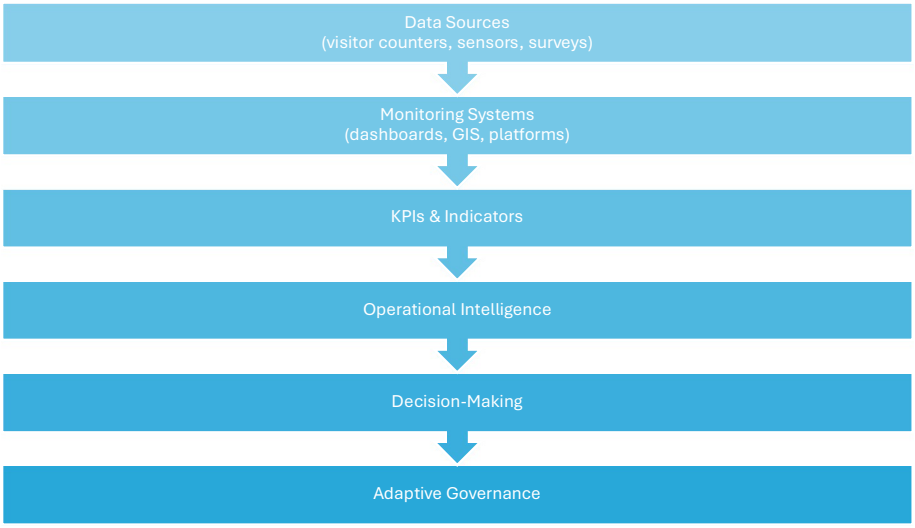
The HERIT ADAPT monitoring framework ultimately promotes the development of adaptive monitoring ecosystems capable of continuously supporting:

- tourism management;
- preventive conservation;
- climate adaptation;
- participatory governance;
- operational decision-making.

The framework therefore supports a transition:
from static reporting systems
toward integrated operational intelligence environments capable of informing adaptive and evidence-based governance.

Rather than functioning solely as evaluation tools, HERIT ADAPT monitoring systems are intended to become permanent operational components of sustainable and resilient tourism management across Euro-Mediterranean heritage destinations.

Figure 2. HERIT ADAPT Monitoring Ecosystem



The HERIT ADAPT monitoring ecosystem illustrates how diverse data sources can be transformed into operational intelligence supporting evidence-based decision-making. Rather than functioning solely as reporting tools, monitoring systems become integral components of adaptive governance processes capable of supporting tourism management, heritage conservation and climate resilience objectives.

10. TRANSFERABILITY AND SCALABILITY

10.1 Introduction

One of the central objectives of the HERIT ADAPT project is to ensure that the knowledge, tools and governance approaches developed through pilot activities can be transferred and adapted to other heritage and tourism contexts across the Euro-Mediterranean region.

The comparative analysis demonstrates that the pilots differ substantially in:

- territorial typology;
- tourism intensity;
- governance maturity;
- digital readiness;
- environmental vulnerability;

- operational capacity.

Despite these differences, the project also reveals a strong set of shared structural challenges and recurring strategic needs. This creates significant potential for the transferability and scalability of HERIT ADAPT approaches beyond the original pilot network.

Importantly, transferability within HERIT ADAPT should not be understood as simple replication of identical technical solutions. Instead, the project promotes adaptive transferability:
the ability to translate strategic principles, governance models and operational approaches into different territorial realities while respecting local capacities and constraints.

10.2 Transferability of Governance Approaches

The strongest transferable component emerging from HERIT ADAPT is not necessarily technology itself, but the governance logic supporting integrated and adaptive heritage tourism management.

Across multiple pilots, the project demonstrated the importance of:

- interdisciplinary coordination;
- participatory governance;
- integration between tourism and conservation planning;
- operational collaboration between institutions;
- stakeholder engagement mechanisms.

The establishment of Territorial Working Groups (TWGs) represents one of the most transferable governance mechanisms identified through the partnership. The pilots demonstrate that TWGs can function effectively across:

- urban UNESCO environments;
- remote archaeological sites;
- mixed cultural-natural landscapes;
- regional tourism systems.

Importantly, participatory governance approaches are highly scalable because they do not depend primarily on advanced technological infrastructure. Even sites with limited digital maturity can implement:

- stakeholder coordination mechanisms;
- collaborative planning processes;
- participatory mapping;
- co-creation workshops;
- governance consultation structures.

The analysis therefore confirms that governance continuity and institutional coordination are among the most universally transferable dimensions of the HERIT ADAPT model.

10.3 Transferability of Digital and Monitoring Systems

Digital documentation and monitoring systems demonstrate strong transferability potential, although implementation complexity varies significantly according to local capacities and available resources.

The pilots demonstrate that digital twins, photogrammetry, LIDAR documentation and geospatial models can be adapted to:

- monuments;
- museums;
- archaeological sites;
- historic urban areas;
- cultural landscapes;
- remote heritage environments.

Similarly, environmental monitoring systems based on:

- temperature sensors;
- humidity monitoring;
- visitor counters;
- dashboard systems;
- territorial observation platforms

can be progressively scaled according to operational readiness and available infrastructure.

However, the comparative analysis also demonstrates that successful transferability depends on several enabling conditions:

- institutional ownership;
- technical maintenance capacities;
- interoperability between systems;
- availability of operational funding;
- staff training and analytical capacity;
- governance integration of monitoring outputs.

The pilots therefore show that digital transferability is not only a technological issue, but equally a governance and operational challenge.

10.4 Scalability Across Different Territorial Typologies

The HERIT ADAPT partnership demonstrates that scalable sustainable tourism governance models must remain adaptable to different territorial typologies.

The pilots reveal several broad territorial categories:

- high-pressure UNESCO urban heritage environments;
- remote archaeological and monumental sites;
- mixed cultural-natural landscapes;
- regionally distributed tourism systems;
- smaller-scale local heritage environments.

Each typology requires different operational priorities.

Urban UNESCO environments primarily require:

- congestion management;
- predictive visitor analytics;
- environmental monitoring;
- adaptive carrying-capacity management.

Remote and under-visited sites require:

- accessibility improvements;
- digital visibility;
- territorial integration;
- interpretative storytelling;
- basic monitoring systems.

Mixed territorial systems require:

- integrated regional governance;
- territorial observation systems;
- climate adaptation planning;
- coordinated tourism distribution strategies.

The HERIT ADAPT framework therefore demonstrates that scalability depends on flexibility rather than rigid standardization.

The comparative assessment allows the different HERIT ADAPT components to be evaluated according to their transferability and scalability potential, highlighting the conditions required for successful replication across diverse heritage contexts.

Table 10. Transferability and Scalability Matrix

HERIT ADAPT Component	Transferability Potential	Scalability Potential	Main Enabling Conditions
Participatory Governance (TWGs)	Very High	Very High	Institutional commitment, stakeholder engagement
Narrative Connectivity and Visitor Redistribution	High	High	Tourism partnerships, interpretation capacity
Digital Documentation and Digital Twins	High	Medium	Technical expertise, funding, maintenance capacity
Environmental Monitoring Systems	Medium-High	Medium	Monitoring infrastructure, operational maintenance
Territorial Intelligence Platforms	Medium	Medium	Data availability, interoperability, analytical capacity
Integrated Adaptive Governance Model	Very High	High	Governance continuity, institutional coordination

The assessment confirms that governance-related measures demonstrate the highest transferability potential across different territorial contexts, while digital and monitoring solutions require stronger technical and operational capacities. The findings further indicate that successful replication depends not only on technology, but also on governance continuity, institutional ownership and long-term sustainability arrangements. Together, these factors form the foundation for scaling HERIT ADAPT approaches beyond the original pilot network.

10.5 Financial and Operational Scalability

The pilots additionally demonstrate that financial scalability is a critical factor influencing long-term implementation potential.

Highly advanced digital systems involving:

- predictive analytics;
- integrated dashboards;

- environmental sensors;
- territorial intelligence platforms

require substantial:

- operational maintenance;
- staff capacities;
- technological upgrades;
- long-term funding commitments.

At the same time, several HERIT ADAPT measures demonstrate strong scalability potential precisely because they remain relatively low-cost and governance-oriented.

These include:

- stakeholder coordination mechanisms;
- TWGs;
- participatory workshops;
- narrative-based redistribution approaches;
- signage systems;
- interpretative storytelling;
- collaborative planning tools.

The analysis therefore confirms that scalable sustainable tourism governance does not necessarily require highly sophisticated technologies in all contexts. In many cases, operational governance improvements can generate substantial resilience benefits even with limited financial resources.

10.6 Replication Potential Beyond the HERIT ADAPT Partnership

The strategic approaches developed through HERIT ADAPT demonstrate strong relevance for a broad range of heritage and tourism destinations facing:

- overtourism;
- climate vulnerability;
- governance fragmentation;
- insufficient monitoring systems;
- weak integration between tourism and conservation planning.

The project is particularly relevant for:

- UNESCO heritage cities;

- coastal Mediterranean destinations;
- archaeological sites;
- climate-sensitive heritage environments;
- remote and under-visited heritage areas;
- mixed cultural-natural landscapes.

Several strategic dimensions demonstrate especially high replication potential:

- participatory governance models;
- integrated monitoring frameworks;
- climate-aware heritage management;
- visitor redistribution strategies;
- digital documentation systems;
- territorial intelligence approaches.

The transnational nature of HERIT ADAPT therefore significantly strengthens the project's strategic value by demonstrating that adaptive governance approaches can function across highly diverse operational and territorial conditions.

10.7 Barriers and Limitations to Transferability

Despite strong transferability potential, the pilots also reveal several important barriers limiting scalability and replication.

The main barriers include:

- fragmented institutional structures;
- insufficient long-term funding;
- low digital maturity;
- weak interoperability between systems;
- limited technical capacities;
- lack of operational ownership;
- insufficient staff resources;
- absence of baseline monitoring systems.

Several pilots additionally demonstrate that:

- technological sophistication alone does not guarantee successful implementation;
- digital systems without governance integration remain underutilized;

- monitoring systems require long-term maintenance structures;
- participatory governance mechanisms require continuous institutional support.

The comparative analysis therefore confirms that transferability depends as much on governance readiness and operational continuity as on technical capacity.

10.8 Towards a Transferable Euro-Mediterranean Governance Model

The HERIT ADAPT partnership ultimately demonstrates that sustainable and resilient tourism governance can no longer rely on isolated sectoral approaches.

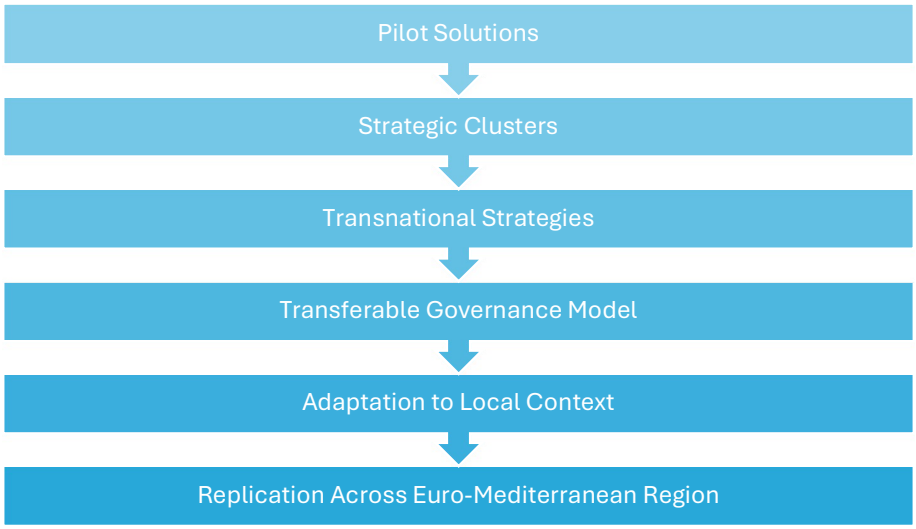
The pilots collectively support the emergence of a transferable governance model combining:

- digital transformation;
- climate adaptation;
- preventive conservation;
- participatory governance;
- tourism intelligence;
- adaptive operational management.

This model does not propose a single standardized technical solution. Instead, it establishes a flexible governance framework capable of adaptation to different territorial realities and implementation capacities.

The strategic value of HERIT ADAPT therefore lies not only in the individual pilot outputs, but in the project's ability to demonstrate how integrated and adaptive governance systems can support long-term resilience of heritage tourism destinations across the Euro-Mediterranean region.

Figure 3. HERIT ADAPT Transferability Logic



The HERIT ADAPT experience demonstrates that transferability is achieved not through replication of identical technical solutions, but through adaptation of common governance principles, monitoring approaches and strategic frameworks to diverse territorial realities. This flexibility represents one of the project's most important contributions to sustainable and resilient tourism governance in the Euro-Mediterranean region.

11. POLICY RECOMMENDATIONS

11.1 Introduction

The HERIT ADAPT pilot activities demonstrate that sustainable and resilient tourism governance within Euro-Mediterranean heritage environments requires a stronger integration of:

- tourism management;
- climate adaptation;
- preventive conservation;
- digital transformation;
- participatory governance;
- evidence-based operational management.

The comparative analysis additionally confirms that many existing tourism and heritage governance systems remain fragmented, reactive and insufficiently equipped to respond to:

- overtourism;
- climate-related risks;
- environmental degradation;
- operational pressure on heritage assets;
- increasing complexity of visitor management.

The following policy recommendations are therefore intended to support the transition toward adaptive, integrated and resilience-oriented governance models applicable across different territorial contexts.

The recommendations are structured according to:

- local and site-management level;
- regional and destination-management level;
- national policy level;
- Euro-Mediterranean and European cooperation level.

11.2 Local and Site-Level Recommendations

Strengthen Integration Between Tourism and Heritage Management

Local heritage destinations should strengthen operational integration between:

- tourism management;
- conservation planning;
- climate adaptation;
- environmental monitoring;
- visitor management systems.

The pilots demonstrate that fragmented sectoral approaches significantly reduce long-term operational effectiveness.

Local governance models should therefore support:

- integrated management structures;
- interdisciplinary operational coordination;
- shared monitoring systems;
- joint decision-making procedures;

- common operational protocols.

Establish Permanent Participatory Governance Mechanisms

The HERIT ADAPT experience demonstrates the strong value of Territorial Working Groups (TWGs) and other participatory governance mechanisms.

Local authorities and heritage institutions should therefore:

- formalize stakeholder coordination mechanisms;
- establish regular consultation processes;
- integrate local communities into tourism planning;
- strengthen interdisciplinary cooperation;
- support long-term continuity of participatory governance structures beyond project cycles.

Integrate Climate Adaptation into Everyday Operations

Climate resilience should become an operational component of heritage and tourism management rather than a separate environmental policy domain.

Site-level management should progressively integrate:

- environmental monitoring;
- climate vulnerability assessment;
- preventive conservation protocols;
- risk thresholds;
- climate-responsive maintenance planning;
- operational preparedness procedures.

Support Data-Informed Visitor Management

Local tourism and heritage managers should strengthen:

- visitor-flow monitoring;
- congestion assessment;
- carrying-capacity evaluation;
- dashboard-based operational management;
- evidence-based visitor redistribution measures.

Special attention should be given to:

- overcrowded heritage environments;

- climate-sensitive locations;
- highly seasonal destinations;
- fragile archaeological and museum environments.

11.3 Regional and Destination-Level Recommendations

Promote Territorial Redistribution Strategies

Regional tourism authorities should strengthen territorial diversification strategies capable of reducing concentration pressure on flagship attractions while increasing visibility of under-visited heritage areas.

This may include:

- thematic cultural routes;
- regional storytelling strategies;
- integration of secondary heritage sites into tourism itineraries;
- coordinated interpretation systems;
- off-season tourism development measures.

The pilots demonstrate that narrative connectivity and territorial integration can significantly improve spatial balance of tourism flows.

Develop Regional Tourism Intelligence Systems

Regional governance structures should support development of:

- territorial observation systems;
- visitor analytics platforms;
- integrated monitoring dashboards;
- GIS-based tourism intelligence tools;
- climate vulnerability monitoring systems.

Integrated territorial intelligence systems can support:

- adaptive tourism planning;
- evidence-based governance;
- regional resilience assessment;
- operational coordination between destinations.

Strengthen Inter-Municipal and Cross-Sector Cooperation

Many heritage destinations operate within wider territorial systems that exceed administrative boundaries.

Regional policies should therefore strengthen:

- inter-municipal coordination;
- cooperation between tourism and heritage sectors;
- integration between environmental and tourism governance;
- regional governance networks for climate adaptation and resilience planning.

11.4 National-Level Recommendations

Integrate Climate Resilience into National Heritage and Tourism Policies

National tourism and heritage policies should increasingly integrate:

- climate adaptation;
- preventive conservation;
- environmental monitoring;
- resilience planning;
- adaptive visitor management.

The pilots demonstrate that climate-related risks increasingly affect both tourism sustainability and long-term conservation of heritage assets.

Support National Digital Heritage and Monitoring Frameworks

National institutions should support:

- standardization of digital documentation methodologies;
- interoperability standards for monitoring systems;
- national frameworks for digital heritage management;
- long-term preservation of digital heritage datasets.

Particular attention should be given to:

- digital twins;
- geospatial heritage documentation;
- integrated monitoring environments;
- interoperability between tourism and conservation datasets.

Strengthen Funding Mechanisms for Long-Term Operational Sustainability

Several HERIT ADAPT pilots demonstrate that:

- project-based funding alone is insufficient;
- monitoring systems require permanent maintenance;
- digital infrastructure requires long-term operational support.

National funding frameworks should therefore support:

- operational continuity of monitoring systems;
- maintenance of digital infrastructure;
- climate adaptation measures;
- long-term governance coordination capacities;
- training and technical capacity-building.

Support Capacity-Building and Interdisciplinary Training

The implementation of adaptive governance systems requires new operational capacities combining:

- tourism management;
- digital literacy;
- climate adaptation;
- conservation management;
- data interpretation;
- participatory governance.

National institutions should therefore support interdisciplinary training programmes and operational capacity-building initiatives for heritage and tourism professionals.

11.5 Euro-Mediterranean and European-Level Recommendations

Promote Shared Monitoring and KPI Methodologies

The HERIT ADAPT experience demonstrates the importance of harmonized monitoring systems capable of supporting:

- comparability;
- cross-site learning;
- transferability assessment;
- resilience evaluation.

Euro-Mediterranean cooperation frameworks should therefore support:

- common KPI methodologies;
- interoperability standards;
- shared monitoring approaches;
- territorial observation systems.

Strengthen Support for Adaptive Governance Models

European cooperation programmes should increasingly support governance-oriented innovation rather than focusing exclusively on isolated technological solutions.

Particular attention should be given to:

- participatory governance mechanisms;
- interdisciplinary coordination models;
- adaptive operational management;
- integration between climate adaptation and tourism governance.

Support Replication of Climate-Aware Heritage Management Approaches

The Mediterranean region is increasingly exposed to:

- extreme weather events;
- heat stress;
- erosion;
- flooding;
- wildfire risks;
- environmental degradation.

European policies and funding programmes should therefore support replication of:

- environmental monitoring systems;
- preventive conservation approaches;
- climate-responsive tourism management models;
- resilience-oriented heritage governance frameworks.

Promote Knowledge Transfer and Transnational Learning Networks

One of the major added values of HERIT ADAPT lies in transnational learning between highly diverse heritage contexts.

Future Euro-Mediterranean cooperation initiatives should therefore support:

- exchange of operational methodologies;
- transfer of governance models;
- collaborative monitoring systems;
- joint resilience planning;
- knowledge-sharing platforms for adaptive heritage tourism governance.

Table 11. Summary of HERIT ADAPT Policy Recommendations

Policy Area	Local Level	Regional Level	National Level	Euro-Mediterranean Level
Governance	TWGs, stakeholder engagement	Inter-municipal cooperation	Capacity-building programmes	Adaptive governance models
Monitoring & Data	Visitor monitoring, dashboards	Tourism intelligence systems	National monitoring standards	Shared KPI methodologies
Climate Adaptation	Climate-responsive operations	Regional resilience planning	Climate integration into policy	Climate-aware heritage management
Digital Transformation	Site-level monitoring tools	Regional observation platforms	Digital heritage frameworks	Interoperability standards
Visitor Management	Carrying-capacity assessment and redistribution	Territorial diversification	Policy integration	Transferable visitor management approaches

The comparative analysis confirms that no single governance level can effectively address the complex sustainability challenges facing heritage destinations on its own. Successful implementation of the HERIT ADAPT model requires coordinated action across local, regional, national and transnational levels, ensuring that governance, monitoring, climate adaptation, digital transformation and visitor management are addressed through integrated and mutually reinforcing policy frameworks.

11.6 Towards Integrated and Adaptive Governance Frameworks

The policy recommendations presented in this chapter provide a practical framework for embedding HERIT ADAPT principles into future governance, planning and funding mechanisms across different territorial scales. Their implementation can support the long-term integration of tourism management, heritage conservation, climate adaptation and digital innovation within adaptive governance systems.

12. CONCLUSIONS

12.1 Main Strategic Findings

The HERIT ADAPT project demonstrates that sustainable and resilient tourism governance within Euro-Mediterranean heritage environments requires integrated approaches that connect tourism management, heritage conservation, climate adaptation, digital transformation and participatory governance.

The comparative analysis of pilot sites confirms that heritage destinations face increasingly interconnected challenges, including tourism concentration, climate-related risks, environmental pressures, governance fragmentation and insufficient monitoring capacities. At the same time, the pilots reveal significant opportunities for developing more adaptive, evidence-based and resilience-oriented management approaches.

One of the central findings of HERIT ADAPT is that sustainable tourism governance can no longer rely on reactive management models. Future resilience increasingly depends on continuous monitoring, operational intelligence, interdisciplinary cooperation and the integration of digital tools into decision-making processes.

The project additionally confirms that technological innovation alone is insufficient without governance continuity, institutional coordination, long-term operational ownership and stakeholder engagement.

12.2 Strategic Contribution of the HERIT ADAPT Model

The HERIT ADAPT Sustainable Tourism Model provides an integrated framework linking data and monitoring systems, governance coordination and strategic implementation.

The pilot experience demonstrates that these dimensions are strongly interconnected. Monitoring systems generate operational intelligence, governance structures enable coordination and implementation, while strategic frameworks transform pilot experiences into long-term management approaches.

A key contribution of HERIT ADAPT lies in demonstrating how digital transformation, climate resilience and participatory governance can be integrated into a unified adaptive management framework rather than implemented as separate initiatives.

12.3 Transferability and Future Relevance

The pilots demonstrate strong transferability potential across a wide range of heritage contexts, including UNESCO cities, archaeological sites, museums, cultural landscapes and regional tourism systems.

Importantly, HERIT ADAPT shows that successful implementation does not depend on identical technological solutions. Instead, the project promotes flexible and scalable approaches that can be adapted to different territorial realities, governance capacities and levels of digital maturity.

The project further demonstrates that governance-oriented measures, stakeholder coordination mechanisms and visitor redistribution approaches can often generate significant benefits even in locations with limited resources.

The transnational dimension of HERIT ADAPT further demonstrates that shared governance principles can be successfully adapted across diverse territorial, institutional and cultural contexts, strengthening the relevance of the model beyond the original pilot partnership.

12.4 Final Reflection

HERIT ADAPT ultimately demonstrates that resilience is not achieved through isolated interventions, but through the continuous integration of governance, monitoring, climate adaptation, tourism management and preventive conservation.

The project supports a transition from fragmented and reactive management towards adaptive, evidence-based and climate-aware governance systems capable of responding to the growing sustainability challenges affecting heritage destinations across the Euro-Mediterranean region.

By combining technological innovation with participatory governance and adaptive planning approaches, HERIT ADAPT provides a transferable framework for strengthening the long-term sustainability and resilience of heritage tourism destinations.

In this sense, HERIT ADAPT provides not only a project methodology, but a long-term governance vision for sustainable and resilient heritage tourism across the Euro-Mediterranean region.

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