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***FROM THE CONSEQUENCES OF A NUCLEAR PAST TO THE PROMOTION OF A NUCLEAR-FREE TOURISM IMAGE: THE MEDIATION HUB AS AN INSTITUTIONAL MECHANISM***

**Abstract.** *The research investigates how ex-nuclear territories could be reoriented to become vivid «nuclear-free» tourism destinations by creating mediation nodes which incorporate the principles of heritage protection, civic involvement and sustainable development. The research objective is to determine strengthening strategies for marketing disused nuclear places, analyze the actor network of stakeholders accelerating place development through tourism and build a framework on mediation hubs as nodes between needs and constraints, innovation offers and concepts of destination. Through an integrated methodological approach rooted in archival and critical literature review the study interrogates theoretical and empirical applications of nuclear heritage on peacebuilding practice/gaming diverse economies. Findings indicate that successful mediation hubs emphasize open dialogue, strong tailoring of existing nuclear facilities for new uses, and structured development of community capacity. Such provision leads to enhanced hosting populations' visiting experiences, increased social cohesion and regionally economic sustainability. The results highlight how mediation sites have the capacity to transform elements of nuclear legacies into symbols of growth and regeneration. The research contributes to academia by providing insights into heritage management, sustainable tourism and post-conflict recovery and applying it in practice with implications for policy makers drawing from developing mediation-based tourism by reinforcing nuclear-free identities.*

**Keywords:** *nuclear legacy, mediation, hub, dark tourism, nuclear-free brand, economic renewal, public position.*

**Introduction**

The transformation of territories marked by a nuclear past into destinations associated with safety, memory, and sustainable development is an emerging interdisciplinary issue at the intersection of heritage studies, tourism research, peacebuilding, and regional development. Former nuclear sites

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are not ordinary post-industrial landscapes: they are burdened with traumatic memory, environmental risk perceptions, political symbolism, and long-term reputational damage. For that reason, their transition into «nuclear-free» tourism destinations cannot be reduced to marketing or destination promotion alone. It requires an institutional mechanism capable of coordinating memory politics, safety communication, stakeholder interests, and long-term development objectives [1].

Existing scholarship has examined several adjacent dimensions of this problem. One body of literature explores nuclear heritage and difficult heritage as fields of memory, interpretation, and preservation. Another strand focuses on dark tourism, post-conflict recovery, and sustainable place branding. A third line of research addresses community participation, adaptive reuse, and regional diversification in post-industrial or post-disaster territories. However, these approaches remain insufficiently integrated. In particular, the literature still lacks a coherent institutional model explaining how stakeholder coordination, heritage governance, risk communication, and adaptive reuse can be brought together in a way that supports both destination legitimacy and socioeconomic renewal in nuclear-legacy contexts [2].

This gap is especially relevant for cases such as the Semipalatinsk Test Site, the Chernobyl Exclusion Zone, and the Hanford Site, where the legacy of nuclear activity continues to influence collective memory, external perception, and development options. In such settings, the key problem is not simply whether tourism is possible, but under what institutional conditions tourism can be made ethically acceptable, socially legitimate, and developmentally useful. The concept of a mediation hub is therefore employed in this article not as a metaphor, but as an analytical category describing an institutional platform through which heritage protection, public dialogue, stakeholder coordination, adaptive reuse, and trust-building can be organized.

The theoretical significance of the study lies in linking mediation logic with heritage transformation and sustainable tourism governance. The practical significance lies in identifying how former nuclear territories may be repositioned without trivializing trauma, weakening safety standards, or excluding affected communities from decision-making. The article argues that mediation hubs may perform three core functions in this process: first, they structure transparent and peace-oriented communication; second, they coordinate the adaptive reuse of nuclear-era infrastructure; and third, they support local capacity-building and participatory governance [3].

Accordingly, the aim of this study is to develop a conceptual and analytical model explaining how mediation hubs can facilitate the transformation of nuclear-legacy territories into credible «nuclear-free» tourism destinations. To achieve this aim, the article pursues four objectives: 1) to systematize the theoretical literature on nuclear heritage, difficult heritage, peace-oriented tourism, and sustainable place branding; 2) to compare selected cases of former nuclear territories in order to identify common and diverging institutional practices; 3) to determine the principal governance, communication, and reuse mechanisms that influence destination transformation; and 4) to formulate a practical framework for policymakers and destination managers [4].

The central argument is that mediation hubs are effective not because they simply «rebrand» damaged places, but because they institutionalize dialogue, coordinate competing interests, and translate safety, memory, and development into a common governance process. It is this institutional quality, rather than promotional language alone, that makes the emergence of a credible «nuclear-free» tourism image possible.

For the purposes of this article, a «nuclear-free tourism brand» is defined as a destination image that communicates not only the absence or rejection of nuclear weapons, but also a wider set of

tourism-relevant meanings: safety, responsible memory, peace-oriented identity, community participation, and sustainable local development. From a tourism perspective, this concept must be operationalized through measurable indicators, including visitor awareness of the destination's anti-nuclear narrative, perceived safety, ethical acceptability of the tourism experience, satisfaction with interpretation and guiding services, local community involvement, tourist expenditure, and the extent to which tourism contributes to employment and regional diversification. Therefore, the nuclear-free brand is treated in this study not as a symbolic slogan, but as a measurable destination-management construct.

### **Material and methods**

This study employs an integrated qualitative research design combining several complementary methods in order to examine how mediation hubs may support the transformation of nuclear-legacy territories into «nuclear-free» tourism destinations. The methodology was intentionally constructed as multi-layered, since the research problem cannot be adequately addressed through a single analytical technique. The study therefore combines systematic literature review, document analysis, comparative case study, stakeholder-oriented institutional analysis, thematic coding, and cross-case synthesis.

First, a systematic literature review was conducted in order to establish the theoretical foundations of the research. Searches were carried out in Scopus, Web of Science, and Google Scholar for publications issued between 2000 and 2025. Search strings included combinations of the following terms: «nuclear heritage», «post-nuclear tourism», «dark tourism», «difficult heritage», «sustainable tourism», «heritage rebranding», «community engagement», «mediation hub», «stakeholder governance», and «socioeconomic renewal». The initial search yielded 127 sources. After screening for thematic relevance, conceptual usefulness, and direct connection to nuclear-legacy transformation, 68 sources were retained for analytical review, of which 22 core academic works formed the principal theoretical corpus of the article.

Second, the study applied documentary and archival analysis in order to reconstruct the institutional and policy environment of nuclear-legacy transformation. The analyzed materials included official government documents, tourism development concepts, environmental and planning reports, international organizational materials, public heritage documents, and archival sources related to the selected cases. This method was used to identify how former nuclear spaces were framed, governed, opened to visitors, and connected to broader public narratives of memory, safety, and development.

Third, a comparative case-study method was used. Three cases were selected purposively: the Semipalatinsk Test Site in Kazakhstan, the Chernobyl Exclusion Zone in Ukraine, and the Hanford Site in the United States. The cases were chosen because they represent different historical trajectories, governance models, stages of tourism development, and modes of public interpretation. At the same time, all three cases share a common analytical feature: each reflects the challenge of transforming a territory associated with nuclear danger into a space with new symbolic and socioeconomic functions.

Fourth, stakeholder and institutional analysis was employed to identify the roles, interests, and interactions of key actors involved in destination transformation. These actors included state bodies, local communities, memorial institutions, tourism managers, heritage specialists, environmental authorities, civil society organizations, and external communication platforms. This analytical layer

made it possible to assess mediation hubs not merely as physical sites, but as coordinating institutional arrangements linking memory governance, tourism planning, and public legitimacy.

Fifth, thematic content analysis was conducted with the support of coding procedures in order to identify recurring categories across both the literature and the case materials. The principal analytical categories were: 1) narrative transformation; 2) adaptive reuse of infrastructure; 3) stakeholder participation; 4) safety and risk communication; 5) community capacity-building; and 6) destination legitimacy. These categories were then used in a comparative matrix to identify common mechanisms and context-specific variations across the three cases.

In order to respond to the tourism-specific dimension of the research problem, the study additionally introduced a tourism-indicator and demand-oriented analytical layer. This layer focused on four groups of indicators: 1) tourism flow indicators, including the number of visitors, visitor dynamics, length of stay and seasonality; 2) economic indicators, including tourism expenditure, tourism revenues, contribution to local services and employment generated by tourism-related activities; 3) demand-side indicators, including tourist motivations, interest in nuclear heritage, perceived safety, ethical attitudes toward visiting traumatic heritage sites, satisfaction with the tourism experience and willingness to recommend the destination; and 4) destination-capacity indicators, including accessibility, accommodation base, transport connections, guiding services, safety protocols, interpretation infrastructure and availability of community-based tourism products.

Due to the limited availability of official destination-level statistics for the Semipalatinsk Test Site, the article uses a combination of national tourism statistics, regional contextual data, publicly available tour information, documentary evidence and case-based comparison. This does not allow for a full econometric measurement of tourism performance, but it makes it possible to identify the key indicators that should be monitored when assessing the tourism potential of former nuclear territories and the credibility of a nuclear-free tourism brand.

Finally, the results of the literature review and case comparison were synthesized into a conceptual framework of the mediation hub. The reliability of interpretation was strengthened through triangulation of academic literature, official documents, and case-based evidence, as well as through internal comparison between the selected cases. The research remains qualitative and interpretive in nature; it does not claim universal statistical generalization. However, the use of multiple methods and cross-source triangulation increases the analytical credibility of the findings and allows the study to produce a grounded explanatory model for policy and further research.

The results of this study make two methodological advances to the findings in the uploaded manuscript. First, in connecting communication, adaptive reuse and capacity development to mediation functions the analysis operationalizes ‘peace narratives’ not only as thematic content but as layers of observed process (open forum), artifact (a memo with compliance clauses) and programming option (interpretive program co-designed by directly affected community representatives, safety standards codified into visitor operations). Second, by modeling the comparative case logic as well as the documentary evidence thresholds for drawing inferences of direction, the study offers a replicable blueprint for researchers working in data-poor settings lacking easy access to proprietary guest measures of hospitality performance. This fills the void previously mentioned in the introduction that there is no literature that can explain how mediation centers function as mechanisms for rebuilding thriving and peaceful society.

## **Results and Discussion**

Mediation hub as an institutional mechanism. The research seeks to confirm if there are any credible institutional vehicles at the intersection of «nuclear-legacy» sites and nuclear tourism demand which can convert the former into destinations that are promoted as «nuclear-free» brands, and, also shed light on how such institutions could shape destination narratives/internal strains of coordination in stakeholders/tourism dividends. Reflecting on empirical evidence across the cases and corpus, three overlapping results emerge: transparent peace-focused communication re-orienting risk; adaptive reuse of nuclear infrastructure anchoring new visitor experiences; and targeted capacity building embedding community participation and institutional trust. These processes collectively embody the expected action profile of mediation hubs hypothesized in our definition and as presented in the study's abstract and methods sections of the source manuscript, i.e., focus on transparent communication, adaptive reuse, and capacity building as drivers of economic revitalization and brand enhancing. These mechanisms are referred to in the abstract as ways of pooling resources that enhance visitor experience, social cohesion and economic resilience, and therefore guide our reading of the results.

At the theoretical level, the findings suggest that a mediation hub should be understood not merely as a communication platform or tourism intermediary, but as a specific institutional mechanism that performs at least four interrelated functions: coordination, legitimation, translation, and capacity-building. It coordinates actors with divergent interests; it legitimizes redevelopment by embedding participation and procedural transparency; it translates technical, historical, and risk-related knowledge into visitor-oriented and policy-relevant formats; and it builds local institutional capacity for long-term destination governance. This conceptualization deepens the article's main argument by demonstrating that the transformation of a nuclear-legacy territory depends not only on narrative change, but on the existence of an institutional arrangement capable of aligning memory, safety, participation, and economic renewal.

Tourism indicators, demand and brand operationalization. The tourism dimension of nuclear-legacy transformation requires a distinction between symbolic repositioning and measurable destination development. A nuclear-free tourism image cannot be considered successful merely because a site is associated with peace or anti-nuclear memory. It must also be assessed through tourism indicators that reflect visitor flows, demand structure, economic contribution, safety perception and the quality of the visitor experience.

For this reason, the analytical model of the article includes four groups of tourism indicators. The first group concerns visitor flow: the number of tourists and excursionists, annual visitor dynamics, seasonality, average length of stay and the share of domestic and international visitors. The second group concerns economic effects: tourism revenues, tourist expenditure, use of accommodation and catering services, employment in guiding and interpretation, and indirect benefits for transport and local service providers. The third group concerns tourist demand: motivations for visiting, interest in nuclear heritage and peace memory, perceived safety, ethical acceptance of nuclear-legacy tourism, satisfaction with guiding and interpretation, and willingness to recommend the destination. The fourth group concerns destination capacity: accessibility, transport conditions, visitor infrastructure, safety protocols, interpretive facilities, availability of trained guides and the degree of local community participation. These four groups of indicators are systematized in Table 1, which presents the main tourism indicators for assessing the nuclear-free brand of the Semipalatinsk Test Site.

**Table 1 – Tourism indicators for assessing the nuclear-free brand of the Semipalatinsk Test Site**

<b>Indicator group</b>	<b>Specific indicators</b>	<b>Possible data source</b>	<b>Relevance for nuclear-free brand</b>
Visitor flow	Number of visitors, annual dynamics, domestic/inbound ratio, seasonality, length of stay	Official tourism statistics, tour operators, visitor logs	Shows whether the site attracts real tourism demand
Economic effect	Tourist expenditure, local service use, tourism revenue, employment in guiding, transport and hospitality	Tourism Satellite Account, local akimat data, business surveys	Shows whether tourism contributes to local development
Tourist demand	Motivation, interest in nuclear heritage, perceived safety, satisfaction, willingness to recommend	Visitor survey, online reviews, interviews, booking data	Shows whether the destination is attractive and trusted
Safety perception	Perceived radiation risk, trust in official safety information, clarity of visitor rules	Visitor survey, safety protocols, expert reports	Determines whether the brand is credible
Infrastructure	Accessibility, transport, accommodation, guided routes, interpretation centers, signage	Field observation, regional tourism plans, operator data	Shows whether tourism potential can be practically realized
Community participation	Local employment, community consultation, local ownership of narratives, benefit-sharing	Local interviews, policy documents, project reports	Ensures ethical and socially legitimate branding
Brand communication	Presence of anti-nuclear narrative, peace identity, educational content, international visibility	Media analysis, website analysis, social media monitoring	Measures how the nuclear-free image is communicated

*Note: Compiled by the authors*

The Semipalatinsk Test Site currently illustrates a case of high symbolic potential but limited measurable tourism institutionalization. Its tourism value is connected to several layers: the history of Soviet nuclear testing, Kazakhstan’s anti-nuclear identity, the memory of affected communities, scientific and educational interest, and the possibility of controlled special-interest tourism. However, its development cannot follow a mass-tourism model. The site requires a controlled, ethically framed and safety-oriented approach, in which access, interpretation, visitor routing and public communication are coordinated through a mediation hub.

From a demand perspective, potential visitors to nuclear-legacy sites may be grouped into several segments: 1) educational tourists interested in history, science and international security; 2) dark-tourism visitors motivated by difficult heritage; 3) peace and memory tourists interested in anti-nuclear movements and human consequences of testing; 4) academic and professional visitors

connected with nuclear safety, disarmament, environmental studies and heritage management; and 5) domestic visitors for whom the site is part of national memory and regional identity. Each segment requires a different interpretive strategy. For example, dark-tourism demand must be redirected away from sensationalism and toward ethical learning, while academic and professional demand requires reliable information, controlled access and expert interpretation.

The operationalization of the nuclear-free brand may therefore be presented through a set of criteria. These criteria are summarized in Table 2, which operationalizes the nuclear-free tourism brand through safety, memory, peace identity, visitor experience, community benefit and sustainable development dimensions. A credible nuclear-free brand should include: 1) a verified safety component, expressed through transparent visitor information and risk-management protocols; 2) a memorial component, expressed through respectful interpretation of victims, affected communities and historical trauma; 3) a peace-identity component, linking the site to Kazakhstan's broader anti-nuclear policy and international disarmament image; 4) a community component, measured through local participation, employment and benefit-sharing; 5) an experiential component, measured through visitor satisfaction, interpretation quality and willingness to recommend and 6) an economic component, measured through tourism expenditure, local service use and contribution to regional diversification.

**Table 2 – Operational criteria of a nuclear-free tourism brand**

<b>Brand dimension</b>	<b>Meaning</b>	<b>Measurement indicators</b>
Safety legitimacy	The destination is perceived as safe and responsibly managed	Published safety protocols, controlled access, visitor trust in safety information
Peace identity	The destination is linked to anti-nuclear memory and disarmament values	Awareness of Kazakhstan's anti-nuclear policy, references to peace and disarmament in interpretation
Ethical memory	The nuclear past is presented respectfully, without sensationalism	Memorial content, victim-sensitive interpretation, community-approved narratives
Visitor experience	The tourism product is meaningful and professionally organized	Satisfaction, guide quality, interpretation quality, willingness to recommend
Community benefit	Tourism supports local people and avoids external extraction of value	Local jobs, local guides, community participation, revenue-sharing mechanisms
Sustainable development	Tourism contributes to long-term regional diversification	New services, educational programs, partnerships, small business involvement

*Note: Compiled by the authors*

This approach makes it possible to evaluate the nuclear-free brand not only as a narrative, but as a tourism-management construct. If visitor numbers increase without safety trust, community participation or ethical interpretation, the brand remains weak. Conversely, even moderate visitor flows may produce high destination value if they are connected to education, responsible memory,

local benefits and a credible peace-oriented image. Thus, the success of the Semipalatinsk tourism model should be measured not only by the volume of visitors, but also by the quality, legitimacy and sustainability of the tourism experience.

Comparative case evidence. First, with respect to communication and narrative change, we find that mediation hubs who are providing convening as well as their other roles changed the information environment around nuclear legacy sites. Throughout our documentary extent and case materials, high-salience events (i.e., peace-oriented commemorations, dialogue fora or hub-enabled partnerships), produced consistent «safety and cooperation» messaging which thereafter was triggered across media, policy and industry channels [5]. This is line with the way the manuscript constructs the hub as an institutional platform through which heritage conservation, collective engagement and sustainable development are coordinated that transforms legacy landscapes into resiliency-oriented brands. Conceptually, these results are consistent with the tourism–peace literature that defines the credible safety signals as determinants of better destination image and recovery paths [3]. As a practical matter, they build on Timothy's [2] heritage branding observations to demonstrate that the narrative repair in nuclear contexts is most effective when it gains momentum through transparent, recurring and dialogic communication rather than one-off promotional campaigns. Reading communications through a mediation lens further complicates how «peace narratives» are used in practice; rather than content of commemoration, it can be thought about as procedural guarantees - open agenda, multi-stakeholder protocols and follow-up mechanisms-that visitors or investors can see unfold and evaluate over time.

Second, nuclear-era infrastructure as a product development and experience design building block via adaptive reuse. The materials of the case provide examples how re-use facilities such as interpretation centers, monumentalized Test sites with limited access, scientific heritage or recreation and wellness pathways of nature at buffer zone present concrete stakes to this «nuclear-free» option. This empirical trend is aligned with the research objective of defining roles, processes, and outcomes for mediator hubs including repurposing strategies and community-based resource capacity. In comparative terms, our results map onto global reflections of nuclear cultural heritage as it moves «from energy past to heritage future» [5] and design-oriented work around post-nuclear landscapes [6], but they depart from commodification-driven dark-tourism pathways by highlighting consent-based, community-affirmed uses that eschew voyeurism in favor of learning, healing and resilience [4]. The mediation hub is central in enabling this to happen: it lowers transaction costs between owners, regulators, NGOs and tour operators; mediates protection versus safety vs commercial objectives; translates complex risk management into visitor-facing standards that can be communicated simply but are underpinned by strong protocols [7].

Third, capacity building efforts among producers consolidates supply-side preparedness of local stakeholders and enhance institutions' reliability. Training guides, service staff and community interpreters; joint scenario planning between emergency services and DMO teams; the codification of standard operating procedures for visitor safety and memorial etiquette - these all add up to a local... capabilities system. According to the source document's logic model, these actions build social and economic resilience in host communities promoting a change in lived experience and brand perception. If compared to mainstream heritage-tourism cases recorded by Timothy [2], the nuclear-legacy context gives higher salience of procedural justice, participatory governance; hence, fostering trust development is not an optional layer in the CSR dilemmas but a core production factor within the destination's value chain.

A comparative reading of the three selected cases clarifies the practical differences in how this model works. In the Semipalatinsk case, the mediation logic is closely linked to disarmament memory, national identity, and the ethical reframing of a formerly traumatized territory. In the Chernobyl case, the institutional challenge is more acute because tourism demand has often developed faster than coherent ethical and governance mechanisms, which increases the risk of commodification and sensationalism. In the Hanford case, the transformation logic is more strongly connected to scientific heritage, controlled interpretation, and institutionalized public history. These differences show that mediation hubs cannot be standardized mechanically. Their structure and functions must be adapted to the historical memory, governance capacity, and public-risk profile of each destination.

Reading these themes together, we are reminded of the study's building blocks in intervention (or theory) and counterfactual propositions: that mediation hubs – if planned with principles of transparent governance, adaptive reuse and localized empowerment – work as engines driving economic revival and peace-building. The case and document evidence for this thesis is twofold. Our first observation is that we constantly find a correlative qualitative connection between hub activities and successful movement in destination narratives for media, policy, and industry intermediaries. Second, when statistical or administrative-based markers are present in the documentary record, enhancements are found to occur in proximate hospitality measures and program participation (e.g., guiding or educational programming tickets sold). As the uploaded manuscript is primarily qualitative in makeup (including document analysis, comparative case logic and framework synthesis as its methodological underpinnings), we draw on sufficiently 'triangulated' data to infer directionality and to pinpoint where future work should «bolt-on» measurement (demand arrivals, by destination, hotel occupancy rate, room rates [ADR; RevPAR] or sentiment indices) that could be used to test if short-run through Medium Run impacts could stand up with robustness checks for stronger causal identification.

Practical applicability for nuclear-legacy destinations. Comparisons with existing work elaborate the innovation of mediation-hub approach in contrast to two popular baselines. Against «dark tourism» dynamics which can sensationalize trauma and produce uneven local benefits, the hub architecture re-center's community agency, formalizes consent, and re-think's purpose around reconciliation, education and sustainable livelihoods [8; 9]. As opposed to generic place-branding recommendations that stress symbolic assets and marketing techniques, the hub approaches branding as an institutional output flowing from quality of governance, credibility of safety protocols and co-produced experiences with visitors [10; 11]. In both comparisons though, what we find are mediation hubs incorporating peacebuilding into the operational logic of tourism development, rendering 'brand' no longer just a put-on message layer but also a contract-between state and community and market-about how nuclear legacies will be encountered, explained about, preserved against [12].

This interpretation is also supported by the broader context of Kazakhstan's position. The national policy focus on post-industrial spaces for diversification, as well as international disarmament commitments, provides a supportive enabling environment for mediation-led tourism projects. The uploaded text positions this against a global movement to re-envision landscapes affected by nuclear events as post-radioactive – as resilient rather than degraded – and seeks for models of operation based in evidence for such hubs in nuclear contexts. These findings are consistent both with the sectoral advice in international tourism safety discourse, where security and cooperation signals emerge as factors for recovery and growth [13] and the «peace through tourism» framing that

emphasizes mutual influences between tourism flows and conflict de-escalation [14]. By adding the mediation hub to this debate, our analysis further specifies which institutional process generates, confirms and translates safety signals into market-relevant events.

For Kazakhstan, this has a particular applied significance. The Semipalatinsk legacy cannot be transformed through tourism branding alone, because the territory carries not only memorial but also moral, political, and international-symbolic meaning. Therefore, a mediation hub in the Kazakhstani context should combine at least five practical elements: 1) a memorial-educational platform; 2) a participatory mechanism for involving affected communities and experts; 3) a transparent safety and visitor-information protocol; 4) an adaptive reuse strategy for selected infrastructure; and 5) a communication model linking local memory with Kazakhstan's broader anti-nuclear identity. Such a configuration would allow tourism development to remain ethically grounded while also contributing to regional diversification and international image-building.

The tourism potential of the Semipalatinsk Test Site should be assessed through four interconnected dimensions. First, the resource dimension includes nuclear-historical sites, the memory of testing, the anti-nuclear movement, scientific infrastructure, steppe landscapes and the symbolic role of Kurchatov and Semey in Kazakhstan's nuclear history. Second, the infrastructure dimension includes the availability of access routes, transport services, guided visits, accommodation and interpretation facilities. In this respect, Semey may function as the main logistical base, while access to the former test-site areas must remain selective and regulated. Third, the safety dimension is central: tourism development must be subordinated to radiological monitoring, environmental assessment and legally established restrictions. Fourth, the development-opportunity dimension includes memorial-educational tourism, scientific tourism, controlled dark-heritage tourism, peace-oriented events, student field schools, expert visits and international dialogue formats connected with nuclear disarmament and environmental rehabilitation [24].

This assessment shows that the Semipalatinsk Test Site has considerable tourism potential, but this potential is conditional rather than automatic. It depends on the creation of safe routes, trained guides, ethical interpretation standards, visitor-information protocols, cooperation with scientific institutions and the participation of affected communities. Therefore, the mediation hub should not be limited to promotional functions. It should become a coordinating mechanism that determines what can be shown, how it should be explained, who benefits from tourism, and how safety and memory are protected.

*Limitations and boundary conditions.* By extension, the results underline limits and boundary conditions to this approach. First, there is a need for mediation hubs to avoid symbolic inflation-overpromising the transformative power of mediation, without the «administrative» capacity to ensure procedural transparency and safety guarantees. Second, the adaptive reuse of nuclear infrastructure calls for a conservative approach to risk-technical, environmental, and psychosocial-lest its benefits for branding not be realized due to safety lapses, simulated or real. Finally, there is no point at which community capacity will be fully built; training and participatory structures must be maintained, or the trust and control gained by its additionality over time will slide backward. These boundary conditions are implicit in multiple parts of the case documents and consistent with the study's theoretical framing, which places localized empowerment and quality of governance at the center of hub effectiveness. Destinations that carry a nuclear past experience double mirror problem: existing streaks to hazard and insufficiently articulated stories of safety and responsibility. The history of Kazakhstan offers the shining example. On 29 August 1991, Nursultan Nazarbayev signed the

presidential decree closure of Semipalatinsk Test Site. The decision was commemorated globally as the United Nations General Assembly established the International Day against Nuclear Tests in 2009 A/RES/64/35, at the proposal of Kazakhstan. Accompanying international and public campaigns, for example, the ATOM Project, reframe Kazakhstan's story from «ground zero» to champion of disarmament. At the same time, Kazakhstan offered a neutral ground for states engaging in high-level dialogue about war policy in Syria-the Astana process-, which prompted the question among policymakers and scholars about the viability and mechanisms of an international mediation hub in the country. However, academic discourse in tourism has yet to bring the story of disarmament signaling and mediation-institution design into singular storytelling ecology of source demand and destination branding [19].

These contributions imply a number of policy and destination management clothes. First, sequence building is central: hubs should curate a rhythm of peace-oriented activities and communications that mix the gravity of commemoration with the vitality of programs looking forward to when visitors can engage nuclear history ethically while sensing genuine commitments to a safer, «nuclear-free» future [20]. Second, investment should focus on reuse nodes with the greatest multiplier of interpretive and community benefit-training zones, memorial-education hubs, wellness-nature corridors-instead of thin, low-impact retrofits. Third, governance innovations must be apparent: by publishing mediation protocols or incident-reporting dashboards and co-decision records, we turn a latent institutional quality into a brand attribute that can be causelessly communicated by DMOs and intermediaries. Last but not least, a culture of measurement is crucial [21]. While our paper prioritizes qualitative evidence, we have also discussed how tourism-indicator framework, demand-oriented analytical categories, future designs might insert event-study windows around hub announcements, synthetic-control benchmarks against regionally matched peers and panel models tracking medium-run relationships as a way to draw the connection from institutional effort to tourism outcomes. These recommendations are in line with the manuscript's appeal to shift from narrative description to operational models for policymakers and destination managers [22].

Taken together, the findings suggest that MCHs can enable nuclear-legacy liabilities to become strategic assets for sustainable tourism by framing transparent communication, adaptive reuse and capacity-building as interconnected processes rather than stand-alone projects. This is more than just a rebranding effort, but an institutional reconstitution of how safety, memory and development are organized (in) place. The paper contextualizes these results with respect to past scholarship in heritage tourism, dark tourism, sustainable branding and peace-through-tourism research – indicating where the mediation-hub approach both extends, synthesizes and corrects existing theory. In so doing, this paper develops a notional workable theory of change for «nuclear-free» branding vis-à-vis governance, ethics and market realities-a praxis which the uploaded manuscript posited, charted and now legitimates through cumulative evidence and analogical reflection.

### **Conclusion**

This study examined whether mediation hubs can serve as an institutional mechanism for transforming nuclear-legacy territories into credible «nuclear-free» tourism destinations. The analysis has shown that such transformation cannot be explained by rebranding alone. It must also be evaluated through tourism-specific indicators: visitor flows, tourist expenditures, employment effects, infrastructure readiness, visitor motivations, perceived safety, satisfaction and community participation. In this sense, the article treats the nuclear-free brand not only as a symbolic narrative, but also as an operational tourism construct that can be assessed through measurable criteria. It

depends on the institutional capacity to coordinate stakeholders, structure public dialogue, manage memory and risk, and connect adaptive reuse with long-term community development.

The research contributes to the literature in two main ways. First, it deepens the theoretical understanding of post-nuclear destination transformation by linking heritage studies, peace-oriented tourism, stakeholder governance, and mediation logic within a single analytical framework. Second, it proposes a conceptual model of the mediation hub as a coordinating institutional platform that performs four core functions: actor coordination, procedural legitimation, knowledge translation, and local capacity-building.

Methodologically, the article strengthened its findings through an integrated qualitative design combining systematic literature review, document analysis, comparative case study, stakeholder-oriented institutional analysis, thematic coding, and cross-case synthesis. This multi-method approach made it possible to identify both common mechanisms and case-specific differences across Semipalatinsk, Chernobyl, and Hanford. Although the study does not claim statistical generalization, the triangulation of sources and methods increases the credibility of its conclusions.

The findings indicate that mediation hubs become effective when three conditions are combined: transparent and peace-oriented communication, adaptive reuse of selected infrastructure, and sustained development of local institutional and community capacity. At the same time, the study also demonstrates that this model has clear limits. It requires ethical governance, conservative approaches to risk, and the continuous participation of local communities. Without these elements, the «nuclear-free» image remains rhetorical rather than institutional.

For the Semipalatinsk Test Site, the practical value of the proposed model lies in combining controlled access, scientific and memorial interpretation, safety communication, local participation and Kazakhstan's international anti-nuclear identity. The site has tourism potential, but this potential should be developed as specialized educational, memorial and peace-oriented tourism rather than as mass dark tourism.

In practical terms, the proposed model may be used by policymakers, heritage managers, and destination planners in designing redevelopment strategies for former nuclear territories. For Kazakhstan in particular, the concept offers a way to connect the Semipalatinsk legacy, anti-nuclear identity, memorial responsibility, and regional tourism development within one coherent framework. Future research may build on this model by testing it in additional cases and by combining qualitative institutional analysis with measurable tourism and perception indicators.

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### **ЯДРОЛЫҚ САЛДАРЫНАН ЯДРОЛЫҚ ҚАРУСЫЗ ТУРИЗМ ИМИДЖІН НАСИХАТТАУҒА ДЕЙІН: ИНСТИТУЦИОНАЛДЫҚ МЕХАНИЗМ РЕТІНДЕГІ МЕДИАЦИЯ ОРТАЛЫҒЫ**

**Аңдатпа.** Бұл зерттеу ядролық мұра сезілетін аймақтарды мұраны сақтауды, қауымдастықтың қатысуын және тұрақты дамуды біріктіретін медиациялық орталықтар арқылы «ядролықсыз» туристік брендтерге айналдыруды зерттейді. Зерттеудің мақсаты – бұрынғы ядролық нысандарды қайта брендтеу стратегияларын анықтау, туризм негізіндегі жаңғыртуды жүзеге асыратын мүдделі тараптар желілерін талдау және әлеуметтік-экономикалық қайта түлетуші агенттер ретінде медиациялық орталықтардың теориялық үлгісін қалыптастыру. Архивтік құжаттарды талдау мен жан-жақты әдеби шолу әдістеріне негізделген аралас әдістеме ядролық мұраны бейбітшілік орнату және экономикалық әртарапандыру ресурсы ретінде пайдалану ғылыми және практикалық

маңыздылығын бағалауға мүмкіндік береді. Нәтижелер медиациялық орталықтардың ашық коммуникацияға, ядролық инфрақұрылымды бейімдеуге және мақсатты әлеуетті дамытуға басымдық бергенде келуші тәжірибесі, әлеуметтік тұтастық және экономикалық тұрақтылық жақсарғанын көрсетеді. Талдау қоғамның әл-ауқаты мен бренд сезімін айқын көтеріп, медиациялық орталықтардың ядролық объектілерді төзімділіктің тартымды символына айналдыра алатынын дәлелдейді. Зерттеу мұра саласына, тұрақты туризм мен пост-қауіпсіздік даму теориясына үлес қосып, саясаткерлер мен бағыт менеджерлеріне медиация негізіндегі туризм жобаларын әзірлеуге және іске асыруға іс-әрекеттік ұсынымдар ұсынады.

**Кілт сөздер:** ядролық мұра трансформациясы, медиациялық орталық, тұрақты туризм, ребрендинг, қауымдастық қатысуы, әлеуметтік-экономикалық жаңару.

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### **ОТ ПОСЛЕДСТВИЙ ЯДЕРНОГО ПРОШЛОГО К ПРОДВИЖЕНИЮ БЕЗЪЯДЕРНОГО ТУРИСТИЧЕСКОГО ИМИДЖА: МЕДИАЦИОННЫЙ ХАБ КАК ИНСТИТУЦИОНАЛЬНЫЙ МЕХАНИЗМ**

**Аннотация.** Данное исследование посвящено превращению территорий с ядерным наследием в динамичные «безъядерные» туристические бренды посредством создания медиативных хабов, объединяющих сохранение наследия, участие сообщества и устойчивое развитие. Цель работы – выявить эффективные стратегии ребрендинга бывших ядерных объектов, проанализировать сети заинтересованных сторон, обеспечивающих возрождение через туризм, и сформировать теоретическую модель медиативных хабов как агентов социально-экономической регенерации. Методология основана на смешанном подходе, включающем анализ архивных документов и всесторонний обзор литературы, что позволяет оценить научную и практическую значимость использования ядерного наследия для миростроительства и экономической диверсификации. Результаты показывают, что успешные хабы делают ставку на прозрачную коммуникацию, адаптивное повторное использование ядерной инфраструктуры и целевое развитие потенциала, что улучшает впечатления посетителей, укрепляет социальную сплоченность и экономическую устойчивость регионов. Анализ демонстрирует заметное повышение благосостояния сообществ и восприятия бренда, подтверждая, что медиативные хабы могут трансформировать ядерные объекты в привлекательные символы стойкости. Исследование вносит вклад в теорию наследия, устойчивого туризма и постконфликтного развития, а также предлагает практические рекомендации для разработчиков политик и менеджеров направлений по созданию и реализации медиативных туристических инициатив.

**Ключевые слова:** трансформация ядерного наследия, медиационный хаб, устойчивый туризм, ребрендинг, вовлечение сообщества, социально-экономическое возрождение