

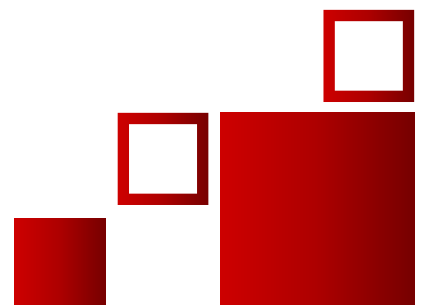
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Addressing Nuclear Legacy in the Marshall Islands

Integrating Indigenous Data Sovereignty and Hybrid Governance Approaches

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Highlights

The nuclear legacy of the Marshall Islands remains a complex governance and justice challenge shaped by evidentiary uncertainty, geographic dispersion and migration, all of which fragment data and constrain nationally led monitoring and service delivery. This paper argues that indigenous data sovereignty (IDS) offers a practical foundation for strengthening Marshallese authority over environmental, health and historical records, supporting credible evidence generation and reinforcing justice-oriented policy autonomy. Drawing on the United Nations human-rights practices and comparative indigenous governance models, the paper presents IDS as a means to consolidate dispersed datasets, embed informed consent and community participation and integrate scientific analysis with Marshallese knowledge systems. To operationalize these principles, the paper proposes hybrid arrangements that maintain national leadership while drawing on targeted United Nations and regional support. Such approaches can harmonize monitoring standards, coordinate victim-facing services across mobile and diasporic populations and build long-term scientific, archival and analytical capacity appropriate to small-island contexts. By combining IDS with adaptive hybrid governance, the paper outlines policy options to reduce fragmentation, strengthen institutions and advance a coherent, nationally owned system for remediation, resettlement and intergenerational health. The overall aim is to transition from externally driven, episodic initiatives to a sustainable, Marshallese-led nuclear-justice framework that enhances trust, accountability and self-determined recovery.

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¹ Visit: <https://www.ohchr.org/en/calls-for-input/2026/call-inputs-addressing-challenges-and-barriers-full-realization-human-rights>.

Disclaimers

The views expressed in this paper are those of the authors and do not necessarily reflect the official position of the United Nations. Copilot was partially used to assist in editing the manuscript, in accordance with *the Principles for the Ethical Use of Artificial Intelligence in the United Nations System* (United Nations System, 2022).

Table of Contents

Highlights.....	i
About the authors	i
Acknowledgements	i
Disclaimers	iii
Introduction.....	2
Current Challenges in Addressing the Nuclear Legacy.....	2
Time-Related Ambiguities	3
Geographic Dispersion of the Marshall Islands.....	3
Migration Dynamics	4
Multi-Dimensional Barriers	4
Regional and International Dimensions	6
The Role of Indigenous Data Sovereignty	7
The United Nations’ perspectives on indigenous data sovereignty.....	7
Existing IDS Practices.....	7
Relevance to the Marshall Islands.....	8
Governance Innovation: Towards Hybrid Institutional Arrangements	10
Role of the United Nations Multi-Country Resident Coordinator’s Office.....	10
Design Lessons from Hybrid Institutional Practice.....	10
Adaptation Options for the Marshall Islands	11
Policy Options and Practical Proposals	11
Conceptual Development.....	12
Policy Formation.....	12
Capacity Building	13
Points of Caution	13
Conclusion	13
References.....	155

Introduction

The nuclear legacy of the Marshall Islands remains a complex policy challenge with long-term health, environmental, social and development implications (Johnston and Barker, 2008; Narita and Abe, 2024; OHCHR, 2024; UNHRC, 2012). It is characterized by fragmented and externally controlled data, uneven remediation benchmarks and logistical and institutional constraints associated with time, geographic dispersion and migration (Simon *et al.*, 2010; United States National Research Council, 1994). These conditions have limited the nationally led justice system, comprising monitoring, planning and decision-making and exposed the limits of project-by-project interventions. A more integrated approach is required, one that embeds data governance, coordination and capacity development within nationally owned institutions and regionally supported systems (Kukutai and Taylor, 2016; Rainie *et al.*, 2019; SPC, 2020).

This paper advances such an approach. First, it diagnoses current challenges, time-related ambiguities, geographic dispersion, migration dynamics and multi-dimensional barriers, showing how they interact to erode evidentiary clarity, fragment services and constrain policy autonomy. Second, it positions indigenous data sovereignty (IDS) as a foundational governance principle for stewarding environmental, health and historical records in ways that reflect Marshallese authority, cultural protocols and community participation. Third, it proposes hybrid institutional arrangements that combine national leadership with selective United Nations and regional support to deliver sustained monitoring, victim-facing services and coherent data stewardship. Finally, it sets out policy options for conceptual development, policy formation and capacity building, including regional interoperability and standards harmonization suited to a small-island setting.

The intended contribution is practical: to shift from externally curated, episodic initiatives to a Marshallese-led justice system that consolidates evidence, strengthens institutional capacity and supports transparent and reliable decision-making on remediation, resettlement and intergenerational health (OHCHR, 2024; UNHRC, 2012). The paper is structured as follows. Section 2 provides the diagnosis. Section 3 presents the IDS framework and its relevance. Section 4 outlines feasible governance innovations. Section 5 offers policy options and points of caution to guide sequencing and implementation.

Current Challenges in Addressing the Nuclear Legacy

Efforts to address the nuclear legacy in the Marshall Islands are shaped by a set of interrelated structural challenges that extend beyond questions of contamination alone. Over time, evidentiary uncertainty has increased even as claims for recognition and redress have broadened; geographic dispersion and migration have fragmented populations, data and service delivery; and political, legal, environmental and socio-economic systems have interacted to constrain nationally led responses. These challenges are further embedded within regional and international dynamics that influence standards, resources and governance pathways. Taken together, they help explain why conventional scientific, legal and administrative approaches have struggled to deliver durable solutions and why addressing the nuclear legacy requires integrated frameworks capable of engaging time, space, mobility, institutional capacity and cross-scalar governance simultaneously.

Time-Related Ambiguities

Nearly seven decades after the end of atmospheric nuclear testing, temporal distance has become a central source of uncertainty in efforts to assess harm and design effective responses. As time passes, the cohort of direct survivors with clinically documented exposures continues to diminish while the number of descendants who may experience intergenerational health, social and economic effects is expanding. This demographic inversion complicates the identification of beneficiaries, challenges eligibility criteria for assistance and compensation and shifts evidentiary standards away from demonstrable acute exposure towards probabilistic assessments of long-term and inherited risk (Simon *et al.*, 2010; United States National Research Council, 1994). It also raises unresolved normative questions about the appropriate balance between individualized remedies and collective or community-level forms of redress.

Temporal ambiguity is further intensified by evolving environmental and social conditions. Residual radionuclide contamination varies significantly across islands and over time, shaped by ecological processes such as soil movement, ocean dynamics and bioaccumulation. At the same time, repeated relocations, changing settlement patterns and development pressures have altered livelihoods and exposure pathways, producing shifting baselines against which contemporary risk and acceptable standards of protection must be assessed (OHCHR, 2024; UNHRC, 2012). These dynamics complicate dose reconstruction, longitudinal epidemiological analysis and environmental monitoring, particularly where historical data are incomplete or inaccessible.

Taken together, the passage of time erodes evidentiary clarity while simultaneously broadening the population asserting legitimate claims. It raises the methodological bar for scientific assessment and policy design even as demands for recognition, accountability and remedy remain urgent and unresolved. Time-related ambiguities thus represent not merely a technical challenge but a structural obstacle to achieving justice for the enduring consequences of nuclear testing in the Marshall Islands (Simon *et al.*, 2010).

Geographic Dispersion of the Marshall Islands

The small size, remoteness and archipelagic dispersion of the Marshall Islands impose persistent structural constraints on measurement, service delivery and data governance. Dozens of widely separated atolls spread across a vast ocean area complicate routine radiological monitoring, environmental sampling and independent verification. Limited transport infrastructure, infrequent inter-island connections and high fuel and freight costs further impede regular health outreach, longitudinal epidemiological studies and timely follow-up, particularly for outer-island communities (OHCHR, 2024; UNHRC, 2012). As a result, monitoring efforts are often episodic rather than continuous, weakening the reliability of trend analysis and early risk detection.

Geographic dispersion also undermines the feasibility of centralized archives, registries and laboratories. Historical exposure records, medical files and environmental data are fragmented across islands and institutions while physical distance and resource constraints limit the ability to consolidate, update and cross-validate datasets. In the absence of sustained investment in distributed data systems, local laboratory capacity and trained field personnel, the Marshall Islands remain reliant on intermittent external scientific missions. This dependence reinforces asymmetries in scientific authority, access to raw data and control over analytical narratives, constraining domestic capacity to independently assess risk or inform policy (United States National Research Council, 1994).

Addressing these geographically embedded challenges requires shifting from episodic, externally driven assessments towards resilient, island-level capacity. Strengthening local monitoring nodes, digitising records to enable interoperable and secure access and building a cadre of Marshallese health physicists, technicians and epidemiologists are preconditions for credible surveillance and responsive policymaking. Such investments would not only improve technical accuracy but also enhance trust, continuity and accountability across dispersed communities, thereby reducing the governance gaps created by distance and isolation.

Migration Dynamics

Migration has been both a driver and an enduring consequence of nuclear-legacy harms in the Marshall Islands. Initial forced displacements from Ailinginae, Bikini, Enewetak, Rongelap and Utrik fragmented previously cohesive communities, producing multi-site populations distributed across Ebeye, Kili, Majuro and other locations. These relocations disrupted kinship networks, land tenure systems and administrative records, complicating the documentation of exposure histories and the verification of eligibility for assistance and compensation (Niedenthal, 2013; United States National Research Council, 1994).

Subsequent waves of mobility have further intensified these challenges. Efforts to return to contaminated atolls, followed by renewed evacuations prompted by ongoing radiological concerns, have generated cyclical patterns of movement and uncertainty. These dynamics have been compounded by labour migration enabled under the Compact of Free Association with the United States, as well as by climate-related pressures affecting both sending and receiving communities (Abe and Wang, 2024). The result is a set of dynamic, translocal and partially diasporic populations whose health trajectories and exposure pathways are difficult to capture through place-based surveillance and service delivery systems (Johnson, 2009).

These migration dynamics complicate victim identification, disrupt continuity of care and fragment medical and exposure records across jurisdictions. They also challenge the design of community-based environmental and health monitoring systems, which must operate across multiple islands and, increasingly, across national borders. Without mechanisms to track individuals over time and space, programmes risk under-inclusion, duplication or misallocation of resources, undermining both effectiveness and trust (OHCHR, 2024; UNHRC, 2012).

Addressing these challenges requires policy frameworks capable of accommodating mobility rather than treating it as an exception. Portable entitlements, harmonized case definitions and interoperable health and exposure information systems are essential to ensure continuity of care and equitable access to remedies as individuals move between islands and jurisdictions. Such systems must also incorporate robust safeguards for privacy, informed consent and community oversight, particularly given the sensitivity of health and exposure data in contexts of historical harm.

Multi-Dimensional Barriers

The nuclear legacy of the Marshall Islands cannot be understood or addressed through a single policy or sectoral lens. Rather, it is embedded within interlocking political, legal, environmental and

socio-economic systems whose interactions have compounded harm and constrained remedial action. These overlapping dimensions have produced cumulative barriers that exceed the capacity of conventional, siloed responses.

Politically, the legacy is closely intertwined with the bilateral architecture of the Compact of Free Association and its associated historical settlements. Many of these arrangements were negotiated under conditions of profound information asymmetry, particularly with respect to health risks and environmental contamination and continue to shape negotiating leverage, fiscal space and policy autonomy (Republic of the Marshall Islands, 2000; United States Department of State, 2004). As a result, contemporary efforts to revisit or expand remedies are often constrained by inherited institutional frameworks rather than guided solely by evolving evidence or community needs.

Legal barriers further complicate redress. Divergent interpretations of exposure thresholds, causation standards and evidentiary requirements have placed a high burden of proof on claimants, particularly where time, migration and data gaps have weakened individual documentation. These legal standards have narrowed the scope of recognized harm and limited access to reparations, even where broader patterns of impact are well established (Simon *et al.*, 2010).

Environmental dimensions add another layer of complexity. Contamination is unevenly distributed across atolls and landscapes while clean-up benchmarks and risk thresholds remain contested. These uncertainties complicate decisions regarding resettlement, subsistence practices and land tenure, with direct implications for cultural continuity, food security and the exercise of customary rights (United States National Research Council, 1994). Environmental risk thus intersects with social and legal systems in ways that are difficult to disentangle.

Socio-economic conditions amplify these challenges. Legacies of displacement have concentrated populations on small islets with limited land, stressed infrastructure and heightened exposure to climate hazards. At the same time, education and employment opportunities, particularly for younger generations, often require mobility, weakening continuity of care, fragmenting community institutions and complicating long-term monitoring and support (OHCHR, 2024; UNHRC, 2012).

Across all these dimensions, domestic institutional capacity remains a decisive cross-cutting constraint. The absence of a fully resourced national archive, persistent gaps in biomedical and environmental laboratory capacity and limited numbers of trained archivists, epidemiologists and radiation scientists impede nationally led research and evidence-based policymaking. Reliance on externally driven studies has also contributed to community fatigue, particularly where repeated surveys have not translated into transparent findings, policy changes or tangible benefits. This erosion of trust reinforces the case for indigenous data governance models that institutionalize local custodianship, informed consent and equitable benefit sharing (Johnson, 2009).

Building durable Marshallese institutions, supported by long-term financing, professional career pathways and sustained regional and international technical partnerships, will be critical to overcoming these multi-dimensional barriers. Without such investments, responses will remain fragmented and externally curated. With them, the conditions are created for nationally stewarded systems capable of integrating evidence, restoring trust and advancing justice across generations.

Regional and International Dimensions

Marshall Islands' nuclear legacy is not an isolated case but part of a broader global pattern of nuclear harm, creating opportunities for comparative learning, coalition-building and norm diffusion. Across the Pacific, other nuclear-affected contexts reveal strikingly similar challenges. In French Polynesia, disputes over dose reconstruction methodologies and eligibility thresholds have shaped long-running debates on victim recognition, compensation and state responsibility. In Kiribati, British-era nuclear test sites and downwind exposure pathways have prompted renewed calls for expanded health surveillance, environmental assessment and international acknowledgement (Narita and Abe, 2024). These shared experiences underscore the structural nature of evidentiary uncertainty and the political consequences of contested scientific authority.

Beyond the Pacific, experiences such as Kazakhstan's Semipalatinsk region illustrate both the potential and the limits of international engagement. There, sustained national registries, longitudinal health monitoring and international technical partnerships have supported long-term research and site remediation. At the same time, the conversion of historical recognition into durable legal entitlements has required prolonged political negotiation and institutional reform, highlighting that scientific evidence alone is insufficient without governance structures capable of translating knowledge into rights and services (Lipikhina, n.d.; Republic of Kazakhstan, 1992). For the Marshall Islands, such cases provide practical lessons on registry design, exposure tracking and the sequencing of remediation, assistance and memorialization.

Comparative engagement at the regional and international levels can therefore serve multiple functions. It enables benchmarking of safety thresholds and reparations standards, diversification of funding and technical support and co-development of methodologies for community-centred monitoring and redress. Shared approaches to dose reconstruction, data governance and participatory research can also reduce duplication and enhance credibility across affected contexts.

Emerging international normative frameworks further expand the policy space. The Treaty on the Prohibition of Nuclear Weapons establishes explicit obligations relating to victim assistance and environmental remediation. Although not universally ratified, it provides a normative template for state practice, donor coordination and rights-based programming that is directly relevant to the Marshall Islands' claims and priorities (UNHRC, 2022; United Nations, 2017). At the United Nations Human Rights Council, Resolution 51/35 has already anchored a programme of technical assistance and capacity-building with a particular emphasis on justice, data governance and community participation (OHCHR, 2024; UNHRC, 2022). This signals an institutional pathway for aligning scientific monitoring with human-rights benchmarks and nationally defined needs.

Working through a regional lens, via the United Nations Multi-Country Resident Coordinator's Office in Micronesia and the Pacific intergovernmental bodies, such as the agencies of the Council of Regional Organisations of the Pacific (CROP), also offers practical mechanisms to connect national priorities with pooled expertise, shared repositories and common training standards. Such arrangements are particularly well-suited to small island states facing constraints of scale, dispersion and capacity.

Taken together, the challenges outlined across this section point towards the necessity of integrated solutions. Time-related ambiguities demand longitudinal research designs and sustained registries; geographic dispersion requires distributed infrastructure and interoperable systems; migration dynamics call for portable entitlements and cross-jurisdictional records; and multi-dimensional barriers necessitate coordinated political, legal and scientific governance. Regional parallels reinforce the value of shared methodologies and standards. If coupled with sustained investment in Marshallese scientific, archival and governance institutions, continued United Nations engagement can help rebalance informational power, democratize truth-seeking and enable evidence-based decisions on return, remediation and intergenerational support.

The Role of Indigenous Data Sovereignty

IDS has emerged as a critical framework for addressing the epistemic and governance dimensions of historical harm in data-intensive contexts. In settings shaped by displacement, environmental contamination and contested science, questions of who controls data, how knowledge is produced and whose interpretations carry authority are central to the pursuit of justice. For the Marshall Islands, the nuclear legacy has been characterized by long-standing asymmetries in access to records, scientific expertise and decision-making power, limiting nationally led truth-seeking and policy autonomy. This section situates IDS as both a rights-based principle and an operational tool that repositions Marshallese institutions and communities as custodians of their own data, narratives and evidence. It examines how the United Nations' practices, comparative indigenous governance models and Marshallese priorities together point to IDS as a foundational element for credible justice, durable remediation and self-determined recovery.

The United Nations' perspectives on indigenous data sovereignty

IDS denotes the authority of indigenous peoples to determine the collection, governance, interpretation and application of data relating to their peoples, lands and knowledge systems (Kukutai and Taylor, 2016; University of Waikato, n.d.). While not yet codified as a discrete norm in the United Nations instruments, IDS functions as an operational pathway for implementing the United Nations Declaration on the Rights of Indigenous Peoples, particularly Article 31 on control and protection of cultural heritage and traditional knowledge (OHCHR 2024). Within the United Nations human rights practice, IDS is framed as a means to realize self-determination, participation and knowledge governance in data-intensive contexts. UNESCO's ethical discussions on artificial intelligence (AI), relevant Human Rights Council processes and the United Nations development guidance increasingly position indigenous communities as data governance actors, rather than passive data subjects and emphasize alignment of measurement, standards and repositories with indigenous protocols (CEB, 2022; UNDP, 2025; UNESCO, 2023). In nuclear-legacy settings, this orientation situates IDS as a precondition for credible, victim-centred truth-seeking (OHCHR, 2024).

Existing IDS Practices

Practice-led regimes offer established IDS models for the Marshall Islands. Australia's *Maiam nayri Wingara* principles inform public-sector data protocols to guide how governments create, collect, manage, access, use and share data about Aboriginal and Torres Strait Islander peoples (Kukutai and Cormack, 2020; Kukutai and Taylor, 2016). In New Zealand, *Te Mana Raraunga's Māori Data Sovereignty Principles* institutionalize *iwi* and *hapū* governance through boards, data access

committees and culturally grounded metadata standards (Te Mana Raraunga, 2018). In Canada, ownership, control, access and possession (OCAP®) specify consent, custodianship and access arrangements across research and programme evaluation (First Nations Information Governance Centre, 2014). In the United States, tribal sovereignty underpins research codes, tribal institutional review boards and intergovernmental data-sharing compacts that treat data governance as an expression of inherent jurisdiction (Rainie *et al.*, 2019).

Across jurisdictions, four design features are salient. First, indigenous leadership is embedded throughout the data lifecycle, from agenda-setting to dissemination (Walter and Suina 2019). Second, plural epistemologies are recognized, elevating oral histories and customary environmental indicators alongside scientific measurements (Kukutai and Taylor 2016). Third, reciprocity is formalized through benefit-sharing and access conditions, mitigating extractive practices and community fatigue (Te Mana Raraunga, 2018). Fourth, operational tools, codes, agreements, repositories and training pathways support not only stewardship of historical archives but also local capability for ongoing data generation and analysis (Carroll, S.R. *et al.* 2019; First Nations Information Governance Centre, 2014; Rainie *et al.*, 2019).

Relevance to the Marshall Islands

The Marshall Islands' nuclear legacy has been shaped by structural information asymmetries: key records remain externally controlled; declassification has been partial; and scientific judgments have been politicized. IDS offers a structured response by vesting Marshallese institutions with authority over data agendas, standards and interpretation. A nationally governed nuclear knowledge infrastructure, integrating environmental datasets, health registries, oral histories and digitized archives, would transform a fragmented, externally curated evidence base into a coherent corpus for truth-seeking, reparations design and environmental decision-making (OHCHR, 2024).

IDS operationalizes through community data governance boards, free prior and informed consent protocols, bilingual returns of results and accessible platforms for community review. Given archipelagic dispersion and migration, IDS-aligned systems should prioritize portable identifiers, interoperable registries and diaspora linkages to sustain continuity of care and participation across jurisdictions (OHCHR, 2024; Te Mana Raraunga, 2018). Co-analysis that pairs scientific measures with oral histories and customary ecological observations strengthens both credibility and uptake of findings in contested domains such as resettlement safety, subsistence guidance and remediation priorities (Kukutai and Cormack, 2020).

Persistent disagreements over standards, exposure scope and remediation adequacy reflect deeper imbalances in ownership and interpretation of data. IDS provides a basis for renegotiating data-sharing: mirrored repositories hosted in Majuro; joint custodianship and access protocols; delivery of machine-readable raw data, codebooks and analytic code; and structured opportunities for Marshallese peer review and counter-analysis (OHCHR, 2024; Rainie *et al.*, 2019). These measures should be coupled with sustained capacity development in environmental sampling, radiation analysis, digital archiving and statistical methods to internalize core functions within Marshallese institutions.

Incorporating IDS into OHCHR-supported transitional justice workplans, including truth-seeking and reparations architecture and guarantees of non-recurrence, ensures that data governance is foundational, not ancillary (OHCHR, 2024; UNHRC, 2022). "Transitional justice" refers to the broad array of judicial and non-judicial processes that societies employ to promote accountability, deliver justice and foster reconciliation amid large-scale past atrocities, such as conflicts, repression, human rights violations and abuses (Narita and Abe, 2024; UNSC, 2004). In addition, fundamental IDS ideas

for data collection and management, such as CARE principles,² align with the OHCHR consultation approach on transitional justice so IDS can strengthen practical activities to pursue transitional justice (Carroll *et al.*, 2020; OHCHR, 2026). Regionally, collaboration via the United Nations Multi-Country Resident Coordinator’s Office in Micronesia and with Pacific bodies can adapt *Maiam nayri Wingara*, *Māori* and OCAP® principles to Micronesian legal and cultural settings, support shared repositories and training standards and reduce per-country transaction costs (UNHRC, 2012; Walter and Suina, 2019). The role of data in transitional justice is summarized in Table 1. This table illustrates how an IDS approach strengthens the four pillars of transitional justice (i.e., truth seeking, justice, reparations and guarantees of non-recurrence), offering a more persuasive and culturally grounded framework for addressing the Marshall Islands’ nuclear legacy.

Table 1. Roles of Data in Transitional Justice

Pillar of transitional justice	Core meaning	Specific roles of data	Risks when data are absent or uneven	Key success factors
Truth seeking	To clarify what happened	Records of nuclear tests (time, location, scale); dose estimation data; health and environmental data; testimonies and oral histories of affected persons	Underestimation or denial of facts; lived experiences reduced to anecdotal accounts	The right of indigenous peoples to define what constitutes “valid data” for truth
Justice	To establish responsibility for violations	Data to establish causality; scientific assessment of harm; administrative and military records	Impunity due to lack of evidence; non-prosecution due to “insufficient evidence”	Participation of indigenous peoples in defining data standards and interpretation
Reparations	To provide redress and compensation	Criteria for recognition of harm; data for calculating compensation; lists of eligible beneficiaries	Arbitrary thresholds for compensation; exclusion of affected individuals	The right to co-govern and reassess data determining eligibility for reparations
Guarantees of non-recurrence	To prevent the recurrence of violations	Preservation and disclosure of records; educational materials and archives; monitoring and institutional data	Erosion of memory; reproduction of similar violations	The right to manage and transmit data and memory across generations

Source: The author.

IDS does not displace science or law; it re-balances them. By locating authority, interpretation and benefit with the Marshallese people, IDS provides institutional mechanics to democratise knowledge, operationalize transitional justice and underpin durable, self-determined solutions to the nuclear legacy.

² CARE stands for collective benefit, authority to control, responsibility and ethics.

Governance Innovation: Towards Hybrid Institutional Arrangements

The governance challenge associated with the nuclear legacy in the Marshall Islands is fundamentally institutional. Long-term environmental monitoring, health surveillance, data stewardship and victim support, including the implementation of the IDS systems, require arrangements that can operate across sectors and over extended time horizons while remaining responsive to national priorities, capacity constraints and justice imperatives. Fragmented, project-based interventions have struggled to deliver this continuity. Hybrid institutional arrangements, combining national leadership with sustained United Nations and regional support, offer a practical means of addressing scale, dispersion and technical limitations without displacing national authority (Narita and Abe, 2024).

Role of the United Nations Multi-Country Resident Coordinator's Office

The United Nations Multi-Country Resident Coordinator's Office (UNMCO) in Micronesia provides an established coordination platform through which assistance related to the nuclear legacy can be aligned and sequenced. Its primary function is convening and coordination rather than direct implementation. By bringing together human rights, health, environment and development actors, UNMCO can support the development of integrated, country-owned workplans covering environmental monitoring, health surveillance and data governance.

In a context characterized by fragmented responsibilities, limited specialist personnel and under-resourced national repositories, UNMCO can help reduce duplication and ensure that external technical assistance is embedded within Marshallese-led institutions rather than delivered through stand-alone projects (Narita and Abe, 2024). It can also facilitate alignment between programme financing and multi-year national priorities, supporting a shift from short-term interventions towards sustained investment in archives, laboratories and community-based monitoring capacity.

Design Lessons from Hybrid Institutional Practice

Experience from hybrid institutional arrangements in other contexts suggests several transferable design principles. While most hybrid models have emerged in peace and security settings, their relevance here lies in governance logic rather than institutional form (Belloni, 2012). Where responsibilities span multiple mandates and no single institution holds all required competencies, shared governance arrangements can clarify roles and sequencing while preserving accountability (Abbott and Faude, 2021).

Three lessons are particularly applicable. First, clearly articulated decision-making structures are essential to integrate environmental science, public health and data governance functions without diluting national leadership (OHCHR, 2023). Second, regional organizations can serve as intermediaries, contributing contextual knowledge and facilitating peer exchange while the United Nations provides standards, quality assurance and continuity (United Nations Regional Information Centre, 2019). Third, responsibility-sharing enables domestic capacity to develop progressively, allowing essential functions such as monitoring and service delivery to continue while institutions are strengthened, thus supporting long-term justice for affected populations (United States Department of State, 2022).

At the same time, large-footprint and security-oriented hybrid missions are not appropriate for a small island developing state (Belloni, 2012). Governance arrangements for the Marshall Islands must remain civilian, development-oriented and sensitive to sovereignty considerations, particularly given the historical and political context of the bilateral arrangement. Hybridization should therefore be adaptive and proportionate.

Adaptation Options for the Marshall Islands

Several adaptation pathways could operationalize a hybrid approach, either sequentially or in combination.

Option A: A Marshall Islands–United Nations hybrid nuclear legacy mechanism

A bespoke mechanism co-governed by the Marshall Islands’ National Nuclear Commission and relevant United Nations entities could oversee four core functions: (i) independent environmental and health monitoring aligned with agreed technical standards; (ii) a nationally governed data and archives system consistent with IDS; (iii) victim assistance and referral mechanisms linked to diaspora-aware registries; and (iv) structured capacity development to localize scientific, archival and analytical expertise. Decision-making authority would remain with Marshallese institutions while external partners provide technical support, quality assurance and peer review.

Option B: A Pacific-wide data and monitoring platform

In collaboration with Pacific regional organizations, such as CROP agencies, a regional platform could harmonize methodologies for environmental assessment and dose reconstruction, establish shared laboratory networks and repositories and develop regionally appropriate data governance standards. Such an approach reflects shared experiences among nuclear-affected Pacific communities, reduces per-country transaction costs and strengthens regional visibility in global technical processes.

Option C: Sub-regional cooperation among nuclear-affected States

Targeted cooperation among the Marshall Islands, Kiribati and French Polynesia could focus on interoperable health and exposure registries, mutual recognition of screening protocols, joint training of technical personnel and coordinated engagement with international partners on monitoring and remediation support.

Across all options, three design features are essential. First, shared governance arrangements must clearly define authority and accountability to ensure sustained national leadership. Second, financing should be predictable and multi-year, linked to national strategies and accompanied by explicit capacity-transfer milestones. Third, data governance must be treated as a foundational function, aligned with IDS, to address long-standing information asymmetries and support credible monitoring, planning and decision-making as a matter of both effectiveness and justice.

Taken together, a carefully designed hybrid architecture can consolidate fragmented initiatives into a coherent, Marshallese-led system. By combining national authority with selective United Nations support and regional partnership, such arrangements can institutionalize long-term monitoring, service delivery and data stewardship in a manner that is sustainable, scalable and responsive to Marshallese priorities.

Policy Options and Practical Proposals

This section outlines practical policy options to strengthen national and regional responses to the Marshall Islands’ nuclear legacy, with a focus on governance, coordination and capacity development.

Building on the preceding analysis, it identifies measures to embed IDS in policy design, reduce institutional fragmentation and support nationally led evidence generation and decision-making. The proposals are organized across conceptual development, policy formation and capacity building and are accompanied by points of caution to support realistic sequencing and implementation in a small-island context, ensuring that justice concerns are addressed throughout both policy design and implementation.

Conceptual Development

Advancing a coherent policy framework for the Marshall Islands' nuclear legacy requires explicit integration of IDS in national and international policy discourse. Positioning IDS as a core governance principle in nuclear-legacy reporting and technical guidance ensures Marshallese authority over data is treated as foundational to credible monitoring, assessment and decision-making. Comparative practices show that embedding IDS principles at the outset helps correct long-standing asymmetries in ownership, access and interpretation (Kukutai and Taylor, 2016; Walter and Suina, 2019).

Conceptual development should be underpinned by structured partnerships with universities, regional institutions and global IDS research networks. Collaboration with entities experienced in OCAP® can provide methodological templates for a Marshallese-led data governance system adapted to a small-island context (First Nations Information Governance Centre, 2014; Maiaim nayri Wingara, 2018 and Te Mana Raraunga, 2018). Joint research hubs, fellowships and practitioner exchanges would accelerate the training of Marshallese scholars, archivists and technicians so that evidence generation and interpretation progressively shift to national institutions (Kukutai and Cormack, 2020; Rainie *et al.*, 2019).

Policy Formation

Policy formation should prioritize mechanisms that reduce fragmentation and enable interoperability across jurisdictions and sectors. A Pacific-wide coordination platform for radiological data and environmental monitoring, hosted through existing regional bodies, could support alignment of methodologies, quality assurance and interpretation thresholds among the Marshall Islands, Kiribati and French Polynesia (SPC, 2020; SPREP, 2016). Integrating radiological, environmental, climate and health datasets into culturally governed repositories would improve comparability and continuity (Te Mana Raraunga, 2018; Walter and Suina, 2019).

Harmonization of radiation standards is a priority. Historical variation in exposure thresholds and remediation benchmarks has impeded resettlement planning and contributed to public uncertainty. Aligning standards with international radiological protection guidance while allowing for culturally grounded precaution would support transparent decision-making on land use, subsistence and remediation investments (ICRP, 2007; United States National Research Council, 1994).

Comparative policy learning from other nuclear-affected settings can inform design choices. Kazakhstan's Semipalatinsk experience with national registries and longitudinal health monitoring and France's evolving approach to French Polynesia compensation standards offer practical insights on registries, eligibility and environmental protocols (Apsalikov *et al.*, 2019). Structured dialogues and shared technical guidelines can contribute to a community of practice that elevates Pacific perspectives in multilateral forums, strengthening regional advocacy for nuclear justice and equitable treatment in global standards (SPC, 2020; Rainie *et al.*, 2019).

Capacity Building

Sustained implementation depends on durable national capacities. Priority investments include training Marshallese technicians, radiation scientists, epidemiologists and archivists, supported by clear career pathways to retain expertise and institutional memory (Kukutai and Cormack, 2020; Rainie *et al.*, 2019). Capacity development should extend beyond technical analysis to encompass data governance, ethical review, translation, community engagement and culturally grounded communication (First Nations Information Governance Centre, 2014; Maiam nayri Wingara, 2018).

Institutional capacity also requires strengthening national archives and digital preservation systems capable of stewarding environmental, biomedical and historical records over the long term. Decentralized repositories with interoperable standards are essential in light of geographic dispersion and migration (SPREP, 2016; Te Mana Raraunga, 2018). Community-based monitoring, paired with customary ecological indicators and oral histories, can enhance data quality while reinforcing trust and participation through the establishment of IDS systems (Kukutai and Taylor, 2016; Walter and Suina, 2019).

Museums, cultural centres and community knowledge hubs can serve as hybrid scientific-cultural institutions. By curating indigenous knowledge alongside scientific evidence, they support intergenerational learning and restore narrative authority to Marshallese communities (Kukutai and Cormack, 2020; Walter and Suina, 2019).

Points of Caution

Several constraints warrant careful management. Multilateral and bilateral partners operate under finite resources and shifting priorities, which may affect continuity of support; diversified funding and multi-year programming can mitigate this risk (SPC, 2020; SPREP, 2016). Political sensitivities, particularly in relation to the United States, require calibrated engagement to sustain cooperation while advancing national priorities. Classification and access restrictions continue to limit the availability of historical data, complicating verification and analysis (ICRP, 2007; United States National Research Council, 1994).

Finally, implementation capacity within the Marshall Islands remains constrained. Reforms should be sequenced and paced to avoid overburdening institutions, with external support explicitly linked to skills transfer, infrastructure development and gradual localisation of core functions (First Nations Information Governance Centre, 2014; Rainie *et al.*, 2019).

Conclusion

The nuclear legacy in the Marshall Islands remains a multi-sector policy challenge with long-term implications for health, environment, land use and development. Persistent fragmentation of data, uneven remediation standards and structural information asymmetries continue to constrain credible monitoring, planning and decision-making, underscoring the limitations of ad hoc, project-based responses and the need for integrated, nationally led governance arrangements.

This paper proposes that IDS, supported by hybrid institutional arrangements, offers a practical foundation for strengthening national capacity and restoring coherence to nuclear-legacy management. IDS repositions Marshallese institutions and communities as custodians of data and knowledge so that evidence generation, interpretation and use align with national priorities, cultural protocols and community participation while hybrid arrangements combine national leadership with selective multilateral and regional support suited to a small-island context.

Current and planned international engagement provides an enabling environment to translate this approach into practice through coordinated assistance, peer learning and standards alignment. Near-term opportunities include embedding IDS in international reporting and technical guidance; establishing a Marshallese-led data and archives system; strengthening coordination through adaptive national-regional mechanisms; and advancing regional cooperation to harmonize methods and share repositories.

Sequenced and adequately resourced, these measures would support a transition from externally curated initiatives to a nationally owned, institutionally grounded system. Such a shift would enhance evidence-based decisions on remediation, resettlement and intergenerational health while building durable capacities for monitoring, data stewardship and service delivery. In doing so, the Marshall Islands can move towards a more coherent, sustainable and self-determined approach to managing the enduring consequences of nuclear testing, one that affirms rights, redresses harms and strengthens justice for current and future generations.

References

- Abbott, K.W. and Faude, B. 2021, 'Hybrid institutional complexes in global governance', *The Review of International Organizations*, vol. 17, no. 2, pp. 263–291.
- Abe, M. and Wang, A. 2024, 'Migration Among the Freely Associated States in Micronesia: Trends, Drivers, and Implications', in Monaco, E. and Abe, M. (eds), *Sustainable Development Across Pacific Islands: Lessons, Challenges, and Ways Forward*, Springer Nature, Singapore, pp. 3–34.
- Apsalikov, K.N., Lipikhina, A., Grosche, B., Belikhina, T., Ostroumova, E., Shinkarev, S., Stepanenko, V., Muldagaliev, T., Yoshinaga, S., Zhunussova, T., Hoshi, M., Katayama, H., Lackland, D.T., Simon, S.L. and Kesminiene, A. 2019, 'The State Scientific Automated Medical Registry, Kazakhstan: an important resource for low-dose radiation health research', *Radiation and Environmental Biophysics*, vol. 58, pp. 1–11.
- Belloni, R. 2012, 'Hybrid Peace Governance: Its Emergence and Significance', *Global Governance*, vol. 18, no. 1, pp. 21–38.
- Carroll, S.R., Herczog, E., Hudson, M., Russell, K. and Stall, S. 2020, 'The CARE Principles for Indigenous Data Governance', *Data Science Journal*, vol. 19, article 43.
- Carroll, S.R., Rodriguez-Lonebear, D. and Martinez, A. 2019, 'Indigenous Data Governance: Strategies from United States Native Nations', *Data Science Journal*, vol. 18, article 31. <https://doi.org/10.5334/dsj-2019-031>.
- FNIGC (First Nations Information Governance Centre) 2014, *The First Nations Principles of OCAP®*, FNIGC, Ottawa.
- ICRP (International Commission on Radiological Protection) 2007, 'The 2007 Recommendations of the International Commission on Radiological Protection', *ICRP Publication 103, Annals of the ICRP*, vol. 37, nos. 2–4.
- Johnston, B.R. and Barker, H.M. 2008, *Consequential Damages of Nuclear War: The Rongelap Report*, Left Coast Press, Walnut Creek, CA.
- Johnson, G. 2009, *Nuclear Past, Unclear Future*, Micronitor News and Printing Co., Majuro, Marshall Islands.
- Kukutai, T. and Cormack, D. 2020, "'Pushing the space": Data sovereignty and self-determination in Aotearoa NZ', in Walter, M., Kukutai, T., Carroll, S.R. and Rodriguez-Lonebear, D. (eds), *Indigenous Data Sovereignty and Policy*, Routledge, London, pp. 15–29.
- Kukutai, T. and Taylor, J. (eds) 2016, *Indigenous Data Sovereignty: Toward an Agenda*, ANU Press, Canberra.
- Lipikhina, A. n.d., 'Registry of population living around Semipalatinsk nuclear test site: an important infrastructure for studies of low-dose effects', *presentation*, Research Institute for Radiation Medicine and Ecology, Semey, Kazakhstan.
- Maiam nayri Wingara 2018, Indigenous Data Sovereignty Principles (Communiqué and principles; web resource), *Maiam nayri Wingara Indigenous Data Sovereignty Collective and Australian Indigenous Governance Institute*.
- Narita, Y. and Abe, M. 2024, 'Revisiting Nuclear Legacy in Marshall Islands: The Implications of Transitional Justice and Trans-science', in Monaco, E. and Abe, M. (eds), *Sustainable Development Across Pacific Islands: Lessons, Challenges, and Ways Forward*, Springer Nature, Singapore, pp.281–312.
- Niedenthal, J. 2013, *For the Good of Mankind: A History of the People of Bikini and Their Islands* (2nd edn), Bravo Publishing, Majuro, Marshall Islands.

- OHCHR (United Nations Office of the High Commissioner for Human Rights) 2023, *Guidance Note of the Secretary-General on Transitional Justice: A Strategic Tool for People, Prevention and Peace*. 11 October.
- OHCHR (United Nations Office of the United Nations High Commissioner for Human Rights) 2024, *Addressing the challenges and barriers to the full realization and enjoyment of the human rights of the people of the Marshall Islands, stemming from the State's nuclear legacy*, A/HRC/57/77.
- OHCHR (United Nations Office of the United Nations High Commissioner for Human Rights) 2026, *Internal Technical Guidance: Supporting meaningful national consultations on transitional justice*, OHCHR, Geneva.
- Rainie, S.C., Kukutai, T., Walter, M., Figueroa-Rodríguez, O.L., Walker, J. and Axelsson, P. 2019, 'Indigenous Data Sovereignty', in Davies, T., Walker, S., Rubinstein, M. and Perini, F. (eds), *The State of Open Data: Histories and Horizons*, African Minds/IDRC, Cape Town and Ottawa, pp. 300–319.
- Republic of Kazakhstan 1992, *On Social Protection of Citizens Who Suffered from Nuclear Tests at the Semipalatinsk Nuclear Test Site* (national law).
- Republic of the Marshall Islands 2000, *Changed Circumstances Petition to the U.S. Congress pursuant to Section 177 of the Compact of Free Association*, 11 September.
- Simon, S.L., Bouville, A., Land, C.E. and Beck, H.L. 2010, 'Radiation doses and cancer risks in the Marshall Islands associated with exposure to radioactive fallout from Bikini and Enewetak nuclear weapons tests: Summary', *Health Physics*, vol. 99, no. 2, pp. 105–123.
- SPC (Pacific Community) 2020, *Improving Pacific Statistics and Data – The Pacific Data Hub: Monitoring, Evaluation and Learning Framework (Version 2)*, Pacific Community (Annex III, July 2020).
- SPREP (Secretariat of the Pacific Regional Environment Programme) 2016, *Strengthening Environmental Impact Assessment: Guidelines for Pacific Island Countries and Territories*, SPREP, Apia.
- Te Mana Raraunga 2018, *Principles of Māori Data Sovereignty* (Brief #1, October 2018).
- UNDP (United Nations Development Programme) 2025, Otsuka, R., Hay-Edie, T. and Flores, W. 'From data subjects to digital sovereigns: The impact of AI on Indigenous Peoples', *UNDP Blog*, 8 August.
- UNESCO (United Nations Educational, Scientific and Cultural Organization) 2023, *Recommendation on the Ethics of Artificial Intelligence: Key Facts and Implementation*, UNESCO, Paris.
- UNHRC (United Nations Human Rights Council) 2012, *Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes: Mission to the Marshall Islands and the United States of America*, A/HRC/21/48/Add.1.
- UNHRC (United Nations Human Rights Council) 2022, *Technical assistance and capacity-building to address the human rights implications of the nuclear legacy in the Marshall Islands*, A/HRC/RES/51/35.
- United Nations 2017, *Treaty on the Prohibition of Nuclear Weapons*, adopted 7 July 2017.
- United Nations Regional Information Centre (UNRIC) 2019, *UNRIC Library Background: Transitional Justice*.
- United Nations Security Council (UNSC) 2004, *The rule of law and transitional justice in conflict and post-conflict societies. Report of the Secretary General*, S/2004/616. UNSC, New York.
- United Nations System Chief Executives Board for Coordination (CEB) 2022, *Principles for the Ethical Use of Artificial Intelligence in the United Nations System*, CEB/2022/2/Add.1

United States Department of State 2004, *Compact of Free Association, as Amended, between the United States of America and the Republic of the Marshall Islands*, signed 30 April 2003; entered into force 1 May.

United States Department of State, Bureau of Democracy, Human Rights, and Labour 2022. *DRL Transitional Justice Programs: Factsheet*.

United States National Research Council 1994, *Radiological Assessments for the Resettlement of Rongelap in the Republic of the Marshall Islands*, National Academies Press, Washington, DC.

University of Waikato, Te Ngira Institute for Population Research n.d., *Indigenous Data and Governance*, Hamilton, New Zealand.

Walter, M. and Suina, M. 2019, 'Indigenous data, Indigenous methodologies and Indigenous data sovereignty', *International Journal of Social Research Methodology*, vol. 22, no. 3, pp. 233–243.

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