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LEBANON'S RUBBLE CRISIS:

A Choice Between Environmental Rehabilitation and Irreversible Damage

Policy Brief

26 February 2025

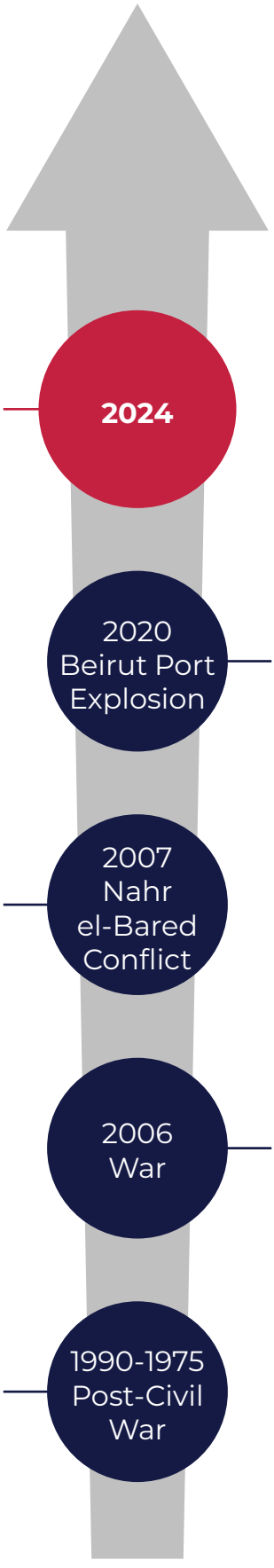
Executive Summary

Since the ceasefire between Israel and Lebanon on 27 November 2024, the conflict's aftermath remains largely unaddressed. While discussions have focused on clearing the rubble from Israeli shelling and airstrikes, the process lacks coordination, oversight, and a binding national directive. Contractors are removing debris, but disposal is dictated by convenience rather than policy, leading to unregulated dumping—including into the sea.

Lebanon now faces a pivotal choice: rehabilitate degraded quarries using war rubble or allow uncontrolled dumping in the sea and valleys, risking long-term environmental and economic damage. Unregulated disposal threatens human health, marine life, and tourism, while a structured approach—such as quarry rehabilitation—creates jobs, recovers valuable materials, and restores landscapes. Dumping could cost Lebanon over $3 billion in health and environmental damages, whereas proper management minimizes costs and supports reconstruction. A well-coordinated rubble management plan could reduce respiratory diseases, prevent toxic groundwater contamination, and limit biodiversity loss, making it a crucial step toward sustainable recovery. Each day of inaction deepens environmental, economic, and legal risks, making it critical to adopt a structured approach that transforms waste into a strategic asset rather than an escalating liability.

Lebanon's Rubble Crisis: A Legacy of Mismanagement

Lebanon has historically managed war debris through ad-hoc dumping rather than a structured recovery process. Every waste crisis response has lacked foresight, regulation, and enforcement. Lebanon has always defaulted to reactionary, short-term rubble clearance instead of structured recovery.



2024

Lebanon again lacks a coordinated national response that takes accountability and long-term planning into account.

2020 Beirut Port Explosion

Debris was stockpiled in Karantina along with hazardous materials, including asbestos. To this day, no decision has been taken regarding its proper management.

2007 Nahr el-Bared Conflict

Rubble was used to expand Tripoli Port. This proved that rubble can be repurposed if properly managed.

2006 War

Rubble from Beirut's southern suburbs was dumped in four unregulated sites—two near the sea; one on Choueifat Road and another near Burj Al-Barajneh along the Airport Road. In Baalbek, debris was dumped in abandoned quarries and informal sites, while in the south, some was used for road construction.

1990-1975 Post-Civil War

Reconstruction waste from downtown Beirut was dumped at the former Normandy landfill, later reclaimed as the Beirut Waterfront/Biel.

Lebanon's Rubble Crisis: A Defining Choice

Lebanon's approach to managing the estimated 20 million tons of war-generated rubble will define its environmental and economic trajectory for decades. Without a structured plan, the country risks severe ecological damage, public health crises, and economic losses. Current debris removal efforts lack coordination, oversight, and compliance with environmental standards, leading to unregulated dumping that threatens marine life, water resources, and air quality. However, an alternative path exists: rubble processing and quarry rehabilitation, which offer material recovery, job creation, and long-term sustainability. The following table presents a comparative assessment of disposal options, highlighting their impacts on various sectors to inform Lebanon's path forward.

Table: Impact of Rubble Disposal Options

Impact Area	Rubble Processing and Quarry Rehabilitation	Unregulated Rubble Dumping (including Sea Dumping, Valleys, and Other Areas)
Air Pollution	Controlled processing limits dust emissions; air filtration and dust suppression reduce health risks.	Unregulated dumping generates airborne particulate matter (PM2.5), worsening respiratory diseases and long-term air quality.
Water Pollution	Rubble is processed before use, minimizing runoff and preventing water pollution.	Dumping near water sources leads to runoff that contaminates water, while sea dumping degrades marine quality.
Biodiversity Loss	Temporary disruption, followed by managed ecological restoration and habitat recovery.	Permanent destruction of coral reefs, marine habitats, and fisheries, accelerating biodiversity collapse.
Soil Pollution	Rubble is treated to avoid leaching harmful chemicals into the soil.	Contaminates soil with hazardous materials, degrading fertility and causing long-term pollution.
Land Restoration	Restores disturbed land, stabilizing ecosystems and promoting regeneration.	Causes long-term land degradation, leaving areas unsuitable for development or restoration. Sea dumping hinders recovery of marine environments.
Health	Minimizes exposure to harmful dust, asbestos, and heavy metals, protecting public health.	Exposes communities to toxic substances, leading to respiratory and skin problems, with potential contamination of seafood.

Impact Area	Rubble Processing and Quarry Rehabilitation	Unregulated Rubble Dumping (including Sea Dumping, Valleys, and Other Areas)
Job Creation	Creates jobs in waste processing, transportation, environmental restoration, and sustainable construction.	Creates minimal, short-term labor opportunities that are mostly illegitimate and can harm sectors like tourism and agriculture due to environmental damage.
Tourism	Restored quarries can be repurposed into nature reserves, eco-tourism parks, or commercial developments.	Degrades coastal and green inland areas, reducing tourism due to environmental harm and unsightly waste.
Real Estate/ Property Value	Increases property value of degraded and surrounding lands with potential to attract investment.	Coastal degradation, water pollution, and ecological damage reduce property values in affected regions.
Legal and Compliance Risk	Aligns with environmental regulations and global best practices, securing donor trust and international funding.	Directly violates environmental treaties and exposes Lebanon to legal penalties and funding restrictions.

Simulation of rubble recycling and quarry rehabilitation benefits

The simulation below provides rough estimations based on assumptions, highlighting the critical impact of rubble processing and quarry rehabilitation compared to unregulated dumping.

10,000+
jobs created across industries and Lebanese territory

$3 billion+
in long-term public costs saved, mitigating environmental and health damage

Over $800 million
in economic losses prevented through marine and tourism preservation

35,000+
health cases avoided, improving public well-being

19 million
metric tons of CO_2 emissions reduced, contributing to climate action

As the comparison reflects, Lebanon must act decisively to prevent environmental catastrophe and economic collapse. Rubble processing and quarry rehabilitation offer the only viable path to sustainable recovery. The following sections assess the gaps in the current institutional framework and propose an alternative path.

Governance Breakdown: Who Is Really in Charge?

Rubble removal is underway, but decision-making lacks clear governance. No centralized authority is overseeing the process, resulting in unclear responsibilities and uncoordinated execution.

I. The Council of Ministers: Setting Policies Without Oversight

The Council of Ministers is responsible for setting national policies and assigning responsibilities. Former Prime Minister Najib Mikati's government issued decisions to structure rubble management, including delegating debris removal to multiple entities (Decision No. 4/12/2024) and establishing a standardized mechanism for procurement in line with the Public Procurement Law (Decision No. 4/2024-7/12/2024). However, critical gaps remain:

1. **Lack of compliance monitoring:** no structured oversight exists to ensure contractors fulfill mandates after tenders are awarded.

2. **Weak policy enforcement:** once contractors begin operations, there is no mechanism to verify adherence to environmental and regulatory frameworks, as accountability mechanisms are limited to individual procuring entities. The designated implementation consultant has yet to be appointed.

3. **Absence of coordination:** in the absence of a national strategy, ministries and municipalities receive directives, but no central entity ensures alignment, resulting in fragmented execution.

The February 2025 transition to a new government under Prime Minister Nawaf Salam has delayed implementation, with newly appointed officials assessing the previous government plan. This has created an opportunity for a serious and timely revision of the strategy to ensure enforcement mechanisms are properly embedded and applied.

II. The Ministry of Environment: Authority Without Power

The Ministry of Environment (MoE) is responsible for ensuring rubble disposal aligns with environmental regulations and sustainability standards. While it has the technical expertise to regulate rubble disposal, it lacks enforcement authority. On December 4 2024, the MoE issued a circular providing guidelines for managing war-generated rubble, recommending the disposal of debris in environmentally degraded sites, particularly quarries. However, this circular has not been incorporated as a binding requirement in the tender process and remains a non-mandatory guideline. Although tenders reference MoE guidelines, the ministry has yet to issue a formal decision outlining enforceable compliance measures. As a result:

1. **Non-binding regulations** – The circular should be amended to include enforcement measures and the legal consequences of non-compliance, as stipulated in the 2002 Law on the Protection of the Environment. Moreover, its guidelines are not included in current contract versions.

2 **Limited oversight on disposal sites** – MoE cannot enforce the use of quarries for structured disposal, as its authority does not extend to mandating site selection. Although MoE has shared the list of sites, it is not positioned to enforce their specific usage.

3 **Insufficient monitoring capacity** – MoE lacks the resources to track violations, and without the legal power to halt operations or impose penalties, enforcement relies on intervention from other government entities.

Without legal authority over implementation, the MoE is a peripheral actor in rubble management, leaving environmental compliance unregulated.

III. Municipalities & Local Councils: Operating in Isolation

The Higher Relief Council (HRC), South Lebanon Council, and the Southern Suburb Union of Municipalities each manage their respective areas independently, without a unified coordination mechanism. This will result in fragmented decision-making, misaligned priorities, and overlapping efforts. Each entity plans on applying its own approach rather than adhering to a standardized national strategy. As a result, contractors operate under varying regional expectations, leading to inconsistencies in execution and unregulated disposal practices.
Lebanon's rubble management is primarily driven by contractors rather than a centralized regulatory framework. In the absence of a national oversight body, disposal decisions are based on logistical convenience rather than strategic environmental and infrastructural priorities.

The Precious Opportunity: Quarries as National Rubble Hubs

The issue is not merely where to dispose rubble but how to manage it as a strategic national asset. A structured approach to rubble management can contribute to environmental rehabilitation, resource recovery, and sustainable reconstruction. Quarries provide a viable solution by addressing multiple challenges simultaneously:

Controlled disposal – utilizing designated quarries prevents illegal dumping and ensures compliance with environmental standards.

Site rehabilitation – backfilling abandoned quarries can restore degraded landscapes, addressing long-standing environmental concerns.

Material recovery – extracting and recycling rubble reduces reliance on new raw materials, lowering environmental impact and construction costs.

This approach aligns with the Ministry of Environment's existing recommendations. However, without formal regulatory enforcement, contractors will unbound by these guidelines. Integrating quarry rehabilitation into a national rubble management policy would ensure structured execution, environmental benefits, and long-term resource sustainability.

Recommendations and Way Forward

To break the cycle of mismanagement and establish a structured, enforceable approach to rubble disposal, Lebanon must take immediate and decisive action, these include:

SHORT TERM ACTIONS:

Amend the Council of Ministers' Decision No. 4/12/2024 to establish a **centralized oversight body** responsible for monitoring compliance, enforcing environmental regulations, and coordinating between ministries, municipalities, and contractors. The amendment should make the Ministry of Environment's Environmental Guidelines for Managing War Debris legally binding, mandating the use of designated quarries for disposal to prevent unregulated dumping.

Strengthen the Ministry of Environment's Guidelines by linking non-compliance to the legal consequences in Chapter 6 of the 2002 Law on the Protection of the Environment (Law No. 444/2002). This amendment should ensure that failure to adhere to environmental regulations results in enforceable penalties, civil and criminal liabilities, and financial obligations under the Polluter Pays Principle. Violators must be held accountable for the restoration of environmental damage, with authorities empowered to impose fines, halt harmful activities, and take legal action where necessary.

Ehance the role of the Environment Police by defining their enforcement mandate, providing necessary resources and training, and empowering them to impose penalties for non-compliance under Law No. 444/2002.

Create dedicated entity to play an immediate role in coordinating the efforts of various stakeholders to address rubble processing, disposal, and material recovery in a sustainable, legally compliant manner and to define and enforce technical, environmental, and operational standards for rubble processing, disposal and material recovery.

LONG TERM ACTIONS:

Expand the MoE's mandate to include enforcement authority to assign and regulate disposal sites, monitor compliance with environmental standards, and impose penalties for non-compliance.

Integrate rubble management into urban planning as well as national reconstruction plans, incorporating sustainable reuse strategies for infrastructure and environmental rehabilitation.

Expand the Mandate of the Environment and Public Works & Transportation Committees to ensure effective legislative reform and oversight of rubble management. The committees should focus jointly on developing legal frameworks that ensure policy continuity, regulatory enforcement, and long-term governance of rubble and construction and demolition waste management.

Designate a Central Oversight Body to be responsible for monitoring implementation, coordinating inter-agency efforts and ensuring compliance with national and environmental regulations.

Establish a coordinated monitoring framework for the Environment Police to collaborate with ministries, municipalities, and contractors, ensuring compliance with national environmental policies and enhancing sustainable management in Lebanon.

Implementing these measures will establish a structured, enforceable framework for rubble management, ensuring regulatory compliance, environmental sustainability, and alignment with Lebanon's broader reconstruction and development objectives.