



*Empowered lives.  
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United Nations Development Programme

THE HAITIAN EXPERIENCE 2010 - 2012



# TECHNICAL GUIDE FOR DEBRIS MANAGEMENT





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Designed by Rafael Eduardo Sanabria Duarte  
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2.1 Background	30	4.4.2 Debris macro recycling: Truman transformation site	61	IHSI	Institut Haïtien de Statistique et d'Informatique (Haitian Institute of Statistics and Information)		
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				MTPTC	Ministère des Travaux Publics, Transports et Communications (Ministry of Public Works, Transport and Communication)		

On January 12, 2010, an earthquake measuring 7.0 on the Richter scale struck Haiti and devastated the capital Port-au-Prince, and its peripheral municipalities (Delmas, Cité Soleil, Croix des Bouquets, Pétienville, Tabarre, Carrefour), the Ouest department and the cities of Léogâne, Grand Goâve, Petit Goâve, Ganthier, Gressier, as well as the Sud-Est department and, in particular, the city of Jacmel. The earthquake killed more than 220,000 people and displaced more than 1.5 million people.

The building damage assessment, conducted between March 2010 and February 2011 by the Government of Haiti and the United Nations system, showed that more than 400,000 buildings were damaged or destroyed, of which approximately 218,000 could be occupied without repairs (green category), 105,000 were damaged but could be repaired (yellow category), and 80,000 were severely damaged and remained uninhabitable (red category).

The destruction of buildings and infrastructure generated a huge amount of debris, estimated at 10 million cubic meters, blocking streets and land in affected areas. In the absence of a national debris management strategy, debris could, thus, be cleared and disposed of in an uncontrolled manner, hindering relief, recovery and reconstruction activities.

Following the earthquake, the UN Integrated Strategic Framework (ISF) replaced the United Nations Development Assistance Framework, and defined strategic priorities for intervention in the country. The framework was adopted by all United Nations agencies and the United Nations Mission for Stabilization in Haiti (MINUSTAH), to contribute to the Action Plan for National Recovery and Development of Haiti (PARDN) developed by the Haitian Government, in consultation with all sectors of the country.

The priorities of the Action Plan aimed to address the immediate emergency, resume economic, governmental and social activities, reduce the country's vulnerability to natural disasters and re-launch Haiti on the path of development. Clearing the debris, demolishing potentially hazardous buildings and repairing damaged houses became the main means of encouraging the return and resettlement of displaced people to their areas of origin, the resumption of the productive cycle, the reconstruction of everyday life and the psychosocial recovery of affected populations. As such, debris management was one of the first steps towards rebuilding the country.

With this overarching objective, in February 2010, the United Nations Development Programme (UNDP) launched a joint labor-intensive Cash for Work programme (LI/CFW) in partnership with the World Food Programme (WFP) and the Government of Haiti, to initiate early interventions for debris and waste removal, clearing of roads and public squares, and dredging of drainage channels.

In response to the priorities identified by the Government of Haiti through the Interim Haiti Recovery Commission, UNDP decided to launch the implementation of a sustainable development and recovery-based debris management programme through the implementation of three specific projects, the first project in Léogâne, the epicentre of the earthquake, and two in Port-au-Prince (Debris I and Debris II). These projects were intended to contribute to the rehabilitation of the most affected urban areas through the implementation of a debris

management strategy, including planning, demolition, removal, transportation, reuse and recycling and rehabilitation of public spaces through recycled debris.

The Debris Projects (Debris I and Debris II) in Port-au-Prince benefitted from the strategic integration of the United Nations system, with the involvement of several agencies that played specific roles: the United Nations Human Settlements Programme (UN-Habitat) responsible for social mobilization, community participation and the preparation of neighborhood restructuring plans; the International Labor Organization (ILO) responsible for job creation through the reuse of recyclable debris and the reactivation of the local economy through the creation and support for small and micro-enterprises; and UNDP responsible for demolition, debris removal, neighborhood rehabilitation and the general coordination of the intervention, including a participatory approach and in partnership with UNOPS, central and local governments, local and international NGOs, the private sector, and more importantly, the Haitian population.

Debris management thus became a strategic point of entry into damaged areas through programmes that stimulate the local economy and job creation, becoming the basis for sustainable development.

The chaotic situation from the outset and the limited literature on assistance programmes in urban contexts, such as debris management, made the implementation of this programme a challenging but also exciting experience for UNDP.

This experience has allowed to draw meaningful lessons and propose practical recommendations for the implementation of new debris management programmes, for both UNDP and humanitarian actors at large.

Based on the experience gained by UNDP in Haiti, this guide aims to share the key design, programmatic and operational considerations for the implementation of debris management programmes, from a hands-on learning perspective, based on the successes and challenges of the experience, with a particular focus on the actions under its responsibility.

**Sophie de Caen**  
**UNDP Senior Country Director**

#### The earthquake in figures:

- More than 220,000 people died.
- More than 1.5 million displaced.
- 400,000 buildings affected, including 105,000 to be repaired and 80,000 that remained uninhabitable.
- 10 million m<sup>3</sup> of debris generated.



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*In terms of recovery and reconstruction, the safe return of people to their neighborhoods of origin, the rehabilitation of damaged buildings, the resumption of daily life and private sector development are at the heart of UNDP's approach. In this context, debris management became a first step towards achieving these goals and laying the foundations for sustainable development.*

*The design and planning of a debris management programme should consider this approach as well as the needs, interests, resources, mandates and implementation capacities in order to reduce response costs and programme formulation time, promote coordination efforts and clarify the responsibilities, procedures and resources required.*

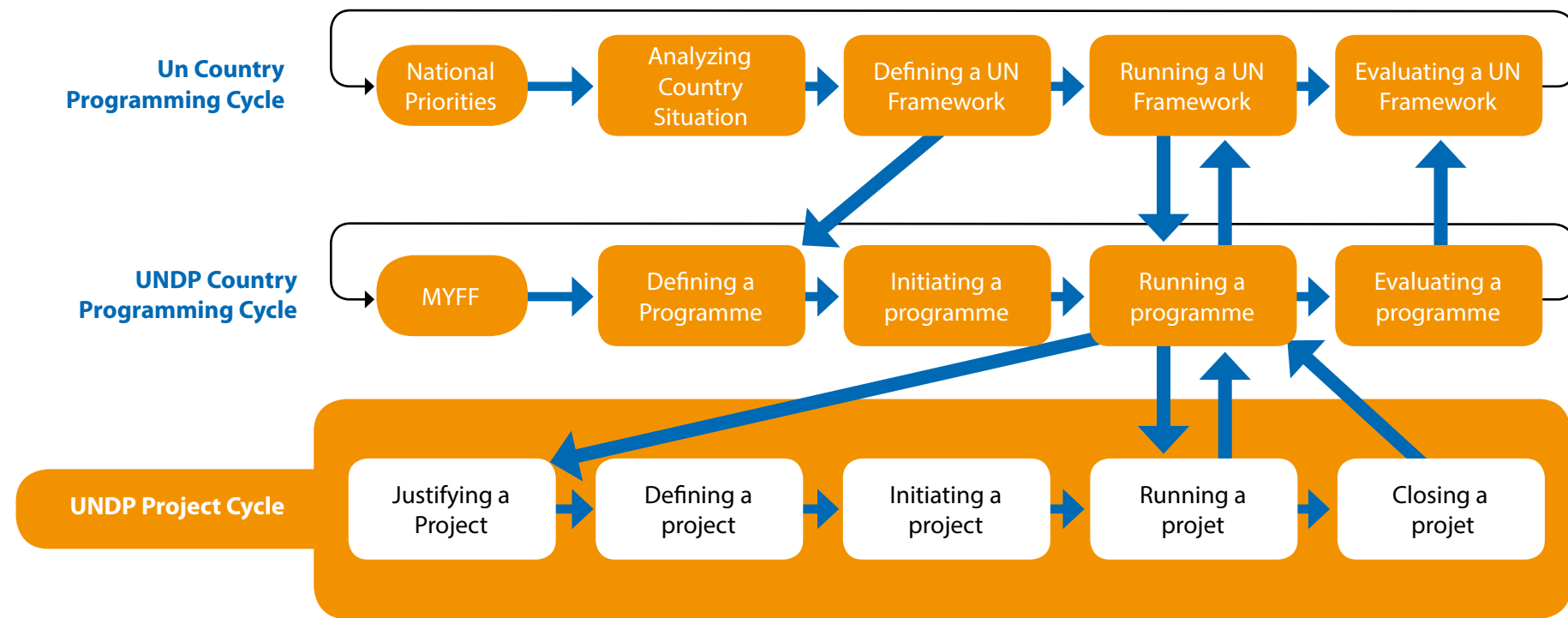
*Planning is an ongoing stage of the programme that makes it possible to review and readjust the intervention in function of the rapid changes that characterize a post-crisis context.*

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The planning of the intervention was based on the requirements and procedures of UNDP's planning cycle.

**Diagram 1. UNDP Planning Cycle**



UNDP in Haiti combined a holistic and long-term approach to debris management that goes beyond immediate debris removal and cleaning programmes. For UNDP, debris management became the entry point to begin sustainable neighborhood recovery, encourage early return and resettlement of displaced persons within their area of origin and resume daily life activities.

The UN Integrated Strategic Framework contributed to the definition and implementation of a comprehensive debris

management strategy, based on participatory approaches and the engagement of local communities, viewing debris management as a social and economic resource rather than just waste.

UNDP's strategy was therefore focused on maximizing the potential benefits derived from debris reuse and recycling by establishing debris as a raw material for reconstruction, a resource for job creation and an open door for development.

In this context, UNDP addressed debris management in Haiti from a life cycle perspective that includes the following phases:

- Community planning.
- House demolition and debris removal.
- Sorting, treatment and reuse of debris in neighborhoods (reuse and micro recycling) including entrepreneurship and capacity development amongst micro and small entrepreneurs.
- Classification and transportation of debris.
- Recycling of debris at processing sites (macro recycling) and support for reconstruction/redevelopment programmes.
- Disposal of non-recyclable debris at a final disposal site.

**Diagram 2. Debris management cycle**

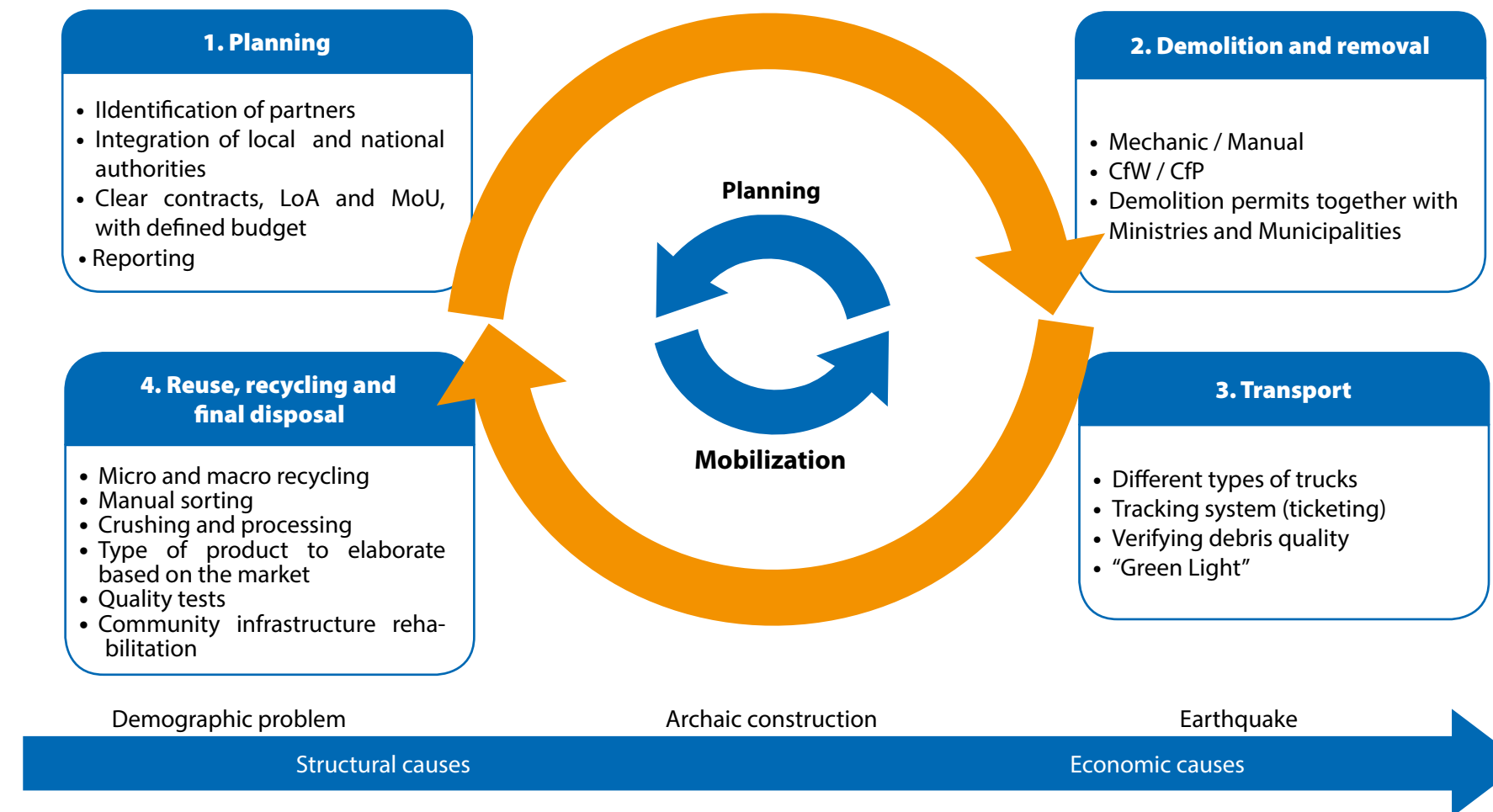




Table 1. Main results and quantitative indicators

Results	Quantitative indicators
<b>House demolition and debris removal</b>	Number of demolition permits signed and approved Volume of debris cleared
<b>Economic revitalization</b>	Number of people hired (temporary jobs) Number of debris processing and recycling micro-enterprises created
<b>Recycling and reuse of debris</b>	Volume of debris transported to recycling facilities Volume of debris recycled or reused
<b>Contribution to the reconstruction</b>	Number of neighborhood redevelopment plans elaborated Amount of materials from recycling used in reconstruction projects
<b>Local capacity development</b>	Number of guides and policies promoted/developed Number of people trained in the techniques of debris recycling, seismic construction Number of people trained in business management

The debris management programme adopted a “results-based management” approach, which primarily sought to define measurable outcomes, as well as methodologies and tools to achieve the desired results. This approach helped improve the performance and accountability of various stakeholders by focusing intervention planning, management and monitoring on the expected results.

**Reference documents:**

- Debris Léogâne Project Document
- Debris I Project Document
- Debris II Project Document
- Annual Reports
- Brochures
- Project fact sheets
- Debris Management Guidance Note

Planning a debris management programme requires the collection of substantial background information, including:

**At the strategic level:**

- A working strategic framework: a national debris management policy or strategy and associated legislation to ensure the relevance of the intervention (UNDP, Government).
- A damage assessment, in order to identify and delineate the disaster sites and areas, the number and location of destroyed or severely damaged homes and buildings, this includes facilitating the development of location maps with GPS data and characterization of the level of destruction (Ministry of Public Works or similar, UNDP).
- Defining the official volume of debris to be cleared and its location (Government).
- Recycling and reuse options, establishing the physicochemical characteristics of the debris, its degree of contamination and recycling potential (national and international technical laboratories, Government).

Estimates indicate that urban debris can be recycled at an average rate of 30-40%, which makes it possible to design preliminary recycling lines and volumes. However, it is important to obtain an official government authorization that validates the use of recycled products prior to the design of recycling actions. Furthermore, if market demands have not

Although estimates during the first months of 2010 indicated that the earthquake in Haiti generated a volume of 40 million m<sup>3</sup> of debris, the Ministry of Public Works, Transport and Communications concluded in April 2011 that the volume of debris was 10 million m<sup>3</sup>, after validating the combined results of studies carried out by UNOPS and Miyamoto.

been thoroughly analyzed, the quantity and quality of these actions may be overestimated.

- Establishment and characterization (location, access and capacity) of landfill and treatment sites (Government, private sector).
- Physical accessibility of debris to determine the equipment needs and an adapted workforce (Government, UNDP).
- Reconstruction and development actions planned to provide linkages, continuity and consistency in the programme's actions (Government, UNDP).

**At the institutional level:**

- The identification of partners, to determine the operational capacities of state agencies, UN agencies, international and national NGOs, the private sector, and establish procedures for coordination and leadership (UNDP).

While many debris management programmes are an excellent opportunity for joint work between UN agencies, government and humanitarian organizations, their active participation must be considered in the various stages of debris management, through a previous analysis of their management capacity, efficiency and expertise.

- Coordination mechanisms to ensure an organizational structure between the Government and all implementing partners (recommended within the Early Recovery Cluster).

The establishment of a special working group on debris management under the responsibility of the Early Recovery Cluster (Government, UNDP) can be an ideal instrument to manage and share information and facilitate effective coordination for debris management programme design and implementation.

It could take several months for the implementation of a debris management programme to be properly defined. Consequently, the programme must generally be formulated and planned based on assumptions and preliminary values or data to be reviewed and readjusted as the information evolves.

of the local economy through the creation of labor-intensive jobs under a Cash for Production modality and the promotion of micro and small enterprises, debris reuse and recycling, disaster risk reduction, among others), as the required information was made available and the population and authorities developed the means to cope with the new demands.

The lessons learned through the initial projects contributed significantly to improving the design and implementation of new projects. In this context, fiscal and operational flexibility (review of intervention areas, target population and activities) proved to be a critical element in the evolution of the programme.

#### Reference documents:

- *Action Plan for National Recovery and Development of Haiti*
- *Location map of severely damaged buildings in Léogâne*
- *Location map of severely damaged buildings in Port-au-Prince*
- *Density map of severely damaged or collapsed buildings per hectare, Léogâne*

### RECOMMENDATIONS

1. - Seek guidance from people who have participated in this type of phenomenon (Gaza, Lebanon, Algeria, Afghanistan, etc.) within UNDP. Their experience is an invaluable source of learning to draft the first outlines of a debris management programme.
2. - Establish a multidisciplinary and multi-agency team to provide the essential technical skills and necessary background understanding. It should focus primarily on the development of joint and common services, if possible.
3. - Include technical representatives of the State (relevant Ministries, Councils, local authorities), most representative and recognized community structures, local UN agency staff and representatives of the private sector (demolition, recycling, transport) in the early stages of the programme design to draw on their technical skills, their understanding of the local dynamics and specificities, and synergy of action.
4. - Cross-cutting issues such as inclusion, gender equity, environment and disaster risk reduction, should be part of the initial assessment phase, to ensure their integration into the overall debris management programme.
5. - Action planning requires a well-defined neighborhood approach, not based on rigid geographic data but, more importantly, on territorial dynamics and communities. On-going consultation with the local population can help refine the analysis and ensure relevant community-based solutions.
6. - Ensure, from the early planning stages, the sequence and consistency of immediate recovery, rehabilitation/reconstruction and development actions, as well as local ownership, which stands out as a successful exit strategy, involving the private sector from the outset as a valid and experienced alternative.
7. - Perform a deep risk analysis of capacity, security, policy making, finance, environment, gender and disasters.
8. - The initial assessment must rely on computer and data management tools (mapping, GIS) to facilitate decision-making and better planning of the actions to implement.

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