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United Nations Development Programme

SYSTEMATIZATION OF THE DEBRIS MANAGEMENT PROGRAMME UNDP HAITI 2010 - 2012

DEBRIS MANAGEMENT: THE DOOR TO DEVELOPMENT

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ACRONYMS AND ABBREVIATIONS

CARMEN	Centres d'Appui pour la Réparation des Maisons Endommagées (Community Resource Centers for House Repairs)
CFP	Cash for Production
CFW	Cash for Work
CIAT	Comité Interministériel d'Aménagement du Territoire (Interministerial Committee for Land Planning)
CNIGS	Centre National d'Informations Géo-Spatiale (National Centre for Geo-Spatial Information)
DM-WG	Debris Management - Working Group
FAU	Fondation Architectes de l'Urgence (Emergency Architects Foundation)
IHSI	Institut Haïtien de Statistique et d'Informatique (Haitian Institute of Statistics and Information)
ILO	International Labor Organization
LI	Labor-Intensive
MTPTC	Ministère des Travaux Publics, Transports et Communications (Ministry of Public Works, Transport and Communications)
NGO	Non Governmental Organisation
PARDN	Plan d'Action pour le Relèvement et le Développement National d'Haïti (Action Plan for National Recovery and Development of Haiti)
UN	United Nations
UN-Habitat	United Nations Human Settlements Programme
UNDP	United Nations Development Programme
UNS	United Nations system
UNOPS	United Nations Office for Projects Service
WFP	World Food Programme
WG	Working Group

INTRODUCTION

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

The Debris Projects (Debris I and Debris II) 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 should not be viewed as a set of mechanical cleaning actions, but rather as an open door to encourage the rebuilding of the social fabric, promote job creation and initiate the sustainable development of affected populations.
>
> Therefore, this systematization accounts for the human development process undertaken by debris management projects implemented in Haiti.

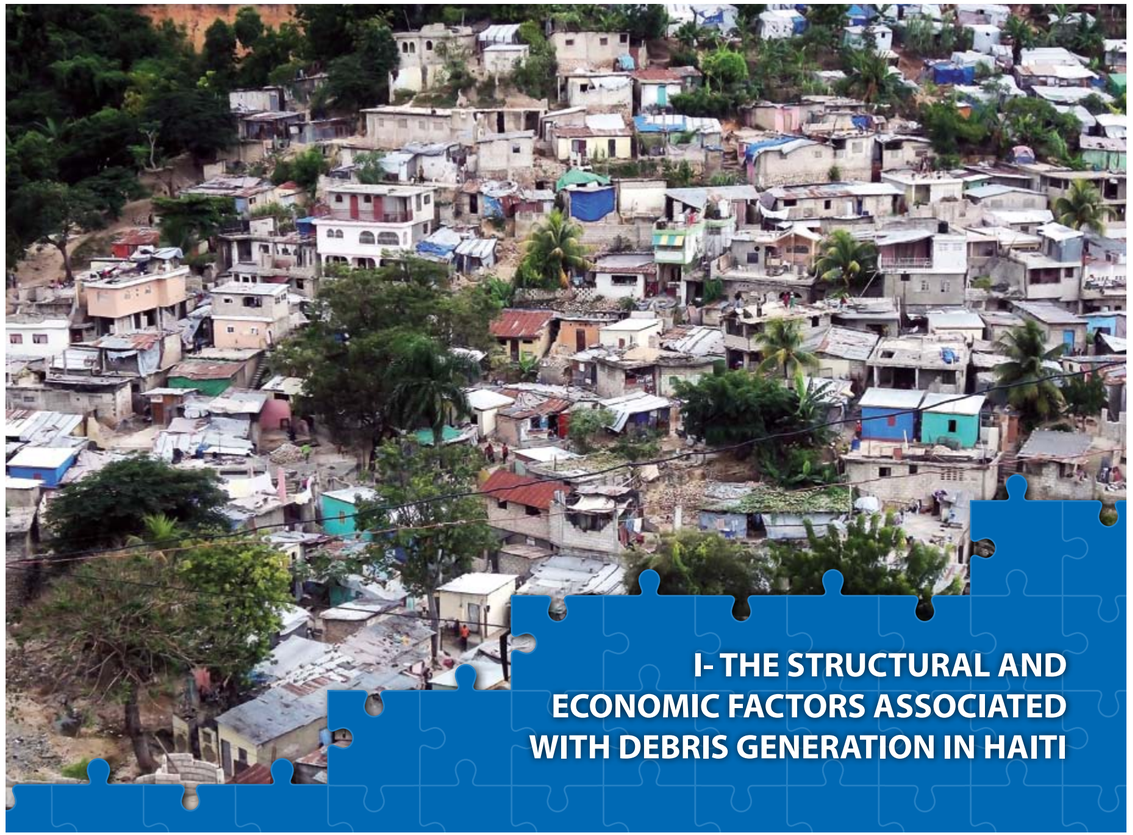
Debris management thus became a strategic point of entry into damaged areas through programmes that stimulated the local economy and job creation, becoming the basis for sustainable development.

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 document is intended to share key lessons learned and propose practical recommendations for the implementation of new debris management programmes, for both UNDP and all humanitarian actors.

Sophie de Caen
UNDP Senior Country Director

Conditions determined by physical, social, economic or environmental factors or processes increase the susceptibility of a community to the impact of hazards. United Nations - International Strategy for Disaster Reduction.



I- THE STRUCTURAL AND ECONOMIC FACTORS ASSOCIATED WITH DEBRIS GENERATION IN HAITI

The extent of the damage caused by a disaster in an urban area is directly related to structural (socio-economic, socio-cultural, technical and institutional) and economic vulnerabilities. Often responsible for the magnitude of the disaster, these vulnerabilities slow recovery and hinder reconstruction and development efforts.

In Haiti, the generation of debris is directly related to this context:

- Rapid urbanization and population growth have propelled the development of vulnerable neighborhoods (slums) in the most exposed areas.

- The lack of urban planning and land insecurity prompted the uncontrolled construction of precarious housing that did not meet basic planning and safety standards.

- The illegal and informal occupation of land encouraged irregular construction methods - often based on the model of progressive construction, i.e., adding a floor after another without ensuring proper foundations -, with poor quality materials and the use of inappropriate construction techniques. Non-compliance or lack of building standards and building maintenance are one of the main causes for the collapse of houses and buildings, generating a huge amount of debris in the streets and lots of Haitian cities.

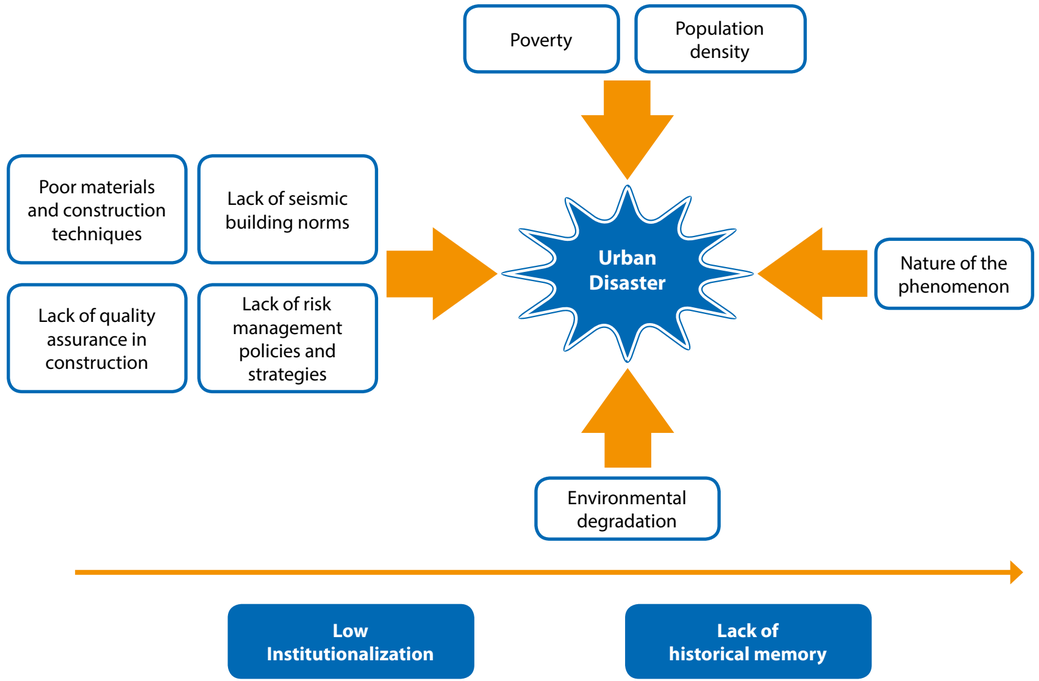
- The adoption of construction models that are more responsive and resistant to most recurrent natural hazards, such as hurricanes, heavy rains, winds or tornadoes, generated serious vulnerabilities compared to other latent but less predictable hazards such as earthquakes.

- The type, magnitude and location of the hazard are also directly linked to the extent of the damage.

In Haiti, the large migration from rural to urban areas observed since 1986 had harmful consequences on the housing of thousands of low-income families, leading to a high-density population settlement in the metropolitan areas and slums of Port-au-Prince, where marginal constructions were erected on informal, unfit and at high risk spaces.

Hurricane Hazel, which struck Haiti in 1954, caused a rapid change in the traditional building techniques of the country. Wooden houses and light buildings, more resilient and less dangerous against earthquakes but more hazardous in the face of hurricanes, were replaced by concrete houses and buildings that became death traps for thousands of people during the January 2010 earthquake.

Figure 1. The main causes of debris generation in Haiti



In Haiti, the return of families to their neighborhoods of origin was one of the main priorities of the government and a central aspect of its post-earthquake action plan. The UN Integrated Strategic Framework, developed to support the government, contributed to the definition and implementation of a comprehensive debris management strategy, based on participatory approaches and the engagement of communities, considering debris management as an entry point at the neighborhood level as well as a resource for reconstruction programmes.

II- UNDP RESPONSE TO DEBRIS MANAGEMENT IN HAITI

2.1 THE PROGRAMME

It can take several months for a debris management programme to be properly defined in a crisis situation. 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.

UNDP began to implement a massive debris removal programme in the immediate aftermath of the earthquake, with the goal of cleaning the streets and main roads of the affected areas and promoting labor-intensive work under the Cash for Work modality to inject rapid economic resources into neighborhoods and promote their economic and social revival.

Subsequently, the implementation of successive pilot projects (Debris Léogâne, Debris I and Debris II), allowed for the progressive application of an integrated approach to debris management, including new aspects such as the revitalization the local economy through the creation of labor-intensive jobs under Cash for Production schemes and the promotion of micro and small enterprises, debris reuse and recycling, disaster risk reduction, among others, as the required information became available and the population and authorities developed the means to cope with the new demands.

The Debris I and Debris II projects in Port-au-Prince, benefited from the strategic integration of the UN system, with the involvement of several agencies including UNDP, ILO and UN-Habitat. A multidisciplinary and complementary design resulting from the participation of various agencies enabled the definition of roles and procedures of each partner, from the outset even prior to undertaking joint programming in more detail.

These programmes were developed in partnership with the Ministry of Public Works, Transport and Communications (MTPTC) and the target municipalities, and had the operational support of national and international NGOs with longstanding experience in Haiti.

The lessons learned through the initial projects contributed significantly to improving the design and implementation of new projects.

Figure 2. Development of the joint debris management programme

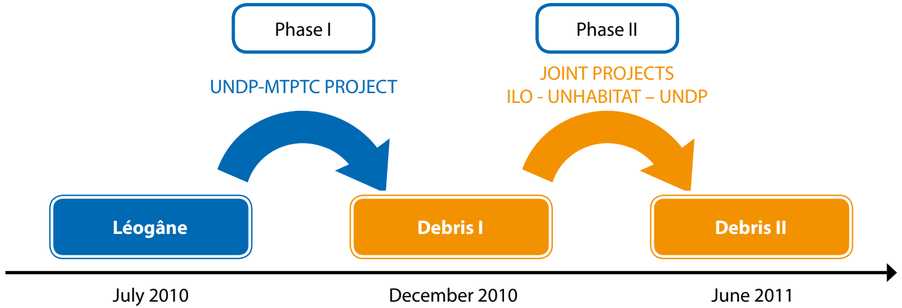


Table 1. Information of the three debris management projects

	LÉOGÂNE	DEBRIS I	DEBRIS II
Implementation period	July 2010 - December 2012	December 2010 - December 2012	June 2011- December 2012
Budget	USD 11 million	USD 16.9 million	USD 25 million
Volume of debris cleared	300 000 m^3	162 000 m^3	625 000 m^3
Intervention area	Communal sections of 1st Dessources, 3rd Petite Rivière, 3rd Grande Rivière.	Carrefour Feuilles, Saint Gérard, Lélio, Sanatorium, Desprez and Morne à Tuf.	Bel Air, Fort National, Turgeau, Pétionville, Delmas, Carrefour.
Key Partners	MTPTC City of Léogâne Community-based organizations and national and international NGOs.	MTPTC, Port-au-Prince Mayor's office, City of Pétionville Mayor's office, UNDP, UN-HABITAT, ILO, UNOPS. Community-based organizations and national and international NGOs.	

The joint debris management programme had the following overall objectives:

- Removal and disposal of debris.
- Demolition of severely damaged houses to support the return of people affected by the earthquake to their homes.
- Creation of job opportunities through labor-intensive programmes.
- Long-term revitalization of the local economy through debris reuse and recycling.
- Development plans for the redevelopment and reconstruction of neighborhoods through community participation.
- The linkage of debris management with other reconstruction and development efforts.
- Strengthening national and local capacities for debris management, through the provision of technical assistance to the Haitian Government for the development of a National Strategy for Debris Management, to facilitate a legal and operational framework at the national level, the lack of which proved to be one of the biggest challenges for all stakeholders.

LESSONS LEARNED AND RECOMMENDATIONS

1. - While the humanitarian world has confronted a fair number of disasters in urban areas, the lack of systematization and capitalization of experiences has created a vacuum in terms of references and valuable experiences for all humanitarian organizations. The implementation of a debris management programme should therefore be based on assumptions and should be undertaken as a continuous learning process in order to implement the best practices of previous projects to improve the planning of new ones. Experience will allow the project to be adapted to actual circumstances.

2. - In order to respond to a key concern of the affected populations, the design of return support programmes must prioritize the creation of income-generating activities for residents of neighborhoods across the "Cash for Work" or "Cash for Production" modalities the latter proving more effective in the demolition, removal and transportation of debris.

2.2 THE DEBRIS MANAGEMENT CYCLE

UNDP in Haiti combined a holistic and long-term approach to debris management that goes beyond the immediate removal of debris and cleaning programmes. For UNDP, debris management was the key point of departure to undertake the sustainable recovery of neighborhoods, encourage early return and resettlement of displaced persons within their area of origin and begin the return to everyday life.

UNDP focused its debris management efforts on maximizing the benefits that may be derived from debris reuse and recycling, reducing the volume of debris for final disposal, and making debris a resource for job creation and raw material for the rebuilding process.

In this context, UNDP addressed the life cycle of debris management in Haiti, through the following phases:

1) Planning
2) Demolition and removal
3) Transportation
4) Reuse, recycling (macro and micro) and final disposal of non-recyclable debris

To the extent possible, UNDP supported manual demolition, focusing on stimulating the local economy, creating new individual and family revenue, and promoting financial flows at the neighborhood level, to the detriment of technological approaches that may be more efficient in terms of time and costs. Thus, the human dimension remained at the heart of its intervention.

This approach proved suitable because of Port-au-Prince's uneven terrain and limited road access in slums - which made the use of heavy machinery almost impossible - and due to the abundance of an underemployed local workforce in need of generating income.

UNDP initiated the controlled management of debris focusing, first, on the options for reuse and recycling "in situ", to reduce the final disposal volumes, promote economic activity within neighborhoods and encourage the reuse of materials in local redevelopment programmes. Simultaneously, a component of large-scale recycling was implemented in order to use debris as raw material to support major reconstruction programmes.

Table 2. The phases of debris management of the Haiti joint programme

	PLANNING	DEMOLITION AND REMOVAL	TRANSPORTATION	REUSE, RECYCLING AND FINAL DISPOSAL
KEY STAKEHOLDERS	- Central and decentralized governments. - UN system (UNDP, UN-Habitat, ILO). - National and international cooperation organizations. - Donors. - Private sector. - Scientific entities. - Communities.	- Central and decentralized governments. - UN system (UNDP - UNOPS). - NGOs. - Communities.	- Ministry of Public Works, Transport and Communications (MTPTC). - UN system (UNDP-UNOPS). - Private sector. - Association of local transport and logistics companies. - NGOs.	- Ministry of Public Works, Transport and Communications (MTPTC). - UN system (UNDP - ILO - UNOPS). - NGOs. - Communities. - Small and medium local businesses.
KEY ACTIVITIES	- Establishment of a multidisciplinary and multi-agency team. - Identification of partners. - Assessment of damages; definition of official volume and location of debris to be cleared. - Definition of recycling potential of debris. - Identification of landfill and treatment sites. - Identification of transport routes to use and alternative transport. - Definition of requirements in terms of machinery and labor (labor-intensive methods). - Organization of the massive cleanup programmes. - Organization / Definition of joint comprehensive debris management programmes. - Linkage with reconstruction and development phases.	- Technical assessment of the structural condition of the houses and public and private buildings. - Definition of legal and administrative procedures for demolition. - Classification and distribution in intervention areas. - Community outreach. - Community planning. - Obtaining of demolition permits. - Technical planning of works (engineers). - Recruitment of demolition crews and necessary equipment. - Demolition and removal of debris.	- Selection of main roads and communication routes for the transportation of debris to landfill/ treatment sites. - Selection of suppliers. - Selection of transportation periods. - Definition of payment mechanisms (per m3).	- Identification and development of debris discharge and treatment sites (in situ/ex situ). - Feasibility studies and identification of debris recycling related economic sectors to develop. - Community awareness and planning. - Selection of beneficiaries (local micro entrepreneurs, collectors, sorters, etc.). - Implementation of training workshops. - Workshop equipment. - Training of trainers. - Technical and management training. - Development of a marketing strategy (product marketing).

	PLANNING	DEMOLITION AND REMOVAL	TRANSPORTATION	REUSE, RECYCLING AND FINAL DISPOSAL
METHODS AND MEANS	- Strategic Framework (UN system-Government). - Coordination mechanisms (sectorial tables, Immediate Recovery cluster, DM-WG). - Participatory approaches incorporating neighborhood residents (focus groups, community platforms). - Software for data management and other applications (mapping, GIS).	- Operational and legal framework. - LI cash for production schemes. - Community platforms (community participation and consultation). - Liaison Officers (local coordination of actions, conflict prevention). - Engineers (assessments, technical planning and monitoring of projects). - Tracking system to ensure regular record of the number of houses demolished, the volume of debris cleared and people engaged. - Steering Committees (programme monitoring and adaptation).	- Market study. - Alliances and partnerships with companies and organizations for the allocation of trucks. - Control and monitoring mechanisms (tracking system, GPS and photographs) to ensure a record of the volume of debris transported and disposed. - Steering Committees (programme monitoring and adaptation).	- Legal framework. - Market study. - Alliances and partnerships with the private sector. - Establishment of a space for debris exchange between key producers and users of recycled materials. - System for monitoring and recording data on site. - Innovation of recycled products to facilitate their sale. - Steering Committees (programme monitoring and adaptation).

LESSONS LEARNED AND RECOMMENDATIONS

1. - The recycling of debris from destroyed homes and buildings can be considered a very sensitive issue for part of the population. Therefore a level of acceptance and cultural dimension before deciding to reuse debris should be accounted for.

2. - A conducive political and legal environment is key to ensure the smooth and proper development of a debris management programme, which includes highly sensitive issues such as land rights, reuse and recycling of debris, that determine what can and what can not be done. The legal requirements of the intervention deserve special consideration.

2.3 STRATEGIC PARTNERSHIPS

Partnerships are core aspects of UNDP's work to encourage development goals and ensure the expected outcomes of the programme. To this end, UNDP seeks to ensure a dynamic strategic collaboration with the government, UN agencies, international financial institutions, bilateral and multilateral organizations, civil society and the private sector.

In Haiti, UNDP prioritized bringing together all key stakeholders to begin a joint and converging process of reconstruction, through a participatory approach and partnership with central and local governments, the UN system, local and international NGOs, the private sector and, especially, the Haitian population.

At the external level...

Aimed at supporting national reconstruction efforts, the Immediate Recovery Cluster managed the strategic coordination of all the recovery efforts in Haiti. UNDP facilitated the work of the cluster, bringing together over 120 organizations, including national institutions, UN agencies, international and national NGOs, and the private sector. Given the importance and specificity of the various components of this cluster, different Working Groups (WG) were developed, such as debris management, livelihoods, communities of return and district-housing.

More than 50 organizations participated in the Debris Management - Working Group (DM-WG), coordinated by UNDP in partnership with the Ministry of Public Works, Transport and Communications (MTPTC), with the following key objectives:

- Identify key stakeholders in debris management and contribute to the effective coordination of efforts,
- Maintain geographic and tabular databases of partners,
- Support national authorities and strengthen their capacity to structure and improve the debris management chain,
- Support advocacy for improved policy and strategic planning in the area of debris management.

To ensure work at the neighborhood level, UNDP relied on grassroots organizations and NGOs with established experience and presence in the priority areas identified, which proved to be a real asset, especially in insecure neighborhoods such as Bel Air and Fort National.

Meanwhile, the partners had to provide a set of indispensable capacities to guarantee the smooth operation and management of projects, particularly at the technical and administrative management level:

- Capacity to plan, manage and coordinate activities.
- Capacity to manage the technical aspects of the project.
- Capacity to ensure UNDP procedures to manage human and financial resources, as well as contract management and procurement practices.

Creation of partnerships in the planning phase

Success factors	Key Challenges
Convincing stakeholders, particularly donors, of the importance of the implementation of debris management programmes with a holistic and long-term approach.	Absence of references from other interventions in terms of debris management.
	Lack of a National Debris Management Strategy.
UNDP to assume a leading role at the government and UN system level.	Poor coordination by a government that was strongly affected by the earthquake.
	Election period and change of government.
Establishment of clear agreements with the various partners involved in debris management.	Presence of numerous international organizations, highly heterogeneous and with different interests, resulting in a dispersion of efforts and coordination difficulties.

Creation of partnerships in the demolition and removal phase

Success factors	Key Challenges
Implementation of the DM-WG at the early recovery cluster level.	Community-based approach to engage the beneficiaries.
Establishment of joint procedures (Municipalities, MTPTC) for demolition permits.	
Official classification of at risk houses and buildings likely to be demolished.	Implementation of procedures at the partner level to obtain demolition permits and for monitoring work.
Partnership with local and international organizations with experience at the neighborhood level and knowledge of its dynamics and characteristics.	
Participation of a liaison officer and local engineers to ensure close communication with community leaders and municipal authorities (ASEC, CASEC).	Lack of official statistics, baselines and cadastral information delaying planning and programme start-up.
Partnership with organizations with access to the necessary demolition and debris removal equipment.	Absence of a legal and operational framework for debris management, making it necessary to develop agreed and validated intervention procedures, which were slow in becoming available.
The process of debris removal in neighborhoods strengthened community ties, promoting community involvement in the rehabilitation and reconstruction phases.	

... and within the UN system

The complex and multidimensional nature of debris management, as well as its close relationship with longer-term rehabilitation/ reconstruction and development strategies requires strong linkages within the United Nations system. As such, UNDP worked closely with UN-Habitat and ILO to ensure an integrated and effective response from UN agencies, with the following division of responsibilities:

UNDP: Demolition of hazardous structures, creating short-term jobs under Cash for Work as well as Cash for Production modalities, debris management and coordination of the overall programme.

UN Habitat: Social mobilization, organization and community planning, cadastre issues.

ILO: Market analysis, professional training, support in the creation of micro-enterprises.

Similarly, UNDP enlisted the services of UNOPS to support the MTPTC in the technical assessment of houses and to support the joint debris management programme with demolition, removal, transportation and macro recycling activities.

The collaborative, coordinated and complementary approach at the UN agency level took into account the specific mandates, experiences and comparative advantages of each agency to provide a full and effective response.

Creation of partnerships in the transport phase

Success factors	Key Challenges
Partner access to the acquisition/ rental of trucks and containers.	Competitiveness of small and medium-sized transport companies versus large transport companies.
Hiring of small and medium local carriers.	Limited availability of small and medium carriers.
Commitment of the partners to focus on the transport process.	

Creation of partnerships in the reuse, recycling and disposal phase

Success factors	Key Challenges
Partnership with local and international organizations that focus on recycling, empowerment, capacity development and community work (establishing micro-enterprises, and workshops).	Lack of government provisions for recycling debris.
Promoting the participation of construction workers, small entrepreneurs and artisans from the neighborhoods.	Difficulties in understanding the process of recycling and management of workshops at the partner level.

LESSONS LEARNED AND RECOMMENDATIONS

1. - Coordination between the actors in major disasters - both the UN system, NGOs and the private sector - is key in order to avoid duplication, unmet needs and inconsistent practices. The establishment of coordination mechanisms such as "clusters" in the context of the United Nations humanitarian reform offers excellent opportunities for exchange and dialogue. However the complexity of the management of debris requires, by itself, a special working group within the Immediate Recovery Cluster to ensure an integrated and comprehensive approach by many stakeholders.

2. - The lack of experience, know-how or capacity of a partner are barriers that are difficult to overcome to achieve the smooth development and coordination of all project activities. It is imperative to define the eligibility and participation of partners in relation to their actual response capacity before considering their active participation in all aspects of debris management.

3. - At the internal level, the articulation and coordination of a joint programme by UN agencies can be delicate and difficult, since their actions respond more to each agency's particular vision rather than to the implementation of a joint programme. The Resident Coordinator must therefore play a leading role to ensure the connectivity and synergy of actions.

4. - External programme coordination must be ensured by the establishment of a steering committee comprised of the various executing agencies, donors, implementing partners, national and local authorities, including community leaders and municipal authorities.

2.4 COMMUNITY PARTICIPATION

The community is generally best placed to identify its priority problems and needs.

In Haiti, UNDP began its debris management programme from a community planning approach, understood as the involvement of the population in the development of its territory. The "participatory urban planning" component was implemented as part of the Joint Debris Management Programme by the United Nations Human Settlements Programme (UN-Habitat) and its partners Emergency Architects Foundation and Oxfam GB, in consultation with the Department of Urban Planning of the MTPTC.

When considering the planning of neighborhood reconstruction and development, it was crucial to revisit a particular aspect of their development: beneficiary neighborhoods were largely part of an area where public authorities had never planned its development and inhabitants most often built their homes in precarious conditions. Subsequently, these communities had a singular history of self-organization.

This specificity provided the neighborhood inhabitants with a sense of individual and collective involvement in the development of their living environments and promoted the establishment of a number of community organizations formed by citizens concerned with the problems of their community.

This component considered the following three phases (UN-Habitat):

1. Community mobilization:

a. Community outreach and mobilization,
b. Development of an inventory of community-based organizations,
c. Strengthening of community organizations in their work to raise awareness, inform and mobilize the people concerned,
d. Structuring community-based organizations and strengthening the coordination platform,
e. Strengthening the capacity of community leaders to program, implement, monitor and evaluate activities, as well as mediate and resolve conflict in conducting participatory planning processes.

2. Analysis and assessment phase:

a. Visits to districts with representatives of community-based organizations to identify priority sites, problem areas, to initiate encounters and exchanges with residents.
b. Preliminary meetings to allow residents to share their perception of the neighborhood and discuss needs in terms of projects, including "mental mapping" activities to allow participants to express their perceptions and expectations of the neighborhood.

Community participation in the planning phase

Success factors	Key Challenges
Participatory planning with beneficiaries, representatives of neighborhoods and local authorities.	Planning based on assumptions due to lack of validated data.
Identification of professionals with expertise in district work.	Establishment of initial communication with the community.
Negotiations with the communities and creation of working groups.	Weakness of local institutions.
Reliance on the support of a liaison officer, enabling better communication with the community.	Initial identification of neighborhoods and beneficiaries on the basis of criteria such as low-income households, red houses, lack of other stakeholders.

c. Thematic meetings, in the form of "focus groups" in various fields of study, generally defined by the needs expressed: neighborhood stories (from "old timers"), vulnerability, education, health, youth, insecurity, among others.
d. Communication addressed to the residents and community-based organizations, including the progress of the urban planning project and the actions of the Debris Management Programme partners.
e. Meetings of local stakeholders from the fields of study.

3. Community planning:

a. Organization of forward-thinking exercises to identify problems and define solutions. This included establishing an understanding of the mechanisms in action and prospects for action (able to generate leverage effects or virtuous circles).
b. Evaluation and prioritization of collective projects, which must be based on the priorization of needs, but also on opportunities for operational implementation (more easily financed projects, timely opportunities).
c. Project selection and approval of the development and reconstruction plan by community representatives.

The urban study therefore allowed for the implementation of a planning process in consultation with community-based organizations. Through this approach, communities identified five key areas (environment, road infrastructure, basic urban services, public spaces and associative/cultural facilities, and housing) and defined strategic directions and priority projects in the short, medium and long-term for the reconstruction and development of their neighborhoods, using recycled debris in certain cases.

Community participation in the demolition and removal phase

Success factors	Key Challenges
Labour-intensive Cash for Production initiatives.	Identification and determination of the legal house owners.
Project ownership by the communities.	Convincing the community to allow the demolition of houses.
Presence of a liaison officer and local engineers to support the activities.	Obtaining legal permission and demolition permits from the government and owners.
Attendance of witnesses (neighbors) to validate the ownership of private houses without ownership title.	

Community participation in the transport phase

Success factors	Key Challenges
Hiring of small and medium local carriers.	Reduced availability of small and medium carriers.
Implementation of a ticketing system to manage and track both the quantity and location of debris along transport routes.	Acceptance by the population of the removal of the debris from their neighborhood.

In addition to the participatory dimension popularized by the urban planning exercise, the assessment by the people served as a key input for decision making in urban planning at the neighborhood level, but also at the commune and metropolitan area level:

- At the community level, for the preparation of neighborhood reconstruction and restructuring plans.
- At the municipal level, for greater inclusion of precarious quarters and improving the local economy.
- At the metropolitan area level, for the consideration of major metropolitan problems such as drainage, mobility, water supply, waste management, etc.

The integration of the different levels was essential and allowed each exercise to feed the reflection at other levels as well as the articulation of coordination, planning and monitoring tools.

Planning exercises were conducted through focus groups and workshops, including mayors and municipal technicians the private sector (formal and informal), neighborhood communities, urban planning professionals, academia and civil society (competent people/consumer or user associations that have worked in the general interest of the majority in planning development options and land use proposals), among others.

It was fundamentally important to choose the most representative and recognized local authorities and community structures during the conceptualization and implementation phases, using a broad concept of neighborhood defined not by geographic data but by an important analysis of the interrelationships and dynamics existing at the local government level. The analysis also used mapping and social survey tools:

Community participation in the reuse, recycling and disposal phase

Success factors	Key Challenges
Promotion of the participation of local construction workers, small entrepreneurs and artisans in recycling workshops and redevelopment work in neighborhoods.	Convincing communities about the opportunities for reuse and recycling of debris and reintegration into the neighborhoods, which may have a negative connotation for part of the population.
Respect for the needs and priorities of communities in redevelopment programmes, using reused and recycled materials.	
Respect for cultural specificities in the reuse and recycling of debris.	

a).- **Mapping** was central to the development work, as much for the analysis as to the definition and presentation of projects. In the absence of a land registry and maps of the sector's urban components, it was necessary to develop a real cartographic database of the study area.

This activity included several steps (UN-Habitat):

1. Recruitment and training of field workers to read cartographic and aerial images, mostly selected from the population of the target district.
2. Organization of cartographic scouting operations: data collection, reporting on aerial photographs or cartographic backgrounds (buildings, infrastructure, networks, land).
3. Digitization and integration of data to the cartographic database (data processing in geographic information system-GIS).
4. Production of location and analysis maps.

b).- **Surveys** were also central to the work of understanding and analysing the neighborhood. The field agents employed for the mapping were also trained as investigators, and participated in this important part of the project. Data was been collected from more than 4,000 households.

Stages of implementation:

1. Development of the questionnaire, including socio-demographical and census questions. This document was developed in consultation with the Interministerial Committee for Territorial Development (CIAT), the National Centre for Geo-Spatial Information (CNIGS) and the Haitian Institute of Statistics and Information Technology (IHSI), among others, within the framework of global harmonization of geographic and demographic information in Haiti.
2. Implementation in households for 10 days.
3. Data entry and development of database.
4. Validation of the results by the population.
5. Data processing and statistical analysis.

LESSONS LEARNED AND RECOMMENDATIONS

1.- Prior to any debris management intervention, and despite the enormous time restrictions for agencies and stakeholders, it is essential to make sound and evidence-based participatory assessments about community expectations, needs, capacities and constraints, for a response that is coordinated and adapted to the complex urban reality.

2.- Community platforms are effective tools for dialogue between community expectations and premises of urban planning, as well as an important element of local governance. The effective participation of the population through community platforms must take place in the early stages of the programme and must consider gender and generational equity issues into account. Consulting the population can help refine the analysis and search for relevant community-based solutions. However, it is imperative to assist these organizations with training processes and specialized technical assistance to support the gradual transfer of responsibilities and resources.

3.- Building good cooperation with state and local authorities is an asset to ensure effective coordination among implementing partners, the establishment of the Steering Committees promote better integration of the authorities and greater local ownership of the project.

4.-The presence of facilitators or liaison officers recognized by the population and leaders is a great way to ensure good relations with the population and local authorities, as well as an effective tool for conflict prevention and management. The liaison officer provides the link and connectivity with communities and their leaders, whether formal or informal, by integrating into the community and ensuring an almost permanent presence. They are also a good investment as they contribute to better and more sustainable local management beyond the duration of the project.

5. - There is no standard solution in a participatory approach. Each experience is unique and responds to a specific context.

2.5 ECONOMIC REVITALIZATION OF NEIGHBORHOODS

Emergency and early recovery stages are a good opportunity to use and stimulate local resources, promoting empowerment through massive job creation.

Results in numbers

90% of Haitian labor
36,501 temporary jobs created, including
14,498 assigned to women (39.7%)

Although a sound and circumspect analysis of the context will help to define the most appropriate technologies, mechanisms and methods of implementation, in a crisis situation, it is necessary to maximize benefits in terms of job creation, income and services in the affected communities, given their extreme vulnerability.

Economic revitalization in the planning phase

Success factors	Key Challenges
Conceptualization of debris as a resource for development and an activity for job creation in the short and long term.	Coping with the limitations of the Cash for Work modality and developing and implementing a more efficient but less acceptable model for a sector of the population.
Drawing lessons learned from the Cash for Work modality to develop and implement an alternative model, Cash for Production.	Coping with the limitations and inefficiencies of the Cash for Work modality.

For UNDP, debris management was a departure point for reviving the local economy and revitalizing neighborhoods. From this perspective, debris management was not an end in itself but rather a means to drive the stages of rehabilitation and reconstruction and to promote the rapid return of displaced populations to their neighborhoods.

The complementarity of the implementation of massive employment programmes and the promotion of micro and small enterprises has helped to promote sustainable economic and social revitalization.

Labor-intensive (LI) schemes

Prioritizing the widespread participation of individuals through labor-intensive initiatives, with an emphasis on hiring women, was a key component of UNDP's approach to demolition and debris removal in Haiti.

After an initial preparatory period focused on securing equipment and establishing recruitment and payment systems, UNDP began its demolition and debris clearance activities with the clearing of streets and communication routes under a **Cash for Work** modality to promote the mass hiring of the population, rapidly injecting vital economic resources to restore the livelihoods of beneficiaries and promote psychosocial recovery as the population became active participants rather than passive recipients.

Economic revitalization in the demolition and debris removal phase

Success factors	Key Challenges
Implementation of labor-intensive Cash for Production schemes to rapidly inject money into neighborhoods and promote economic recovery.	The debate surrounding the implementation of manual, mechanical or mixed demolition and removal actions, based on the analysis of costs and the need to reactivate the local economy.
	Transition from Cash for Work to Cash for Production.

Economic revitalization in the transport phase

Success factors	Key Challenges
Working with small local carriers and the government sector, which reduced transport costs.	Competitiveness of small and medium-sized enterprises versus large transportation companies.
	High transport costs.

Beneficiaries, grouped into teams, worked for two to four weeks, six days a week, at the minimum wage rate so as not to interfere with the supply and demand cycle in the local labor market and discourage hiring in the private sector.

During 2011, a new formula called **Cash for Production** was established under the joint debris management programme. While the old formula provided for the payment of wages based on the number of hours worked each day, the new modality was directly related to the amount of debris removed in m3, allowing workers to increase their income, sometimes significantly, and increase the productivity of the programme (up to five times).

For its implementation, mixed local teams with an average of 10-15 members (although a few organizations preferred to work with teams of 20-25 people), including a team leader, were hired to demolish and manually clear the houses. These teams were trained in specialized demolition techniques, safety and health measures at work, and had access to the necessary work equipment and continuous technical monitoring by professional engineers.

Local associations and authorities were also mobilized to identify and implement other priority projects such as the construction of retaining walls and dams, cleaning of canals, improvement of access roads and excavation, among others, allowing Haitians to take lead on the reconstruction of their communities.

Promoting small and micro enterprises

According to ILO, low levels of education and training in Haiti have led to a shortage of skilled workers in some sectors. Given the extent of the damage caused by the earthquake, the labor market in the construction and recycling sector has become an important source of long-term employment in Haiti.

Therefore, UNDP, in close collaboration with ILO, promoted a major programme of debris micro-recycling in neighborhoods most affected by the earthquake in Port-au-Prince, with the goal of clearing debris in neighborhoods while strengthening the economy of the area through business development and job creation. The programme fostered the creation of micro -enterprises (small workshops) to facilitate the recovery and reuse of materials from the rubble in the implementation of reconstruction work on a small scale, thus contributing significantly to the reduction of the volume of debris for disposal, and speeding up urban, economic and social recovery.

The programme encouraged the production of innovative products with a good market demand and a catalogue of different products manufactured in the workshops to facilitate their dissemination was elaborated.

Three types of approaches were considered for its implementation:

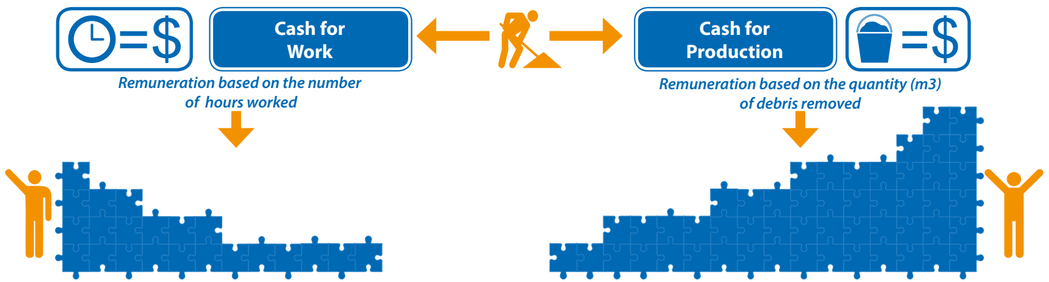
a).- Micro and small entrepreneurs from the construction sector of each district were invited to participate as producers of recycled materials. For their participation, the contractors were asked to contribute with their workshops and workers; in exchange, the project provided training in management and specialized production, as well as basic equipment.
b).- Small and medium enterprises, operating in the building material sector outside of neighborhoods, intervened and invested in the production of recycled material. The entrepreneurs produced recycled products with their equipment and received technical assistance from the project.
c).- Groups of young people trained in business management and the technical aspects of recycling, organized production units of recycled materials, enabling them to become entrepreneurs in the recycling sector. The project supported some of these young people to organize working groups so that their production units could become micro-enterprises.

In this way, UNDP worked to ensure that maximum resources were spent on the local economy and employment, and to promote income-generating activities in the districts, relying on the Haitian private sector.

Economic revitalization in the reuse, recycling and disposal phase

Success factors	Key Challenges
Creation of micro-enterprises for the manufacture of recycled debris products.	Absence of a National Debris Management Strategy and clear parameters for debris reuse and recycling.
Development of technical and management capacities at the neighborhood level.	Identification of sites for recycling workshops.
Obtaining locally produced final products (cobblestones, blocks), facilitating their inclusion in rehabilitation and reconstruction programmes, maximizing their life cycle.	Definition of workshop management and recycling process.
	Difficulties in creating sustainable jobs, and coordinating with other recovery activities.
	Competitiveness of recycled products based on "innovation, quality and price".

Figure 3. Comparison between Cash for Work and Cash for Production modalities



LESSONS LEARNED AND RECOMMENDATIONS

1.- Debris management must combine the use of heavy machinery and intensive-labor (IL) to demolish, clear and classify the debris in the most efficient way. Therefore, it is necessary to establish clear action priorities and balance the need for the injection of cash into the neighborhoods with the productive yields of the machinery.

2. - The intensive-labor method proved to be a suitable approach in densely-built neighborhoods, due to the abundance of local underemployed workforce and the difficult access for vehicles. The design of return support programmes must prioritize the massive hiring of neighborhood residents through Cash for Production schemes rather than Cash for Work ones, which proved significantly less profitable.

3. - The presence of women in work teams is a valuable asset, as they were able to not only assume different roles within demolition teams, even those considered the most physically challenging, but also proved to be more disciplined, responsible and committed to work. Their inclusion, however, is not always immediate, requiring a process of individual and social acceptance.

4.- The production or manufacturing of recycled material from debris must aim for fluid production, marketing and sales of the products. In this context, any product to be integrated in the commercial chain should provide added value to facilitate its introduction, whether an innovative approach, or favorable conditions in terms of price and quality compared to available products on the market.

2.6 RECYCLING AND REUSE OF DEBRIS

An environmental approach...

In Haiti, there was not a facility capable of receiving and processing the massive amounts of debris, estimated at more than 10 million cubic meters for the entire country. Furthermore, in the absence of a national debris management strategy, debris could be cleared and disposed of in an uncontrolled manner.

In this context, the Government designated the site of Truitier, the usual site for solid waste disposal in the city of Port-au-Prince, as the official site for the massive discharge of debris to facilitate the rapid cleaning of the city and avoid or mitigate environmental and public health hazards caused by the uncontrolled discharge of debris.

Thus, UNDP and its partner agencies began the controlled management of debris, focusing first on the options for reuse and recycling "in situ", in order to reduce volumes for final disposal, promote economic activity within neighborhoods and encourage the reuse of materials in local redevelopment programmes.

And... a resource for reconstruction

Following technical studies by national and international laboratories, the Government of Haiti decided to increase the use of recycled products derived from debris in non-structural work.

Recycling and reuse of debris in the planning phase

Success factors	Key Challenges
Participatory and joint planning process with experienced local and international organizations.	Lack of references from previous programmes in recycling and reuse of debris in post-crisis situations.
	Lack of experience within the UN team in debris recycling.
Promoting the participation of construction workers, small businessmen and artisans in neighborhoods.	Poor feasibility studies.
	Development of a recycling strategy before engaging with communities.
Achieving a change in community perception of the debris, from waste to resource.	Absence of a national debris management strategy and clear government provisions for recycling debris, determining the permitted products to elaborate, as well as how and where they could be used.
The prestige of the UNDP at the government level to determine which products could be developed from debris, and how and where they could be used.	Cultural resistance to the reuse and recycling of debris.
	Determining areas for the use recycled and reused products.

To promote and facilitate the massive, safe, effective, tested and quality-certified recycling of debris, UNDP, in partnership with the Ministry of Public Works, Transport and Communications and UNOPS, installed a macro site for the crushing and processing of debris in downtown Port-au-Prince, called the Truman site, where debris was processed into various products, such as cobblestones, with a production of more than 20,000 per week.

The site promoted the recovery of large volumes of construction materials such as sand, aggregates and blocks, maximizing the reuse of materials by national and international cooperation organizations, construction companies and communities, through their free provision for reconstruction activities. This facility promoted a significant reduction in the volume of debris

Recycling and reuse of debris in the demolition and removal phase

Success factors	Key Challenges
UNDP introduced the issue of labor-intensive work versus exclusive use of machinery into its partner discussions.	Debris quality.
	Degree of debris contamination.
Classification and separation of debris suitable for recycling by the engineers responsible for demolition actions.	Recycling "in situ" versus recycling "ex situ".
	Volume of debris suitable for recycling (critical mass).
Promotion of the recovery of reusable materials by the owners or tenants.	Use of labor versus machinery.

Recycling and reuse of debris in the transport phase

Success factors	Key Challenges
Gradual decrease of debris transport costs to recycling sites.	Transport alternatives and diversification of transport services.
Establishment of a monitoring system for debris (ticketing and tracking) to manage both the quantity and location of debris along the transport routes.	Very high costs.
	Establishment of roads and transport schedules.
	Security.

for final disposal - estimated at approximately 20-25%. The debris that did not meet the recycling quality standards was delivered directly to Truitier.

As part of a pilot initiative by the NGO Entrepreneurs du Monde (World Entrepreneurs), construction models incorporating recycled debris products were built, inspired by local architectural typology resulting in a contemporary, paraseismic, hurricane resistant, inexpensive and modular house.

Recycling and reuse of debris in the reuse, recycling and disposal stages

Success factors	Key Challenges
Use of recycled and reused products for the redevelopment of community infrastructure (corridors, embankments, retaining walls) and reconstruction projects.	Determining the products to be manufactured.
	Accessing the necessary machinery.
Refinement of the manufacturing process of the products (cobblestones) and significant increase in production.	Establishment of treatment and disposal sites.
Establishment of additional sites for micro and macro processing.	Commercial considerations of recycled products, such as the target market.

Additionally, the Debris Management Working Group, coordinated by the MTPTC and supported by UNDP, launched an initiative in Haiti called "The debris exchange" (La bourse aux débris) which provided storage for debris removal organizations so that other organizations could then use the debris for recycling and construction. The idea was to bring together debris providers and seekers.

To achieve this, a letter of agreement was signed between debris "donors" and "users", the donors being responsible for producing and making debris available to the user or directing them to the UN processing site (Truman), based on the specific requirements concerning the volume and size of the aggregates.

The user, in turn, was then required to use the debris in projects related to the rehabilitation or construction of urban works complying with the technical standards adopted by national and local authorities, in particular, the National Laboratory of Building and Public Works for the use of the required debris. This initiative eliminated the uncontrolled use of debris and helped capitalize on the volume of debris in construction projects.

LESSONS LEARNED AND RECOMMENDATIONS

1.- Urban disasters, which produce millions of tons of debris, have proved to be an unavoidable opportunity for implementing recycling programmes. According to studies carried out by specialized companies, an average of 30-40% of urban debris is recyclable. Debris reuse and management of the remaining 60-70% must be considered from the beginning.

2.- Debris recycling alternatives must be specified by the Government on the basis of composition studies and specific quality standards from accredited laboratories, to decide if they are to be used as (mainly) structural or non-structural materials.

3.- The reuse and recycling activities at the neighborhood level (in situ) are limited in terms of low volume of production and unclear quality of materials. In a post-crisis context, it is necessary to promote massive reuse and recycling programmes to ensure the recovery of raw materials, reduce production costs, and work in accordance with quality standards and market access.

4.- The inclusion of recyclers, small and medium entrepreneurs from the solid waste management and construction sectors in reuse and recycling programmes is a great asset, even if capacity development and training in specific alternative technical areas is required.

5. - The systematic integration of debris management initiatives with other recovery and development efforts is not only an essential approach to ensure the holistic management of debris but also an effective strategy for the marketing of recycled products.

2.7 MAINSTREAMING DISASTER RISK REDUCTION

The phenomena of urban sprawl and uncontrolled urbanization have illustrated the fragility of Haitian cities such as Port-au-Prince and Léogâne, in the face of regular, latent or even exceptional hazards. This fragility is even greater for the poorest populations.

For UNDP, disaster risk is a major obstacle to sustainable development and can cause devastating effects on people, environments and economies. Therefore, sustainable development depends on the successful incorporation of disaster risk management in the planning process of urban development, including prevention, preparedness and mitigation components.

In Haiti, reducing the vulnerability of the most exposed and poorest populations in the country was a priority to ensure the sustained development of cities and minimizing future urban vulnerabilities:

1.- To support the Haitian national disaster risk reduction system, UNDP assisted the Government of Haiti with the development of **seismic zoning maps** at the national level. Access to this cartographic information proved crucial to informing decision-making on urban land and urban planning, becoming a vital tool for the resilient reconstruction of the country.

2.- Through local employment programmes, and as part of an overall risk reduction plan in each affected town, UNDP supported the implementation of **mitigation projects** identified and implemented by community-based organizations, in close collaboration with local authorities following their own process of participatory planning. Community organizations

Disaster risk reduction in the planning phase

Success factors	Key Challenges
Development of a national seismic map.	Consideration of multi-hazard scenarios.
Supporting the government in developing a National Debris Management Strategy.	Urgent action makes it difficult to adopt a long-term approach to planning.
Identification of community projects for disaster risk reduction.	

Disaster risk reduction in the demolition and debris removal phase

Success factors	Key Challenges
Demolition of houses at high risk of collapse (red houses).	Official classification of levels of structural damage to the buildings and houses.
	Obtaining demolition permits from the owners.
	Decision-making concerning the houses to be demolished or repaired has not always been guided by an approach to reduce future risks but determined by the condition of the building.

have received support for mapping neighborhood risks following a participatory methodology for cataloguing risk areas related to various hazards (floods, landslides, etc.).

Based on risk maps, neighborhood residents were able to identify and prioritize the mitigation activities to be undertaken to secure the main risk sites in their neighborhood, including the stabilization of slopes, the sanitation of gullies and drainage networks, the construction of retaining walls against floods walls, and urban improvements such as the development of small road infrastructure, construction of gullies and corridors, construction of access stairs and the development of small squares, among others, by reusing the maximum of debris or recycled products with the support of the micro and small community workshops driven by the ILO and the UN processing site in Truman.

3. - In order to provide the Haitian authorities with an operational and legal framework for debris management at the national level, UNDP supported the development of a National Debris Management Strategy, in close collaboration with the Ministry of Public Works, Transport and Communications (MTPC), that established the steps for the cleaning and clearing, discharge, storage, reuse and disposal of debris from a comprehensive waste management perspective.

Disaster risk reduction in the reuse, recycling and disposal phase

Success factors	Key Challenges
Use of recycled debris materials for the production of mitigation works (retaining walls, embankments).	Debris quality.
	Degree of debris contamination.
	Weaknesses of government provisions for debris recycling.
Construction of paraseismic houses with recycled materials, based on a traditional building model.	Difficulty in performing the most decisive actions to reduce future disasters and tackle the main causes of vulnerability (hazardous location of homes, legal vacuum in land planning, etc.)

LESSONS LEARNED AND RECOMMENDATIONS

1. - A disaster proves to be a turning point for the deployment of recovery efforts in affected communities, from the perspective of safe and sustainable reconstruction, and thanks to the ability to rely on significantly sensitized authorities and population. Thus, a debris management programme -following a crisis- proves ideal for mainstreaming risk management by implementing prevention, mitigation and preparedness actions.

2. - To ensure effective community involvement in the identification of risks, participatory development of risk maps at the neighborhood level should be promoted, and the achievement of subsequent mitigation and prevention activities ensured based on Cash for Production or Cash for Work schemes.

2.8 LINKING DEBRIS MANAGEMENT INITIATIVES WITH OTHER RECOVERY AND DEVELOPMENT EFFORTS

In Haiti, UNDP linked its debris management programme with other rehabilitation and reconstruction programmes promoted by the government and the UN system.

The work done in the neighborhoods under the debris management programme led to cleared and accessible streets and land; land planning procedures; an engaged, motivated and organized population; skilled labor; formalized small entrepreneurs trained in practical issues relating to the safe repair, construction and demolition of houses; and quality recycled materials, which are significant assets in promoting return efforts and community actions in the long term.

Therefore, the debris management programme can be considered the cornerstone of a global reconstruction and development process for the affected communities through the implementation of various complementary and connected programmes.

The community-based participatory approach of the debris management programme enabled UNDP, in close collaboration with UN-Habitat, to address the “Community Planning” component of the Government driven 16/6 Project, aimed at helping communities in six camps return to their 16 areas of origin. In this context, the debris management programme facilitated the establishment of discussion and decision-making platforms

by systematically considering public opinion, and allowing for dialogue and community involvement in urban development plans in Port-au-Prince.

Similarly, the debris management programme contributed to the Community Resource Centers for House Repairs **(CARMEN)**, through the promotion of small and medium local entrepreneurs trained in construction and recycling, who have supported repair, construction and demolition actions by and for the communities; and by making available highly skilled engineers. Similarly, the spaces for dialogue established at the neighborhood level served as platforms for meeting and exchange with various experts from the construction, legal and land planning sectors.

Link with other recovery initiatives in the demolition and removal phase

Success factors	Key Challenges
Debris removal as a starting point for the gradual return of the population to their neighborhoods and beginning of reconstruction efforts.	Official classification of levels of structural damage to the buildings and houses.
Once the debris has been removed from neighborhoods, links at the community level remain, allowing for the entry of other reconstruction projects.	Obtaining demolition permits from the owners.

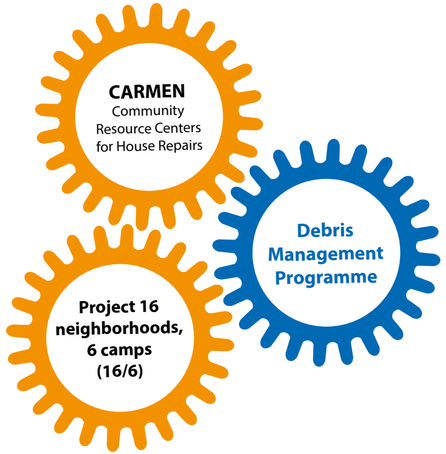
Link with other recovery initiatives in the planning phase

Success factors	Key Challenges
The vision of debris management as an open door for development, allowing for other rehabilitation and reconstruction initiatives.	Providing programme continuity beyond the emergency and early recovery stage.

Link with other recovery initiatives in the reuse, recycling and disposal phase

Success factors	Key Challenges
Use of recycled debris for other reconstruction programmes.	Debris quality.
	Degree of debris contamination.
	Weaknesses of government provisions for debris recycling.

Figure 4. The link with other recovery and development initiatives



LESSONS LEARNED AND RECOMMENDATIONS

1.- The effective management of debris, including the demolition of at-risk homes is complex and difficult to implement if the programme does not have the necessary financial and technical assistance for the reconstruction of demolished houses. Therefore, those affected households without access to alternative housing are reluctant to leave their homes and simply make minimum repairs that they consider sufficient to allow them to return to their home.

2.- To ensure the continuity of the intervention, it is imperative to promote, from the early planning stages, the linkage and consistency of early recovery - rehabilitation/reconstruction - development, and encourage local ownership of the process for a successful exit strategy.

III- RESULTS AND INDICATORS

UNDP's strategy for debris management was, thus, based on maximizing the benefits that could be derived from debris during its life cycle, providing raw material for reconstruction, a resource for job creation and a means for local revitalization.

Table 3. Main results and quantitative indicators

Results	Quantitative indicators
House demolition and debris removal	Number of demolition permits signed and approved Volume of debris cleared
Economic revitalization	Number of persons engaged (temporary employment) Number of debris processing and recycling micro-enterprises created
Recycling and reuse of debris	Volume of debris transported to recycling facilities Volume of debris recycled or reused
Contribution to the reconstruction	Number of neighborhood redevelopment plans elaborated Amount of materials from recycling used in reconstruction projects
Local capacity development	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 January 2010 earthquake in Haiti proved to be an unprecedented disaster in the country, striking its urban, political, administrative, economic, demographic centre and generating a crisis in an already fragile and vulnerable country.

The destruction of thousands of buildings and infrastructure produced an enormous volume of debris that had to be cleared not only to avoid serious environmental problems caused by the risks associated with their uncontrolled disposal but, more importantly, as a precondition for the implementation of recovery and reconstruction programmes.

The strategy of the UN debris management programme in Haiti, following a comprehensive life cycle approach, was found to be effective. It also sought to ensure minimal environmental impact, the optimal recycling of materials and the competitiveness of recycled products, making debris an important resource for the generation of employment in the short and long term, and effective raw material for reconstruction.

In order to respond to a key concern of the affected populations, the programme prioritized the creation of income-generating activities for neighborhood residents through Cash for Work and Cash for Production mechanisms, the latter proving to be more effective in the demolition, removal and transportation of debris.

To this end, it was fundamentally important to choose the most representative and recognized local authorities and community structures during the conceptualization and implementation phases at the communal level, following a creative approach to the territorial and social dynamics and challenges. Partnerships at the national, local and community level proved to be essential to the success of the programme, favoring ownership by affected populations and proving to be a solid exit strategy, making neighborhood residents the main actors in their own reconstruction.

The debris management programme simultaneously proved to be a remarkable opportunity to contribute to the reduction of risks in urban areas, especially for the very poorest people, ensuring the foundations for a sound and sustainable development.

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