

This factsheet is put out for information about the debris challenges

In absolute terms

Huge: 20 million m³ is among the disasters debris toppers

8'000 Olympic swimming pools

Would fill the fourth of world largest landfill

Scattered: Debris spread over a large dense urban (roughly 4000 km²)

Smaller city area.

Costly: USD 800 million based on other disaster debris experience (see next page)

In the Haitian context

- Weakened political and technical leadership
- Moving assets ARE available
- Dearth of landfill
- > Debris are a blind Spot for a scattered international community: a complex, non humanitarian issue

Current efforts:

- Local debris gathering at ad-hoc primary staging areas, spontaneous or paid under CfW
- Autonomous recycling has started
- ➤ Vairaux and now Truitier are receiving limited amount. Current rate of 300 trucks per day will take 6 years!
- No mapping

Recommendations:

- > Haitian technical team dedicated to only this task with strong leadership (MoE a possibility)
- Urgent promulgation of a Disaster Debris Emergency Order
- Urgent decision about new landfill sites, or at least, secondary staging areas
- Focus on clearing the streets and ad-hoc staging areas. **Keep the issue of demolition separate**
- > Ops room to gather information, map and coordinate the tasking monitoring/removal and trucking
- ➤ Hotline and satellite tools to facilitate mapping, disseminate guidelines. Communication campaign
- > Use the opportunity for income-generating recycling and foster sprouting eco-business
- Direct Environmental monitoring and support to future environmental monitoring



Lessons Learned from 20 years of Disaster Debris Management

Reviewing of diverse experiences of disaster debris management in Pakistan (Earthquake), Thailand, Sri Lanka Indonesia (Tsunami), United States (Hurricane and terrorism), Gaza (War), indicates that Debris Management is:.

Mostly Unplanned: If a plan exists but all disasters differ and outstretch pre-positioned capacity

Yet, urgent executive orders usually follow with later adjustments

Slow and costly: After 2 years,

NOT Demolition: Demolition is tricky and slower, always trails behind the first removal of debris

Environmental issue: Environmental concern is mild but unavoidable, mostly dealt ambiguously,

'close monitoring' is necessary

Essential elements: There is little comparisons possible between exceptional and diverse experiences to derive 'best practices' but responses have tended to include:

Assistance: always by federal government and in many cases by the international community.

Private sector: always involved, extra capacity contracted and/or self-interested

Coordination: A challenge in itself as many multi-layered actors are involved

<u>Communication:</u> Hotline and public broadcast to alleviate the impatience citizens and collect information, disseminate best practice guidelines.

Recycling: cost effective and an opportunity for leapfrogging in Eco-Business, energizing private sector

Practically, the following elements have shown to be indispensable:

- ➤ Hot Line to gather information, disseminate
- Template contract with private sector
- > Operation rooms to dispatch debris collection
- Staging and disposal sites are the bottleneck.: New sites are needed for all large scale disasters Well organized multi-function staging areas, Construction & Demolition (C&D) and Sanitary landfill



Summary Table

| Disaster | Location | Country | Date | Estimated Debris volume million m^3 | Estimated Debris weight million tons | Spread | Composition | Urgency for Recovery | Asbestos and Other Hazardous Waste | Costs USD million | Cost USD/ m^3 |
|------------------|--------------------|------------|-----------|-------------------------------------|--|------------|-----------------------|----------------------------|---|-------------------------|---------------------|
| | | | | | | | | | | | |
| Cyclone Bhola | | Bengladesh | 12-Nov-70 | NA | | | | | | | |
| Hurricane Andrew | Dade County | USA | 1992 | 33 | | Smalll | | Medium | | | |
| Earthquake | NorthRidge | USA | 1994 | 5.35 | | | | Medium | | | |
| Terror Attack | Manhattan | USA | 9-Sep-01 | >0.3 | 0.5 | Localized | Dust and Steel | High | | | |
| Tsunami | Kota Banda Aceh | Indonesia | 26-Nov-04 | >2 | | | | Medium | | | |
| Tsunami | | Thailand | 26-Nov-04 | 0.4 | 0.5 | | | | | | |
| Tsunami | Galle District | Sri Lanka | 26-Nov-04 | TBC | | | | Medium | | | |
| Kathrina | New Orleans | USA | 29-Aug-05 | 76 | 22 | Medium | Asbestos, | High | Vague | 4200 | 55.3 |
| Earthquake | Kashmir | Pakistan | 8-Oct-05 | 2.3 | | | | Medium | | | |
| War | Gaza | Palestine | 2005 | 1.2 | | | | High | | | |
| War | Gaza | Palestine | 27-Dec-08 | 0.5 | 0.6 | | | High | | 17.5 | 35 |
| Hurricanes | TBC | Haiti | 2008 | | | | | _ | | | |
| Haiti Earthquake | Leogane | Haiti | 12-Jan-10 | 19-40 | | Wide+Urban | Mostly rubble | High | NA | 858 | |
| Earthquake | _ | Chile | 2010 | TBC | | | | _ | | | |
| <u>Average</u> | | | | | | | | | | | 45.1 |



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