

PROBLEM STATEMENT

Debris removal is logistically complex and costly. Ethnographic research sought to uncover social processes that affect disaster waste and debris management decision-making in the U.S. by asking 1) who is involved and 2) how do they make decisions across disaster phases.

We highlight two key moments in the Disaster Debris Removal and Waste Management planning process:

- **Pre-incident preparedness planning**
- **Post-incident operational planning**

Analysis revealed a salient theme of continuities and ruptures between these two disaster waste management phases which affect debris management decision-making. Pre-planning documentation is described by practitioners as simultaneously supportive and limiting in operational planning.

The contradiction we explore is: how does pre-planning help operational debris removal and waste management if plans themselves are not ALWAYS useful?

METHODS

The methods included a literature review, **14 focus groups** and **9 interviews** conducted with over **70 professionals** from federal, state, tribal, county, and municipal agencies who work in waste management, disaster planning, and emergency response. Qualitative thematic analysis of transcripts revealed shared challenges, opportunities, and lessons learned.

We thank the experienced and knowledgeable professionals who took the time to share their insights with us.

RESEARCH FINDINGS

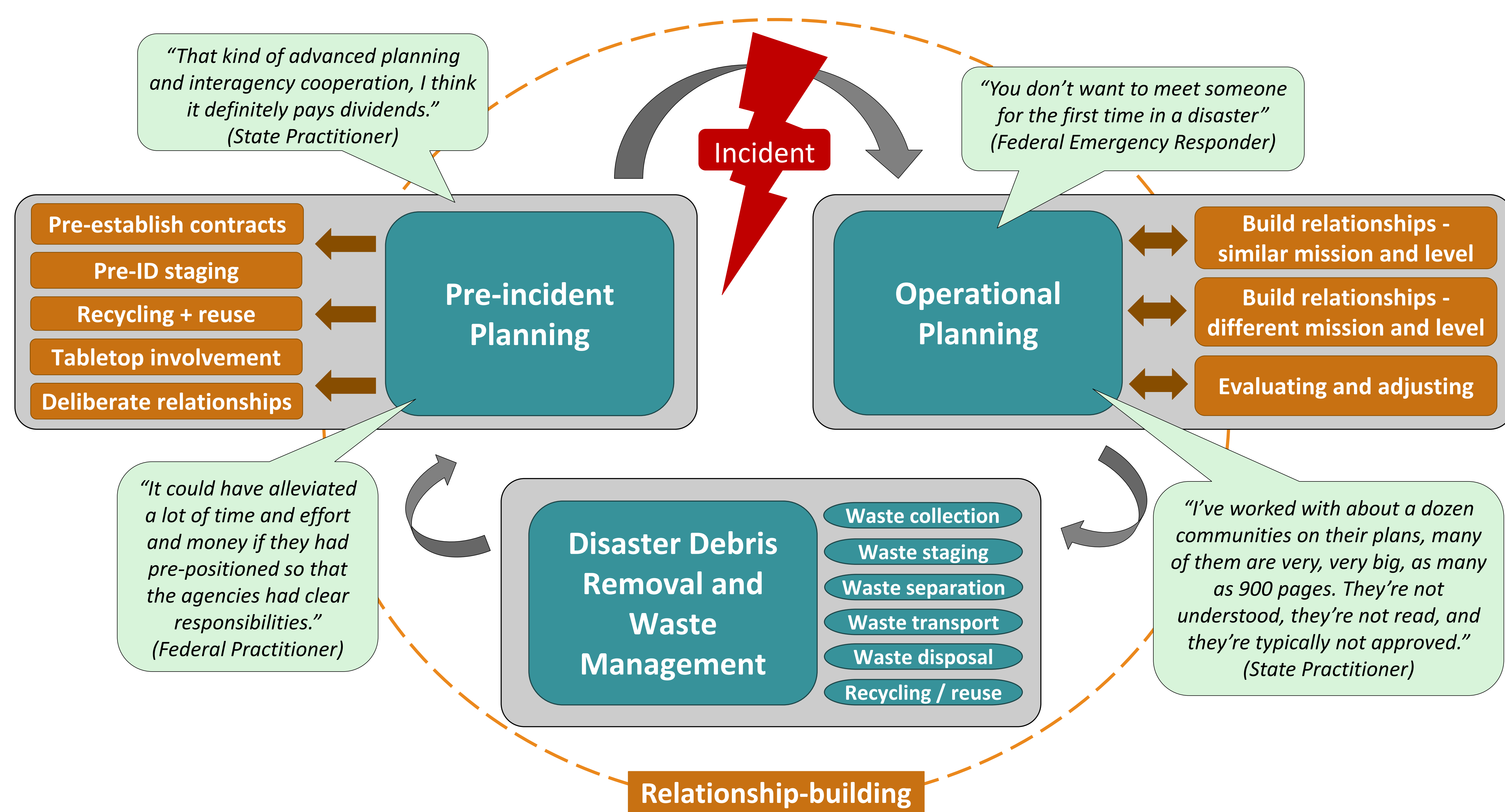


Figure 1: Interacting continuities (in orange) and ruptures across pre-incident planning and post-incident operational planning phases (in blue)

Pre-incident Planning

Ruptures:

- Waste management not always present in disaster tabletop exercises

Continuities:

- Pre-planning can enable effective response **BECAUSE:**
 - Different agencies get to know each other and build trust
 - Time for inclusive decision processes without urgency or pressure of incident

Actions to maximize the benefits of pre-incident debris management planning include:

- **Pre-establishing contracts** with waste management contractors to expedite response and secure access to specialized expertise
- **Pre-identifying waste staging sites** to identify environmentally and socially appropriate sites through a collaborative process
- **Incorporating recycling and reuse** into plans to normalize sustainability and resilience in disaster waste decision-making
- **Involving waste managers in tabletop exercises** to ensure coordination across all stages
- **Paying deliberate attention to relationship building** as part of pre-incident tabletop exercises and creation disaster debris management plans

Operations Planning

Ruptures:

- Pre-incident plans not always followed: each incident presents unique waste circumstances
- Plans can be lengthy, not useful, or non-existent

Continuities:

- Crucial decision-making space for assessing and altering plans
- Relationships built during pre-incident planning enable a more rapid operational planning

Actions to support operational planning include:

- **Building relationships between agencies with similar mission spaces at the same level** in other locales to learn about unique waste circumstances
- **Building relationships between agencies with different mission spaces and at different levels** to improve interagency coordination
- **Allowing space for evaluating and adjusting** since debris management plans are not always applicable



As part of a mission assignment from FEMA, US EPA responders collect, stage, and separate household hazardous wastes in the aftermath of Hurricane Maria.



While assessing a private property in Rumson, NJ post Hurricane Sandy, U.S. EPA and the Coast Guard found an overturned propane tank in the debris.

TAKEAWAYS

Pre-incident planning is critical to managing disaster waste because it is a time to **build relationships**

- Allows for **staging pre-identification**, **pre-established contracts**, and **increased waste management involvement**

Operations planning involves crucial decision-making made easier through **relationships** established during **pre-incident planning**

- Room for **assessment and alterations** of plans
- **Interagency coordination** is vital for clear communication and action