
IDRLF 2026

Incheon Disaster Decision Conflict Audit

*Implementing locally led resilience
in the era of compound risks and digital transformation*

Do the instructions from different institutions still add up
to a single realistic path of action for citizens, or do they
contradict each other in ways no one has tested?

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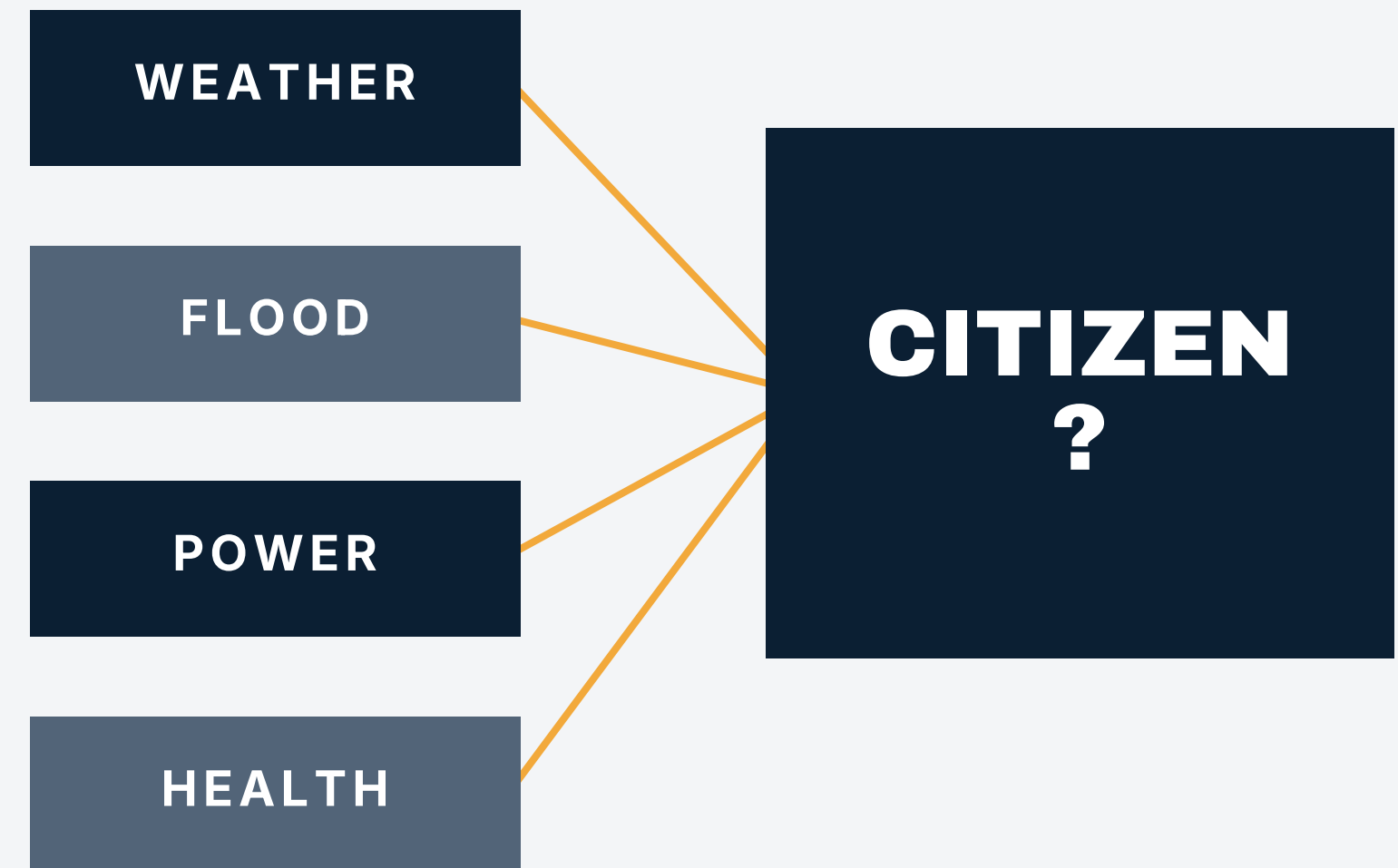


Compound disasters: not just more data, more contradictions

Modern disaster systems generate large amounts of information and maintain well-developed response plans. However, during *cascading disasters*, the challenge is conflicting institutional decisions.

Challenges:

- Agencies operate with **different responsibilities and priorities**.
- **Multiple warnings** may be technically correct.
- Citizens receive **incompatible instructions** from different institutions.
- Existing plans are **rarely tested** as **one integrated response** system.
- The problem is **decision interoperability** rather than information availability.



75 years old. High-rise. Heat + flood + blackout.

08:00 | Heat Warning (Extreme Heat)

"Go to a cooling center immediately."

- Stay out of overheated buildings.
- Avoid prolonged indoor exposure without air conditioning.

14:00 | Flood Warning (Torrential Rain)

"Avoid flooded roads and underground spaces."

- Major roads become flooded.
- Travel is strongly discouraged.

19:00 | Blackout (Power Outage)

Power failure disables daily life.

- Elevators stop, air conditioning fails.
- Phones cannot be charged.
- The cooling center is no longer accessible.
- ***Transports are for Emergency routes only*** (Bus services reduced & Flooded intersections block access)
- ***Hospitals overloaded***, ambulance delayed.

- The issue: **Whether individual recommendations remain actionable when multiple agencies, hazards, and response protocols intersect.**
- Our audit focuses on identifying and resolving these operational conflicts ***before disasters occur.***



Disaster Decision Conflict

Occurs when two or more institutions...

- Give instructions that are individually valid but *jointly impossible, unsafe, or unclear* to follow
- Or assign different priorities to competing risks *without a mechanism for resolution*

01 Agency ↔ Agency

- One says evacuate, another says shelter in place
- No shared priority framework or escalation mechanism

02 Plan ↔ Infrastructure

- Plan assumes infrastructure that no longer functions
- Evacuation route exists on paper, but elevator is off, road is flooded, or shelter has lost power

03 Plan ↔ Citizen reality

- Plans assume a mobile, informed, digitally connected adult
- Elderly, persons with disabilities, migrants, and tourists cannot comply

04 Responsibility gaps

- No single authority owns the final call when plans contradict
- Citizens left to resolve institutional disagreements alone

05 Timing mismatches

- Warnings arrive out of sequence or earlier guidance silently invalidated
- Citizens act on outdated instructions with no update issued

A human-led, AI-assisted red-team audit

01

HUMAN-LED

- Public officials, frontline responders, residents, and domain experts make all final judgments
- Issues of responsibility, institutional priorities, vulnerability assessment, and local realities **cannot be delegated to algorithms**
- Requires **human deliberation and accountability**

02

AI-ASSISTED

- *Compare* disaster manuals and public guidance
- *Detect* inconsistent instructions
- *Flags* ambiguous responsibility assignments
- *Identifies* missing content for vulnerable groups
- *Tracks* changes in message consistency over time

03

RED-TEAM

- Challenge existing response assumptions.
- **Identify where plans could fail.**
- **Improve coordination** before real emergencies.

Audit process: from scenario to revision

- 1

CASCADING SCENARIO DESIGN
Design a realistic compound scenario for Incheon where hazards escalate over time and key services fail in sequence.
- 2

PROTOCOL & MESSAGE MAPPING
Gather agencies' plans and public messages; map who decides, who is addressed, required actions, timing, dependencies, and use AI to flag potential contradictions.
- 3

CONFLICT IDENTIFICATION
Mixed groups of residents, responders, and officials walk through the scenario to see which instructions conflict, what actually works, and who has final authority.
- 4

COMMUNITY VALIDATION
Citizens and frontline practitioners, including persons with disabilities and foreign residents, test whether the plans are executable in real living conditions.
- 5

PRIORITIZATION & REVISION
Rank conflicts by likelihood, impact, urgency, and effects on vulnerable groups, then revise messages, procedures, communication, and backup options
- 6

RE-TESTING
Apply revised plans to the same or updated scenarios and repeat the audit regularly, especially when technologies or policies change

What we audit and what Incheon gets

SCOPE

01 Public Guidance

- Warnings, public instructions, timing & consistency

02 Mobility & Evacuation

- Evacuation routes, transit availability, shelters & backup options

03 Critical Services

- Power, telecom & water disruptions and their cascading dependencies

04 Health & Care

- EMS access, hospital capacity, cooling centers & facilities

05 Inclusive Access

- Mobility support, disability access & multilingual communication

06 Decision Coordination

- Interagency reporting, responsibility, escalation & final authority

DELIVERABLES

From identified conflicts to actionable improvements

01 Decision Conflict Map

- See where directives and dependencies collide

02 Priority Matrix

- Focus first on high-impact conflicts

03 Revised Public Guidance

- Clarify which action takes priority

04 Responsibility & Escalation Map

- Clarify who coordinates, decides, and approves

05 Municipal Testing Protocol

- Make the audit repeatable across scenarios

06 Annual Conflict Audit Report

- Track fixes, remaining gaps, and next priorities

Can our decisions still be carried out together by real people?

The answer is yes.

COMPOUND RISK

→ cascading scenarios, not single-hazard plans

DIGITAL TRANSFORMATION

→ AI assists comparison; humans decide & govern

LOCALLY LED RESILIENCE

→ residents & frontline workers validate on the ground

CONFLICT ANALYSIS LENS

→ institutional misalignment, communication gaps, power & responsibility



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Thank You

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