

Motiving Local Action to Mitigate Climate Threats and Build Resilience



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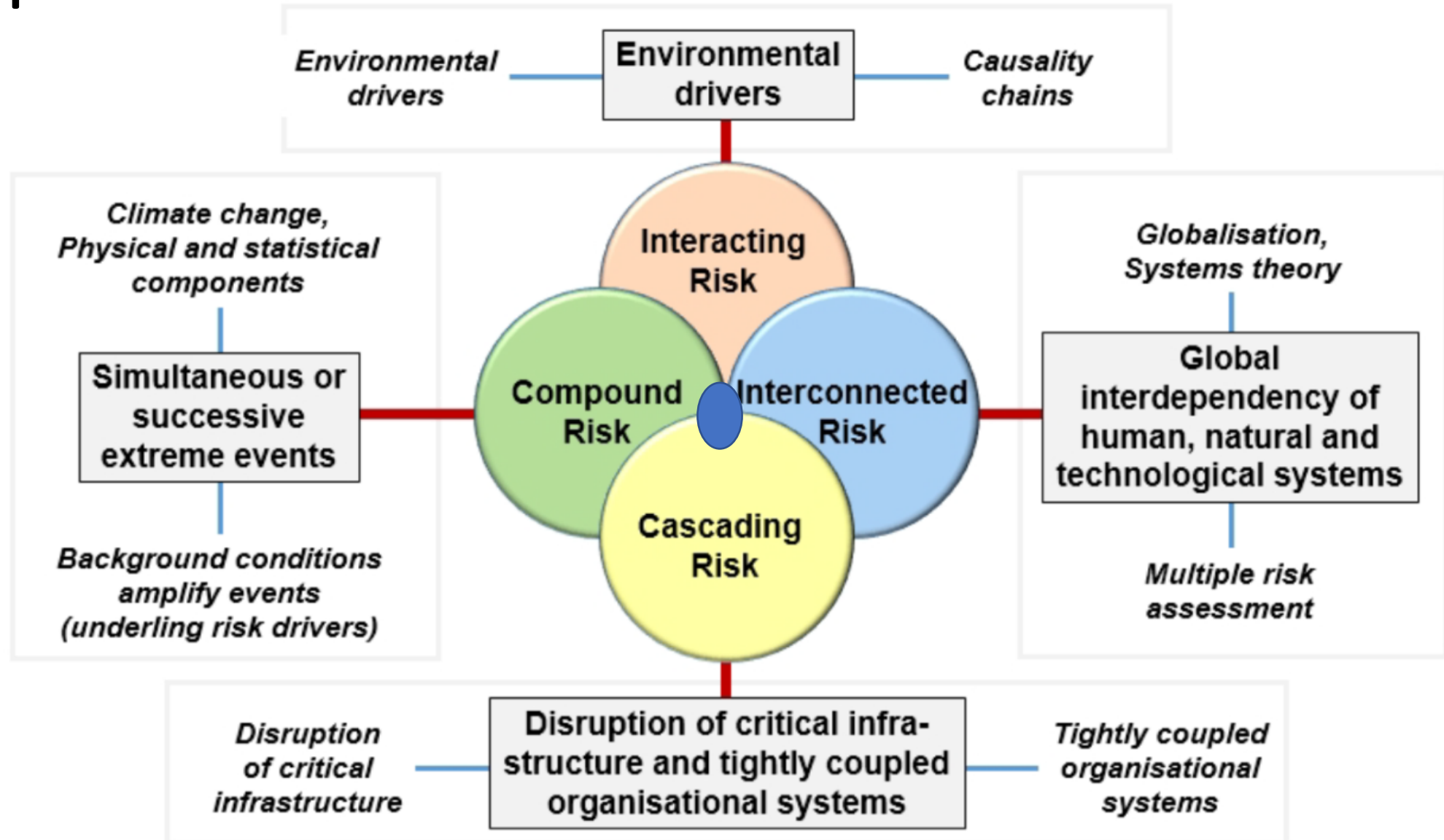
Translating Data for Motivating Local Resilience Action
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NIST

Complex Events



Climate Information – Challenges

- Impacts can be hard to discern and attribute, especially in the case of slow onset, persistent impacts
- There are psychological, cognitive, emotional, cultural and social factors that impact individual and institutional perceptions (which also vary from those implied by classical theory).
- Three prevalent themes:
 - **Rules of Thumb**: Humans make most decisions using mental shortcuts.
 - **Framing narratives**: The collection of anecdotes and stereotypes that make up the mental filters we rely on to understand and respond to events.
 - **Market inefficiencies**: Asset prices do not accurately reflect true values [to the stakeholder].



<https://www.dictionary.com/e/tech-science/behavioral-economics/>

Discounting and Risk Matter!

“...embeds risk management and mitigation in all planning, decision making, and development....” (FEMA, FARG, 2013)

Benefit-Cost Analyses (BCAs) consider risk using a standard “optimal”

consumption discount rate: $r_t = \delta + \eta g_t$

where r_t is the consumption discount rate at time, t

δ is the pure rate of time preference (or utility discount rate)

η is the elasticity of the marginal utility of consumption

g is the growth rate of consumption

Costs & benefits of resilience via mitigation and adaptation are sensitive to the specific parameter choice for η

Simultaneously reflects preferences that are NOT empirically consistent:

1. intertemporal substitution,
2. aversion to risk, and
3. aversion to (spatial) inequality

Helgeson et al. (2009)

Meanwhile there is a
"finite pool of worry"
(Linville and Fischer,
1991)



Type of resilience or
competing objective met:

- survival / coping
- mitigation
- adaptation

- Social capital types
- Enabling factors
- Co-benefits
- Value proposition

- How risk accepting is the community?
- Who are the stakeholders? Bearers of risk/costs?
- Deep uncertainty?

HOW THE **ECONOMIC DECISION GUIDE** FITS INTO THE **RESILIENCE PLANNING SIX-STEP PROCESS**

1>

**SELECT CANDIDATE
STRATEGIES**

2>

**DEFINE INVESTMENT
OBJECTIVE & SCOPE**

3>

**IDENTIFY BENEFITS
& COSTS**

4>

**IDENTIFY NON-MARKET
(NON-ECONOMIC)
CONSIDERATIONS**

5>

**DEFINE ANALYSIS
PARAMETERS**

6>

**PERFORM ECONOMIC
EVALUATION**

7>

RANK STRATEGIES

1) Form a Collaborative
Planning Team

2) Understand the
Situation

3) Determine Goals
& Objectives

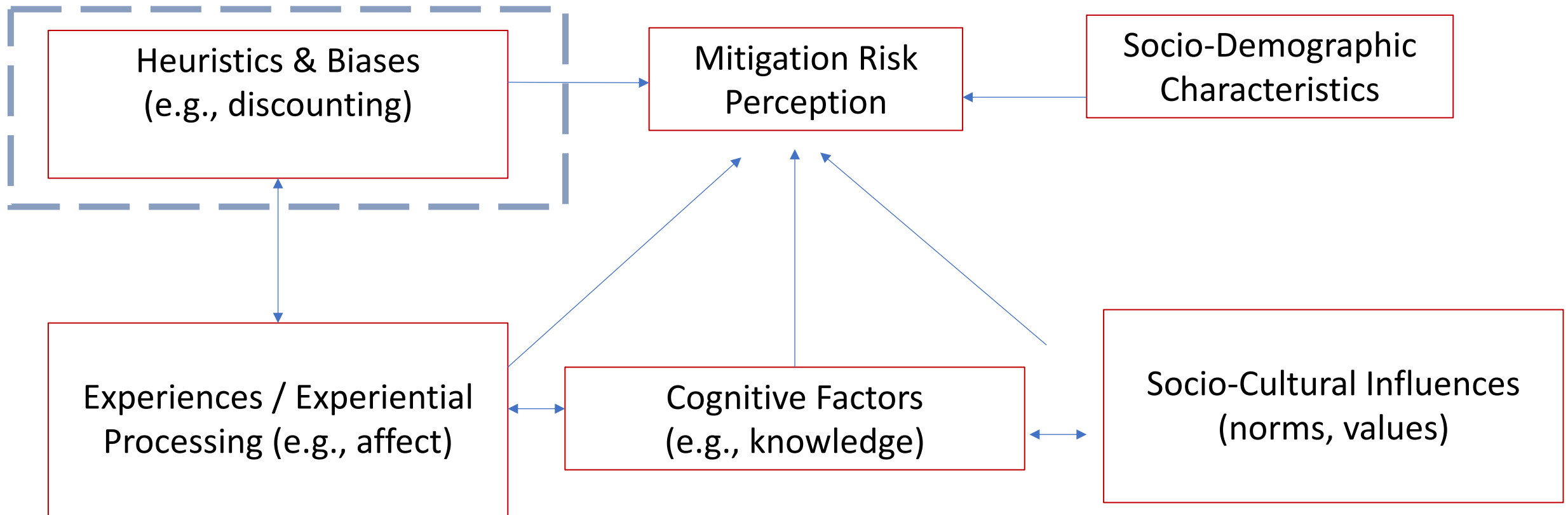
4) Plan Development

5) Plan Preparation,
Review & Approval

6) Plan Implementation
& Maintenance



What do we need to consider?

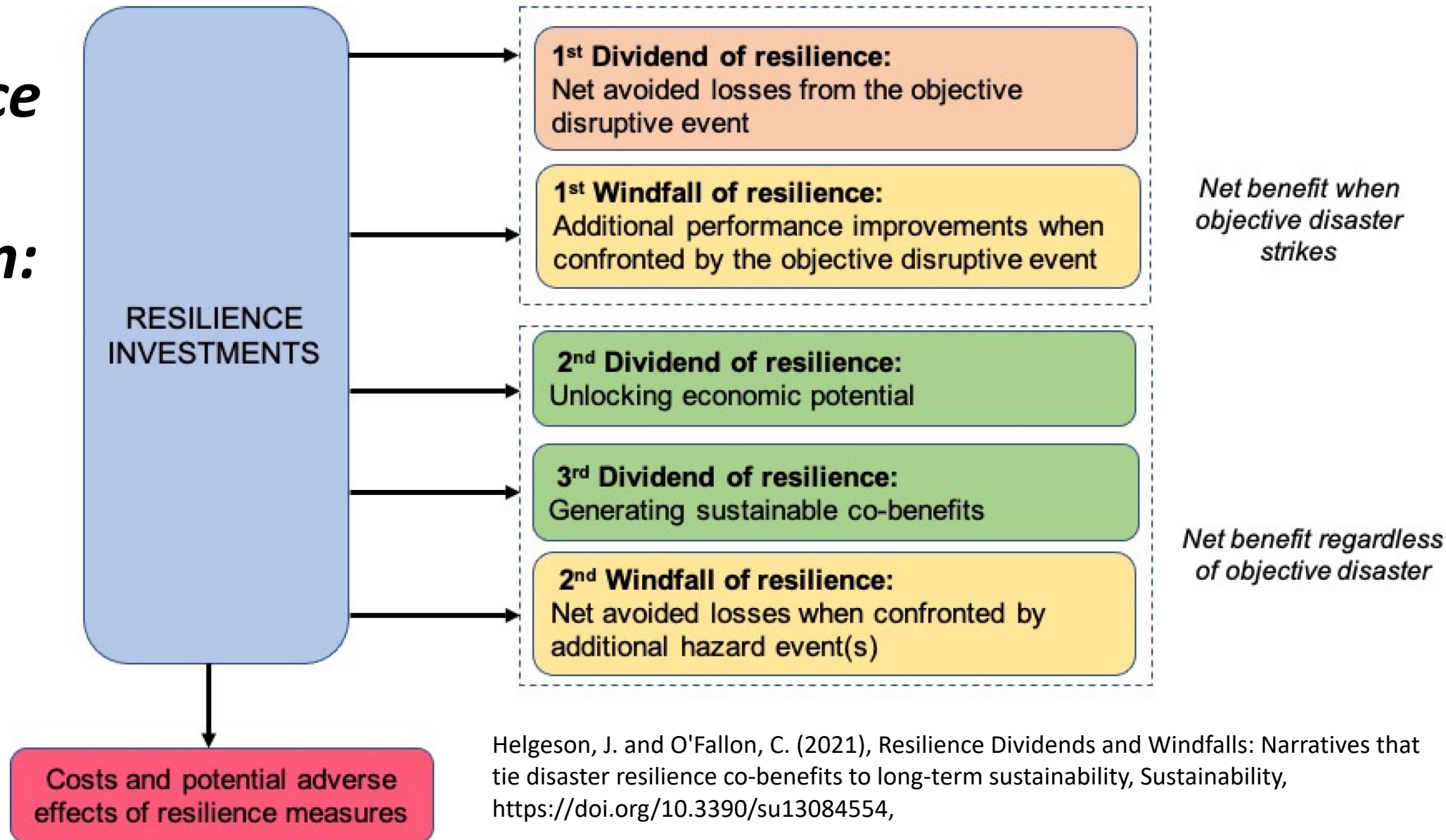


Adapted from the “Climate Change Risk Perception Model” (CCRPM) (Helgeson, van der Linden, & Chabay, 2012)

(Ajzen, 1991; Daellenbach et al., 2018).

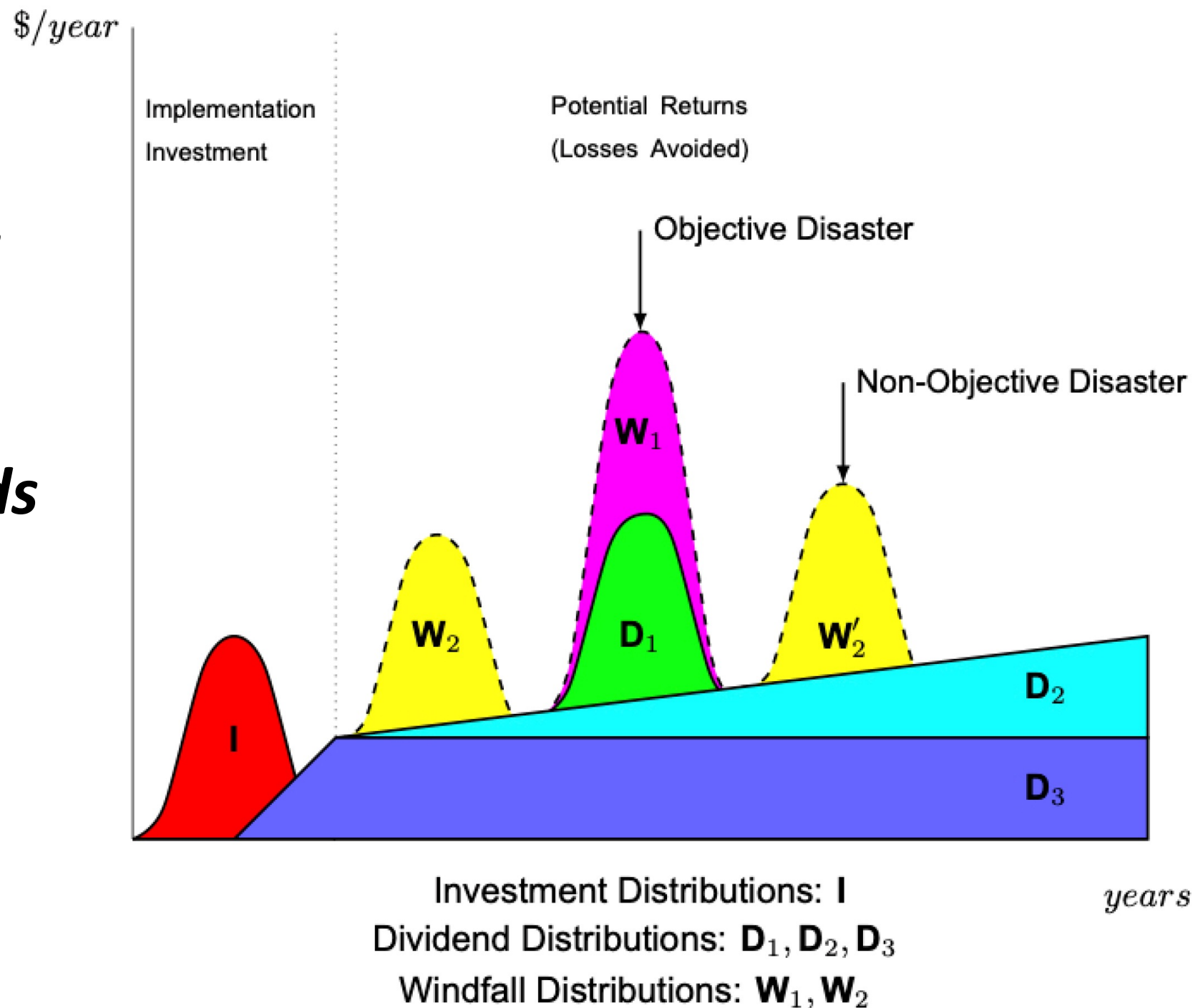
Narratives of co-benefits matter!

Importance of project evaluation: Resilience Dividends and Resilience Windfalls



Importance of project evaluation: Net co-benefits in the form of Resilience Dividends and Resilience Windfalls

Helgeson, J. and O'Fallon, C. (2021), Resilience Dividends and Windfalls: Narratives that tie disaster resilience co-benefits to long-term sustainability, Sustainability, <https://doi.org/10.3390/su13084554>,



EDGe\$ Tool Online: <https://edges.nist.gov/>



NIST Economic Decision Guide

The Economic Decision Guide Software (EDGe\$) Tool brings to your fingertips a powerful technique for selecting cost-effective community resilience projects. This decision support software is designed to support those engaged in community-level resilience planning, including community planners and resilience officers, as well as economic development, budget, and public works officials. It provides a standard economic methodology for evaluating investment decisions required to improve the ability of communities to adapt to, withstand, and quickly recover from natural, technology, and human-caused disruptive events. The tool helps to identify and compare the relevant present and future resilience costs and benefits associated with new capital investment versus maintaining a community's status-quo. The benefits include cost savings and damage loss avoidance because enhancing resilience on a community scale creates value, including co-benefits, even if a hazard event does not strike.

[Start New Analysis](#)[Open Existing Analysis](#)

Thank You



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Planning Guide: <https://www.nist.gov/topics/community-resilience/planning-guide>

EDGe\$ Online Tool: <https://edges.nist.gov>

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