

Are You Prepared for the Next Crisis?

Discover key lessons and strategies from recent health crises to boost supply chain resilience and future emergency preparedness.

LUNCH AND LEARN

Thursday, July 3, 2025 | 12pm ET

Webinar Archive



Dima Nazzal



Chris Gaffney

Related Upcoming Course Series
chhs.gatech.edu/hhscm



Health and
Humanitarian Systems

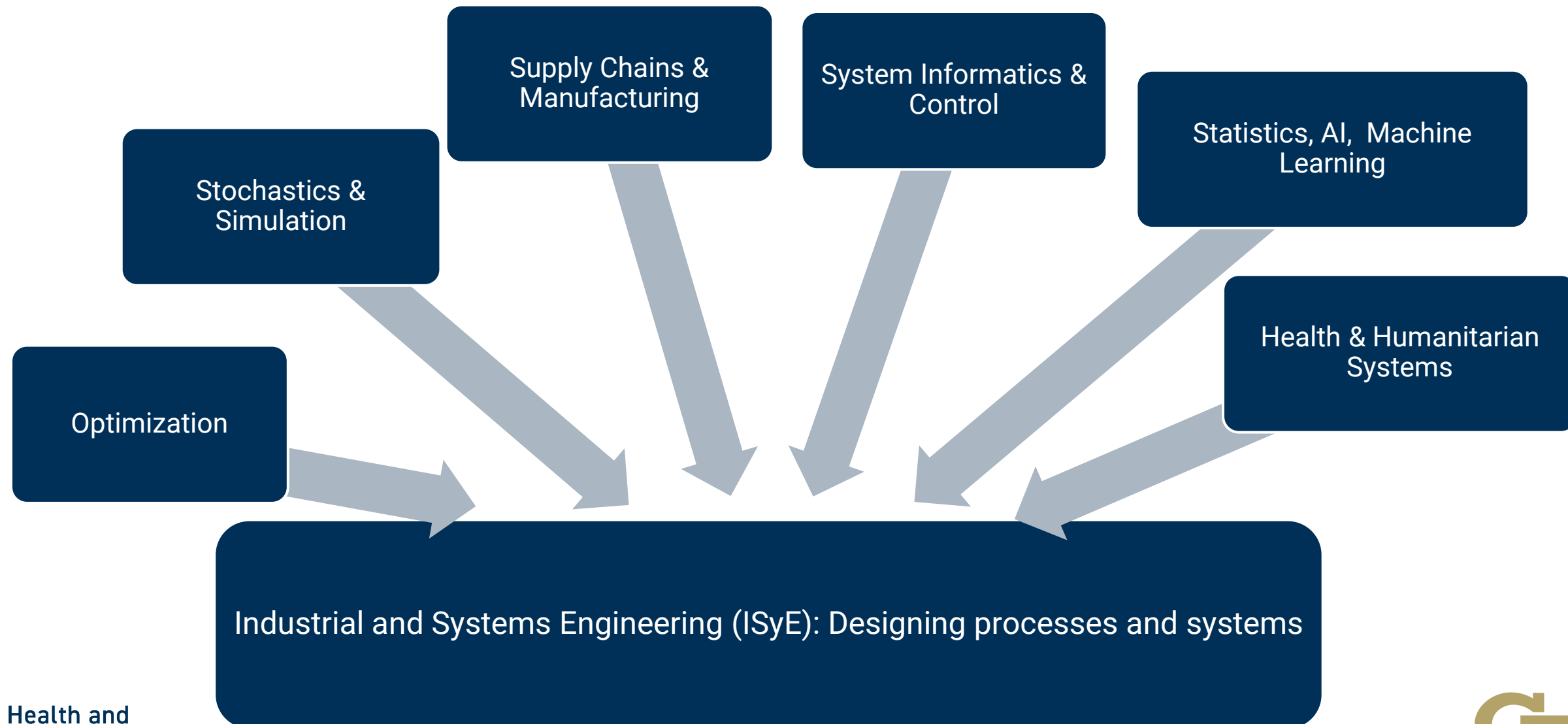


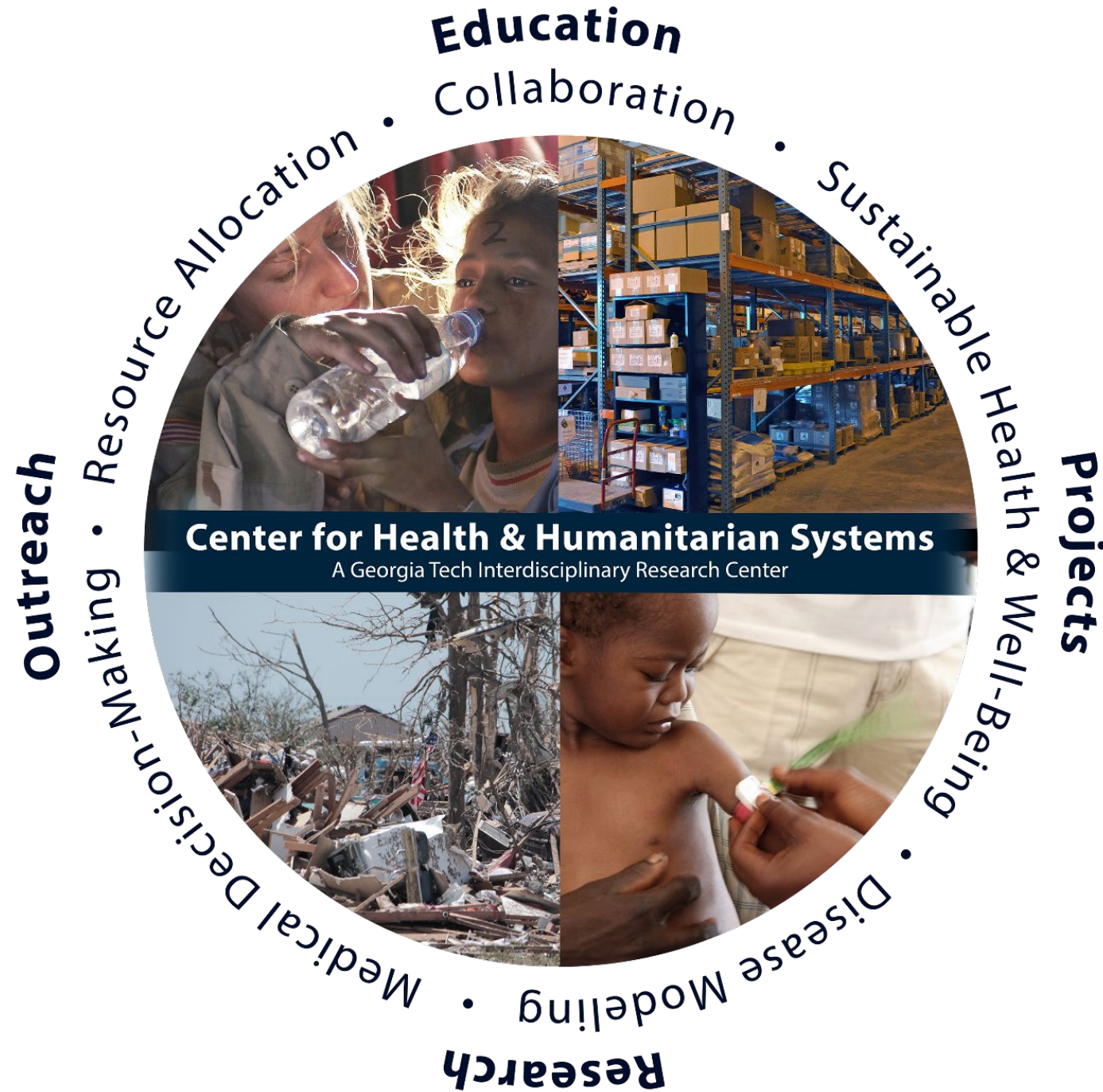
Supply Chain and
Logistics Institute

Georgia Tech & ISyE

Committed to improving the human condition through advanced science and technology
All Engineering schools are ranked in the top 10

#1 by US News Rankings, (25+ years)
Faculty size > 70





MISSION

Make a positive
“impact” through
improved health &
humanitarian
systems worldwide

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Today's Roadmap

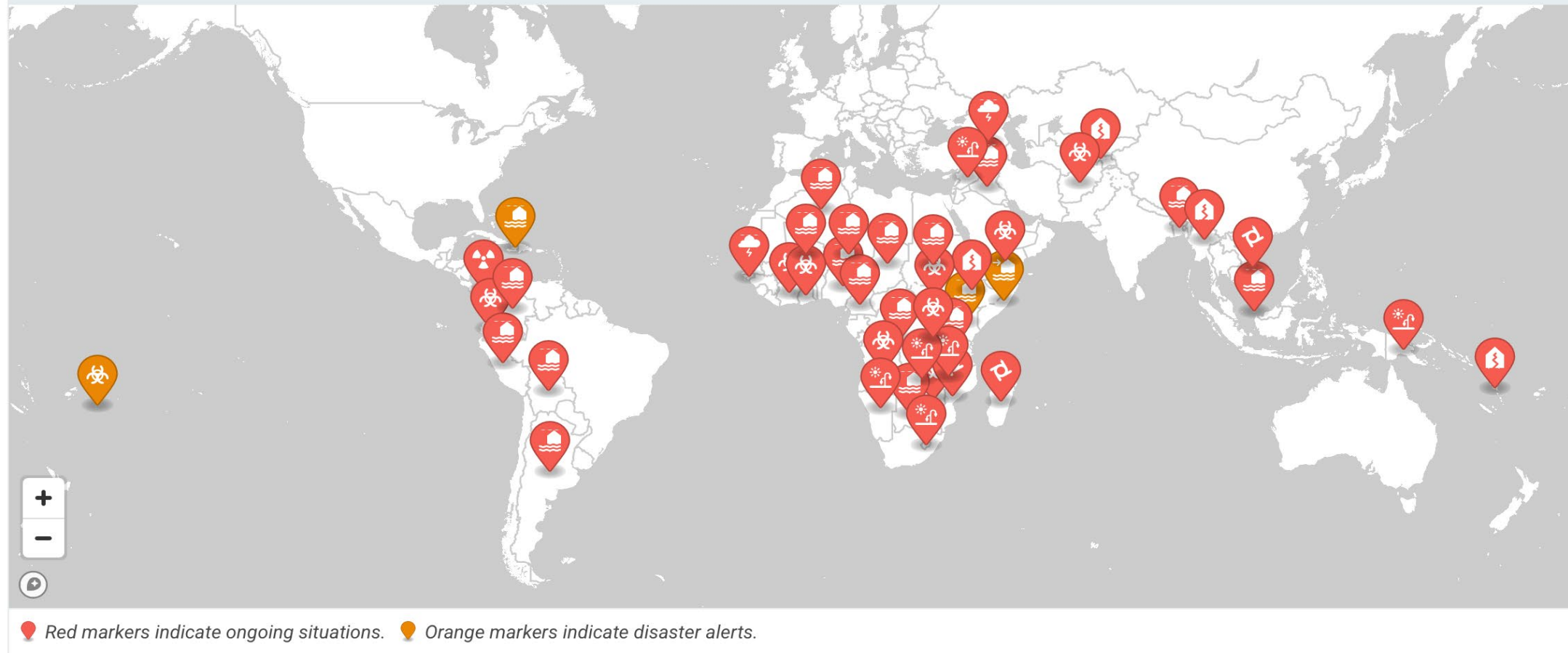
1. What Broke—and Why It Matters
2. The 4-R Resilience Framework
3. Deep Dives in Modeling and Design
4. Next Steps: Certificate

The New Normal: Crises on the Rise

All Disasters

Alert / Ongoing

Alert and Ongoing Disasters



<https://reliefweb.int/disasters>, retrieved on June 28, 2025

130%

Recent surge

Higher frequency of billion-dollar disasters in just the last five years

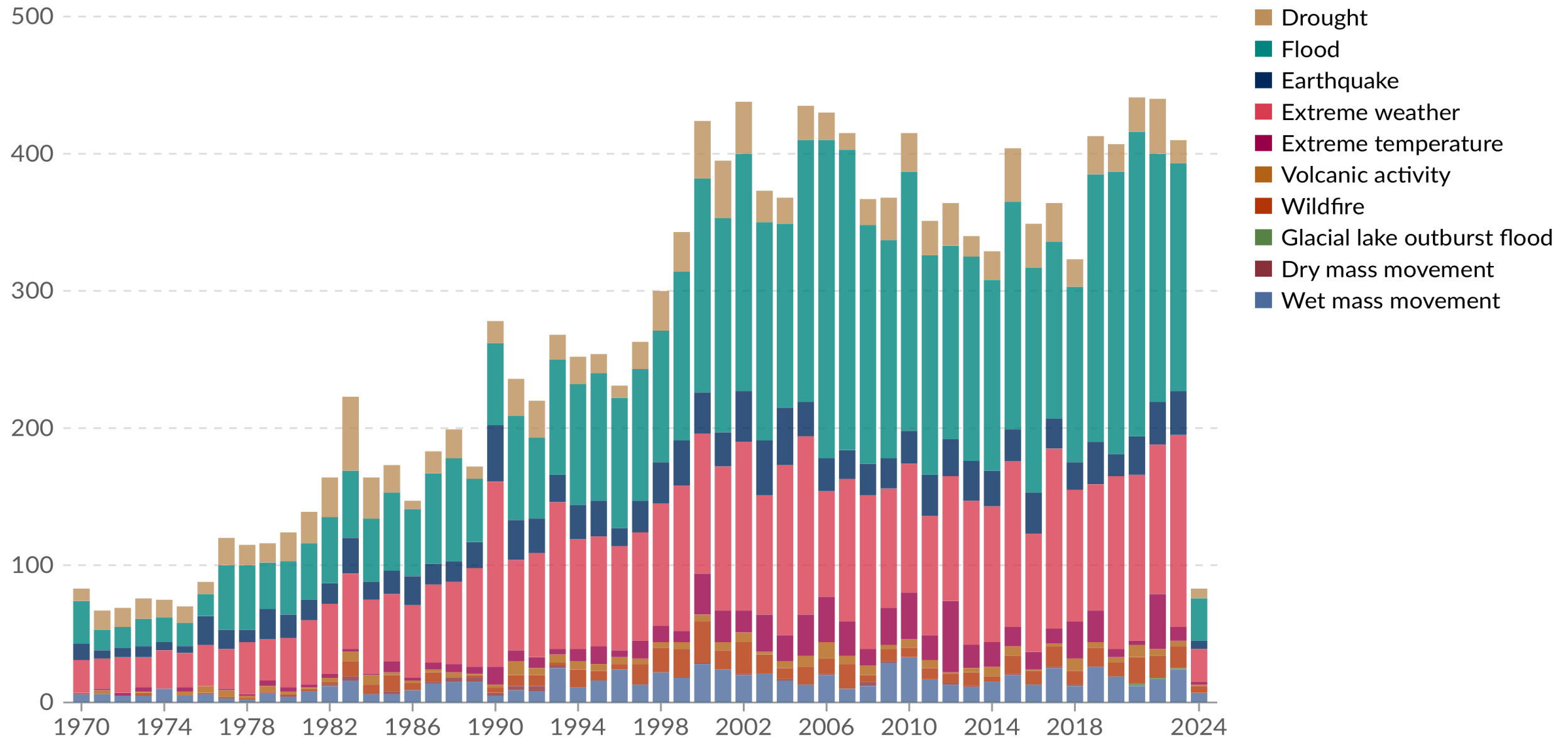
5x

Frequency increase

Major disasters now happen five times more often than in the 1980s

Global reported natural disasters by type, 1970 to 2024

The annual reported number of natural disasters, categorised by type. The number of global reported natural disaster events in any given year. Note that this largely reflects increases in data reporting, and should not be used to assess the total number of events.



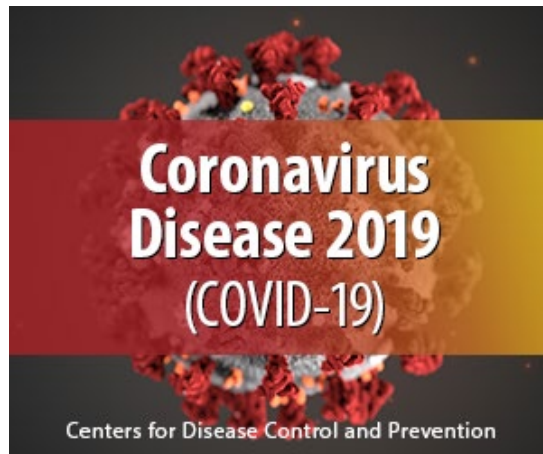
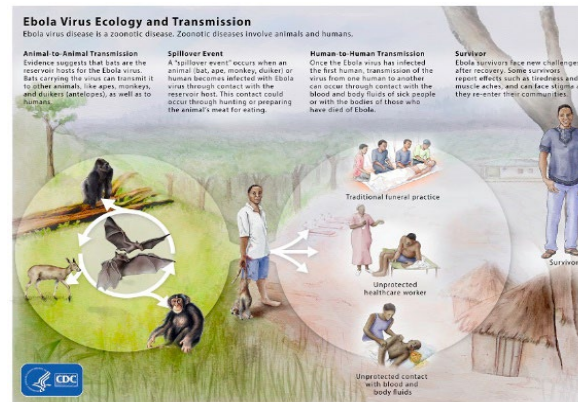
Data source: EM-DAT, CRED / UCLouvain (2024)

OurWorldinData.org/natural-disasters | CC BY

Note: Data includes disasters recorded up to April 2024.

Vulnerabilities Exposed

- Natural and manmade disasters and health emergencies
- Ongoing problems
 - Food, water, shelter, sanitation, health, energy, environment, poverty, terrorism & war, education, democracy, population
- Environments with disruptions, uncertainty, variability
- Many decision makers but often limited resources



Natural & Manmade Disasters

 SEARCH

FOX WEATHER

The FOX Weather App
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LIFESTYLE | Published October 3, 2024 9:34pm EDT

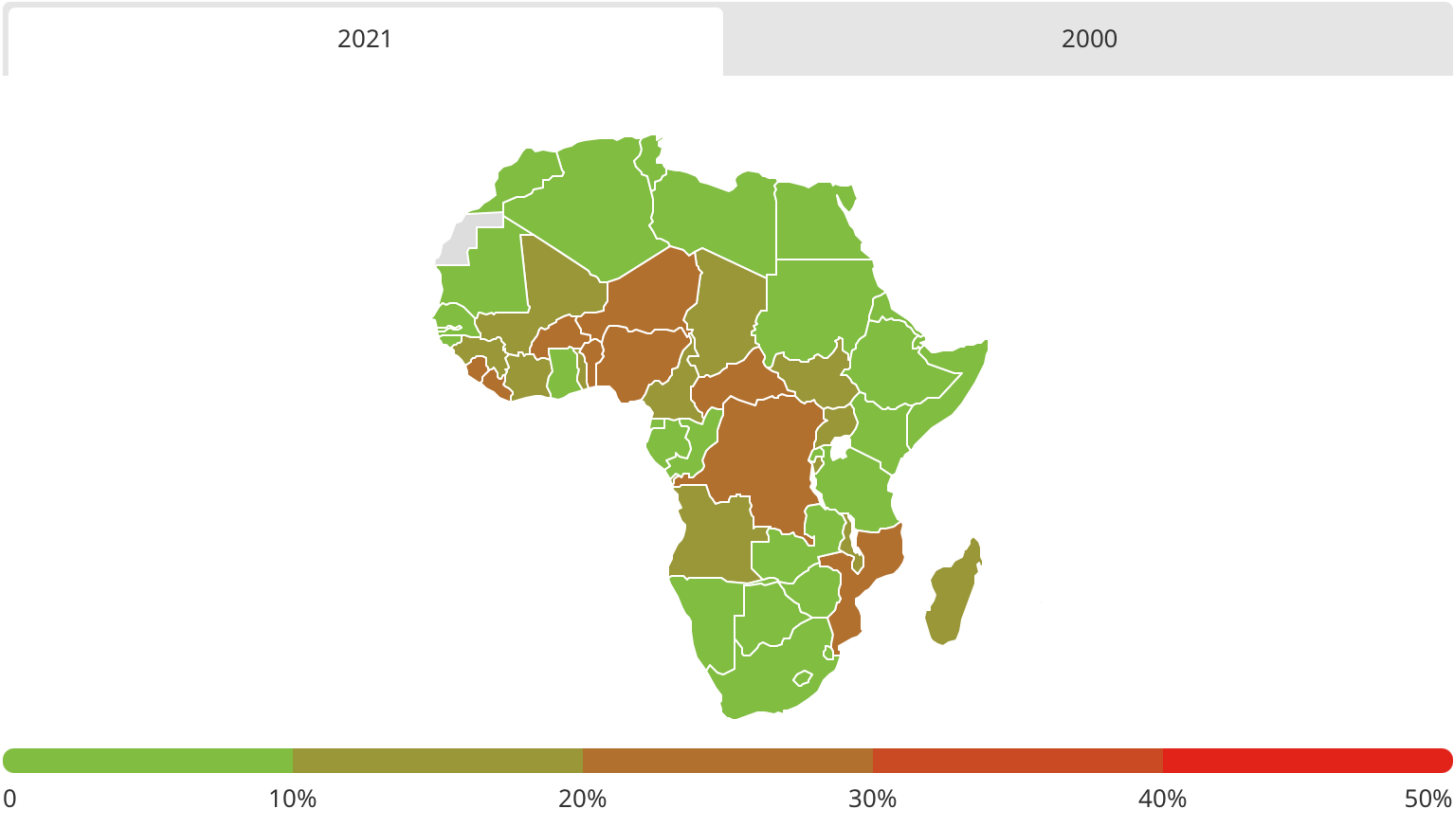
Helene flooding causes critical IV, medical solutions plant in North Carolina to suspend production

According to the American Hospital Association, the Baxter facility in McDowell County, North Carolina produces 60% of the country's supply of IV solutions. The large warehouse facility was flooded and roads that lead to the plant were significantly damaged.

Ongoing Problems

Nearly every minute, a child under 5 dies of malaria

Percentage of deaths caused by malaria in children under 5 years of age in Africa (2000-2021)



<https://data.unicef.org/topic/child-health/malaria/>

Last-mile Distribution Challenges

Cold Chain Limitations

Disruption, Uncertainty & Variability: Global PPE Supply Shock

Export Halt: China—then responsible for the majority of global N95 production—barred all respirator exports in Jan–Feb 2020, slashing export volumes by 17 % year-over-year

By late February, China had ramped mask output from 20 million/day to over 100 million/day, but much of that remained for domestic use; **global lead times for international orders ballooned from weeks to 3–6 months**



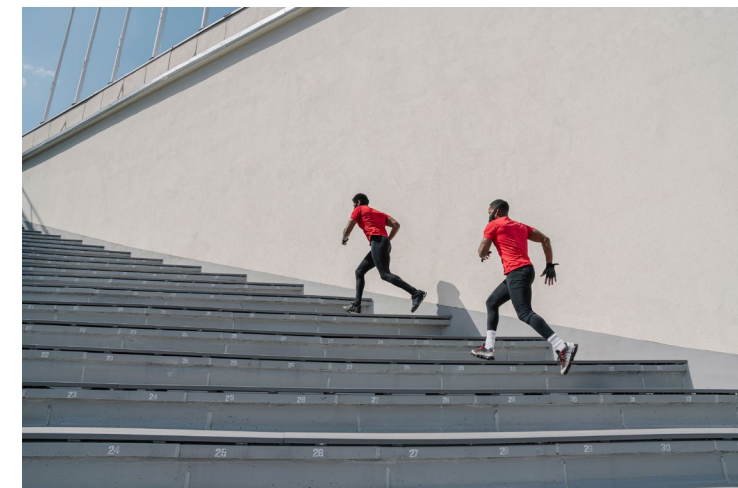
Many Decision-Makers & Limited Resources

Example: U.S. COVID-19 Vaccine Rollout (2020–2021)

CDC, state health departments, hospitals, pharmacies & federal agencies all raced to allocate doses.



Impact: Early “first-come, first-served” chaos, vials wasted, and underserved communities left behind.



Why Supply Chains Are Breaking

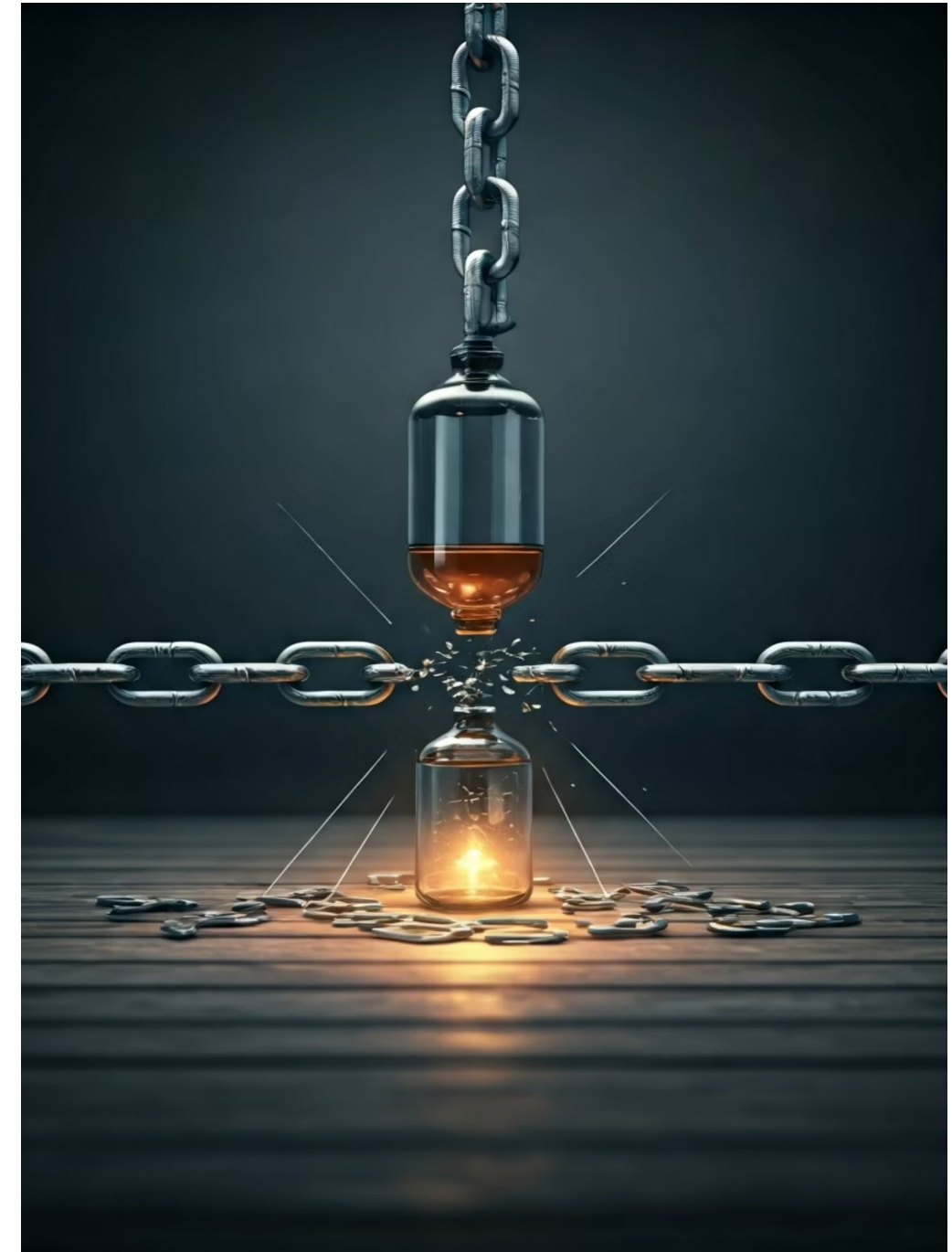
- **Frequent Overlapping Disasters**

- **Finite Resources**

- **Global Ripple Effects**

- **Competing Priorities & Insufficient Collaboration**

- **Just-in-Time Vulnerabilities**



A Resilience Framework

The 4 Rs of Resilience

1 Robustness

Ability to withstand initial shocks without breaking

2 Redundancy

Having backups and alternatives if one link fails

3 Resourcefulness

Capacity to adapt and problem-solve creatively during crisis

4 Rapidity

Ability to restore services quickly and minimize downtime



The Continuous Improvement Cycle

Prepare & Mitigate
Plan, train, strengthen systems

Review & Adapt
Conduct after-action analysis



Respond
Execute plans with adaptability

Recover
Stabilize and restore operations

Preparation Strategy #1

Invest in Infrastructure & Pre-Position Resources

- Strengthen physical facilities
- Ensure backup power systems
- Protect IT and communication networks
- Pre-position critical supplies in strategic locations
- Create regional stockpiles near high-risk areas
- Maintain buffer inventory of essential items

Preparation Strategy #2

Plan & Practice

Develop Detailed Plans

- Alternate transportation routes
- Clear roles and responsibilities
- Updated contingencies

Run Simulations

- Tabletop exercises
- Full-scale drills
- Identify gaps before real crisis

Preparation Strategy #3

Build Strong Partnerships



Pre-Crisis Relationships



Join Coalitions



Private Sector

“It is a sad reality that all too often emergencies trigger a huge scramble among aid organisations for donor money to support their own relief initiatives. This is often to the detriment of valuable coordination. Sometimes little attention is paid to what other agencies are doing amid single-minded approaches to maximise marketing opportunities.”
– Fenton, 2003

Players/Stakeholders, Interactions

Donors & suppliers

- Government
- Foundations
- Companies
- Individuals

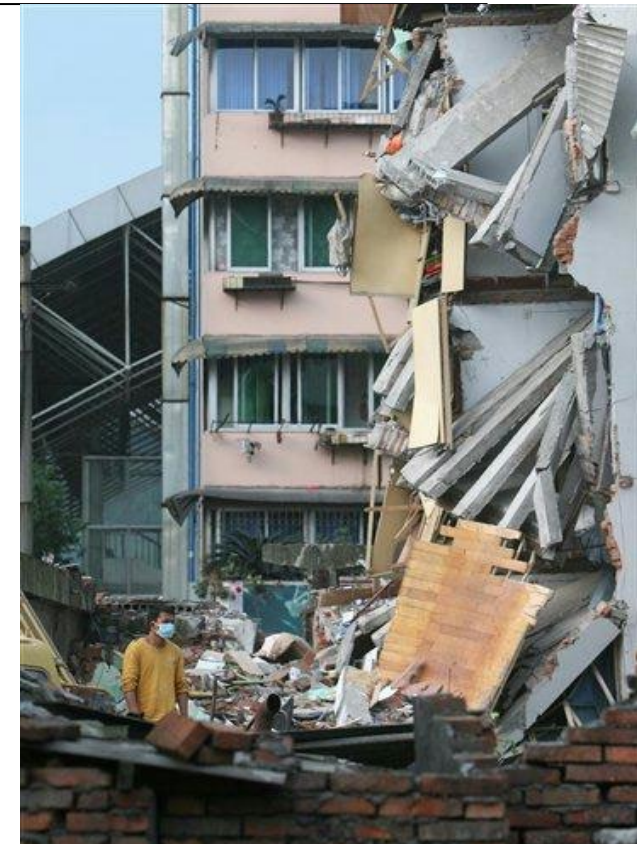
Recipient agency

- UN agencies
- NGOs
 - IFRC
 - WVI
 - WFP
 - CARE
 - Red Cross
 - ...
- Governments

Delivering agency

- Global or local NGOs
- Local organizations or governments
- Military

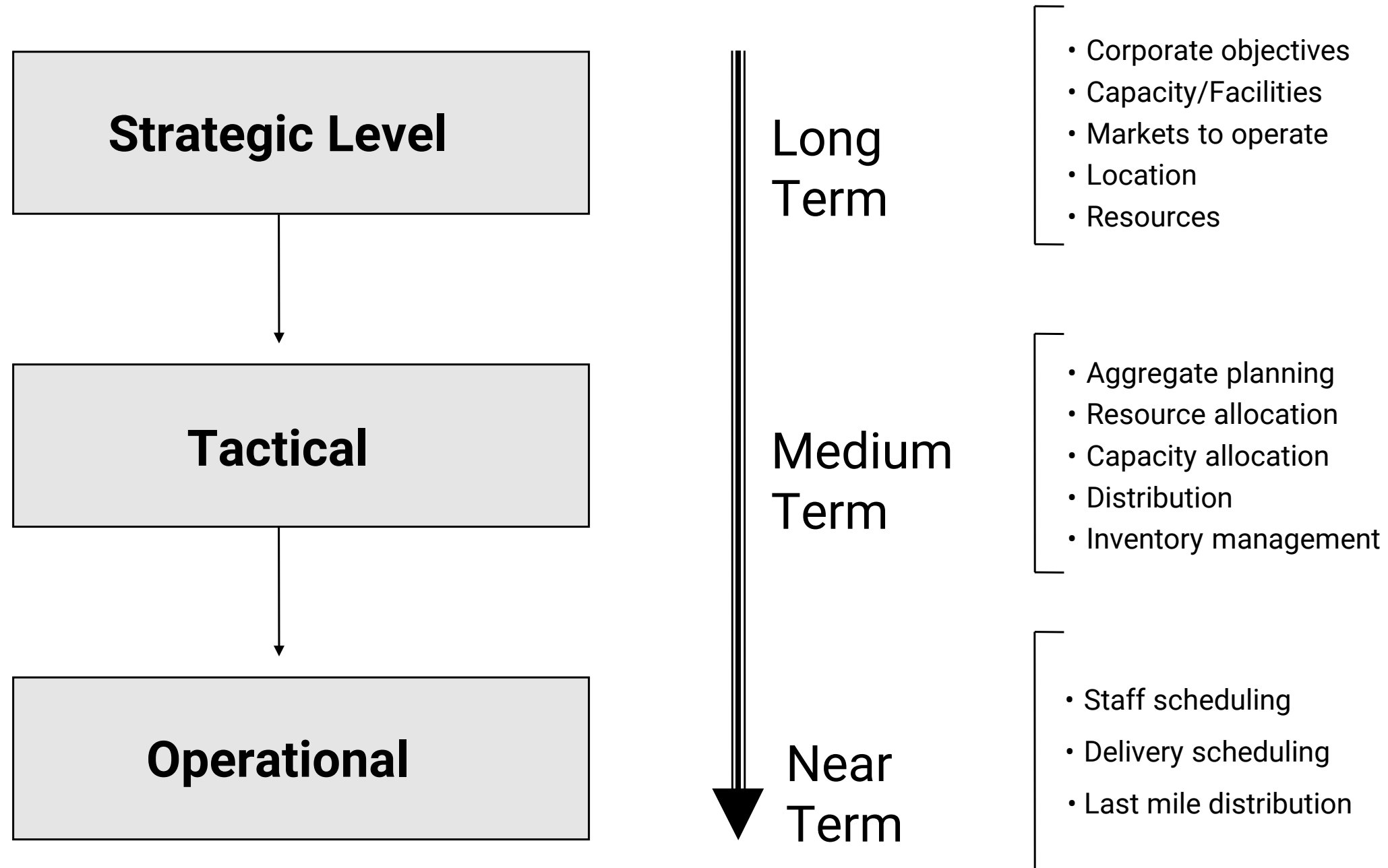
People in need



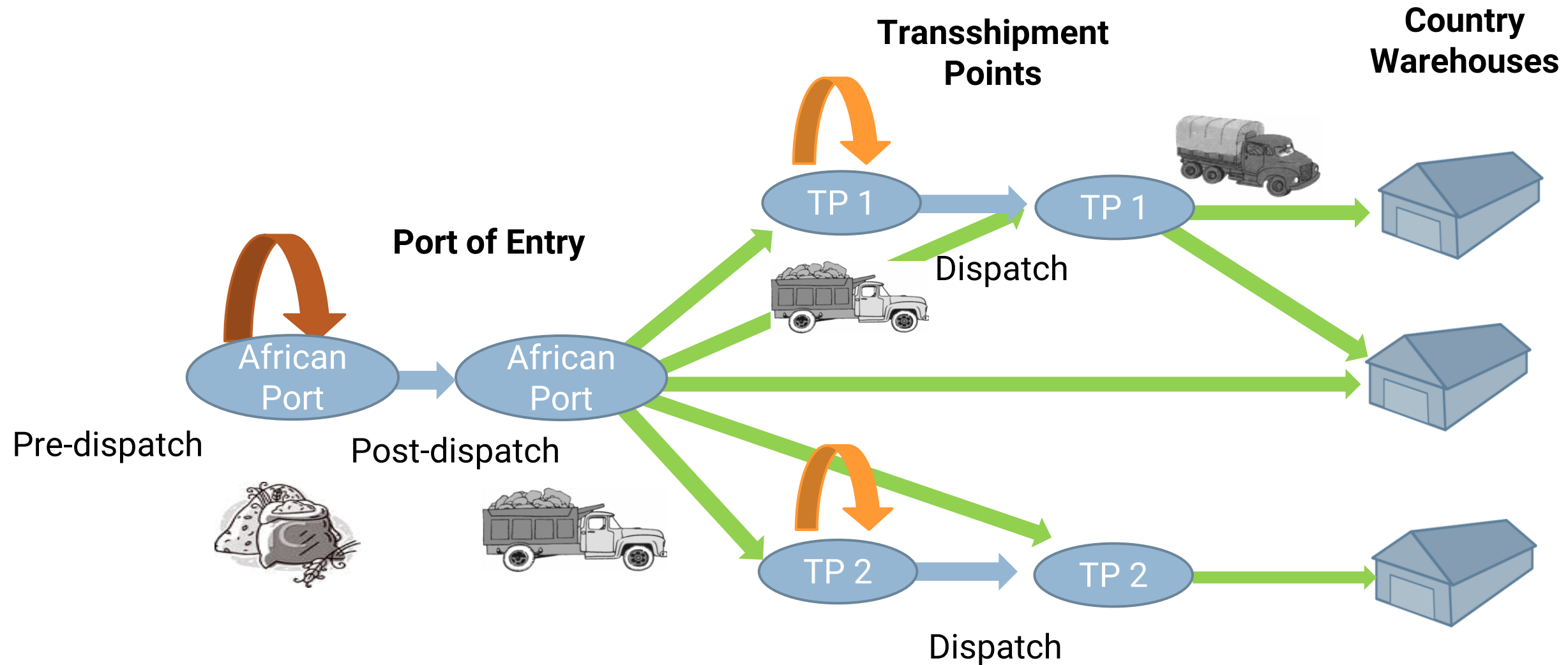
Others indirectly involved: domestic or international media, general public

Supply Chain Management Models Work!

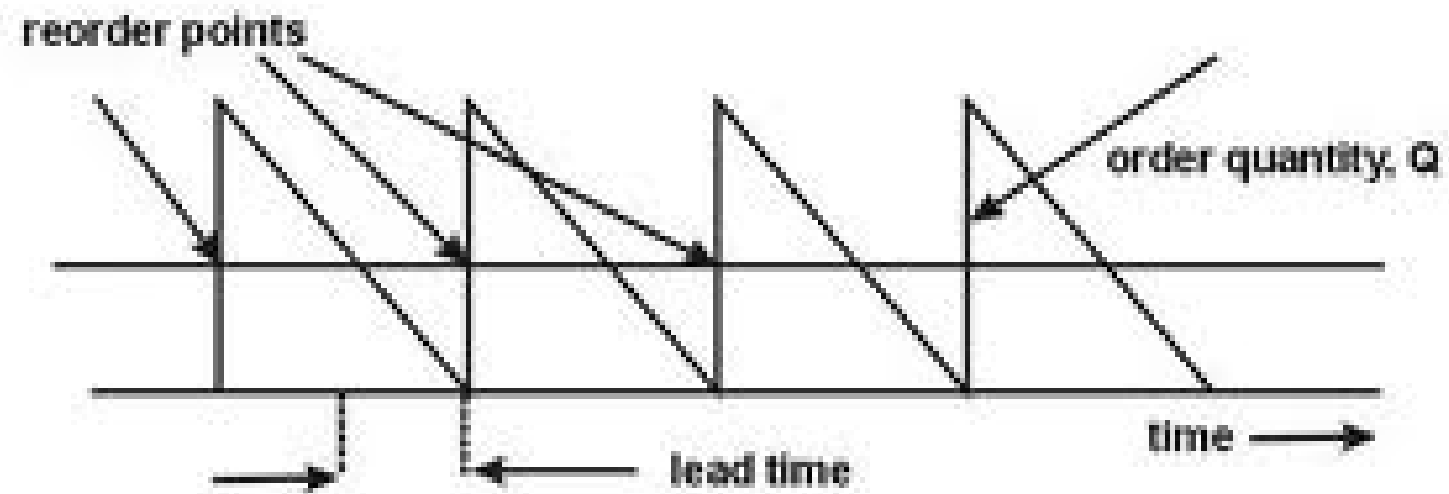
Supply Chain Decisions



Distribution and Network Design Models



Inventory Management and Procurement



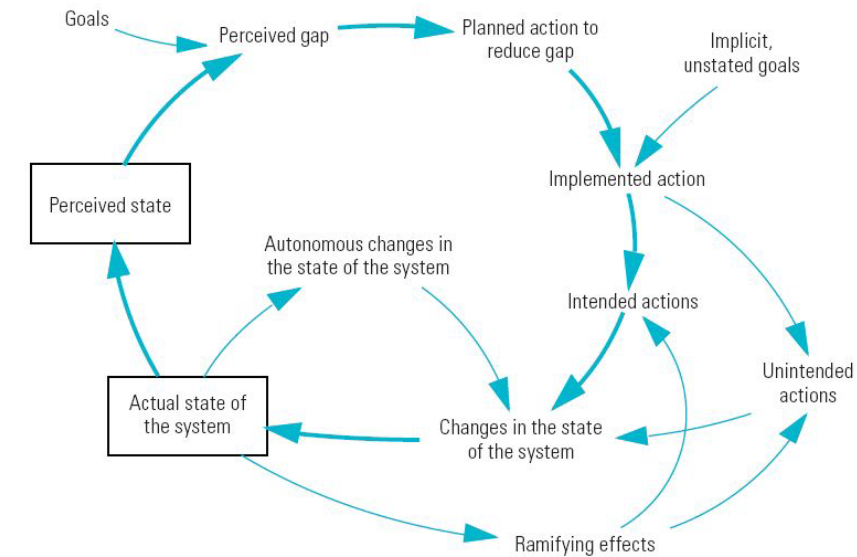
- Tradeoffs and Dealing with Conflicting Objectives
- A Variety of Inventory Models

Performance Measurements



- Performance measuring frameworks
- Vertical vs. horizontal alignment

System Dynamics



- The System Dynamics Process
- Feedback Loops
- Tradeoffs

Georgia Tech Certificate Program: Health & Humanitarian Supply Chain Management

Transforming systems to improve lives

This professional certificate program covers emergency and long-term issues in health and humanitarian systems through a blended learning format of self-paced work and instructor-led sessions.

1 Program Benefits

Immediate organizational impact through real-world case studies and analytical models for forecasting, inventory management, and distribution.

2 Who Should Attend

NGO members, private corporations, government employees, public health officials, and foundation representatives involved in humanitarian response.

"The forecasting and decision-making tools will provide me with a lot of opportunities to optimize both processes and supply chains." -Sanne Wijnhorst, Oxfam Novib



Health and
Humanitarian Systems



Three Courses that lead to a Certificate in Health/Humanitarian Supply Chain Management

Course 1: **Pre-planning Strategy**

- Designing supply chain systems
- Forecasting
- Disruptions and transportation

Course 2: **Tactical Decision Making**

- Resource allocation trade-offs
- Procurement and inventory
- Optimize transportation routing

Course 3: **Systems Operations**

- Strategic interactions, coordination and collaboration
- Performance measurement
- System dynamics



What participants get out of these courses

Foundational Knowledge

Models

Tradeoffs

Uncertainty and Variability

Skills

Key Supply Chain Models

Intuition

Real world case studies

Networking



Program Curriculum

Key Topics:

- Forecasting & inventory management
- Network design & distribution
- Resource allocation strategies
- Coordination mechanisms
- Decision-making under uncertainty

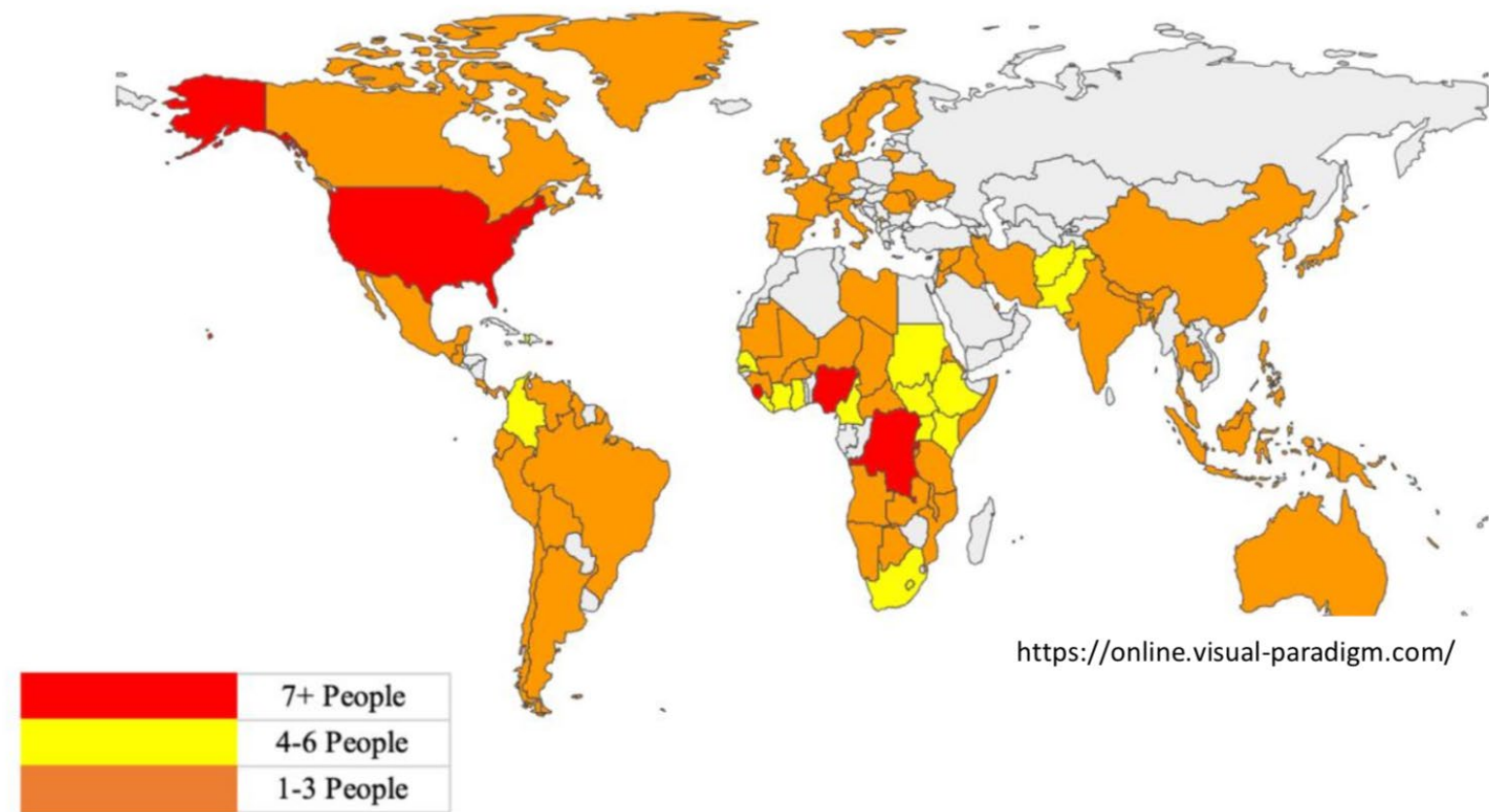
Learning Approach:

- Real-world case studies
- Interactive simulations
- Expert practitioners
- Breakout group exercises
- Immediate application to your work

American Red Cross
Centers for Disease Control & Prevention
Chemonix
Critical Angle Enterprises
Direct Relief International
Georgia Institute of Technology
Habitat for Humanity Int'l, Inc.

International Trachoma Initiative Inc.

John Snow Inc. (JSI)
League of Hope
Schenker Logistics Inc.
The Carter Center
United Nations World Food Program
USAID/Benin
USAID/OFDA
USAID/PEPFAR Cote d'Ivoire
USDA Forest Service



"I learned a lot from colleagues from other fields and countries. Having participants with various backgrounds and from different fields was an incentive for fruitful discussions,"
Simplice Kamdem Takoubo, from USAID/Benin.

"Exposure to the varying degrees of expertise and experiences was eye opening and useful." Shawn Robinson from the Centers for Disease Control and Prevention

Upcoming HHSCM Courses

Responsive Supply Chain Design and Operations

Sept 8, 2025 - Sept 11, 2025 | Virtual (Instructor-led)

Inventory Management and Resource Allocation in Supply Chains

Sept 22, 2025 - Sept 25, 2025 | Virtual (Instructor-led)

Systems Operations and Strategic Interactions in Supply Chains

Sept 29 - Oct 2, 2025 | Virtual (Instructor-led)

Scholarship opportunities available at <https://hhls.scl.gatech.edu>

Thank you to the [UPS Foundation](#) for its generous support of the Health and Humanitarian Supply Chain Management Certificate Series.

Upcoming SCL Lunch and Learn Opportunities

The Future is Integrated: IBP Insights from Georgia Tech

w/ Manpreet Hora, Andre Calmon, and Chris Gaffney

Thursday, August 7th | 12-1pm ET | Zoom Registration Link



scl.gatech.edu/aug25-Inl



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