FINANCING RESILIENCY SOLUTIONS:

READY. SET. THRIVE.

CB&I helps our public and private sector clients with comprehensive programs to survive, adapt, and thrive in the face of environmental, social and economic shocks and stresses.

CB&I OVERVIEW:

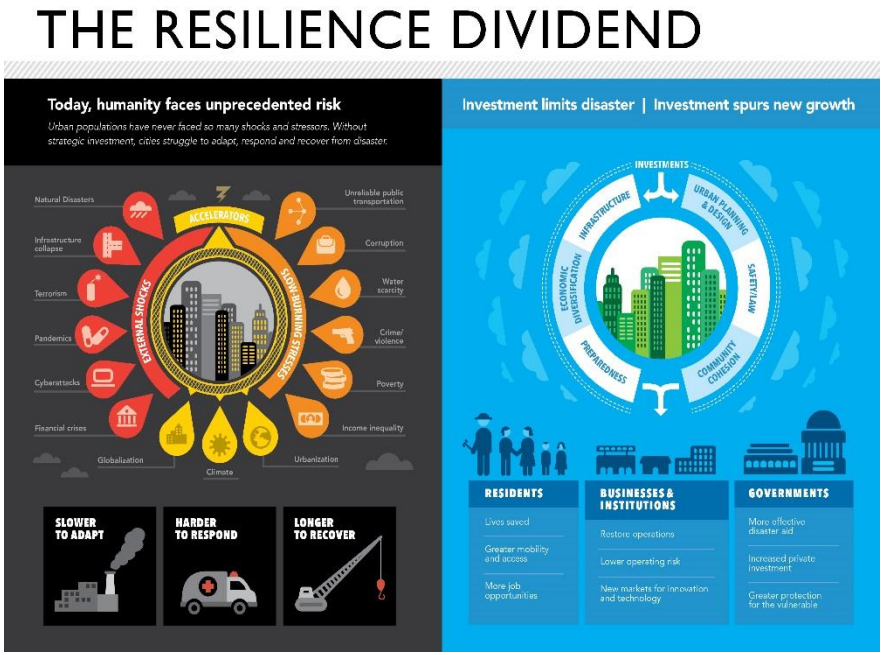
- 125 years of experience
- 40,000 employees worldwide
- National leader in resiliency and adaptation planning
- 100 Resilient Cities Platform Partner
- Experts and facilitators for HUD's NDRC Resiliency Academies
- Facilitated over 25 resiliency plans; assisting 3 jurisdictions with program implementation

Local government context

- Severe weather events are increasingly frequent
- Local governments are often exposed to loss and underinsured
- Infrastructure is aging and failing, increasing potential for catastrophic losses

Why is the institutional investment community not yet investing in resilience solutions on a large scale?

1. Lack of Measurement: We don't know how to describe what the benefit will be
2. Misalignment in Timelines: Quarterly earnings call vs. decadal timescale of resilience
3. Lack of Understanding: Wall Street doesn't know what adaptation and resilience are



Where Will Resilience Funding Originate?

- Local
  - Reframing the budgeting process to incorporate resilience
  - Increases in user fees, changes in insurance premiums, TIFs
- Federal
  - HUD
  - EPA
- Public/Private Sector
  - Green bonds
  - Catastrophe bonds
  - District financing/value capture
  - Revenue-backed projects
  - Equity investments
  - Public purpose funds (e.g. oil spill trusts, EE funding)
  - Resilience bonds

Case Study: Capital Planning for Resilience

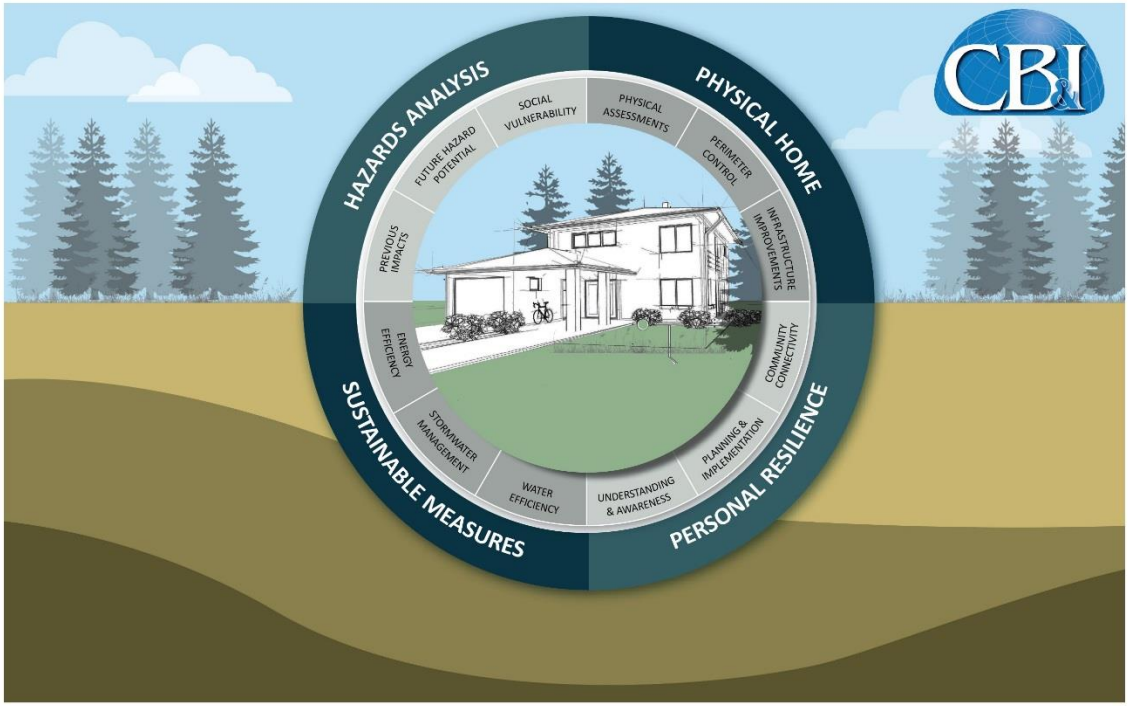
- **Lafayette, Louisiana Capital Planning Workshop**
- Capital planning with a resilience lens
- **Move beyond single-purpose infrastructure**
- Take risk and climate action goals into account in the planning and implementation process

Case Study: Green Bonds for Resilience

- July 2014: DC Water financed a portion of the DC Clean Rivers Project with $350m green bond issue
- Underwriter: Goldman Sachs (lead)
- Tenor: 100 years
- Ratings: Aa2/AA+/AA
- Clean Rivers Project infrastructure reduces combined sewer overflow (CSO) discharges into the Anacostia and Potomac Rivers, and Rock Creek. **It also provides flood relief and mitigation.**

Case Study: Quantifying the Benefits of Resilience Projects

- **City of Boulder Home Recovery and Resilience Assessment Program**
- In-home resilience assessments + rebates to subsidize qualified resilience improvements
- Household Resilience Score
  - Location
  - Physical Factors
  - Personal Resilience
  - Sustainability



Case Study: New Public/Private Partnerships

- **New York City Housing Authority – Post-Sandy Rehabilitation and Rebuilding**

- FEMA-funded generators, participating in utility DSM programs, allowing utilities to take generators offline during peak usage.

- Provides back-up power in emergencies and generates revenues for NYCHA on a daily basis

Case Study: Social Impact Bonds/Shifting Risk to the Private Sector

- Aka “Pay for Success”
- Contract with a service provider to pay for improved social outcomes
  - Public safety and recidivism
  - Homelessness
  - Health
- Vision: Harness private capital to address chronic social problems. Capital provider/investor profits if problem behavior decreases.
- Harvard Kennedy School Government Performance Lab provides technical assistance to jurisdictions interested in SIBs

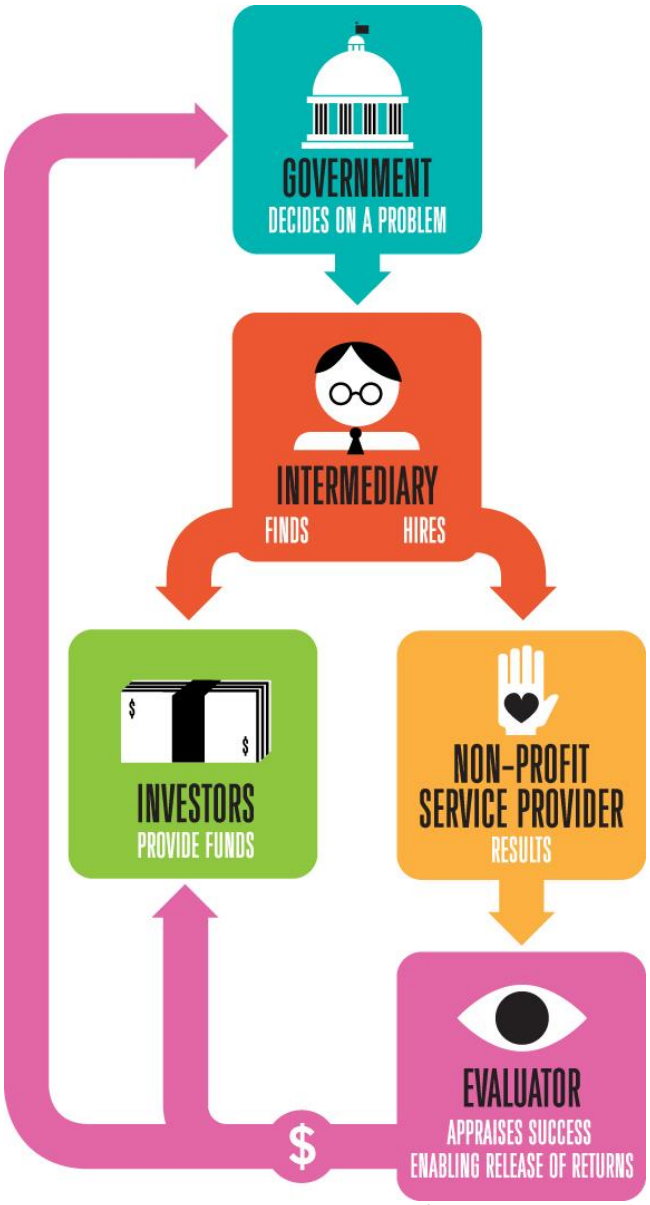


Image source: Harvard Magazine

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What Are Resilient Infrastructure Projects?

Improvement	Example	Resilience Impact
Transportation	Train station, bus depots	Improves air quality, reduces congestion, reduces transportation emissions
Coastal storm surge protection	Seawalls, levees, docks, culverts, bridges, tunnels	Storm surge protection, flood prevention
Facility improvements	Earthquake reinforcements, EE	Stronger, more efficient, smarter buildings
Housing and development		Infill, transit-oriented development, downtown revitalization

What Are Resilient Infrastructure Projects?

Improvement	Example	Resilience Impact
Recreation facilities	Playgrounds, parks, bike paths	Recreation access equity
Brownfields cleanup and mitigation		Soil remediation, storm run-off reduction, place-making
Water, wastewater, and drainage facilities		Clean water, avoid overflows
Distributed generation infrastructure	Microgrids and islanded renewable energy	Energy independence, backup power