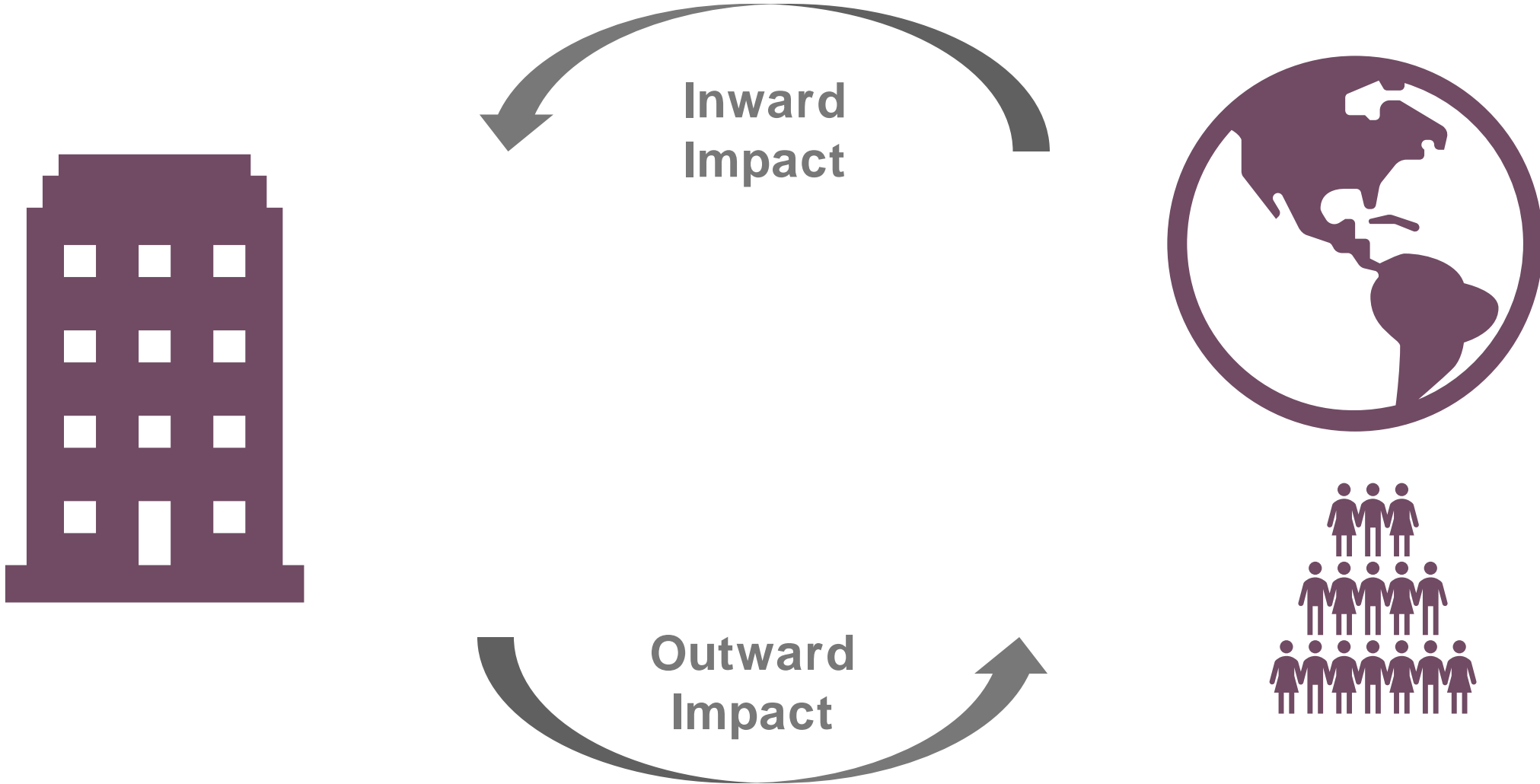


Sustainable Real Estate

June 2023



Double Materiality
Two perspectives to consider



Inward Impact

01



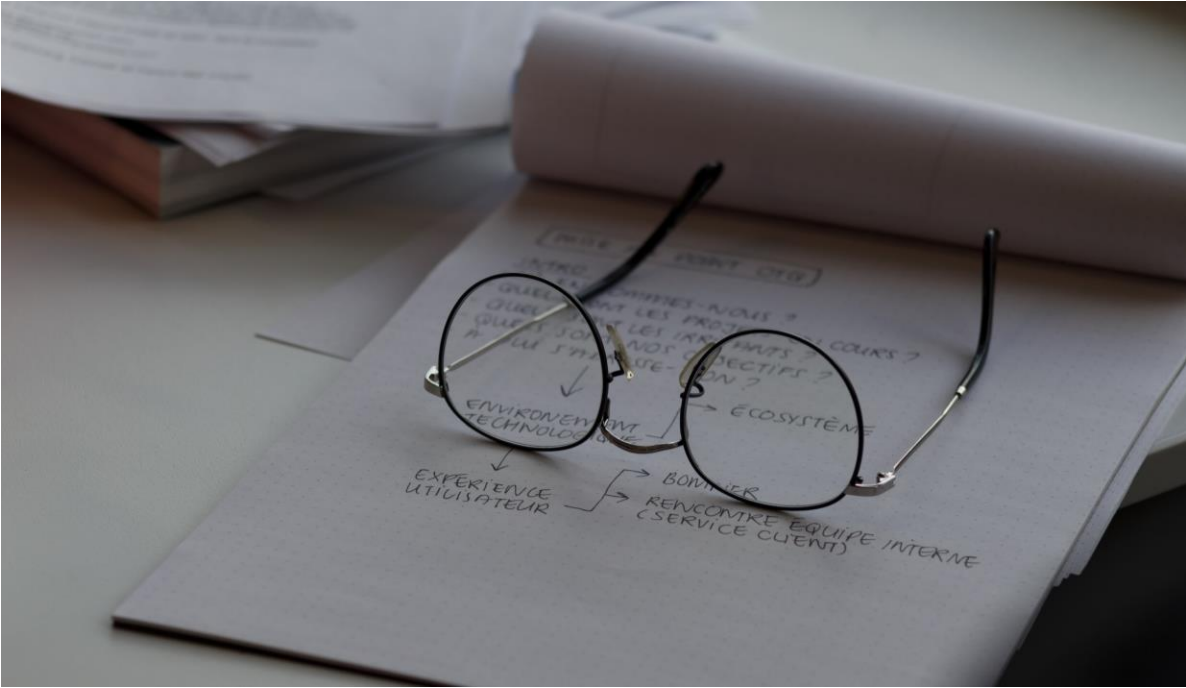
- Physical asset risk
- Geographic or market risk
- Development risk
- Leasing or vacancy risk
- Tenant risk
- Cap rate risk
- Debt risk
- Sponsor risk



ESG factors as modifiers

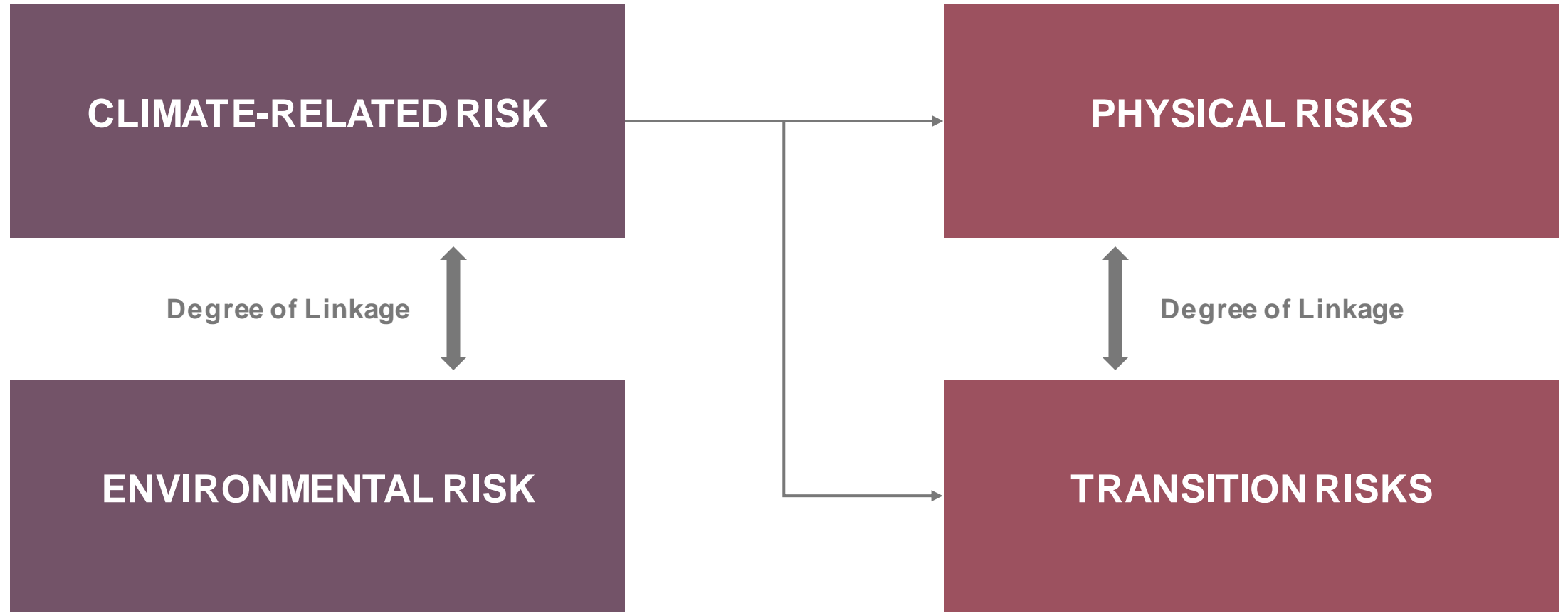
Inward Impact Climate Change Risk

Transition Risk



Physical Risk

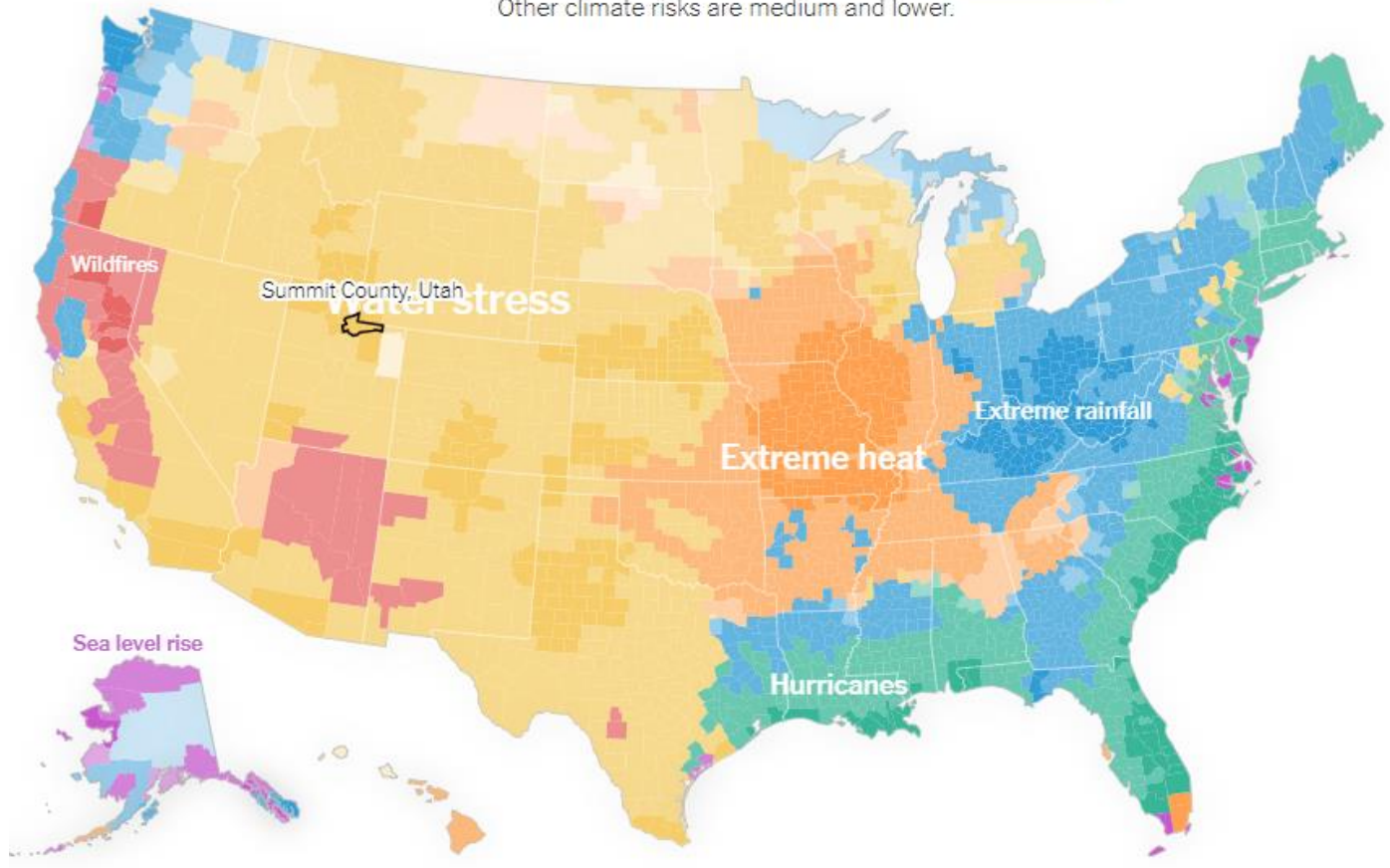






The greatest climate threat in Summit County, Utah is **water stress.**

Other climate risks are medium and lower.

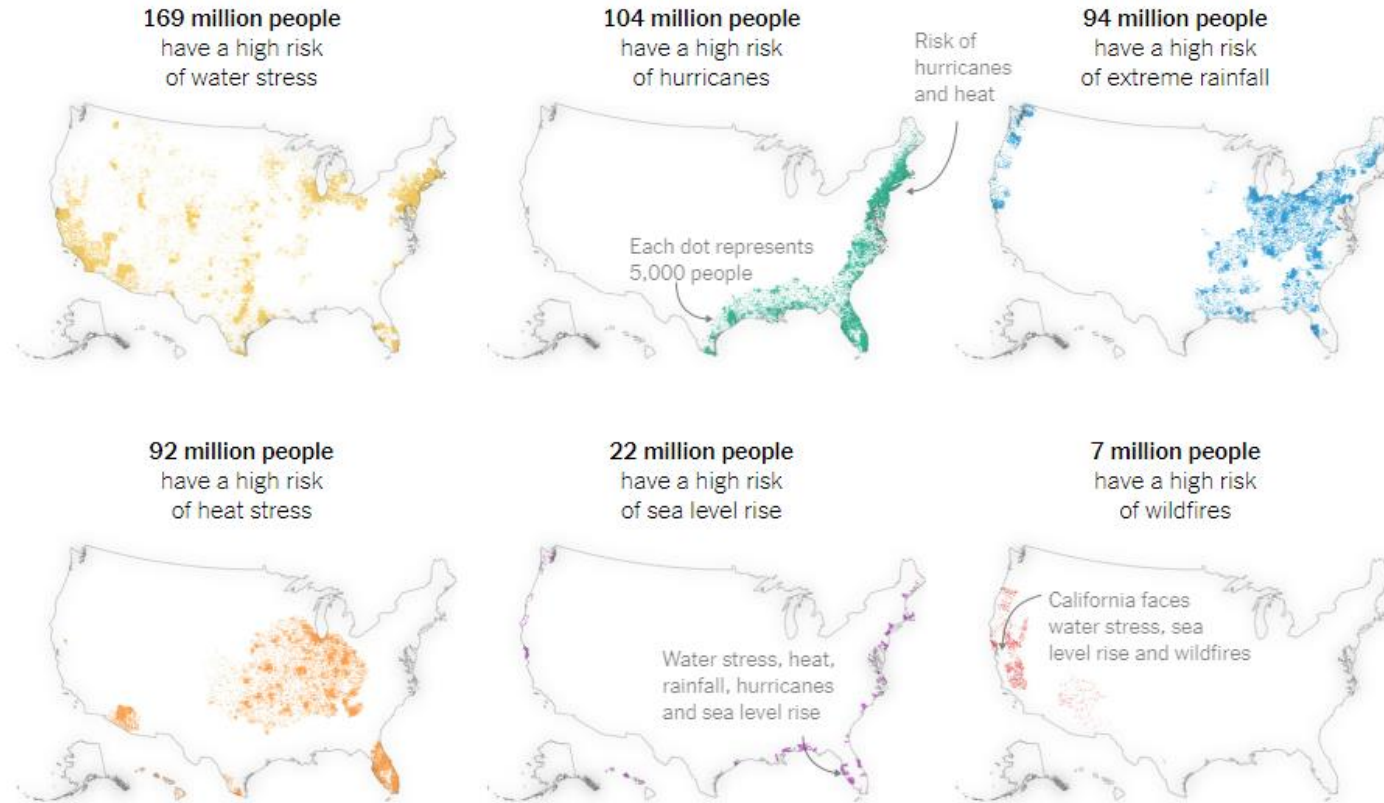


Source: [New York Times](#)



How many Americans will be affected by climate's biggest risks?

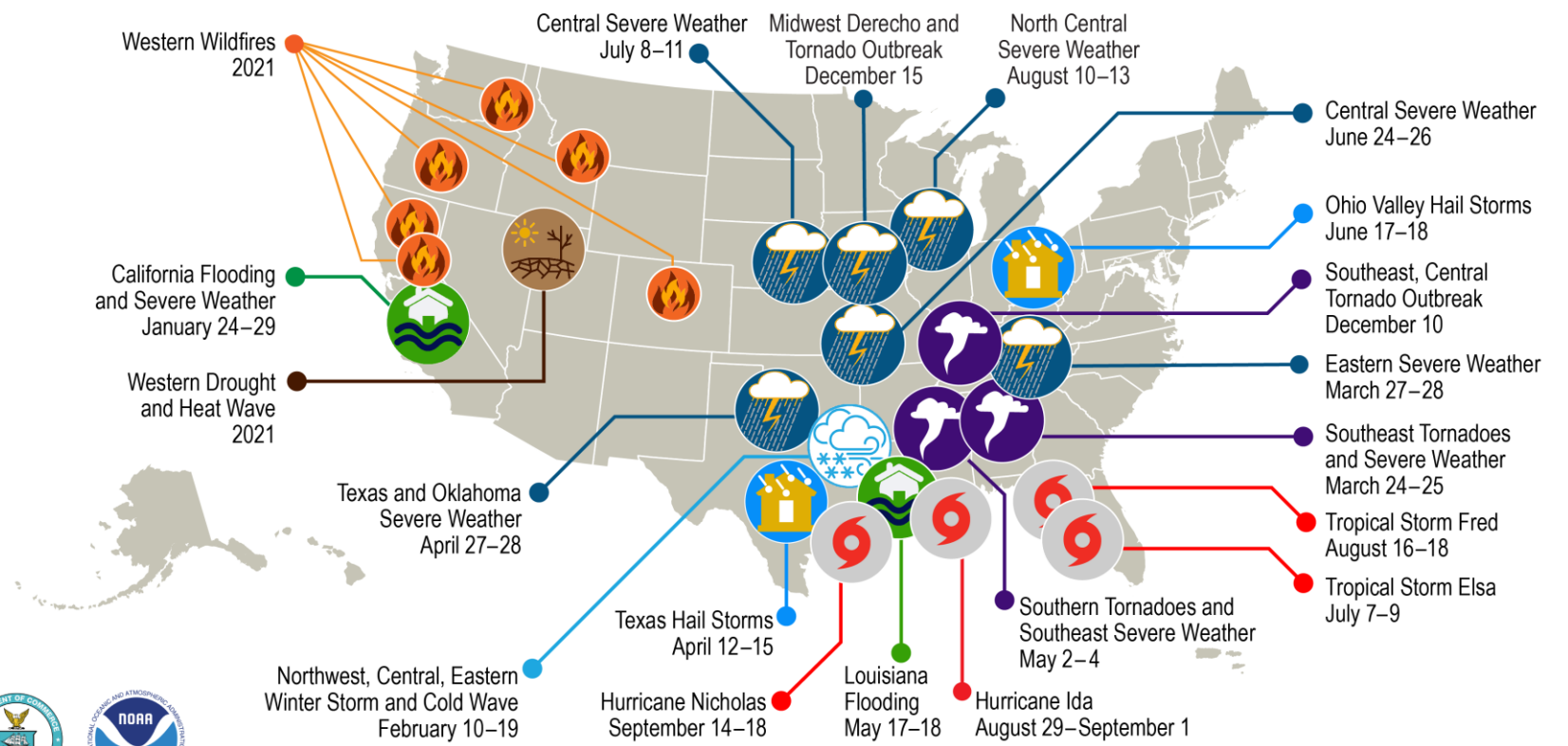
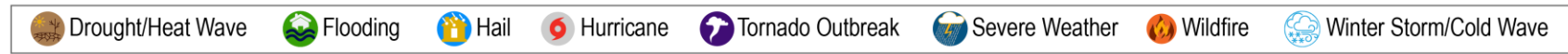
Many parts of the U.S. have multiple high-risk climate threats.



Source: [New York Times](#)



U.S. 2021 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 20 separate billion-dollar weather and climate disasters that impacted the United States in 2021

Costs of weather and climate disasters in the U.S.

- In 2021, 20 climate disasters where damages were at over \$1 billion each
- Damages from 2021 disasters totalling \$145 billion
- From 1980 to 2021, damages estimated at \$2.2 trillion



Source: [National Oceanic and Atmospheric Administration](https://www.noaa.gov/education/outreach-and-engagement/2021-billion-dollar-weather-and-climate-disasters)



Transition Risk

Policy

- Energy transition
- Pollution control
- Resource conservation
- Subsidies

Stakeholders

- Activist investors and shareholders
- Civil society advocacy and activities
- Peer pressure
- Consumer boycotts

Technology

- Energy storage and saving
- Low-carbon transportation
- Advanced fuels
- Climate mitigation technologies
- Climate adaptation technologies

Market

- Shifting consumer preferences
- Repricing of assets
- Reduced demand for goods and services
- Increased cost of raw materials
- Shifting industry best practices



Climate-related and environmental factors = New drivers of traditional RE investment risks

Physical Risks		Transition Risks	
Climate-Related	Environmental	Climate-Related	Environment
<ul style="list-style-type: none"> • Extreme weather events (e.g., heat waves, wildfires, droughts, hail, storms, hurricanes, sea floods) • Chronic weather patterns (e.g., rising sea levels, shifting wind patterns) 	<ul style="list-style-type: none"> • Water stress • Resource scarcity • Biodiversity loss • Pollution • Invasive species • Ecosystem disruptions • Reduced soil productivity 	<ul style="list-style-type: none"> • Policy and regulation (e.g., taxation, subsidies, regulations, sustainability certifications, disclosure, standards, bans) • Technological developments • Climate protectionism • Behavioural change (e.g., consumers, suppliers, employees, investors) 	



- Physical asset risk
- Tenant risk
- Geographic or market risk
- Cap rate risk
- Development risk
- Debt risk
- Leasing or vacancy risk
- Sponsor risk



Climate Migration



Climate Adaptation



Infrastructure Systems



Opportunities to tackle physical climate risks



Source: [Natural Infrastructure \(noaa.gov\)](https://www.naturalinfrastructure.noaa.gov/)

Green Infrastructure

- Utilizing natural infrastructure can lead to higher property values of up to 37%, better water quality, and enhanced storm protection
- Offers solutions for coastal flooding, erosion, runoff, and more



Understanding the potential impact of climate change on an investment or financial portfolio

Key steps considered as best practice

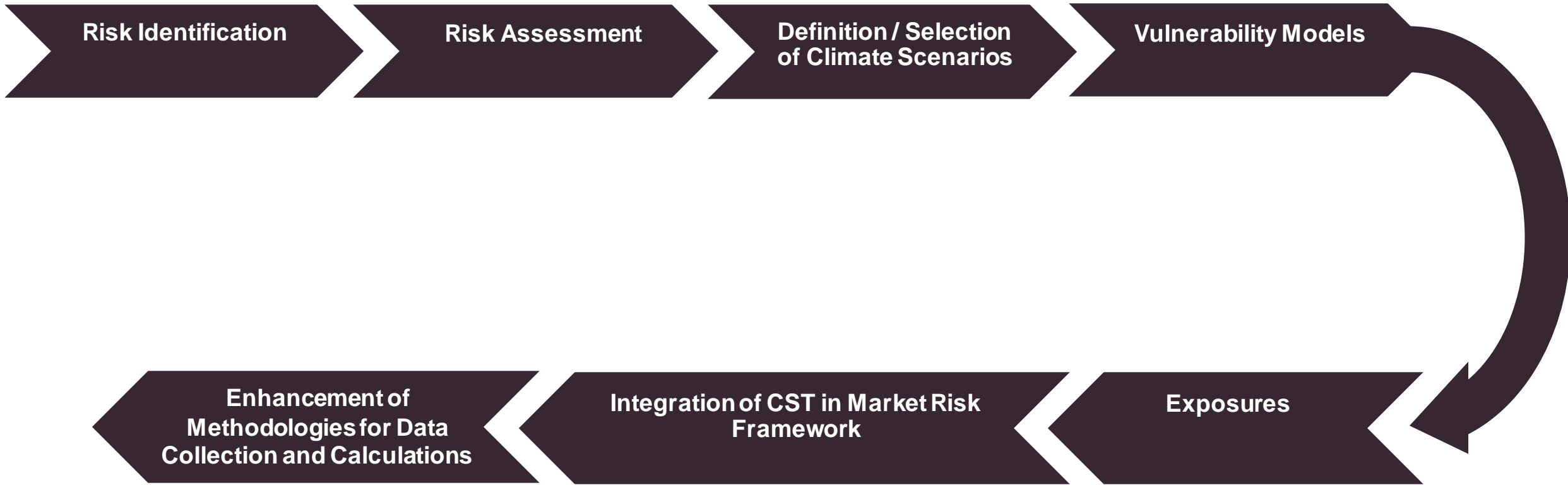
01 Identify risk drivers

02 Assess exposures

03 Determine materiality



Risk Management





Spiking insurance costs

Insurance Costs Spike in High Climate-Risk States

The perfect storm? Weather-related property losses and mounting climate woes lead insurers to chart a new course.

Florida's home insurance market was a mess before Ian. It's about to get worse

Buying a Home in California Is Already Hard. State Farm's Exit Makes It Harder.

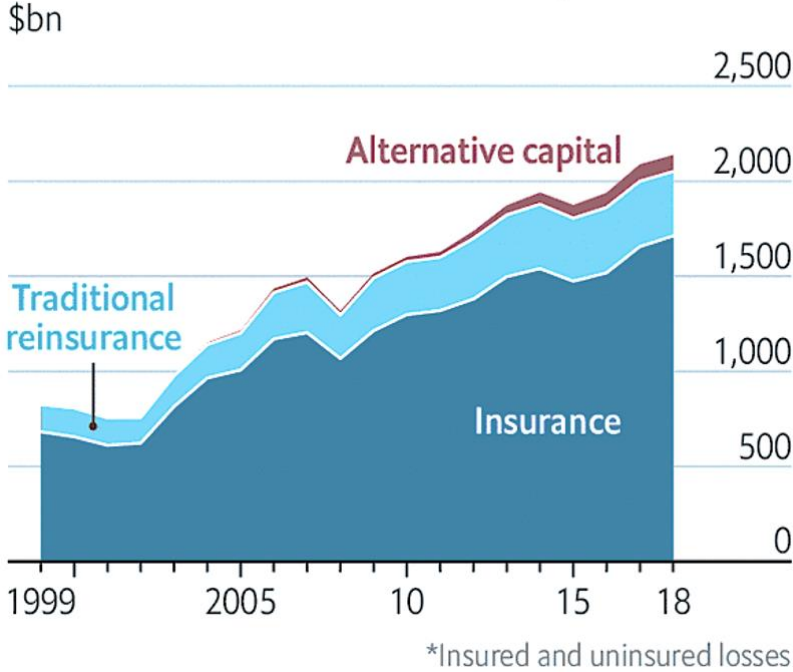
- State Farm, Allstate flee as they push state for rate hikes
- The state is already struggling with an exodus of residents

2 more property insurance companies scaling back in Florida just 2 weeks into hurricane season

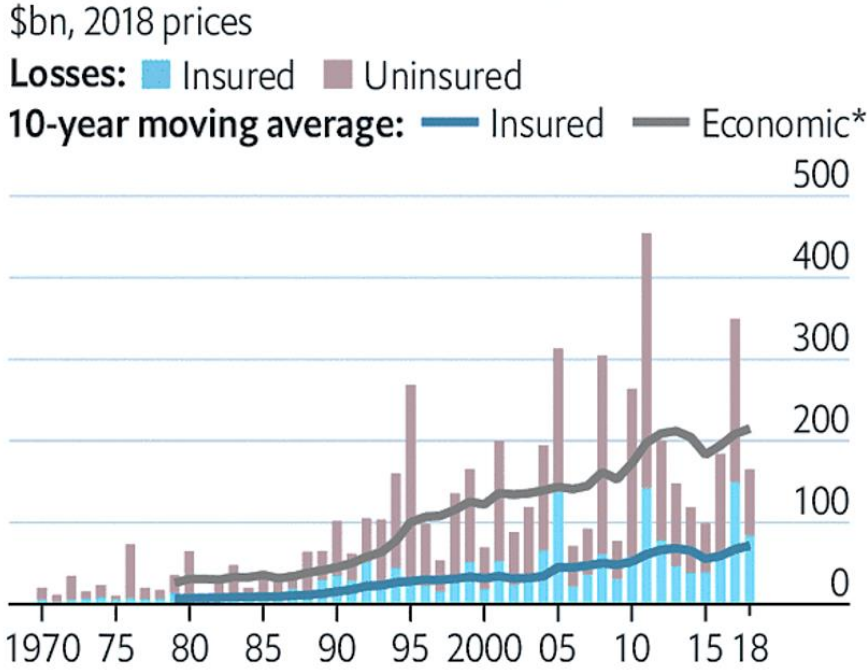


Spiking insurance costs

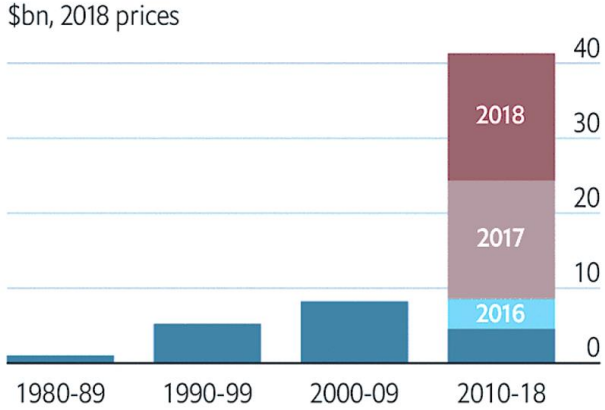
Global non-life and reinsurance capital



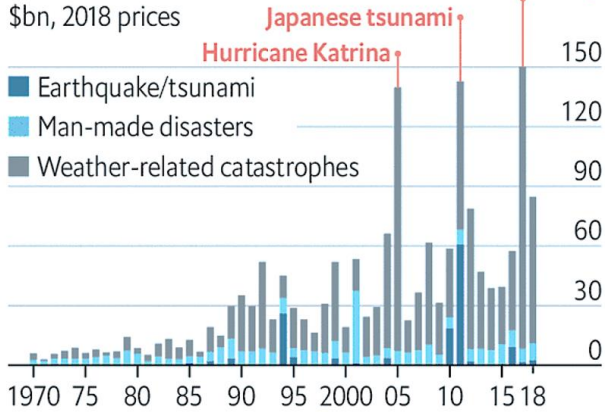
Insured and uninsured catastrophe losses



Global insured losses from wildfires



Insured catastrophe losses



Source: [The Economist](#)



Insurance no longer a proxy

- High instability in the market
- Physical risk modelling not fit for purpose
- Wider data landscape



Data as a necessity for managing climate-related financial risks

What environmental and climate-related data are essential and why?

Firms need to understand at a **granular level** how exposed their business models and balance sheets are exposed to **climate risks, both present and future**, so they can take the appropriate risk management measures today. This includes investing in their data and modelling capabilities and carefully scrutinising the data they obtain from third parties. It means ensuring company boards and senior executives see climate risk as a **strategic priority** and that firms possess sufficient financial resources to absorb losses stemming from climate change risks.

For physical risks

- Location-specific environmental data
 - Flood maps
 - Heatmaps
 - Air quality
- Weather patterns

For transition risks

- Property data and attributes
 - Energy consumption and efficiency
 - Water consumption
 - Waste management
- Construction materials used
- Distance to public transit



Data as a key enabler for managing climate-related financial risks

Building data capabilities

Examples of data sourcing options

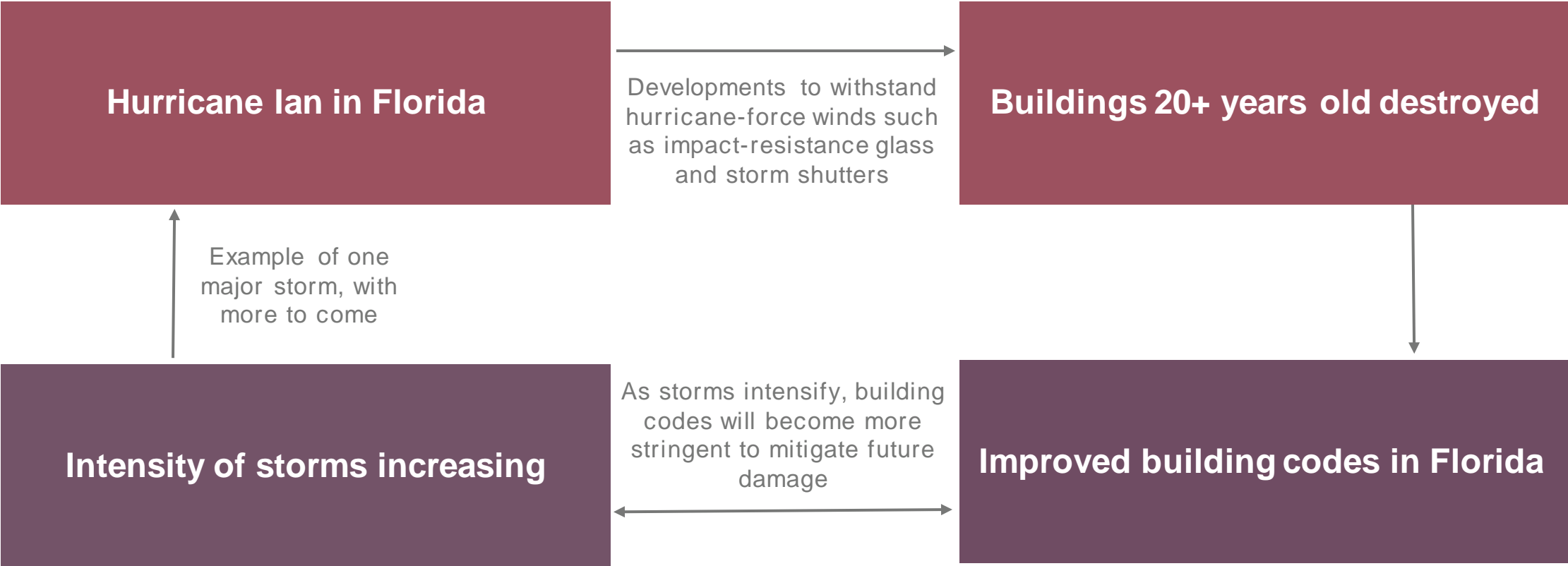
- Collect data from clients (e.g., carbon emissions)
- Proxies (e.g., BER for energy efficiency, Eircode data for flood risk)
- External third-party data providers
- Government environmental data
- Climate stress testing variables and distributions provided by working groups and supervising authorities

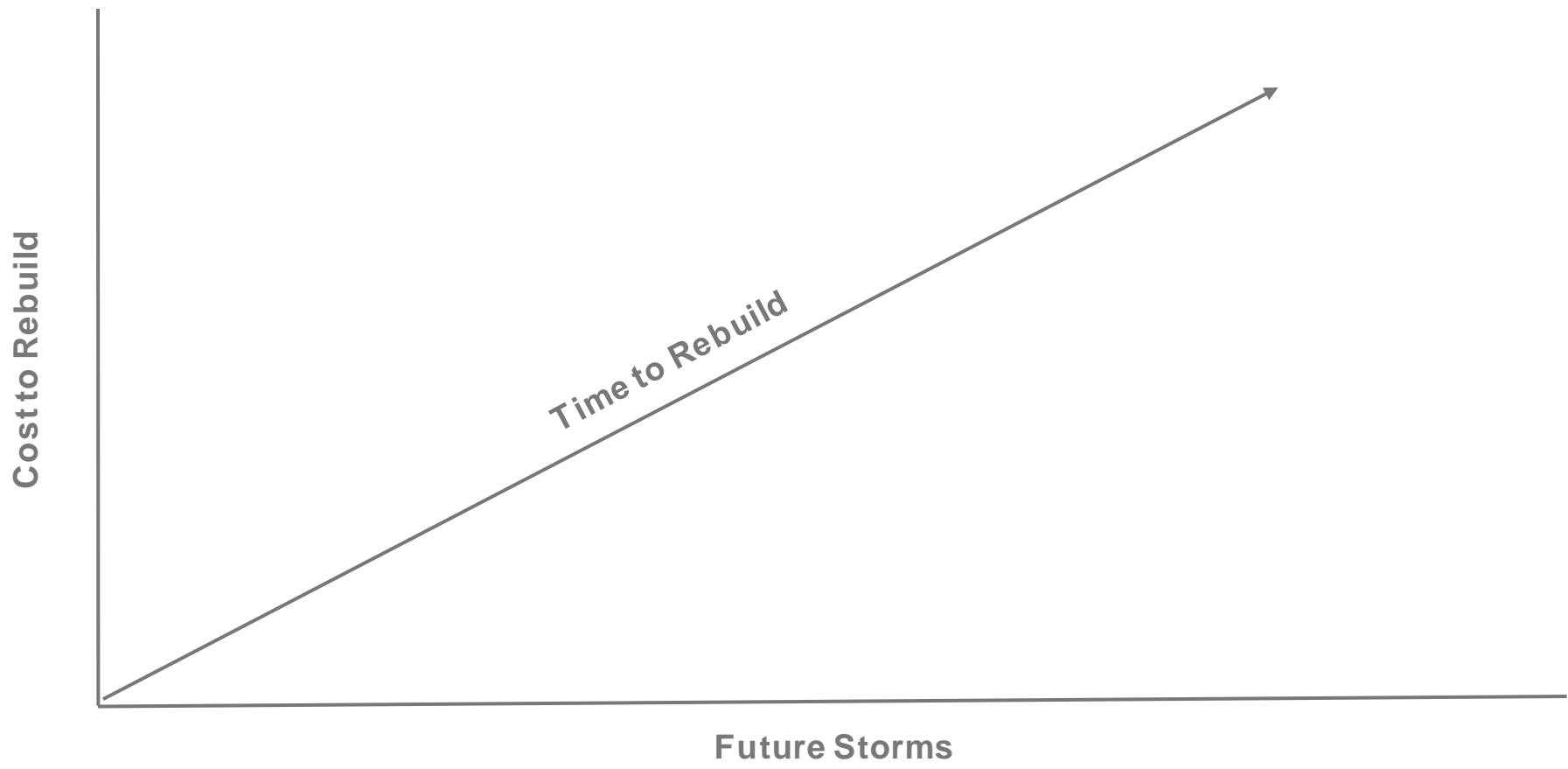
Challenges

- Legacy books, time-consuming tasks, information not available
- Limitations of proxies to provide complete and accurate picture
- Divergent methodologies across data providers leading to different conclusions
- Granularity of scientific data (i.e., not just global / averages)



Example of impacts





Drivers

Continued supply chain constraints



Chronic labor shortage



Inflation



02

Outward Impact



heat pumps

cooling efficiencies

housing low-income
members of the community

air within community spaces

non-toxic finishes

triple-layered windows

basement cogeneration plant

extra insulation

ultra-low-flow water fixtures

energy-efficient
appliances

solar paneling

food scrap containers

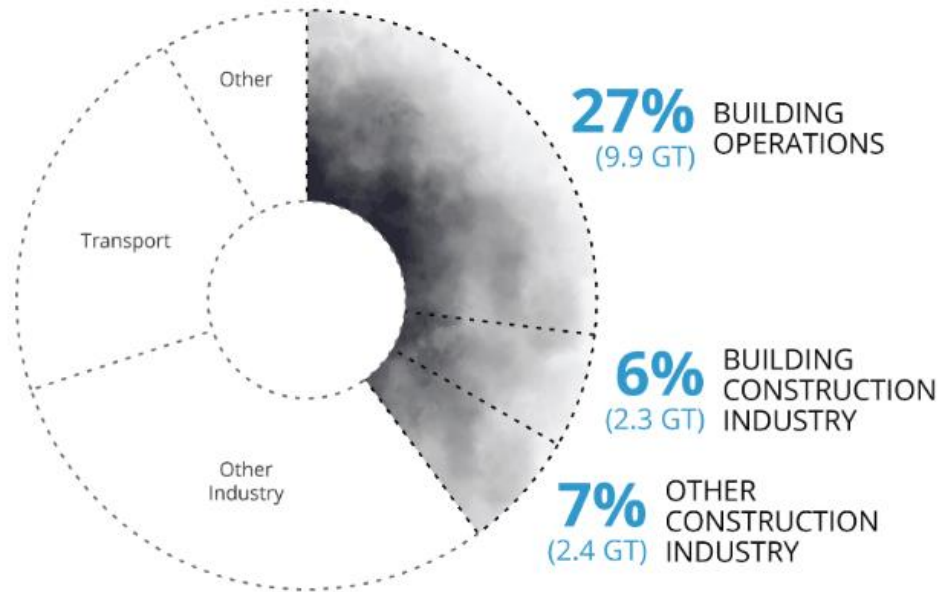
uses waste heat from
appliances to warm the
building

locally sourced

recycled carpets



Annual Global CO₂ Emissions



© Architecture 2030. All Rights Reserved. Data Source: IEA (2022), Buildings, IEA, Paris

Building Construction Industry and Other Construction Industry represent emissions from concrete, steel, and aluminum for buildings and infrastructure respectively.

In 2040, **2/3 of the global building stock** will be buildings that exist today. Without upgrades, they will still be emitting GHGs.

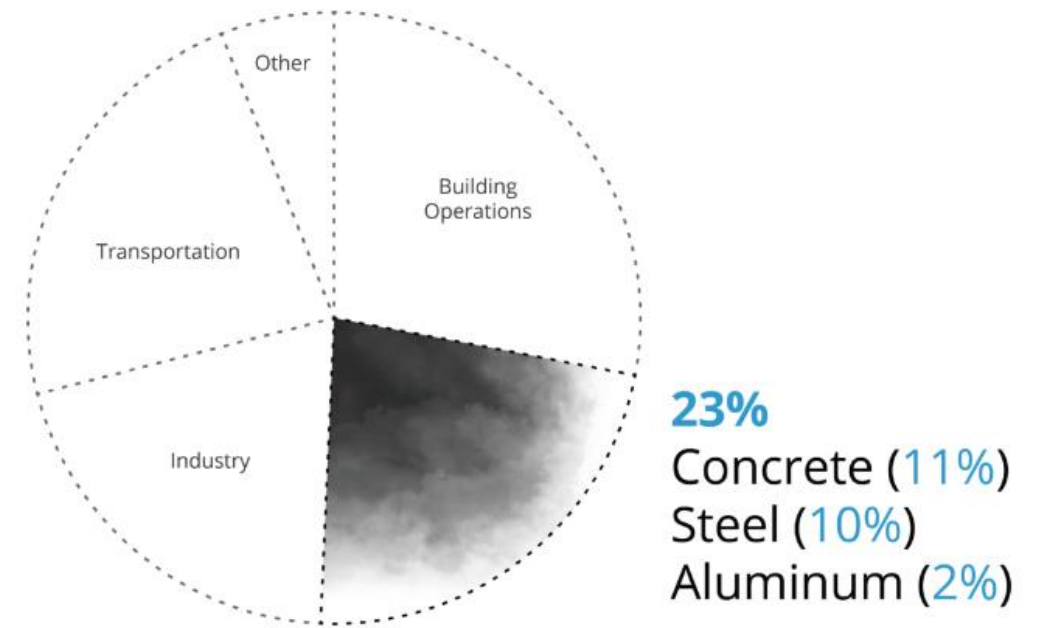


© Architecture 2030. All Rights Reserved.
Data Source: IEA Energy Technology Perspectives 2020, February 2021 Revised Edition



Global building floor area is expected to **double** by 2060

Annual Global CO₂ Emissions



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Data Sources: Global ABC Global Status Report 2018, EIA



ESG initiatives cited as most important in organizational goals:

67%

**Reducing greenhouse
gas emissions**

58%

**Improving people's
health and well-being**

55%

**Reducing resource
usage and waste**



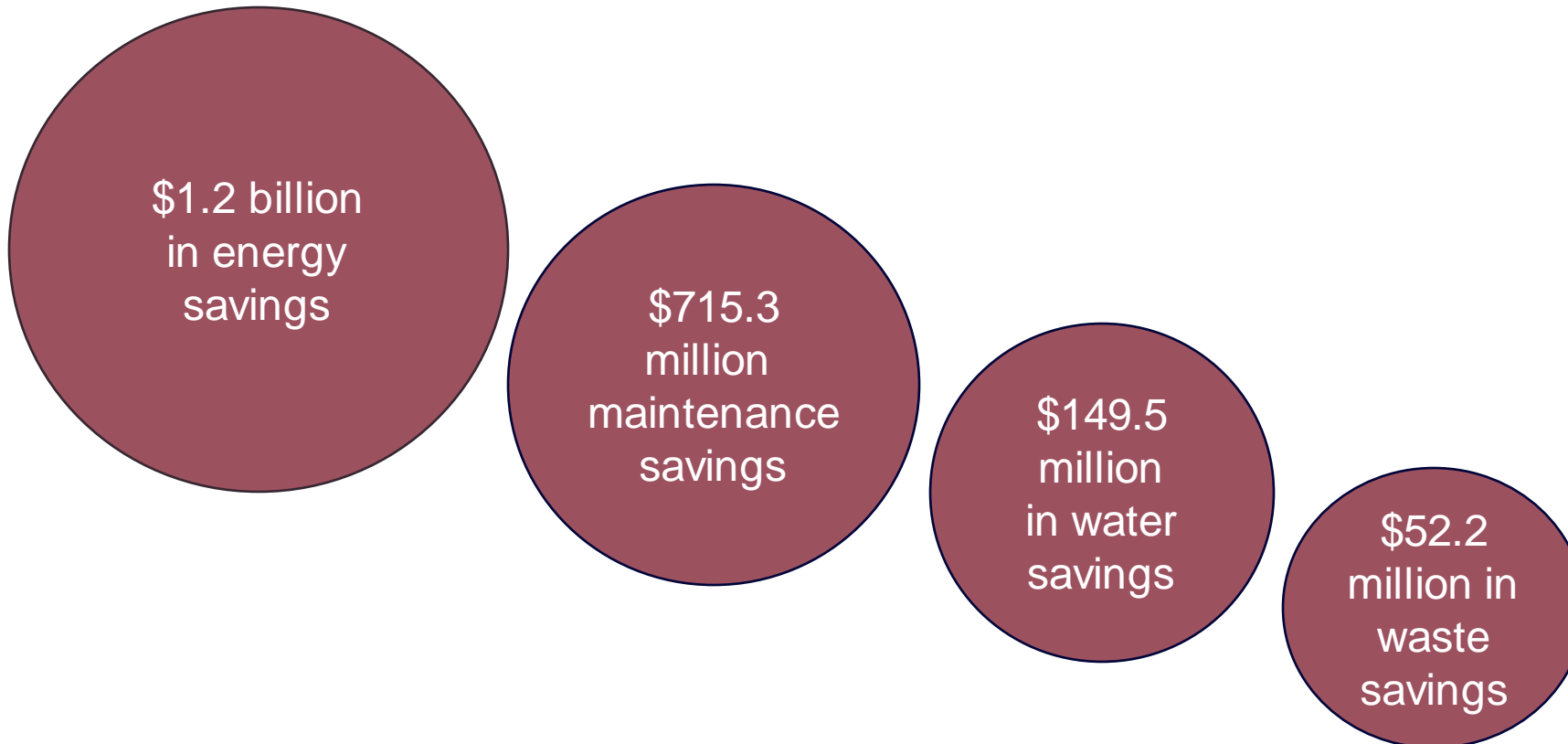
How environmental building features impact real estate transactions

	Pay a Premium (if present)	Seek a Discount (if absent)	Reject Building (if absent)	Total Impact
Features that reduce energy consumption	35%	31%	18%	84%
Green building certification	45%	21%	13%	79%
On-site renewable energy generation	58%	15%	4%	77%
Smart technology that adjusts building operations to reduce environmental impact	53%	18%	5%	76%
Superior resilience to effects of climate change (e.g., flooding)	37%	22%	16%	75%
Features that reduce building water consumption	41%	20%	7%	68%
Uses a green or renewable electricity tariff	38%	16%	9%	63%
Electric vehicle charging points	38%	17%	7%	62%
On-site facilities to reduce and recycle waste	36%	20%	6%	62%
Use of sustainably sourced building materials (e.g., timber)	44%	13%	4%	61%
Green lease clauses to enforce action	33%	17%	8%	58%
On-site biodiversity or protection of local wildlife	32%	13%	3%	48%
Building is refurbished, renovated or converted rather than brand new	30%	12%	5%	47%

Source: CBRE, Strengthening Value Through ESG, 2022



How environmental building features impact real estate transactions



- Environmental performance can correlate with higher rents, lower operating costs, and lower capital costs.
- LEED-certified properties earn approximately 11% higher rents than non-certified ones.
- From 2019 to 2021, LEED-certified assets had a 21.4% higher average market sales price per square foot over non-certified assets.



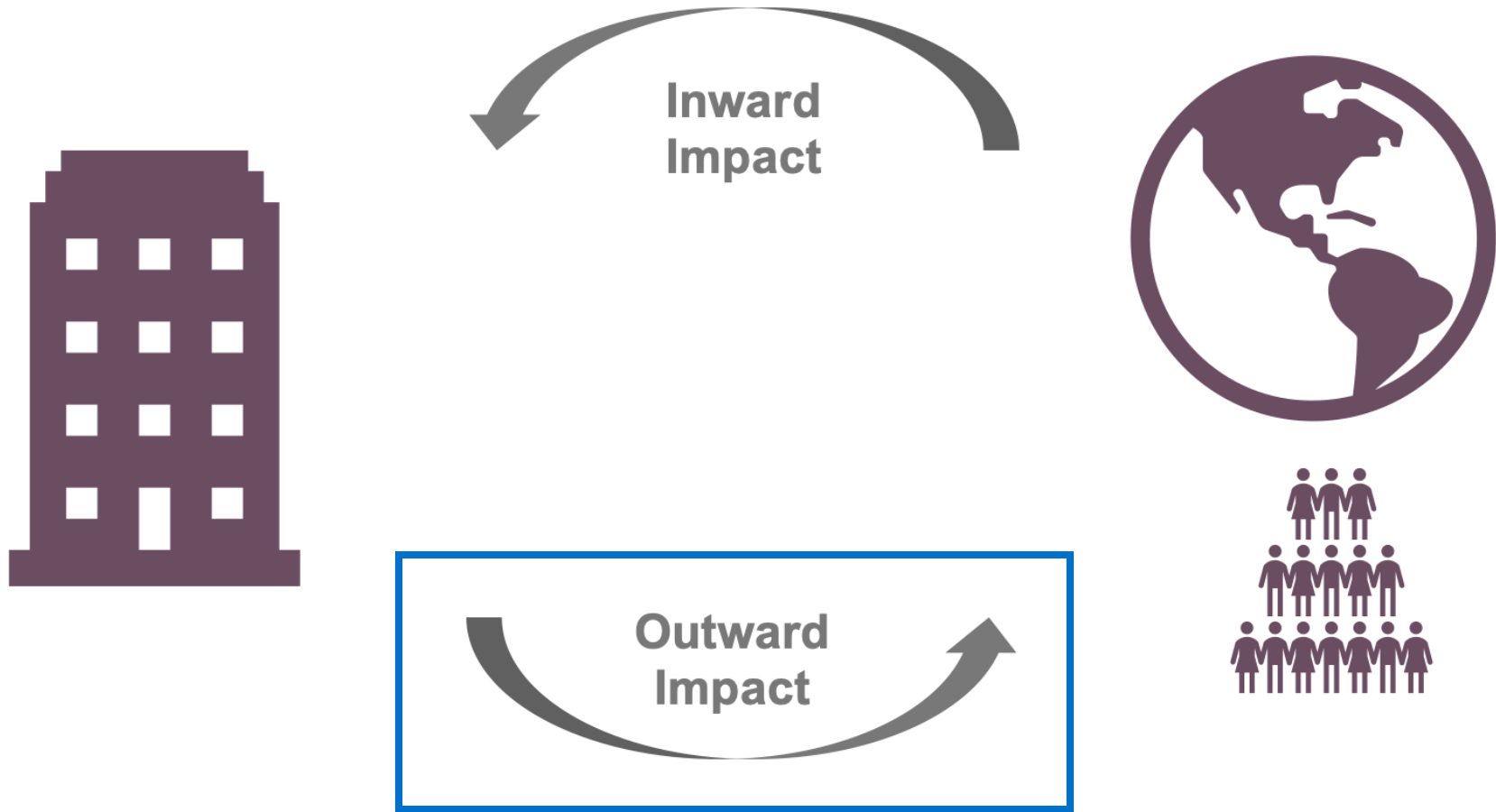
How social building features impact real estate transactions

	Pay a Premium (if present)	Seek a Discount (if absent)	Reject Building (if absent)	Total Impact
Proximity to public transport	43%	20%	19%	82%
Features that improve physical and mental health of building users	49%	12%	6%	67%
Facilities that support cycling and walking	40%	19%	7%	66%
Health and well-being certifications (e.g., WELL)	47%	14%	2%	63%
Inclusive building design (e.g., accommodating ability, age or neurodiversity)	37%	15%	6%	58%
Proximity to an area that the organization can assist socially or economically	31%	9%	4%	44%

Source: [CBRE](#)

03

So, where do we start?

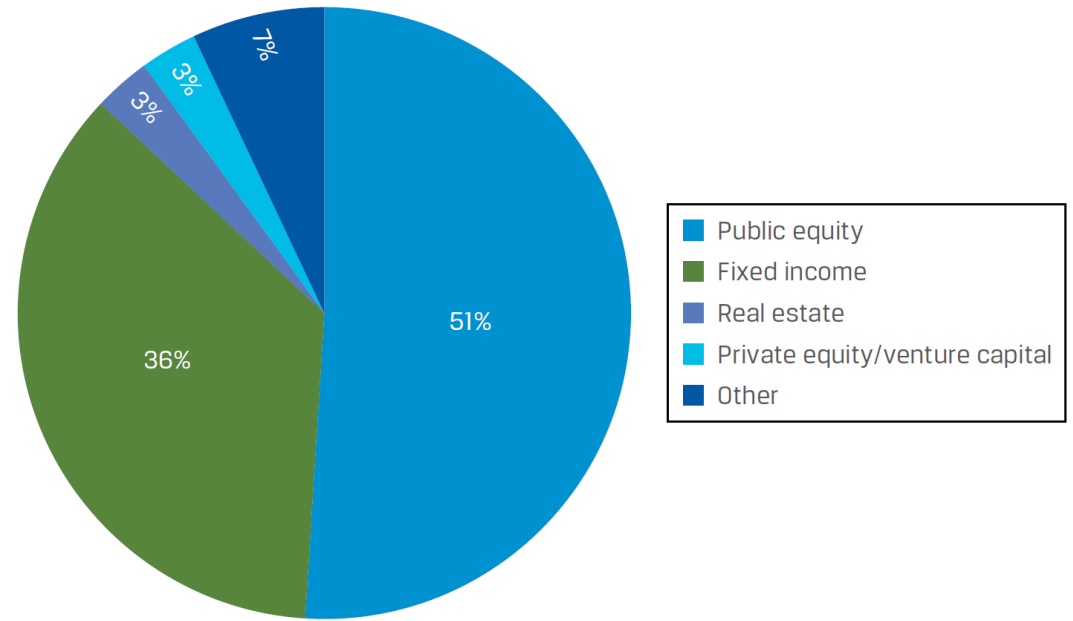




Opportunities

- Enhancing brand and marketability
- Increasing resiliency
- Appreciated property values

- **Attracting capital and investments** | Real estate / property held 3% of global sustainable investing assets



Source: GSIA, "Global Sustainable Investment Review 2018."

Contacts

Phuong Gomard

Sustainable Finance

phuong.gomard@mazarsusa.com

+1 929 631 8702

Claire Gueydan-O'Quin

Global Practice Leader Real Estate

claire.gueydan-oquin@mazars.fr

+33 660 129 132