

A construction site at sunset. In the foreground, a worker in silhouette carries a long metal beam across a grid of rebar. In the background, another worker stands near a crane. The sky is a mix of orange and dark blue. A large yellow semi-circle graphic is on the left side of the image.

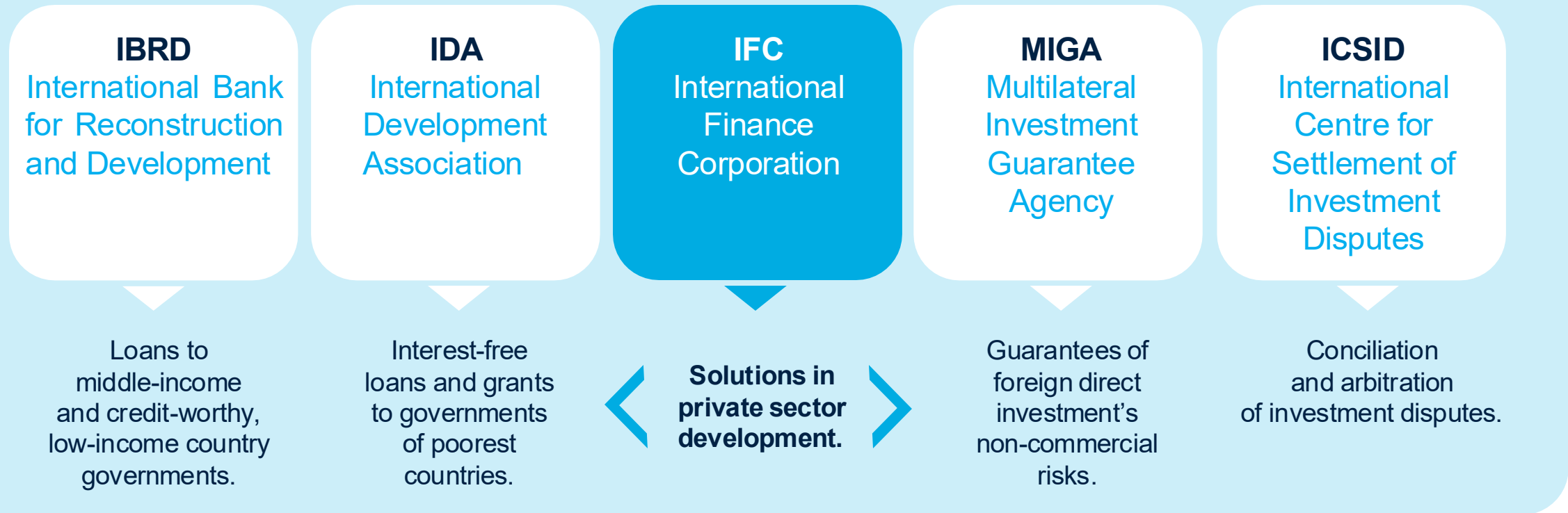
**DESIGNING FOR
DISRUPTION:**

**BUILDING
RESILIENCE
INDEX**

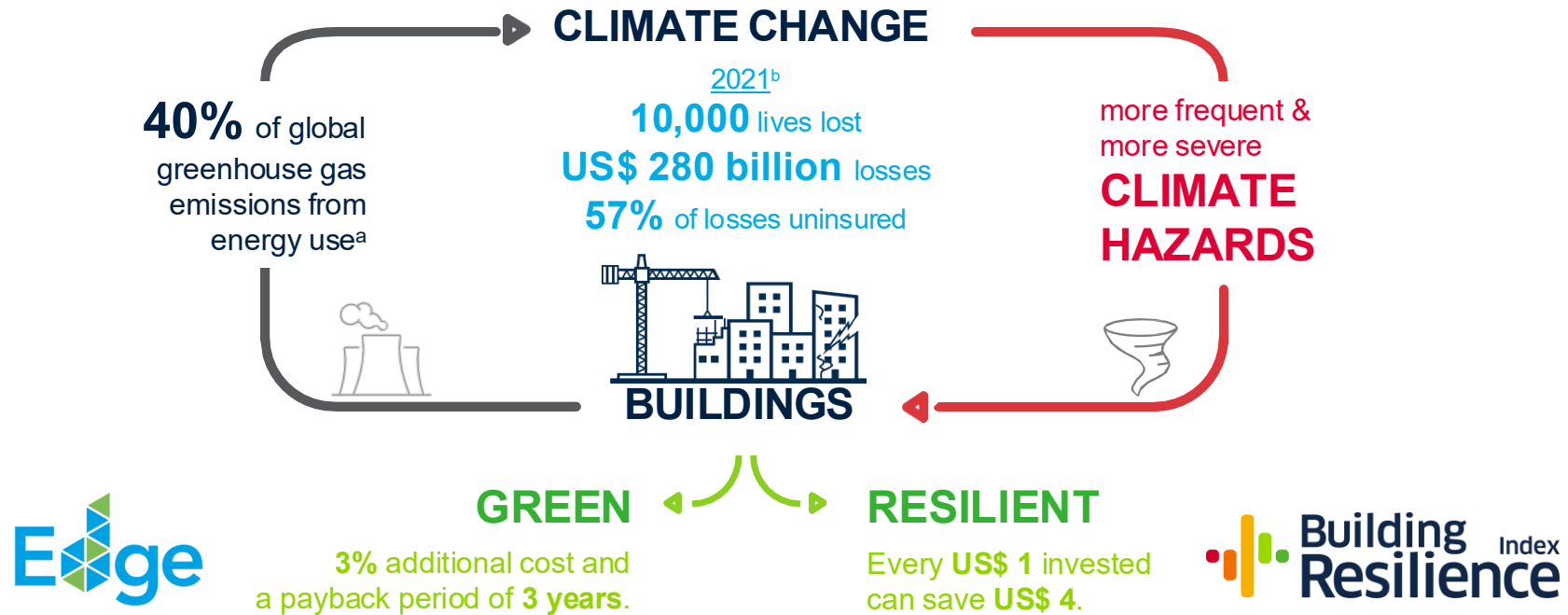
LAY THE FOUNDATIONS FOR RESILIENT CITIES,
ONE BUILDING AT A TIME.



IFC IS MEMBER OF THE WORLD BANK GROUP



THE ROLE BUILDINGS PLAY IN CLIMATE CHANGE



FOLLOWING EXPERIENCE OF EDGE

IFC's track record on buildings started with **climate change mitigation** using **EDGE**. **BRI** complements it by addressing **climate change adaptation**.

a: emissions including embodied carbon; b: includes data from all natural disasters
 Graphic created by Building Resilience Index team with data from: IFC, Munich RE, and Na

IFC'S FOUR-PART STRATEGY TO SUPPORT RESILIENT BUILDINGS



An aerial photograph of a city, likely San Francisco, showing a mix of modern skyscrapers and dense, colorful residential buildings. The Transamerica Pyramid is prominent in the background. The foreground is filled with multi-story apartment buildings with various colored facades and flat roofs. A semi-transparent dark grey banner is overlaid across the middle of the image, containing text.

IFC'S definition for
RESILIENT BUILDING

a building which can withstand the hazards it is exposed to today and tomorrow, due to climate change, and ideally continue its operations without disruption following an intense hazard event



Identify Risk

Identify applicable natural hazards and vulnerabilities based on the location and design of a building.



Manage Risk

Explore risk reduction measures for enhancing the physical integrity and operational continuity of a building.



Disclose Risk

Communicate the resilience of a building by using a standardized letter grade rating system.

Building Resilience Index is an innovation of IFC, a member of the World Bank Group.

BRI is online, and globally available to users **free of charge**.

As of November 2024, users have self-assessed **168** projects, resulting in **9.3 million m²** of assessed total floor space and **US\$ 5.6 billion** in total asset value.

BRI is growing fast: in FY24 the volume of assessed projects has **increased 3.5 times** compared to FY23.



WHAT IS BUILDING RESILIENCE INDEX

A verified self assessment online application that rates any building's hazard mitigation measures

IDENTIFY RISK: LOCATION-SPECIFIC & ASSET-FOCUSED APPROACH



PHYSICAL INTEGRITY

WIND

air motion



WATER

liquid motion



FIRE

rapid oxidation



GEO-SEISMIC

ground motion



Default Hazards

Downburst

Tornado

Storm (Cyclone,
Typhoon, Hurricane)

Local/Urban Flooding

Coastal/Tidal Flooding

River/Lake Flooding

Flash Flooding

Storm surge

Tsunami

Local Fire

Wildfire

Subsidence

Volcano

Landslide

Earthquake



OPERATIONAL CONTINUITY

HISTORIC DATA ON NATURAL HAZARDS + FUTURE LOOKING CLIMATE CHANGE PROJECTIONS

MANAGE RISK: NEW BUILDINGS & RETROFITTING EXISTING BUILDINGS



RESIDENTIAL



OFFICE



RETAIL



HOTEL/RESORT



SCHOOL



HOSPITAL



UNIVERSITY



WAREHOUSE



INDUSTRIAL



MIXED USE



AIRPORT

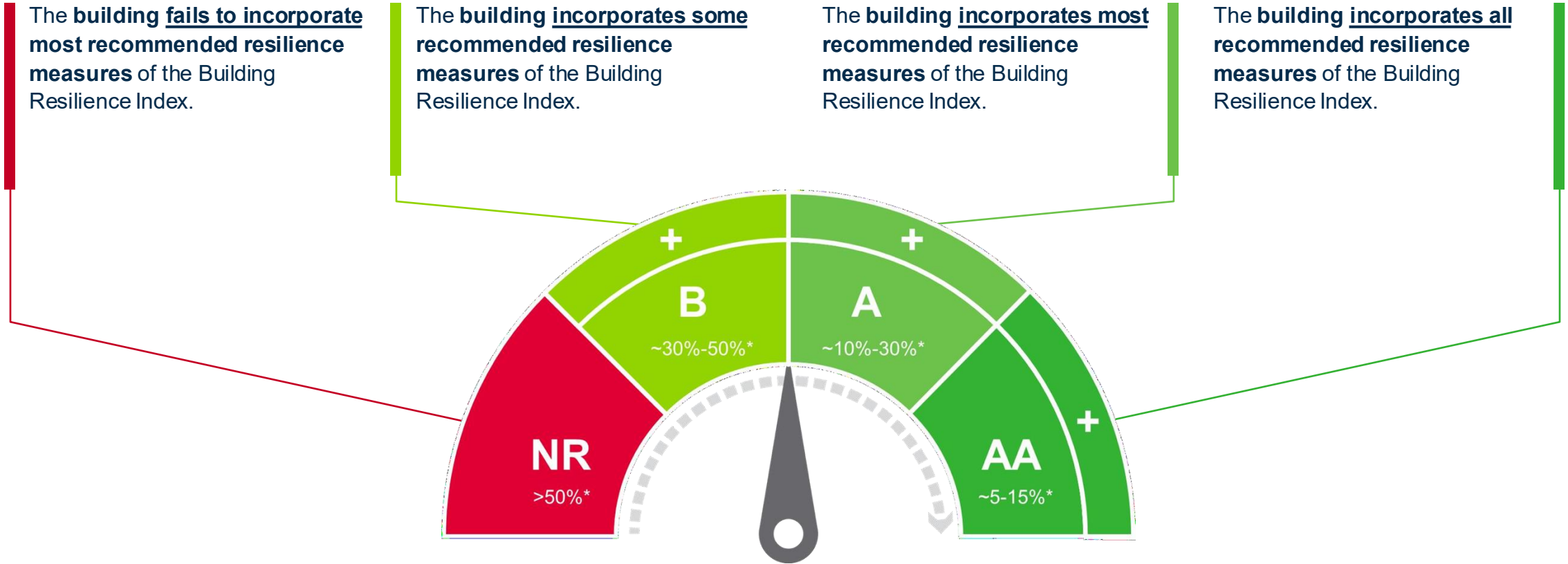


PORT

RESILIENCE MEASURES

- Site Selection
- Foundation Design
- Structural Design
- Building Services (Mechanical, Electrical and Plumbing Systems) Design & Installation
- Material Selection
- Landscape & Site Design
- Design & Construction Audits

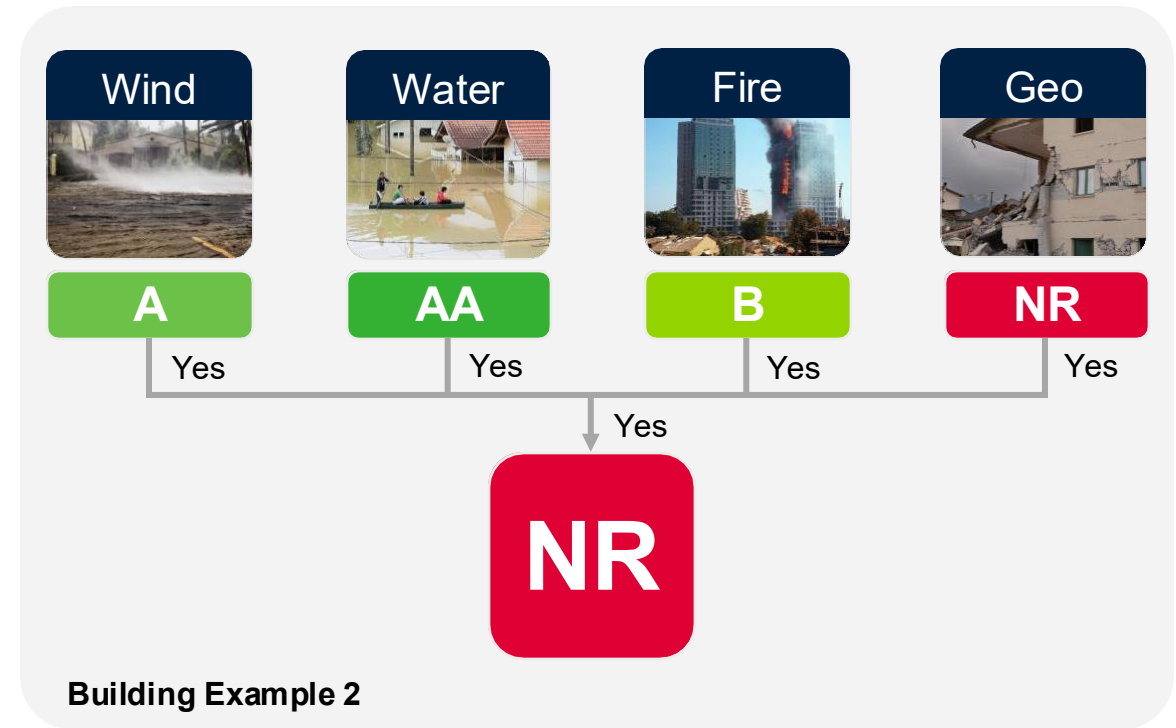
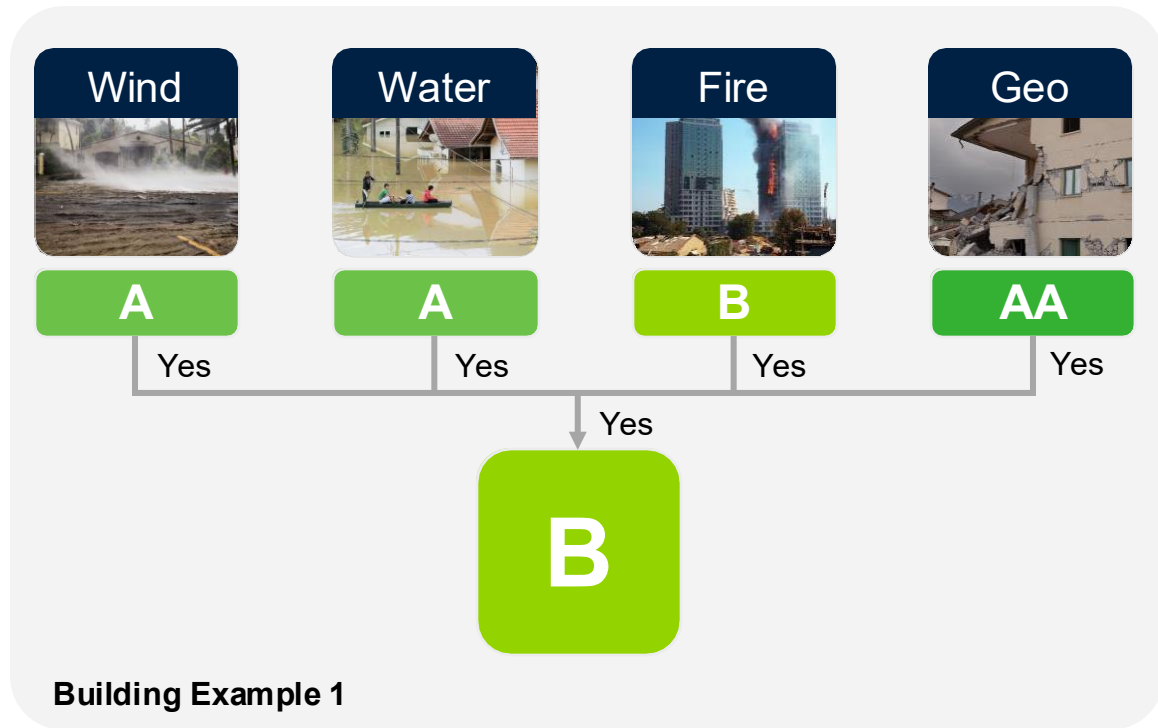
DISCLOSE RISK: A STANDARDIZED RATING SYSTEM



The rating followed by '+' indicates that the building meets all requirements of the identified Building Resilience Index rating, plus **recommended operational continuity measures**.

* Probable Maximum Loss (PML) current replacement cost, including structural and equipment, excluding operational costs.

THE WEAKEST LINK PRINCIPLE



All applicable local hazards must be addressed in order to achieve overall resilience.

The building resilience rating cannot be higher than the weakest level vis-a-vis any relevant hazard.

SELF-ASSESSMENT & VERIFICATION PROCESSES



Who? by the Developer's in-house design and code-responsible technical team, as well as administrative staff if need be

- Steps**
1. Create a Project
 2. Respond to each resilience measure
 3. Request verification from verifiers

two licensed code-responsible engineers, architects or legally entitled parties appointed by the Developer for each mitigation measure

1. Review responses to each resilience measure
2. Submit review

WAYS TO BENEFIT FROM THE BUILDING RESILIENCE INDEX



CONSTRUCTION DEVELOPERS

- Assess and improve resilience to site-specific natural and climate hazards
- Disclose resilience rating to your financiers, insurers, and users
- Differentiate your brand as a developer of resilient buildings



BANKS

- Make informed investment decisions based on natural and climate risks on buildings
- Save time and resources on project evaluation processes
- Reduce property investor risk exposure



INSURANCE COMPANIES

- Complement catastrophe modeling with a multi-hazard approach
- Review resilience rating of assets before underwriting
- Save time and resources on project evaluation processes



GOVERNMENTS & LOCAL AUTHORITIES

- Create skills in the market for more resilient construction practices
- Reduce repetitive costs of post-disaster recovery and reconstruction
- Create an enabling environment for mainstreaming resilient buildings



PROPERTY BUYERS & OWNERS

- Make informed investment or retrofit decisions
- Learn the resilience value of your investment
- Minimize operational disruptions and insurance costs



OCCUPANTS & LESSORS

- Choose to live and work in safer buildings
- Minimize operational disruptions
- Reduce risk of losses due to natural and climate hazards

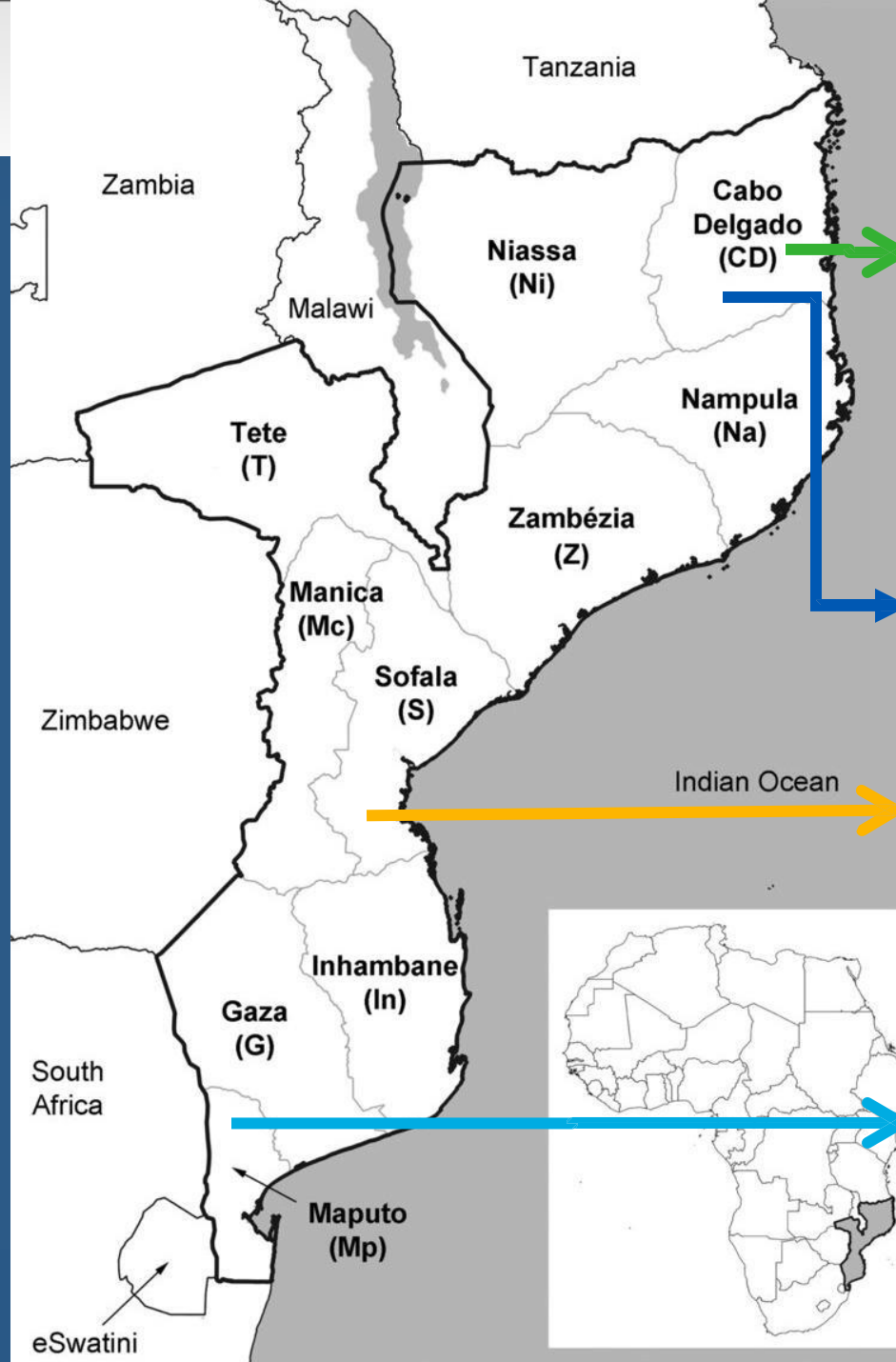


Operational Continuity Measures

- Edge
- Alternative cooling / heating
- Off grid backup power for 48hrs
- Onsite renewable power for 12hrs daily demand
- Backup supply for ¼ demand for 3 days or more
- Sump pumps
- Backup communication
- Multiple access entries to site and building
- Common area for emergency supplies
- Post disaster protocol and designated trained parties

MOZAMBIQUE

- First Sub-Saharan African country for BRI
- Market Study completed and engaged with building sector stakeholders in a Roundtable in Maputo in December 2023
- Engaging with early adopters of Building Resilience Index, promoting the tool and supporting self-assessment
- First verifier training organized in 2024 and five verifiers certified
- Launching the first Green and Resilient Building Professional Network in Mozambique - "Bridge Café"

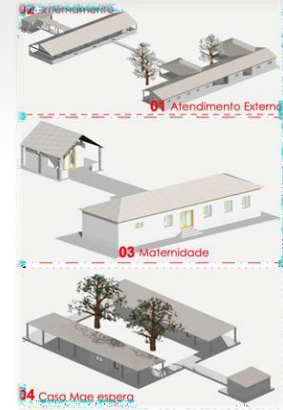


BRI Early Adopters (under self-assessment)



Construction, Remodeling and Rehabilitation of Health Units

AGA KHAN FOUNDATION
An agency of the Aga Khan Development Network



Community Health Centre-Ntocota, Metuge, Cabo Delgado



Resilient School Project Gorongosa National Park



UNICEF Maputo Office Building (EDGE Advanced)





Thank you

LAY THE FOUNDATIONS FOR RESILIENT CITIES,
ONE BUILDING AT A TIME

resilienceindex.org



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Government of the Netherlands



Australian Government

