Sustainable Hospitality Alliance

IFC International Finance Corporation WORLD BANK GROUP

Creating Markets, Creating Opportunities

UNLOCKING INVESTMENTS FOR GREEN AND RESILIENT HOTELS

WEBINAR 3: RISK & RESILIENCE IN THE BUILT ENVIRONMENT

Pathway to NetPositiveHospitality

Environmental

- Resource use and pollution
- Protection and regeneration of nature

Social

- Fairness in the workplace
- Equitable and better opportunities
- Community partnerships and support
- Customer welfare

Governance

- Stakeholder engagement
- Management and compliance
- Commitments and reporting

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GRIP: Greening Real Estate Investment Portfolios

A TWO-STEP PROCESS

1 STRATEGY

Developing a portfolio decarbonization and investment plan

- Baseline assessment of the entire portfolio
- Green guidelines for new developments and acquisitions
- Define corporate-level climate ambitions
- Develop a comprehensive decarbonization pathway, with clear interim KPIs
- Create a financing plan supporting the green transition

2 IMPLEMENTATION

IFC financing to support the green transition

- IFC provides investment in the form of green/ sustainability-linked loans or other products
- The sponsor agrees to report the use of proceeds and progress in achieving agreed interim targts

EDGE: Excellence in Design for Greater Efficiencies

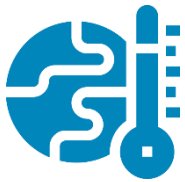
1.
Free Software

Further Resource: [EDGE Software Demo]

2.
Achievable Standards

3.
Verified Green Label

TODAY'S LEARNING OBJECTIVES



- **Climate risk and how hotels can respond to it**

- **Importance of addressing climate resilience**

- **Tools available**

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SUSTAINABLE HOSPITALITY ALLIANCE

Using our collective power across the value chain to deliver impact locally and on a global scale

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7 million rooms

50,000 hotels

CEOs and C-Suite

Water is a global issue…

In 2030, water demand will exceed supply by

40%

$65million

shortfall in hospitality income during Cape Town crisis

…with big impacts for hotels

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1. World Economic Forum

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Mapping areas of high water stress against areas of high hotel growth

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ECOLAB

GREENVIEW

str

Cutting-edge intelligence

Unique analysis of water risk

Help hotels understand financial implications

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The Destination Water Risk Index

379
destinations*

63
countries*

The final rating combines 9 metrics on an equal weighting, ranging from score of 1 (Very Low risk) to 5 (Very High risk).

Types of Risk

Physical Risk

- Baseline Water Stress
- Seasonal Variability
- Future Water Stress

Financial Risk

- Incoming Risk Likelihood
- Revenue at Risk
- Water Intensity per OCRM

Market Risk

- Hotel Pipeline % of Supply
- Population
- Tourism Contribution as a % of GDP

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**selected based on data availability for all metrics.*

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Key findings

13% of destinations have very high / high water risk (mainly across Asia, Middle East and Africa)

All 4 very high risk destinations are in the Asia Pacific region

Very high risk	Delhi, Maldives, Qingdao, Xian

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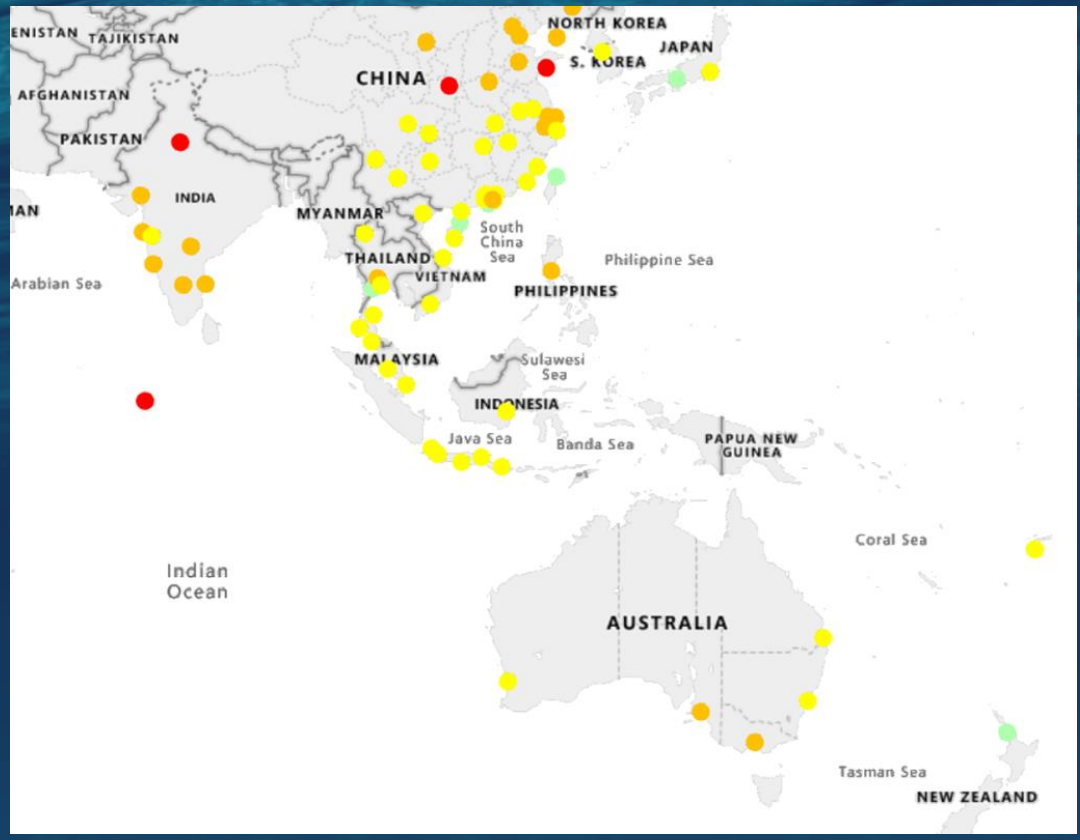
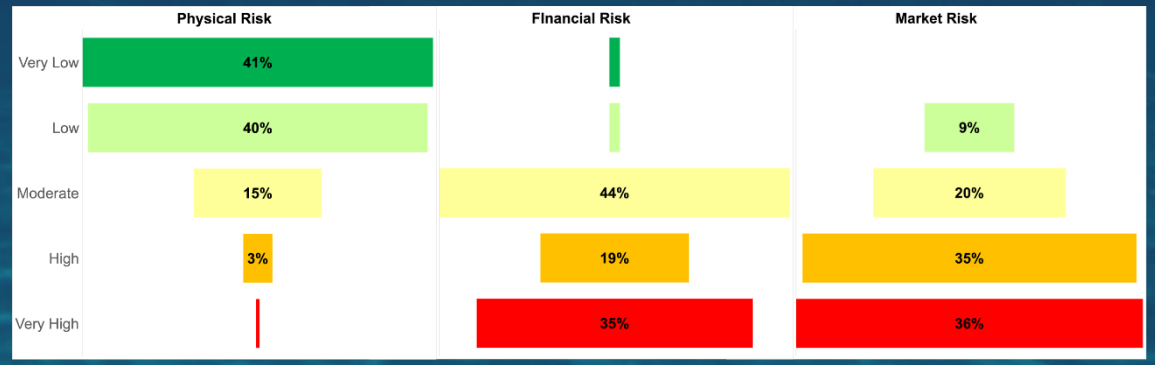
Asia Pacific

75 destinations
33% very high or high risk

Very high* & high risk destinations

• Adelaide	• Greater Zhengzhou	• Qingdao*
• Ahmedabad	• Hangzhou	• Shanghai
• Bangkok	• Hyderabad	• Shenyang
• Beijing	• Jinan	• Shenzhen
• Bengaluru	• Maldives*	• Suzhou-Wuxi-Changzhou
• Chennai	• Manila	• Tianjin
• Dalian	• Melbourne	• Xian*
• Delhi*	• Mumbai	• Yinchuan
• Goa		





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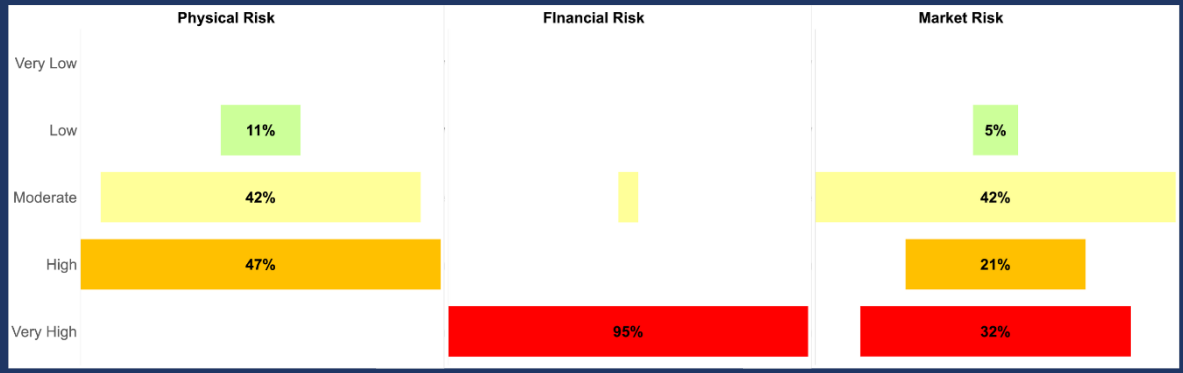
Middle East & Africa

19 destinations
90% very high or high risk

High risk destinations

• Abu Dhabi	• Casablanca	• Makkah
• Algiers	• Doha	• Marrakech
• Al Khobar	• Dubai-Sharjah-Ajman	• Muscat
• Amman	• Istanbul	• Riyadh
• Ankara	• Jeddah	• Tunis
• Cape Town	• Kuwait	



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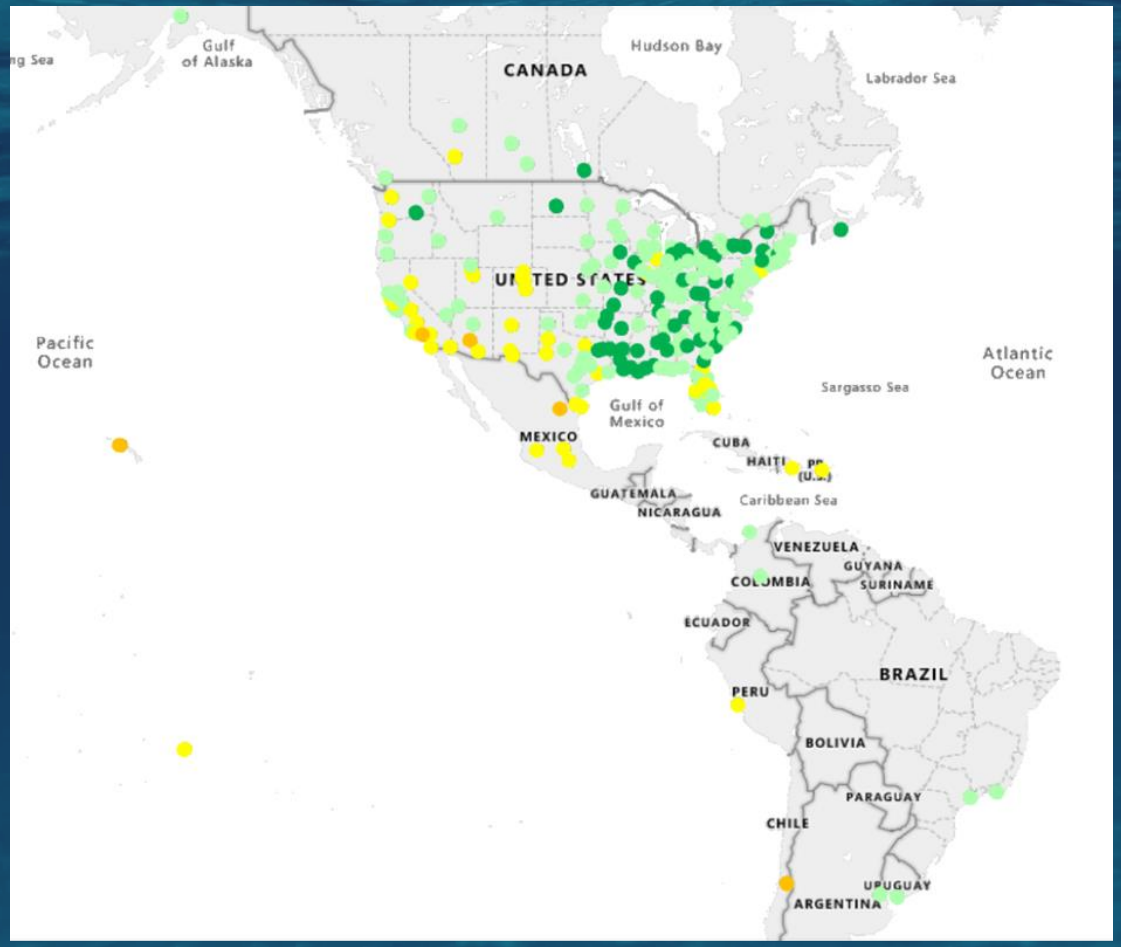
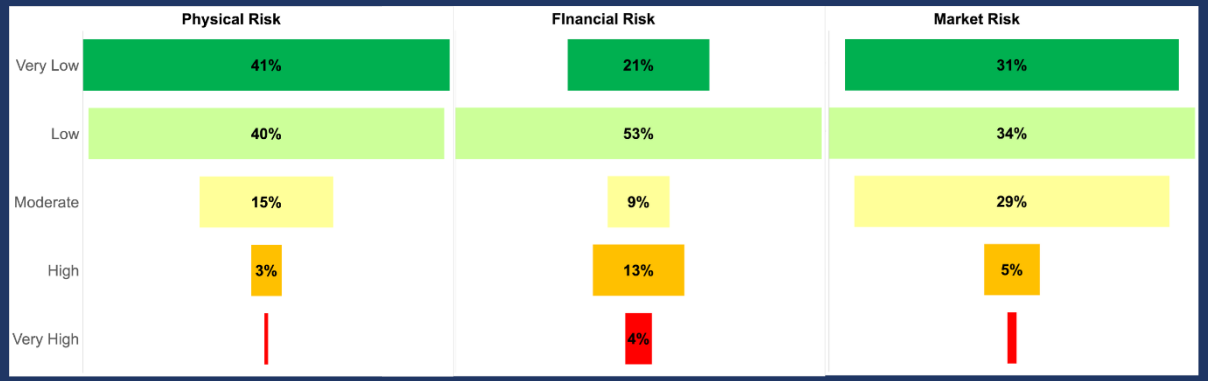
Americas



233 destinations
2% very high or high risk

High risk destinations

- Honolulu
- Los Angeles
- Monterrey
- Phoenix
- Santiago



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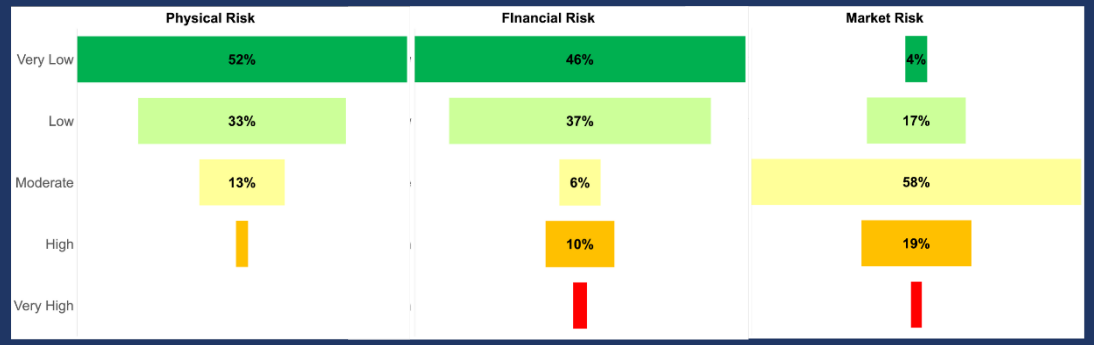
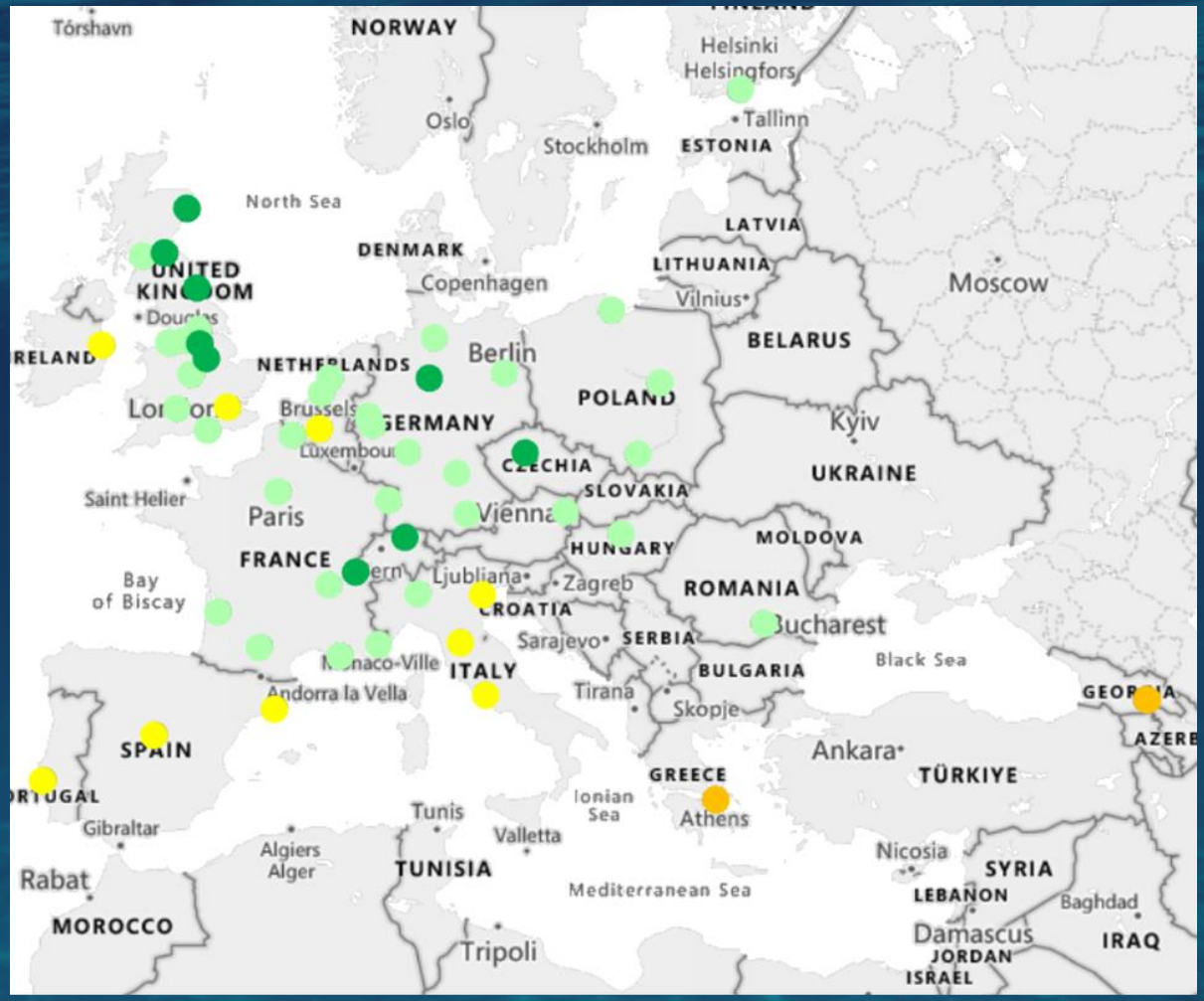
Europe

52 destinations
4% very high or high risk

High risk destinations

- Athens
- Tbilisi





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Using the Destination Water Risk Index

Report

Destinations with very high and high

- **Overall risks**
- **Physical risk**
- **Financial risk**
- **Market risk**

Destination	Country	Region
Ahmedabad	India	Asia Pacific
Delhi	India	Asia Pacific
Honolulu, HI	United States	Americas
Maldives	Maldives	Asia Pacific

Table 3: Destinations with very high Physical risk

High risk destinations

Destination	Country	Physical risk	Financial risk	Market risk
Americas				
Honolulu, HI	United States	Very high	Very high	Moderate
Los Angeles, CA	United States	High	High	Moderate
Monterrey	Mexico	High	High	High
Phoenix, AZ	United States	Moderate	Very high	High
Santiago	Chile	High	High	Moderate
Asia Pacific				
Adelaide	Australia	High	High	High
Ahmedabad	India	Very high	Very high	High
Bangkok	Thailand	Moderate	High	Very high
Beijing	China	High	Very high	High
Bengaluru	India	Moderate	High	High
Chennai	India	High	Very high	Moderate
Dalian	China	Moderate	Very high	High
Goa	India	Moderate	Very high	Moderate
Greater Zhengzhou	China	High	Very high	Very high
Hangzhou	China	Moderate	Very high	Very high
Hyderabad	India	Moderate	Very high	Moderate
Jinan	China	High	High	Very high
Manila	Philippines	Moderate	High	Very high
Melbourne	Australia	Moderate	Very high	Very high
Mumbai	India	Moderate	Very high	High
Shanghai	China	Moderate	Very high	High

Data set

Location	Baseline Water Stress	Seasonal Variability	Future Water Stress	Incoming risk likelihood score	Revenue at risk, YEAR FIVE	Water Usage POR	Hotel Pipeline % of Supply	Population	Tourism % to GDP
Aberdeen	Very Low	Very Low	Low	MEDIUM	Very Low	Very Low	Low	Low	Very Low
Lijiang	Very Low	High	Low	LOW	Very Low	Very High	Moderate	Moderate	High
Lincoln, NE	Very Low	Low	Moderate	HIGH	Moderate	Moderate	Low	Low	Low
Lisbon	Moderate	Low	Moderate	HIGH	Very Low	Low	Moderate	High	Very High
Little Rock, AR	Very Low	Very Low	Low	MEDIUM	Very Low	Low	Low	Very Low	Low
Liverpool	Very Low	Very Low	Very Low	MEDIUM	Very Low	Low	Very High	Low	Very Low
London, ON	Very Low	Very Low	Low	LOW	Very Low	Moderate	Very Low	Low	Very Low
London, UK	High	Low	Very Low	HIGH	Very High	Very Low	High	Very High	Very Low
Longview, TX	Low	Very Low	Moderate	MEDIUM	Very Low	Very Low	Very Low	Very Low	Low
Los Angeles, CA	Very High	High	Low	HIGH	Very High	Low	Moderate	Very High	Very Low
Louisville, KY	Very Low	Very Low	Low	LOW	Very Low	Low	Moderate	Moderate	Low
Lubbock, TX	Very High	Very Low	Moderate	HIGH	Very High	Low	Low	Low	Low
Macon, GA	Low	Low	Low	MEDIUM	Very Low	Low	Very Low	Very Low	Low
Madison, WI	Low	Low	Moderate	HIGH	Very Low	Low	Moderate	Low	Low
Madrid	Very High	Low	Moderate	HIGH	Very Low	Very Low	Low	Very High	Moderate
Makkah	Very Low	Moderate	Moderate	HIGH	Very High	High	Very High	Moderate	Very High

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Using the Destination Water Risk Index – Owners

Development, Governance and Reporting teams

Water Risk Management in Planning & Development Phase

- Address water stress issue in planning and development process.
- Identify and plan for future hotel growth in water stressed areas to better manage water demand and supply.
- Continuous monitoring of risk exposure from consumption.
- Plan for diversification in destinations within the portfolio.

Building Design Innovation

- Implementation water saving features and innovation.

Using the Destination Water Risk Index – Operators

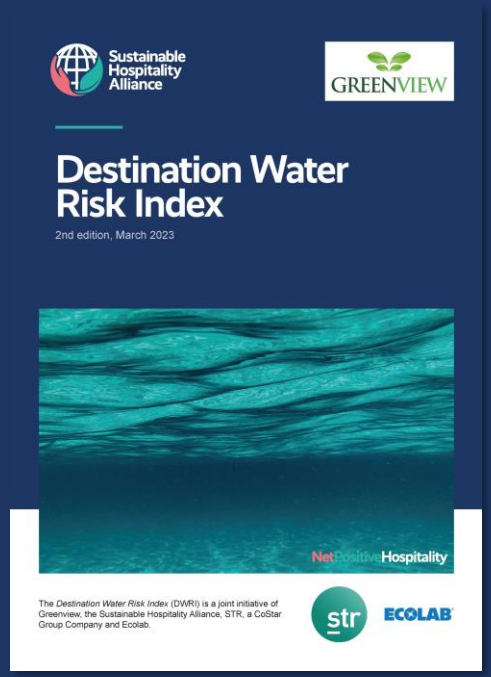
General Manager, Engineering and Operations teams

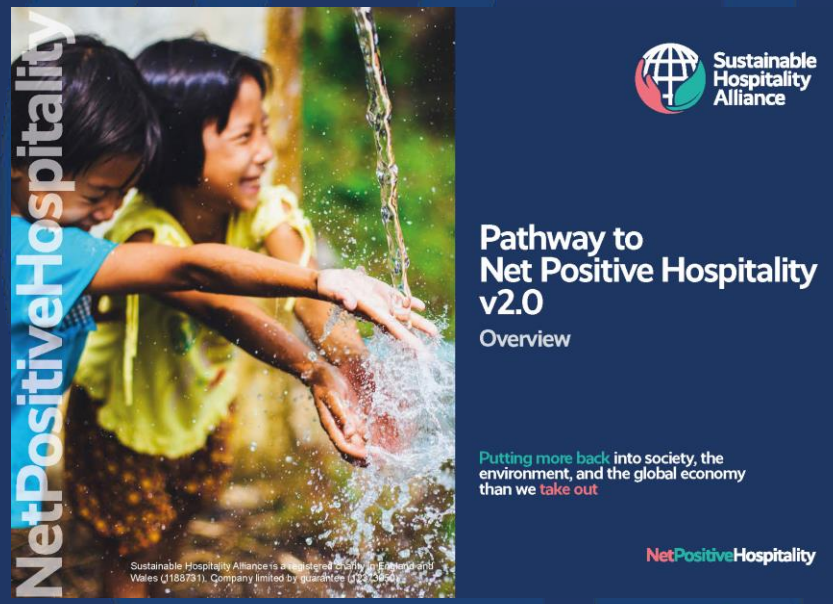
Regular monitoring of consumption

- Measure, track, monitor, report and target for efficiency
- Identify and execute sustainable water action plans for improvement

Advanced water management practices

- Implementation of best practices
- Benchmarks against industry best practices - greenview.sg/services/green-lodging-trends-report/





Available now:
sustainablehospitalityalliance.org

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BUILDING RESILIENCE INDEX

INTRODUCING IFC – INTERNATIONAL FINANCE CORPORATION

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IBRD	IDA	IFC	MIGA	ICSID
International Bank for Reconstruction and Development	**International Development Association**	**International Finance Corporation**	**Multilateral Investment Guarantee Agency**	**International Centre for Settlement of Investment Disputes**
Loans to middle-income and creditworthy low-income country governments	Interest-free loans and grants to governments of poorest countries	**Solutions in private-sector development**	Guarantees for foreign direct investment's non-commercial risks	Conciliation and arbitration of investment disputes

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

IDA
International Development Association
WORLD BANK GROUP

IFC
International Finance Corporation
WORLD BANK GROUP

MIGA
Multilateral Investment Guarantee Agency

ICSID
INTERNATIONAL CENTRE FOR SETTLEMENT OF INVESTMENT DISPUTES

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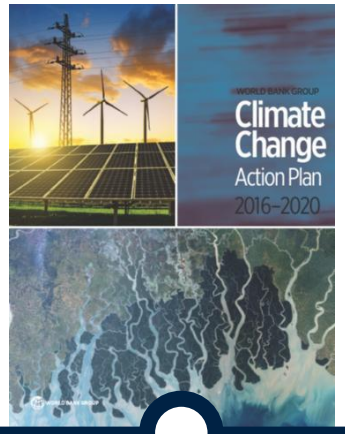
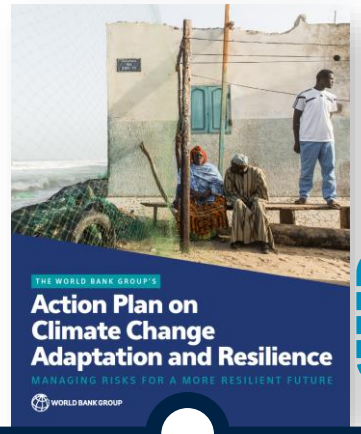
WORLD BANK GROUP'S WORK IN RESILIENT BUILDINGS



June 2016

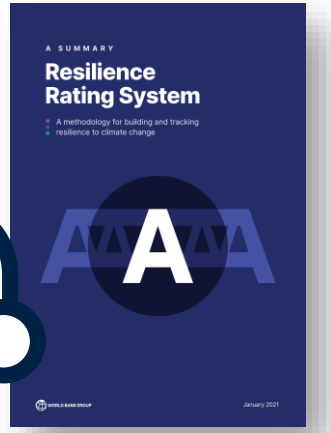
Priority III. Increase its investments with climate co-benefits, focusing on a few high-impact areas and **rebalancing its portfolio with more focus on adaptation and resilience**



January 2019

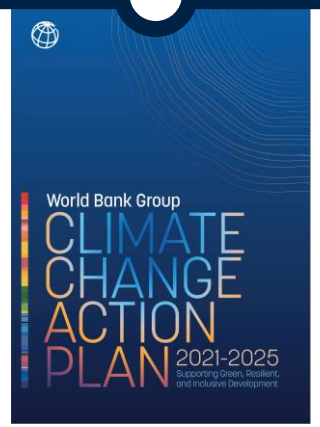
Core objectives:

- Boost adaptation financing - direct adaptation climate finance to reach $50 billion over FY21–25.
- Drive a mainstreamed, whole-of-government programmatic approach
- Develop **a new rating system to incentivize investments in adaptation and resilience and improve tracking.**



January 2021

June 2021



- Country Climate and Development Reports (**CCDR**s)
- **July '23:** 85% of all operations Paris-aligned
- **July '24:** 100% of all operations Paris-aligned
- **Climate finance:** 35% of overall flows
- **Adaptation:** 50% of climate finance (IDA & IBRD)
- **Cities & buildings** are one of the 5 key investment areas
- Direct **reference to Building Resilience Index**

Building Resilience Index

Main approach:

- Resilience of the project
- Resilience through the project
- Letter grade rating system

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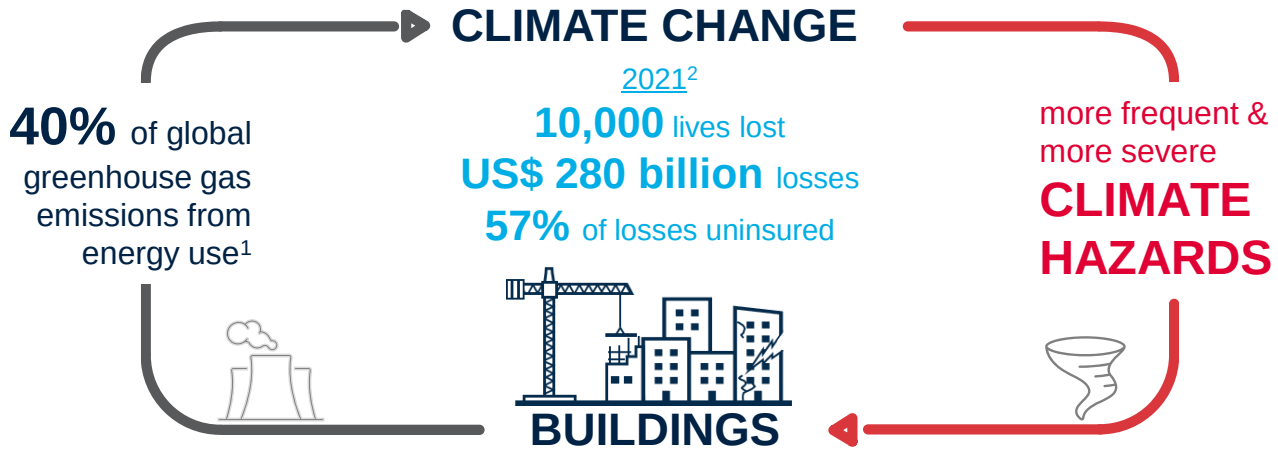
THE ROLE BUILDINGS PLAY IN CLIMATE CHANGE



Edge

GREEN

3% additional cost and a payback period of **3 years**.

RESILIENT

Every **US$ 1** invested can save **US$ 4**.

Building Resilience Index

FOLLOWING EXPERIENCE OF EDGE

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

[1] Emissions including embodied carbon; [2] Includes data from all natural disasters
Graphic created by Building Resilience Index team with data from: IFC, Munich RE, and National Institute of Building Science

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IMPACTS ACROSS THE CLIMATE SYSTEM

Chronic Stresses

Mean global temperature increase

Precipitation pattern changes

Sea level rise

Fire weather

Glacial retreat

Ice sheet loss

Northern Hemisphere snow cover change

Mean ocean temperature increase

Ocean acidification

Acute Shocks

Heatwaves

Extreme precipitation

Tropical Cyclones

Storm surges

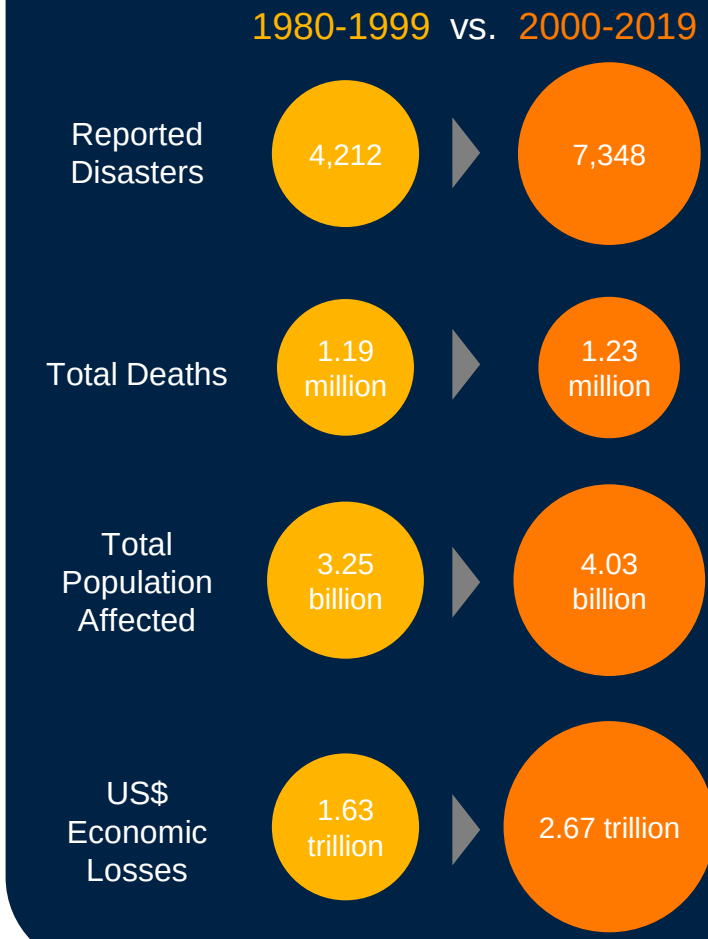
Floods (fluvial, pluvial, coastal…)

Droughts

Wildfires

Marine heatwaves

Decadal Disaster Impact Trends



Data Source(s): IPCC, AR6 Climate Change 2021: The Physical Science Basis, 2021. CRED & UNDRR, Human Cost of Disasters, 2020.

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CLIMATE CHANGE IMPACTS ON TOURISM SECTOR

Chronic Stresses | **Acute Shocks**

Tourism Types

Beach & Coastal

Ocean & Sea Life

Cities & Urban Centers

Mountain & Snow

Forest & Lake

Biodiversity & Agricultural

Impacts

Destination Demand

Season

Operations

Physical Infrastructure

Adapted from: University of Cambridge Institute for Sustainability Leadership (CISL), Climate Change: Implications for Tourism, 2014.

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WHEN BUILDINGS ARE AFFECTED BY DISASTERS

Hotels and Other Buildings

- Total loss of the asset due to structural collapse
- Structural damages varying from irreparable to minor
- Loss of non-structural building components (e.g., roof tiles, windows)
- Disruption of utility connections due to damages sustained by utility infrastructures
- Damages to mechanical, electrical, plumbing systems
  - Risk of secondary hazards being triggered (e.g., fire)
- Damages to equipment, furniture, stock…etc.
- Contamination (water hazards)
- Mold development (water hazards)
- Disruption of building's operations and/or services

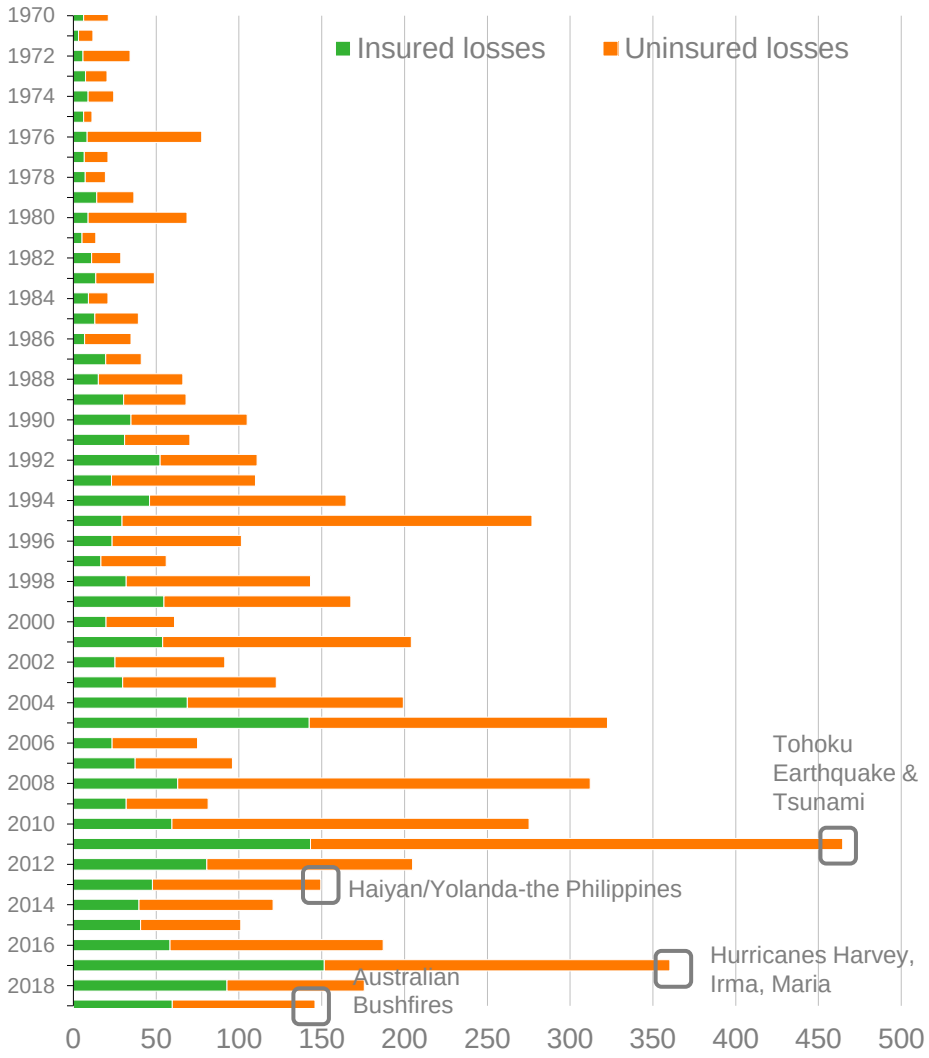
People

- Deaths
- Physical injuries
- Mental health consequences
- Displacement

Economy

- Business disruption
- Loss of livelihoods, income, revenues…etc.
- Reconstruction costs

DISASTERS ARE COSTLY AND ASSETS ARE MOSTLY UNINSURED



2011: Tohoku Earthquake

2013: Haiyan/Yolanda- the Philippines

2017: Hurricanes Harvey, Irma, Maria

2019-2020: Australian Bushfires

Data Sources: *Swiss RE, EMDAT, NOAA*

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BUSINESS CASE FOR INVESTING IN RESILIENCE MEASURES

National Institute of BUILDING SCIENCES™

	ADOPT CODE	ABOVE CODE	BUILDING RETROFIT	LIFELINE RETROFIT	FEDERAL GRANTS
Overall Benefit-Cost Ratio	11:1	4:1	4:1	4:1	6:1
Cost ($ billion)	$1/year	$4/year	$520	$0.6	$27
Benefit ($ billion)	$13/year	$16/year	$2200	$2.5	$160
Riverine Flood	6:1	5:1	6:1	8:1	7:1
Hurricane Surge	not applicable	7:1	not applicable	not applicable	not applicable
Wind	10:1	5:1	6:1	7:1	5:1
Earthquake	12:1	4:1	13:1	3:1	3:1
Wildland-Urban Interface Fire	not applicable	4:1	2:1	not applicable	3:1

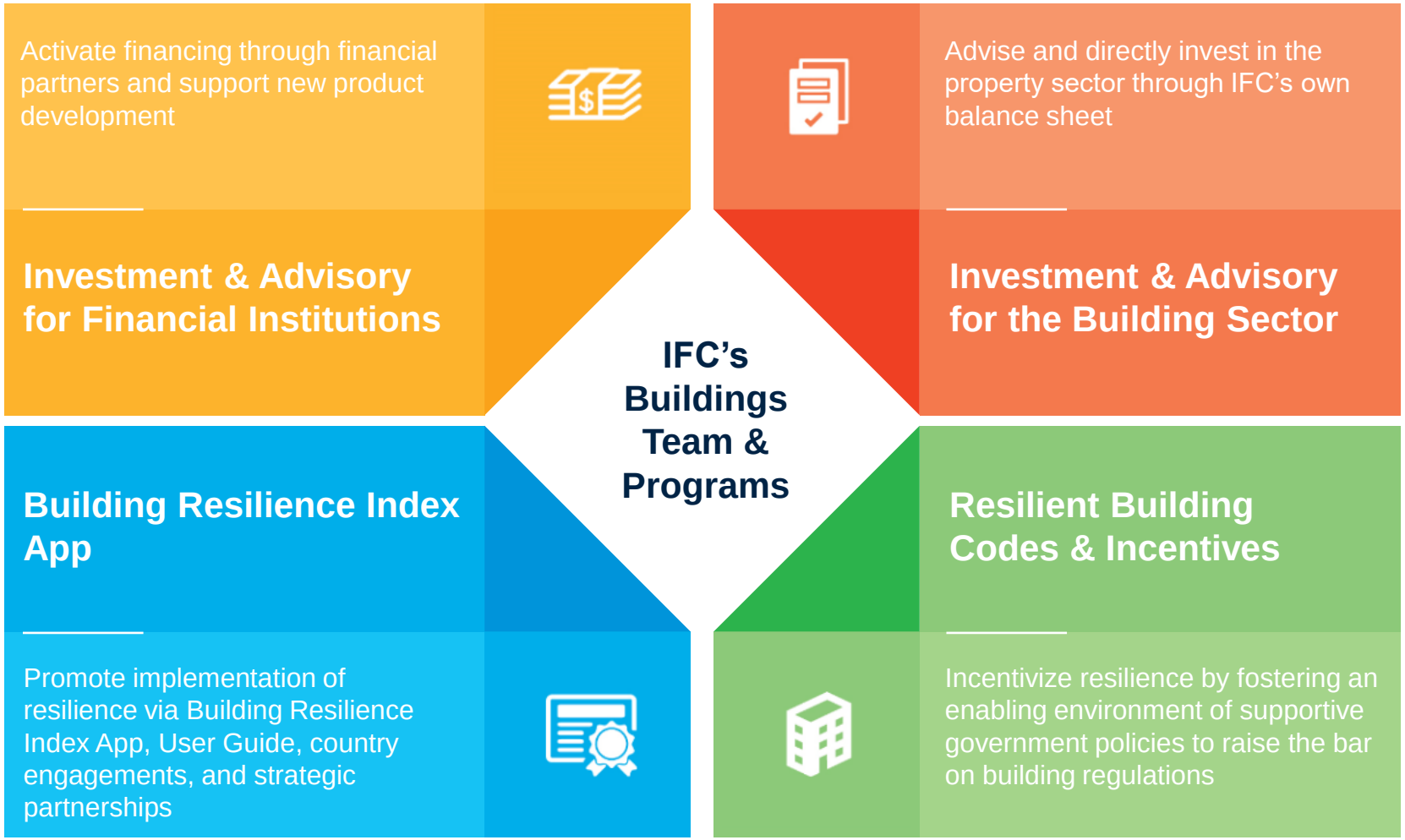
Source: National Institute of Building Science, Natural Hazard Mitigation Saves 2019 Report

RESILIENT BUILDING

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

Photo: Andrei Miranchuk (Unsplash)

IFC'S APPROACH TO CREATING IMPACT



Building Resilience Index

Identify Risk

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

Manage Risk

Explore a list of risk mitigation 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.

Access from: https://www.resilienceindex.org/

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

MITIGATE RISK: FOR BOTH NEW BUILDINGS & RETROFITING EXISTING BUILDINGS

RISK MITIGATION MEASURES

- Site Selection
- Foundation
- Structural Design
- Mechanical, Electrical and Plumbing Systems Design & Installation
- Material Selection
- Landscape & Site Design
- Design Review
- Construction Audit
- Operational Continuity

DISCLOSE RISK: RATING LEVELS OF BUILDING RESILIENCE INDEX

The **building fails to incorporate most recommended resilience practices** of Building Resilience Index. **It will likely not withstand** most applicable hazards, even at moderate level.

The **building incorporates some recommended resilience practices** of Building Resilience Index. It will likely withstand some applicable hazards at a moderate level.

The **building incorporates most recommended resilience practices** of Building Resilience Index. It will likely withstand some applicable hazards at a moderate-high level.

The **building incorporates ALL recommended resilience practices of** Building Resilience Index for all applicable hazards, which are generally set above the local building standards. It will likely withstand all applicable hazards at high level.

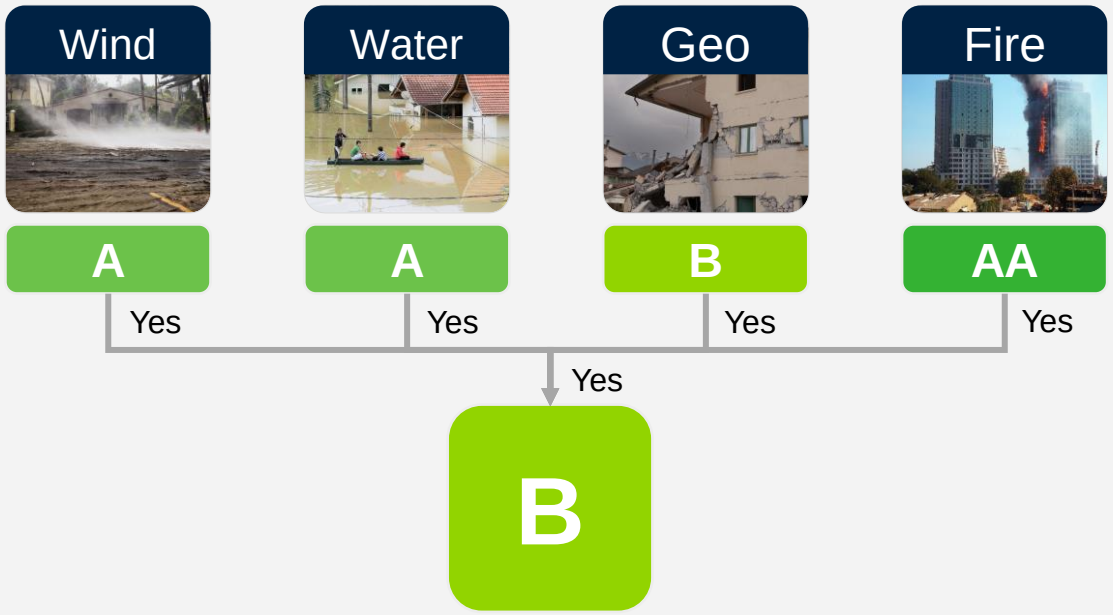
The rating followed by '+' indicates that the building meets all requirements of the identified Building Resilience Index rating, plus **recommended operational continuity measures**.

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

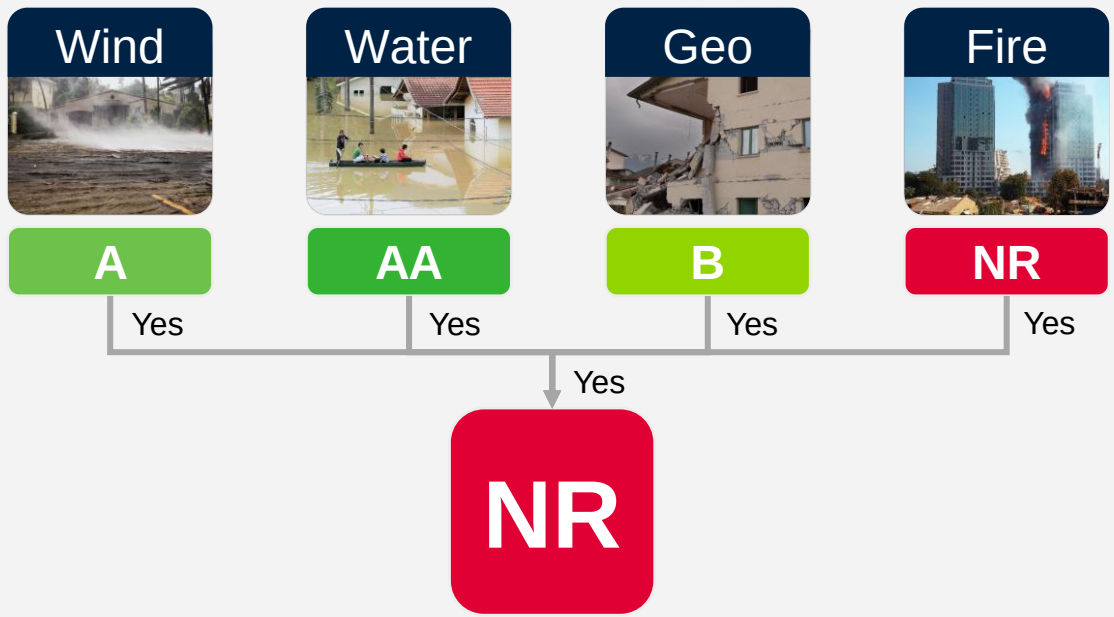
THE WEAKEST LINK PRINCIPLE

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

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



Building Example 1

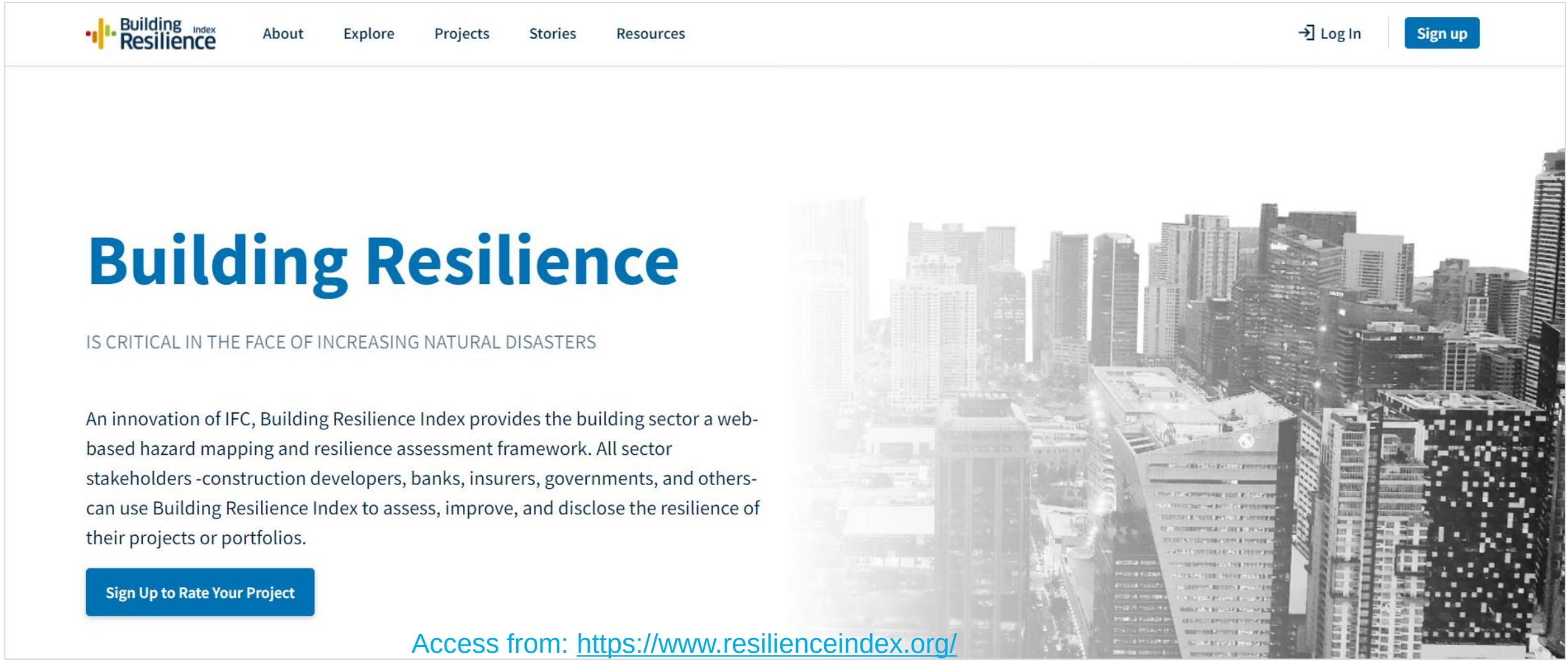


Building Example 2

SELF-ASSESSMENT & VERIFICATION PROCESSES

Who?	by the Developer's in-house design and code-responsible engineering team, as well as administrative staff if need be	**two licensed code-responsible engineers** or parties appointed by the Developer for each mitigation measure
Steps	1. Create a Project 2. Respond to each mitigation measure 3. Request verification from verifiers	1. Review responses to each mitigation measure 2. Submit review

APP DEMO



Access from: https://www.resilienceindex.org/

Demo videos on YouTube at
https://www.youtube.com/@buildingresilienceindex

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Building Resilience Index

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

Identify Risk

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

WIND
air motion

Downburst
Tornado
Storm

WATER
liquid motion

Local/Urban Flooding
Coastal/Tidal Flooding
River/Lake Flooding
Flash Flooding
Storm Surge
Tsunami

FIRE
rapid oxidation

Local Fire
Wildfire

GEO-SEISMIC
ground motion

Subsidence
Volcano
Landslide
Earthquake

Manage Risk

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

PHYSICAL INTEGRITY

RATING	QUESTION	RESPONSE	COSTS (US$) DEFAULT	COSTS (US$) PROJECT
C	WT13. Sealed Openings	Yes / No / N/A	500,000	500,000
	Hide Description: The windows and doors are properly installed and sealed to prevent rainwater from infiltrating to the building's interior.			
	+ Add Comment			
B	WT14. Backflow Valves	Yes / No / N/A	300,000	300,000
	Hide Description: If the ground elevation is less than 5 m above sea/lake/river level, backflow valves are installed to wastewater/sewage flow lines to prevent backflow during flooding.			
	+ Add Comment			

OPERATIONAL CONTINUITY

Disclose Risk

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

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

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WAYS TO BENEFIT FROM THE BUILDING RESILIENCE INDEX

CONSTRUCTION DEVELOPERS

- Assess and improve resilience to site-specific natural 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 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 disasters

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BUILD CHANGE

FM Global

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GFDRR
Global Facility for Disaster Reduction and Recovery