



# Climate Change and Built Environments: Seeing Big Picture Opportunities in Local ESG Challenges

ESG for the Built Environment  
The Garden Ballroom, Parkroyal Collection  
19<sup>th</sup> October, 2022

Gary W. Theseira  
CGM Council

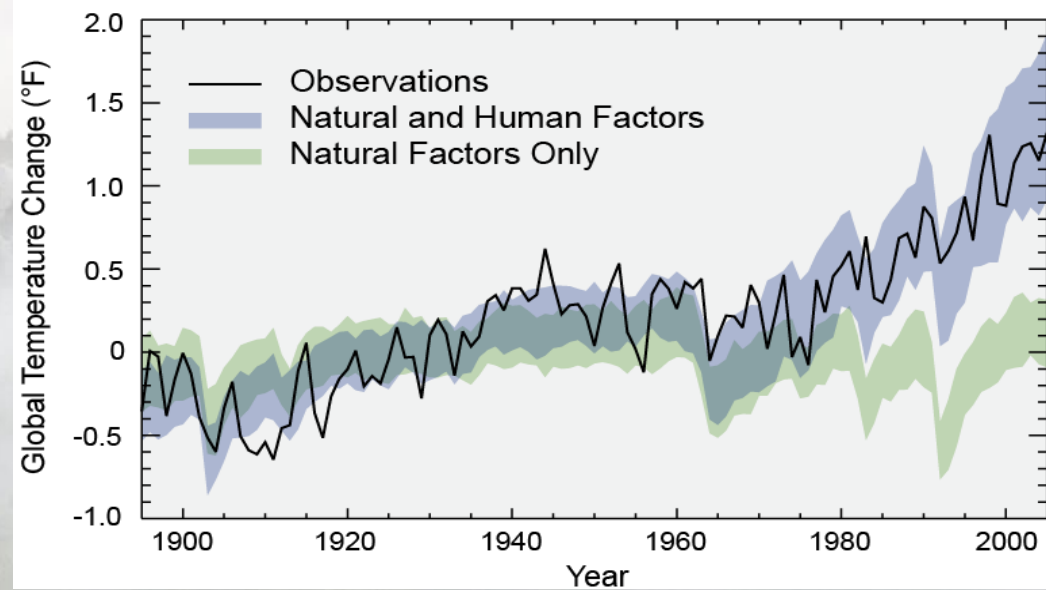




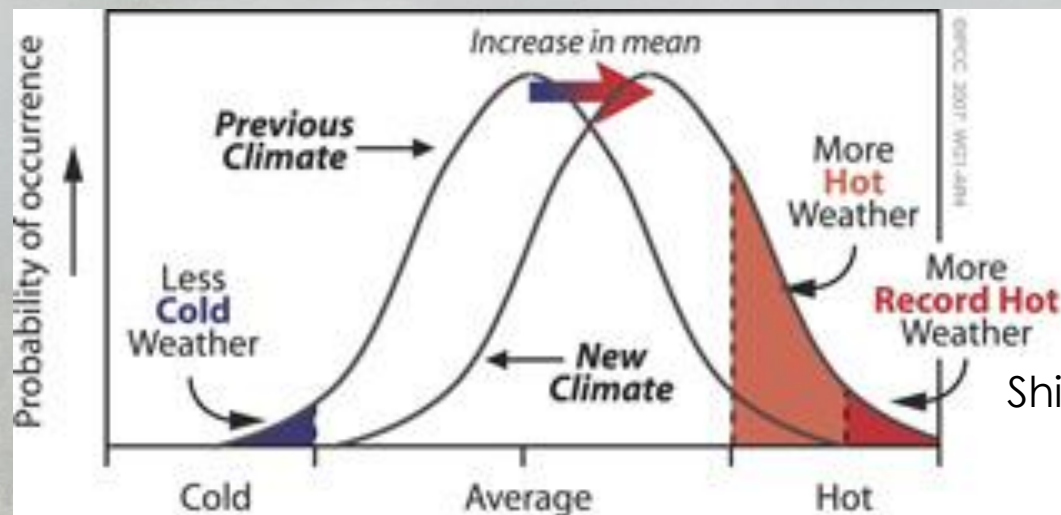
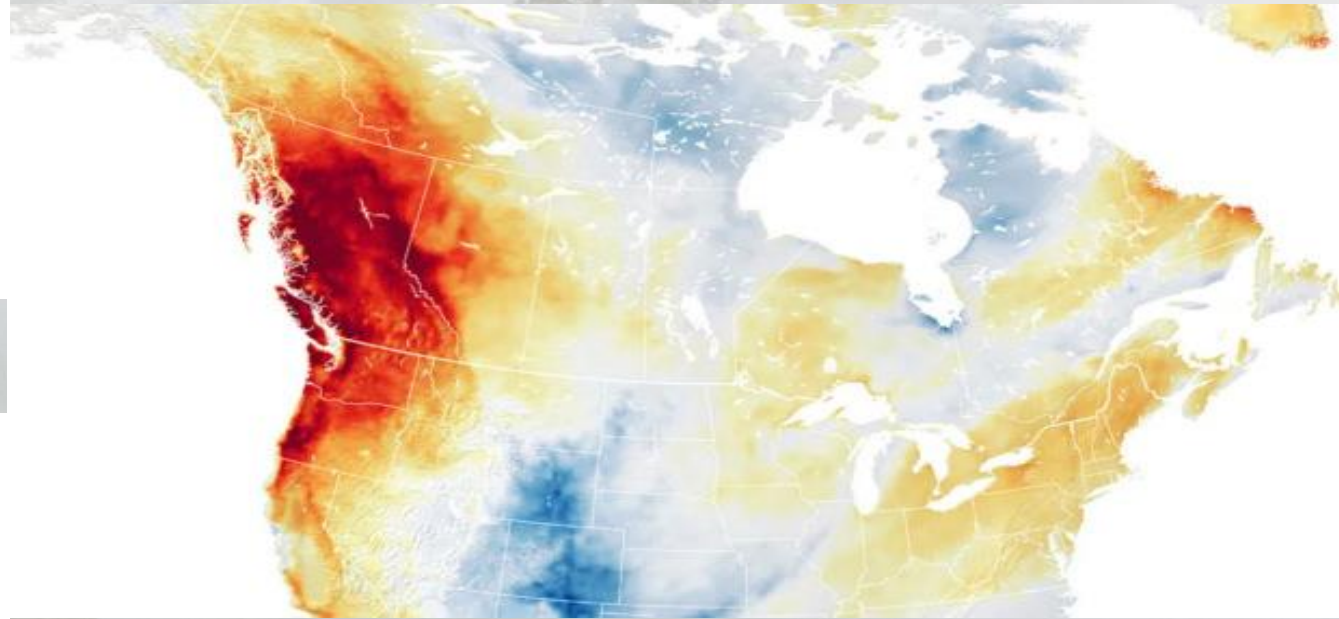
# OUTLINE

- Introduction Global threat of Climate change
- Vulnerability of the Asian region
- Climate Change Threats to the Built Environment
- Turning Challenges into Opportunities
- Measurement and Disclosure tools
- Conclusion

# Climate Explained: Natural v.s. Human-induced changes to climate



Increased frequency of extreme weather events

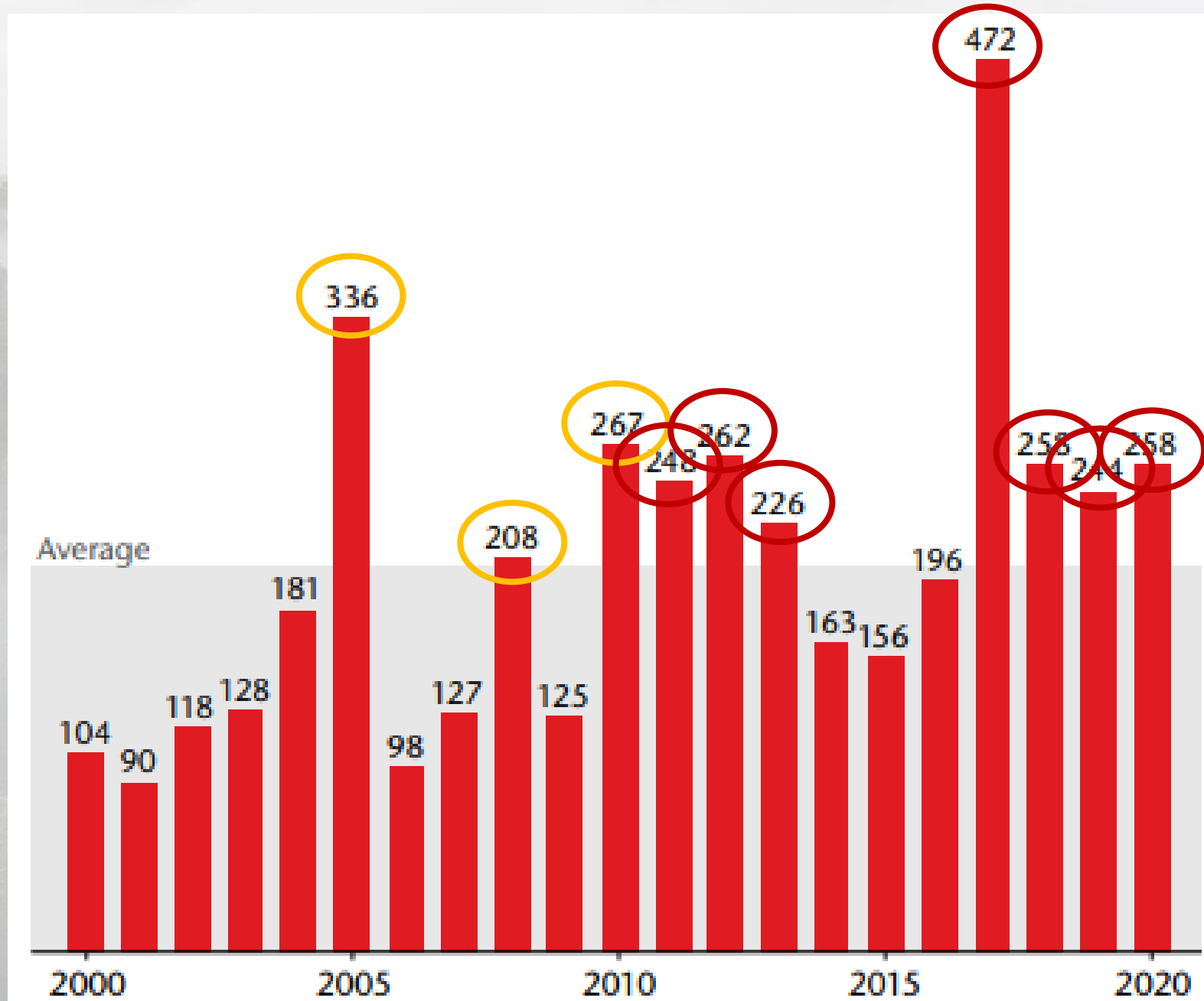


Shifts in average conditions

## 5 Big Findings from the IPCC's 2021 Climate Report

- 1) We are on course to reach 1.5 degrees C of warming **within the next two decades.**
- 2) Limiting global warming to 1.5 degrees C by the end of the century **is still within reach** but requires transformational change.
- 3) Our **understanding of climate science** — including the link to extreme weather — is **stronger than ever.**
- 4) The **changes** we are already seeing are **unprecedented in recent history** and will **affect every region** of the globe.
- 5) **Every fraction of a degree** of warming leads to **more dangerous and costly impacts.**

## Weather-related disasters (2020 USD bn)





## 2021 – Intensity Escalation

### 12 JULY – SOAK IT UP

UK weather – Flash floods hit London & South as thunderstorms dump a month's rain in ONE HOUR but 27C heatwave is on way



### 8 JULY – KILLER HEATWAVE

More than 130 people were killed across US in 'black swan' heatwave that's been called a 'mass casualty event'



### 16 JULY – HELL ON EARTH

Germany floods – Deadliest floods in decades kills 106 as victims wiped out when wall of water triggered landslide





## 2021 – Intensity Escalation

**23 JULY – TURKEY** Hundreds Evacuate  
Dramatic Floods in Rize and Artvin  
Provinces landslide



### 11 JULY – KILLER

**SKY** Thirty killed after  
lightning storm sweeps  
across India as buildings  
collapse and trees sent  
crashing to the ground



### 21 JULY - CHINA

**FLOODING:** Military blasts  
dam to divert flood water  
amid rescue for 1.2 million  
displaced



2021 Global GDP Losses - USD329 billion



## 2022 – Intensity Escalation



River Po – No rice,  
no risotto

July 2022 –  
Driest in  
England  
since 1911



Yangtze – Lowest  
levels since 1865



20 June 2020



Piacenza

20 June 2022

2km

1 mile

Source: Esa

B B



## 2022 – Intensity Escalation

**Worst Pakistan floods in  
a decade  
1,200 fatalities  
33 million affected**



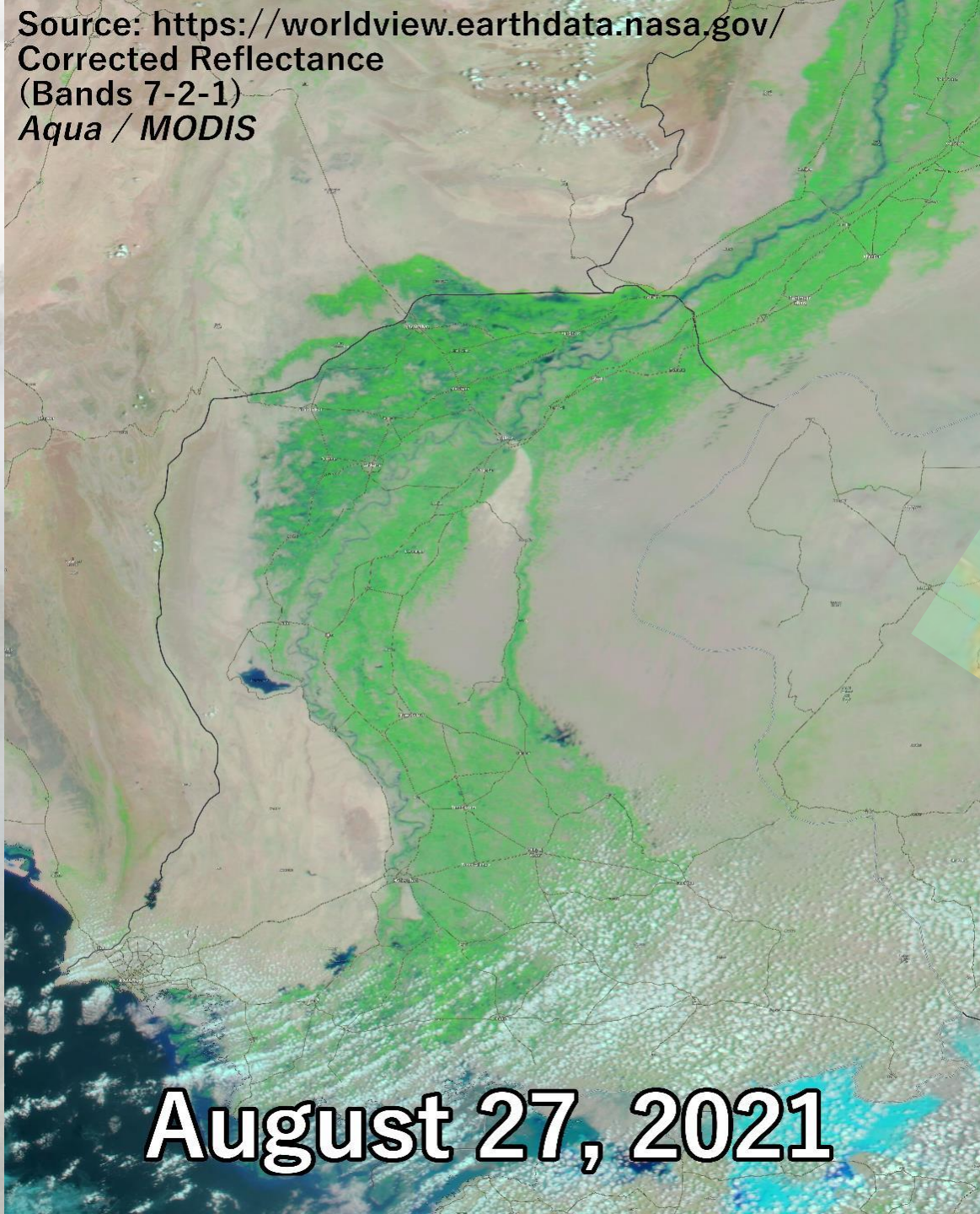
**Worst Bangladesh  
floods in two  
Decades – two  
million stranded**

**Worst Eastern Australia  
floods. A\$4.8 billion in  
damage**

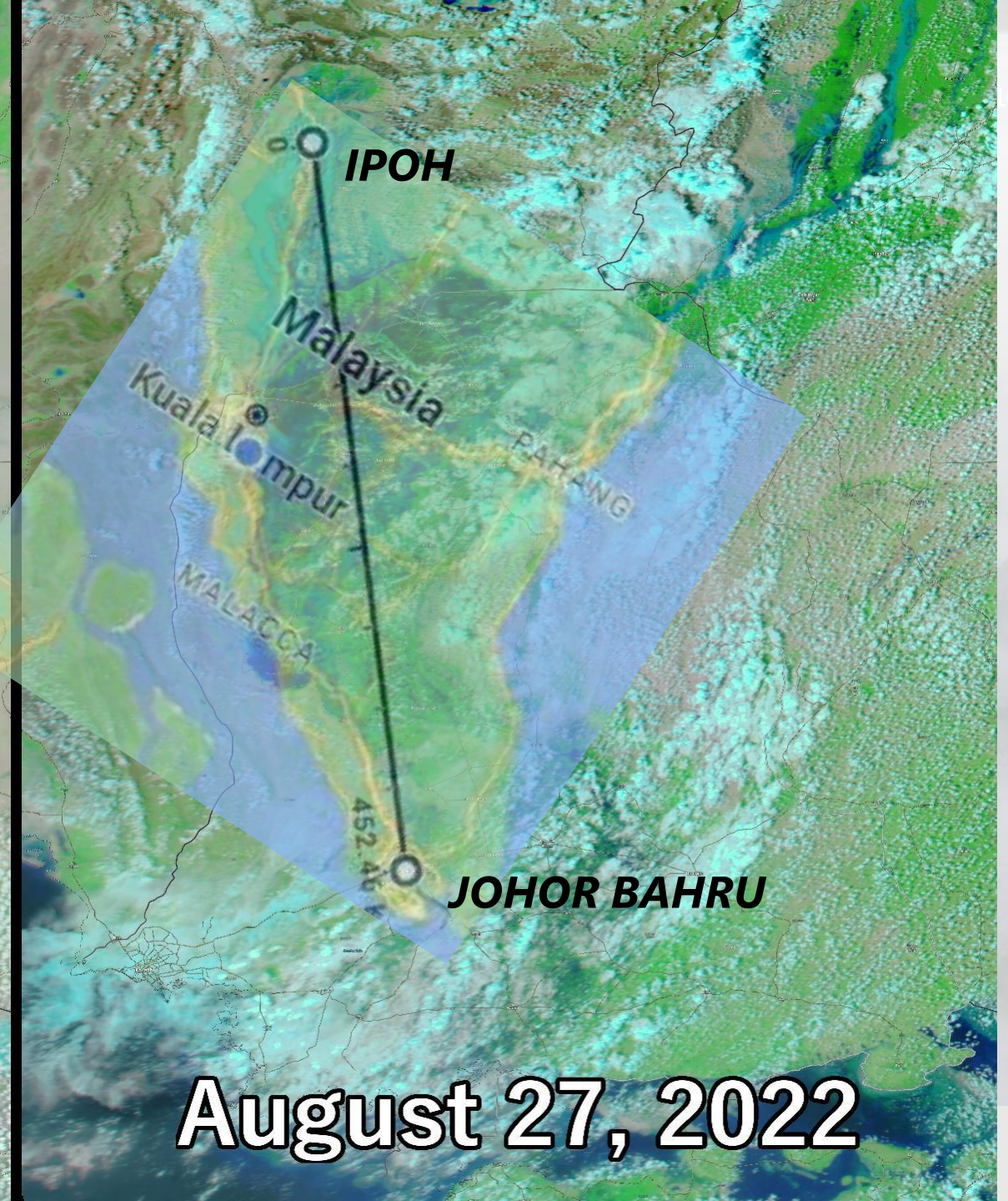




Source: <https://worldview.earthdata.nasa.gov/>  
Corrected Reflectance  
(Bands 7-2-1)  
Aqua / MODIS



**August 27, 2021**



**August 27, 2022**



## Asia is notably more exposed to climate risk:

Companies that do not take steps to become more climate resilient risk increased costs.



Global production and sourcing activities continue to

**GROW RAPIDLY IN ASIA,** but it is one of the world's

“ ***most disaster-prone regions*** ”

– UN News



**BETWEEN 2004 AND 2013**  
climate hazards and  
extreme weather  
events in Asia Pacific

— caused over —

**\$560B**  
**IN DAMAGES**

– UN News



## Asia is notably more exposed to climate risk:

**During Thailand's severe flooding in 2011, more than 14,500 companies reliant on Thai suppliers suffered business disruptions worldwide.\***

**Electronics manufacturers and auto companies were particularly impacted.**

- **Western Digital**, with one third of the global hard drive market, lost 45 percent of its shipments.
- **HP** lost US\$2 billion.
- **NEC** cut 10,000 jobs due to a global shortage of hard disk drives.\*\*
- **Toyota, Honda, and Nissan** lost 240,000, 150,000, and 33,000 cars respectively.\*\*\*
- Some companies had to postpone new car models.\*\*\*\*

Total insured losses were estimated between

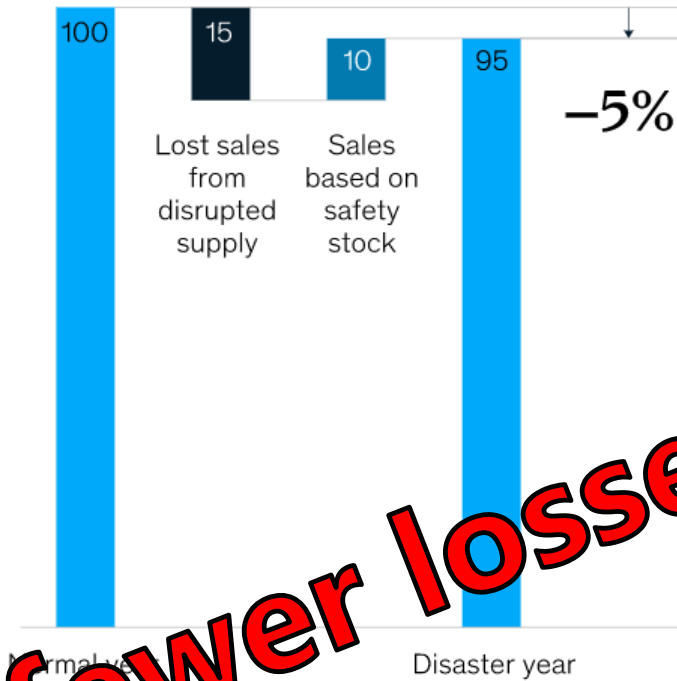
**US\$15B and  
US\$20B**



# Being prepared for extreme weather impacts can minimize disruptions:

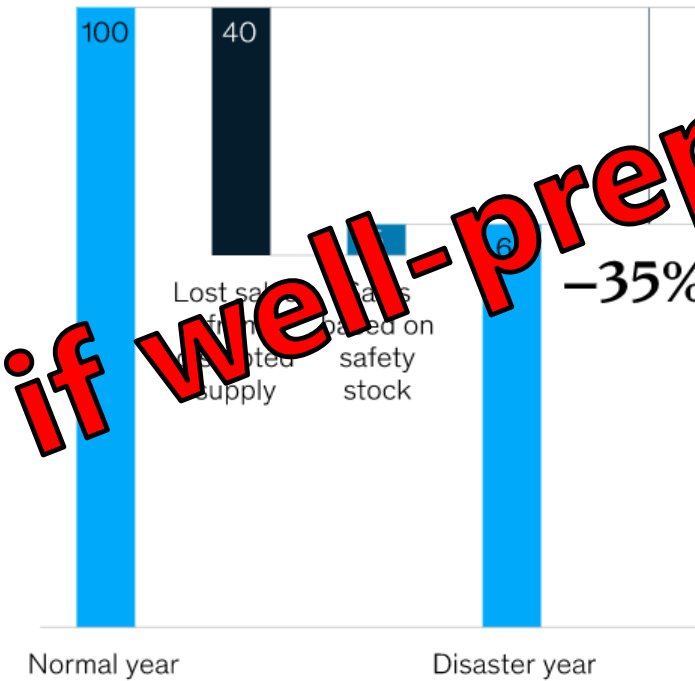
Effect of 100-year hurricane on downstream electronics player,<sup>1</sup> % of normal year revenues

Well-prepared player



- Dual sources and stronger asset resilience: only 3 months of 50% of supply disrupted
- 2x safety stock, spending at half pace due to dual sourcing, lasting for 2 months
- Only 1-month disruption of 50% supply

Unprepared player



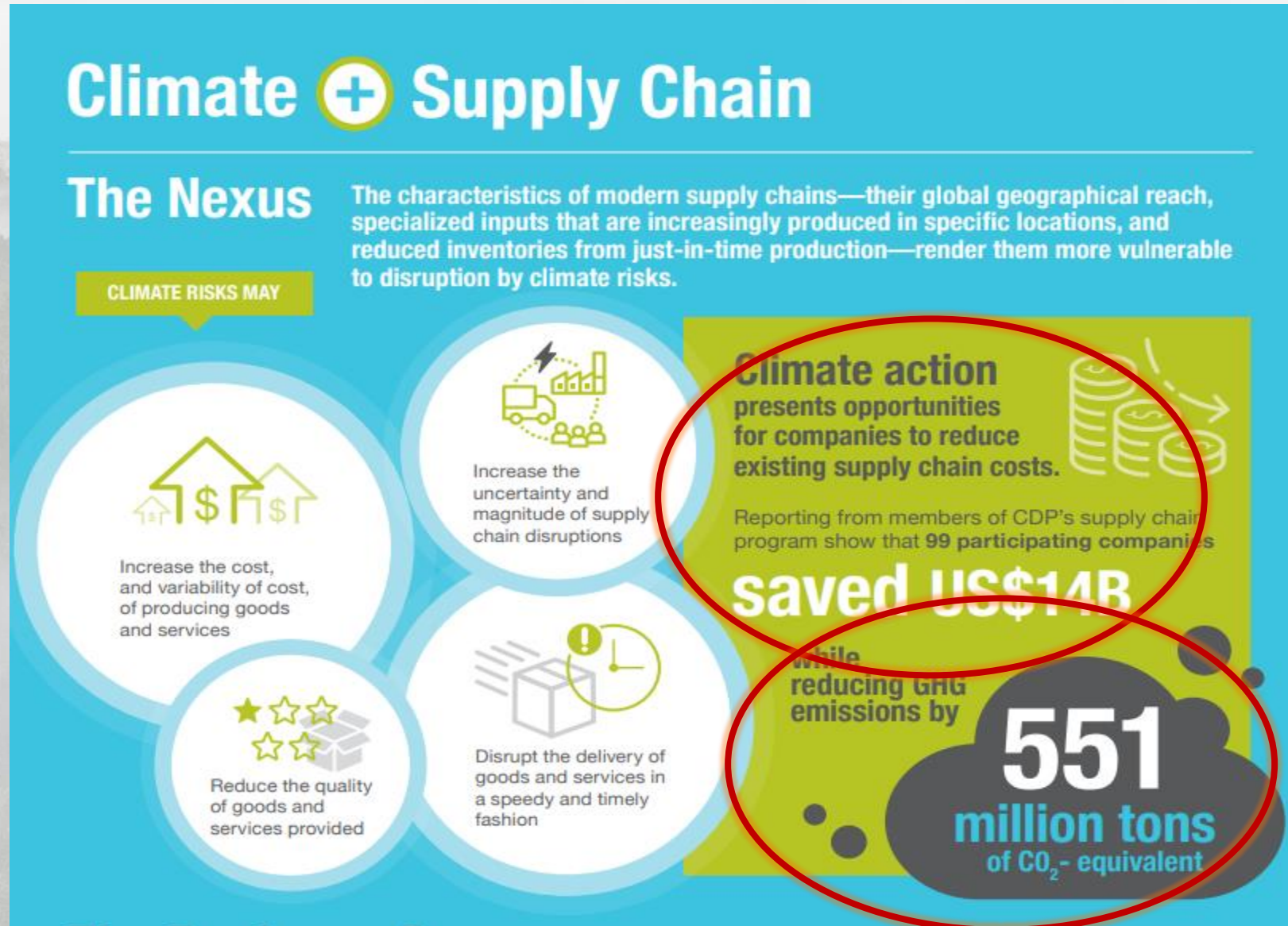
- 5-month disruption of 100% of single-sourced supply
- With 2 weeks of safety stock, resulting production disruption of 4.5 months

<sup>1</sup>Excludes impact of insurance; exact outcomes vary considerably with local conditions and other factors.  
Source: McKinsey Global Institute analysis

20% fewer losses if well-prepared



# Climate Impacts on Supply Chains:





# Climate Threats to Built Environments:

## Direct Threats

- Thermal (Heatwaves)
- Intense Rainfall and Floods
- Extreme Winds

## Indirect Threats

- Energy Supply Disruption
- Water Supply Disruption
- Food Supply Disruption
- Sewerage and Waste Management Disruption
- Industrial and Commercial Supply Chain Disruption



# **Built Environment Systems at Risk:**

## **Information Systems**

- Command and Control
- Monitoring and Reporting (including automated early warning systems)
- Communication and Broadcasting
- Social media, Education, Entertainment
- Commercial and Financial transactions

## **Mobility Systems**

- Powered mobility (including power sources)
- Human powered mobility
- Logistics (including supply chain and solid waste management)
- Supporting Infrastructure

## **Energy Systems (including precursor energy sources)**

- Primary
- Secondary and higher



# **Built Environment Systems at Risk:**

## **Water and Sanitation Systems**

- Stormwater and tidal water management
- Potable and untreated water supply
- Grey, black and other wastewater (including industrial effluent) management

## **Food and Agriculture Systems**

- Primary production
- Secondary and higher
- Agriculture inputs, processing and storage/preservation

## **Construction and Manufacturing**

- Supply chain
- Sale and distribution



# Risk Factors and Opportunities

## Risk Factors

- Length of supply chain
- Level of independence
- Level of exposure
- Substitution options
- Specific and systematic vulnerabilities

## Improving Resource Use Efficiency

- Linking cooling and heating processes
- Reducing inefficient personal transportation
- Limiting fossil plastic use to necessary purposes
- Eliminating the need for landfills through at-source segregation of organic waste



# **Risk Factors and Opportunities (Incorporating Circular Economy)**

## **Building in Resilience (Building level)**

- Stormwater catchment, storage and use
- Greywater use
- Passive lighting and thermal control

## **Planning in Resilience (Township/Municipality/Watershed level)**

- Permanent riparian reserves
  - Edible fruit tree Horticulture
  - Sports and Recreation
  - Submersible Multi-purpose Buildings
- Off-river storage or impoundment ponds
- Distributed energy generation and peer-to-peer exchange
- Whole neighborhood/city raw water catchment
- Expansion of current neighborhood-scale organic landscape and household waste programmes
- Expansion of current Community and Urban Farming initiatives



# Early Movers in Enhancing Resilience

Leading companies are planning now for the inevitable impacts of climate change on their supply chains.



BSR

WE MEAN BUSINESS

BY 2100, OVER HALF the land used to grow coffee, the world's



**2ND** MOST-TRADED COMMODITY

will be unsuitable because of climate change



– InvestorGuide.com

– Union of Concerned Scientists



STARBUCKS HAS INVESTED **\$100M+**



in supporting coffee communities through collaborative farmer programs and other activities to make its supply chain more resilient

These include investments in:

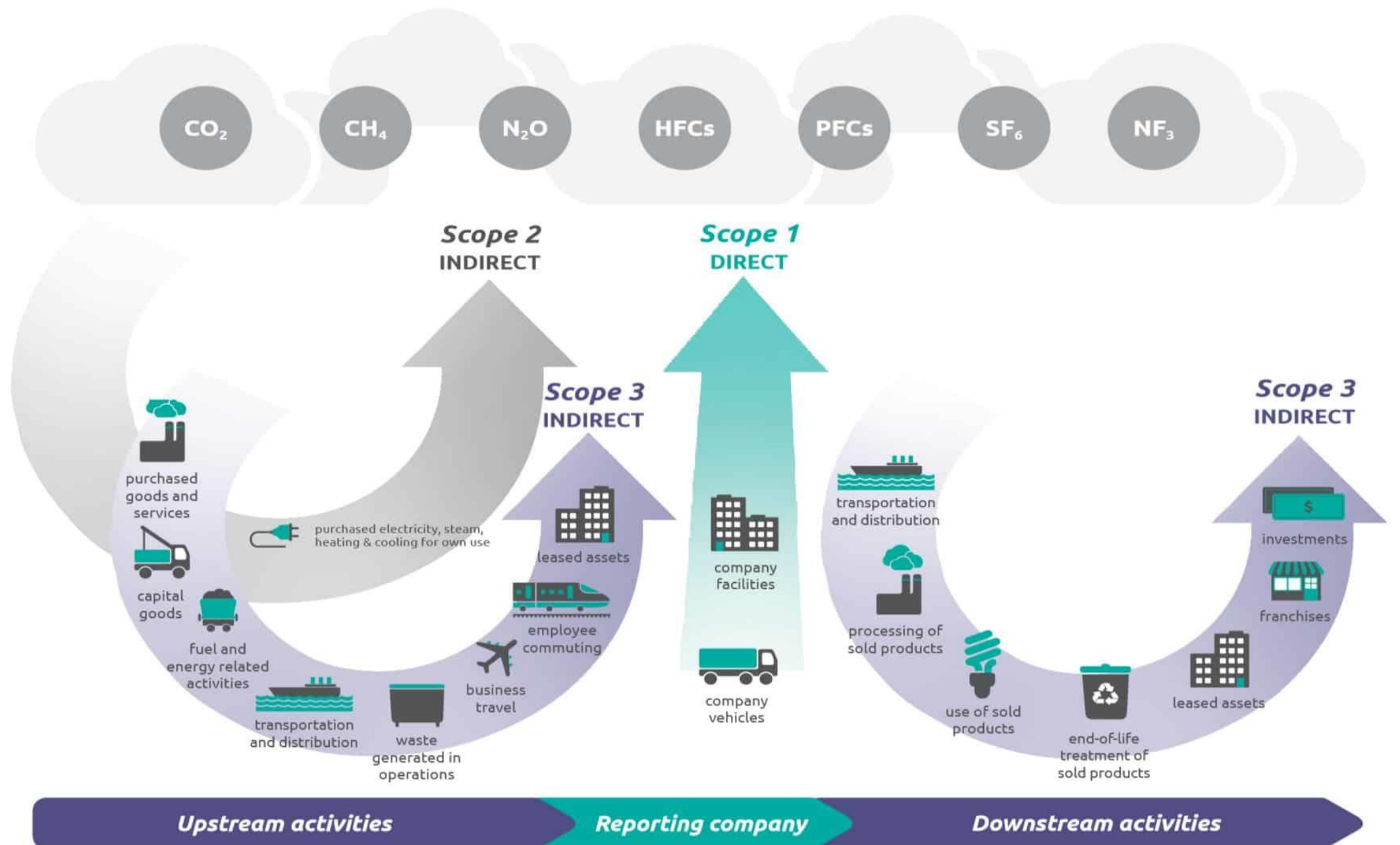


- Coffee & Farmer Equity (C.A.F.E.) Practices
- Farmer Support Centers
- Farmer Loans
- Forest Carbon Projects

– Starbucks



# The World Resource Institute (WRI) GHG Protocol





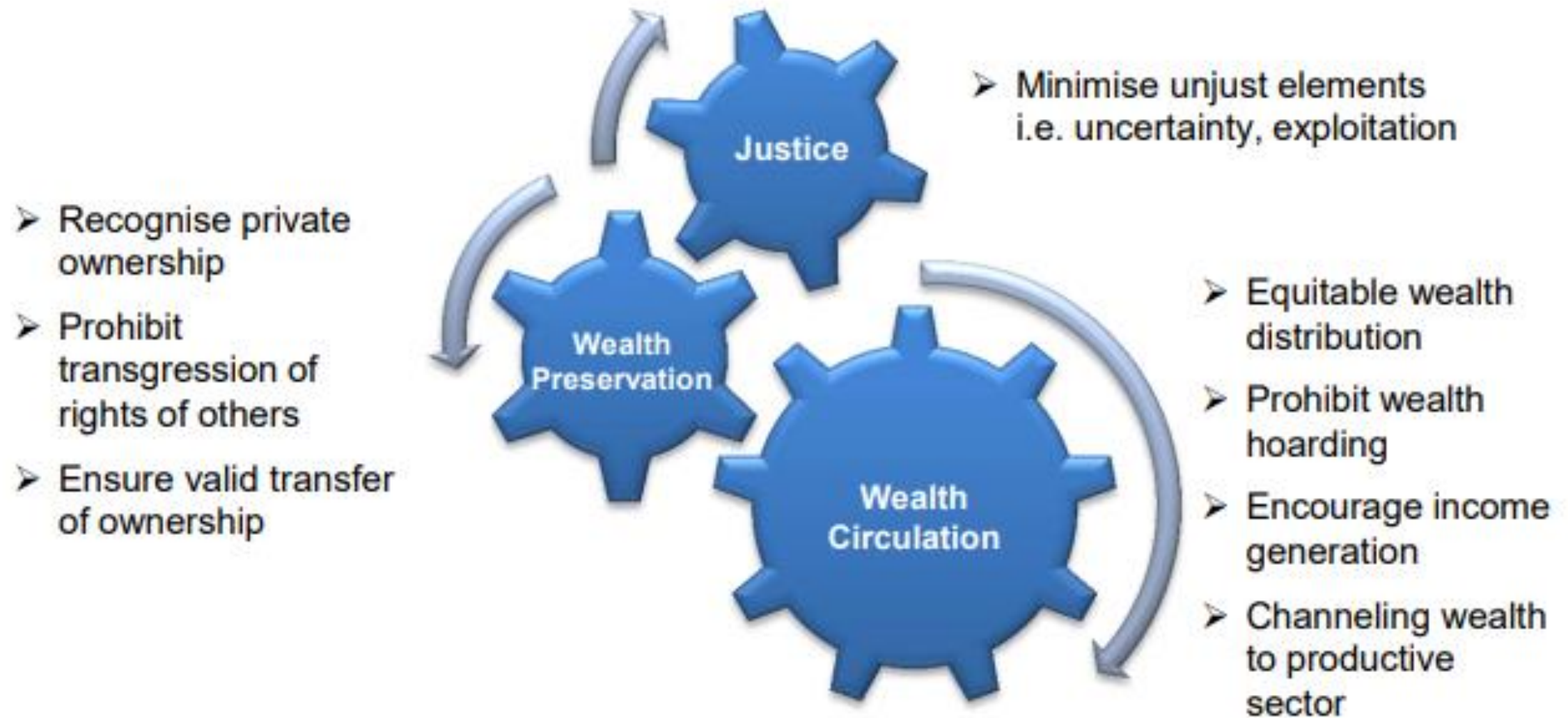
# Central Bank of Malaysia - Value-based Intermediation (VBI)

**Objective: Strengthen Roles and Impact of Islamic Banking Institutions**

**Intermediation:** The "matching" of lenders with savings to borrowers who need money by an agent or third party, such as a bank.

**Value-based Intermediation:** An intermediation function that aims to deliver the **intended outcomes of Shariah** through **practices, conduct and offerings** that **generate positive and sustainable impact** to the **economy, community and environment**, consistent with the shareholders' sustainable returns and long-term interests

# Values-based Intermediation (VBI) – Intended Outcomes of Shariah





# Values-based Intermediation (VBI) – Intended Outcomes of Shariah

## Perceived Current Financial Landscape



Driven by short-term and narrow bottom line



Performance measurement focuses on financial aspect



Innovation mainly to create competitive advantage for shareholders and players



Good conduct driven by regulation



Minimal roles of other stakeholders

## Envisioned Future Financial Landscape



Driven by long term and wider objectives (profit, people and planet)



Performance measurement considers both financial and non-financial aspects



Innovation to create values for all



Impact-based approach that fosters good conduct



Meaningful and active roles of key stakeholders (consumers, employees and public)

# Climate Change and Principles-based Taxonomy (CCPT)

Complements the **Value Based Intermediation Assessment Framework (VBIAF) Guidance**

## **Principles:**

1. Attainment of benefit and prevention of harm
2. Integration of Shariah
3. Fairness and Transparency
4. Constructive and inclusive collaboration with stakeholders

Principles of **Governance**: Articulation of enhanced role of the **Board**

Consistent with **Task Force on Climate-Related Financial Disclosures (TCFD)**

- Established by the **Financial Stability Board (FSB)**
- **Coordinating disclosures** among companies impacted by climate change.
- Thematic areas:
  1. **governance,**
  2. **strategy,**
  3. **risk management, and**
  4. **metrics and targets.**

Diligent.com ( Feb 16, 2021): “**Boards ignore the TCFD requirements at their peril – both for the obligations they represent and the help they can give in directing ESG reporting**”



# Classification of Economic Activities

Classification		Economic Activity (Transaction Level)		Overall Business	
		GP1 Climate Change Mitigation	GP2 Climate Change Adaptation	GP3 No Significant Harm to the Environment	GP4 Remedial Efforts to Promote Transition
Climate Supporting	C1	GP1 or GP2 or both		✓	
Transitioning	C2	GP1 or GP2 or both		✗	✓
	C3	✗		✗	✓
Watchlist	C4	GP1 or GP2 or both		✗	✗
	C5	✗		✗	✗

# Forestry as an Economic Activity is consistent with ESG and the SDGs

## ESG – Environmental

- use of renewable energy sources
- waste management program
- air or water pollution arising from its operations
- deforestation issues
- attitude and actions around climate change issues.

## ESG – Social

- Fair pay
- Retirement Plans
- Benefits, Including Education and Training
- Workplace policies regarding diversity, inclusion
- Prevention of sexual harassment
- Employee engagement with management/customers

## ESG – Governance

- Quality of management by those in leadership
- Attention to the interests of:
  - Employees/Suppliers/Shareholders/Customers
- Giving back to the community where it is located
- Financial and accounting transparency





## Conclusions

### **Built Environments are significantly threatened by climate change**

- Loss and Damage will continue to increase with more severe extreme weather events

### **Future Climate Change Impacts can be reduced by Internalizing Externalities and applying technological and Nature-based Solutions (NBS)**

- WRI - GHG Protocol
- BNM - Climate Change Principles-based Taxonomy (CCPT)
- FSB-Task Force for Climate-Related Financial Disclosures (TCFD)
- International Sustainability Standards Board (ISSB) launched at COP-26

### **Built Environments can contribute to lower GHG emissions**

- Opportunities arising from higher density and proximity

### **Built Environments need to be more resilient to Extreme Weather**

- Coordinated, scenario-based upstream planning and investment





Thank you!

We welcome questions.

Gary W. Theseira  
CGM Council  
[gary@klimanomika.com](mailto:gary@klimanomika.com)