ASEAN VALUERS ASSOCIATION

AVA MALAYSIA

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ADDRESSING THE CLIMATE CHANGE RISK OF PROPERTY VALUATION: ARE WE READY?

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PRESENTATION OUTLINE

CLIMATE CHANGE OVERVIEW

CLIMATE CHANGE RISKS

VALUING THE IMPACT OF CLIMATE-RELATED RISKS TO PROPERTY

VALUING PROPERTIES AT RISK: THE ROLES OF VALUERS

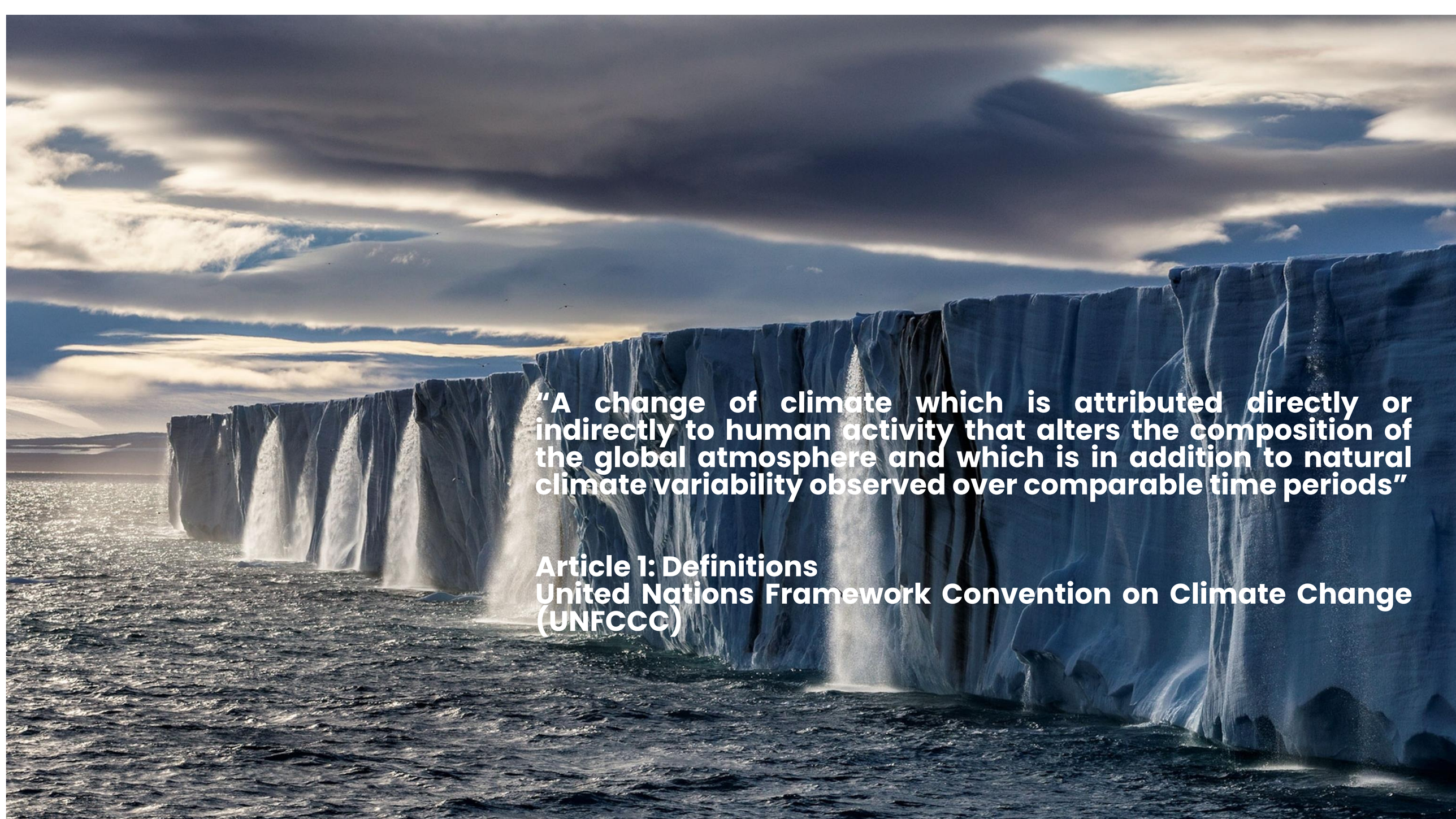
THE MEASUREMENT OF SUSTAINABILITY

THE EVOLUTION OF VALUATION GUIDELINES AND EDUCATION

CONCLUSION

NASA (2021)

https://climate.nasa.gov/causes/



“A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”

Article 1: Definitions
United Nations Framework Convention on Climate Change (UNFCCC)

By far the most terrifying film you will ever see.

aninconvenienttruth

A GLOBAL WARNING

PARAMOUNT CLASSICS AND PARTICIPANT PRODUCTIONS PRESENT A LAWRENCE BENDER / LAURIE DAVID PRODUCTION "AN INCONVENIENT TRUTH"
MUSIC BY MICHAEL BROOK NOW YOU'LL SUNG MELISSA ETHERIDGE EDITOR JAY CASSIDY, A.C.E. DAN SWIETLIK CO-PRODUCER LESLEY CHILCOTT EXECUTIVE PRODUCERS JEFF SKOLL DAVIS GUGGENHEIM DIANE WEYERMANN RICKY STRAUSS JEFF IVERS
PRODUCED BY LAURIE DAVID LAWRENCE BENDER SCOTT Z. BURNS DIRECTED BY DAVIS GUGGENHEIM

PARTICIPANT PRODUCTIONS

PG-13 PARENTAL GUIDANCE SUGGESTED
SOME MATERIAL MAY BE SUITABLE FOR CHILDREN
FOR MILD THEMATIC ELEMENTS

DREAMWORKS

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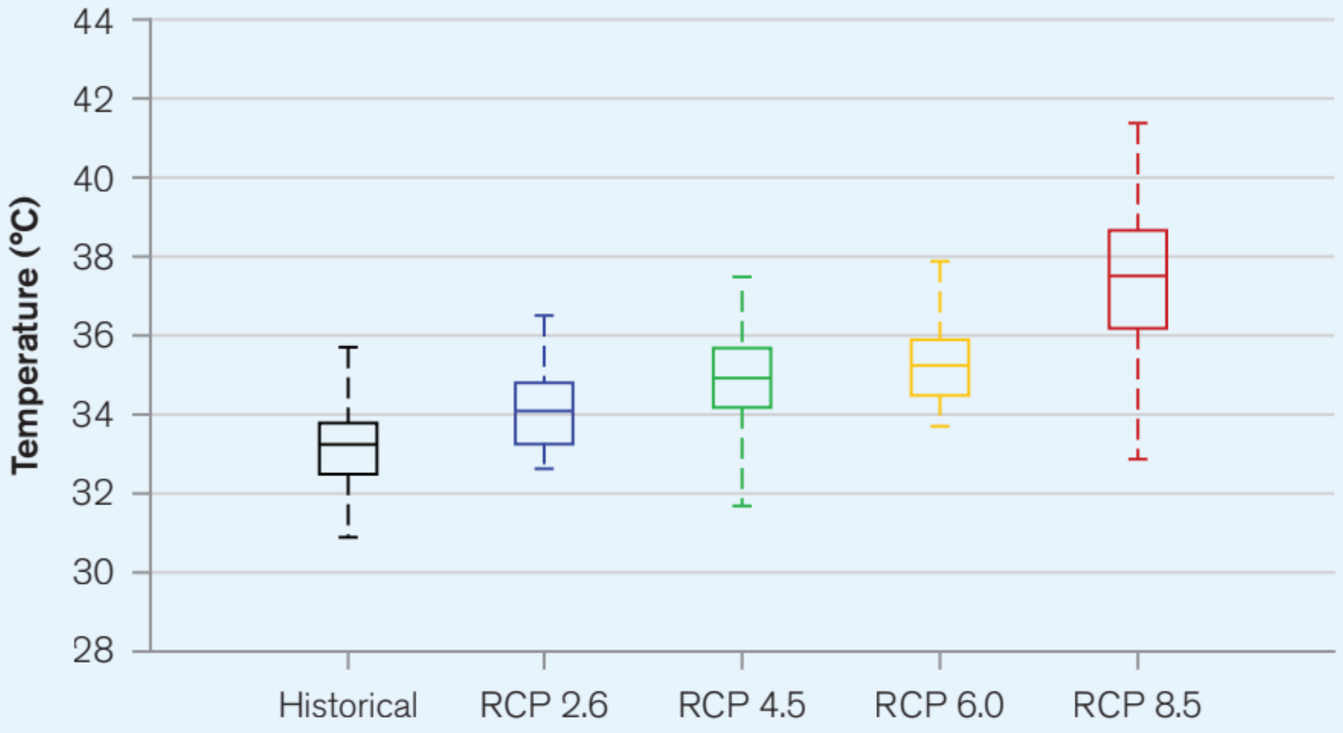
Flooding

Heatwaves

Historical (1986-2005) and projected (2080-2099) annual maximum of daily maximum temperatures in Malaysia)



Source: Climate Risk Country Profile: Malaysia (2021): The World Bank Group and the Asian Development Bank.

The annual maximum of daily maximums climbs to 34–37°C by the 2090s across the different emissions pathway.


Drought

PROJECTED CLIMATE CHANGE RISKS IN ASEAN REGION

Country	Observed			Projections until 2100			
	Temperature	Precipitation	Observed extreme events	Temperature	Precipitation	SLR	Projected extreme events
Brunei Darussalam	0.6 °C rise between 1970 to 2014	10.8 mm increase per year until 2100 (RCP8.5)	Frequent and significant flash floods, forest fires, strong winds and landslides	0.5 °C per decade in the next 30 until 2100 (RCP8.5)	10.8 mm per year until 2100 (RCP8.5)	0.44-0.45	Increase in sea level rise in next 30–50 years. Increase in unpredictable extreme rainfall events resulting in flash floods and landslides
Cambodia	0.8 °C since 1960	General increase in rainfall	Riverine and extreme rainfall floods, high rainfall variability, and droughts were observed	1.6 °C (SRES-B1); 2.5°C (SRES A2)	3–35% increase (SRESA2)	1.7 cm/ year (SRES A2)	Increase in extreme rainfall events, droughts, and floods
Indonesia	0.01–0.06 °C per year since 1950	-2–3% since 1990	Extreme rainfall events, increase in floods, storms, and droughts	Increase by 0.75 °C (RCP2.6) and 2.7°C (RCP8.5)	10–30% in Sumatra, Borneo by 2080	0.5 m by 2040 (RCP4.5)	Increase in ENSO episodes, coastal flooding, wildfires
Lao PDR	0.05 °C per year in the past 40 years	Increased	Increase in extreme rainfall events, drought, and flood events	1.4–4.3 °C	10–30% in eastern, southern parts	Not relevant	Increase in extreme flood and drought events
Malaysia	0.13–0.24 °C per decade since 1969	Unclear long-term trend	Increase in rainfall intensity	1.2–1.6 °C (SRES) by 2050	7.1% to 10.6% increase by 2050	0.11–0.21 m (SRES) by 2050	Frequent extreme dry spells, extreme rainfall events, extreme floods in specific river basins

ASEAN State of Climate Change Report (ASCCR) Jakarta, ASEAN Secretariat, October 2021

Myanmar	0.3–0.8 °C from 1971 to 2000	Increased during March-Nov. & decreased in rest	Increasing intensity and landfall of cyclones, droughts, and floods	1.2–2.5 °C (A1T scenario) & 2.8–3.5°C (A2 scenario)	10% increase during March to November	0.2–0.6 m	Increase in extreme hot days
Philippines	0.62 °C during 1958-2014	Increased intense rainfall	Increase in extreme rainfall events, increase in hot days, droughts, forest fires, change in typhoon behavior	1.8–2.2 °C (A1B)	-9.5% to 27.8% (A1B)	0.2 m	Increase in extreme rainfall events, hot days, change in typhoon behavior, storm surge in coastal areas
Singapore	0.25 °C per decade from 1948 to 2015	Increased at average rate of 67 mm per decade from 1980 to 2019	General uptrend in annual average rainfall from 2192 mm in 1980 to 2727 mm in 2014	1.4-2.7 °C (RCP4.5), 2.9-4.6 °C (RCP8.5) (mean daily temperature change for the years 2070-2099, relative to the period of 1980-2009)	Increasing trends in both intensity and frequency of heavy rainfall events	0.30-0.74 m (RCP4.5), 0.45-1.02 m (RCP8.5), by 2100 relative to the period of 1986-2005	Increased contrast between wet months and dry months, with increasing trends in both intensity and frequency of heavy rainfall events
Thailand	1.04 °C during 1970–2009	64.8 mm in East-Coast Gulf	Increase in hot days, extreme flood events	0.9–1.8 °C (RCP2.6), 2.0–3.1 (RCP8.5)	(-)66 to 193 mm (RCP2.6), (-)19 to 191 mm (RCP8.5)	1–2m	Increase in hot days, increase in high rainfall events
Vietnam	0.62 °C during 1958–2014	2.6% during 1958–2014	Increases in droughts, extreme rainfall events, super typhoons and typhoon period	1.7–2.4 °C (RCP4.5), 3.0–4.0 OC (RCP8.5)	5–15% (RCP4.5), 20% (RCP8.5)	0.53 m (RCP4.5), 0.73 m (RCP8.5)	Increase in strong and very strong typhoons, the intensity of droughts, number of hot days

ASEAN State of Climate Change Report (ASCCR) Jakarta, ASEAN Secretariat, October 2021

CLIMATE CHANGE RISKS

SEA-LEVEL RISE

- Increased flooding and damage
- Ongoing increased costs (damage and preventative)
- Uninsurable

TEMPERATURE CHANGES

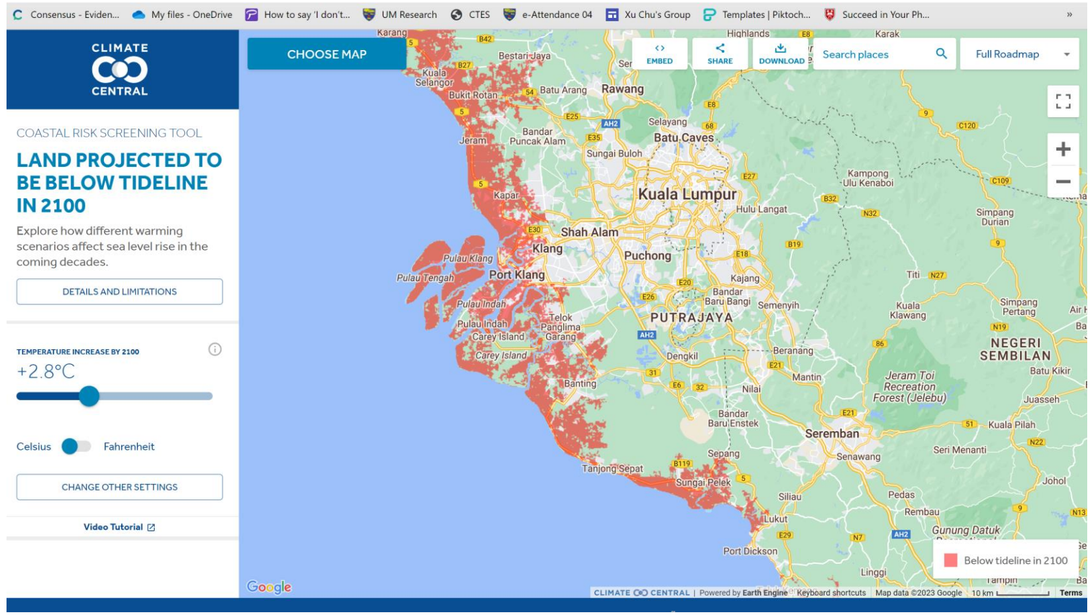
- Increased number of days with higher temperatures
- Increased capacity requirements of building cooling systems due to higher average temperature
- Higher energy demand (peak), potential blackouts

EXTREME WEATHER EVENTS

- Increased frequency and severity of storms
- Increased intense rain events
- Cyclone frequency may reduce but intensity will increase, resulting in more severe damage and loss
- Property damage from wind, hail, flood

Impact of tourism, agriculture and other sectors

CLIMATE CHANGE RISKS



TRANSITION RISKS ASSOCIATED WITH REGULATORY & ADAPTION COSTS, MARKET RISKS, resource availability, reputation and competition

- Increased costs associated with regulatory compliance and management
- Higher adaption costs to protect buildings and make them more efficient
- Increased taxes (e.g. Greenhouse gas emissions), funding adaptation measures
- Stranding of assets—exposure to vulnerable areas/locations or changes in legislation.

CLIMATE CHANGE OVERVIEW

THE IMPACT

Climate change will cause catastrophic occurrences that will harm people, organizations, and communities as well as affect and destroy private and public assets, houses, and companies.

THE ROLE OF VALUERS

Consideration of the breadth of climate change risks (physical, liability and transition) and their potential for direct, indirect and consequential **impacts on asset values.**

WHAT'S LACKING?

- Lack of consideration of the future impacts of such risks on property values (Baldauf et al., 2020).
- Lack of consideration of such risks for property professionals' practices (Warren-Myers and Cradduck, 2022).
- Property valuations are not currently reflecting climate risks, owing in large part to a **lack of global consensus on valuation/appraisal education and standards, relating specifically to climate risks.** (Rivera, 2020)

THE IMPACT OF CLIMATE-RELATED RISKS TO PROPERTY: WHAT DO WE KNOW?

Meta-analysis of the results of thirty-seven published studies on the impact of flooding on the prices of at risk residential properties in both U.S. and non-U.S. locations. **Average price discount** of -4.6 percent for properties located in an officially designated 100-year floodplain (Beltrán, Madison and Elliott, 2018)

Turnbull et al. (2013) reported **longer selling times as well as price discounts** for houses in the highest risk areas.

Several studies **highlighted a temporal element**, where a recent flood event can create a disproportionate reaction with impacts on value, property insurance and desirability of locations, but that **people tend to forget over time** (see for example Bhattacharaya-Mis & Lamond, 2015, Fletcher et al. 2022)

In Malaysia, Razali et al . (2020) found **no significant differences** of prices; flood and non flood areas.

Temporary Discount
or
Permanent Re-Pricing?

From a valuation perspective, the understanding and consideration of the risks pertaining to values will firstly have to be identified by the market and reflected in current decision-making through pricing

THE MEASUREMENT OF SUSTAINABILITY

There has been an evolution of information about emissions mitigation and climate change risks in the valuation industry.

The first global survey of RICS property professionals in 2006 : Lack of knowledge and lack of expertise and the need for further education in incorporating sustainability element into assessments of property value

KEY FACTORS OF CLIMATE CHANGE RISK AND THEIR IMPACTS ON PROPERTIES VALUE

- **DECREASED SALES PRICES AND FEWER HOME SALES IN HIGH-RISK AREAS**

  Properties located in high-risk areas may experience decreased sales prices and a decline in demand, as buyers become more cautious about investing in vulnerable locations

- **INCREASED HOMEOWNERS INSURANCE COSTS**

  As the frequency and severity of climate-related events such as storms and flooding increase, homeowners may face higher insurance costs to protect their properties

- **OVERVALUATION AND POTENTIAL PRICE DEFLATION**

  Unpriced climate risk and overvaluation in housing markets can threaten the stability of the real estate market, with low-income households being at greater risk of losing home equity from price deflation.

KEY FACTORS OF CLIMATE CHANGE RISK AND THEIR IMPACTS ON PROPERTIES VALUE

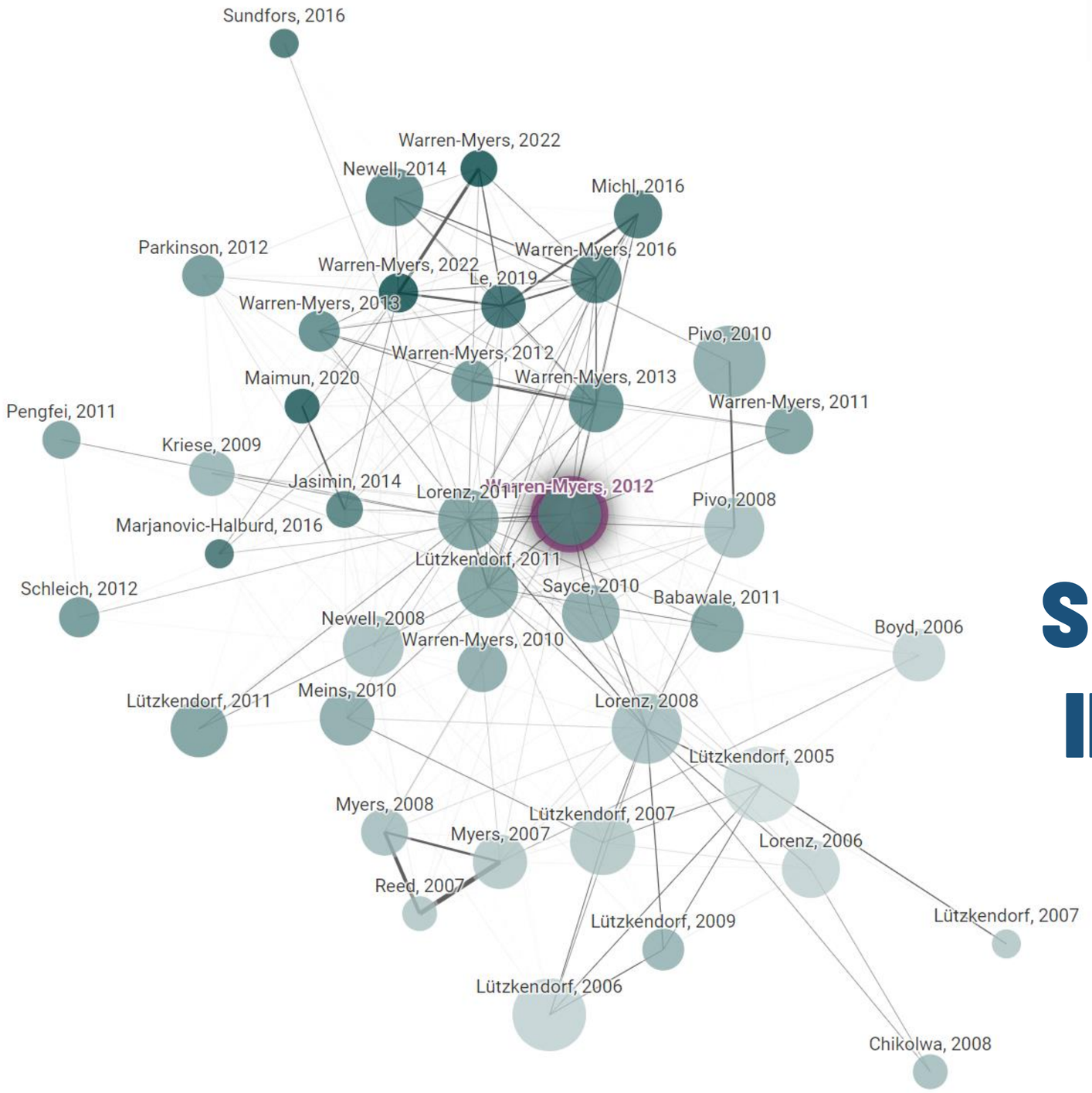
- **BUDGETARY SHORTFALLS FOR MUNICIPALITIES**

  Municipalities heavily reliant on property taxes for revenue may face budgetary shortfalls as property values decline in high-risk areas, affecting their ability to provide essential services.

- **OPPORTUNITIES FOR VALUE CREATION AND COMPETITIVE DIFFERENTIATION**

  Real estate players who incorporate climate change risks into their strategies can create value and gain a competitive edge by investing in climate-resilient properties and infrastructure

WHAT IS THE VALUE OF SUSTAINABILITY?



THE EMPIRICAL STUDIES OF SUSTAINABILITY IN REAL ESTATE VALUATION

DIRECT & INDIRECT IMPACT OF PHYSICAL & TRANSITION RISK TO PROPERTY

	Transition risks Include changes in the economy, regulation, consumer behavior, technology, and other human responses to climate change		**Physical risks** Hazards caused by a changing climate, from floods, fires, and storms to rising sea levels and changing average temperatures	
	 **Direct effect**	 **Indirect effect**	 **Direct effect**	 **Indirect effect**
Revenue	Unattractiveness of a carbon-intensive asset to an occupier that has made a climate commitment	Decline in a sector or local economy resulting in lower local real-estate demand/occupancy	Disruptions to an asset's operations from severe or repeated physical-hazard events (eg, major floods)	Reduced real-estate demand in a local market given disruptions to surrounding transportation or other infrastructure
Operating costs	Increased utility costs given carbon-intensive building systems	Carbon charges on an asset given local regulations	Increased maintenance costs as physical risks increase	Increased insurance costs as insurers recognize physical risks and adjust underwriting models
Capital costs	Significant capital investment required to meet local energy efficiency/emissions standards or tenant demands (eg, early retrofit of heating/cooling systems), increased need to purchase lower-emissions building materials (eg, steel, cement, timber)	Increased financing costs as investors and lenders price in market-level transition risks (eg, in economies dependent upon carbon-intensive industries)	Investment required to improve the resilience of building to increasing physical risks (eg, elevating lobby, green roofs, protecting electric and mechanical systems)	Increased capital investments (eg, development fees) required to protect broader communities from climate risks (eg, floodwalls, green infrastructure for heat mitigation)
Capitalization rate	Changes in capitalization rate due to perceptions of both physical and transition risks by market participants			

While this vast body of knowledge continues to grow, less research has been done on the relationship between sustainability (or sustainability-based ratings) and market value (in the context of valuation practice).

(Warren-Myers, 2022)

THE EVOLUTION OF VALUATION GUIDELINES AND EDUCATION

Valuation Information Paper (VIP 13), 2009
Sustainability and Commercial Property Valuation (Royal Institution of Chartered Surveyors, 2009).

Valuation Information Paper (VIP 13) - Australian Context, 2011
Sustainability and the valuation of commercial property (Australia) (Royal Institution of Chartered Surveyors, 2011)

Residential Guide, 2011
Information Paper: Sustainability and Residential Property Valuation, RICS Practice Standards, UK (Royal Institution of Chartered Surveyors, 2011)

THE EVOLUTION OF VALUATION GUIDELINES AND EDUCATION

Guidance Note (2009 VIP Upgraded), 2013

Guidance Note in the 2014 update of RICS Red Book (RoyalInstitution of Chartered Surveyors, 2013)

Energy efficiency and green buildings Resources, 2012

Recognition of Energy Costs and Energy Performance in Real Property Valuations, Considerations and Resources for Appraisers (The Appraisal Institute, 2012)

Sustainability and Valuation, 2016

European Valuation Standards

THE EVOLUTION OF VALUATION GUIDELINES AND EDUCATION

Valuationand Energy Efficiency and European Guidance Note III: Valuation and Sustainability, 2020

European Valuation Standard EVS 6

ESG and Real Estate Valuation, 2021

International Valuation Standards Council, 2022)

A Global Guidance Note, 2022

Sustainability and ESG in commercial property valuation and strategic advice (RICS, 2022)

CONCLUSION

A failure to consider climate-related risks will impact property values (IVSC, 2021)

An emerging need for more education, guidance and information in relation to climate change risks and the future, and more particularly, how this may affect properties and, subsequently, their values.

How prepared are ASEAN valuers for climate change risk and its implications for valuations and property values?

THANK YOU FOR YOUR RESPONSE.

THANK YOU

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