



# Building resilience to climate risks in business operations and infrastructure

Malavika Bambawale – 16<sup>th</sup> June 2020





# Agenda

**Preparing for the next threat**

Slide 3

**Categorizing the risks**

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**Three levers to mitigate risk**

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**Case examples**

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**Appendix**

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# Climate Resilience

## *Preparing for the next threat*

### Challenges of unprecedented scale:



Vulnerable supply chains



Vulnerable infrastructure



Dysfunctional systems driving accountability



**3x**

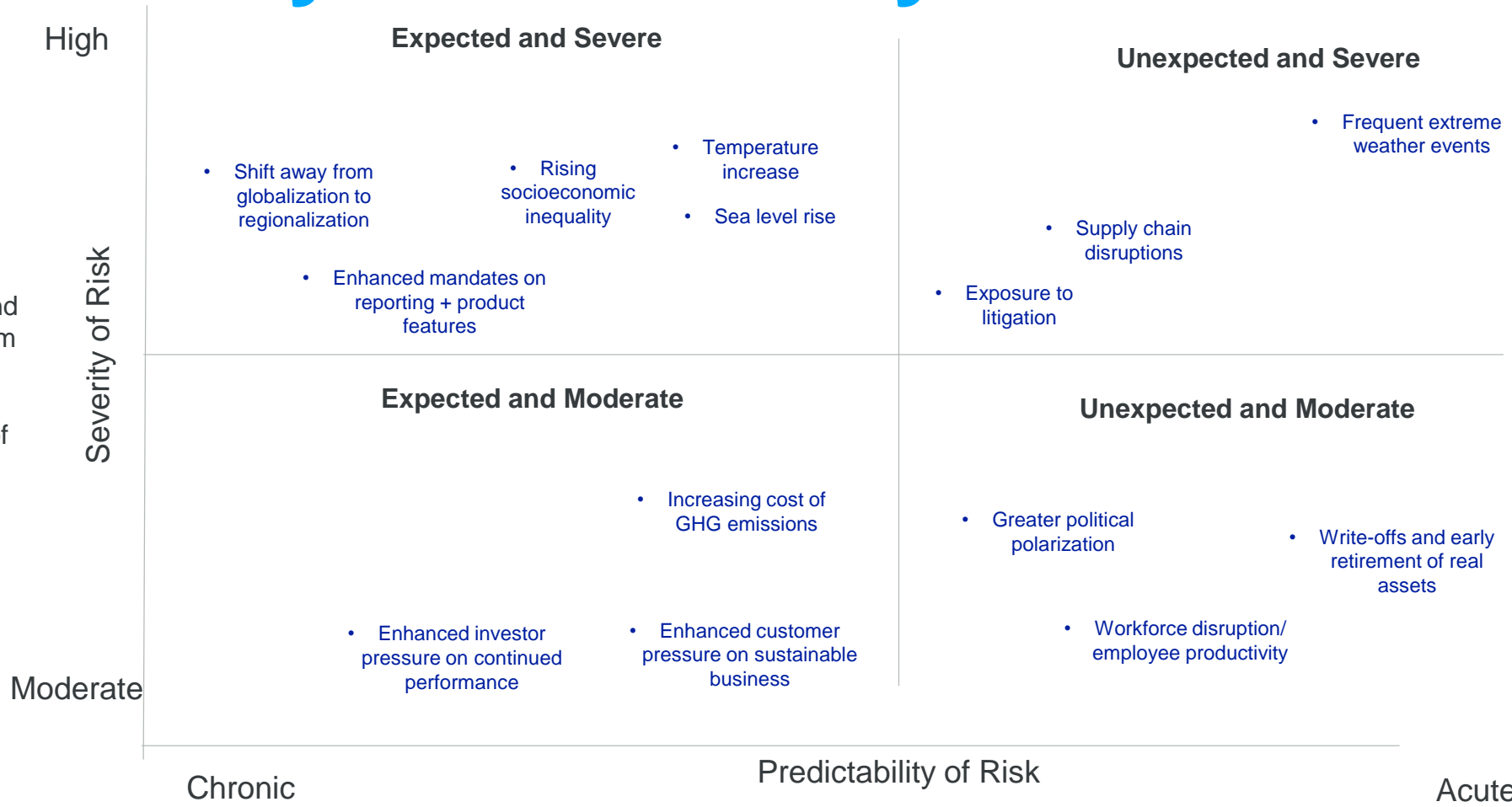
Number of reported disasters has nearly tripled since 1980

**\$ 200 billion**

The cost associated with those disasters

# Identify gaps in risk management based on predictability and severity of risk

**Execution Gap**  
Severe risks demand scale and ecosystem of capabilities that extend beyond the internal resources of an organization.

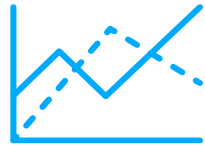


ILLUSTRATIVE

**Knowledge Gap**  
Unexpected shocks demand a broad foundation of intelligence to quickly act in times of crisis

# Why now

## *Using pivotal moments to accelerate change*



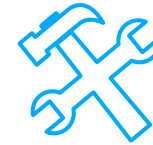
### **Leverage the shift in mindsets to plan for systemic risks**



Important decade to act on climate change.



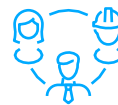
Prime opportunity to integrate climate into risk planning, investment decisions, and strategic business priorities.



### **Use the downtime to accelerate delayed projects**



These low volume periods allows for new projects and reallocation of workers that would otherwise disrupt productivity



Invest in your key value chain relationships

# Unlock gaps in resilience with technology, operations, and coalitions

	Leverage <b>technology</b> to diagnose and track risks	Invest in <b>operational agility</b> by broadening understanding of risk	Form <b>coalitions</b> to share costs and risk
Knowledge Gaps	Leverage diagnostic tools to map, model and track	Strengthen understanding of risks to estimate their financial impacts	Design bankable business models to maximize synergies
Implementation Gaps	Leverage granular data to respond quickly	Lock in operational agility and redundancy	Implement models that lower the cost and risk of infrastructure investments

# Lifou 100% Renewable Energy Project

## *A model for green energy*

### Context

Lifou Island relies heavily on fuel oil for electricity generation, resulting in unpredictable fuel costs and increased CO2 emission.

This project sets out to reduce its dependency on fuel oil and make the island a “showcase” for energy transition in the Pacific

### Our solution:



An energy master plan to make the most of the island's resources



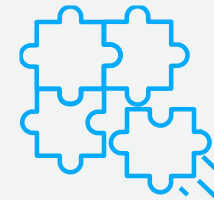
Organize the sharing of services



Power simulation models were used to create different scenarios and business cases



Better predictability of electricity costs



Investments and partnerships with suppliers and ministries were developed

# Flemish Administration – Spatial Policy

## *Urban planning for climate change*

### Context

The Flemish Administration and its residents have felt the effects of climate change (droughts, heatwaves, and floods). Every year, millions are spent compensating for damage caused by climate change.

### Our solution:



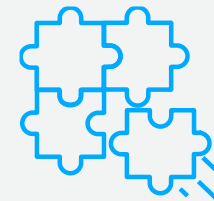
A qualitative and quantitative guidelines for climate change adaptation in relation to urban planning and design



Climate simulation models were used to determine the impacts of climate change



Highlighted the importance of spatial policy in climate change adaptation



A long term global strategy and a “toolkit” of measures to guide future initiatives design and implementation



# Ranchi Smart City - India

## *Envisioning today the city of tomorrow*

### Context

In 2050, 7 out of 10 people will live in cities, increasing the demand of power everywhere on the planet.

The Smart Cities Mission is an urban renewal and retrofitting program to develop smart cities across India, making them citizen-friendly and sustainable

### Our solution:



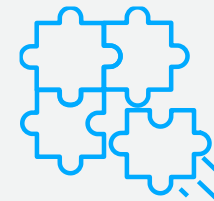
Vulnerability and risk assessment of urban infrastructure



Models were used to aid key technical studies on vulnerability and risk assessment



Integrated climate change resilient urban plans



Testbed for a Intelligent Transport System and other ICT components

# Simiyu Region of Tanzania

## *A climate resilient water supply solution*

### Context

Climate change has a direct impact on water resources, affecting the availability of water as an essential resource.

### Our solution



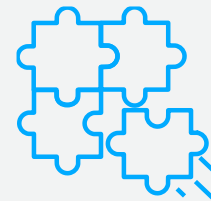
A climate resilient bulk water supply scheme in combination with a smart-agriculture on a territory



Hydro-meteorological modelling and hydro-behavioral simulation to determine the probability of hazard events, outcomes and potential solutions



Incorporation of a smart-agriculture as an added value stream



Workshops and stakeholder engagements to enhance knowledge



# Appendix

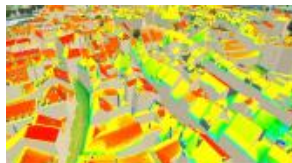




# Boosting the sustainable transformation of cities and territories through the use of a digital twin

## 3D Modeling of the City

- Creation of a **complete Digital Twin** of a city or territory
- Construction of a database specific to the client's sites, with the collection of **data of multiple nature**
- *Examples of data: topography, hydrographic features, solar/wind potential, building data (insulation, energy consumption,...), number of roads intersections*



## Multi-Scenarios Analyses to Build Integrated Masterplan

- Usage of data from the Digital Twin – complemented by additional data sources - to **conduct complex analyses** with other in-house developed tools
- **Modeling and testing of several scenarios** compelling multiple variables
- **Supporting in the development of integrated master plan** articulating the different offerings brick



## Impacts Visualization

- **Visualization of the results** of the implementation of the integrated sustainable transformation roadmap
- **Support the tracking of the value** created and enable the monitoring and **adjustment of the transformation plan**
- Facilitate the **supervision of operations** through ongoing access to the Digital Twin

