

Addressing climate change around the world – the views from an international consulting engineer

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7 March 2024

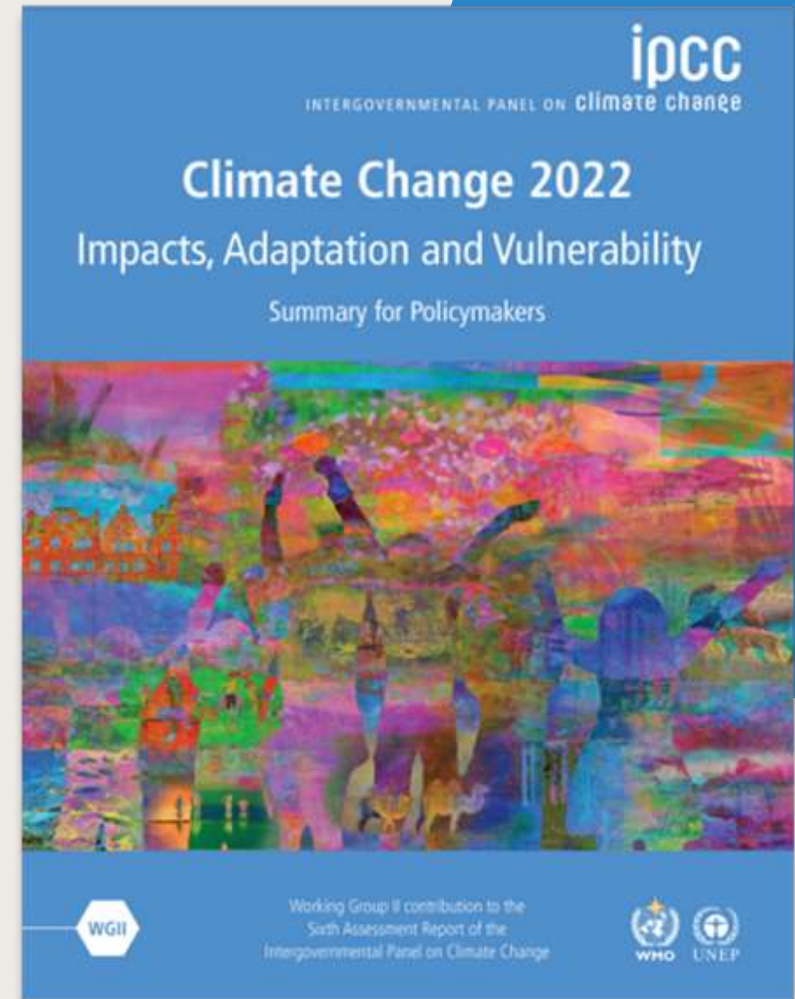
Non-confidential - Standard



Net Zero
(Decarbonisation)

**Climate
Resilience/
Adaptation**

3.3 to 3.6 billion
people live in
contexts that are
highly vulnerable
to climate change
(IPCC)



“Even if we were to stop emitting today, the infrastructure sector would need to implement climate resilience measures for decades to come.”

Carlos Sanchez

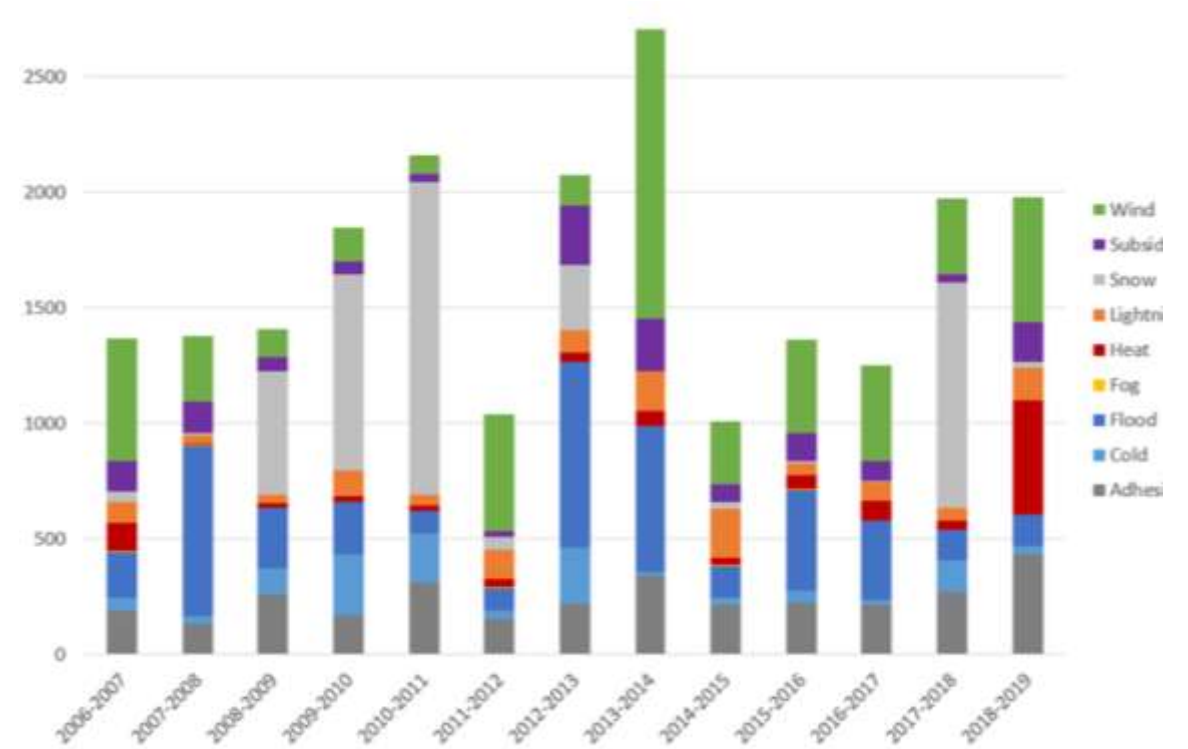
Executive Director

Coalition for Climate Resilient Investment

Weather already affects safety and performance on the railway



Fatal derailment at Stonehaven, Scotland in 2020. Passenger train hit a landslip following heavy rain



Delay minutes categorised by weather type in the UK – Network Rail Schedule 8 data

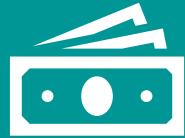


Key risks for rail



Damage & failure of assets

Physical impacts of climate change (flooding, high temperatures, drought) resulting in disruption to or loss of infrastructure services and networks. Costs from disruption services and operations. Risks to staff and passenger health, safety and useability.



Increased operating & maintenance costs

Increasing expenditure to maintain, repair or replace assets following a climate or weather related event.



Interdependencies

Complex and cascading risks across multiple networks and sectors given the interdependencies between infrastructure systems.



Policy & regulation

Lack of policy on climate resilience to fully embed it within decision making processes. Failure to adequately meet wider policy and regulation.



Reputational damage & responsibility

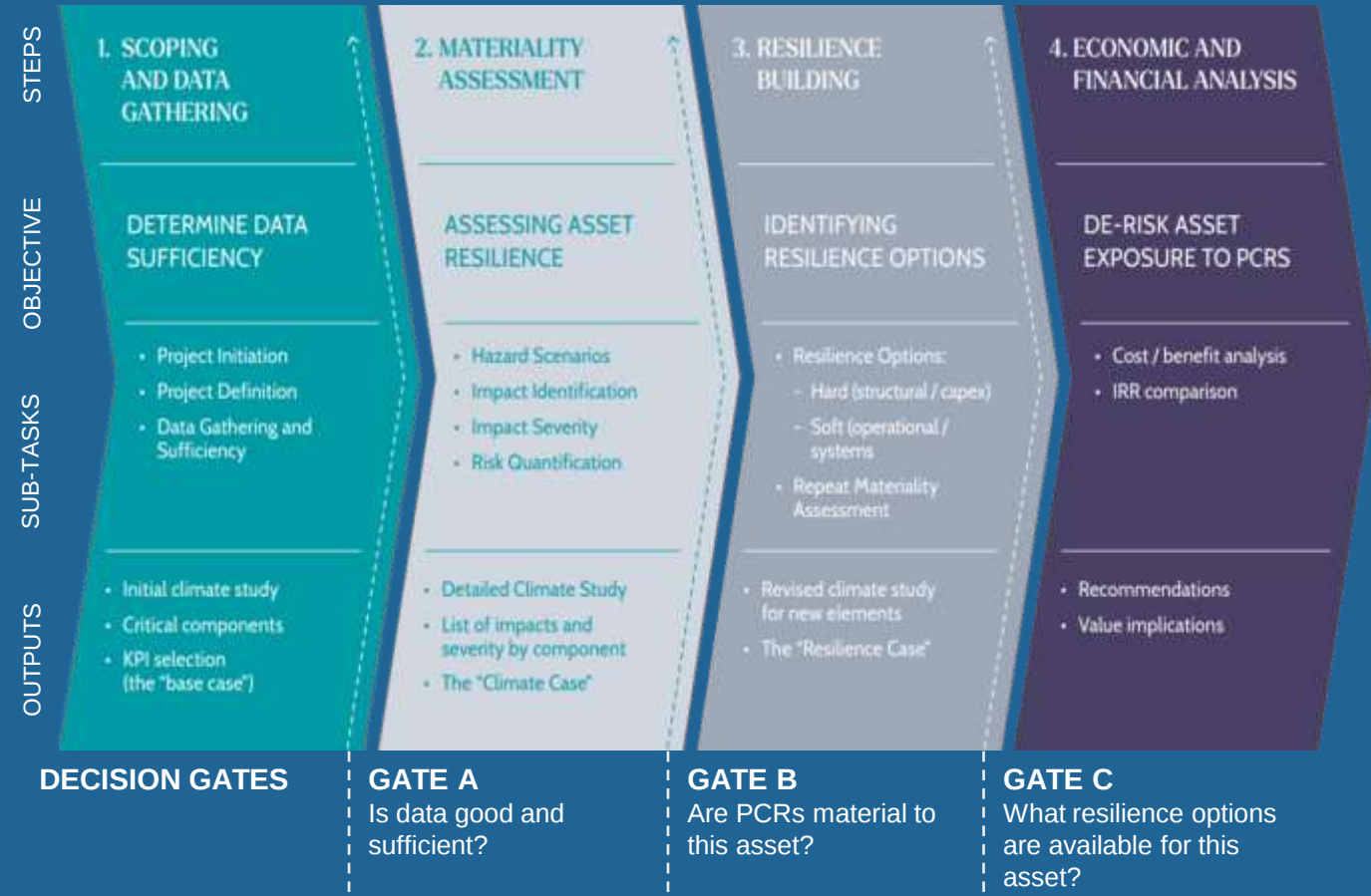
Changing customer or community perceptions around climate action. Failure to take responsibility and demonstrate action to increase resilience could have negative impacts on reputation.

The Physical Climate Risk Assessment Methodology (PCRAM)

Helping the industry to **invest and benefit from more resilient infrastructure**

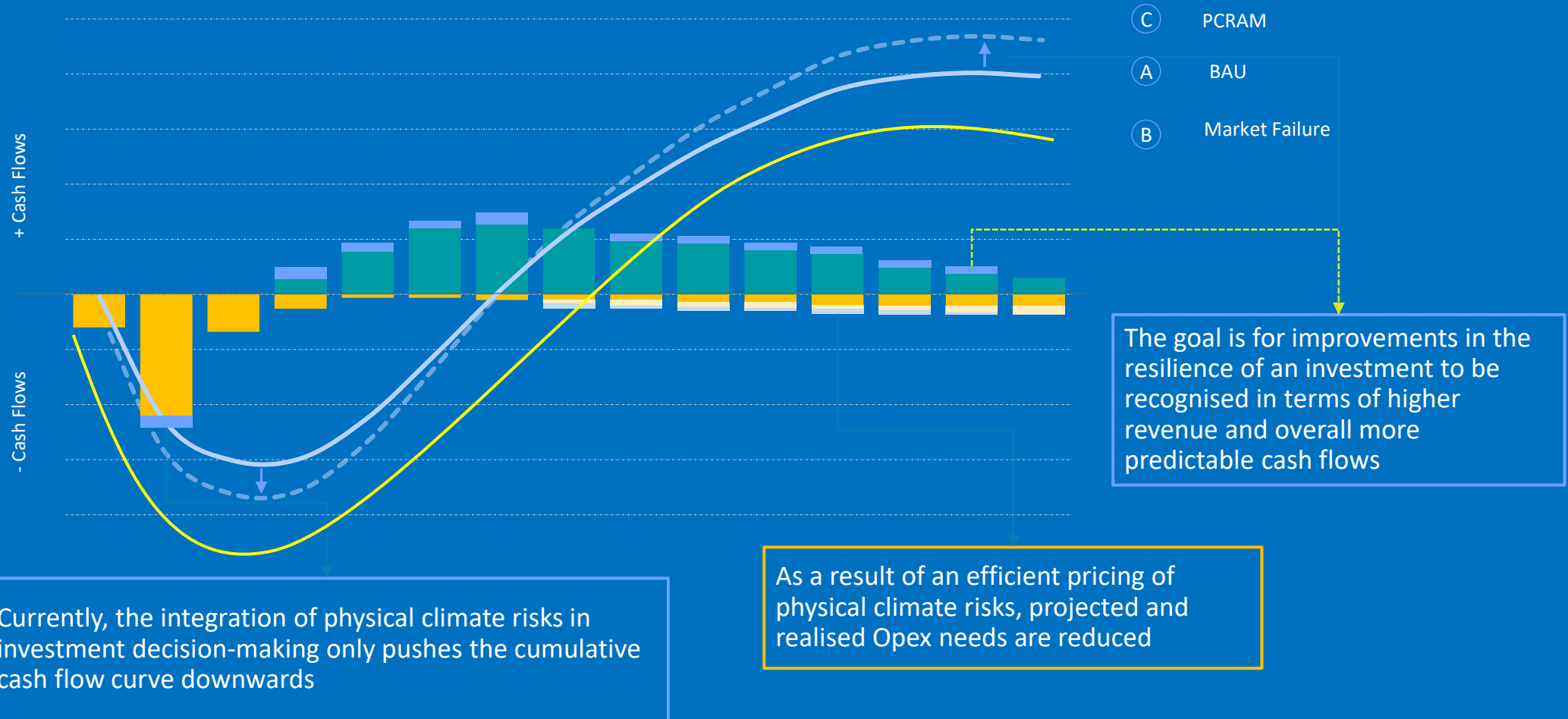


Our industry publications



PCRAM has proved a working thesis

Shows that resilience projects are not more costly projects, but rather more reliable sources of future cash flows



Why do we need PCRAM?

1

Physical climate risks (PCRs) are not consistently integrated in infrastructure investment decision-making. Infrastructure is being built which may not be fit for the future.

2

Building non resilient infrastructure reduces long-term value at the asset level and increases costs to future generations at the societal level.

3

Currently there is no standard methodology for assessing PCRs in asset management and investment decision making. This results in ad-hoc approaches and solutions.

4

Changing legislation could mean there is the potential for clients to be liable if the infrastructure they build today is not adequate for the needs of our future.

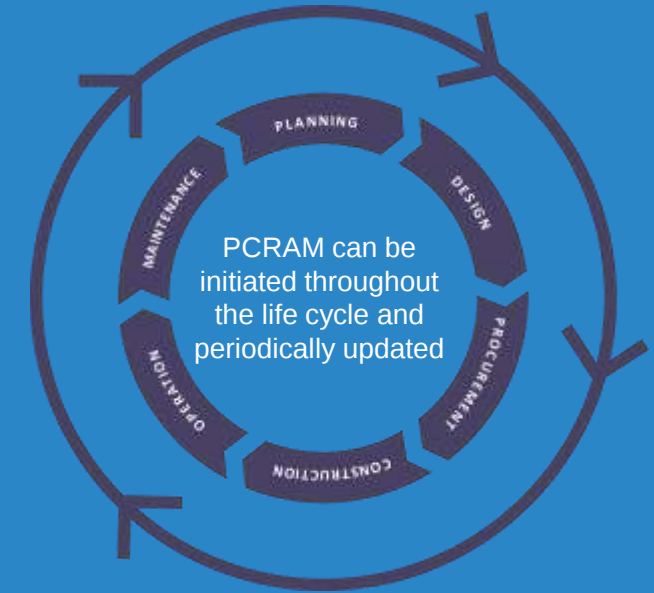
Application of PCRAM

Provides a robust four-step process that translates Physical Climate Risks into quantifiable impacts for asset performance.

Allows asset managers to make informed decisions on how best to build resilience into infrastructure assets.

Injects a consistent method into the marketplace with a common language.

Quantifies the resilience needs of infrastructure assets and translates them into benefits.



Where PCRAM can be applied?

1. Flexible to fit any infrastructure project
2. It can be applied to any type of Physical Climate Risks *e.g. acute vs. chronic*
3. Incorporates a variety of business objectives *e.g. performance, economic, financial, social, and environmental*

Infrastructure asset owners or investors that are:

- ☒ Planning big capex investment
- ☒ Managing existing assets & investing in renewal, repair and maintenance
- ☒ Seeking confidence incorporating resilience into decisions

So what?

**Creating a culture
of climate
resilience**

**Utilising pathways
to approach
adaptation**

**Aligning net zero
and climate
resilience**

**Maximise social,
economic &
environmental
opportunities**

**Innovation and new
technology**

**Nature based
solutions**

Thank you