

# CLIMATE ADAPTATION **BENCHMARKING & CAPACITY DEVELOPMENT**

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INTRODUCING CaDD  
A Capacity Diagnosis &  
Development Tool

[www.climatesense.global](http://www.climatesense.global)

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# CLIMATE AGILE DECISION MAKING



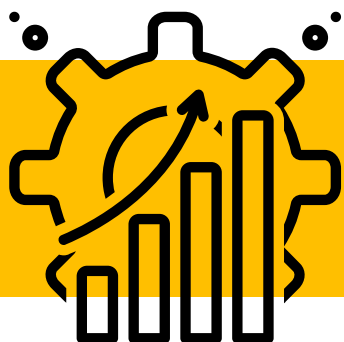
**Organisations are facing a complex future navigating a changing climate, a rapidly evolving carbon economy, complex sustainability issues across value chains and evolving existential threats.**

**Climate Sense** partners with organisations to identify the actions they can take today, in order for them to adapt and thrive in the face of a changing climate and complex geo-politics.

Our approach combines a deep understanding of human coaching with climate adaptation expertise that is rooted in academic research and decades of implementation. This is supported by our proprietary decision and organisational capacity mapping technology which supports us to map the most efficient and effective course of action to climate resilience. We support any organisation or system to safeguard and build a strategy that sees their organisation, employees and operations thrive.

**This document** sets out the methodology and practical application of Climate Sense's proprietary adaptive capacity mapping and development platform [CaDD] and how it can support and enhance XDI's powerful physical risk scoping and analysis.

# INTRODUCING THE CADD PLATFORM



Our adaptive capacity mapping tool, the Capacity Diagnosis & Development platform [CaDD], rapidly assesses at scale and develops an organisation's capacity to effectively and efficiently implement a climate adaptation strategy to proportionately address its unique climate risks.



CaDD enables projects and organisations to continuously identify the systemic challenges affecting them, then to plot the most effective and efficient path to address these challenges.

**THE CADD METRICS ARE ALIGNED WITH BOTH TCFD AND CBES REQUIREMENTS AND PROVIDE BENCHMARKING ACROSS ADAPTATION GLOBALLY.**





**XDI** CROSS  
DEPENDENCY  
INITIATIVE

**"A COLLABORATION IMPROVING  
1 MILLION CLIMATE RISK  
DECISIONS EACH DAY"**

**XDI and Climate Sense have partnered to transform how  
organisations take decisions about climate risk.**

XDI and Climate Sense's partnership combines industry leading physical climate risk analysis with Climate Sense's potential climate risk analysis and adaptive capacity mapping and development. This joint approach enables an assessment of all elements of climate risk and measures the ability of an organisation to manage those risks more effectively.

**Combined  
impact**

Accelerating climate agile decision  
making across industries and  
geographies.

**12**

Pilot partnership  
projects in 2023

**5**

Delivering across  
5 continents

# THE BUILDING BLOCKS OF CLIMATE RISK



Actual climate risk is the capability of the organisation to manage it's risk.

**ACTUAL CLIMATE RISK**

**AN XDI & CLIMATE SENSE COMBINED PACKAGE ENABLES AN ASSESSMENT OF ALL ELEMENTS OF CLIMATE RISK AND HOW TO MANAGE THAT RISK MORE EFFECTIVELY.**

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# UNPACKING ADAPTIVE CLIMATE CAPABILITY

Adaptive capability and why it matters for  
climate risk management.

What  
it is. ➔

Adaptive capability is organisation's or system's ability to appropriately factor climate change into decision making. The appropriate level of adaptive capability ensures that the essential data about the impacts of climate change is used effectively and leads to meaningful action.

Why it  
matters. ➔

There are huge amounts of data available that assess an organisation's current and future vulnerability to climate change. Identifying effective action from this data requires a specific skillset and can be costly. Misinterpretation of the data can lead to unnecessary costs.

Understanding an organisation's current capacity to take effective decisions in response to climate change exposes what is currently possible and where improvement is needed. It builds a highly effective profile of an organisation's true climate capability. This, in turn, informs the creation of a prioritised action plan addressing climate risk, that strengthens the management of climate risk. This action plan is based on the specific strengths and needs of the organisation and builds proportionate 'climate risk capacity' within the organisation, so it is able to effectively respond to and manage climate risk.

# CaDD

## CLIMATE SENSE'S ADAPATIVE CAPACITY MAPPING PLATFORM

CaDD is Climate Sense's proprietary technology platform that assesses the capacity of organisations to take the decisions that mitigate the impact of climate change. It maps and assesses an organisation's adaptive capacity.

Built on an evidence-based framework and developed from over 2000 industry case studies, CaDD assesses, then grows the capacity of organisations, and the systems they form part of, to take strong decisions that consider climate change issues

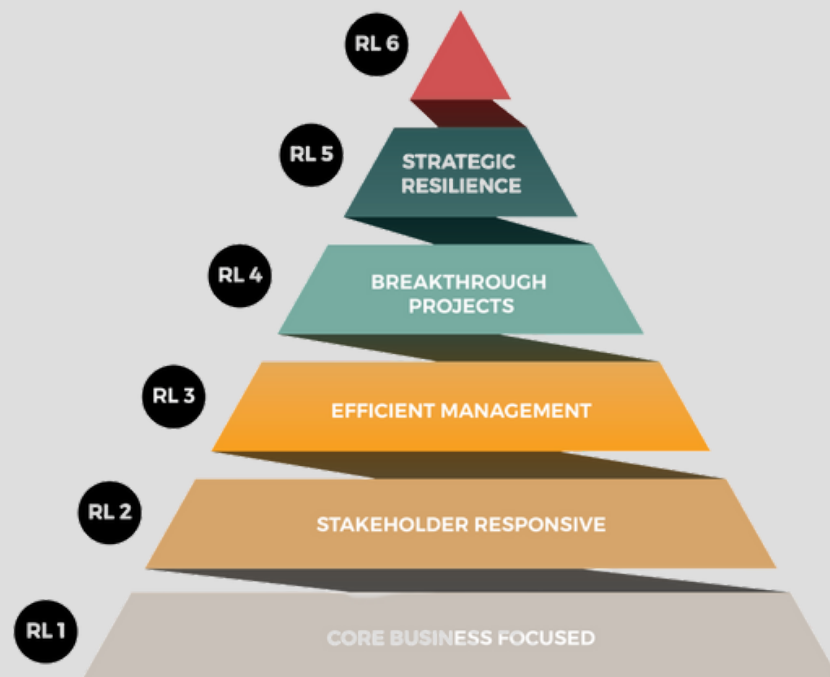
### CaDD measures the component parts of adaptive resilience

#### THE METHODOLOGY

CaDD is built on a maturity index that looks at 6 response levels within any organisation.

The methodology identifies the levels of capacity that are needed for an organisation to react effectively to climate risks.

This capacity is determined by reviewing the types of decisions and actions an organisation takes and is involved in.



### THE CaDD METHODOLOGY SHOWS ORGANISATIONS:

The level of adaptive capability an organisation requires to manage its physical risks.

The level of capability it currently has to manage its physical risks

How the impact of physical risk changes depending on one's level of adaptive capability.

Provides a prioritised set of actions to manage it's climate risk by strengthening adaptive capacity.



CaDD is designed to assess adaptive capacity at decision making points in risk management systems. Evidence shows that by developing adaptive capability at one point in a system, risk management outcomes change across the entire system.



# UNPACKING THE CaDD RESPONSE LEVELS

CaDD identifies different levels of adaptive capacity. The adaptive capability an organisation needs, depends on the climate uncertainty that needs to be managed. As such, not all organisations need to achieve the highest Response Levels [RL]. Each Response Level is built upon the foundation of the Response Level below. Organisations at different capacity levels require very different types of support.

## CHAMPION ORGANISATIONS

Some organisations seek to lead wider social change in addition the capacity they have nurtured within their own organisation. We continue to build an understanding of what this level means.

**RL  
6**

## STRATEGIC RESILIENCE

The organisation has addressed and proactively manages systemic climate risk but also understands it needs to remain 'adaptive' to identify and respond to long term climate risk [>20 years] and the evolving and unforeseen risks a changing climate can pose i.e. unknown future emissions levels and increasing climate volatility.

**RL  
5**

## BREAKTHROUGH PROJECTS

An organisation recognises the need to manage the direct and complex, intangible risks posed by climate change. It is actively innovating solutions to both understand and manage systemic and unknown climate risks.

**RL  
4**

## EFFICIENT MANAGEMENT

An organisation takes proactive initiative in managing precise and clearly defined climate risks [< 20 years] for which there are clear solutions. It may begin to take advantage of opportunities that result from climate change that would benefit the company and is agile in their adaptation response.

**RL  
3**

## STAKEHOLDER RESPONSIVE

An organisation addresses some risks posed by climate change in order to keep their stakeholders happy or they are only able to take effective climate action with support their stakeholders.

**RL  
2**

## CORE BUSINESS FOCUSED

An organisation resists pressure to address climate risks, unless it sees a direct immediate benefit to the business.

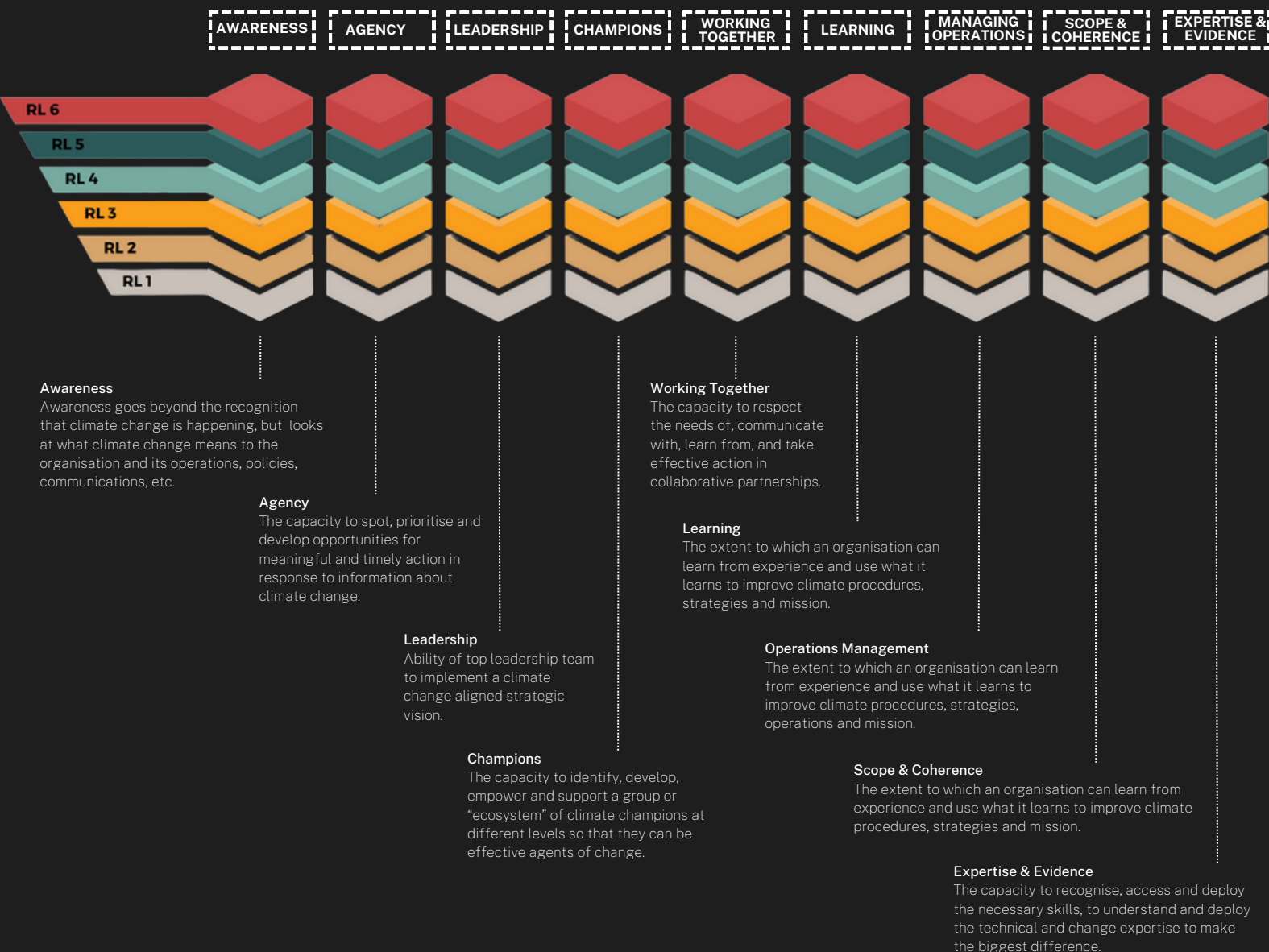
**RL  
1**

# THE CaDD METRICS

The CaDD platform analyses over 300 different activities that take place within an organisation. These activities give an indication of what level of ‘adaptive capacity’ an organisation is at.

These activities, once identified are categorised under 9 different metrics including: **Awareness, Agency, Leadership, Champions [climate], Working Together, Learning, Operations Management, Scope & Coherence and Expertise & Evidence.** Once an activity is categorised, it is quantified against the Resilience Levels 1-6.

Determining what activities an organisation is already doing, allows us to get a comprehensive profile of their strengths. This tells us exactly how best to work with them – building climate interventions on what they already do well.



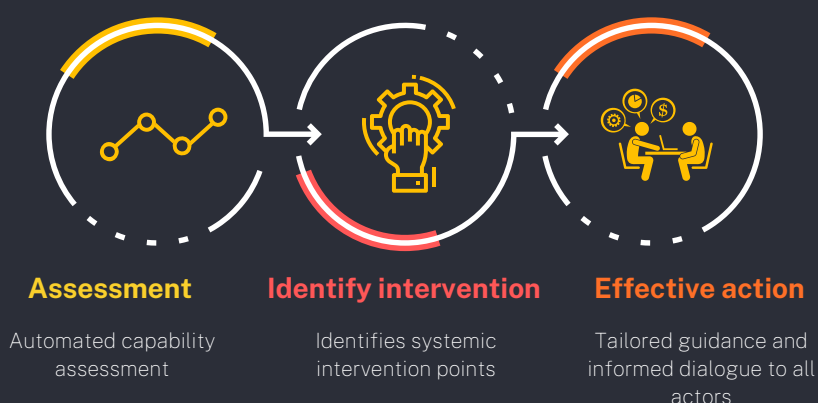
# ADAPTABLE APPLICATIONS OF THE CaDD PLATFORM

CaDD works with an organisation to help them understand how best they can use the data and information, in order to take meaningful, cost efficient, effective, tailored climate action. Climate Sense offers two levels of support on the CaDD platform.

## CaDD Light Explorer

Light Explorer is a rapid & highly scalable automated assessment.

It is highly dynamic and adaptable for multiple uses and can rapidly assess adaptive capability. CaDD Explorer. The client completes an online inquiry (20 mins), a prioritised action plan is then automatically produced. This approach has been designed to assess thousands of clients simultaneously. It is designed to give a 'first look' adaptation assessment and plan. It can be used by a single organisation or as a tool to map adaptive capacity and prioritise adaptation action across a system e.g supply chain, sector or multifaceted organisation.



## CaDD Deep Dive

Deep Dive is a rapid & highly scalable automated assessment on the CaDD platform.

It is highly dynamic, can assess multiple systems and looks at all 9 metrics of our capability methodology. It is designed to provide a high definition/in depth adaptation plan for a single organisation.



# Case Study 1: CaDD investigating the unique adaptive capacity of 21 different European cities

Cities face severe, yet differing impacts from climate change including; flooding, heatwaves and water scarcity coupled with coastal impact for those cities in vulnerable locations.

Climate Sense delivered a project in partnership with Riccardo-AEA, ICLEI, Arcadis, The University of Manchester and Adelphi for the European Commission Directorate General on Climate Change, it had a 3-fold purpose:

1

It aimed to build the capacity of and assist 21 European cities to develop and implement climate adaptation strategies.

2

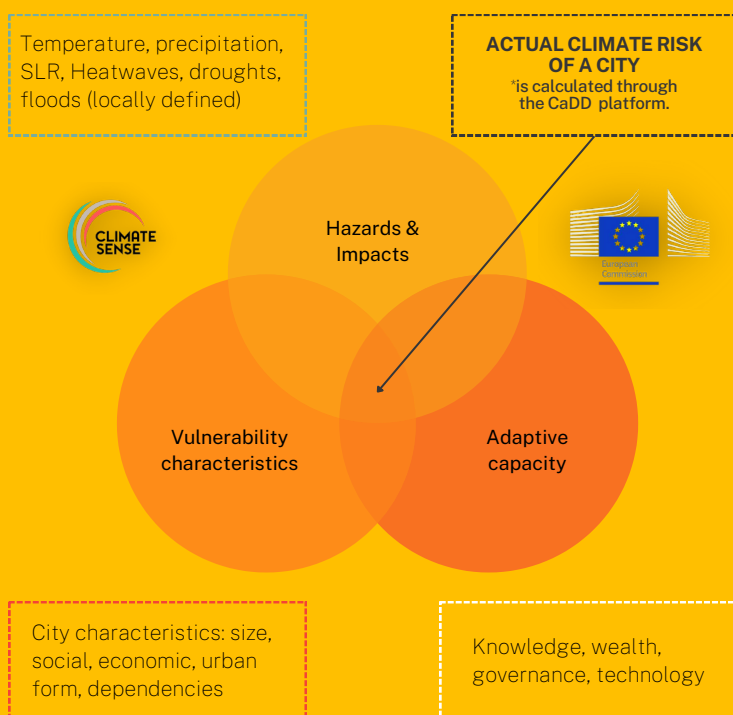
To provide additional technical support for cities to implement urban adaptation to climate change.

3

To raise crucial awareness amongst cities about the importance of preparing for climate change in cities.

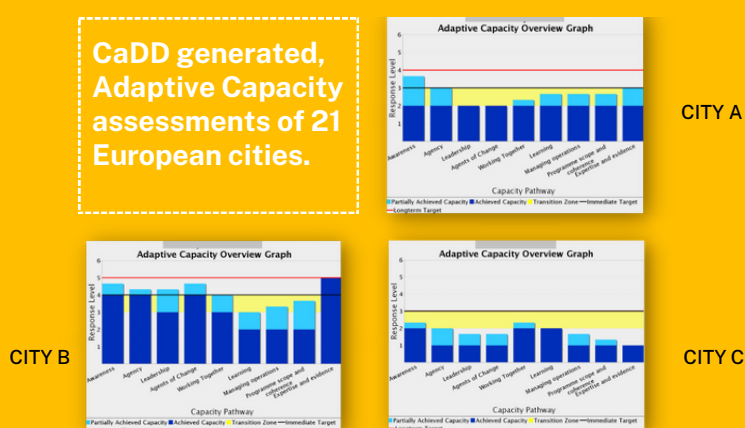
## Using CaDD to assess climate vulnerability in an urban framework.

CaDD incorporated a new framework for understanding Urban Climate Change Vulnerability and Risk. This facilitates longterm benchmarking for urban based organisations.



## Observations: Geographical differences, contrasting climate threats & unique adaptive capacities highlighted need for tailor made strategies for each city.

CaDD generated, Adaptive Capacity assessments of 21 European cities.



\*A sample of 3 cities from 21 European cities CaDD profiled, highlighting the range of capacity found across the project.

Cities face different threats, they are not a homogenous group. As such, multi-dimensional, tailored approaches were needed to develop adaptation strategies across each of the 21 cities.

# Case Study 1: CaDD developing the unique adaptive capacity of 21 different European cities

The project identified that capacity for climate adaptation across the 21 cities was highly varied, with the majority low but with some high capacity examples. Capacity building and support urgently needs to be grown, especially where major long, lifetime decisions are being taken. Capacity growth is needed in 3 major categories: Urban Adaptation Management, Knowledge Management and Governance & Financing.

## CADD GROWING PAN-EUROPEAN ADAPTIVE CAPACITY ACROSS 21 CITIES OF VARYING CAPACITY.

Climate Sense used a multi-dimensional, tailored approach to develop individual adaptation strategies to meet each city's needs that included:

Built bespoke adaptation plans for each city that were tailored to build on and augment their strengths and address their unique climate challenges.

Facilitating peer-to-peer learning between Cities that were on the same 'adaptation pathway' but that were one level apart. This was found to significantly boost learning and action for both parties.

Climate Sense created a learning platform that supported and promoted adaptation action. The platform also enabled cities to share their experience of the 'prioritised steps'.

## CADD IDENTIFIED CITY SPECIFIC CHALLENGES CLIMATE CHALLENGES.

There is a lack of awareness of understanding of adaptation & a lack of baseline information about climate threats.

Greater emphasis needed on mitigation as opposed to adaptation.

Ineffective internal communication about climate threats across city departments.

Only those cities that partnered with competent third party, climate change modelling organisations had large scale data on climate change hazards.

A lack of adequate political commitment for funding climate adaptation.

Climate data was dispersed data across departments and little cohesive coordination.



## A macro, Pan-European climate adaptation framework would expedite the capability of individual cities to develop climate change adaptation strategies and capacity.

The project illustrated how a macro-framework for climate capacity building and an information exchange on adaptation can be provided by the EU or an overarching network. Cities could then engage and be supported, then coached to make rapid and efficient progress in developing climate adaptation strategies. There is a clear role for the EU to also provide over-arching political support for climate adaptation strategies.

## Case Study 2: Mapping UK Insurance Provider's adaptive capacity to flood risk that impacts investment returns from UK property.

Climate Sense expanded on a study done by Climate Wise, a global network of insurers in partnership with Cambridge University's [Institute for Sustainability Leadership](#). We built on and analysed their study that considered the physical risks of climate change across 12 real estate portfolios worth over \$2trillion. Their aim was to improve the management of the physical risks of climate change in the insurance industry. In 2017, global weather-related financial losses exceeded US\$325billion. Estimated changes in climate pose huge questions for investors, lenders, insurers and policy makers with potentially huge financial implications.

Their approach assessed how much additional damage today's portfolios might face under the climatic conditions that see a 4°C warming trajectory by the 2100s. Their methodology assumed a continuation of trends in the recent past regarding community based adaptation.

The study found



in potential \*Average Annual Loss from flooding for UK residential mortgage portfolios by 2050s.



Climate Sense worked with Climate Wise to assess the adaptive capacity of English Local Authorities in their work to ensure that new properties are insurable against flood risk over the next 100 years.

- The likely increase in risk will have significant knock-on effect, with a direct rise in insurance premiums proportionate to the projected increase in Average Annual Loss from flooding or cover may become unavailable, this has already been seen in some cases.
- As a result, socially vulnerable populations will be at particularly risk. Higher accuracy in flood predictive models will lead to higher insurance costs for those in high flood prone areas, resulting in unaffordable or unavailable insurance for vulnerable demographics.

# 180,000

additional UK properties in the portfolio were identified to be at severe risk of flooding due to climate change by 2050s.

**This increase in the number of properties at considerable risk of flooding by the 2050s is 40%.**

**Today's models place only the 1.3% of properties at risk [1 in 75].**

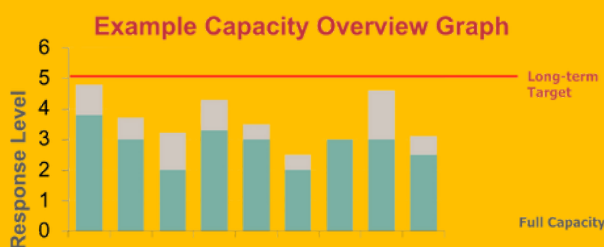


# Case Study 2: The role of adaptation in reducing the impact of climate related investment loss for UK insurance providers.

Our analysis highlighted that 'adaptive capacity' can have a material role in reducing climate risks and their associated impacts on real estate portfolios. Climate Sense has found that where regulation often introduces the concept and need for climate adaptation to companies through compliance procedures, many begin to own the risks and take action to develop their own 'adaptive capacity'.

For UK residential properties, existing efforts to encourage adaptation need to expand significantly. Joint efforts to implement adaptation strategies between lenders, insurers and the government will be critical. For real-estate and infrastructure investors, motivation to undertake adaptation remains limited. Efforts are likely to be driven by building codes and planning regulation, over business strategy.

Governments and mortgage lenders are beginning to recognise the increased climate risks on their long term loans. These mortgage lenders are now developing packages to encourage and enable mortgage holders to adapt to climate risk, demonstrating significant development in the adaptive capacity of the mortgage lenders.



A Deep Dive CaDD analysis and prioritised action plan would further catalyse the development of adaptive capacity. It would highlight the security of the mortgage portfolio by providing a benchmark from which to assess current adaptive capacity against the capacity required to manage its climate risk.

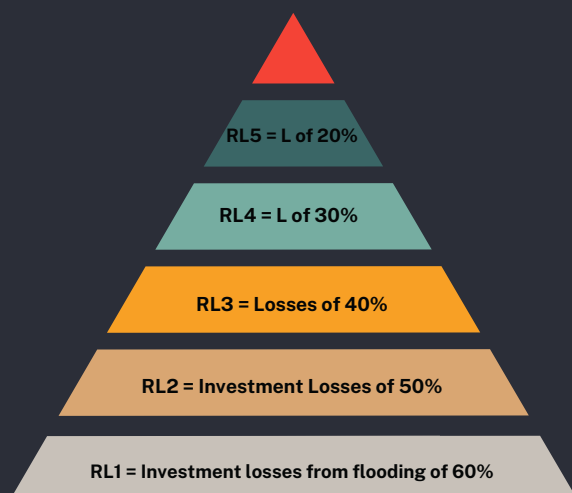
**ADAPTIVE CAPABILITY**



**LOWER LOSSES OF INVESTMENT RETURN DUE TO FLOODING**



## INVESTMENT LOSSES AT DIFFERENT ADAPTIVE CAPABILITIES



## CaDD results

The owner of the real estate portfolio would need to have an "adaptive capacity" at Resilience Level [RL] 5 to incur only **20% potential loss** on investment return by 2050.

The lower the capacity (Response Level) to respond to climate risks, the higher the risk of losses on investment caused by flooding.



# CLIMATE SENSE'S ADAPTIVE CAPACITY TEAM

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**DOOGIE BLACK**

**Director**

Doogie is the founding member of Climate Sense, he pioneered the development of the CaDD platform. Doogie focuses on climate change resilience, supporting organisations to optimise their use of climate and risk data to producing climate-informed decision-making. Doogie was the UK principle expert in developing ISO 14090 (2019), the first ever international standard on climate change resilience and sits on the BSI Adaptation to Climate Change Committee.

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**NICK PYATT**

**Director**

Nick has over 40 years experience leading organisational development strategies for natural resource management systems within complex commercial, social, environmental and climate sensitive environments. With deep expertise in identifying and analysing an organisations capacity to effectively address climate and other sustainability challenges, Nick facilitates the CaDD platform's proprietary methodology for organisations or systems.

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If you have any questions, please do get in touch with us.

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