

Climate Change Decision-Making

Based on UKCIP's 'Adaptation Wizard'
Treating Climate Impacts as a Business Risk

Taipei, November 2008





UK Climate Impacts Programme (UKCIP)

The UK Climate Impacts Programme (UKCIP)

“helps organisations to assess how they might be affected by climate change, so that they can prepare for its impacts”.

- Set up by UK Government in 1997.
- Funded by DEFRA.
- Based at University of Oxford.

Works through:

- Stakeholder-led research.
- Partnerships.
- Projects.
- Capacity building.

Provides common tools and datasets. All freely available on the web site:

www.ukcip.org.uk



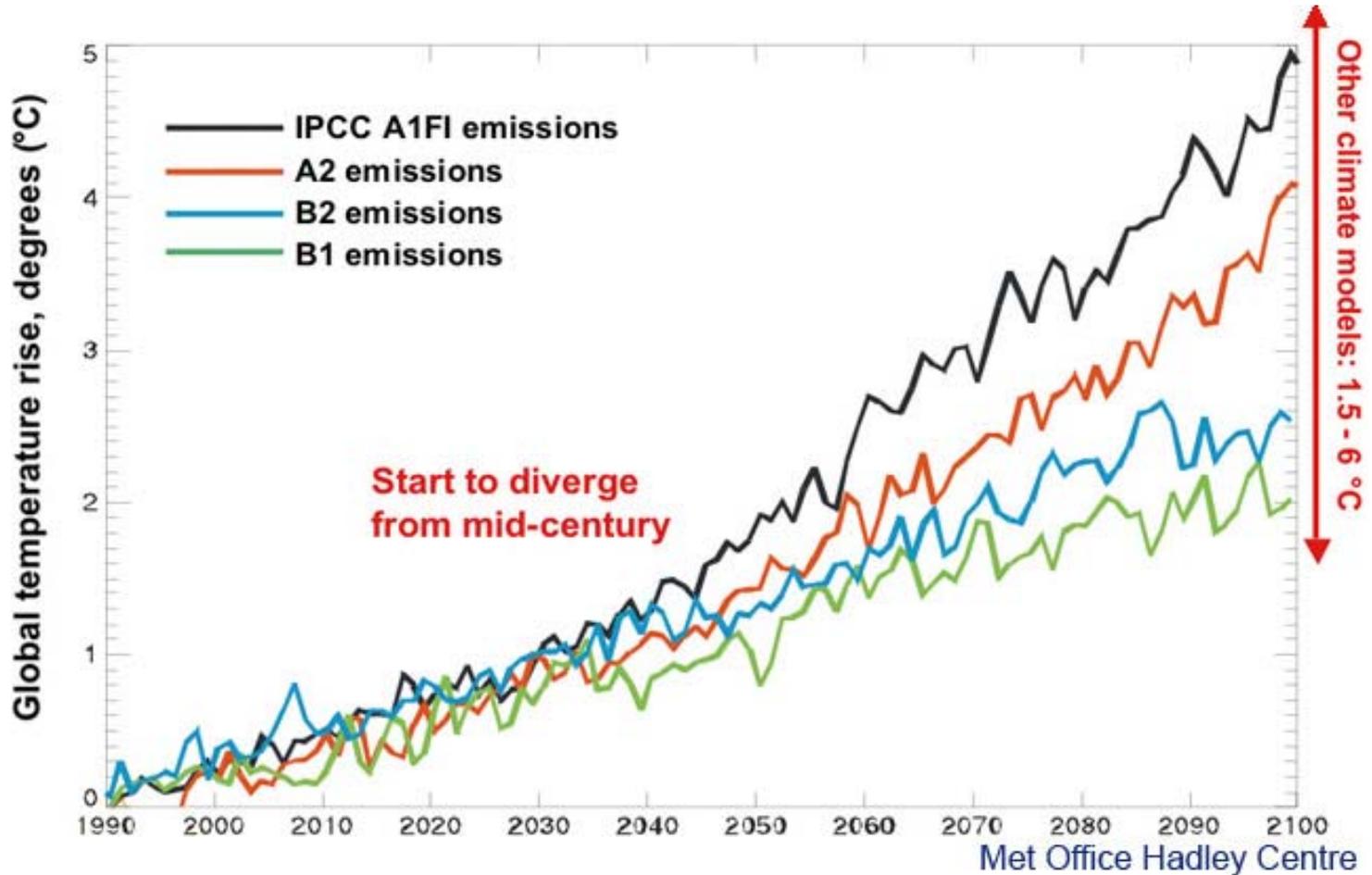
UK Climate
Impacts Programme

The need for Adaptation



Science of Climate Futures

climate change is unavoidable



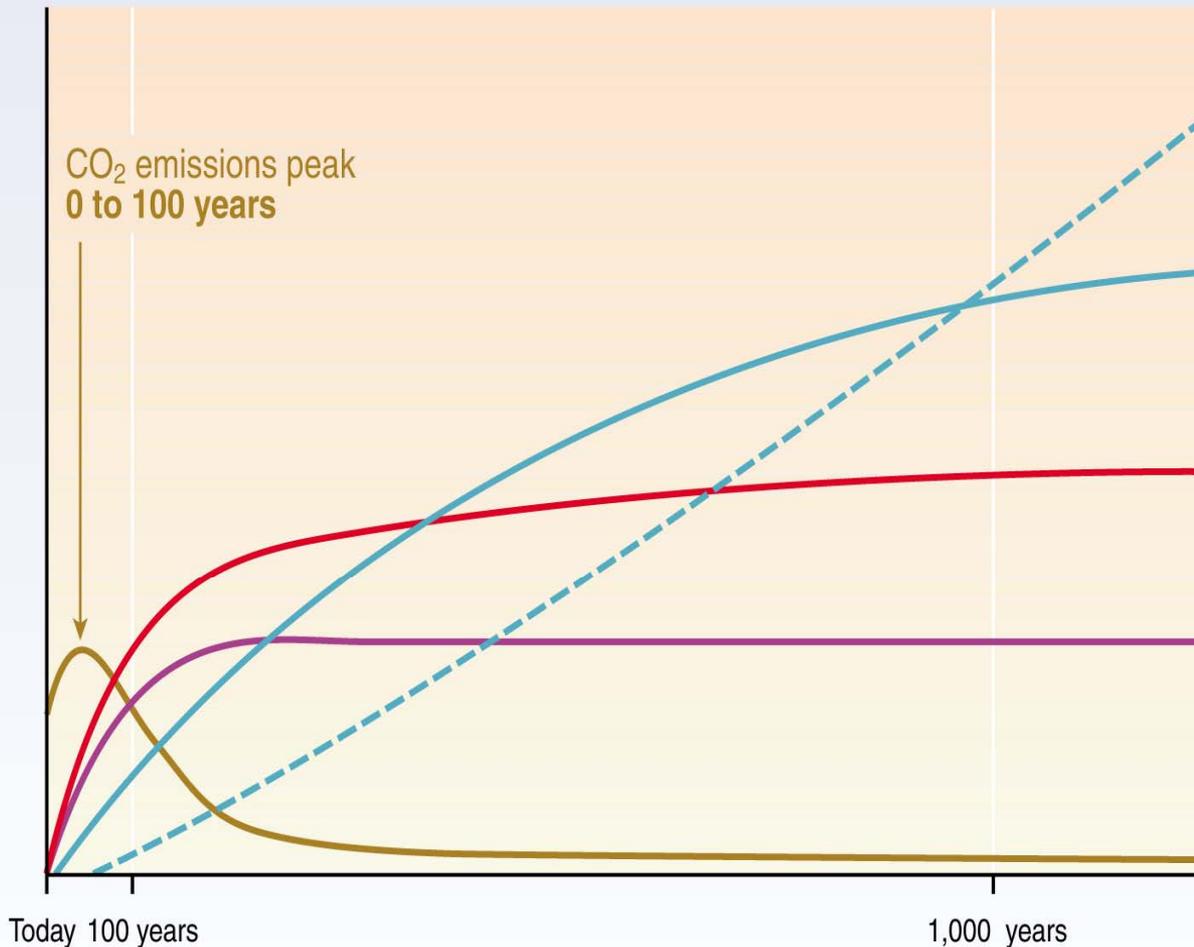
Science of Climate Futures

unavoidable climate change is long lasting

CO₂ concentration, temperature, and sea level continue to rise long after emissions are reduced

Magnitude of response

Time taken to reach equilibrium



Sea-level rise due to ice melting:
several millennia

Sea-level rise due to thermal expansion:
centuries to millennia

Temperature stabilization:
a few centuries

CO₂ stabilization:
100 to 300 years

CO₂ emissions

Twin Responses to Climate Change

**“There are two methods of curing the mischiefs of faction:
the one by removing its causes, the other by controlling its effects.”**

James Madison et al, The Federalist Papers

1. mitigation of climate change

slow down global warming by reducing greenhouse gas emissions

2. adaptation to climate change

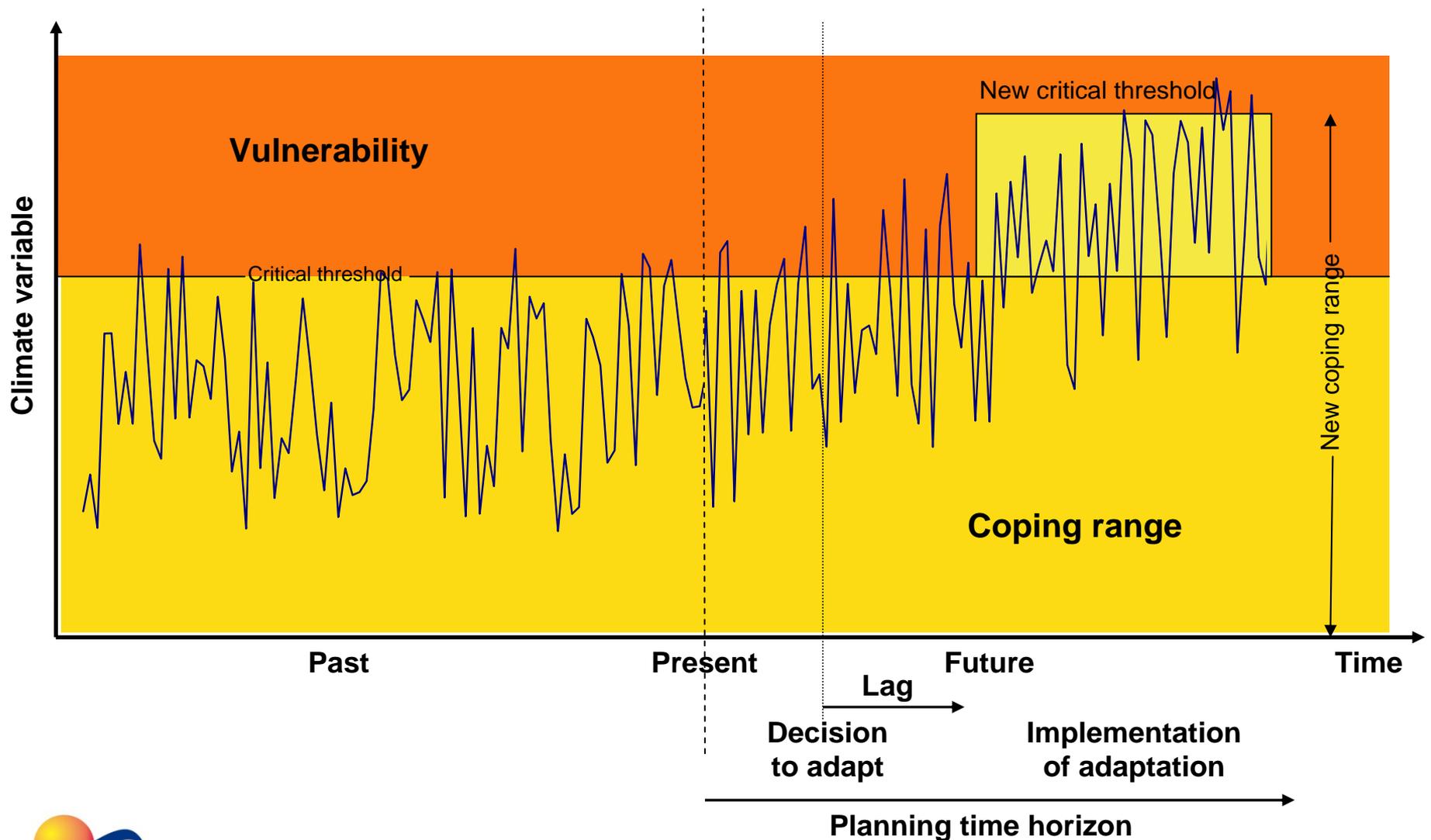
respond to the predicted impacts of unavoidable climate change

- the terms ‘weather related risks’ and ‘climate risks’ may be more useful when considering impacts and adaptation
- beware also of the use of the word ‘adaptation’ as meaning ‘adapting to a low-carbon economy’.

Why adapt a local authority to Climate Change?

- Maintain council's service provision and political commitments
- Support vulnerable members of community
- Exploit (business) opportunities where they exist
- Manage risks proportionate to other risks
- Manage strategic assets and long-term investment
- Achieve Business Continuity for council etc. and local business
- Avoid unnecessary expenditure arising from impacts

What is Adaptation?



Distinguish between weather and climate

Climate

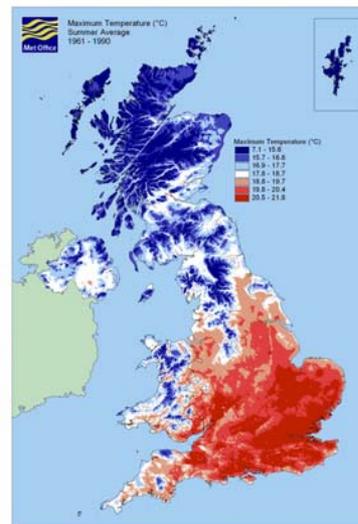
- the average weather in a locality over a thirty year period

"Climate is what you expect –

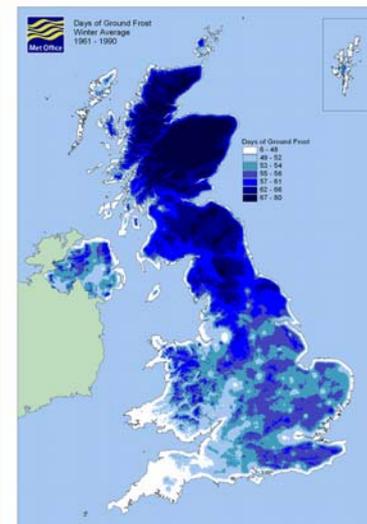
weather is what you get!" R.A. Heinlein 1973

Weather

- what it is doing outside right now
- It is mainly extreme weather events, and their impacts, that present risks to society.



Max temp,
Summer av. 1961-1990



Days of ground frost
Winter av., 1961-1990



Oxford Eastern By-Pass: October 11th 2006

Some typical impacts expected in the UK

But remember that impacts are very specific to locality

- increased risk of flooding and coastal erosion
- pressure on drainage systems
- possible winter storm damage
- habitat loss
- summer water shortages
- low river/stream flows especially in summer
- increased subsidence risk in vulnerable locations
- increased thermal discomfort in buildings in summer
- reduced demand for winter heating
- increased demand for summer cooling
- drought impacts on crops and livestock
- etc

Adaptation to changing weather might include:

- taking a bottle of water with you on the underground in summer
- having siestas in the middle of the day to avoid high temperatures
- more co-operation between agencies to reduce flood risk
- growing new varieties of potatoes to perform better in new climate
- undertaking research into potential impacts on vulnerable groups
- issuing sunblocker to primary schools in the south
- planting vegetation in uplands to reduce rate/quantity of run-off
- reducing/eliminating space-heating in offices in the south
- reducing paved areas in urban locations to reduce run-off
- landowners creating reservoirs to use winter water for summer use
- buying property in the north of and outside urban heat islands
- building eco-towns above 5m contour and etc
- etc

Role of UK Central Government



Role of UK Central Government

New Adaptation to Climate Change (ACC) Team in Defra

Works with other central government departments

Commissions research on impacts and adaptation

Commissions scenarios for future climate from Hadley Centre

'Mitigation' now with new Dept of Energy and Climate Change (DECC)

Climate Change Bill: Mitigation: targets for emissions reduction

Climate Change Bill: Adaptation: risk-based assessment of public bodies

Sponsors and oversees UKCIP

Changing social and political context

Stern Review

Carrier bags, air miles,

Climate Change Bills

Climate Change Declarations

Performance Indicators for Local Authorities

2006 Heatwave in England

2007 floods in Gloucestershire etc

Pitt Review on flooding

Forthcoming UKCIP08 Scenarios

UK Adaptation Policy Framework (APF)

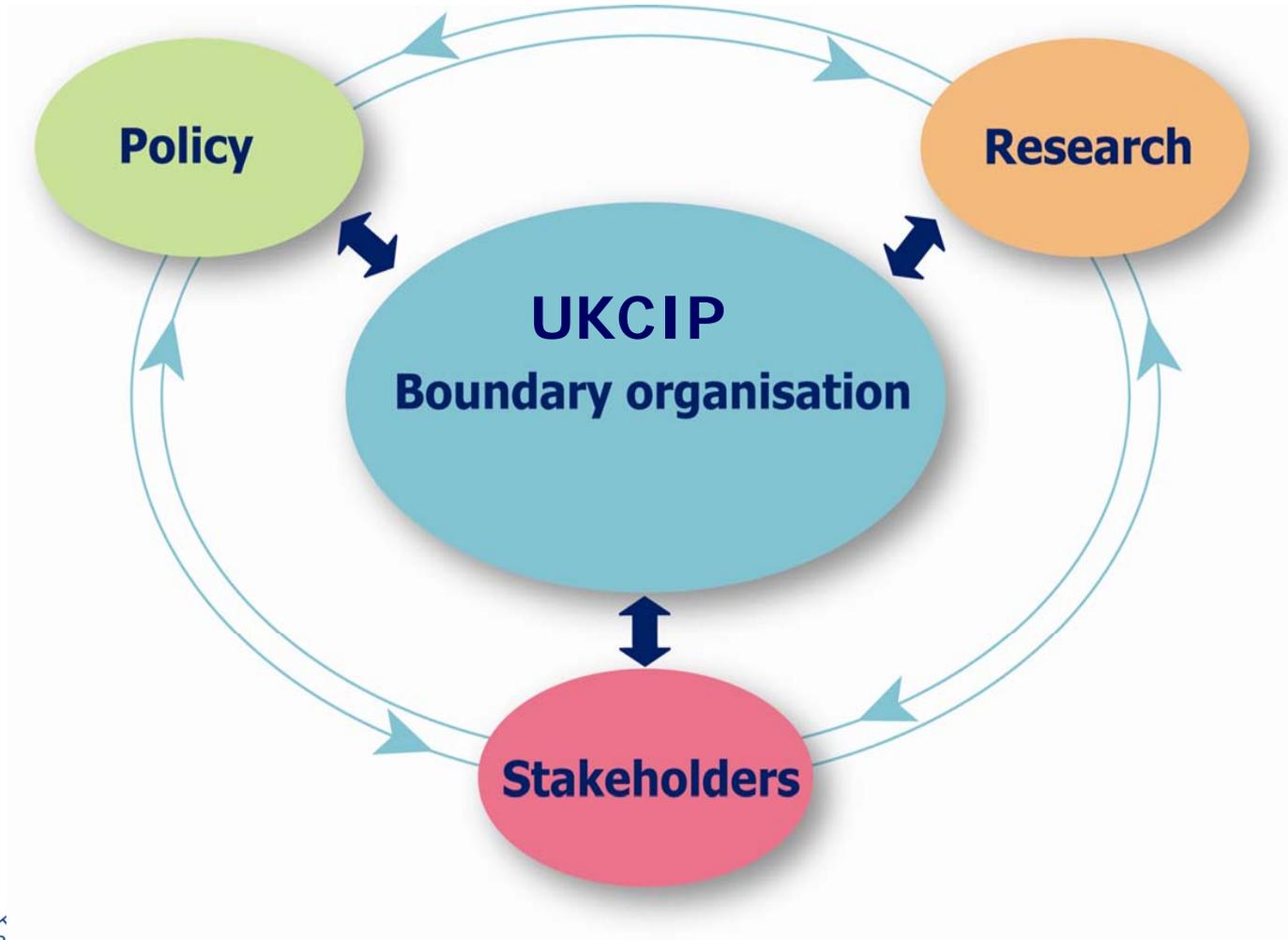
New Defra Team (Adaptation to Climate Change: ACC)

www.defra.gov.uk/environment/climatechange/adapt



UKCIP is a 'boundary organisation'

UKCIP facilitates relationships between three groups of key actors



UKCIP Work Programme

- 1 - Understand Vulnerability Impacts and Adaptation:
Impact research, UKCIP08, National Risk Assessment
- 2 - Resources to support adaptation:
Targets & Indicators, "Learning thro' doing", Wizard, other tools
- 3 - Build Capacity for Adaptation in stakeholders:
Central Government, Climate Change Bill, Regions, LAs, Business
- 4 - Support UKCIP through communications:
Website, Stakeholder community, Training, E-learning
- 5 - Learning From and Sharing Internationally.

UKCIP Stakeholders

- Central Government Departments
- Agencies and Utilities (Environment Agency, Water Companies)
- Devolved Administrations (Scotland, Wales, Northern Ireland)
- 9 English Regions
- Local Government
- Business, business-facing organisations (Professions, Trade Bodies)
- Scientific and Academic Communities

Target stakeholders are professional decision-makers and planners.

UKCIP does **not** work with the general public and householders.

Creating a Well Adapting Organisation

Building Adaptive Capacity (BAC)

- undertaking research, institutional change, education and training,
- creating standards and legislation, management, and resources
- developing policies, plans, strategies

Delivering Adaptation Actions (DAA)

- building flood defences or managing retreat
- putting more nails in a roof tile, increasing the diameter of a drain
- creating 'siesta' times in a business or a locality

Two different approaches to Adaptation

Scenarios Approach

typically used in 'Developed' Countries

(main approach of UKCIP)

using science-based, modelled projections of future weather and climate with which to explore potential impacts and responses

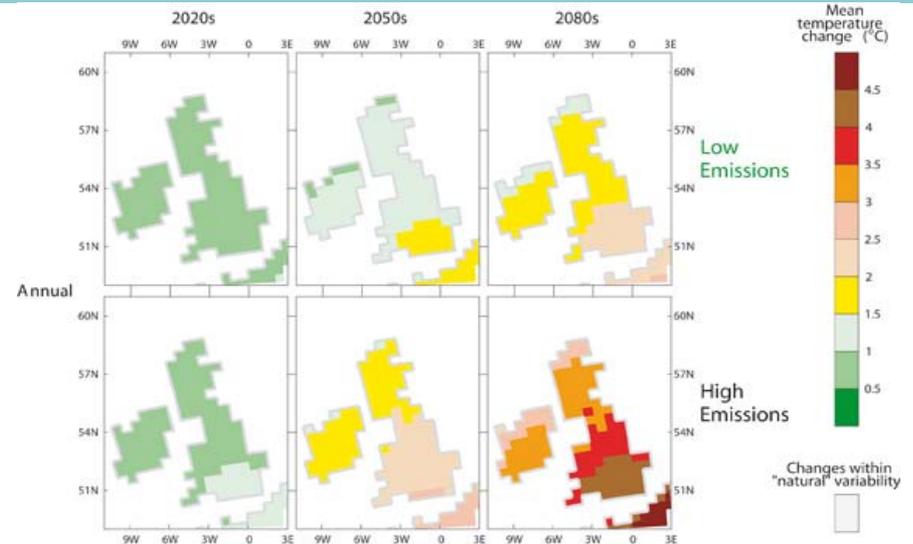
Vulnerability Approach

typically used in 'Developing' Countries

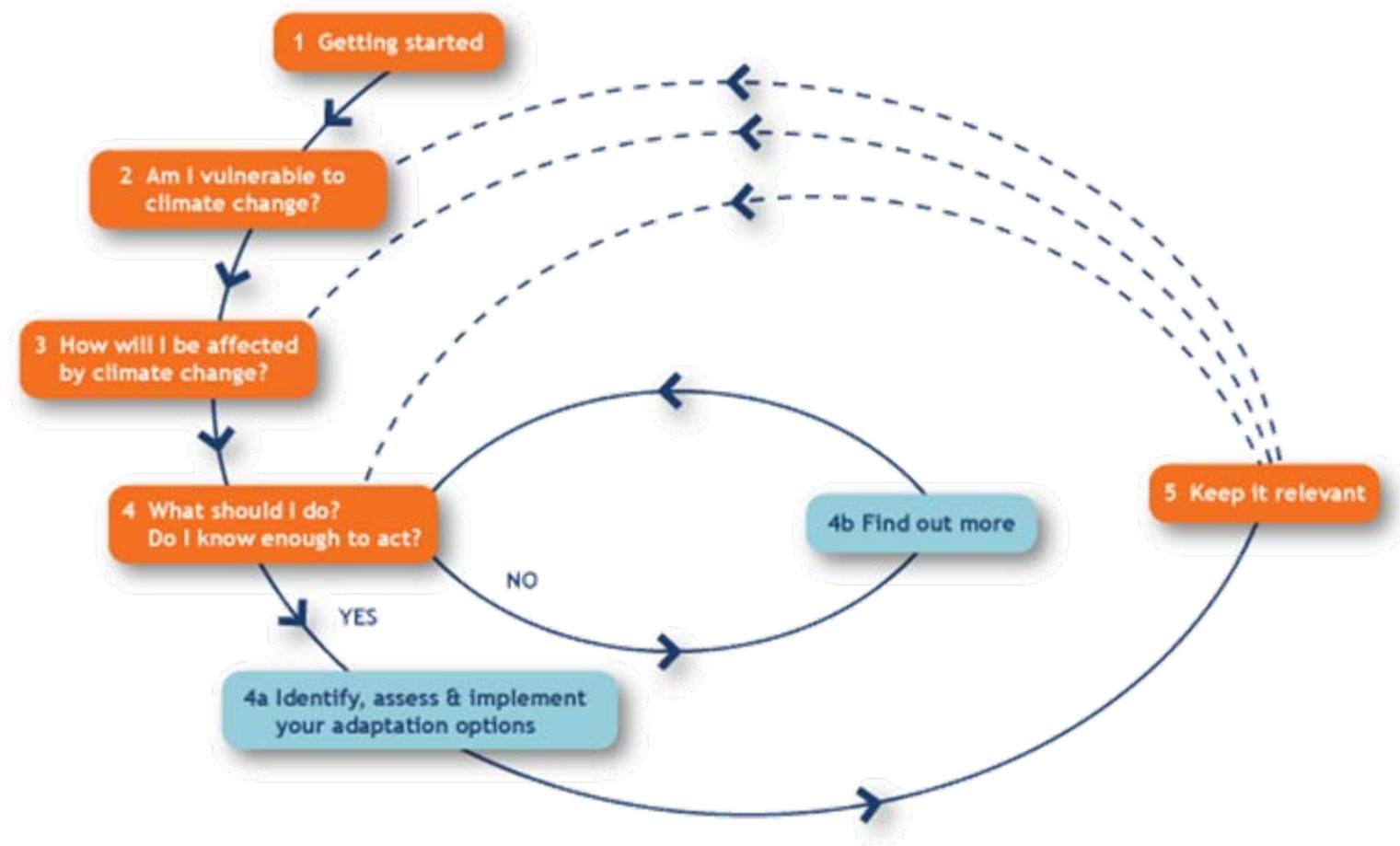
(of increasing interest to UKCIP)

understanding the sensitivity of a system to climate variability, its exposure to risk and inherent capacity to adapt

depends on physical, social and economic characteristics as well as locality



The Adaptation Wizard



The Purpose of the Workshop

Overall Aims:

1. To enable delegates to explore vulnerability to current and future climate risks within their own organisation and make the case for adaptation.
2. To facilitate discussion to inform future thinking on adaptation in Taiwan.

Objectives:

- to provide an introduction to climate change impacts and adaptation, mainly from a business perspective
- to describe approaches and key concepts relating to identifying priority risks using stages 1-5 of the UKCIP Adaptation Wizard and highlighting other available adaptation tools and resources
- to explore by drawing on delegates own experience, issues arising from the above process

UKCIP Adaptation Wizard: Project Management

Plan Project Management

1 Getting started

Assess Current Problems

2 Am I vulnerable to the current climate?

Define Future Risks

3 How will I be affected by climate change?

Action Planning and Implementation

4 What should I do?
Do I know enough to act?

Monitor and Review

5 Keep it relevant

Uses for the UKCIP Adaptation Wizard

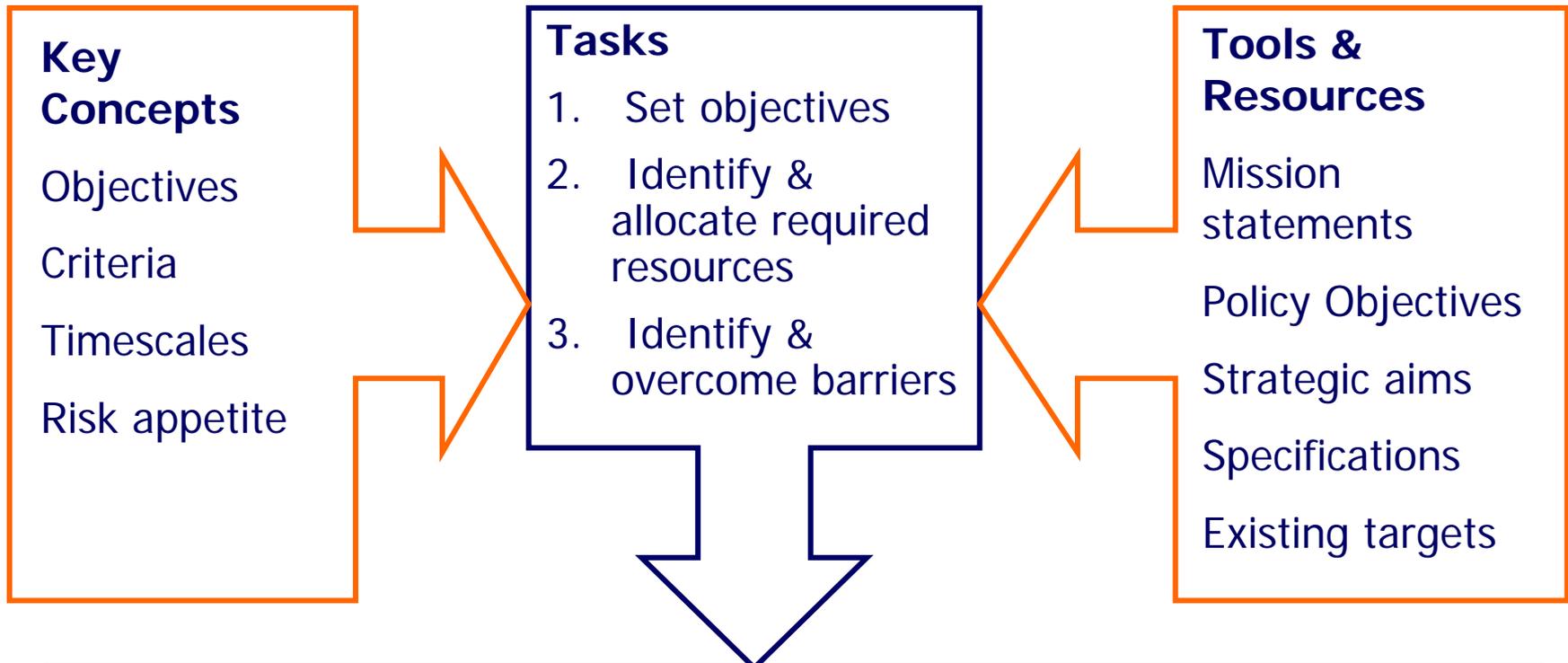
The UKCIP Adaptation Wizard is designed as a flexible generic tool

Therefore it can be used to:

1. To introduce the issue of adaptation and associated decision-making processes.
2. Structure project-management and decision-making processes
3. Raise awareness of colleagues or wider professional network
4. Make the case to senior management of the need to adapt
5. Make a climate resilient decision or develop an adaptation strategy

Step 1: Getting Started

Step 1 aims to help you understand what the Wizard is and how it can help you adapt to climate change.



Outcomes: An idea of what you want to achieve, how to use the Wizard and what resources will be required.



Step 1: Getting Started

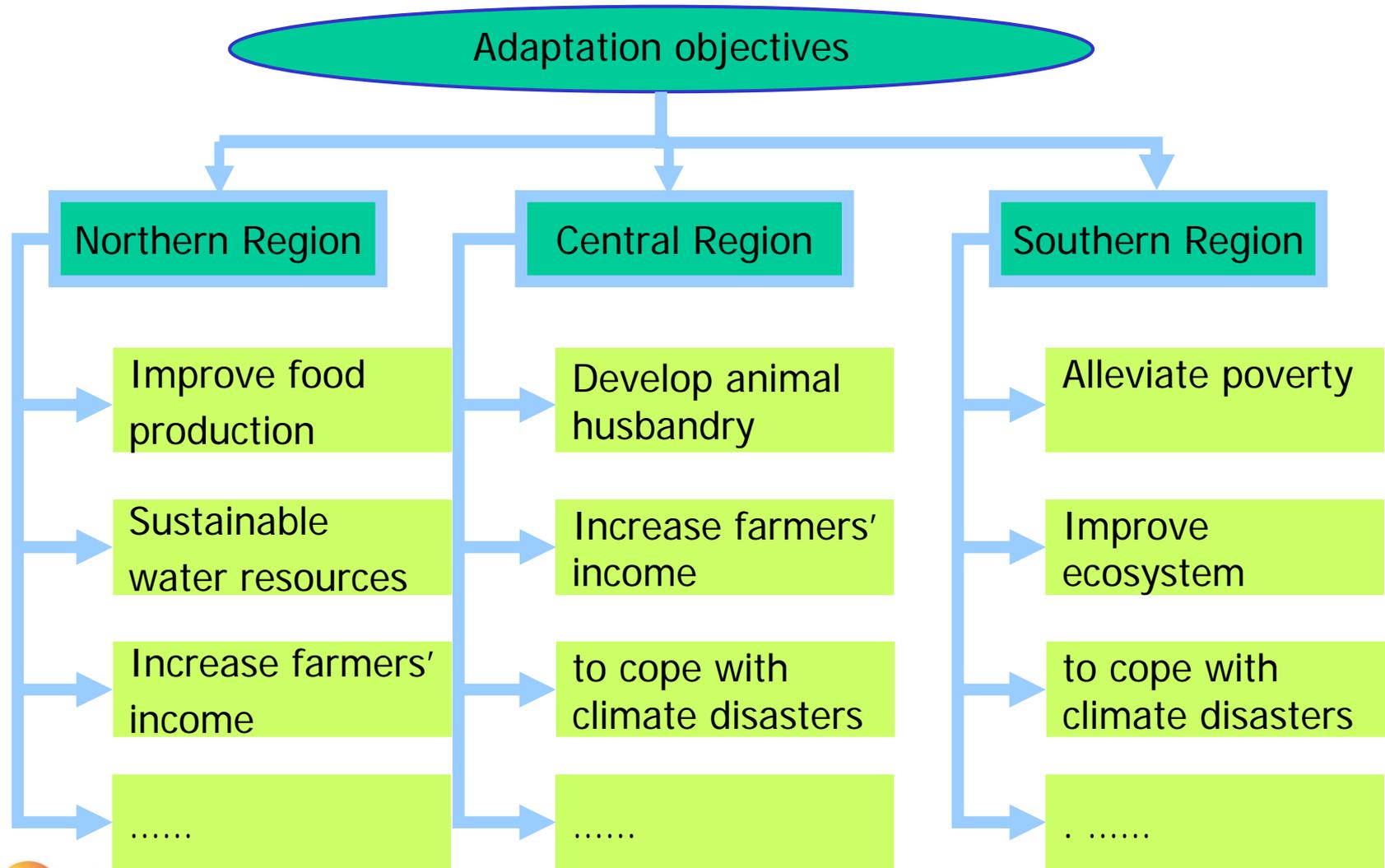
Task 1: Set Objectives



How to Set Objectives

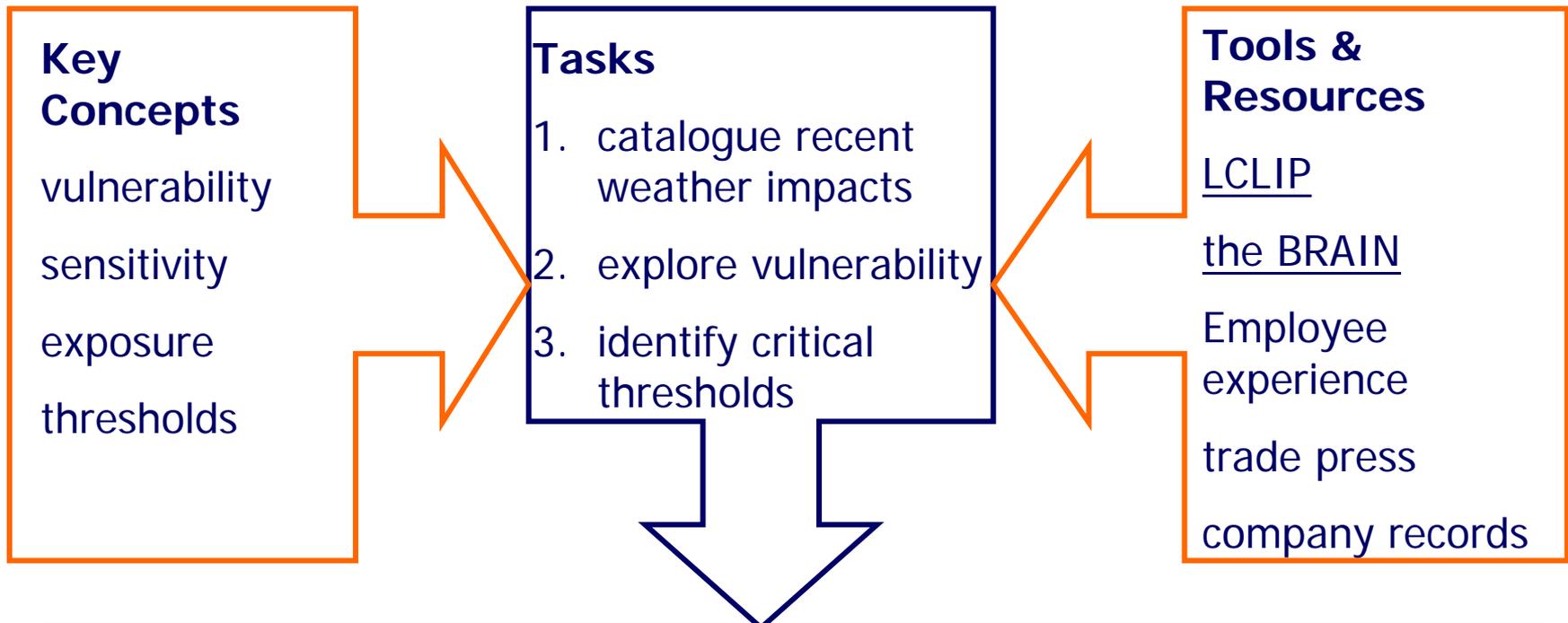
- objectives are important as they will provide the criteria against which adaptation options will be tested
- these may be the highest level objectives of the organisation, such as the mission statement, vision or overarching objectives from the business plan
- but system boundaries may define a much narrower field
- in most cases they will represent a commitment to maintain or extend the status-quo in the face of changing a climate
- organisational attitude to risk (risk appetite) will have implications for objectives
- objectives should include consideration of timescales, of which there may be several

Example: Ningxia Agriculture



Step 2: Am I vulnerable to the current climate?

Step 2 will help you to assess your vulnerability to current climatic variability. This will make it easier for you to consider how future climate change might affect you (Step 3).



Outcomes: A record of past weather events and their consequences and details of critical thresholds.

Vulnerability

- vulnerability is a function of:
 - o sensitivity to climatic variability
 - o exposure to climate risk and
 - o inherent capacity to adapt
- benefits of understanding your vulnerability include a better understanding of the consequences of future climate impacts and better integration of climate and non-climate factors
- however, a full vulnerability assessment is difficult and time-consuming
- step 2 of the Wizard focuses on the sensitivity component of vulnerability



Step 2: Am I vulnerable to the current climate?

Task 1: Catalogue Recent Weather Impacts



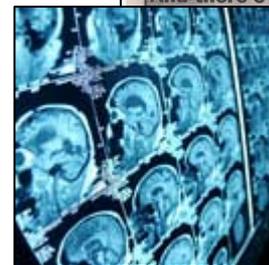
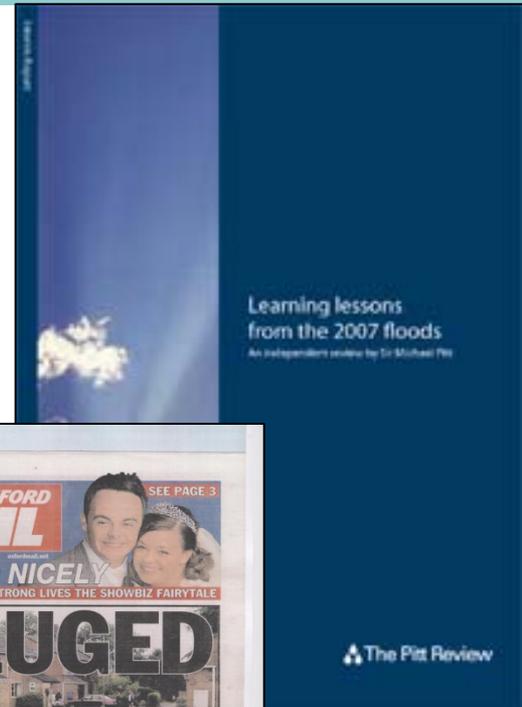
A Business Climate Impacts Profile?

- Local Climate Impacts Profile (LCLIP) is a partial vulnerability based approach originally developed by UKCIP for local authorities
- it is a snap shot of current vulnerability to weather and climate
- a business version can focus on 'operations', 'supply chain' or 'sector' instead of 'locality'
- review significant, recent, weather events, their consequences, and effectiveness of responses in order to understand current vulnerability

Sources of Information on Weather Impacts

Past events can reveal information about sensitivity, such as from:

- reviews of past weather events e.g. The Pitt Review and other local studies
- the BRAIN database, which includes details on impacts
- a simple desk-based study can be used to gather new information, relevant to your locality, sector or area of interest – A Climate Impacts Profile
- **but do not use as evidence of climate change!**





Step 2: Am I vulnerable to the current climate?

Task 2: Explore vulnerability

Factors that Influence Vulnerability

Sensitivity to Climate Variability

- **supply chain features:** diversity, contracts, mode of transport etc
- **physical assets:** design, age, quality, maintenance of buildings and equipment
- **activities undertaken:** timescales, requirements of processes/ equipment, working conditions, dependence on power, water, transport etc
- **market features:** nature of competition, your position in the market, type of market, customer loyalty etc
- **institutional and governance arrangements:** legislation, corporate resilience, policies & procedures, insurance, etc
- **people:** old, young or ill employees, customers etc

Factors that Influence Vulnerability

Exposure to climate risk

- number and location of your operations, key suppliers, customers, utility supply, timescale
- physical features including rivers, mountains, valleys, cities

Adaptive capacity

- finances, human resources, culture, networks, relationships





Step 2: Am I vulnerable to the current climate?

Task 3: Identify critical thresholds

Critical Thresholds

A critical threshold is the point at which a risk becomes unacceptable

Some natural and industrial systems have thresholds, for example:

- the temperature at which tarmac melts
- the summer temperature required for growing citrus trees
- the volume of rain that causes the drains to back up

...and so do aspects of human behaviour and organisational structures:

- the summer temperature at which people switch from beer to cider
- the number of days of delivery disruption that would cause production to cease

Benefits of this Approach

- does not require large resource or technical expertise
- generates powerful stories that can be used in engaging colleagues or raising awareness (step 1 and implementation in step 4)
- knowing what has happened in the past will help you to identify and prioritise potential future climate impacts, including highlighting areas where immediate action is required i.e. where impacts are already unacceptable (prioritising impacts in step 3)
- process can be developed into a more systematic monitoring of impacts and success of adaptation measures (step 5)

Recent Weather Impacts

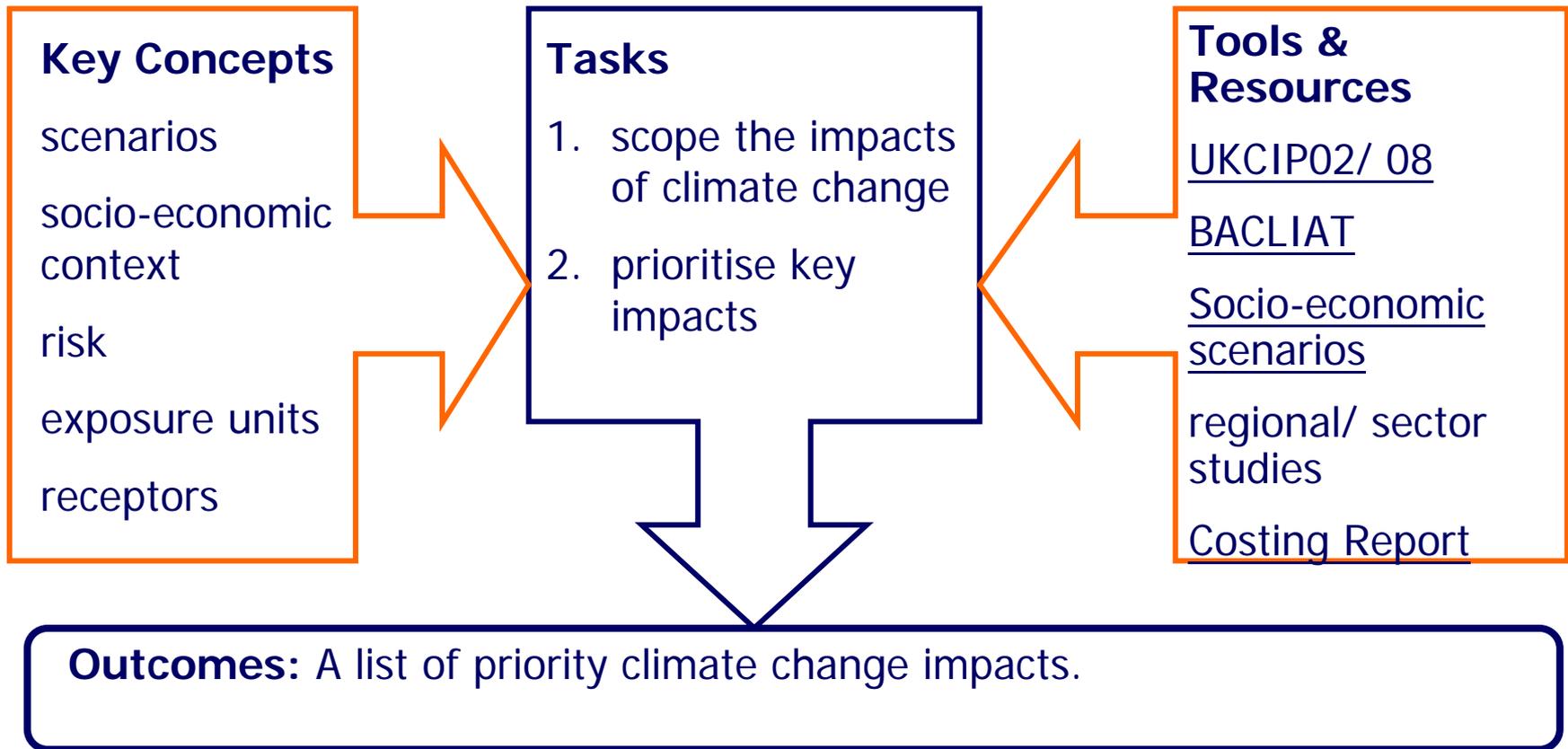
Describe a weather event from the recent past and how it affected your organisation or an organisation that you have been working with.

1. torrential rain / flash flooding
2. high winds / stormy weather
3. coastal or riverine flooding
4. high temperatures / heatwave
5. drought
6. snow/ ice/ frost (or lack of?)

What was the impact?
What was the consequence?
What was the response?

Step 3: How will I be affected by climate change?

Step 3 contains information on how the UK's climate is expected to change, and will help you to assess how those climatic changes could affect you.





Step 3: How will I be affected by climate change?

Task 1: Scope the impacts of future climate change

UKCIP02 Headlines

Headline Messages on 21st Century Climate in UK

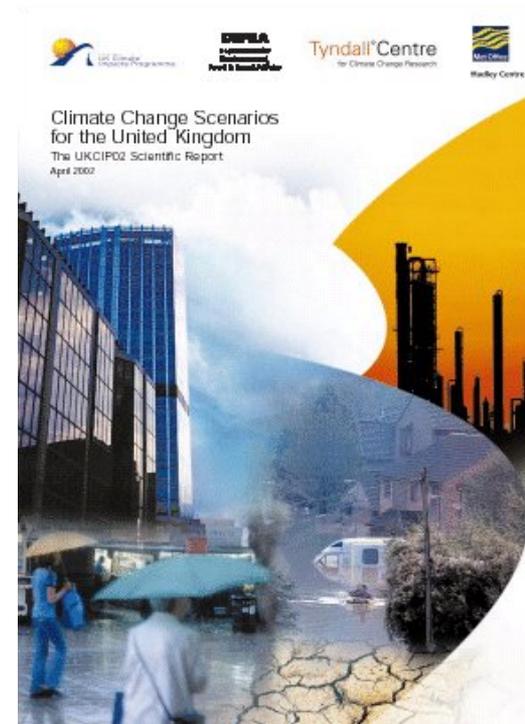
Trends

- the UK will continue to get warmer
- summers will continue to get hotter and drier
- winters will continue to get milder and wetter
- sea levels will continue to rise

Extremes

Some extremes will become more common others less so:

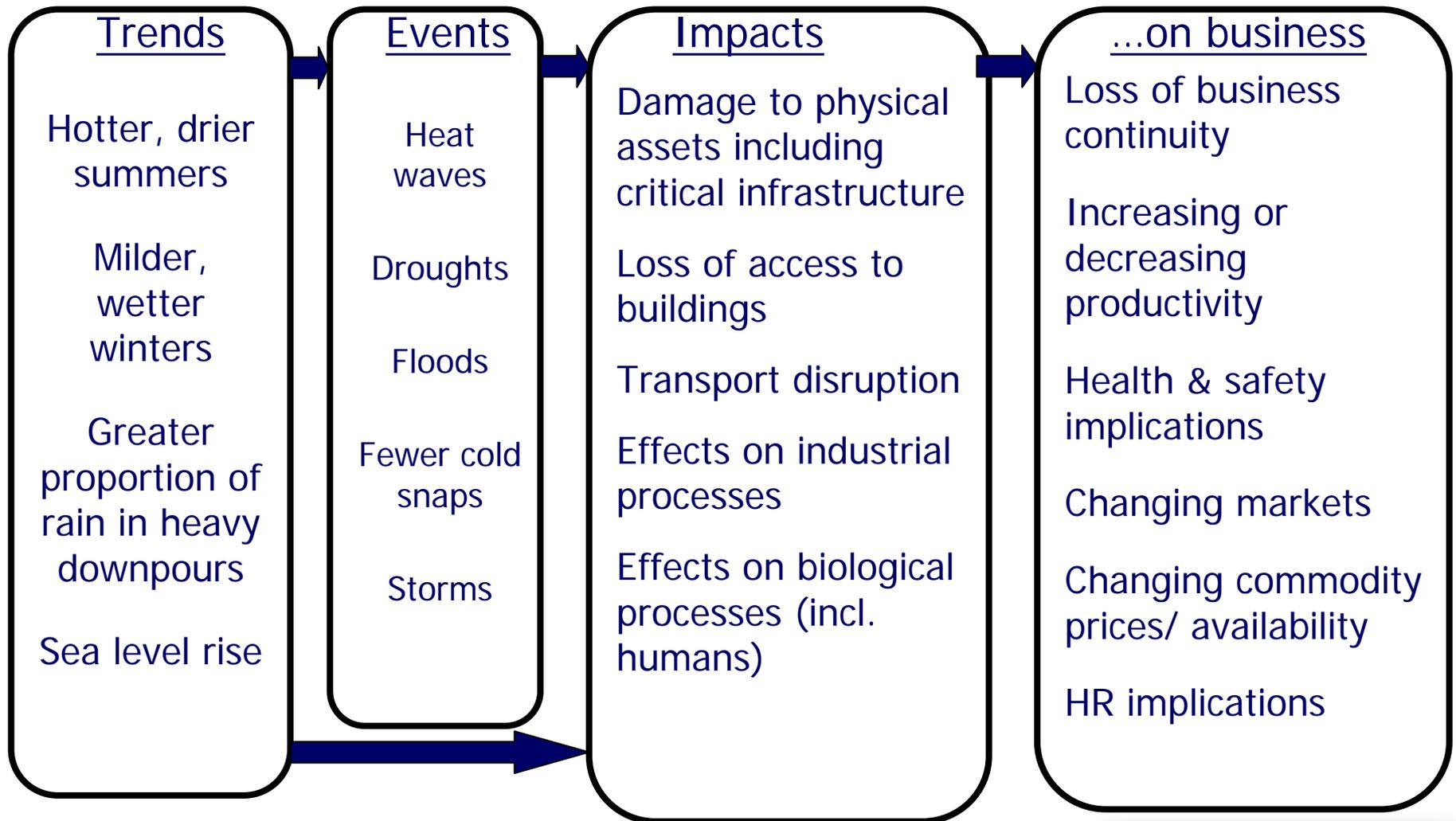
- more very hot days
- fewer very cold days
- more frequent heavy winter precipitation
- more frequent winter storms



UKCIP08 will provide headline messages at a regional level

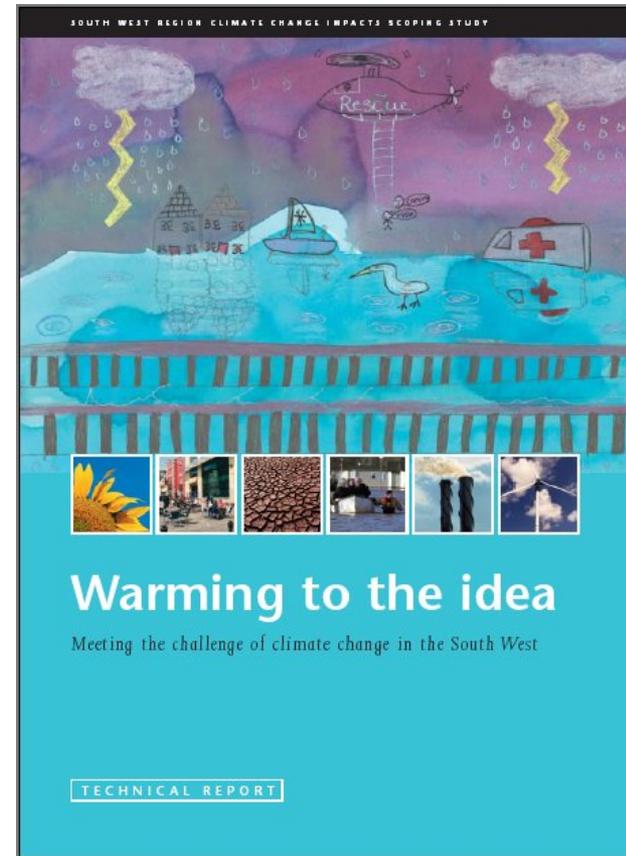


Business Impacts



'Regional' Studies

- all English regions and devolved administrations have produced a scoping study of the implications of climate change
- key impacts are identified based on the expected climate changes in the region and regional priorities



Sectoral Studies

Sector based studies include:

Agriculture

Built Environment

Health

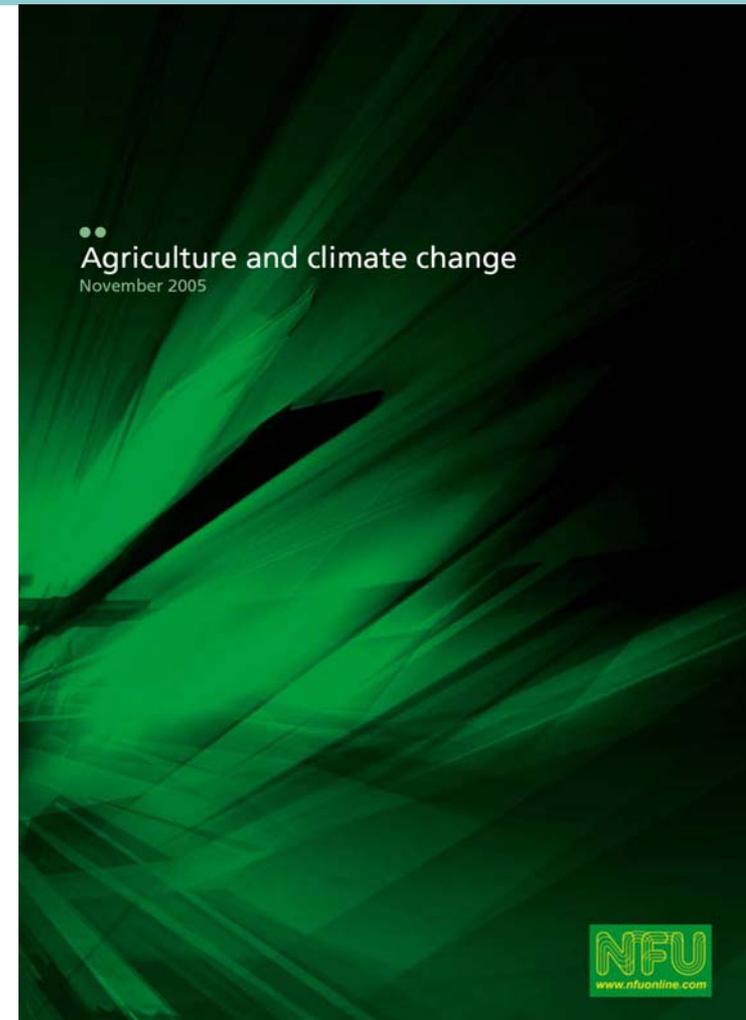
Housing

Rail Transport

Retailing fresh produce

Waste Management

UKCIP has been represented on steering committees of some of these





BACLIAT

A generic process for considering climate impacts on business areas:

Markets: changing demand for goods and services

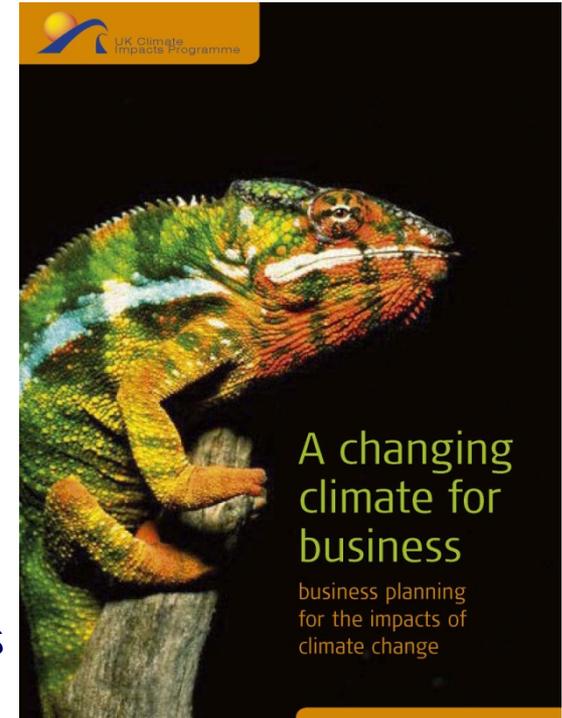
Logistics: supply chain utilities and transport

Process: production process and service delivery

Finance: investment, insurance, liabilities

People: workforce, customers, lifestyles

Premises: design, construction maintenance, facilities



*information on past experience from step 2 can be fed in, therefore
combining vulnerability and scenario approaches*



Markets: changing demand for goods and services

tourism: Med. is too hot so visit UK instead
food & drink: summer preferences
al fresco pavement cafes 24/7
building design: passive cooling,
sustainable construction
environmental technology:
monitoring, and technical fixes
cars etc: cooling as standard
health: new diseases, new technologies
leisure: demand for parks, gardens,
heritage
other global impacts on markets???



Logistics: vulnerability of supply chain, utilities, transport, infrastructure

disruption of utilities

- power
- water
- drainage

disruption of transport

- road,
- rail,
- sea
- air

vulnerability of raw materials production

arising from:

flooding: coastal, riverine, urban

drought, subsidence and heave,

wind and storm damage,

landslip,

excess temperatures.





Process: Impacts on production processes/service delivery

agriculture: crops

manufacture: temperature

nature conservation: habitats

heritage: buildings and gardens

food and drink: temp. control

waste: health hazards

construction: site conditions

office: summer environment

leisure: impacts on beaches, amenities





Finance: Investment, insurance, liabilities

ABI policies

tests for increased resilience?; variable premiums; vulnerable locations; uncertainty

investment issues

tests for future proofing of investment?
global impacts on international investment

liabilities in extg. developments

new liabilities may occur; remedial action unlikely to be cost effective

actions in future developments

higher specification normally cost effective



People: workforce, customers and changing lifestyles

new residential locations preferred

- trend to north
- retreat from urban locations

changed travel to work patterns

- more pedestrian/cycle journeys

poor working environment

- external: construction, agriculture
- internal: offices in summer
- more complaint generally
- siestas??

reputation as employer

- attract and retain high quality staff





Premises: building design, construction, maintenance & facilities management

building fabric and structure

- vulnerable to wind, rain, storm, subsidence

internal environment

- less winter heating required
- more summer cooling required but avoid air conditioning

existing buildings

- retrofit represents a major challenge
- especially low-energy cooling in housing

sustainable construction

- link CC adaptation and mitigation agendas





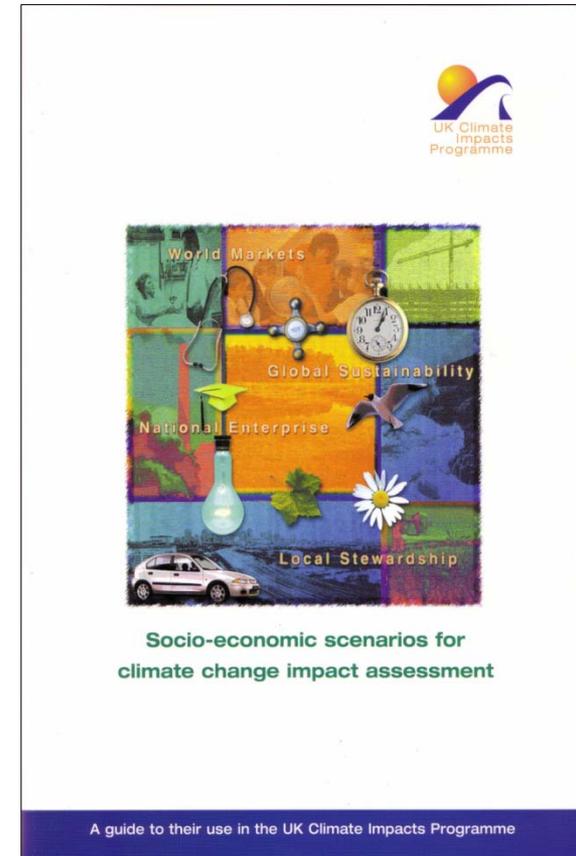
Consider other aspects of the future

The climate is not the only thing that is changing

- in the past century UK population increased by 50%
- global economy
- housing stock has trebled
- life expectancy dramatically increased
- new modes of transport
- new modes of communication
- what will a low-carbon economy look like?

Consider other aspects of the future

- non-climate factors could alter vulnerability or exposure therefore leading to new impacts
- sources of non-climate info:
 - o regional (etc) economic forecasts
 - o scenarios eg for sectors
 - o future mapping
 - o market intelligence/research
 - o technological development models
 - o UKCIP Socio-Economic Scenarios



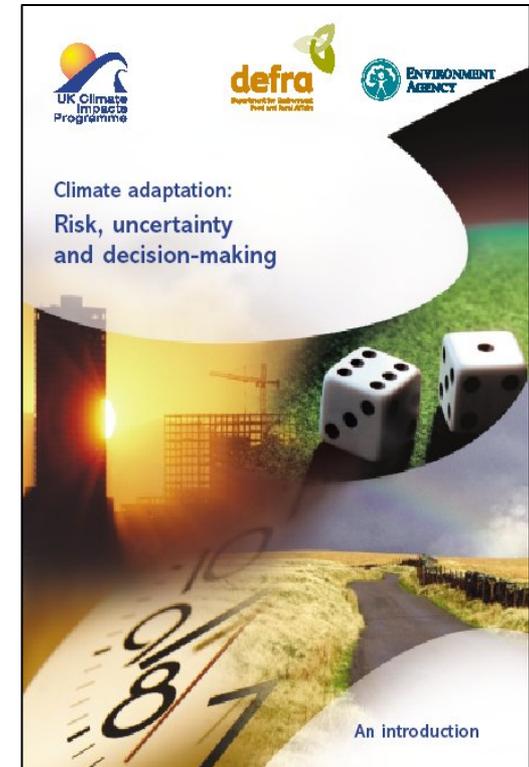


Step 3: How will I be affected by climate change?

Task 2: Prioritise key impacts

A Risk-Based Approach

- the rate of climate change is uncertain
- the way climate change will affect natural, industrial and social systems is even more uncertain
- the socio-economic future is the most uncertain of the lot!
- uncertainty requires decision-makers to decide:
 - o is adaptation needed?
 - o how much adaptation?
 - o which adaptation measures to implement?
 - o when to adapt?



Funded by: DEFRA and
Environment Agency
Contributors : EA, UKCIP, Risk
Policy Analysts Ltd, Middlesex

**3 How will I be affected
by climate change?**



Risk Assessment

- risk is the combination of probability of occurrence and magnitude of the consequence of a hazard (can also be used for positive impacts)
- the concept of risk can be used:
 - to draw up a rank order listing of the significant threats and opportunities
 - to assess various adaptation options
- a risk assessment can be simple and qualitative or technical and comprehensive depending on:
 - the importance of the investment decision
 - your vulnerability to weather and climate
 - the decision making culture of your business
- if your company has its own in-house risk assessment methods, use these



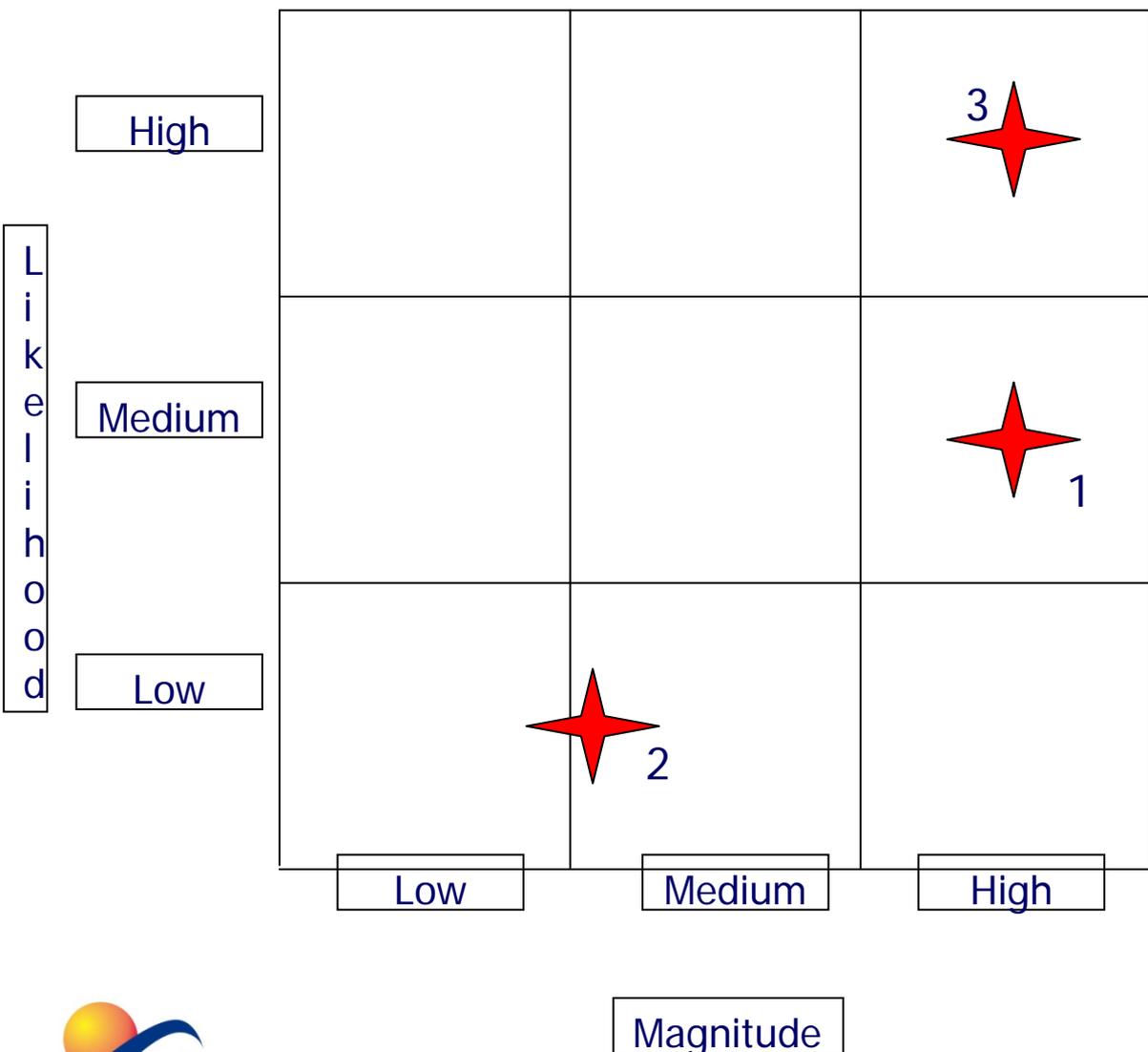
Is a formal risk assessment necessary?

Prioritisation can be done even without formal risk assessment by selecting those impacts:

- that you face already
- that will increase most rapidly due to climate change
- to which a response will take some time to plan and implement
- for which there is no contingency
- in an area where an *early-mover* advantage is desired or
- for which there is a complementary non-climate driver for taking action, such as health and safety or mitigation or achieving a better work/life balance



Risk Assessment: Example



Risk =
likelihood
x
Magnitude of
consequence
..of a hazard

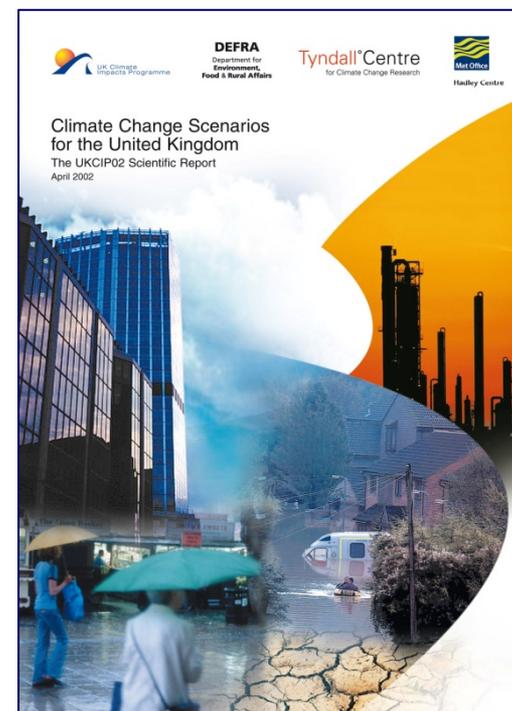
3 How will I be affected by climate change?

Estimating Likelihood

UKCIP02 provides:

- change with reference to baseline data for 1961-1990
- regional variation: 50 km square grid over UK
[UKCIP08 will be at 25km]
- three time periods: 2020s, 2050s, 2080s
[UKCIP08 will have overlapping time slices]
- four emissions scenarios: L, ML, MH, H
[UKCIP08 will have three emissions scenarios]
- a range of climate variables
- four seasons + annual
- expert judgements of levels of confidence

[UKCIP08 will have more detail on confidence levels]

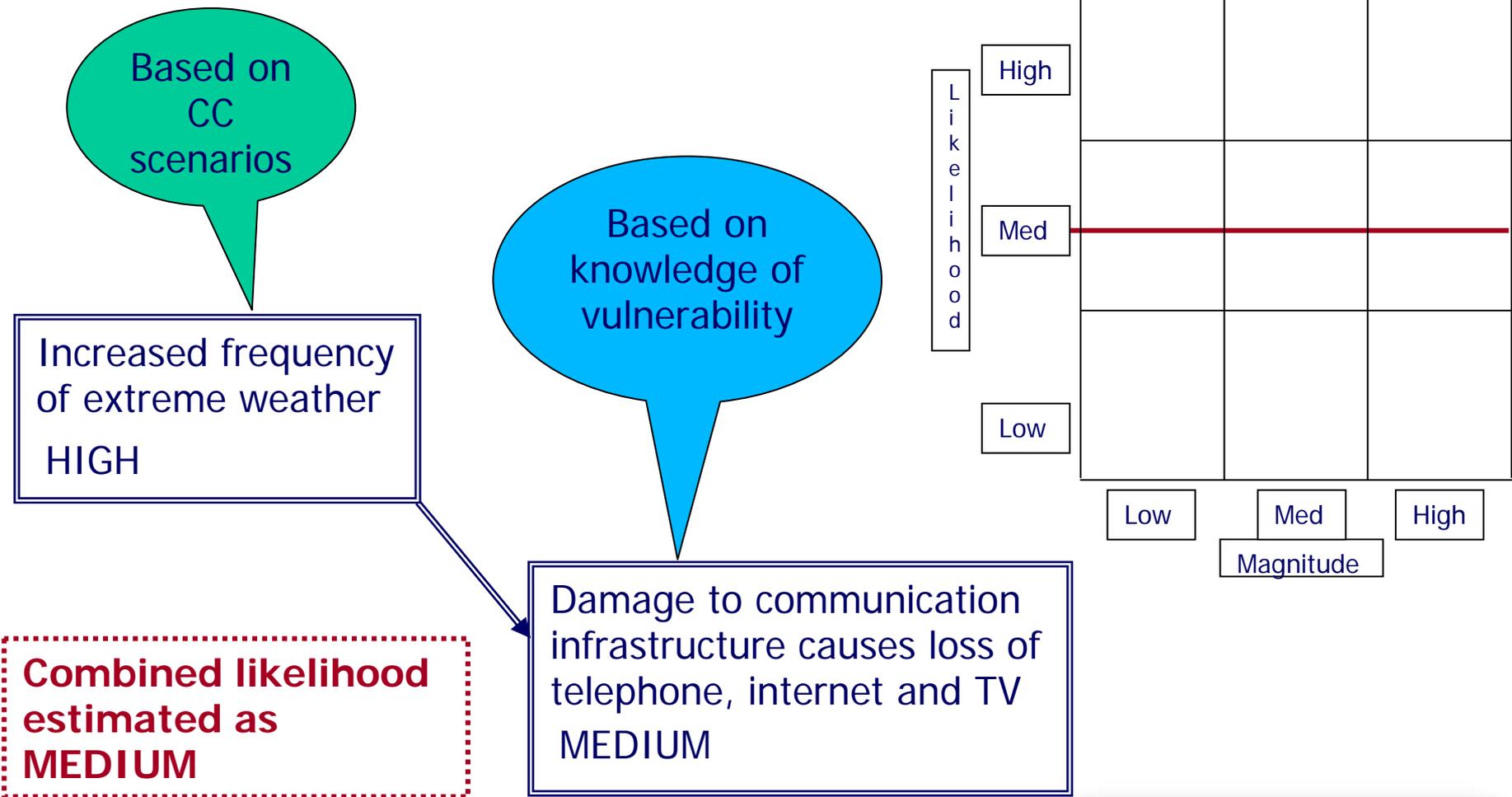


3 How will I be affected by climate change?

Estimating Likelihood

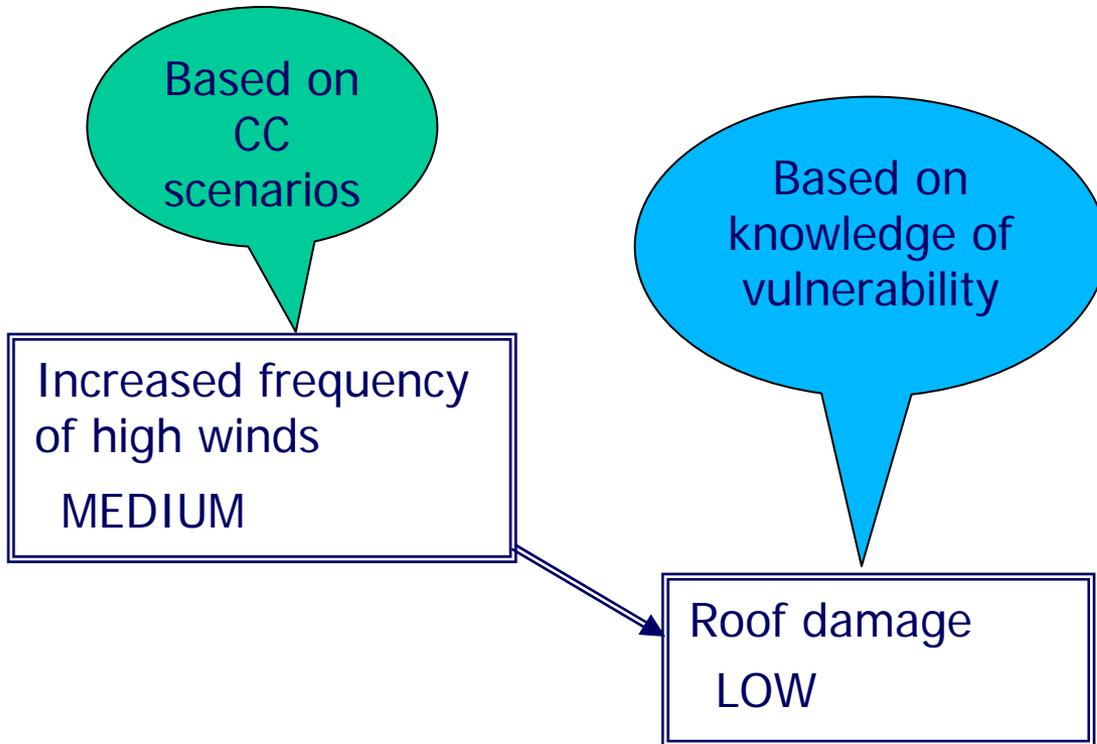
- the probability of an impact depends on more than just the climate variable
- the further away your operations get from the natural environment the more of an issue this is
- in the absence of quantitative information on every component, judgements are made based on:
 - o what you know about your vulnerability e.g. locations, length of supply chain, building design & construction, your timescale etc
 - o a mental comparison between different climate risks
 - o whether the impact has resulted from the **current** climate, either to you or others....
- using UKCIP08 together with a threshold can connect weather and climate with impact or consequence leading to a 'better guess'

Estimating Likelihood: Example Risk 1

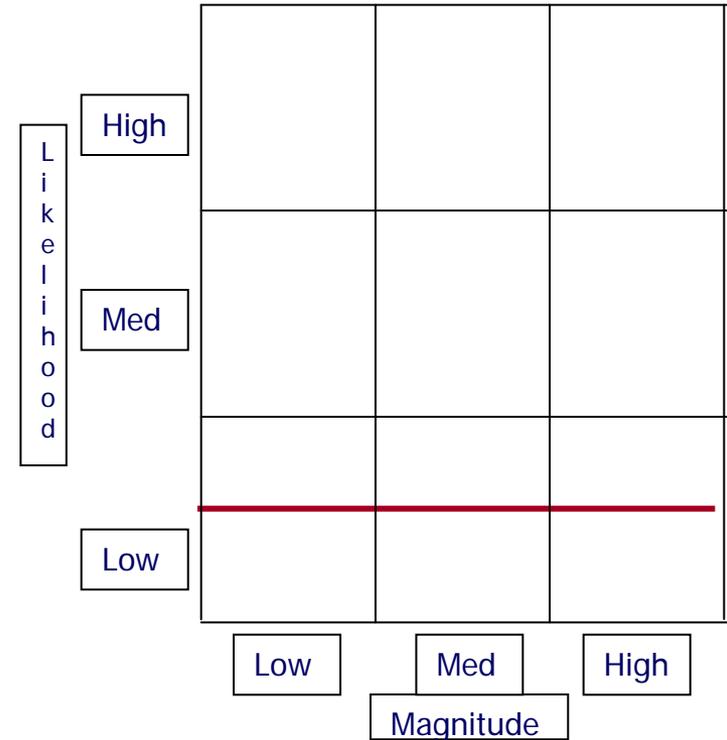


3 How will I be affected by climate change?

Estimating Likelihood: Example Risk 2

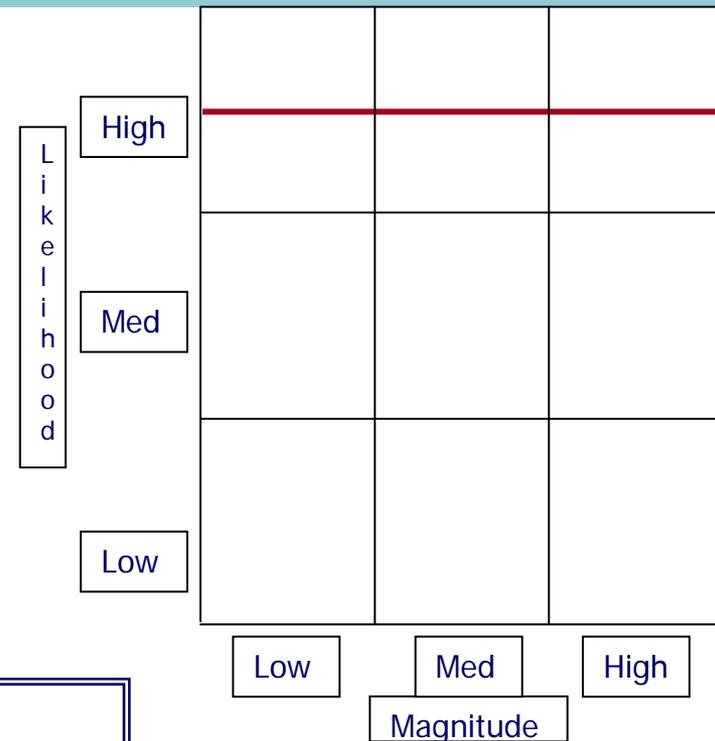
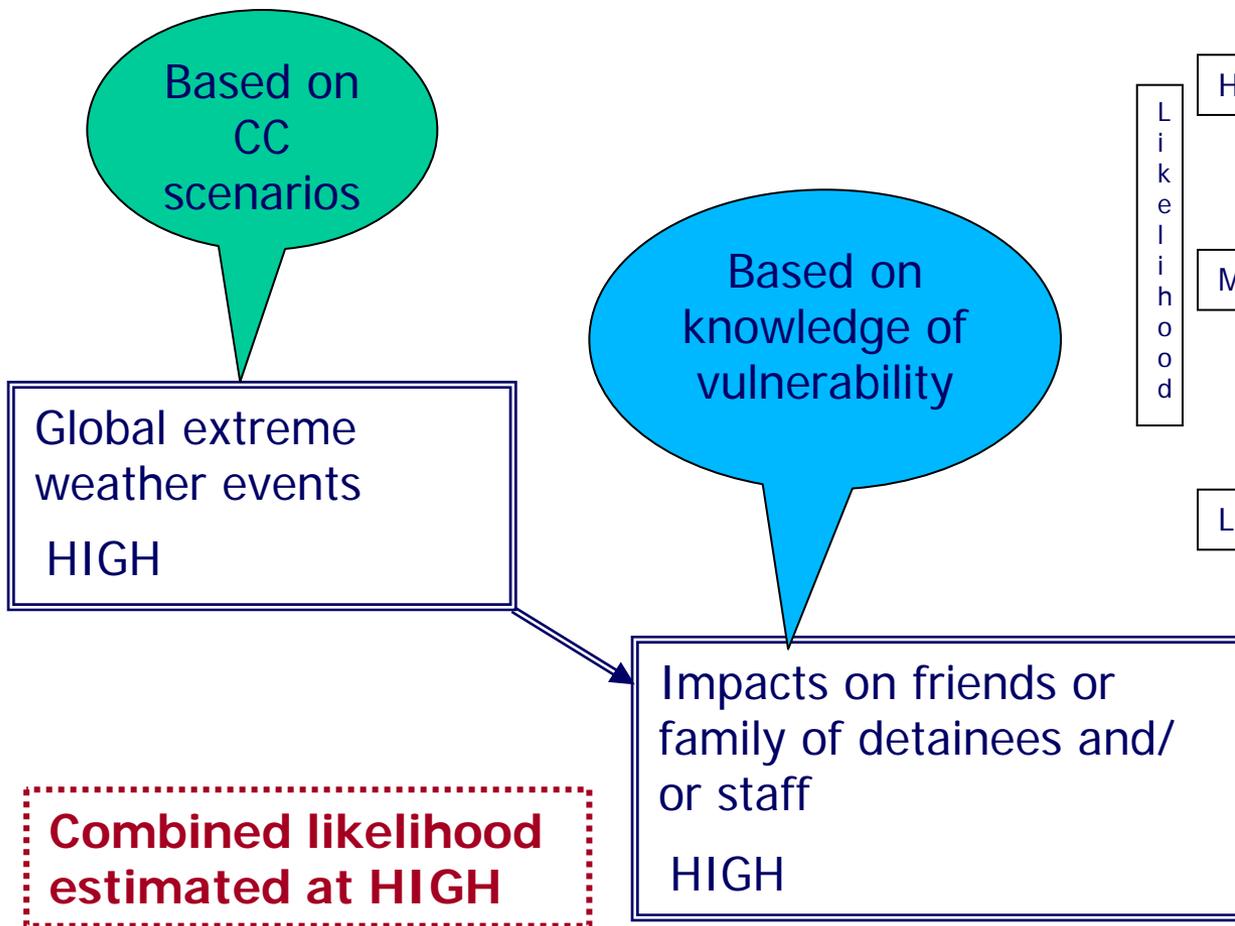


Combined likelihood estimated as LOW



3 How will I be affected by climate change?

Estimating Likelihood: Example Risk 3



3 How will I be affected by climate change?



Magnitude

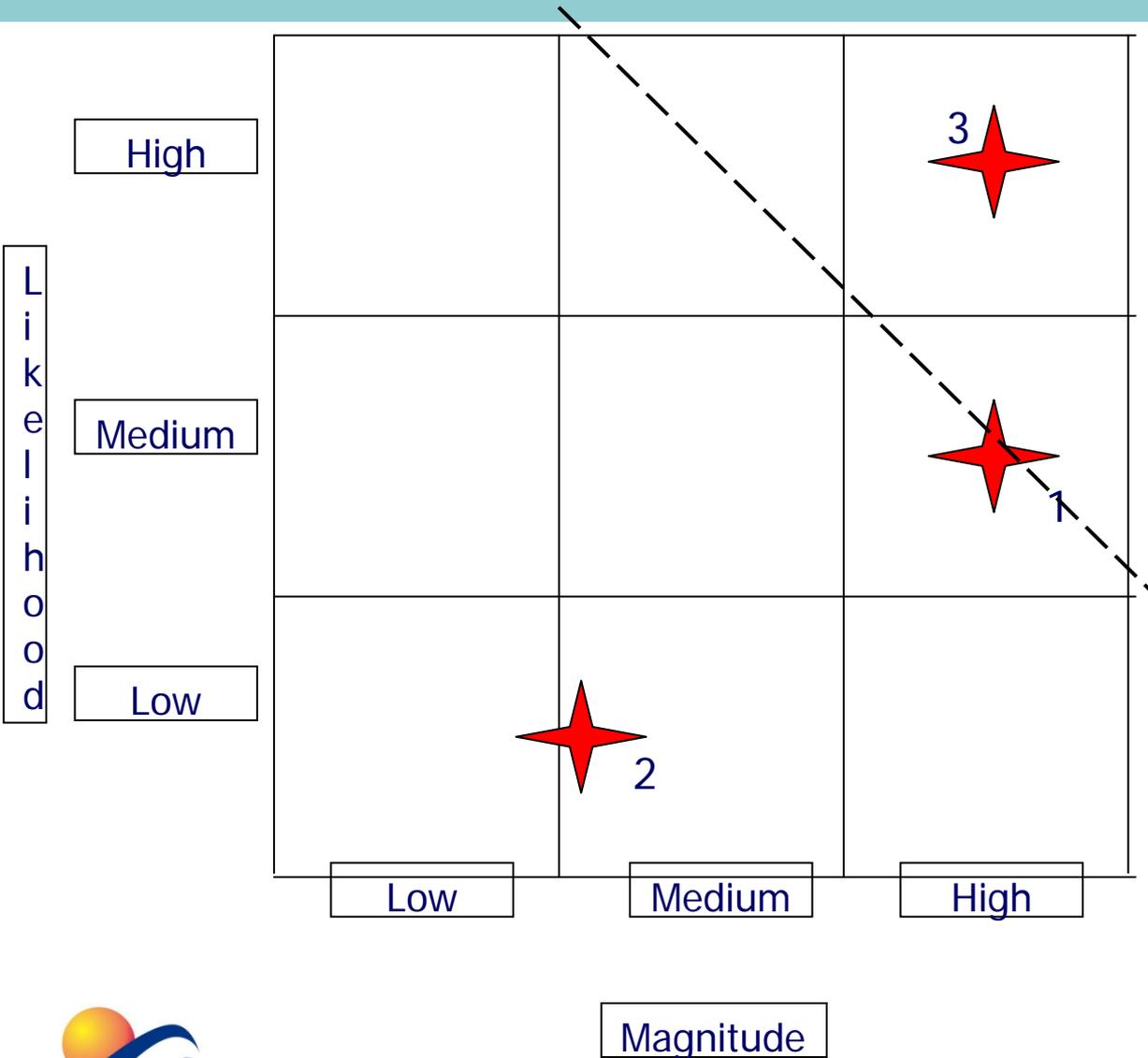
	Consequence	Magnitude
1	loss of telephone, internet or TV	HIGH because communication is known to be vital to well-being and control which is a high priority
2	Damage to tin roof from high winds	MEDIUM because although repair would cause disruption costs could be covered
3	increased anxiety and tension levels following natural disaster overseas	HIGH because protecting security and well being of detainees is core priority

Note that perceptions vary

3 How will I be affected by climate change?



Risk Assessment: Example



1. Loss of TV etc
2. Damage to roof
3. Global incidents

3 How will I be affected by climate change?



Prioritising Climate Risks

- prioritise only those risks that are significant in the context of the whole business so that adaptation can be shown to be reasonable and proportionate
- compare climate and non-climate risks:
 - climate change is likely to be just one of a large number of risks
 - use existing risk register to assess the importance of climate risks relative to non-climate risks
 - note that the relevant importance of risks may change over time
- be explicit about sources of uncertainty



Step 3: How will I be affected by climate change?

Task 2.1: More detailed RA
(if appropriate)



UKCIP08 and Likelihood

Where thresholds have been identified, UKCIP08 can help with the likelihood element of a risk assessment

Where threshold is a monthly or seasonal average...

- probabilistic scenarios can be used to identify the probability that the future *climate* will *exceed* this value

Where threshold is an extreme event...

- The weather generator can be used to estimate the **frequency of occurrence** of this type of *weather* will occur
- and the likelihood of exceeding a certain number of events

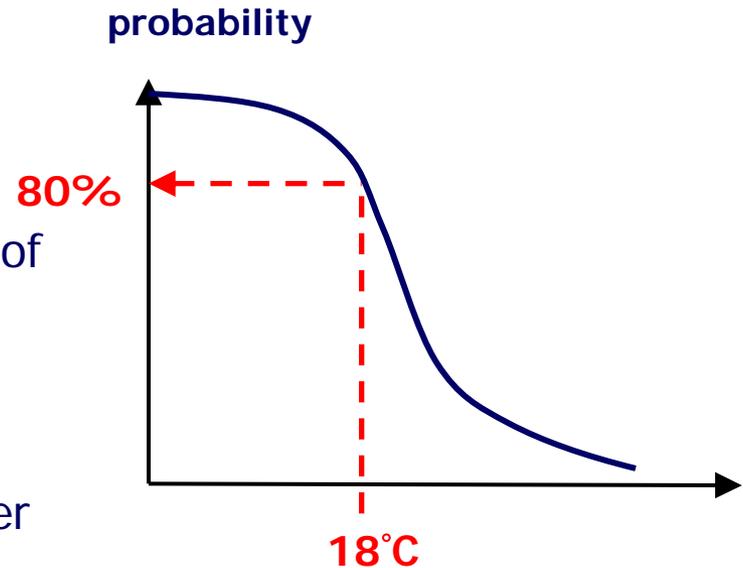
But beware – less accuracy!



UKCIP08 Example: Cider Drinking

- Research has shown that during hot summers there is a step change in cider consumption
- at what point did that event become significant?
 - Monthly average daytime temperature of at least 18°C
- the **probabilistic scenarios** can tell you
 - the probability that the average summer temperature in the 2020s, 2030s.. etc will exceed 18°C

Averaging period: summer
Variable: max temperature





UKCIP08 Example: Melting Roads

- a local authority LCLIP revealed that a previous heat wave caused sticky conditions on 37 roads across the county
- what was the weather extreme that caused this effect?
 - o Temperature exceeded 34 degrees for two consecutive days
- the ***weather generator*** can tell you:
 - o this can be expected to happen *about* X times in the 2020s, 2030s... etc
 - o the probability of it happening more than Y times is Z% (low confidence)

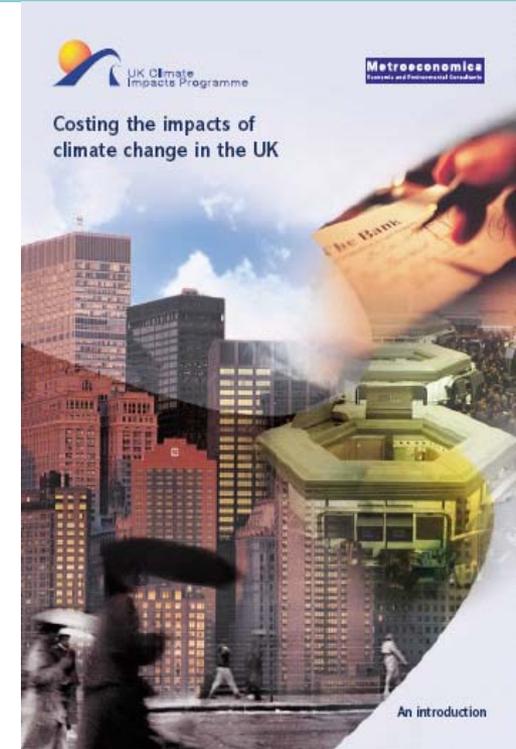


Oxfordshire 2006

The Cost of Potential Impacts

if necessary, magnitude can be expressed in terms of costs using:

- costs of similar past impacts whether they arose from an extreme weather event or another type of disruption, discounted for chosen timescale
- for example:
 - Cost of lost (gained) productivity
 - Cost of lost (gained) sales
 - Decreased (increased) value of reputation
- Or use UKCIP Costings Methodology: includes techniques for costing impacts on market and non-marketed goods – health, time loss, biodiversity, cultural heritage, recreation

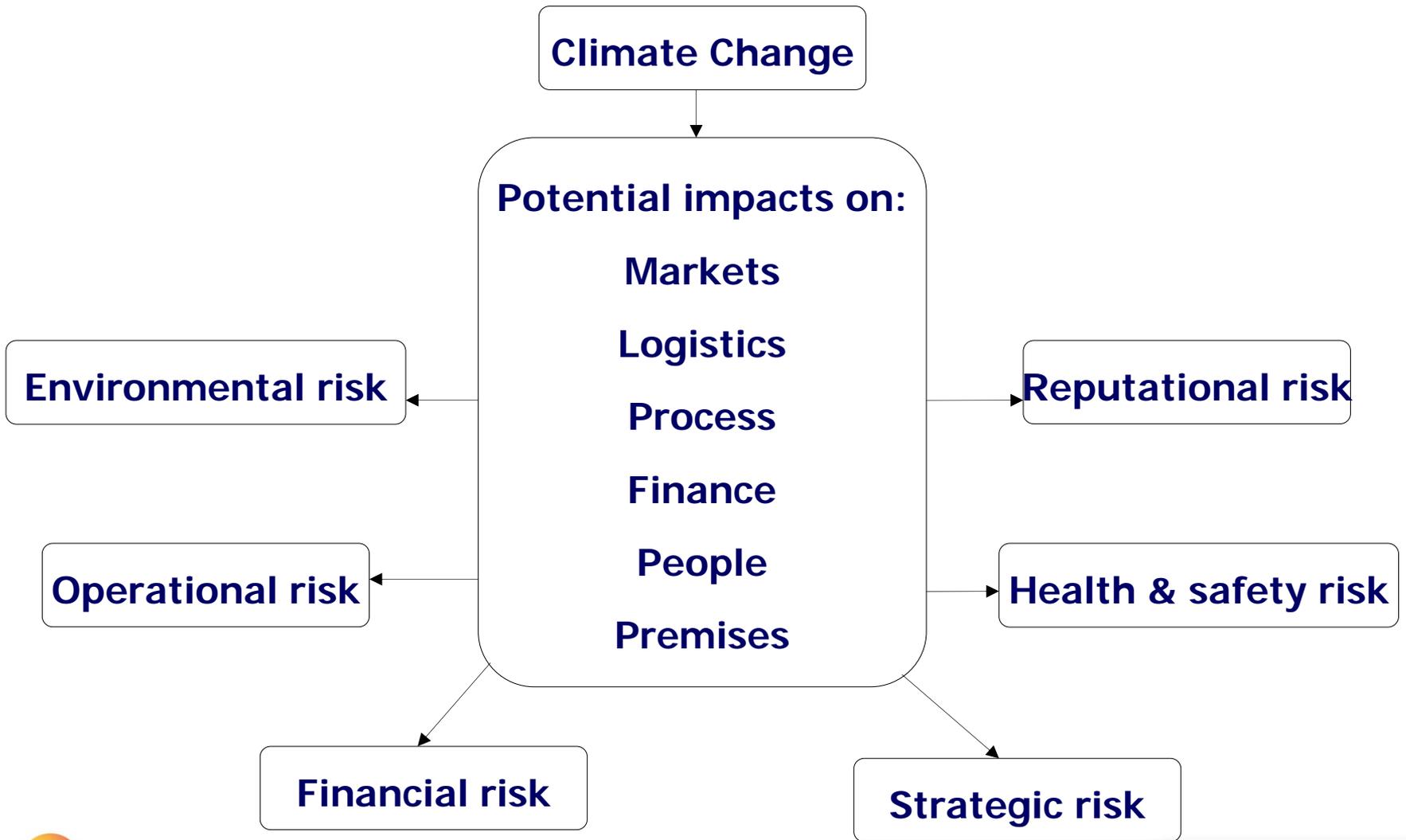


3 How will I be affected by climate change?

Roles in Climate Risk Assessment

Activity	Decision Maker	Technical Expert
Managing the exercise		✓
Setting objectives	✓	
Likelihood		✓ <i>drawing on information from a range of employees</i>
Magnitude	✓ <i>if using qualitative methods</i>	✓ <i>if using costs</i>
Prioritising	✓	

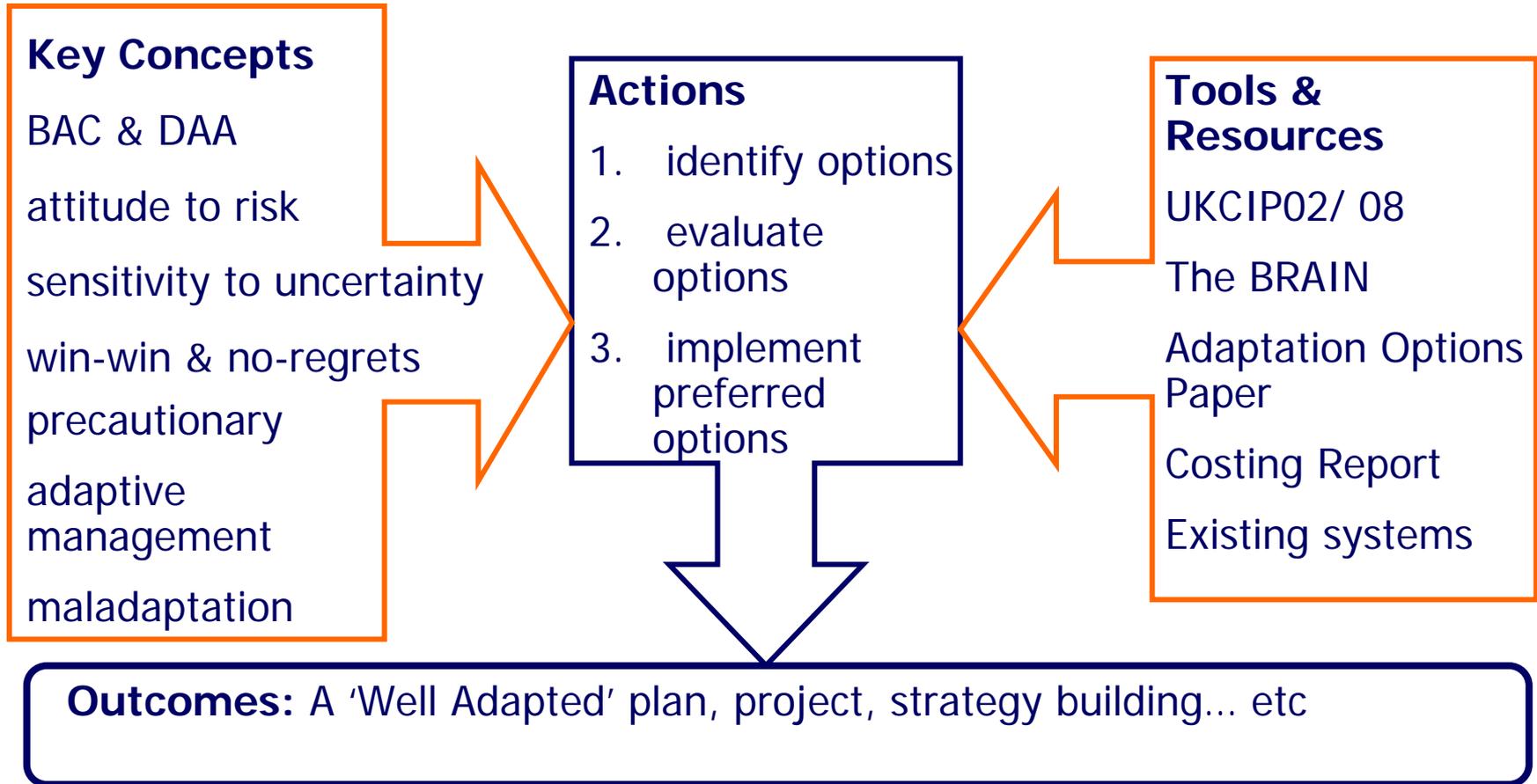
Climate Impacts as Business Risks





Step 4: What should I do?

Step 4 will help you identify, select and implement the adaptation options that will best achieve your objectives (set out in step 1).





Step 4: What should I do?

Action 1: Identify Options



BAC and DAA

Building Adaptive Capacity (BAC)

- creating the information, social capital and supportive conditions that are needed as a foundation for delivering adaptation actions

Delivering Adaptation Action (DAA)

- taking action that helps to reduce vulnerability to climate risks, or to exploit opportunities



Identify Adaptation Options

BAC

1. create, gather or share information
e.g. forecasting & warning
2. create supportive governance
e.g. PPS25
3. create supportive organisational structure
e.g. flood forum

DAA

1. accept, spread or share loss
e.g. 'Go with the Flow'
2. avoid or minimise negative impacts
e.g. converting farmland to woodland, moving vulnerable equipment....
3. exploit positive opportunities

For example:

- strategic solution
- temporary arrangement
- separate risk from receptor
- technical fix
- change working practice
- system for quick recovery
- actions for others

4 What should I do?
Do I know enough to act?



Different Options for Different Actors

Example: Adapting the UK Cider Industry

- **orchards:** collaborating on feasibility studies of new apple varieties; altered planting/ spraying/ harvesting regimes; flood/ storm defence technology etc
- **cider making companies:** insurance and contractual arrangements; marketing of novel cider varieties; altering logistics or process equipment etc
- **National Association of Cider Makers:** providing guidance and training; facilitating sharing of information
- **scientists:** research and development of new apple varieties
- **consultants:** market research into new tastes arising from new climate
- **Environment Agency/ Met Office:** flood and extreme weather warnings
- **government:** regulation on alcohol/ fruit content



Step 4: What should I do?

Action 2: Evaluate Options



Methods for Evaluating Options

- Evaluate options, for example by using:
 - o multi-criteria analysis
 - o risk-assessment where the climate risk is considered as one of many risks
 - o cost benefit analysis
- criteria/ risks/ costs and benefits should be based your initial objectives
- for some analyses a superficial approach using existing assessments will be sufficient but others will need in-depth technical expertise – UKCIP08 can be accessed at different levels



Step 4: What should I do?

Action 3: Implementation



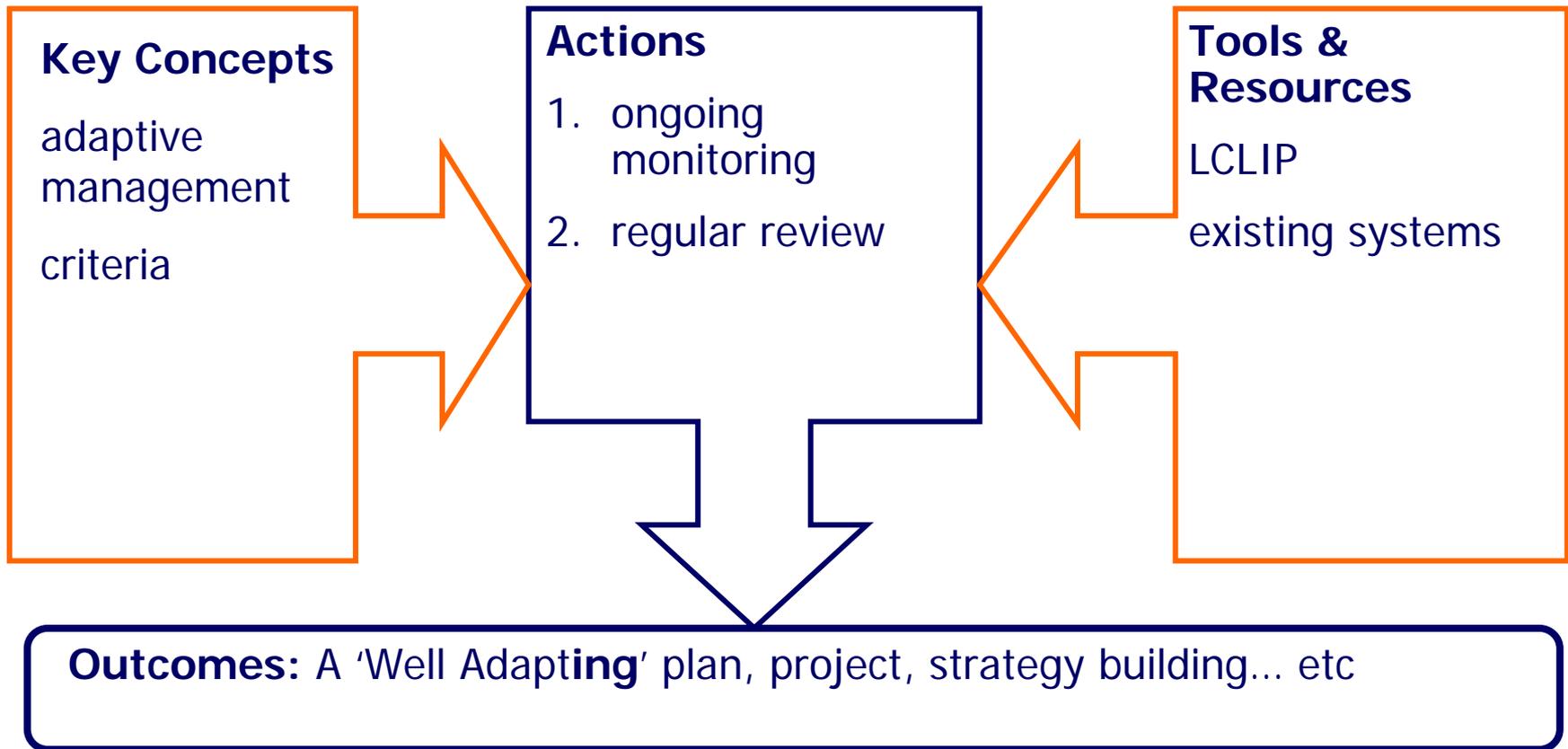
Mainstreaming Adaptation

example climate change impact	risk type	dealt with through..
extreme weather events causing disruption to deliveries	operational	business continuity management
		risk management
		supply chain management
new opportunities in passive cooling technologies	market	strategic planning
		recruitment planning
temperature sensitive products fail in the new climate	reputational	quality management system
increased insurance premiums for a poorly designed building that cannot function in the new climate	financial	asset management
		risk management
increased odour from production in hotter summers	environmental	environmental management system e.g. ISO14001
increased risk of heat stress among vulnerable employees	health & safety	health and safety arrangements

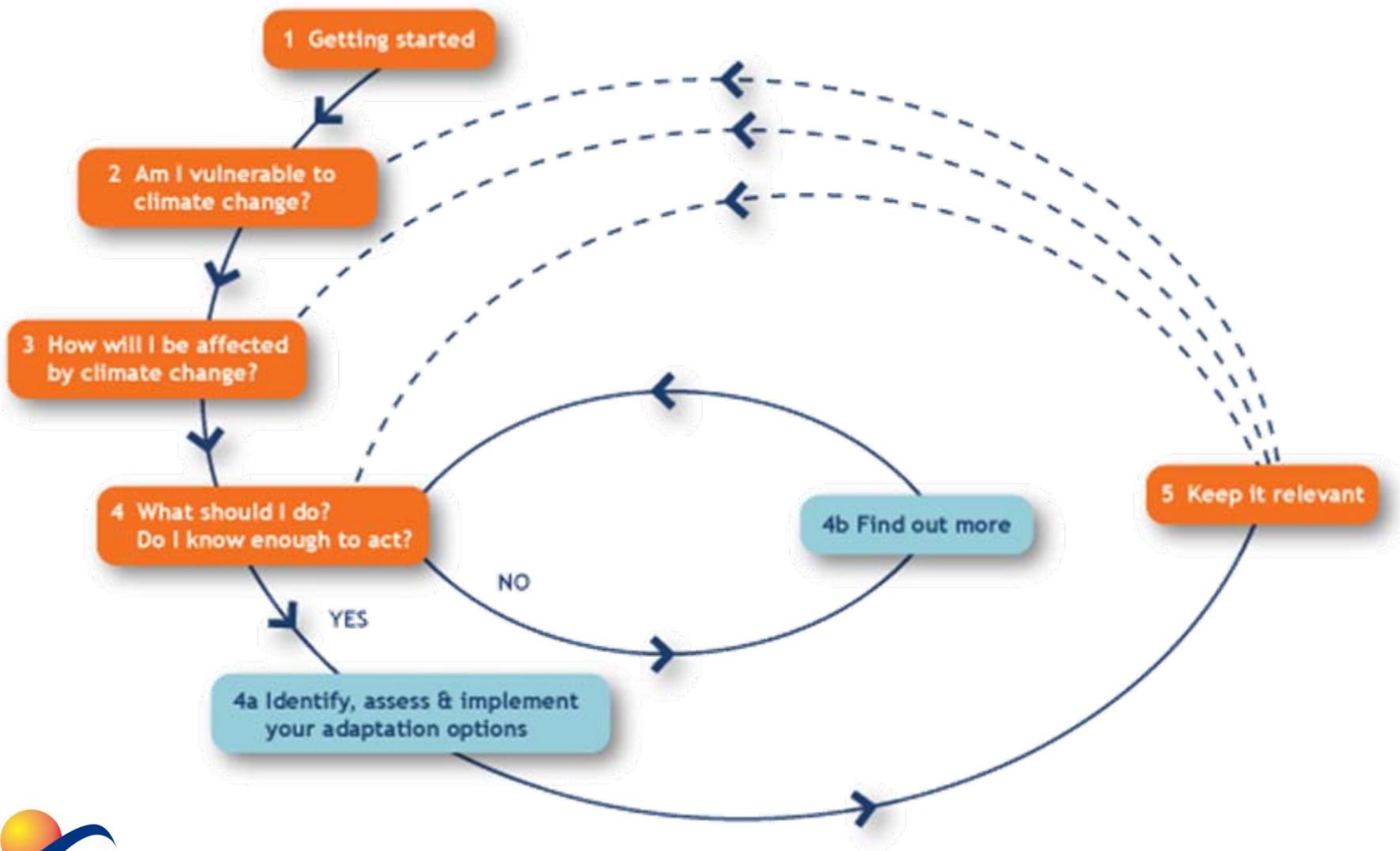


Step 5: Keeping it relevant

Step 5 provides guidance on how you can keep your strategy relevant and up to date in a continually changing environment.



The Adaptation Wizard



www.ukcip.org.uk

