

Adaptation Scotland

supporting climate change resilience

Climate risks in the workplace Protecting workers in a changing climate

Catherine Payne, Sniffer | Teams | 13 July 2021



The Adaptation Scotland programme is funded by the Scottish Government and delivered by sustainability charity Sniffer.



Setting the scene



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Why think about climate change today?

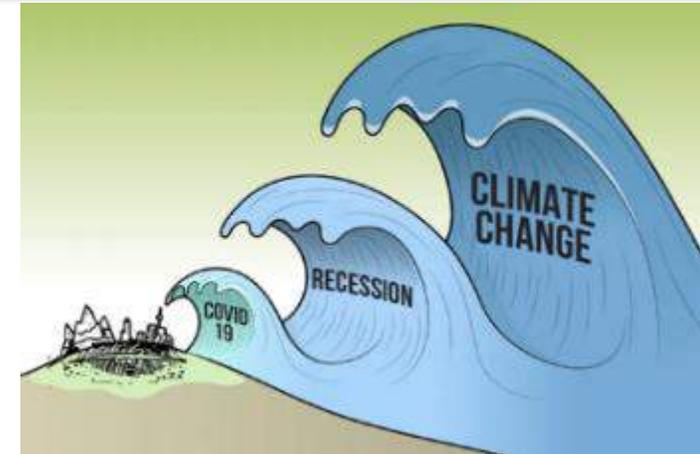
- Rebuilding after the pandemic offers a chance **to reimagine cultural / institutional norms that damage health, wellbeing, environment, and prosperity**
- We have a narrow window of time to prepare before the brunt of the climate crisis hits us
- ‘Normal’ wasn’t working for the majority so why go back?
- Moments of crisis offer us a chance to make big transformations
- **Let’s take advantage of this unique moment to:**
 - Upskill TU reps to identify emerging climate risks and codesign adaptation solutions that protect Scotland’s workers
 - Ensure workers voices are heard
 - Ensure health, wellbeing, social justice and employment rights are at the heart of Scotland’s climate action



What can we learn from the pandemic?

- **Proactive, precautionary, science-led action is vital**
 - Humans have collective failure of imagination regarding risks / unexpected consequences
 - Responding reactively costs more, risks lives, causes unintended consequences, worsens inequalities,
 - Regulations insufficiently agile for emerging risks
- **Distant events can have big impacts for Scotland**
- **Not a problem for the future. Climate change is here, now**
 - Systems underpinning modern life are vulnerable
 - Especially after austerity
 - Systems are operating outwith conditions they were designed for
 - Infrastructure failures to be expected
- **Impacts will be surprising:**
 - Full range / breadth of impacts often not apparent until months later
 - Recovery may be protracted and uneven
 - Low paid and front line workers most at risk

UK's climate targets will cost less than battling Covid, says OBR



While we've focused on COVID-19 the world has warmed +1.25°C How much worse can it get?

Adaptation
land

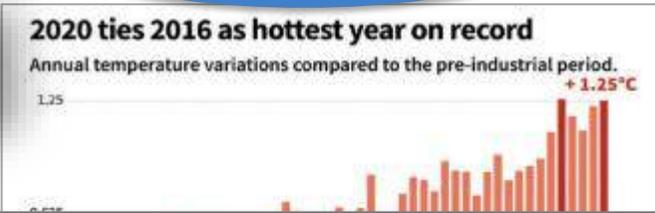
Worst-case global warming predictions are the most accurate, say climate experts

'Doomsday' seed vault in the Arctic has FLOODED after soaring global temperatures caused permafrost to melt

'We're f***': Climate change will be catastrophic for mankind after study reveals methane leaking from the Arctic Ocean, scientist warns**

**"Nowhere is safe ... who would have predicted a temperature of 48/49C in British Columbia?"
Sir David King**

The North Pole is an insane 20C warmer than normal as winter descends



Climate change is driving the expansion of zoonotic diseases

GLOBAL WARMING DOOMSDAY ALERT
TEMPERATURE RISE OF 2C COULD TRIGGER 'HOthouse EARTH'



We are perilously close to dramatic climate change that could run out of our control

Miami condo collapse prompts questions over role of climate change

Keep global warming under 1.5C or 'quarter of planet could become arid'

IMF chief 'couldn't sleep' after reading climate report: 'What have we done?'



Amazon rainforest 'close to irreversible tipping point'

The Ocean Is Warming at a Rate of 5 Atom Bombs Per Second, Scientists Warn

Canadian inferno: northern heat exceeds worst-case climate models

NEW STUDY INDICATES LOSS OF WEST ANTARCTIC GLACIERS APPEARS UNSTOPPABLE

Antarctica ice melt has accelerated by 280% in the last 4 decades

Runaway warming “Hothouse Earth” scenario

- It’s a climate emergency because we are at the brink of climate breakdown
 - >50% of human emissions were absorbed by natural carbon sinks with the rest going into the atmosphere
 - Earth’s natural abilities to absorb GHG reaching saturation / have been weakened by our warming. Once natural sinks are saturated or damaged they release GHG into the air
 - ‘Positive feedbacks’ no longer merely theoretical they are happening now
 - **If vast natural carbon sinks become net emitters - will trigger an unstoppable spiral of warming – runaway climate change**
 - BAU makes such a climate breakdown the most likely case
 - Limiting warming to 2°C will deliver 50+% likelihood of climate breakdown by 2100 **Would you put your kids on a plane with 50% odds of crashing?**
 - If we limit warming to <1.5°C our odds of disaster **are still 33%**
- We must limit warming to <1.5C and the faster the better



How to respond? Cut, cope, capture

Mitigation
Preventing the
causes of climate
change



CUT



Adaptation
Dealing with the
consequences of
climate change



COPE



Sequestration
Getting GHG out of
the atmosphere



CAPTURE



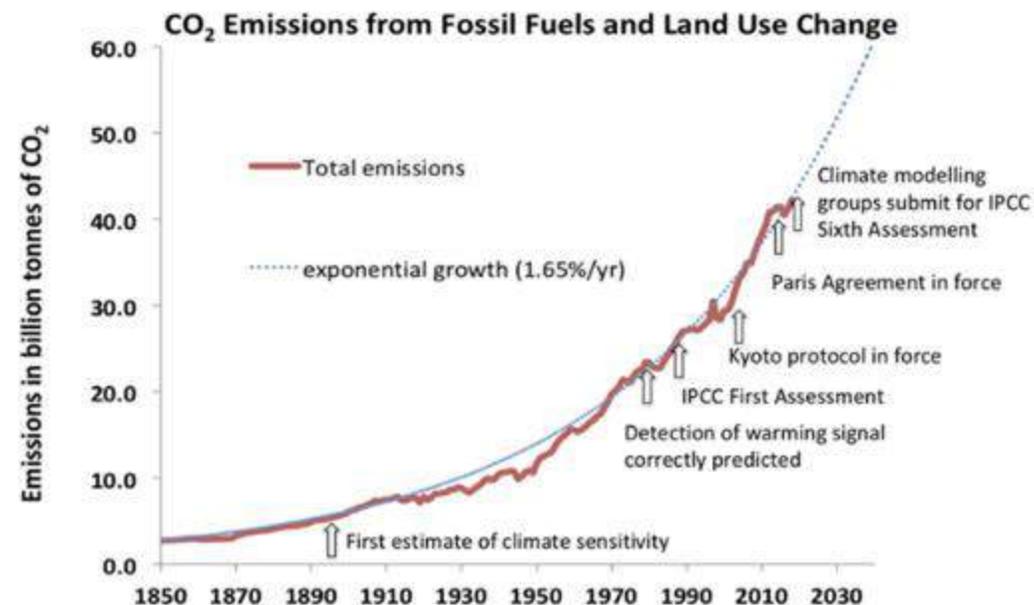
If we reach net zero won't the climate go back to normal?

NO! We've left it too late - big impacts are now inevitable

- **Climate system time lags** mean that warming effect of past emissions isn't immediate can take decades to be fully felt
 - Today's changes are from emissions from approx. 1980-2000
 - Half of all GHG **ever released**, were emitted after 1990
 - Impacts of which only just starting to be felt
 - If emissions fell to zero tomorrow:
 - warming would continue for 30+ years
 - sea levels would rise for centuries
- **These impacts are more than our society is used to and infrastructure was designed to cope with**
- **Adaptation MUST be the new normal** and will be needed for hundreds of years
- But adaptation actions take time we must act now

Adaptation = becoming more resilient

Historically 'The ugly sister' of climate change action, we only have to do it if we fail to cut emissions...



Why should Trade Unionists care about adaptation?



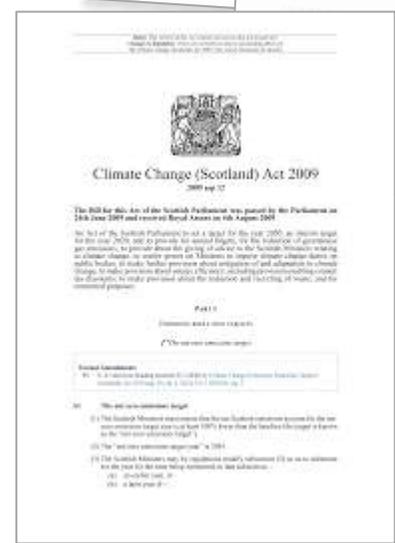
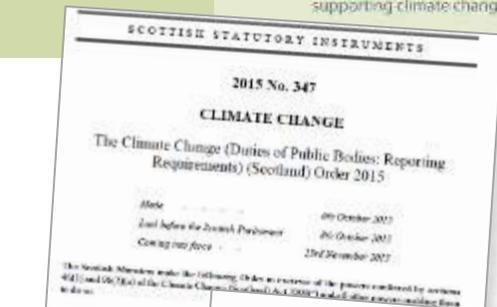
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Many organisations are legally obligated to adapt

The Climate Change (Scotland) Act states:

- “A public body **must**, in exercising its functions, **act in the way best calculated** to contribute to the delivery of:
 - emissions reduction targets (known as ‘mitigation’),
 - ... any statutory climate change adaptation programme, and
 - in a way that it considers is most sustainable
- Legal obligation to act under the Climate Change (Scotland) Act 2009, as amended 2015 and 2019
- **This is a statutory obligation - something all public bodies MUST do**
 - Not an optional extra
 - Not something that would be ‘nice to have - if budgets allow’



Climate change is a health and safety issue

- **New pests and diseases such as:**
 - reawakening of extinct pathogens, pandemics, mosquito borne infections
- **Rising temperatures:**
 - heat-stress and fatigue leading to safety lapses, heatstroke, sunburn,
 - food poisoning and gastrointestinal infections, accidents, drowning,
 - electrical faults and electrocution, fire and wildfires,
 - negative impacts on productivity, chronic kidney failure linked to excessive sweating and dehydration during heavy outdoor work,
 - increasing ground-level ozone concentrations with adverse effects,
 - workers' exposure to hazardous chemicals,
- **Air pollution** already kills 7 million people a year:
 - asthma, dementia, respiratory infections, COVID-19
 - cardiovascular conditions (including COPD, lung cancer, strokes, heart disease),
- **Storms and flooding:**
 - road accidents, trips and falls (ice), hypothermia, safety lapses,
 - more downtime (for example working from heights during high winds) could result in unsafe pressure on workers to rush delayed tasks

Climate crisis likely to increase violent deaths of young people - report

The Heat Wave Shows Climate Change Is a Workers' Rights Issue

Human-induced global heating 'causes over a third of heat deaths'

From Qatar to Vietnam, global heating is making the workplace deadly for millions

Climate crisis 'may put 8bn at risk of malaria and dengue'

Anthrax outbreak triggered by climate change kills boy in Arctic Circle

How Climate Change Is Ushering in a New Pandemic Era

A warming world is expanding the range of deadly diseases and risking an explosion of new zoonotic pathogens from the likes of bats, mosquitoes, and ticks

Thunderstorm asthma: 'You're talking an event equivalent to a terrorist attack'

COVID deaths in England's first wave were 70% higher in areas with worst air pollution, study finds

Rising temperatures will cause more deaths than all infectious diseases - study



Adapting to climate change is social justice

- Those who've done the least to cause climate change
 - Are the least able to address it,
 - AND face the worst impacts
- **Adaptation is not a question of jobs vs environment – we can protect BOTH**
 - Adaptation will create decent, rewarding, permanent, local jobs
 - Move debate on from pointing the finger at climate 'bad guys'
 - There is no job security in the hothouse earth scenario
- **IMPOSSIBLE to achieve ANY core TU goals (social justice, community revitalisation, health / wellbeing, poverty reduction) unless we adapt**
- Adaptation demonstrates international solidarity and intergenerational fairness
 - resource scarcity caused by climate change exacerbates conflict
- Well-planned climate change adaptation brings a **host of cobenefits**

World's wealthiest 'at heart of climate problem'



Greta Thunberg @GretaThunberg · Apr 13

Wealthiest 1% produce double the combined CO2 emissions of poorest 50%.

'Untold human suffering': 11,000 scientists from across world unite to declare global climate emergency

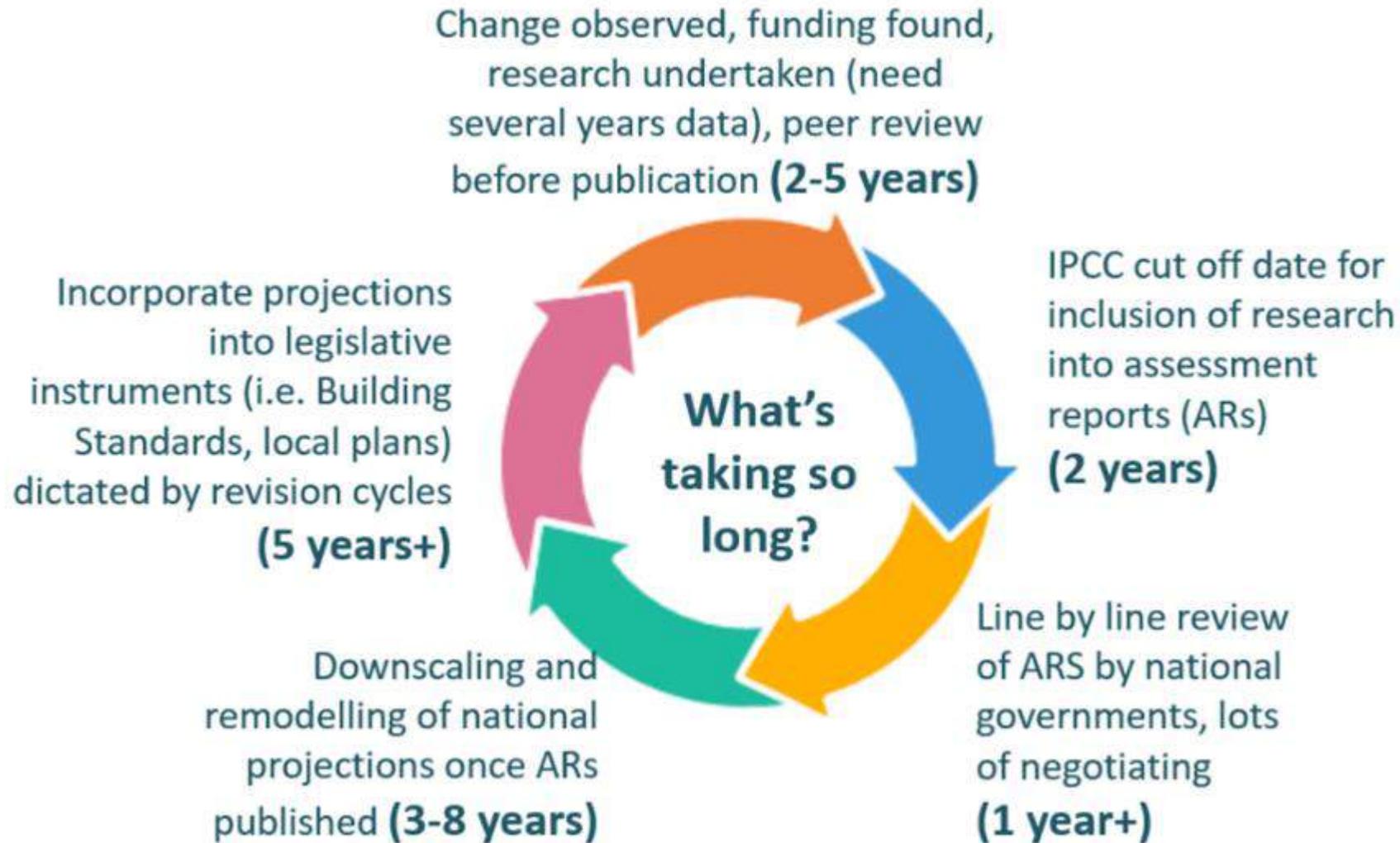
'Despite 40 y

The climate crisis will create two classes: those who can flee, and those who cannot

Climate change hits the poor hardest



Legal compliance may not guarantee resilience



Guidance and regulations lag 13-20 years behind the latest science

- Climate change is happening so fast
- Regulations cannot keep pace with the science
- Ideas which were the reasonable worst case 10 years ago, are now the most likely case
- **Plan for the worst, hope for the best**

What do we know about climate risks today?

And projections for the future....

Climate change is already happening in Scotland

- Record breaking extremes of all weather types
- Impacts are starting to hurt
 - Cascading impacts can devastate communities for months, **lives are being lost**
 - Even brand new buildings or the latest infrastructure recently inspected can fail

“In the best part of 20 years in the railway, I have never seen infrastructure destroyed like this...” Liam Sumpter, Scotland's Railway

“Climate change has arrived.”
Baroness Brown

Edinburgh-Glasgow line closed for two months after canal breaches its banks, severely damaging railway



Melting Arctic sea ice drove the Beast from the East in 2018, scientists find

Covid In Fife: Kirkcaldy vaccine centre remains shut after heavy rain forced weekend closure

Science Centre roof 'melts' on hottest ever June day in Glasgow



Icy Europe, balmy North Pole: the world upside down



Tinderbox Scotland

In a laver: seaweed shuts nuclear reactor again in bad weather



Edinburgh St James Quarter: Why did the £1bn shopping centre flood days after opening?

Average temperatures are increasing, seasons becoming less predictable

The science:

- Last decade was 0.69 °C warmer than 1961 – 1990 average
- Scotland's 10 warmest years on record - all been since 1997

Changing weather:

- Temperatures are projected to increase in both summer and winter, warming is expected to be greatest in summer
- Climate change has already increased the chance of seeing a summer as hot as the summer of 2018 to between 12-25%
- Hot summers like 2018 could happen 50% of the time
- Doesn't mean that extreme cold winters won't occur
- The Beast from the East was partially caused by Arctic overheating

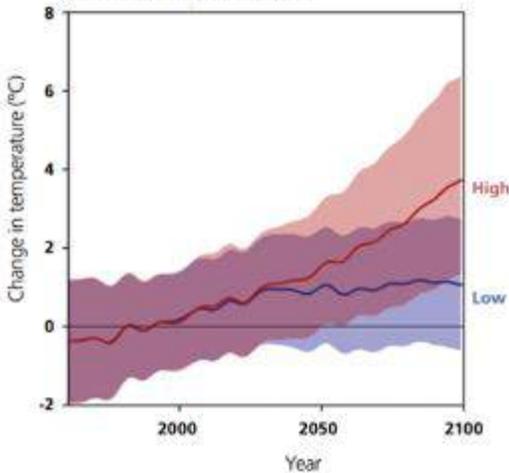


Higher average temperatures, with more frequent and extreme heatwaves



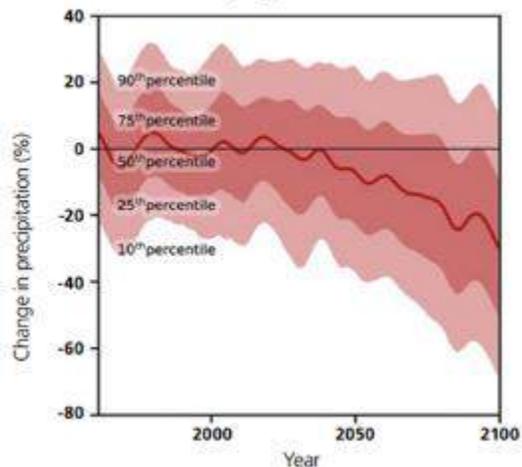
Increasing extreme weather

Scotland winter mean temperature compared to 1981–2000



Precipitation change projections

Scotland summer precipitation relative to 1981–2000, high emissions scenario



Rainfall is increasing, becoming less predictable, extremes are widening

The science:

- The last decade was 9% wetter than 1961 – 1990 average
- Biggest increases have occurred during winter - 19% wetter than 1961 – 1990 average



Changing weather:

- More heavy rainfall events and greater unpredictability
- Rainfall increases will be largest in the west
- Warmer air can hold more water, when snow occurs there is the possibility of greater extremes
- Significant increase in the intensity of downpour events
- Possibility that summers may get drier but the jet stream may complicate this



Increasing
extreme weather



Heavier winter rainfall and
reduced summer rainfall



Sea level is rising and the rate is accelerating

The science:

- Mean sea level around the UK rose by approx. 1.4mm per year since the start of the 20th Century
- Globally seas have risen by 21-24cm since 1880
- The rate of sea level rise has trebled since the 1990s. Now seeing annual rises of 3.6mm+
- Seas could rise over 1m by 2100

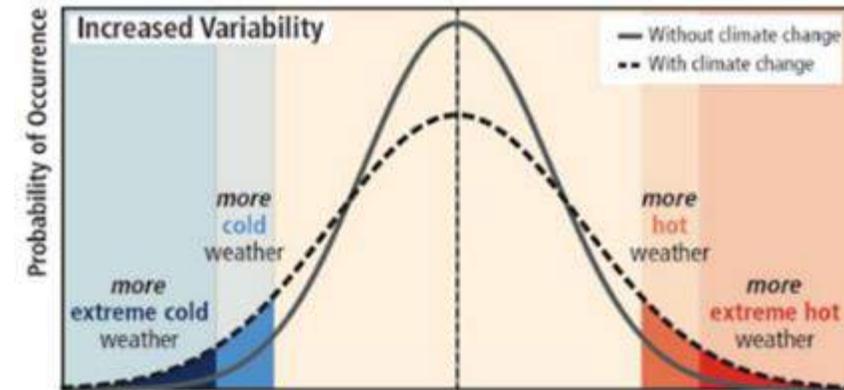
Changing environment:

- Sea level rise will keep on accelerating until temperatures stabilise
- If major ice sheets are destabilised seas could rise for centuries
- Increased impacts from storm surge and erosion



Climate projections are NOT predictions

- **There are many sources of uncertainty:**
 - Models rely on educated guesses about people yet to be born using technologies not yet invented (not all will be right)
 - Intricate interactions between earth systems and human activity too complex to model perfectly; plus big modelling gaps
 - Climate change isn't linear - we're destabilising climate patterns. Weirder not warmer – harder to model AND adapt to
- **Today's observations are rewriting scientific understanding - we must use the precautionary principle**
 - **Models significantly underestimate warming**
 - Unrealistic assumptions about deployment of negative emissions technologies
 - The future is going to be messy and surprising



Source: IPCC SREX (2012)



- **The climate emergency is here, now**
- Adaptation action in the UK has failed to keep pace with the worsening reality of climate risk; the UK is less well prepared now than it was five years ago
- The world could warm by 4C by 2100, the UK government's plans are inadequate to cope even with a 2C temperature rise
- The UK has the resources to respond effectively to climate risks, but it has not yet chosen to do so
- COVID-19 has been a tragedy, and it has shown us the importance of preparing for known risks
- Of the 61 climate change risks and opportunities identified for Scotland:
 - More action is needed now to address 33 of them,
 - Sustaining current action only deemed appropriate in 4 cases

Figure 1: Top six areas of inter-related climate change risks for the United Kingdom



How do TU reps feel that their workplace will cope?

- **Only 16.7%** felt that their workplace was sufficiently resilient to weather-related risks
- **72%** said climate impacts were happening more frequently and / or had more severe effects on their workplace and workers

Railway is frequently disrupted by extreme weather events ... causing delays, late running, enforced overtime, angry passengers, cancelled services, overcrowding...

Unpredictable weather patterns are impacting negatively on planned activities and events. It's hard to plan

The Beast from the East closed all of our buildings. We just couldn't cope

Weather affecting trains is reported to staff so they can leave early

After raising the matter for years we now have outdoor trousers, jackets and boots that are freezing ... poorly fitted ... and aren't suitable for the winter

Outdoor education is all day, all week. It's very wearing being outdoors in all weathers. It impacts many members with underlying health conditions.

In the heatwave of 2018 a local substation failed in the heat – the fire alarms were triggered and we all had to go home

If adaptation is about becoming more resilient where to start?

How to identify potential climate risks in the workplace



- **Toolbox talks / gather observations**
 - From frontline staff, contacts from upstream and downstream
- **Site walkabouts** (similar to a fire safety audit) think about how buildings, sites and activities could be impacted by droughts, temperature extremes, storms, flooding, transport and supply chain disruption, loss of utilities and extreme winter conditions.
 - Is there a mis-match between critical activities and vulnerable site location (i.e. pharmacy or servers in a basement would be at risk of flooding) and
 - Are there other factors which might compound risks (i.e. buildings without openable windows)
 - Are there parts of the site having problems already?
- **Establish a working group** i.e. to liaise with facilities management, business continuity, risk management and workplace health / wellbeing practitioners
- **Near miss reporting** and instances of ‘we were lucky that time’
- **Identify pinch points**
 - Where is there rationalisation or JIT delivery in essential systems, stock storage and supply chains
- **Build the evidence base for action** keep a record of downtime, staff absences, damage and insurance claims, and other costs of climate events
- **Watch the news** for impacts on similar organisations (for sectoral issues that might affect yours in the future) and impacts on properties nearby (for risks based on location)

Basics of good adaptation

- **Common sense NOT rocket science**
 - Not one size fits all – location specific, industry specific, individual specific
 - Difficult to retrofit
- **Go for win-wins**
 - Flexible solutions that can cope with a range of different climate extremes
 - Choose solutions which help tackle other problems too
 - Avoid adaptation choices that increase GHG emissions
 - Systems should fail to safety not fail to risk
- **Redundancy / spare capacity in supply chains, infrastructure etc**
- **Develop contingency plans (and supplies) BEFORE problems arise**
 - Involve upstream / downstream bodies in emergency preparedness exercises
- **Learn from experience, solutions need to evolve:**
 - Evaluate adaptation actions to see how they fared. What could be improved?
- **Be led by the science and use weather warnings**
 - Precautionary principle - build in lots of 'headroom' - assume the reasonable worst case
 - Don't assume that supporting infrastructure can't fail just because it has coped before

		Impacts				
		Negligible (1)	Low (2)	Medium (4)	High (8)	Very High (16)
Likelihood	Almost Certain (5)	5	10	20	40	80
	Likely (4)	4	8	16	32	64
	Possible (3)	3	6	12	24	48
	Unlikely (2)	2	4	8	16	32
	Rare (1)	1	2	4	8	16



-  **FACE COVERINGS**
-  **AVOID CROWDS**
-  **CLEAN HANDS**
-  **TWO METRES**
-  **SELF-ISOLATE**



UKCCRA3 Ten principles of good adaptation

Figure 2 Ten principles for good adaptation



Source: CCC

What does good look like?

Examples of adaptation solutions for different workplace settings...

Resilience for workers who travel

Involve staff in regular business continuity exercises

Climate is changing fast, workplace protections need to be reviewed regularly

Use weather data to plan

Longer rest breaks

PPE / uniform that reflects seasonal extremes

Build more downtime into travel schedules

Alternative travel plans including options to safely extract workers

Provide emergency travel kit including communications equipment (phone or radio)

Business continuity plans for extremes

Feedback mechanism for remote or travelling staff to report risks observed on the frontline

Prohibit solo working in extreme conditions

Threshold triggers for suspending travel

Climate risk assessment

Update work statements to consider reasonable worst case



Resilience for outdoor workers

Locate welfare facilities in most resilient spot (heat, cold, flood, storm risks)

Look at work practices with a new eye and an open mind – impacts will be surprising

Emergency comms for staff
i.e. storm warnings to trigger site closure or halting activities

Changes to work statements & emergency plans for extremes

PPE that reflects seasonal extremes



Longer rest breaks

Weather related contract terms

Improved welfare facilities – cold water, shading, sunscreen, cool rooms, heating as needed

No blame site culture - empower workers to speak out about safety

Capture weather data in accident & downtime reporting

Changes to shift patterns to avoid extremes

Build more downtime into construction schedules /

Resilience for indoor workers

Windows that open / other means of natural ventilation

Chilled storage for food

Emergency comms for staff i.e. storm warnings

Workers able to control workplace temperature

Site most critical activities in least vulnerable location



Hot & cold drinks

Sustainable resilience options that don't increase GHG emissions

Record climate risk near misses & down time

Blinds to reduce glare

Passive solar design to plan out activities (i.e. north facing rooms for 'hot' activities)

Green shading to reduce overheating

Maximum & minimum working temperatures for activities

PPE
Home working options

Well maintained, heavy-weight, insulated buildings

Avoid JIT delivery

Back up systems / spare capacity in supply chain

Take homes – we need to do things differently, starting today

- **Climate change is not a problem for the future, the window for action is now and it is fast closing**
 - Climate change impacts will dwarf the deaths and damages from COVID19
 - BAU will compound the problem - not deliver solutions
 - Tinkering around the edges is not going to fix this
- **Climate change demands action from ALL of us (not just dedicated champions)**
 - We must all adapt to climate risks, store carbon and cut emissions
- **We've lost the surety of a stable climate – but we can't wait for certainty before we act**
 - We need to think flexibly and assume the reasonable worst case
 - Ask challenging questions and go beyond the legal minimums
- **Climate change is the biggest social justice and health and safety issue**
- **We need to stop polarising environment vs jobs and collaborate compassionately to help all workers flourish**
 - there is no job security on the hot house earth scenario



"Yes, the planet got destroyed. But for a beautiful moment in time we created a lot of value for shareholders."

"It is difficult to get a man to understand something, when his salary depends on his not understanding it."
Upton Sinclair

To find out more:



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Further information

Adaptation Scotland Scotland's national climate risk and adaptation programme

<https://adaptationscotland.org.uk/how-adapt/tools-and-resources>

Climate Just compendium of adaptation resources focusing on social justice impacts

<https://www.climatejust.org.uk/resources>

Scotland's Climate Assembly Recommendations for Government report from the people's panel

<https://www.climateassembly.scot/full-report>

UN 1.5C Special Report summarises the latest climate science and risks of runaway warming

<https://www.ipcc.ch/sr15/download/>

UKCCRA3 Independent Assessment of UK Climate Risk: Advice to Government

<https://www.theccc.org.uk/wp-content/uploads/2021/07/Independent-Assessment-of-UK-Climate-Risk-Advice-to-Govt-for-CCRA3-CCC.pdf>

UKCCRA3 Evidence Report for Scotland Summary, Climate Change Committee

<https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-Scotland-Summary-Final.pdf>

EPSU Public Services and Adaptation to Climate Change

https://www.epsu.org/sites/default/files/article/files/2_EPSU%20Public%20services%20and%20adaptation%20to%20climate%20change%20for%20reading.pdf

Scottish Climate Change Adaptation Programme (SCCAP) Scottish adaptation action being undertaken 2019-24 by the Scottish Government & partners

<https://www.gov.scot/publications/climate-ready-scotland-second-scottish-climate-change-adaptation-programme-2019-2024/>

New UKCP18 climate projections for Scotland summary <https://www.adaptationscotland.org.uk/news-events/stories/new-climate-projections-summary-scotland>

Welsh TUC Greener Workplaces for a Just Transition https://www.tuc.org.uk/sites/default/files/2021-02/Greener%20Workplaces%20-%20English%20Version_0.pdf

Adaptation Capability Framework (ACF)

- **Adaptation is daunting**
 - Changing the way we have always done things to adapt to a scary, uncertain future,
 - no longer being able to use the past as a guide,
 - a task with no fixed end point...
- **Adaptation Scotland** have developed the **Adaptation Capability Framework (ACF)** to help guide organisations toward their resilience goals
 - The ACF is an innovative and holistic approach which spells out the actions and capabilities needed for resilience
 - 50 tasks over 4 themes to build a tailored adaptation response for an organisation
 - Rooted in Scottish culture, values and decision-making processes

To find the ACF go to:

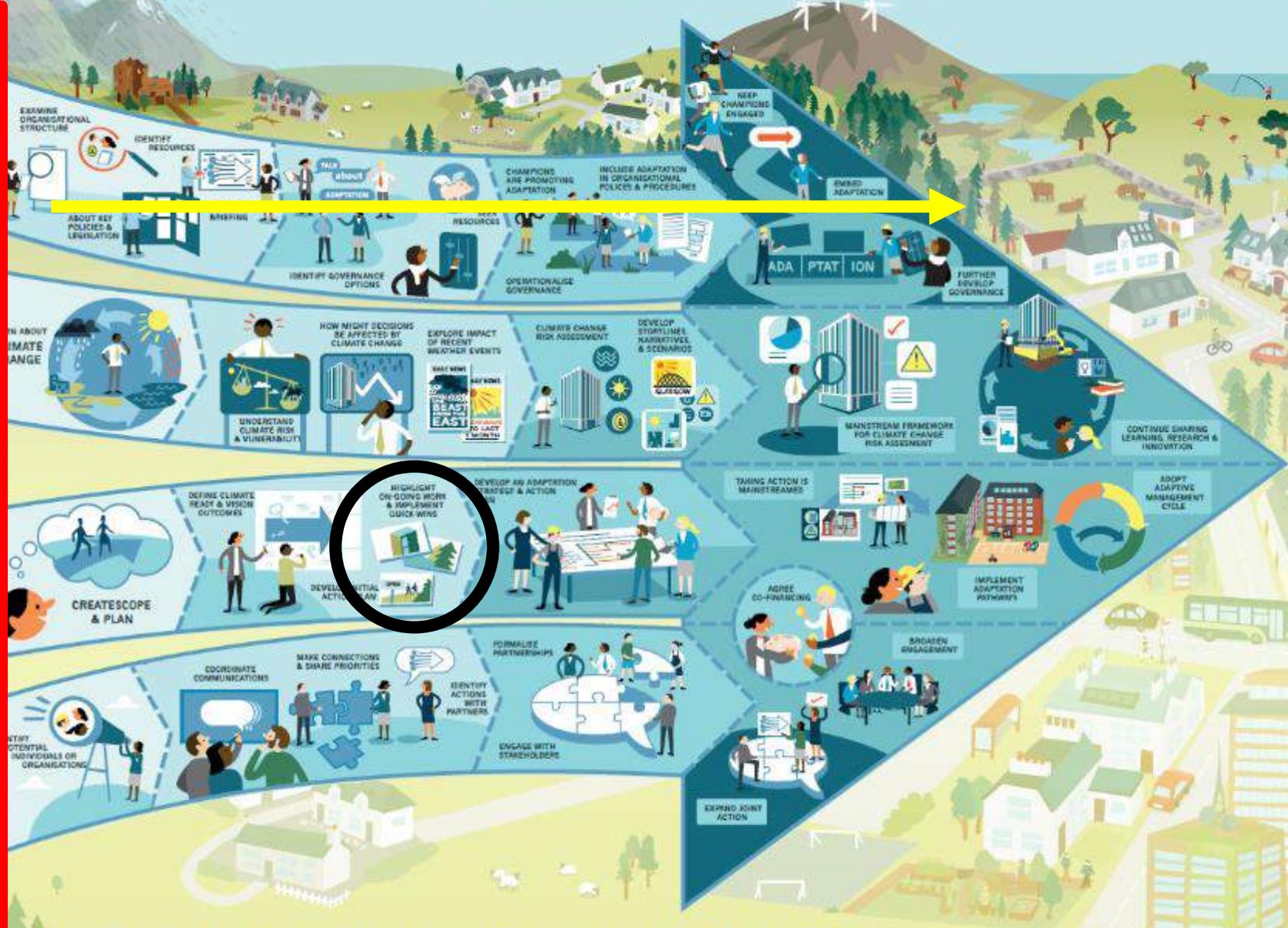
<https://www.adaptationscotland.org.uk/how-adapt/your-sector/public-sector/capability-framework-interactive>

PICK AND CHOOSE TASKS THAT ARE RIGHT FOR YOUR ORGANISATION



UNADAPTED

ADAPTING



Maturity Stages

Tasks

Capabilities

ADAPTATION CAPABILITY FRAMEWORK



STARTER PACK

Starter pack

– for organisations and individuals who are new to adaptation.



BENCHMARKING TOOL

Benchmarking tool

– assess progress and plan adaptation work.



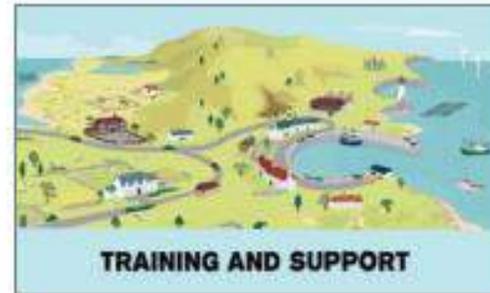
The Handbook

– introduction to climate change adaptation for Scotland's public sector.



Interactive Adaptation Capability Framework

– access detailed task information, resources and case studies.



TRAINING AND SUPPORT

Online training modules

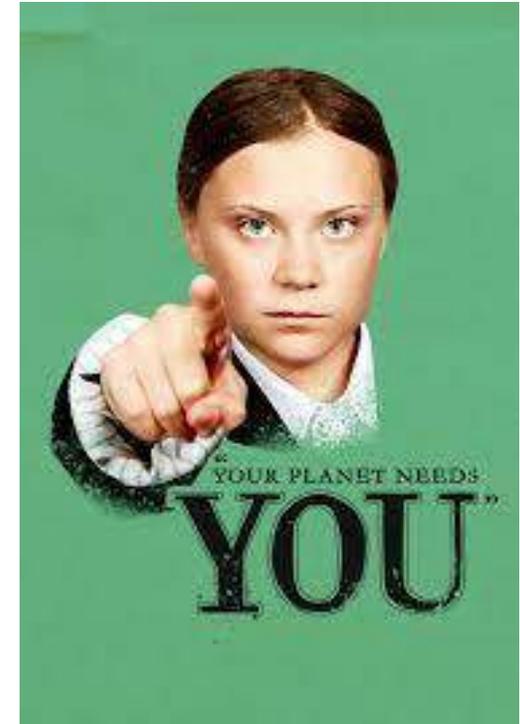
– develop adaptation skills and expertise.

- Adaptation Scotland is here to help
 - Support you working through Starter Pack Benchmarking Assessment
 - CPD sessions
 - Awareness raising Resources Advice

• We want to develop better resources for Scottish workplaces

Want to help protect workers in the climate crisis?

- We are asking TU reps for your time, enthusiasm and insight to help create a climate risk and resilience toolkit for workplaces
- We would love your help
 1. Take part in a short (<1 hour) interview on your workplace experiences to make the kit relevant to real life situations
 2. Attend a workshop event (September 2021) covering these issues in more depth, and codesigning the toolkit to:
 - Deliver proactive solutions to **make workplaces more resilient BEFORE the brunt of the climate crisis hits**
 - **Tailor familiar tools** such as work method statements, risk assessments and risk registers to negotiate for safer workplaces
 - **Foster innovative and disruptive thinking** to encourage a step change in action and include marginalised groups in the conversation
 - **Share understanding of the key risks posed to workers from climate change** now and in the future and allow workers to be informed partners in managing these risks



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[@adaptationscotland](https://twitter.com/adaptationscotland)



www.adaptationscotland.org.uk



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