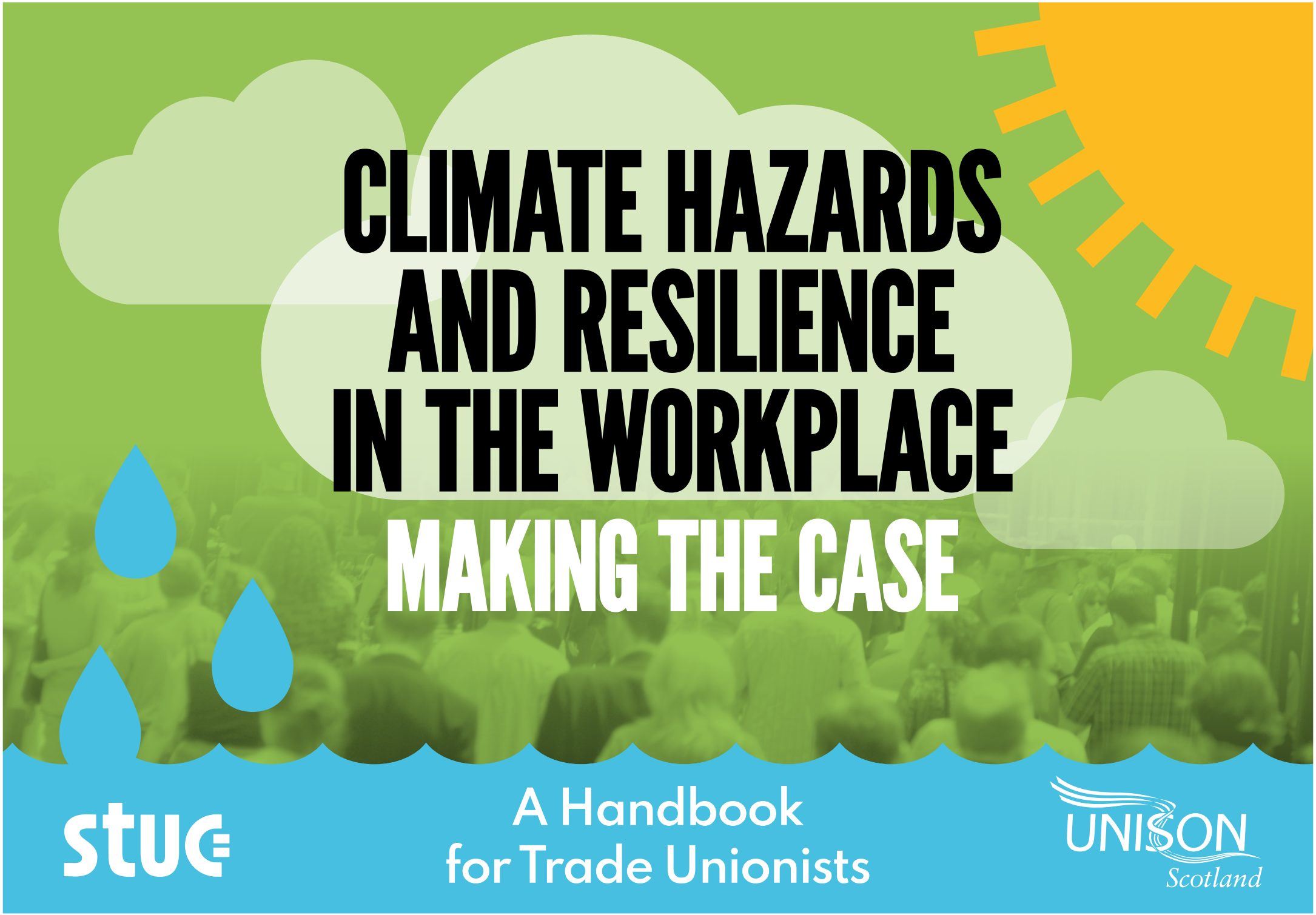

CLIMATE HAZARDS AND RESILIENCE IN THE WORKPLACE

MAKING THE CASE

A Handbook for Trade Unionists

STUC

UNISON Scotland

STATUS OF THE HANDBOOK

This handbook has been developed by UNISON and the Scottish Trades Union Congress with support from other interested unions, Scottish Hazards, and the Adaptation Scotland programme. The handbook represents the independent views of the TU movement. Sections 3 and 4 draw on scientific evidence from the UK Climate Projections 2018 and the UK Climate Change Risk Assessment Evidence report. The handbook is part of a wider set of climate resilience resources developed for Trade Unionists.

ACKNOWLEDGEMENTS

Trade union members from across Scotland provided valuable feedback to inform the contents of the handbook. Over 60 members participated in workshops and interviews, sharing their experience of severe weather and climate impacts and the importance of climate resilience for the TU movement. Their valuable feedback has made a significant contribution to this handbook and accompanying resources.

AUTHORS

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Version 1

Published April 2022

sniffer
knowledge brokers
for a resilient Scotland

CONTENTS

FOREWORD

Everyone's work will be affected by climate change, whether directly in relation to the kind of work we do, by changes to the way existing jobs are done, or by dealing with extreme weather events. As trade unionists we believe that workers have a fundamental role to play in the adaptations that will be needed, to make our workplaces more resilient, and that this is best achieved collectively. This forms a key element in achieving a Just Transition.

Workers have responded magnificently to the challenges of the pandemic, delivering key services, and making workplaces safer. The response to COVID-19 demonstrated the difficulty of developing good policy in a time of crisis; and that policy developed 'on the hoof' can create unfortunate unintended consequences which widen societal inequalities. The same is true of climate change policy. We need to act now before the worst of the crisis hits.

Applying the learning gained from COVID-19 to our response to the climate crisis indicates that:

- Global challenges have no national borders.
- As a society, we're only as safe as our most vulnerable people. Often the people who do the most important jobs within our society receive low pay, poor conditions and face the greatest risks.
- Global challenges require systemic changes, but they also require individual and collective behavioural changes. Trade unions have an important role to play in delivering this.
- We must listen to the warnings of scientists. Our response measures need to be based on science and we must acknowledge that while the science will continue to advance, we can no longer afford to wait until we have all the answers before we act.
- We are going to have to get good at adaption fast. However, we cannot anticipate exactly how climate risks will unfold. So, we will need to learn by doing and this will be an iterative process forcing us to evaluate how adaptation actions fare in response to real events and amend them accordingly.

All of this means that we will need to be bold in developing solutions in the face of uncertainty. These solutions must be robust in the context of reasonable worst-case scenarios and sufficiently flexible. Solutions must also be built on the views of a wide range of stakeholders including marginalised voices. We must also share the costs and benefits of adaptation fairly, leaving no community behind.

We need t o draw on the more positive aspects of the response to COVID-19 where people have come together and collaborated on solutions. Our response to climate change must be similarly collaborative. It should make workplaces stronger, the economy better and fairer and reduce economic harm here, and around the world.

This handbook and its supporting resources are an important contribution to achieving this. They provide information to help union officers and reps in Scotland take action to protect workers from the unavoidable impacts of climate change and make their workplaces climate resilient.

Roz Foyer, General Secretary
Scottish Trades Union Congress

PURPOSE

This handbook is an introduction to climate hazards identification and climate resilience for TU members. It has been designed to help workers have a central voice in building resilience to climate risks and championing solutions which also tackle inequality and social justice.

RESOURCES

This handbook is part of a set of resources and support created for TU members. Visit **www.adaptationscotland.org.uk/how-adapt/tools-and-resources/climate-risks-workplace-protecting-workers-changing-climate** to access all the resources.

HOW THESE RESOURCES WERE DEVELOPED

Over 70 trade union members, representing a diverse range of sectors and industries, helped to develop the resources by, sharing their experience of severe weather and climate impacts and the importance of climate resilience for the TU movement. Feedback from trade unionists was provided through workshops, surveys, and interviews and has made a significant contribution to this handbook and accompanying resources.

WHAT DO WE MEAN BY ADAPTATION AND RESILIENCE?

The terms climate change adaptation and climate change resilience are related.

- Adaptation is taking action to adjust to actual or expected climate and its effects such as overheating or increased flood risk. Adapting helps to reduce harm.
- Resilience refers to the ability to recover from the effects of climate change, for example the ability to recover after a landslide or flood event.

These terms are both commonly used and are used interchangeably throughout the guidance.

For more detailed explanations of the terms adaptation and resilience see the latest Intergovernmental Panel on Climate Change Glossary https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Annex-II.pdf

INTRODUCTION

The Scottish trade union movement is committed to safeguarding workers' wellbeing today and in the future. Our climate is already changing, and we can no longer use the past as a guide to the future.

From storms and power cuts, floods, to droughts, forest fires and harvest failures; every country is grappling with how best to adapt to our warming world. The changes we are currently experiencing are projected to continue and intensify in the decades ahead and we need to act now to increase resilience.

This handbook makes the case for building resilience to climate risks and supporting a just transition. It also provides clear information about Scotland's changing climate and the risks that we face.

The handbook focusses specifically on increasing climate resilience – responding to the unavoidable impacts of climate change that are already occurring in Scotland because of past and present-day emissions. It is accompanied by a set of resources developed by the Adaptation Scotland programme to support risk assessment and practical action. The resources will help you to identify actions that are relevant to your workplace and are sector and location specific.

Despite 7 in 10 Britons saying they understand what they must do to fight against climate change, few can identify the best ways to make an impact, and none mentioned adaptation and resilience measures that they could personally take to respond to climate risks. If people do not know what adaptation action they can take, they will not act. Raising awareness of what climate change adaptation solutions look like is vital in building resilience at work, at home, on the roads and in our communities.
IPSOS-Mori survey April 2021

> **"WE'VE NEVER SEEN FLASH FLOODING LIKE THAT, THE RAINWATER FILLED BASEMENT FLATS AND SHOPS RIGHT TO THE CEILING IN A MATTER OF MINUTES. IF IT HAD HAPPENED AT NIGHT, ALL OF THOSE BASEMENT FLATS WOULD HAVE HAD FOLK ASLEEP IN THEIR BEDS. THEY'D HAVE DROWNED JUST LIKE IN HURRICANE KATRINA.**
>
> Trade union interviewee

1 THE CASE FOR ACTION

Image © Scottish Canals

1. THE CASE FOR ACTION

Trade unions believe that social partnership and the implementation of fair work, including addressing the health, safety, and wellbeing of workers must be at the forefront of building Scotland's resilience to climate change.

Trade unions around the world are campaigning for climate change action and recognise that it will be difficult, if not impossible, to achieve fundamental trade union goals on social justice, fair employment, equality, health and wellbeing and poverty reduction unless we increase resilience and adapt to the impacts of climate change.

Climate change will increase existing inequalities

Climate impacts will disproportionately affect the poorest people around the world

Climate change impacts pose a serious threat to health and safety

Well planned climate change adaptation action can also address other workplace challenges

Well planned and funded climate change adaptation action can transform our poorest communities

Climate change is a legal obligation

These are described in more detail below.

> **IN THE HEATWAVE OF 2018, A LOCAL SUBSTATION FAILED IN THE HEAT – THE FIRE ALARMS WERE TRIGGERED, AND ALL 2000 PEOPLE ONSITE HAD TO GO HOME.**
>
> Trade union interviewee

To collaborate with other trade unionists who care about climate change check out the Campaign Against Climate Change Trade Union Group http://cacctu.org.uk/

CLIMATE CHANGE INCREASES EXISTING INEQUALITIES

Climate change is a stress multiplier which will disproportionately affect those who are already most disadvantaged. Vulnerable population groups are likely to feel the impact of climate risks soonest and hardest. For example:

- those without access to financial resources find it much harder to get warnings for, prepare, respond and recover from extreme weather events.
- The impacts of floods will be much harder on those who cannot afford flood protection measures and insurance.
- As was highlighted during the pandemic, frontline and low paid workers tend to be amongst the most vulnerable groups so are likely to be less able to adapt to emerging threats.

Unless we act now existing social divisions and inequity will widen as the impacts of climate change progress and worsen.

To find out more about Climate Justice: www.climatejust.org.uk/what-climate-justice

CLIMATE IMPACTS WILL DISPROPORTIONATELY AFFECT THE POOREST

Building resilience and knowledge sharing is an essential component of climate justice.

Climate change is a global threat, but climate impacts are not experienced evenly and are likely to lead to inequalities within and across nations, between current and future generations; and so create climate injustice.

Internationally, climate justice is intrinsically linked with human rights, international development, and sharing the benefits and burdens associated with climate stabilisation, as well as concerns about climate change impacts.

While Scotland has already significantly reduced its greenhouse gas emissions and set a legally binding target to reach net-zero levels by 2045 at the latest; despite 30 years of international climate negotiations, global emissions continue to grow. This reflects the fact that most emissions cuts achieved by the richest nations come from offshoring heavy industry to the Global South rather than true decarbonisation.

The global south has contributed least to the climate emergency in terms of historic emissions and current per capita greenhouse gas emissions but will experience the worst impacts and has the least capacity to adapt. Climate change impacts are already a lived reality for people around the world and are likely to displace millions each year[1].

A powerful way of demonstrating solidarity is to put our own house in order by significantly reducing emissions and increasing climate resilience in Scotland while sharing learning in a two-way dialogue with trade unionists from the Global South.

> ***"Like many others I was frustrated by the lack of justice for the poorest people in the world from COP26. I hope building resilience here in Scotland will create lifeboats that will help the Global South. In the same way that adopting renewables reduced the costs so that solar and wind are now as cheap if not cheaper than fossil fuels, if we invest in adaptation measures now hopefully that will bring down the cost which will benefit the developing world too."***

> **"THE BEAST FROM THE EAST CLOSED ALL OF OUR BUILDINGS. WE JUST COULDN'T COPE."**
>
> Trade union interviewee

CLIMATE CHANGE IMPACTS THREATEN HEALTH AND SAFETY

Climate change is not just an environmental concern, there is also a significant cross over with the health and safety agenda. The latest UK Climate Change Risk Assessment (UKCCRA3, June 2021) highlights that climate impacts on health and wellbeing are a growing risk for Scotland. The Climate Change Committee is clear that action is needed today to address health and safety concerns relating to climate impacts[2], and the lived experience of the workers interviewed for this handbook corroborates this.

While emergency services workers and all those who work outdoors are already experiencing the impacts from changes to weather extremes, are likely to experience the most significant impacts from a changing climate, and experience these impacts soonest; every workplace in Scotland needs to consider the health and safety impacts of climate risks. All workers whether they work indoors, outdoors, offshore or travel for a living are increasingly vulnerable to disruption, damage, and potential injury from climate change impacts such as flooding and heatwaves.

WELL PLANNED ACTION TO INCREASE CLIMATE RESILIENCE CAN ALSO ADDRESS OTHER WORKPLACE CHALLENGES

Achieving greater climate resilience will present massive opportunities for Scotland's workers and industries. Well-planned action to increase resilience and adapt to climate change can also deliver a wide range of cobenefits for physical and mental wellbeing, productivity, welfare, and nature; such action can transform our poorest communities.

The STUC Campaign Our Jobs[3] demonstrates that by playing an active role in identifying climate risks and proposing climate resilience actions, the Trade Union movement can maximise opportunities for worker interests and wider social justice; building health and wellbeing cobenefits that support our communities.

The STUC Campaigns Our Climate Our Buses[4] and Our Climate our Homes[5] provides a strategy for building the resilience of Scotland's poorest urban and rural communities blighted by poor housing and inadequate transport.

> **"OFFSHORE OIL AND GAS PLATFORMS ARE REQUIRED TO HAVE REFUGES AND ACCOMMODATION. I WORRY WHEN I SEE OFFSHORE WIND BEING DEVELOPED FURTHER AND FURTHER OUT TO SEA WITHOUT THESE SAFETY MEASURES. WHAT HAPPENS WHEN WORKERS ARE STRANDED IN UNEXPECTEDLY HARSH CONDITIONS? TO ACHIEVE NET ZERO HSE REQUIREMENTS MUST KEEP PACE WITH THESE RAPIDLY EMERGING INDUSTRIES.**
>
> Trade union interviewee

MANY ORGANISATIONS ARE LEGALLY OBLIGED TO ADAPT TO CLIMATE CHANGE

There are legal obligations for many organisations (for example public bodies and providers of critical infrastructure) requiring them to consider climate risks and support national adaptation action. Climate change (resilience) is not just a public sector duty it can also apply to companies with a public service contract e.g., private companies providing a range of services from bus and ferry transport to the provision of social care.

The Scottish Fire and Rescue Service has a statutory duty to make provision for responding to flood events. In Scotland an estimated 284,000 homes and premises are at risk of flooding today: with an additional 110,000 properties at risk by the 2080s.

To find out more about the legal and policy context for adaptation and resilience in Scotland **https://www.adaptationscotland.org.uk/why-adapt/legislation/climate-change-adaptation-scotland**

and to link directly to the relevant pieces of legislation: **https://www.adaptationscotland.org.uk/application/files/1815/4350/0403/Legislation_Policies_and_Strategies_-_Adaptation.pdf**

2. TAKE ACTION TODAY

Trade Unionists are dealing with a wide range of challenges, many linked to the aftermath of the COVID-19 pandemic. Increasing resilience to climate change will require additional effort at a time when resources are stretched. There is strong justification for acting now to increase resilience:

MOMENTS OF CRISES, SUCH AS THE COVID19 PANDEMIC, OFFER AN OPPORTUNITY TO MAKE TRANSFORMATIONAL CHANGES

We have already seen massive adjustments to work patterns, infrastructure, buildings, and our way of life to accommodate social distancing, improved ventilation, hybrid working and other lessons which emerged during COVID19. Making the right longer-term investment decisions will be even more difficult but critical during the period of accelerated societal, economic, and environmental change after the pandemic. It is vital that these investments consider the future climate, to ensure they are safe, protected and that opportunities for climate resilience are realised.

CLIMATE CHANGE IMPACTS ARE HAPPENING TODAY IN SCOTLAND

72% of the trade unionists interviewed to create this handbook described how they were seeing more frequent and more extreme weather-related disruption in their workplace. Only 17% of felt that their workplace was sufficiently resilient to cope with climate impacts today and in the future.

> ***"It always feels like we are reacting to the last crisis. Everything at work now is about improving ventilation to stop COVID but I don't think anyone is joining the dots and thinking about how the changes we are making now will cope as the climate changes. Will we just have to rip it all out and start again?"***

ADAPTATION ACTIONS OFTEN HAVE LONG LEAD IN TIMES

We can't plant trees to reduce overheating in built up areas and expect saplings to have a big impact, they need time to bed in and mature. We can't build flood defences in a hurry. Retrofitting Scotland's building stock to be more resilient will take years. We have a window of opportunity to plan, adapt and improve Scotland's protection and resilience before the brunt of the climate emergency hits. It is crucial that we start to act now.

> **"WE HAVE CARERS WALKING BETWEEN CLIENTS IN HEAVY SNOW IN CANVAS SHOES BECAUSE THEY CAN'T AFFORD WINTER BOOTS LET ALONE A CAR, AND THEIR EMPLOYER WON'T PROVIDE PPE. THEY WON'T LET THEIR CLIENTS DOWN – THEY TURN UP IN ALL WEATHERS - BUT WHO CARES FOR THE CARERS?**
>
> Trade union interviewee

IT IS VITAL TO PROACTIVELY MANAGE RISKS DURING PERIODS OF RAPID TRANSITION

The transition to a net zero Scotland is bringing rapid changes to our society, infrastructure, and economy which, unless we consider proactive risk management from the outset, has the potential to increase some climate risks to workers. By understanding how to identify climate risks in the workplace Trade Unionists can help ensure that Scotland's policy response to the climate emergency does not come at the expense of workers safety, that net zero developments are planned and operated in a way which is robust to future climate extremes and that health and safety protection, and legislation keeps pace with the expansion of new net zero industries.

Storm Eunice: at least four dead as worst storm in decades roars in

https://www.theguardian.com/uk-news/2022/feb/18/storm-eunice-record-breaking-gusts-chaos-millions-uk-britain-met-office

Action to increase Scotland's resilience to climate risks should be developed as part of wider efforts to recover from the pandemic, tackle the biodiversity crisis and transition to net zero emissions. There is a consensus, globally, amongst trade unions that we do not have time to address these issues individually and must take this unique window in time to develop solutions that help tackle these challenges[6] together.

Governments and employers have spoken of the need 'to build back better' when dealing with Covid and its economic impact. Scotland's trade unions are determined to achieve these aspirations in a way which makes a material difference to the lives of workers. What is clear is that tinkering around the edges of the existing socioeconomic system is not going to be enough to protect us and future generations from the impacts of climate change. Transformational change is needed.

To accompany this handbook there is a practical workbook designed to help Trade Union representatives identify climate risks in the workplace and cocreate solutions which can build resilience to climate hazards and also contribute positively to other aspects of the workplace such as health and safety, social justice, reducing inequalities and improving workers' health and wellbeing. To access the workbook and accompanying video resources visit www.adaptationscotland.org.uk/how-adapt/tools-and-resources/climate-risks-workplace-protecting-workers-changing-climate.

> ***"The Covid-19 pandemic has unleashed humanity's instinct to transform itself in the face of a universal threat and it can help us do the same to create a liveable planet for future generations.... I hope our growing sense of urgency, of solidarity, of stubborn optimism and empowerment to take action, can be one thing that rises out of this terrible situation. Because while we will, eventually, return to normal after this pandemic, the climate that we know as normal is never coming back."***
>
> Christina Figueres, former head of the UN climate secretariat

"EVERY SUMMER WE ARE SEEING MORE TIME SPENT ON FIGHTING WILDFIRES AND IT IS TAKING OFFICERS AWAY FROM THEIR REGULAR DUTIES. IT'S NOT JUST REMOTE AREAS EITHER, WE SEE BLAZES ON ARTHURS' SEAT MOST SUMMERS NOW.

Trade union interviewee

3 WHAT WILL THE JUST TRANSITION MEAN FOR WORKERS?

3. WHAT WILL THE JUST TRANSITION MEAN FOR WORKERS?

WHAT IS THE JUST TRANSITION?

Trade unions across the world have led the call for a just transition that ensures that a transition away from fossil fuels should not be done at the expense of workers and the poorest and most vulnerable. The term *just transition* describes the concept of moving away from an unsustainable, carbon intensive, vulnerable society to a resilient, net zero way of life in a way which doesn't leave any community or sector behind.

The Scottish Government has committed to deliver a net zero and climate resilient economy in a way that delivers fairness and tackles inequality and injustice.

> ***A just transition must provide fairness and overcome injustices experienced by all workers, male and female, young and old, black and white, in the global north and south.***
>
> UK TUC, July 2021

SCOTLAND'S JUST TRANSITION COMMISSION

Scotland's Just Transition Commission was first established in 2019 and reported in 2021. The Scottish Government accepted all the Commission's recommendations, becoming the first country in the world to commit to a Just Transition Planning Framework. The trade union movement in Scotland is heavily involved with the Just Transition Commission and this will be an important relationship for delivering climate justice in Scotland.

To find out more about the Just Transition Commission and its recommendations to Scottish Government: **https://www.gov.scot/publications/transition-commission-national-mission-fairer-greener-scotland/**

> ***We are committed to ending Scotland's contribution to climate change and, critically, ensuring we do that in a way that is just and fair for everyone. Scotland's approach is unique and world leading; we are demonstrating clear leadership to ensure our just transition to net zero does not repeat the mistakes of the past... (We want to) ensure that our transformation journey to becoming a net zero nation leaves no-one behind.***
>
> Just Transition Minister Richard Lochhead

Deadly Storm Arwen dubbed worst UK storm in decades

Accuweather 27/11/2021 https://www.accuweather.com/en/severe-weather/storm-arwen-united-kingdom-wind-damage-deaths/1053511#:~:text=-Storm%20Arwen%20brought%20destruction%20to,dark%20and%20three%20men%20dead

WHAT DOES CLIMATE CHANGE ADAPTATION AND RESILIENCE MEAN FOR EMPLOYMENT PROSPECTS?

Climate change is an issue that has divided the trade union movement for years, with the debate often being distilled to a false polemic of" jobs vs environment". However, there is no job security in a world of climate extremes – everyone's wellbeing and livelihood ultimately requires a functioning and healthy environment. Building climate resilience into our society could be a catalyst for achieving a greener, fairer, equitable recovery and a sustainable Scotland.

When thinking about 'green jobs' most people think about the job creation associated with achieving net zero as we transition to locally produced energy and decarbonise our transport systems and infrastructure, however increasing resilience to climate change can create opportunities for quality employment too. The Scottish Government's strategic approach to Just Transition aims to create high quality good and green jobs across the country as we transition to net zero. We must make sure that new jobs are good jobs, complying with high workplace standards and paying fair wages. That is true across the economy, but especially important in sectors vital for reaching net zero where much public investment is targeted. The Climate Change Committee is clear that it won't be possible to achieve net zero goals without serious investment in adaptation to increase resilience[7]. Increasing resilience is also not just about creating new jobs; it will be vital to protect existing jobs and companies from failure after extreme weather events.

There is an enormous amount of work to be done to make Scotland more resilient to climate change impacts. With proper planning and targeted funding, tackling the risks associated with climate change will not mean fewer jobs but could increase the number of good quality jobs in Scotland, both directly and by supporting strong and healthy local supply chains[8].

Workers will be needed in:

- Building defences, warning systems and resilient infrastructure and agriculture to avoid loss of homes, livelihoods, and lives, because significant climate impacts are now inevitable
- Working together to protect and restore ecosystems including peatland restoration
- Significant programmes to retrofit the built environment to make it more resilient at both the building and infrastructure system level
- Greening and maintaining green infrastructure in our urban spaces to reduce flood risk and provide natural cooling
- Providing 'soft' adaptation responses such as packages of care for vulnerable groups during periods of extreme weather and helping these groups to take greater ownership of their resilience
- Teaching learners the skills that will be needed to live in a resilient and climate just way, in schools, workplaces, community settings and adult learning establishments
- Developing sustainable, regenerative agriculture that increases food security and reduces Scotland's vulnerability to disruption within international supply chains and the future potential for multiple harvest failures
- Stopping unsustainable land management and forestry practices and supporting the reforesting and rewilding of large parts of Scotland
- Providing goods and services suited to Scotland's changing climate
- Rescue, recovery and rebuilding after extreme weather events and as the coastline shifts to accommodate rising seas

> ***"If we don't take this seriously a lot of jobs will be lost from perfectly viable organisations who are pushed over the financial brink by climate impacts. Insurers won't cover these losses indefinitely."***

> ***"Businesses which have suffered from flooding are much more likely to fold. It's hard enough to run a business but uninsured losses, damage to premises, lost stock, and disruption to orders – a flood can be the straw that broke the camel's back. If we don't take this seriously a lot of jobs will be lost from perfectly viable organisations who are pushed over the edge by climate impacts."***

> ***Get it right and we can develop new, innovative industrial sectors providing great new jobs. Get it wrong and those working in fossil fuel sectors of the economy will lose their jobs and livelihoods, with only low skill, low value jobs to replace them.***
>
> Voice and Place, UK TUC

SKILLS GAPS

The just transition needs to be rapid and will require all of us to collaborate and learn together.

Climate change is not happening in a vacuum. Technological change, globalisation, ageing populations and climate change will dramatically increase the pace of change in the Scottish and global labour markets. It is not clear how these mega-trends will interact, but they are likely to result in significant impacts on skills needs for new and existing jobs alike.

While there is great potential for the creation of green jobs as part of the just transition there will also be structural change and transformation of existing jobs. Today, skills gaps are already recognised as a major bottleneck in the decarbonisation sector as industries such as renewable energy, energy and resource efficiency, renovation of buildings, construction, environmental services, and manufacturing struggle to find and retain skilled workers. As adaptation and increasing Scotland's resilience to extreme weather becomes a more central part of our economy, it is likely that skills gaps will occur here too. The adoption and spread of resilient technologies require skills in technology application, adaptation, and maintenance. Packages of training and qualifications will need to be developed at pace.

The 2020 New Skills Agenda for Europe identified 12 key actions to support the development of green jobs and skills, to find out more: **https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1196**

The Campaign Against Climate Change Trade Union Group has produced helpful resources examining the employment prospects posed by climate change. Their report *Climate Jobs: Building a workforce for the climate emergency* provides a detailed and in-depth update of the One Million Climate Jobs report, demonstrating that there are many more than a million good, well paid, skilled jobs that could be created if we get serious and urgently tackle the climate emergency, as the science demands. https://www.cacctu.org.uk/climatejobs

> **IN THE BEST PART OF 20 YEARS IN THE RAILWAY, I HAVE NEVER SEEN INFRASTRUCTURE DESTROYED LIKE THAT. (SPEAKING ABOUT THE AUGUST 2020 STONEHAVEN DERAILMENT.)**
>
> Trade union interviewee

4 SCOTLAND'S CHANGING CLIMATE

Image © Scottish Canals

4. SCOTLAND'S CHANGING CLIMATE

This summary provides an overview of the UK Climate Projections for Scotland. It is intended to help build common understanding for employers, trade unionists and all workers – of the future climate that Scotland will experience.

WHAT ARE THE UK CLIMATE PROJECTIONS?

The 2018 UK Climate Projections[9], produced by the Met Office Hadley Centre, provide up-to-date information about the potential future climate in Scotland. The projections provide a range of potential climate outcomes, based on a set of four pathways for greenhouse gas emissions: a low emissions scenario (RCP2.6); two medium emissions scenarios (RCPs 4.5 and 6.0); and a high emissions scenario (RCP8.5)[10].

Annual air temperature change (˚c) compared to 1981-2000[11]

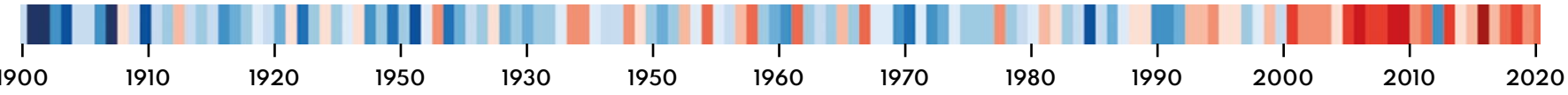
HOW HAS SCOTLAND'S CLIMATE CHANGED?

Over the last few decades Scotland has experienced a warming trend, shifting rainfall patterns, and rising sea levels:

Scotland's **10 warmest years** on record have all occurred since 1997. The average temperature in the last decade (2010-2019) was **0.69˚C warmer** than the 1961-1990 average, and the warmest year on record was 2014[12].

There has been an **increase in rainfall** over Scotland in the past few decades (with an increasing proportion of rainfall coming from heavy rainfall events). The annual average rainfall in the last decade (2010-2019) was **9% wetter** than the 1961-1990 average, with winters 19% wetter[13].

Mean **sea level** around the UK has risen by approximately **1.4 mm/year** from the start of the 20th century[14].



HOW WILL SCOTLAND'S CLIMATE CHANGE IN THE FUTURE?

The changes in climate that we are already experiencing are projected to continue and intensify:

- Average temperatures will increase across all seasons
- Typical summers will be warmer and drier
- Typical winters will be milder and wetter
- Intense, heavy rainfall events will increase in both winter and summer
- Sea levels will rise
- Reduced frost and snowfall
- Weather will remain variable and may become more variable

The amount of change that occurs will depend on how successful we are in reducing greenhouse gas emissions globally.

WHAT ARE LOW AND HIGH EMISSION SCENARIOS?

The following sections provide examples of projected changes in temperature, rainfall and sea level under both low and high emission scenarios.

Low emissions scenario
The low emissions scenario assumes sustained and rapid reductions in greenhouse gas emissions globally. The projections associated with the low emissions scenario represent the minimum level of climate change that we are likely to experience, and are shown in blue in the graphs and tables below.

High emissions scenario
The projections associated with the high emissions scenario outline more extreme changes that are projected if greenhouse gas emissions continue to increase and emission reduction targets are missed. They are shown in red in the graphs and tables below.

Low and high emissions scenarios are two of four potential climate outcomes included in the 2018 UK Climate Projections, medium low and medium high emissions scenarios are also available.

Scotland has already significantly reduced its greenhouse gas emissions[15], and set a legally binding target to reach net-zero levels by 2045 at the latest[16]. However, the current global emissions trajectory remains closer to the medium-high emission scenario[17]. This underlines the importance of both further global efforts to reduce emissions and of adaptation policies and actions that take account of a range of emission scenarios.

WHAT DO THE GRAPHS SHOW?

This summary includes graphs that show projected changes in climate for both low and high emission scenarios. The graphs or sections of graphs shown in blue show the low emissions scenario. The graphs or sections of graphs shown in red show the high emissions scenario.

The UK Climate projections provide a likely range of change. The dark, bold lines in the centre of the graphs show the central estimate (50th percentile) of projected change. The shading shows the wider range of change which is considered likely (10th – 90th percentile). Changes outside of this range are not impossible, but statistically unlikely based on our best understanding.

Although the graphs show a 'smooth' trend in the 50th percentile, individual years will continue to vary significantly year-on-year.

All of the graphs and data presented in sections 3 – 4 are *Probabilistic Projections* from the latest UK Climate Projections available at http://data.ceda.ac.uk/badc/ukcp18/data/land-prob

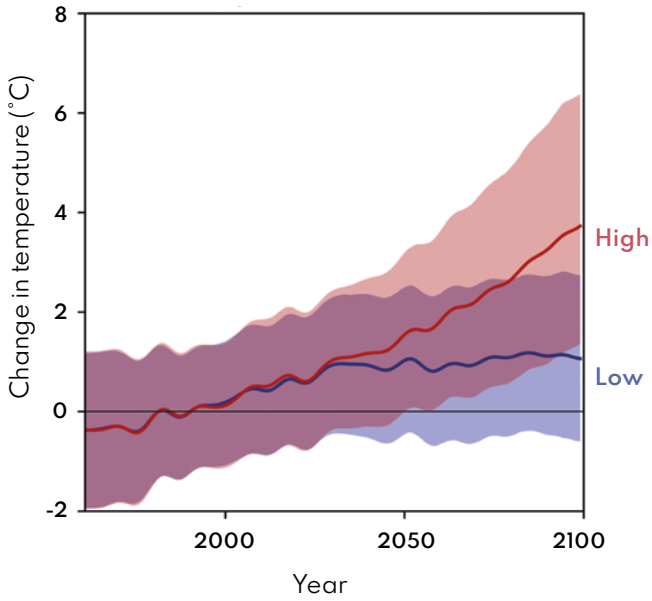
Winter

TEMPERATURE

Winter temperatures are projected to increase.

These changes do not mean that cold snaps and/or severe snowstorms can't or won't occur in the future. The 'Beast from the East' caused considerable disruption in early 2018, and similar cold/snow events remain a possibility despite the overall warming trend.

Scotland winter mean temperature compared to 1981–2000



The table on the right shows projected change in average winter temperatures for 2050 and 2080 under low and high emission scenarios. These figures are taken from the graph above.

The figures in **bold** are the central estimate (50th percentile). The figures below are the range of change that is considered likely (10th – 90th percentile).

Change in winter temperature (˚C)

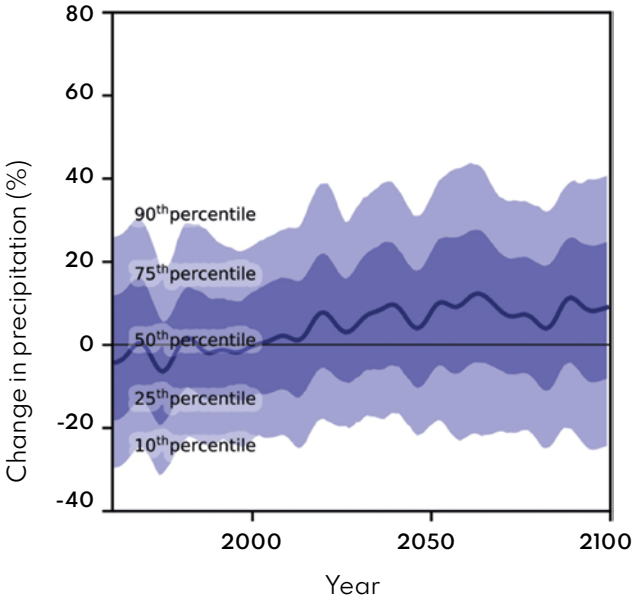
2050		2080	
Low Emission	High Emission	Low Emission	High Emission
1.0˚C -0.5˚C ↔ 2.5˚C	**1.5˚C** 0.0˚C ↔ 3.2˚C	**1.1˚C** -0.5˚C ↔ 2.7˚C	**2.7˚C** 0.6˚C ↔ 4.9˚C

RAINFALL

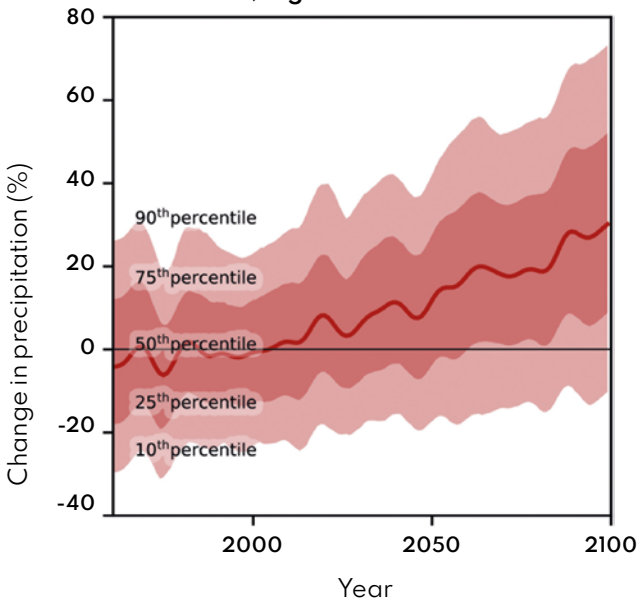
Winters are projected to become wetter, in terms of both the total amount of rainfall and the number of wet days. The increase is expected to be larger in western Scotland compared to the east. The intensity of rainfall on the wettest days is also expected to increase[18].

The graphs on the right show projected change in winter rainfall over this century under a low (blue) and high (red) emission scenario.

Scotland winter precipitation relative to 1981–2000, low emissions scenario



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



The table on the right shows projected change in winter rainfall for 2050 and 2080 under low and high emission scenarios. These figures are taken from the graphs above. The figures in **bold** are the central estimate (50th percentile). The figures below are the range of change that is considered likely (10th – 90th percentile).

Change in winter rainfall (%)

2050		2080	
Low Emission	High Emission	Low Emission	High Emission
8% -19% ↔ 36%	**12%** -17% ↔ 42%	**5%** -24% ↔ 33%	**19%** -14% ↔ 56%

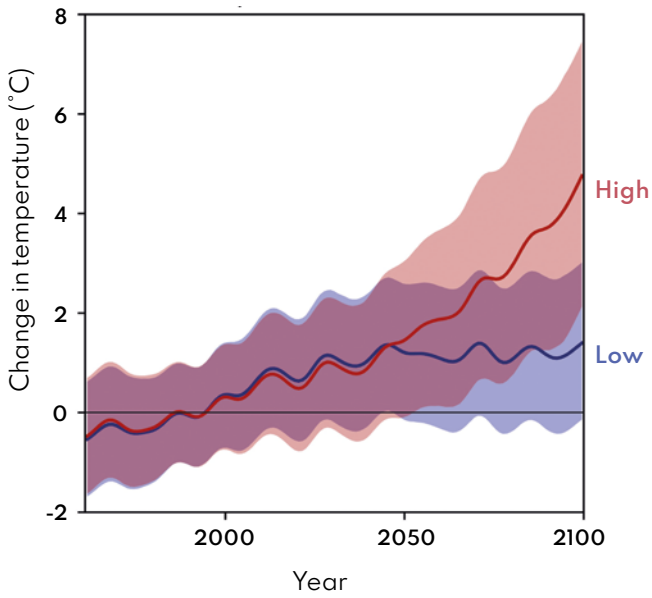
Summer

TEMPERATURE

Although 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 and 25%. With future warming, hot summers by mid-century could become even more common, near to 50%[18].

Scotland summer mean temperature compared to 1981–2000



The table on the right shows projected change in summer by 2050 and 2080 under low and high emission scenarios. These figures are taken from the graph above. The figures in **bold** are the central estimate (50th percentile). The figures below are the range of change that is considered likely (10th – 90th percentile).

Change in summer temperature (˚C)

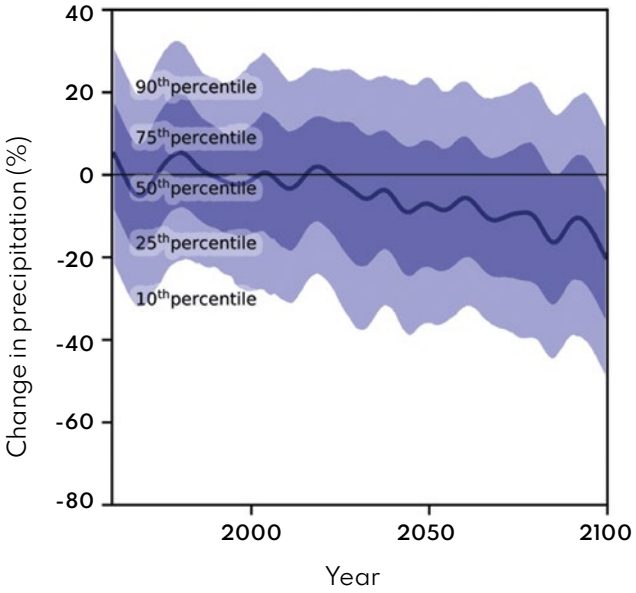
2050		2080	
Low Emission	High Emission	Low Emission	High Emission
1.2˚C -0.2˚C ↔ 2.6˚C	**1.5˚C** -0.1˚C ↔ 3.1˚C	**1.1˚C** -0.4˚C ↔ 2.6˚C	**3.0˚C** 0.8˚C ↔ 5.3˚C

RAINFALL

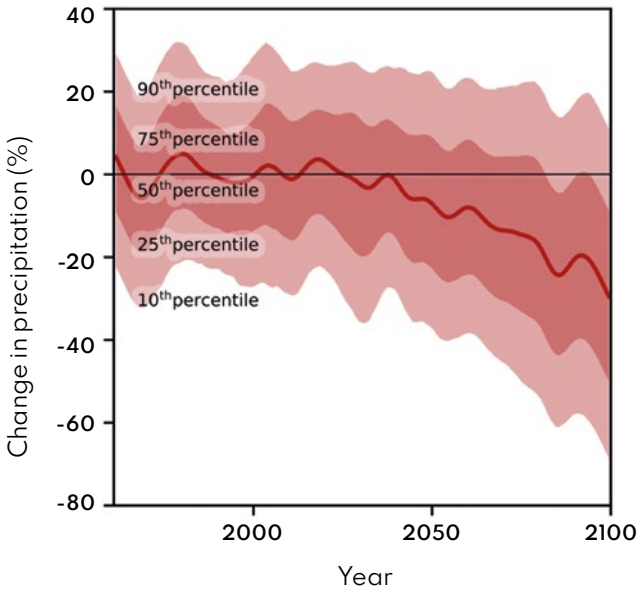
Summer rainfall is projected to decrease, although extreme downpours will be heavier despite the overall drying trend[18].

The graphs on the right show projected change in summer rainfall over this century under a low (blue) and high (red) emission scenario. Summer rainfall decreases under both scenarios, with the greatest decrease projected under the high emission scenario.

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



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

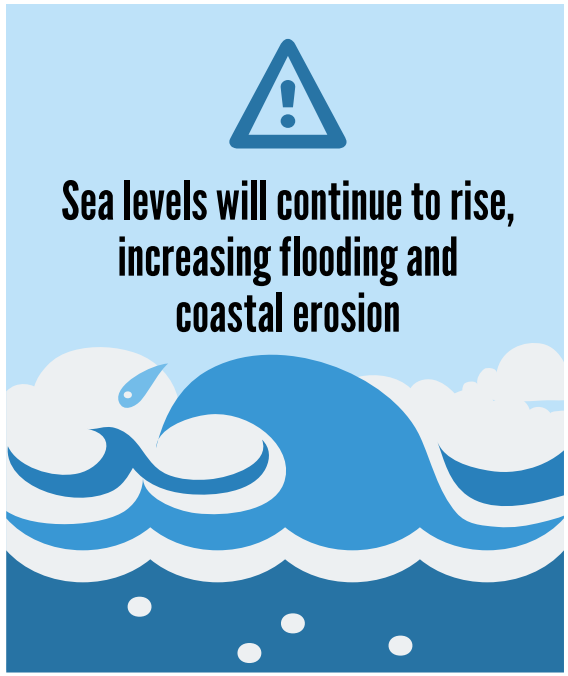


The table on the right shows projected change in summer rainfall for 2050 and 2080 under low and high emission scenarios. These figures are taken from the graphs above. The figures in **bold** are the central estimate (50th percentile). The figures below are the range of change that is considered likely (10th – 90th percentile).

Change in summer rainfall (%)

2050		2080	
Low Emission	High Emission	Low Emission	High Emission
-7%	**-8%**	**-11%**	**-18%**
-36% ⟷ 23%	-38% ⟷ 24%	-40% ⟷ 21%	-54% ⟷ 21%

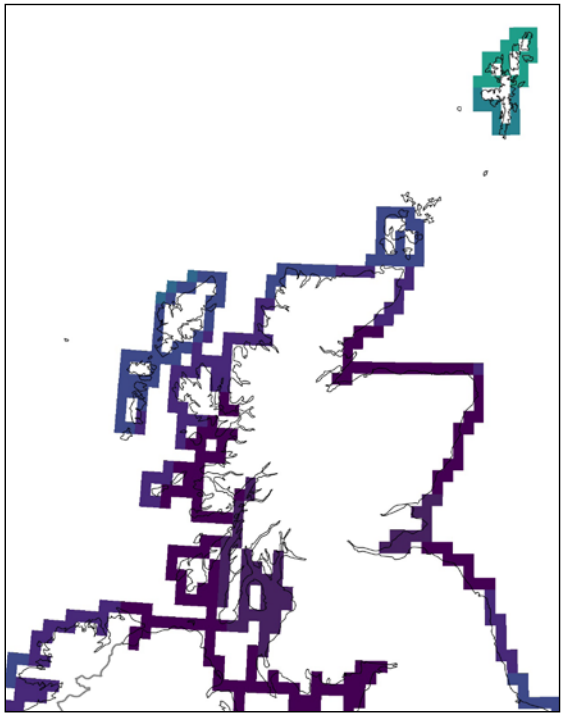
Sea level



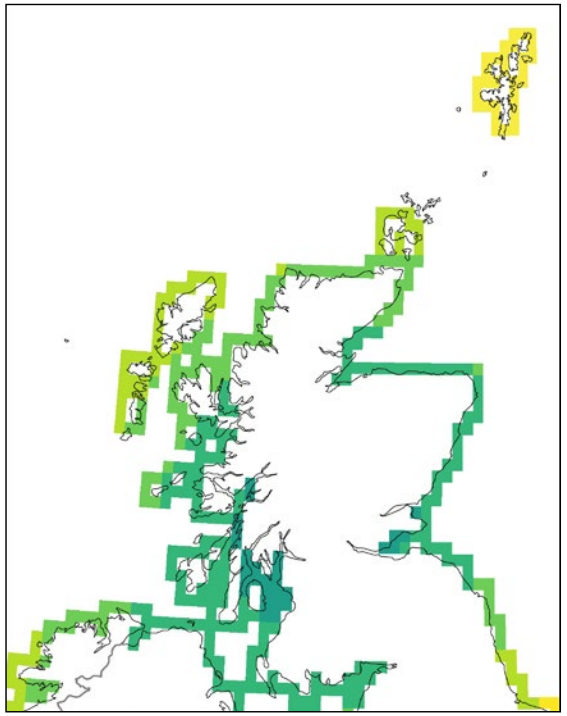
Sea levels around the coast are projected to rise in the decades ahead. There are regional variations in projected sea level rise primarily due to vertical land movement caused by rebound from the last ice age.

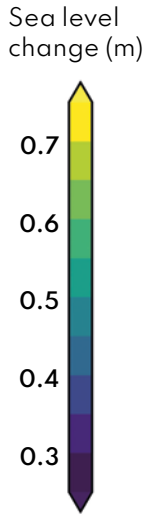
The maps on the right show median projected sea level rise around Scotland's coast by 2100 under low and high emission scenarios.

Median projected sea level change by 2100 for low emissions compared to 1981-2000



Median projected sea level change by 2100 for high emissions compared to 1981-2000





The graphs on the right provide more detail and show sea level rise projections for Edinburgh, Stornoway, and Lerwick for high and low emission scenarios. The greatest projected sea level rise in Scotland occurs in the north, with the lesser projected increase in the central belt.

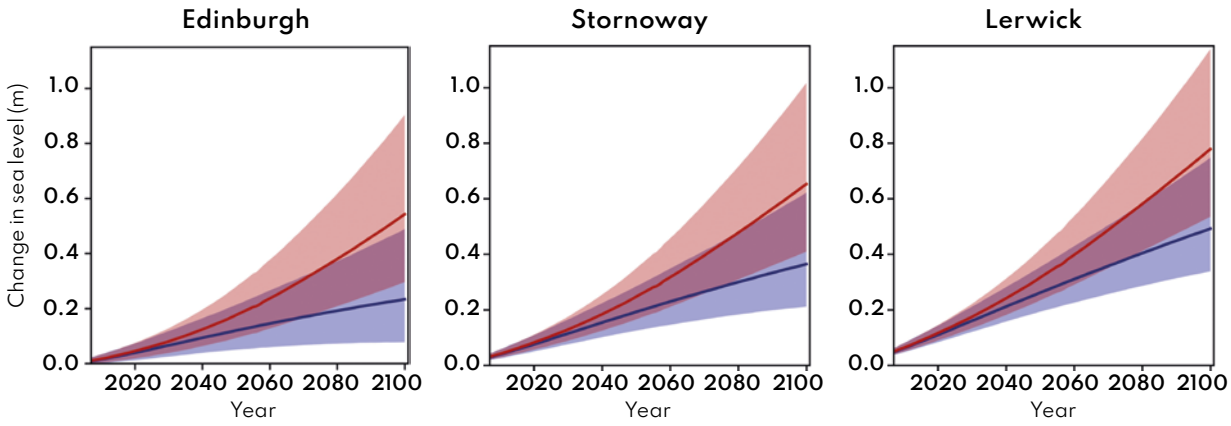
The table on the right shows projected sea level rise by 2050 and 2080 under low and high emission scenarios. These figures are taken from the graphs above. The figures in **bold** are the central estimate (50th percentile). The figures below are the range of change that is considered likely (5th – 95th percentile).

The sea level rise projections provided are considered the most likely range of change. However, the possibility of a sea level rise outside this range cannot be ruled out.

An estimated range for low probability, high impact sea level rise around the UK to 2100 was developed for the previous UK Climate Projections (UKCP09). This range is referred to as a H++ Scenario and is still valid. The low probability H++ absolute sea level rise estimate for the UK is 0.93m – 1.9m by 2100.

The Met Office recommends making use of multiple strands of evidence, including H++ scenarios when assessing vulnerabilities to future extreme water levels[19].

Change in sea level (m above 1981–2000 mean sea level)



Change in sea level (cm)

	2050		2080	
	Low Emission RCP 2.6	High Emission RCP8.5	Low Emission RCP2.6	High Emission RCP8.5
Edinburgh	**12cm** 5cm ↔ 21cm	**18cm** 9cm ↔ 28cm	**19cm** 7cm ↔ 37cm	**38cm** 21cm ↔ 62cm
Lerwick	**26cm** 19cm ↔ 35cm	**32cm** 23cm ↔ 42cm	**40cm** 28cm ↔ 58cm	**58cm** 41cm ↔ 82cm
Stornoway	**19cm** 13cm ↔ 28cm	**25cm** 17cm ↔ 35cm	**30cm** 18cm ↔ 48cm	**48cm** 31cm ↔ 72cm

5 RESULTS OF THE THIRD UK CLIMATE CHANGE RISK ASSESSMENT

Image © Aberdeenshire Council

5. RESULTS OF THE THIRD UK CLIMATE CHANGE RISK ASSESSMENT

An independent risk assessment of how projected changes to the climate will impact the UK is produced every five years by the Climate Change Committee (CCC).

Image © Forestry and Land Scotland

The Third Independent Assessment of UK Climate Change Risk evidence report was published by the Climate Change Committee (CCC) in June 2021 and highlighted that climate change is a systemic risk that will affect all areas of life. The Independent Assessment used to help inform the third UK Climate Change Risk Assessment (CCRA3) assesses 61 risks and opportunities from climate change to Scotland, including to business, infrastructure, housing, the natural environment, our health, and risks from the impacts of climate change internationally. Of these 61 risks and opportunities, more action is needed in Scotland now to address 32 of them, with sustaining current action only deemed appropriate in four cases. The risk assessment identified the following climate risks in Scotland that have a high future magnitude score and where more action is required now to address them, after considering any existing adaptation responses:

- The impacts of climate change on the natural environment.
- An increase in the range, quantities and consequences of pests, pathogens, and invasive species.
- The risk of climate change impacts, especially more frequent flooding, and coastal erosion, causing damage to our infrastructure services.
- The impact of extreme temperatures, high winds, and lightning on the transport network.
- The impact of increasing high temperatures on people's health and wellbeing.
- Increased severity and frequency of flooding of homes, communities, and businesses.

- The viability of coastal communities and the impact on coastal businesses due to sea level rise, coastal flooding, and erosion.
- Damage to our cultural heritage assets because of temperature, precipitation, groundwater, and landscape changes.
- Impacts internationally that may affect the UK, such as risks to food availability, safety and security, risks to international law and governance from climate change that will affect the UK, international trade routes, public health, and the multiplication of risks across systems and geographies.

The Climate Change Committee identified that "alarmingly, the gap between the level of risk we face and the level of adaptation underway has widened. Adaptation action has failed to keep pace with the worsening reality of climate risk"[20].

To learn more about how climate change will translate into risks for workers and workplaces, check out: UK Climate Change Risk Assessment including the Scotland summary and sector fact sheets https://www.ukclimaterisk.org/

Dynamic Coast 2 has been calculating what sea level rise will mean for Scotland by increasing understanding of what is at risk and where. Findings suggest:

- **Sea level rise is a key factor in the increasing extent of coastal erosion seen across Scotland's soft, erodible shores.**
- **9,000 commercial buildings lie within 50m of Scotland's current coastline which equates to ~£1.59 billion of Scotland's total GDP per year**
- **Only 29% of Scotland's built environment is protected behind artificial defences.**
- **At least £340 million of road, rail and property is expected to be affected by erosion and sea level rise by the 2050s.**
- **It will not be technically or economically feasible to protect all these assets from rising seas and the increased risks posed by storm surges on Scotland's firths and estuaries.**

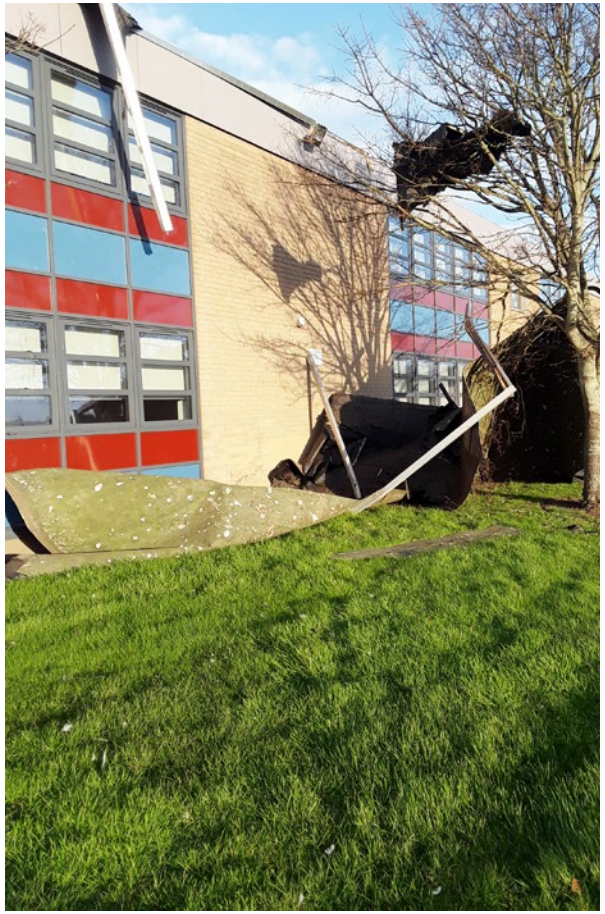


Image © Unison

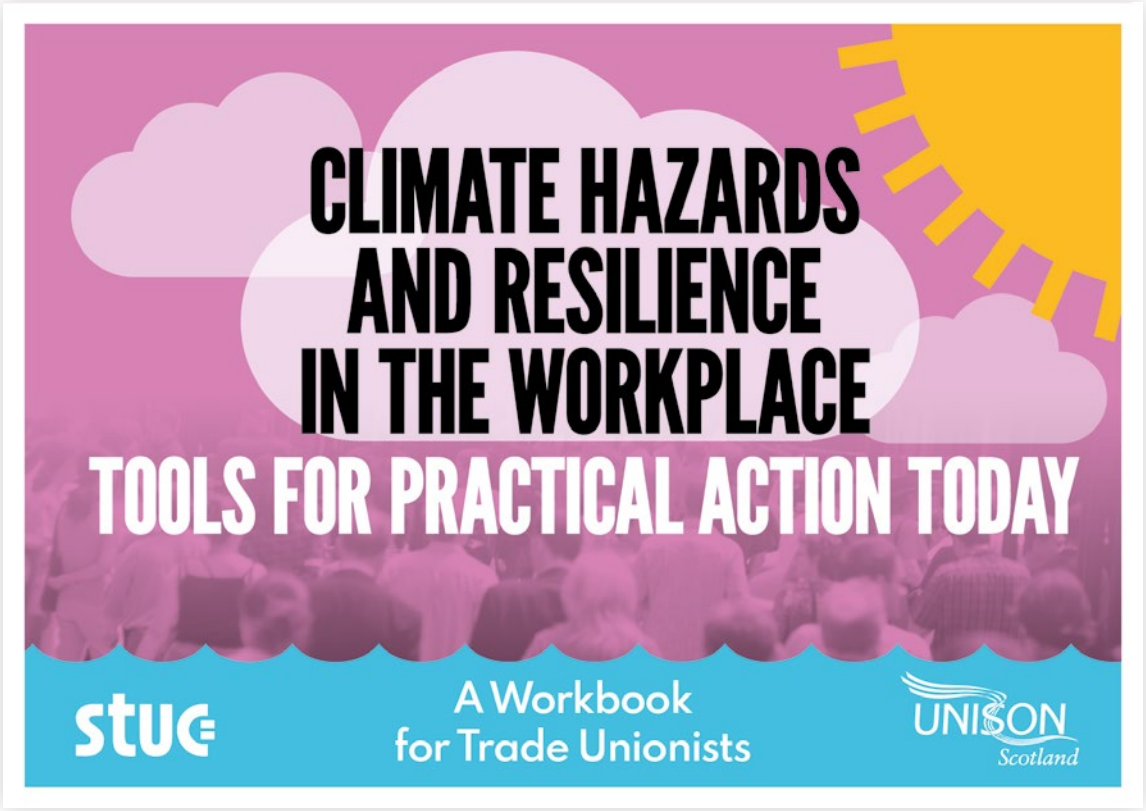
Covid in Fife: Kirkaldy vaccine centre remains shut after heavy rain forced weekend closure

Fife Today, 05/07/21 https://www.fifetoday.co.uk/health/coronavirus/covid-in-fife-kirkcaldy-vaccine-centre-remains-shut-after-heavy-rain-forced-weekend-closure-3296153

6 WHAT YOU CAN DO

6. WHAT YOU CAN DO

This handbook has been designed to make the case for acting on climate hazards in Scotland's workplaces and demonstrate why responding to climate change risks is a matter of social justice. It is part of a set of resources including a workbook that includes check list and risk assessment templates that can help trade union representatives take practical action in their workplace.



Download the workbook at
www.adaptationscotland.org.uk/how-adapt/tools-and-resources/climate-risks-workplace-protecting-workers-changing-climate

7 KEY TERMS

Image © Aberdeenshire Council

7. KEY TERMS

Adaptation
Adapting to climate change means taking action to prepare for and adjust to both the current effects of climate change on the climate, and the predicted impacts in the future. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. Adapting to climate change is not primarily concerned with reducing greenhouse gases – actions to reduce emissions are called mitigation. Adaptation is closely linked to the concept of resilience. For the specific case of environmental change and climate adaptation, many feel adaptation should be defined strictly as deliberate changes made in response to climate change.

Cascading risks
Multiple hazardous events are considered cascading when they act as a series of toppling dominoes, such as flooding and landslides that occur after rain over wildfires. Cascading events may also refer to events which arise because of one climate hazard impacting an asset or infrastructure system, which quickly cascades to impact other systems. Cascading events can also refer to impacts which begin in small areas, but which intensify and spread to influence larger areas.

Co-benefits
A 'co-benefit' is a beneficial outcome that happens when by tackling one issue, we create significant benefits in other areas. It can be helpful to highlight these when talking about climate change as they can be a good way of maximising support for action. For example, creating workplace green spaces can benefit wildlife and nature, reduce flood risks, and provide areas for relaxation for workers and support better physical and mental wellbeing. It may also be easier to achieve results in discussions with employers if the union can present adaptation as a win/win outcome.

IPCC
The Intergovernmental Panel on Climate Change is the United Nations body for assessing the science related to climate change and provides policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. IPCC assessments provide a scientific basis for governments at all levels to develop climate related policies, and they underlie international climate negotiations.

Just transition
A just transition seeks to ensure that the substantial benefits of the transition from a fossil fuel powered economy to a net zero society are shared widely, while also supporting those who stand to lose economically. A just transition is an integral part of many of the global commitments adopted by countries such as the Paris Agreement on Climate Change and UN Sustainable Development Goals.

Lock-In
In climate change the term 'lock-in' means a policy or course of action which commits the individual or organisation to an unsustainable route and which restricts future choices.

Maladaptation
Failure to adjust adequately or appropriately to the environment or situation. Maladaptation is a process that results in increased vulnerability to climate variability and change, directly or indirectly, and/or significantly undermines capacities or opportunities for present and future adaptation.

Net Zero
Net zero refers to a target of completely negating the amount of greenhouse gases produced by human activity, to be achieved by reducing emissions and implementing methods of absorbing carbon dioxide from the atmosphere (i.e., tree planting, sea grass restoration and industrial carbon capture and storage). To avoid the most catastrophic impacts of climate change the IPCC estimates that "global net emissions of carbon dioxide will need to fall to net zero by 2050".

Resilience
An ability to withstand, recover from, or adjust readily to negative external changes. Climate change adaptation and resilience to climate change are related, but subtly different concepts. Climate resilience encompasses a dual function, to absorb shock and allow recovery. In comparison climate adaptation is viewed as a group of processes and actions that help a system absorb changes that have already occurred or may be predicted to occur in the future.

Threshold effects
'Threshold effect' can be defined as something reaching a level or 'tipping point' at which something else starts to happen or change. Climate changes are increasingly occurring in nonlinear ways. Globally the idea of threshold effects can be illustrated by ice loss in the West Antarctic, the ice is not lost in a linear way, coastal glaciers are undermined by warming seas and once these are breached the loss of the wider icesheet can be rapid and catastrophic. Within a workplace the threshold effect could be the point at which systems fail or activities become dangerous to sustain.

Transformational adaptation
Transformational approaches to adaptation call for systems thinking and socio-institutional analysis, and offer the potential to deliver a larger, more sustainable, permanent, long-term change than individual adaptation actions.

Climate change jargon and acronyms can be baffling to outsiders, to find out more about what key terms mean: https://unfccc.int/process-and-meetings/the-convention/glossary-of-climate-change-acronyms-and-terms

Image © Forestry and Land Scotland

Storm Malik kills two: Boy, nine, and 60-year-old woman are killed by falling trees as Britain whipped with 147mph gales, knocking out power for 36,000 homes – and second Storm Corrie will bring MORE gales today

Daily Mail 29/01/22 https://www.dailymail.co.uk/news/article-10454593/Britain-battered-80mph-winds-Storm-Malik-sweeps-in.html

ENDNOTES

1 Institute for Economics and Peace, September 2020 https://www.theguardian.com/environment/2020/sep/09/climate-crisis-could-displace-12bn-people-by-2050-report-warns estimates that 1.2 billion people face being displaced within 30 years as a result of the climate crisis

2 https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA-Evidence-Report-Scotland-Summary-Final-1.pdf

3 https://stuc.org.uk/campaigns-and-events/campaigns

4 https://stuc.eaction.online/OurClimateOurBuses

5 https://stuc.org.uk/campaigns-and-events/campaigns/homes

6 IPBES-IPCC Biodiversity and Climate Change, June 2021 https://www.ipbes.net/events/launch-ipbes-ipcc-co-sponsored-workshop-report-biodiversity-and-climate-change

7 Voice and Place: How to plan fair and successful paths to net zero emissions' UK TUC

8 https://www.tuc.org.uk/research-analysis/reports/voice-and-place-how-plan-fair-and-successful-paths-net-zero-emissions

9 Read more about the climate projections on the MetOffice website https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index and about the Hadley Centre here https://www.metoffice.gov.uk/weather/climate/met-office-hadley-centre/30-years-hadley-centre

10 RPC is explained in this glossary https://www.ipcc-data.org/guidelines/pages/glossary/glossary_r.html

11 The 'climate stripes' for Scotland is based on UKCP Climate trends analysis done for this summary by the Met Office, 2020

12 Temperature data from UKCP Climate trends analysis done for this summary by the Met Office, 2020

13 Rainfall data from UKCP Climate trends analysis done for this summary by the Met Office, 2020

14 Mean sea level figures are from the UKCP 18 Science Overview Report (update April 2019) https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Overview-report.pdf Pg 50, Met Office

15 This blog looks at the latest emissions figures for Scotland https://www.climatexchange.org.uk/blog/how-is-scotland-progressing-towards-net-zero/

16 https://www.netzeronation.scot/ is a Scottish Government website that sets out what net-zero greenhouse gas emissions mean for Scotland and the actions people in Scotland can take.

17 The UNEP Emissions Gap Report 2019 finds that even if all unconditional Nationally Determined Contributions (NDCs) under the Paris Agreement are implemented, we are still on course for a 3.2°C temperature rise https://www.unenvironment.org/resources/emissions-gap-report-2019

18 You can read more about all the projections in the UK Climate Projections: Headline Findings (2019) https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp-headline-findings-v2.pdf

19 Read more about using H++ scenarios in this MetOffice fact sheet on sea level rise and storm surge https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-fact-sheet-sea-level-rise-and-storm-surge.pdf

20 https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/ (key findings)

Science Centre roof ‘melts’ on hottest ever June day in Glasgow

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

Rail Insider 18/08/20 https://railinsider.co.uk/2020/08/18/edinburgh-glas-gow-line-closed-for-two-months-after-canal-breaches-its-banks-severely-damaging-railway/#:~:tex-t=WayNewsOperations-,Edinburgh%2DGlasgow%20line%20closed%20for%20two%20months%20after%20canal,its%20banks%2C%20severely%20damaging%20railway&text=Water%20pours%20through%20the%20breach,heads%20downhill%20towards%20to%20railway

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

Sniffer, Edinburgh Climate Change Institute,
High School Yards, Infirmary Street, Edinburgh, EH1 1LZ

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