



**CLIMATE IMPACTS FOR UKRAINE –  
WORKSHOP MAY 2021**

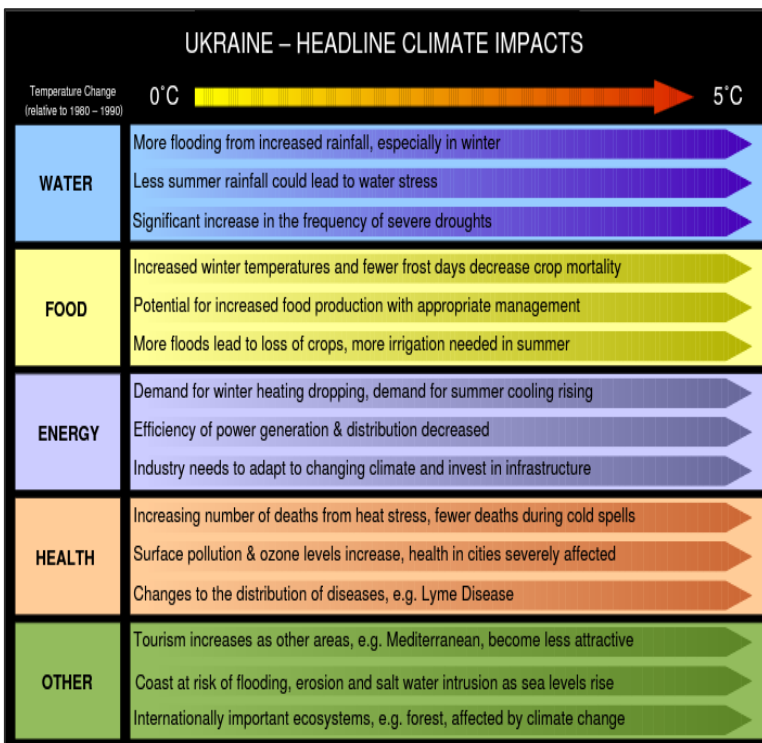


## Background to project

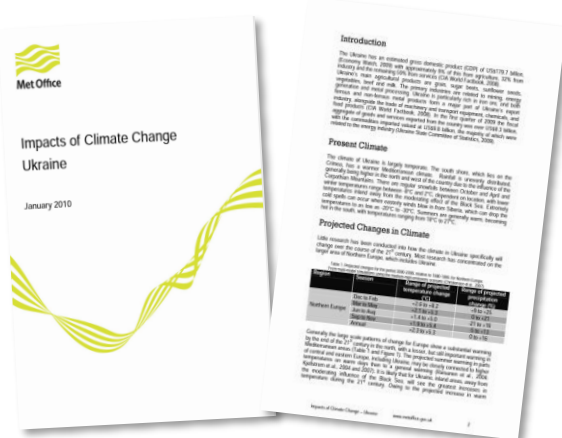
Ahead of the COP26 negotiations being hosted by the UK in November 2021, the British Embassy in Ukraine have commissioned the Met Office to conduct a study on climate change impacts in Ukraine. The 9-month project, from April to December 2021, aims to provide the British Embassy Kyiv, and wider stakeholders involved in climate change mitigation and adaptation (e.g. Ukraine government) with key outputs including a main report (to be finalised by September 2021) and additional summary outputs for wider dissemination, including a short video; all outputs will be available in English and Ukrainian.

## Update to the 2010 report

- The study builds on the short report published by the Met Office in 2010 on the impacts of climate change for Ukraine, which described impacts on the key sectors of water and food security, energy and infrastructure, and the natural and built environment.
- This included the impact of changing weather extremes on Ukraine's energy and transport infrastructure, decreasing summer river inflows and risks of widespread water stress and increased fire danger, as well as the potential opportunity to improve Ukraine's wheat crop yields.
- An updated assessment of current trends, future climate projections and impacts information relevant to Ukraine will be conducted, drawing on the published literature since 2010, and growing volume of available future climate model projections. New projections from the latest generation of global climate models included in the upcoming Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) will be included, ensuring the report is up-to-date with the latest developments in climate science.



Headline statements (above) from the 2010 Ukraine report from the Met Office (below)



The project is being led by the International Climate Services team at the Met Office. The team will be engaging with a range of stakeholders to better understand what information requirements are needed in Ukraine, for example to inform action on greenhouse gas mitigation policies as well as adaptation to address climate change risk. This will help ensure the knowledge outputs produced can best inform policy and risk management for climate risks and hazards (e.g. heat/cold extremes, droughts, floods) in priority economic sectors.



For your consideration, below is the draft report outline illustrating what will be included in the report. The workshop will enable us to gather your input and recommendations and use this to revise and improve the structure of the report, ensuring the most useful and necessary information is included for stakeholders who will use it to inform decision-making.

Things to consider:

- What is missing?
- What else should be included?
- Is the structure appropriate?
- How else could the information in the report be communicated?

## Draft report outline

# Title: Climate Change Impacts in Ukraine

### 1. Introduction

- a) Purpose, audience, and background to project
- b) Aims & objectives
- c) Framing: climate change as a threat multiplier, and relevance to COP26
- d) A note on the impacts of COVID-19 on global emissions
- e) Background on current related initiatives and projects
- f) How the report is intended to be used

### 2. Current climate in Ukraine

- a) Description of regional and seasonal climate, including hydrological information
- b) Presentation and discussion of observed trends, including the influence of human-caused greenhouse gas emissions and natural drivers of climate variability on these trends, where understood in the literature
- c) Discussion of current vulnerabilities and risks
- d) Examples of recent weather and climate events that have had significant impacts to life, livelihoods and socio-economic consequences in Ukraine

### 3. Projected changes in climate

- a) Explanation of key influences on future climate in Ukraine, including greenhouse gas concentration scenarios consistent with IPCC (RCPs and SSPs)
- b) Maps, tables and/or descriptions of future projected changes to annual and seasonal temperatures and rainfall over Ukraine
- c) Sector-specific future climate information and indices (e.g. heatwaves, drought risks)

### 4. Conclusions and headline impacts (may also be communicated as an infographic)

- a) Summary of projected changes in key hazards
- b) Can be visualized by sector, hazard, or by region
- c) Brief discussion of roles of mitigation and adaptation to address projected future climate impacts

### 5. References and supplementary information

Climate change is having an observable and quantifiable impact on Ukrainian infrastructure, agriculture and the environment. Below are some examples of hazards that have had a significant impact on Ukraine in recent years. An example of how climate information has been used to aid mitigation and adaptation decisions to reduce the impact of climate change in the UK is shown on the following page.



## Drought

- Droughts are occurring in the agricultural regions of northern and north-eastern Ukraine, where such conditions were not previously an issue (1).
- Ukraine experienced five droughts during 2000-2010, each affecting up to 80% of the main crop area (2,3). In 2003 and 2007 drought events generated losses in grain production estimated at ~€3 billion (3,4).
- Drought can also have a significant effect on: soil erosion and soil conditions, health and hygiene, and the economy,



## Flooding

- Ukraine has experienced several devastating floods in recent decades (in 1998, 2001 and 2008) (5).
- In July 2008 one of the biggest and most destructive floods on record occurred in the Carpathian region, resulting in 47 fatalities and the evacuation of ~40,000 people (6,7).
- In June 2020 floods in Western Ukraine resulted in over 14,000 homes being damaged (8), along with major infrastructure damage: an estimated 500km (310 miles) of roads were damaged and some routes were destroyed (9).
- Flooding can also have a significant effect on: water quality, human health issues, disruptions to industry and transport and destruction of infrastructure.



## Wildfire

- In recent years the average annual burned area of Ukraine's forests has increased from 4.4 thousand hectares (1998–2007) to 5.9 thousand hectares (2008–2017) (10). This is consistent with the increase in fire danger observed across Europe (11).
- The number of fires in Ukraine's ecosystems increased by 30% in 2020. The State Emergency Service (SES) of Ukraine reported the destruction of nearly 18,000 ha of natural systems in a single season (12).
- Fire can also have a significant effect on: air quality, biodiversity and infrastructure.

## Creating a climate resilient rail network in the UK

Climate change and severe weather pose a serious threat to the rail sector in the UK. To better prepare for the future, a range of stakeholders participated in the Tomorrow's Railways and Climate Change Adaptation (TRaCCA) project (13).

This project's aims were to enhance and share knowledge about future projections of the UK's weather and climate, better understand what the impacts of these events may be on the industry, and consider how the rail sector can improve its resilience to such events through mitigation and adaptation.



The provision of climate information has led to a number of adaptation plans for the UK's rail network. In the south west for example, improvements to drainage systems along the track, strengthening of seawalls, and raising the height of railway formations are being implemented to increase the resilience of the railway to the impacts of coastal flooding e.g., reduction of wave impact damage and overtopping, and reduction to risk and duration of flooding (14).

The benefit of increased availability and the translation of climate information for decision-making through projects such as TRaCCA include enabling the subsequent implementation of appropriate and timely adaptation and mitigation actions. Ultimately, the rail sector in the UK will become more resilient to the threat of future climate change and severe weather events in the future due to its improved access to climate information.



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