



IEAGHG Information Paper 2017-IP48; Weather Extremes Caused by Global Warming is Biggest Risk to Humans

With the European Continent currently experiencing serious problems with wild fires, a new study published¹ suggests that human deaths because of severe weather events in Europe could increase significantly if greenhouse gas emissions are not controlled. Such consequences are not limited to Europe. The number of severe weather events are increasing in the USA and droughts are affecting some 34 African Nations.

2017 Outbreak of European Forest Fires caused by urbanisation and global warming. The United Nations Office for Disaster and Risk Protection (UNISDR) reports that that an area the size of Luxembourg (258,600 hectares) has been destroyed by 677 forest fires this year across the European Union, an increase of 215% over the yearly average between 2008 and 2016². Since the start of the year 2017, fires in Bosnia, Croatia, Former Yugoslav Republic of Macedonia, France, Italy, Serbia, Spain, Portugal and Russia have destroyed tens of thousands of hectares of land. Lives have been lost, notably in Portugal where over 60 deaths have been recorded.

UNISDR put the blame squarely for this development on rapid urbanisation and climate change. UNISDR suggest the rural exodus has seen millions of people move to urban areas, has left fewer people to manage the land and forests and great quantities of combustible material that are easy to burn when temperatures increase have built up as a result. This is further amplified by climate change, which causes extreme and longer-lasting droughts and creates conditions for more intense and larger wildfires.

However, unlike most geological and hydro-meteorological hazards, UNISDR believe that wildfires represent a natural and human-made hazard, which can be predicted, controlled and, in many cases, prevented. Reducing the risk of wildfires requires collective international action in order to ensure the protection of ecosystems, human health and security. UNISDR feels that fire risk must be included in land use management and in the management of natural ecosystems including forests if we want to achieve the main goals of the Sendai Framework.

The Sendai Framework for Disaster Risk Reduction -- a 15-year international blueprint adopted in March 2015, with the aim of saving lives and reducing the economic impacts of natural and man-made hazards -- encourages governments to integrate disaster risk reduction policies in their national management policies to make communities more resilient against disasters.

See: <http://www.unisdr.org/we/coordinate/sendai-framework>

² <http://www.unisdr.org/archive/54477>



Increased risk for human population from extreme weather events in Europe is a consequence of global warming. Researchers from the European Commission's Joint Research Centre, publishing in the journal *Lancet Planetary Health*³, have assessed the longer-term risk of weather-related hazards to the European population in terms of annual numbers of deaths in 30-year intervals relative to the reference period (1981–2010) up to the year 2100. They focused on the hazards with the greatest impacts: heatwaves and cold waves, wildfires, droughts, river and coastal floods, and windstorms. The main findings were:

- That weather-related disasters could affect about two-thirds of the European population annually by the year 2100 (351 million people exposed per year) compared with 5% during the reference period (1981–2010; 25 million people exposed per year).
- Their projections suggest about 50 times the number of fatalities occurring annually during the reference period (3000 deaths) could occur by the year 2100 (152 000 deaths).
- Future effects show a prominent latitudinal gradient, increasing towards southern Europe, where the premature mortality rate due to weather extremes (about 700 annual fatalities per million inhabitants] during the period 2071–100 versus 11 during the reference period)
- The projected changes are dominated by global warming (accounting for more than 90% of the rise in risk to human beings), mainly through a rise in the frequency of heatwaves (about 2700 heat-related fatalities per year during the reference period versus 151, 500 in their projections)

They therefore predict that global warming could result in rapidly rising costs of weather-related hazards to human beings in Europe unless adequate adaptation measures are taken. They also feel their results could help the prioritisation of regional investments for adaptation in Europe.

Extreme Weather Events on Increase in the USA. The National Centres for Environmental Information (NCEI) monitor severe weather and climate events in the USA⁴. According to the NCEI, the US sustained 212 weather and climate disasters since 1980 where overall damages/costs reached or exceeded \$1 billion. The total cost of these 212 events exceeds \$1.2 trillion.

NCEI has reported that, as of as of July 7th 2017, there have been 9 weather and climate disaster events with losses exceeding \$1 billion each across the United States. These events included 2 flooding events, 1 freeze event, and 6 severe storm events. Overall, these events resulted in the deaths of 57 people and had significant economic effects on the areas affected.

For reference:

- The 1980–2016 annual average is 5.5 events,
- The annual average for the most recent 5 years (2012–2016) is 10.6 events
- The previous highest number of events were 10 in both 2011 and 2016.

The data trends suggests that 2017 could be heading for a record number of severe climate and weather events in the USA.

Severe Draughts because of global warming have affected 34 African nations. The Food and Agriculture Organisation have reported⁵ that, as the planet's climate changes, severe dry-spells are becoming more and more frequent. Since the 1970s, the land area in the world affected by situations of drought has doubled.

³ [http://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(17\)30082-7/fulltext?elsca1=tlpr](http://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(17)30082-7/fulltext?elsca1=tlpr)

⁴ <https://www.ncdc.noaa.gov/billions/>

⁵ <http://www.un.org/apps/news/story.asp?NewsID=57007#.WYw5tITyvt1>



The burden is especially high in developing countries, where agriculture remains an economic mainstay. Over 80 percent of damage and losses caused by drought are born by agriculture in the developing world. The many impacts of drought drive not only hunger and instability but cause economic losses up to \$8 billion each annually.

Africa in particular has borne the brunt. Between 2005 and 2016, 84 droughts affected 34 different African nations.

Summary

The pieces of information presented above are not a rigorous analysis of the impacts of global warming but, coming as they do from influential bodies, they make a strong statement that the impacts of global warming on the human population is severe now and will become even more severe as the planet warms further. Such realisations should be driving countries' ambitions to increase their national mitigation actions.

In closing, I would draw the reader's attention to a blog article on the IIASA web site entitled "Living in the Age of Adaptation"⁶. The Blog is based on an interview with Prof Adil Najam dean of the Pardee School of Global Studies at Boston University and former vice chancellor of Lahore University of Management Sciences, Pakistan. In the blog, he discusses the need for adaptation and mitigation and comments as follows:

"Adaptation, after all, is the failure of mitigation. We got to the age of adaptation because we failed to mitigate enough or in time. The less we mitigate now and in the future, the more we will have to adapt, possibly at levels where adaptation may no longer even be possible. Adaptation is nearly always more difficult than mitigation; and will ultimately be far more expensive. And at some level it could become impossible".

John Gale
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⁶ <http://blog.iiasa.ac.at/2017/07/26/interview-living-in-the-age-of-adaptation/>