

Mitigating the risks of climate change to the well-being of nature and people

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The Intergovernmental Panel on Climate Change (IPCC) has approved the second part of its Fifth Assessment Report (AR5), titled Climate Change 2014: Impacts, Adaptation, and Vulnerability, at the IPCC meeting in Yokohama, Japan. The key message of the report is that climate change poses serious risks to the well-being of nature and people all over the world. The observed effects of climate change have an impact on people's health, land and marine ecosystems, water supplies, and people's livelihoods, from the polar regions to the tropics and from small islands to continents. Poor countries that lack the means to adapt to these changes will suffer the worst.

"Despite our efforts, global greenhouse gas emissions continue to increase and the climate will change. We must strengthen Finland's ability to manage the risks related to [climate change](#) and adapt to it," emphasises Permanent Secretary Jaana Husu-Kallio from the Ministry of Agriculture and Forestry.

Professor Tim Carter from the Finnish Environment Institute (SYKE) is one of the lead writers of the now published report. He hopes that decision-makers will take the information produced by researchers seriously: "If adequate measures to reduce emissions are not taken, the fear is that some of the changes resulting from climate change will push us over an edge after which development can no longer be reversed. This kind of threshold could be, for example, the irreversible melting of Greenland's glaciers."

Europe's glaciers dwindling and permafrost melting

"Climate change impacts Europe in many ways. The ice sheets of the Alps and other mountain ranges are dwindling and an increasing portion of the permafrost is melting. In the northern coniferous forest belt, including Finland, the growth of forests is accelerating, and some species are growing more abundant, while others decline. The risk of forest fires is also increasing in southern Europe," Tim Carter explains about the regional effects of climate change.

In Finland, the effects of climate change may weaken the water quality of water systems, as the ground remains unfrozen for longer periods of time in the autumn and winter. Water protection efforts will have to adapt to increased run-off, erosion, and nutrition loads. This will result in new challenges, particularly in agricultural water protection. The warming of Finland's climate is already evident in Finnish fauna; birds, for example, are migrating earlier in the spring and later in the autumn.

Food shortages expected

The estimated future [crop yields](#) will not be enough to feed the world in 2015. "The climate has already changed and affected crop yields. The effects observed have been local, and for the most part negative. The most notable effects have had to do with [extreme weather events](#), such as heavy rains, heat waves, and draught."

"Crop yields and food production per capita have generally improved over the last 40 years, due to the development of farming culture and technology, which has resulted in better fertilisers, better crop strains and more efficient production. However, climate change will result in more extreme weather, draught, heat, and heavy rains. In northern areas, global warming will initially also present benefits, such as longer growth

periods," says Senior Researcher Kaija Hakala from MTT Agrifood Research Finland.

Severe and wide-ranging global changes

Warming, acidification, and decreasing oxygen levels will change marine life. Warming has already resulted in plankton, fish, and invertebrate communities shifting northwards. In northern marine areas, the diversity and biomass of fish populations have increased. Water warming has also altered the distribution of large species of fish found in the open sea. As marine and coastal ecosystems change, their diversity and the products and services derived from them will weaken. Those who depend on coastal areas for their livelihoods, such as fishing communities in the tropics and arctic areas, will suffer.

Rising sea levels, coastal flooding and tidal waves cause danger to life and risk of injury, and hinder livelihoods in low-lying coastal areas and in small island nations. These problems will impact poor population groups in particular. In some areas, flooding will also pose problems to urban populations.

Agricultural trade will grow more difficult and earnings from it will decrease due to the insufficient availability of drinking and irrigation water and the decreasing productivity of farming. These problems will have a particularly severe impact on poor farmers in dry regions.

Extreme weather events will hinder important basic services, such as water, electricity and health and rescue services. Mortality, morbidity and other adverse effects will increase during heat waves, particularly among vulnerable urban population groups and those who work outdoors.

Adaptation required in addition to mitigation

Countries all over the world have begun to develop climate change adaptation plans and strategies. Finland has been a pioneer in this regard, and Finland's reformed adaptation strategy is currently being widely circulated for comments. In Europe, the EU's adaptations strategy has led to adaptation planning being incorporated into, for example, the use and management of [coastal areas](#) and water systems and the risk management of natural disasters.

"Currently we are adapting mainly to past events when we should be adapting to future threats. However, it is good that governments, companies and communities are gaining experience in adaptation, since this experience can be utilised to better help society, and more ambitiously adapt to changes," says Chris Field, the Co-chair of IPCC Working Group II.

IPCC gathers information to support decision-making

The IPCC's Fifth Assessment Report consists of the now published report along with a report on the state of climate, which was published last September in Stockholm, and a report on climate change mitigation, which will be finalised at a meeting in Berlin from 7 to 11 April. A summary of the individual reports will be completed in autumn 2014.

The Intergovernmental Panel on Climate Change was called together by the World Meteorological Organization WMO and the UN's environmental programme UNEP. The goal of the panel is to support decision-making related to [climate policy](#). Its tasks include assessing scientific knowledge related to climate change and its effects, as well as various [climate change mitigation](#) measures. During 2010–2013, some

813 writers took part in drawing up the report, five of them from Finland.

More information: www.ipcc.ch/

Provided by Finnish Environment Institute (SYKE)

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