

# CROATIA



## CLIMATE CHANGE

Most of Croatia has a moderate climate with warm summers. Coastal areas have a Mediterranean climate with hot, dry summers and moderate winters. In mountainous areas more than 1200m above sea level, a humid, snowy climate prevails. The period from 1991 to 2000 was the warmest decade of the 20th century in Croatia. Annual precipitation is decreasing in all parts of the country, in line with the trend across the Mediterranean area. Continued climate change will bring a further rise in temperature and reduced rainfall. Warming will be greater in summer than in winter. A higher incidence of hot, dry summers, with night temperatures over 25 °C, is expected.

## HEALTH EFFECTS

To date, no systematic health impact or vulnerability assessment has been carried out. The Fifth Communication to the UNFCCC discusses potential future risks. More frequent heat-waves will pose a serious threat to human health, especially for older people and patients with chronic diseases. More hot and sunny days may also exacerbate the health impacts of air pollution, particularly from high concentrations of ground-level ozone. On the other hand, fewer cold days in winter will contribute to a decline in the number of coronary heart attacks, cerebrovascular problems and asthma attacks. Warmer and drier conditions may favour the spread of infectious diseases borne by food, water or vectors. In October 2004, the dengue-

transmitting mosquito *Aedes albopictus* was detected in Croatia for the first time; however, to date disease transmission has not been confirmed in the country. Tick-borne viral encephalitis, which is transmitted by forest ticks (*Ixodes ricinus*), occurs from spring to autumn in Croatia. Warmer and longer autumns will contribute to the extension of tick activities, and mild winters will favour tick survival. As the annual mean temperature rises, the ticks will spread to higher altitudes. A warmer and drier climate will also favour the spread of allergenic plants and an increase in the number of patients suffering from allergic respiratory diseases. It is estimated that one in every ten inhabitants of Croatia is allergic to the pollen of common ragweed (*Ambrosia artemisiifolia*); this plant was first detected in Croatia in 1941, is mostly found in the continental part of the country and is currently spreading along the coast.

## HEALTH MEASURES TAKEN TO ADAPT TO CLIMATE CHANGE

### General

Climate change and possible health effects have not, so far, been considered in the country's planning process, but are starting to be of concern. Since 2009, Croatia participates in the European alert system, Meteoalarm (<http://www.meteoalarm.eu>). This Web-based service, developed for EUMETNET (Network of European Meteorological Services), integrates all important severe weather information originating from the official National Public Weather Services of most European countries.



Optatija, Croatia

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Daily newspapers, radio and television include in their weather forecast medical advice regarding extreme heat or cold and strong winds. Biometeorological and pollen calendars also appear regularly in the daily press and in radio and television programmes. These forecasts include advice on how to protect health and prevent symptoms and enable individuals at risk to adjust their activities correspondingly. Established biometeorological research in Croatia focuses on the connection between specific meteorological parameters and human health, in terms of incidence of cerebrovascular diseases, myocardial infarction, neurovegetative disorders and respiratory diseases. An expert group recently designed a heat health action plan for Croatia.

With regard to the risk of allergy from common ragweed, citizens are obliged to remove all *Ambrosia* plants.

## HEALTH SYSTEM

Access to public health services has been improved in view of more frequent heat-wave events in the past and the future. General practitioners, public health workers and homecare nurses have been given specific training in preparation for heat-waves, including risk communication. The heat health action plan includes strengthening of the surveillance system for infectious (including vector-borne) and cardiovascular diseases. Hospital and community-based registers for the city of Zagreb are currently used for the surveillance of cardiovascular diseases. Deaths from acute myocardial infarction and unstable angina are registered, but not yet on a daily basis. Daily registration is foreseen in the framework of the heat health action plan.

## CO-BENEFITS FOR HEALTH OF CLIMATE CHANGE MITIGATION MEASURES

Climate change mitigation measures are focused on improving urban public transport systems and reviewing norms for building construction, in order to increase thermal efficiency and insulation. These may have health co-benefits through improved indoor and outdoor air quality.

## REFERENCES

Ministry of Environmental Protection, Physical Planning and Construction. Fifth National Communication of the Republic of Croatia under the United Nations Framework Convention on Climate Change. Zagreb, 2010; [http://unfccc.int/resource/docs/natc/hrv\\_nc5.pdf](http://unfccc.int/resource/docs/natc/hrv_nc5.pdf).