LANCET COUNTDOWN INDICATORS FOR ITALY: TRACKING PROGRESS ON CLIMATE CHANGE AND HEALTH

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Introduction

As a result of the ever-increasing emission of greenhouse gases, the world is now 1.2°C warmer than in the pre-industrial period, and 2020 tied with 2016 as the hottest year on record (1-3). This climatic change is already having profound impacts on the physical and social determinants of health around the world, with more frequent and extreme weather events, increased wildfire risk, sea level rise, changes to environmental suitability for infectious disease transmission, and impairments to the natural systems which human health depends on. In order to prevent the most catastrophic impacts of accelerated warming, countries committed to limiting global warming to "well below 2°C" by the end of the century in the 2015 landmark Paris Agreement. However, six years on, little progress has been made, and current climate change commitments would bound the world to 1.9-3.0°C of warming by the end of the century (4). With predicted local temperatures rising faster than global average, the Mediterranean is especially at risk. In particular, Italy's intrinsic hydro-geological vulnerability, its high proportion of elderly and urban populations, and its high ecological footprint, makes it vulnerable to the impacts of climate change and puts the health of its populations at risk.

Ambitious climate change mitigation holds the potential to deliver enormous health dividends if health is prioritised in all policies. This is not only due to the reduction in climate-related health risks, but especially due to the immediate health co-benefits that climate action could provide: some examples can be how shifting to low-carbon diets would improve health by increasing plant-based food consumption and reducing that of red meat (5) while increasing urban greenspace coverage would reduce urban temperatures, improve urban air quality, and provide spaces for social interaction and outdoor recreation (6, 7). Indeed, putting health at the centre of all climate change policies could result in millions of lives saved annually around the world, by 2040 (8). For all these benefits, the Word Health Organization (WHO) labelled the 2015 the landmark Paris Agreement as "the most important public health agreement of the century" (9, 10).

Aim and methods

This chapter aims to provide evidence of the health impacts of climate change in Italy and of the implications of the Country's response on the health of its inhabitants by adapting and refining the indicators soon to be published in the 2021 global Lancet Countdown report, to provide data

relevant to Italy. *The Lancet Countdown: Tracking Progress on Health and Climate Change* is an international research collaboration created to monitor the health dimensions of climate change and provide sound, scientific evidence to inform policy discussions that keep health at their centre. It draws on the expertise of leading experts from academic and UN institutions around the world, and annually reports its findings through indicators published in the medical journal *The Lancet*. While the collaboration reports findings primarily at a global level, national-level data is also available. Therefore, in this report, out of the 44 indicators in the 2021 global Lancet Countdown report (11), we present 17 indicators for Italy, organized within five sections that mirror those of the Lancet Countdown: 1. climate change impacts, exposures, and vulnerabilities; 2. adaptation, planning, and resilience for health; 3. mitigation actions and health co-benefits; 4. economics and finance; 5. public and political engagement. Wherever possible, data from the Lancet Countdown is enhanced and refined through the use of national statistics, and other sources of improved data available for Italy.

Results

Main findings are reported below, while a detailed description of each indicator can be found in Appendix A.

Climate change impacts, exposures, and vulnerabilities

Climate change is already affecting the health of Italian populations, with a yearly average of almost 100 million more person-days of heatwave exposure in people over 65 years of age in 2010-2020 compared to 1986-2005, and 2.3% of the total annual deaths observed in 2015 in Italy being attributable to heat exposure.

In 2020, twice the land surface was affected by at least one health month of drought than in 1950, putting food and water security at risk. The changes in climatic conditions are also affecting the environmental suitability for infectious disease transmission, with the basic reproduction potential (R_0) of dengue transmitted by *Aedes albopictus* mosquitoes having increased by 31% in 2020 with respect to the 1950-1954 baseline.

Adaptation, planning, and resilience for health

Despite clear evidence on the growing health risks, the implementation of adaptation measures to protect the health of Italian populations from climate change hazards has been slow: in September 2021, Italy had still not approved its National Adaptation Plan, submitted to public consultation in 2017. Engagement with international standards on climate change adaptation and risk assessment has also been slow: in 2020, only 18 urban centres in Italy reported the status of their climate change risk assessment plans to the CDP (Carbon Disclosure Project), and until November 2020, Italy had not reported to the World Meteorological Organisation whether its national meteorological and hydrological services provide information to the health sector, which could help inform public health measures that protect health from climate hazards.

Mitigation actions and health co-benefits

Italy's mitigation response has been insufficient to meet commitments under the Paris Agreement, and the delay may adversely impact human health. The continued use of fossil fuels is still contributing to high levels of air pollution, which made Italy the second country in the EU with the highest number of deaths attributable to $PM_{2.5}$ exposure in 2019, only after Germany. Italy was still sourcing 6% of its electricity from coal in 2018, and fossil fuels still accounted for 96% of all the energy used for road travel in 2017. At the average annual decarbonisation rate observed between 2015-2020, it would take Italy several decades to decarbonise its energy system fully. Estimates from the Lancet Countdown suggest that, in 2018, greenhouse gas emissions related to consumption of animal products represented 82% of all emissions coming from the agricultural products consumed in Italy. According to the Lancet Countdown's modelling, the associated red meat consumption might result in more than 16000 premature deaths.

Economics and finance

Partly responsible for the slow progress toward decarbonisation is the continued use of public funds to subsidise health-harming fossil fuel burning. In 2018, Italy dedicated the equivalent to 4.77% of its national health budget to this purpose. This not only results in the price of fossil fuels not reflecting their negative health and environmental externalities, but also in effective economic incentives for their continued use, hampering the transition towards a low-carbon economy

Public and political engagement

Despite the discouraging trends described above, indicators tracking public and political engagement on health and climate change as interconnected issues provide glimpses of hope. Italy has recently begun addressing the link between climate change and health in the UN General Debate, exposing this is becoming a priority in its agenda. The first mention to the link between climate change and health was made in 2016, followed by three mentions in its 2020 speech. The Italian scientific community is also increasingly addressing the climate change and health issue, with original research on the topic led by researchers in Italy growing from 3 articles in 2007 to 29 articles in 2020.

Discussion

The overall picture depicted by the analysis of the 17 indicators reveals two key findings.

The first finding is that climate change is already having negative impacts on the health of Italian populations. Importantly, these effects are not being felt uniformly across the Country or by different populations, with the most vulnerable groups being disproportionately at risk.

The second key finding is that, through accelerated action on climate change mitigation, Italy has the opportunity of delivering major and immediate health benefits to its population. Accelerated climate change mitigation through energy system decarbonisation and shifts to more sustainable modes of transport could offer major benefits to health from cleaner air and more active lifestyles. The decarbonisation of agricultural systems would similarly offer health co-benefits to Italian populations. If developed keeping people's health and livelihoods at their centre, policies to reduce greenhouse gas emissions from the agricultural and energy sectors could therefore deliver major co-benefits to health.

As respected and reliable voices, scientific leaders can foster knowledge, increase the understanding on the health dimensions of climate change, and produce evidence to help inform the development of climate policies that maximise human health and wellbeing.

However, time is running up. Unless urgent action is taken to tackle climate change, and protect the health of Italian populations, the rapidly changing climate would have catastrophic consequences on the health of Italian populations. In the upcoming UN Climate Change 26th Conference of Parties (COP26) Italy will have the opportunity of shifting the tide, and ensure it delivers a healthy, sustainable system for present and future populations.

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