

# A three way categorisation of the health effects of climate change on health is not unique

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## **A three way categorisation of the health effects of climate change on health is not unique**

To the Editor

A review article in your journal published in January 2022 describes a three-way categorisation of the health effects of climate change.<sup>1</sup> These effects are summarised as “direct (such as heat waves)” and “indirect (such as vector-borne disease incidence)”. In addition, however, this review presents as “unique” a discussion that “expands on these issues to address a third category of potential longer-term impacts on global health: famine, population dislocation, and environmental justice and education.”

Although most published literature on the topic of climate change and health categorises effects as “direct” and “indirect”, there is widespread recognition of elements of this third category. Indeed, elements of this category appear in each of three papers that were published about climate change and health in 1989, at the dawn of this literature.<sup>2</sup>

An editorial in *The Lancet*, published in April that year, while avoiding the word “famine” states that global warming (sic) “may reduce crop production, with potentially devastating effects on world food supplies.” It also warned that “armed conflicts would be more likely as countries compete for a dwindling supply of natural resources”.<sup>3</sup> The second paper (published June 1989) does use the word “famine”.<sup>4</sup> The final paper published in that year (in December) avoids the word “famine” but warns of “starvation” “especially in poor countries that are already only marginally self-sufficient with respect to food”.<sup>5</sup>

To my knowledge, the first deliberate use of a three-way framework to describe the health effects of climate change was read to the section on occupational medicine, at the Royal Society of Medicine (London), in February 1992.<sup>6</sup> An article describing this presentation was published in the following year.<sup>6</sup> It uses the word “primary” as a synonym for and in addition to the word “direct”, mainly to describe the impact of heat on health, such as from heatwaves and reduced winter cold. Instead of “indirect” the paper warns of “secondary” effects including changes in the distribution of arboviruses, malaria and respiratory and allergic diseases.

However, this paper also devotes approximately one third of its total length to a description of what it calls “tertiary” effects, including impacts on the “availability of food and water”, “refugees”, and on the “probability of conflict and on political and economic systems.” In the same month (December) a second paper was published (with the same lead author), which uses an almost identical three-way framework.<sup>7</sup> This paper also mentions famine, refugees and conflict in the “tertiary” category.

The terms “primary”, “secondary” and “tertiary”, in the context of climate change and health, were then absent from the literature for over 16 years, although brief hints of elements of the third category occasionally surfaced.<sup>2</sup> In 2010 these terms were revived, using conflict as an example of a “tertiary” effect.<sup>8</sup> This paper also stated that there “is a high probability that the current trajectory of climate change, resource depletion

and ecological loss will undermine our own civilisation.” In response, the authors argued, this “should motivate intense preventive activity.”

In 2014, this three-way framework was used as the basis of an edited book, with three chapters in the tertiary section; one on famine, one on population dislocation and the third on conflict.<sup>9</sup> Mental health effects were conceptualised as “cross cutting” as it was reasoned that psychological distress can arise from the experience or effects of any of the main three effect categories. For example, a person displaced by a super-typhoon, aggravated by warmer sea temperature and a rising sea level, may not starve, may not be displaced, nor be a participant or victim in subsequent conflict; however he or she may still be psychologically traumatised (see figure).

Similarly, issues such as social justice and education are more fairly considered as cross-cutting. To imply that these issues only apply to the third category, as the abstract in the review suggests, is to inappropriately restrict the scope of these very important issues.<sup>1</sup>

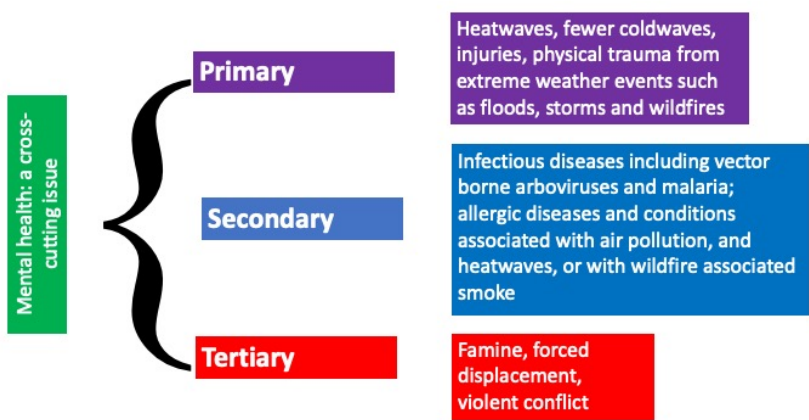


FIGURE 1. A conceptualisation of the three main forms of health effects arising from climate change in conjunction with other health determinants, especially social and political. Mental health effects are conceptualised as “cross cutting”. Adapted from Figure 26.1.<sup>9</sup>

In summary, elements of this third category of effects (here called “tertiary”) have been recognised in the literature since 1989. The three-way categorisation has been used explicitly since at least 1992, apparently without the knowledge of the 32 authors of your review.<sup>1</sup> The characterisation, in this review, of this third category as “unique” is unjustified.

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