The need for health equitable climate adaptation policies in Northern Europe

Shilpa Rao[1,a], Kristin Aunan[1]., Isabelle Budin-Ljøsne[1], Francesco Di Ruscio[1], Antonio Gasparrini[2], Pierre Masselot[2], Matteo Pinna Pintor [3] Zuzana Nordeng[1], Reija Ruuhela[4] and Bernadette Kumar[1]

1. Norwegian Institute of Public Health, Oslo, Norway
2. London School of Tropical Medicine, London, UK
3. Luxembourg Institute of Socio-Economic Research, Luxembourg
4. Finnish Meteorological Institute, Helsinki, Finland
a. Corresponding author

Abstract

Socioeconomic conditions remain an important factor in determining health outcomes in Northern Europe. In this commentary, we argue for evidence-based temperature related climate adaptation policies in Northern Europe that account for disparities in socio-economic conditions and aim at universal health coverage. We highlight the role of spatial and occupational disparities in urban areas that can be important factors in increased physical and mental health impacts related to heat and cold. We further highlight how these factors interplay with exposure to air pollution and access to green areas and worsen health conditions. Adaptation to changing climatic conditions requires both physiological acclimatization and behavioral adaptation, both of which are difficult to assess for socio-economically deprived communities. We argue for more equitable climate adaptations strategies that include i) better integration of health in climate change adaptation plans; ii) building climate resilient communities and iii) integrated surveillance and health systems. These actions could be vital in spearheading research in new cross cutting areas like climate change, migration and health.

Climate change is the greatest global health threat facing the world in the 21st century, but it is also the greatest opportunity to rethink how social and environmental determinants of health can be better integrated into climate adaptation responses [1]. A reasonable level of social security and public services is an important factor for smaller inequalities in health overall, but socioeconomic conditions continue to play an important role in determining health outcomes in Northern Europe[2]. Migrants are often over-represented in socio-economically disadvantaged groups. In this commentary, we argue for evidence-based temperature related climate adaptation policies in Northern Europe that account for disparities in socio-economic conditions and aim at universal health coverage.

Both heat and cold have significant impacts on mortality in Europe with a large share due to cold temperatures [3]. In addition, the impacts of temperature on mortality in Northern Europe are larger for the socio-economically deprived [4]. Although a decrease in cold-related mortality could be expected in Northern Europe with warming [5] this decrease has not really been observed yet [6]. This indicates a need for comprehensive climate adaptation plans in the region that adequately account for both the heat- and cold-related climate risks.

Socioeconomic factors have been shown to be important for evaluating health risk burdens associated with environmental factors[7]. There has been recent evidence of increased cold related mortality impacts among immigrants from warmer countries moving to cold related countries which have been shown to be due to physiological conditions, social integration and

social support [8]. Socio-economically deprived groups often experience spatial and occupational disparities, such as working in more physically demanding conditions, poor quality housing and living in neighborhoods under-covered by healthcare services. As a result, these groups are likely to suffer larger physical and mental health impacts related to heat and cold. They are often impacted by additional environmental disparities at urban scales. Environmental monitoring data managed by the European Environment Agency (EEA) reveals that substantial proportions of EUs urban population remain exposed to levels of air pollution and noise that exceed World Health Organization (WHO) health-based guidance values. Recent studies have shown interactive effects between air pollution and hot weather, i.e. co-exposure to air pollution seems to enhance the health impacts of heat stress, implying that air pollution abatement could mitigate some of the heat-related health burden. In addition, the lack of access to green areas in urban areas has been identified as an important factor affecting the exposure to both air pollution and extreme heat and cold conditions[9].

Climate adaptation interventions often do not take all populations into account and unless properly planned may reinforce, redistribute or create new vulnerability [10]. Adaptation to new climatic conditions requires both physiological acclimatization and behavioral adaptation, both of which are difficult to assess for socio-economically deprived communities. As discussed in [11], there are multiple drivers of adaptation in urban areas and no consensual methodology on integrating these drivers in the adaptation has emerged. Public health interventions in the context of climate change should consider the vulnerability of socially disadvantaged populations and focus on eliminating health inequalities.

We present the following action-points for achieving health equitable climate adaptation plans in Northern Europe.

1) Better integration of health in climate change adaptation plans

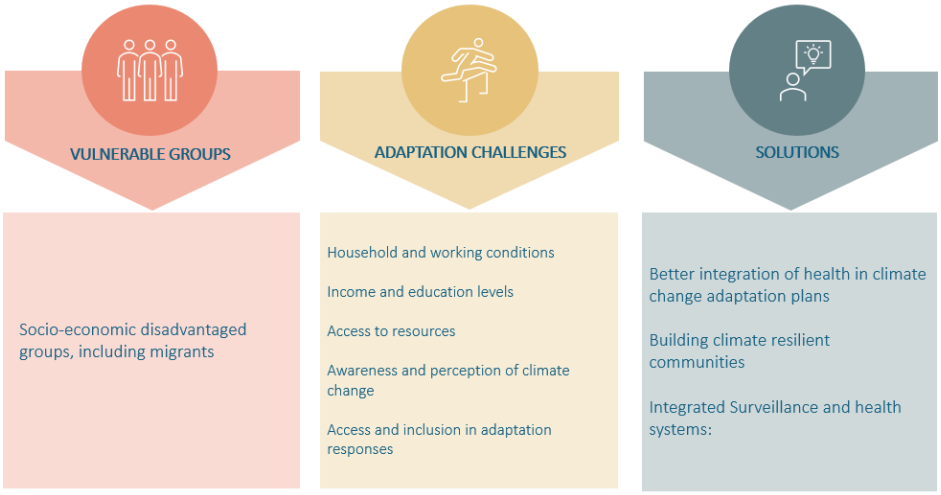
Recent evidence has demonstrated a challenge of information flows in political decisions related to climate adaptation in countries in Northern Europe [12] and highlighted the need to embrace sociopolitical and cultural complexities embedded in urban governance systems. We identify a need for public health authorities to assume a greater role in collecting community-level data on factors likely to hamper and facilitate adaptation, providing evidence-based information as well as guidelines reaching all social groups ensuring a prompt and effective climate change adaptation. Good health is a prerequisite for functional societies from birth to death, therefore, when developing climate adaptation plans, policy makers should consider particularly extreme weather conditions (e.g., extreme snowfall, flooding, heat waves), and implement measures to prevent accidents (e.g., falls on icy pavements) and increase awareness of climate risks among vulnerable groups and health care professionals[13].

2) **Building climate resilient communities:** While countries in Northern Europe show an increased adaptive capacity among the population to rigid cold climates [3], these studies do not adequately account for neighborhood level socioeconomic differences in population. Mapping vulnerabilities should be done at the finest geographic scale possible, to facilitate community understanding of the current challenges associated with climate change and how those could alter over time [14]. We argue for the development of high-resolution data on socio-ecological vulnerabilities at local scales and including socio-economically disadvantaged groups in the co-design of relevant adaptation options.

3) **Integrated Surveillance and health systems**: We identify a need for surveillance and warning systems to be developed with 1)relevant populations being involved in the design to integrate their needs, 2) ensure that the systems are available at no cost and provide

information in lay terms and in relevant languages, 3) using technical platforms that are easy-to use, or using other means (e.g., announcements on TV, radio, leaflets), 4) regularly evaluating the usefulness of the systems for the vulnerable groups and making necessary adjustments to ensure that the systems provide information about relevant health impacts. There is a further need to train social and health workers in the early prevention and identification of health hazards due to climate variations and to teach vulnerable groups to recognize signs of health hazards.

Figure 1: Adaptation challenges and solutions in Northern Europe for socio-economically disadvantaged groups



These actions we propose are also crucial to the newly emerging cross-cutting area of climate change, migration, and health[15][and can be a basis for building up more research on safeguarding the health of migrant populations in Europe under changing climate.

We would like to circulate a call to focus on the adverse health impacts of climate change among diverse populations and to implement climate adaptive strategies in Europe that ensure better health for all.

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