THE UNIVERSITY OF MELBOURNE

The multiple health benefits of climate mitigation measures *by sector*

About climate mitigation measures

Climate mitigation measures:

- involve taking actions such as introducing policies, legislation and incentive schemes that reduce greenhouse gas (GHG) emissions
- can contribute to ambitious action on climate change, in line with Paris Agreement commitments
- reduce other harmful emissions (eg, air pollutants), as emissions are often produced by the same sources
- exist across sectors and governance scales (ie, global, regional, national, state, local)
- must address inequalities across scales (ie, global, national, state, local)
- can have health benefits by reducing the most health-harming impacts of climate change (eg, preventing deaths and injuries) when health is an explicit consideration during their development.
- need to be tailored to domestic circumstances and population needs to maximise local health benefits and avoid regressive actions and/or health co-harms/trade-offs
- generally include a suite of both regulatory and market-based strategies.

Why are mitigation measures important for health?

Extreme weather events, such as heatwaves, wildfires, floods and drought, will become increasingly frequent. These types of events can have substantial impacts on health, exposing people to burns and injuries, dangerous levels of air pollution, contaminated water and infectious diseases, loss of livelihood and properties, as well as mental-health conditions, such as post-traumatic stress disorder, depression and anxiety.

While out of scope for this resource, it is important to acknowledge the critical role that well-designed adaptation policies can play in reducing climate-related health impacts by building resilience to current experiences of climate change.

A carefully designed carbon pricing mechanism is one strategy considered relevant to all sectors that can bring about direct and broader health benefits.

ENERGY

(emissions primarily from electricity production for homes, workplaces, schools, and hospitals)

Health benefits that arise from reduced air pollution

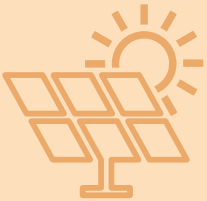
Mitigation measures that:

- Develop clean energy technologies
- Improve energy efficiency
- Change the energy system structure
- Expand renewable energy use
- Reduce fossil fuel use

Introduction of global carbon price >

▼ 1M

prevented deaths by 2050



▲ 27%

US solar energy increase >

US$298B

in public-health benefits

INDUSTRIAL

(emissions from processes used to produce goods and materials)

Health benefits that arise from reduced toxins and air pollution

Mitigation measures that:

- Reduce emissions intensity
- Improve energy efficiency
- Expand renewable energy use
- Reduce fossil fuel use
- Increase the use of low-emission materials

65%

renewable energy in China by 2050 >

US$222B

worth of health benefits

Electrifying industrial sectors >

▼37M

prevented premature deaths by 2060

AGRICULTURE

(emissions from animal and plant food production, and soil)

Health benefits that arise from eating a low-emissions diet

Mitigation measures that:

- Increase livestock farming efficiency
- Increase sustainable land management and use, eg regenerative agriculture practices
- Reduce fossil fuel use
- Reduce animal-based food production
- Reduce food transportation
- Improve agricultural technology

Transition to plant-based diet >

▼ 70%

reduction in GHG emissions

▼ 10%

prevented deaths by 2050

Replace 50% meat and dairy in UK >

▼ 37,000

prevented deaths from heart disease and cancer per year

TRANSPORT

(emissions from cars, buses, trucks, ships, trains, and planes)

Health benefits that arise from reduced air and noise pollution and increased physical activity

Mitigation measures that:

- Decrease the use of motor vehicles
- Where motor vehicles are used, prioritise public over private transport and increase use of low- or zero-emission (eg, electric) models
- Increase active transport (eg, walking, cycling) and public transport

▲ 18 mins

increase in walking & cycling per day >

▼ 14%

reduction in GHG emissions

Replace 10% car trips with cycling in NZ >

USD$308M

saving in health costs

BUILDINGS AND CITIES

(emissions associated with building materials, heating and cooking, and urban planning)

Health benefits that arise from clean and efficient buildings, compact cities, active living and reduced air pollution

Mitigation measures that:

- Reduce fossil fuel-powered energy use and incentivise renewable energy sources
- Increase energy efficiency
- Provide equitable, accessible, and affordable public transport
- Increase safe walking and cycling infrastructure
- Increase use of low-carbon building materials

Energy-efficient measures > reduce CO_2 emissions

▼ 55 Mt

2000–2016 green building standards >

▲ US$5.8B

in climate and health benefits

NATURE-BASED SOLUTIONS

(sustainable solutions that are supported by nature and address emissions associated with deforestation and ecosystem degradation)

Health benefits that arise from increased green space and its use

Mitigation measures that:

- Restore and Increase land and soil health
- Improve freshwater and marine ecosystems
- Increase forestation, conservation, protected areas and urban greening

30 mins

green space use per week > reduce depression and high blood pressure

▲ 10%

increased neighbourhood tree canopy >

▼ 400

prevented premature deaths per year

What are key characteristics of the health benefits of climate mitigation measures?

Health benefits from implementing mitigation measures:

- can be achieved through numerous modifiable pathways
- can be direct and/or indirect, physical and/or mental in nature
- can occur immediately, intermediately and/or longer-term, and often accrue sooner than the direct benefits of reducing GHG emissions
- need to be pursued, as climate adaptation measures on their own are limited in their capacity to protect human health, given limits to adaptation
- are estimated through a variety of study designs and methods (generally undertaking four broad steps: 1) scoping; 2) impact assessment; 3) valuation; and 4) sensitivity/uncertainty analyses) and ideally involving engagement of key stakeholders from the outset
- are an increasingly important consideration in all countries given ageing populations, many of whom have pre-existing health conditions
- can partially or completely offset the costs associated with implementation.

A selection of sector-specific health benefits is presented in the infographic shown in this brochure.

What additional benefits can arise from implementing climate mitigation measures?

- Ecosystem benefits through reducing biodiversity loss
- Economic benefits through reduced healthcare costs, development, growth, employment and productivity opportunities
- Resource-efficiency benefits through changes in solid waste and resources/materials
- Benefits from avoided conflict and disasters associated with changes in climatic events
- Equity benefits through well-designed mitigation policies that support vulnerable and at-risk populations
- Energy security benefits through diversifying energy sources and reducing dependence on external energy sources
- Increased agricultural crop yields due to reduced air pollution (ground-level ozone).

What additional research or resourcing is needed on the health benefits of climate mitigation measures?

There is currently limited research on health benefits in the context of:

- marine ecosystems
- green space
- vulnerable and marginalised populations
- the circular economy
- the subnational level
- developing countries, particularly those in Africa and Asia
- using evidence from intervention studies to evaluate effectiveness
- broader engagement with the concept through interdisciplinary research teams
- their role in policy and integrated decision-making.

Additional investments are needed to support:

- formal collaborative arrangements with key stakeholders and decision-makers
- capacity building in developing countries
- access to additional data sources.

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