
Health burden and costs attributable to the carbon footprint of health systems in the EU

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Introduction



Buildings consume 35% global energy

Contributing to 40% of CO₂ emitted

Environmental impact of around **5%** of global emissions



European Green Deal

Goal: Improving well-being of populations



renovated, energy
efficient buildings



cleaner energy and
cutting-edge clean
technological
innovation



Objective

Estimate the burden of the health sector's carbon footprint within the European Union (EU).

Sources



Methodology

Shared Socioeconomic pathways

S1 - High growth

S2 - Baseline

S3 - Low growth

S4 - EU Goal reached

Sustainability

Policy based on sustainable development
Low consumption
Low population growth
Effective international cooperation

Continue with current development plans

Regional Rivalry

Policy focused on security
High inequality
Slow economic growth
Low population growth in HIC, high growth in LMIC

Fit for 55

Baseline scenario with implementation of EU policy for reduction of 55% of GHG emissions

Health damage factors

DALY/kg CO₂ equivalent

derived from a life cycle assessment (LCA) by Tang et al. (2019)
Using RRs reported by WHO in 2014 for climate change

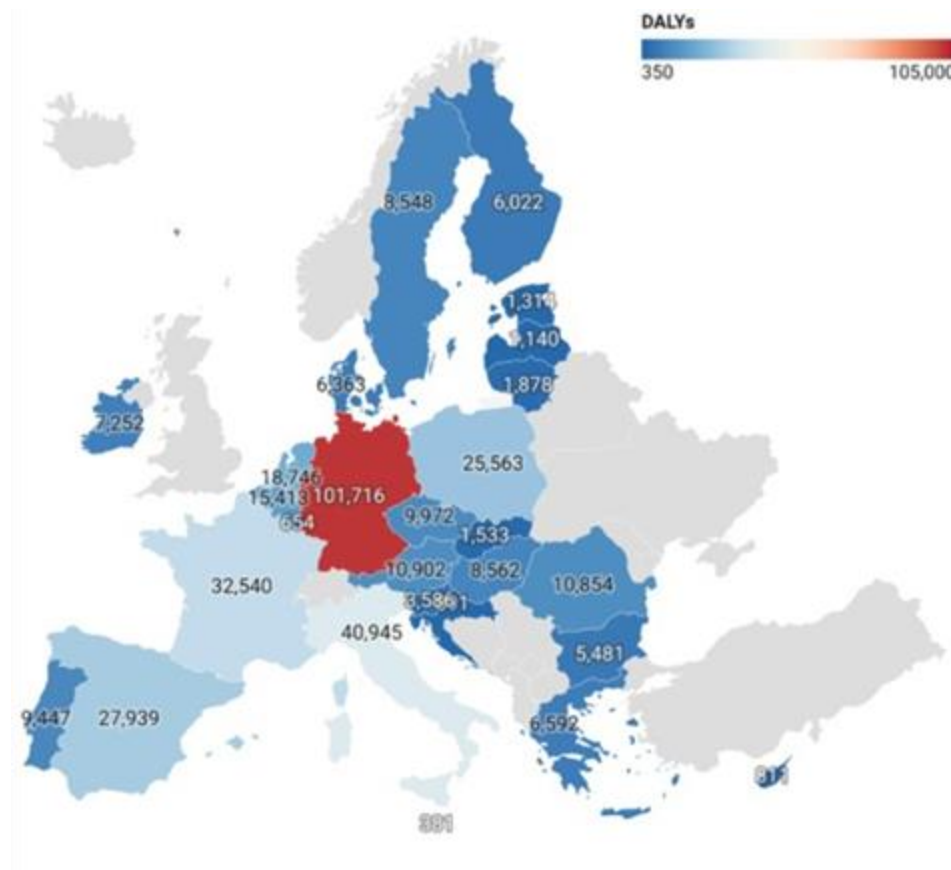
Monetization

Value of a Life Year (VOLY) ~ 70,000 euros per DALY

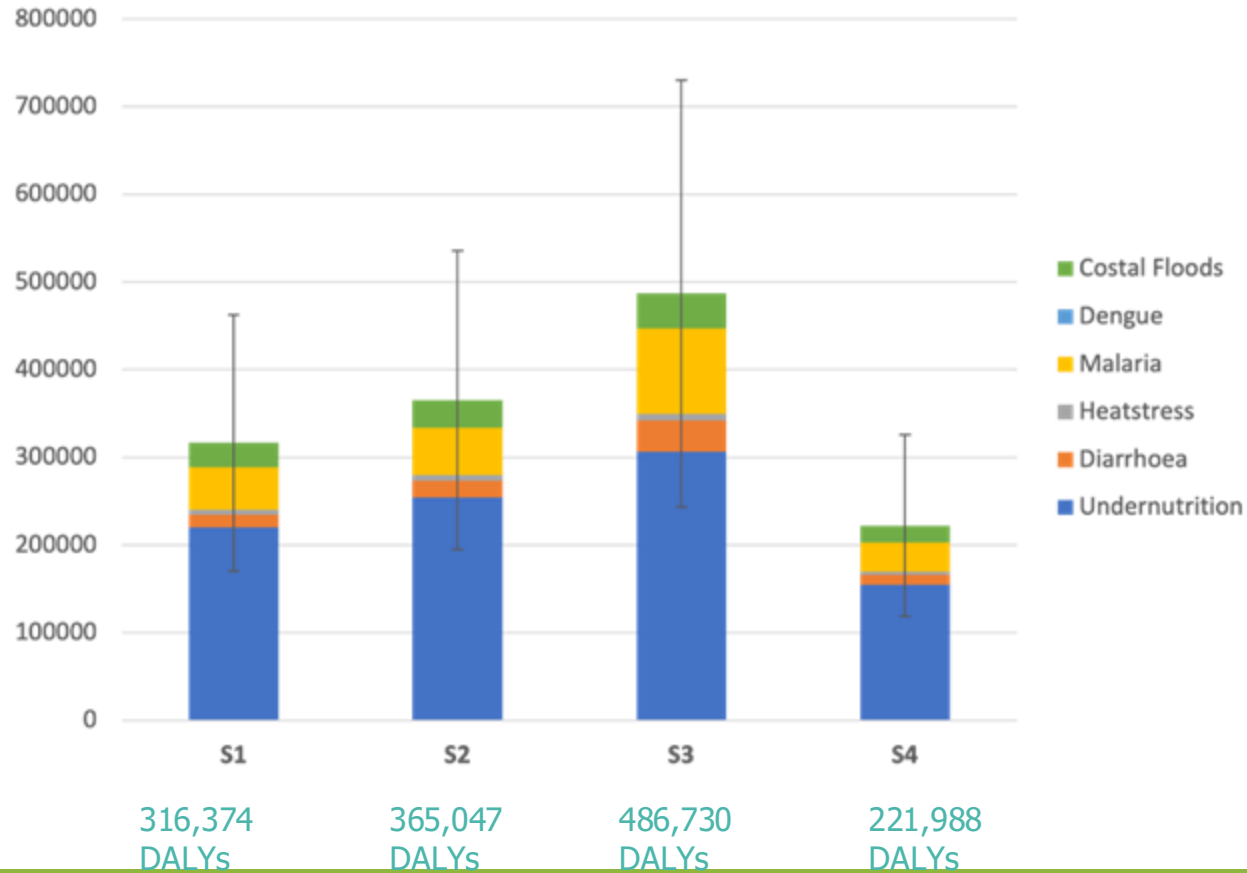
Carbon offsetting

- Typical costs for carbon offsets = 1 to 50 dollars
 - certified offsets: 9-15 dollars/tCO₂-e ≈ **12 euros**
- Cost of consumer offsets by willingness to pay (WTP) for CO₂-e
 - preferential threshold of **16 euros/tCO₂-e** for consumers
- EU's carbon tax - regulation to price carbon emissions ≈ **74 euros**

Results



Results



Results

Overall health costs attributed to climate change

Costs using Value of Life Year (VOLY)

for each scenario, until 2100

S1 - High growth	22b€
S2 - Baseline	26b€
S3 - Low growth	34b€
S4 - EU Goal reached	16b€

Costs using carbon offset

considering 2019 emissions

Price of Carbon offset	Total cost
12€	2.9m€
16€	3.9m€
74€	18m€

Discussion

- **Quantifying health impact of health systems' emissions**
 - high attributable disease burden
 - high costs associated when considering the value of a life year
 - carbon offsetting costs underpriced when considering only disease burden
- **Estimations using HDF are higher than those estimated by Lancet Countdown, which considered only PM2.5 and ozone**
 - Consider other factors, including low/high temperatures, WaSH, other extreme events
 - Need for the creation of a standardized composite risk factor
- **Need for accelerating green transition across sectors**





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Full length article

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