



Environmental health challenges: prioritization by socioeconomic cost as a tool to decision making



Raphaël KERMAÏDIC

PhD student. Chaire RESPECT
(Health Resilience, Prevention, Environment,
Climate, Transition)

Cyrille HARPET (PhD director)
Laurie MARRAULD (PhD co-director)

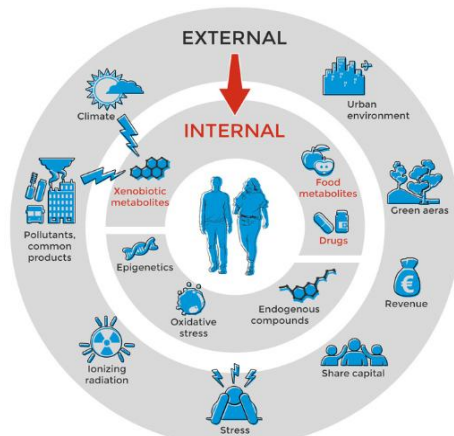


#EHMA2025

1. Context

The Impact of the Environments on Health

and the Environmental Challenges of the Health System



Source : France exposome

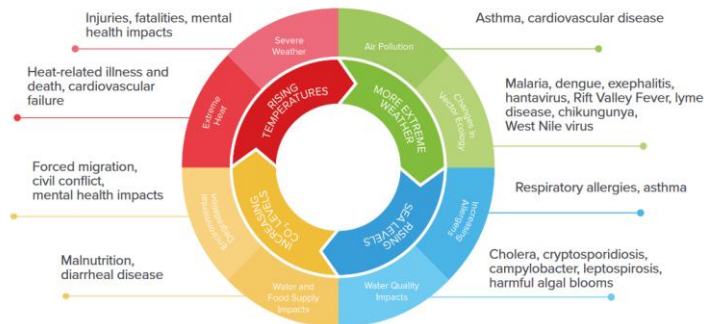
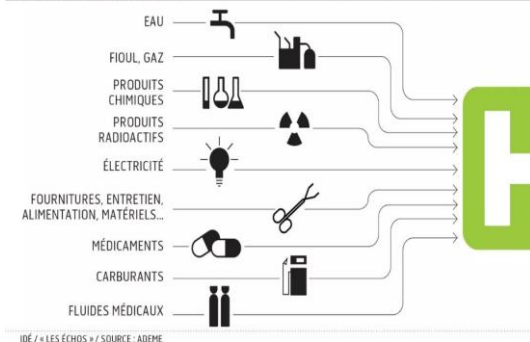


Figure 1: Impact of climate change on human health (Source: U.S. Centers for Disease Control and Prevention)
Source : Health care Without Harm. Health care's climate footprint

LES FLUX HOSPITALIERS



IDF / « LES ÉCHOS » / SOURCE : ADEME

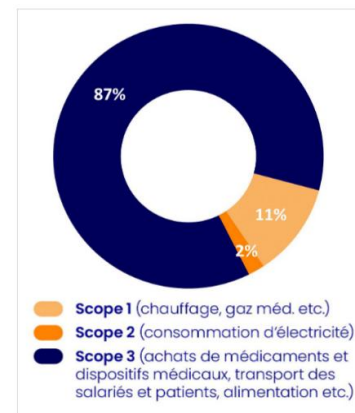


Figure 3 - Répartition des émissions du secteur de la santé par scope (MtCO₂e)
Source : calculs The Shift Project 2021
Source : The Shift Project

OBJECTIVES

- Conduct an analysis of environmental health risks through “environmental health determinants”
- Prioritize them in regard of their socioeconomic cost, as a support to policymaking and health care system ecological transition.

2. Objectives

and

Research Question

Research Question


- Which weight of environmental health determinants on society and the health system?

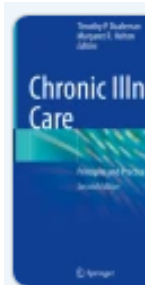
3. Method

Scoping review : Selection of Environmental Health Determinants

Environmental Health Determinants Selection crossing sources and classification :

Selected Environmental Health Determinants

- 
- **Outdoor Air Quality** (PM2,5, PM10, NOx, O3, SO2)
 - **Indoor Air Quality** (radon, lead, carbon monoxide, PM, etc.)
 - **Extreme Climatic Events** (heatwaves, floods, wildfires, drought, etc.)
 - **Water Resources** (scarcity and quality)
 - **Exposure to physical agents** (asbestos, UV, noise, pollen, etc.)
 - **Exposure to chemical agents** (endocrine disruptors, pesticides, etc.)
 - **Nutrition et physical activity** (overweight/obesity ; sedentary lifestyle/ physical inactivity)
 - **GHG Emissions and Climate Change** : health impact, material impacts
 - **Biodiversity** : general biodiversity, green spaces



Environ
Determ

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Santé
publique
France

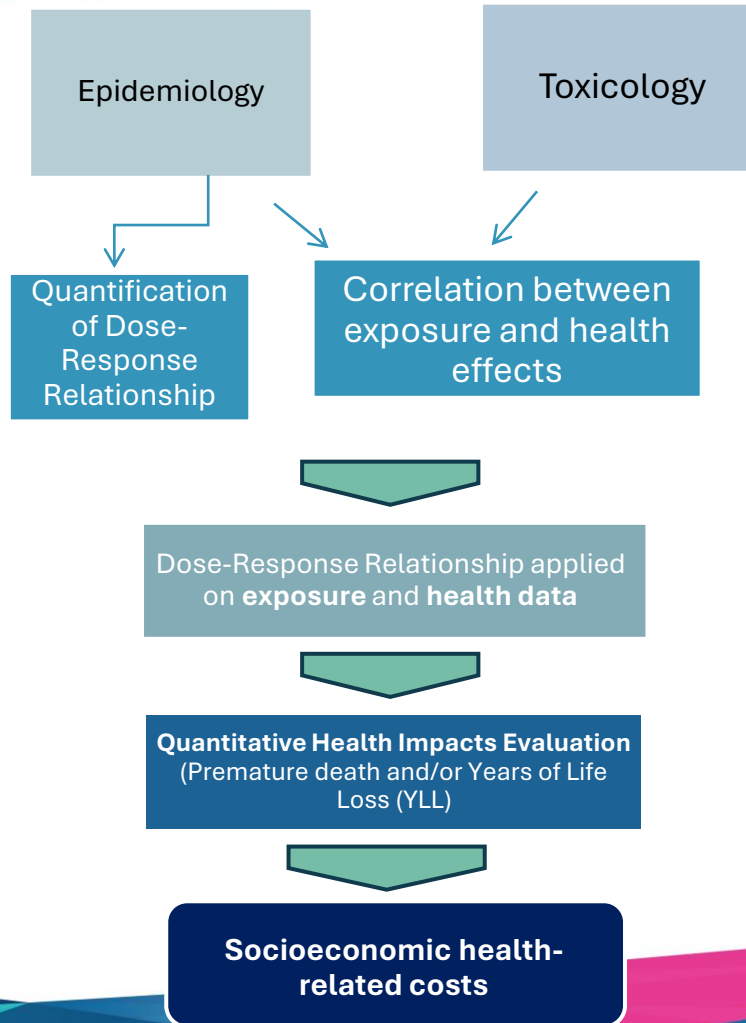
3. Method

**Collection of data
on environmental
and health
impacts and
associated costs**

National Scale

**Environmental Health
Determinants General data:**

main sources of emissions, mean of
exposure, sensitive population,
environmental impacts, short- and
long-term health effects



3. Method : Composition of socioeconomic costs

Health-Related

Healthcare
expenditures

Productivity
loss

Economic valuation
of Premature Death :
3.2 M€

Years of Life Loss :
122 000 € / YLL

Loss of wellbeing,
nuisance,
psychological
effects, etc.

Non health-related

Material and
building damages

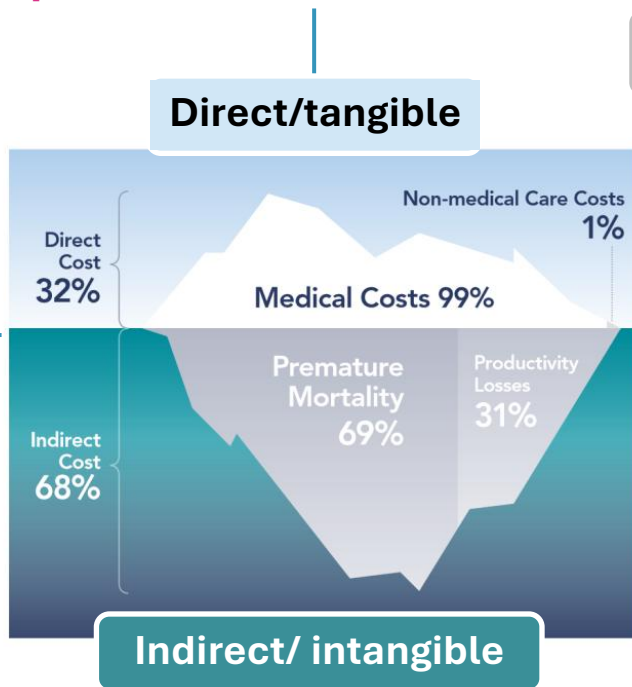
Agricultural and
forestry
production loss

Ecosystem
degradations
and
biodiversity
loss

Cost Aggregation :

**Possible if health
effects are
independent**
(ex : noise and
asbestos in
Exposure to
physical agents)

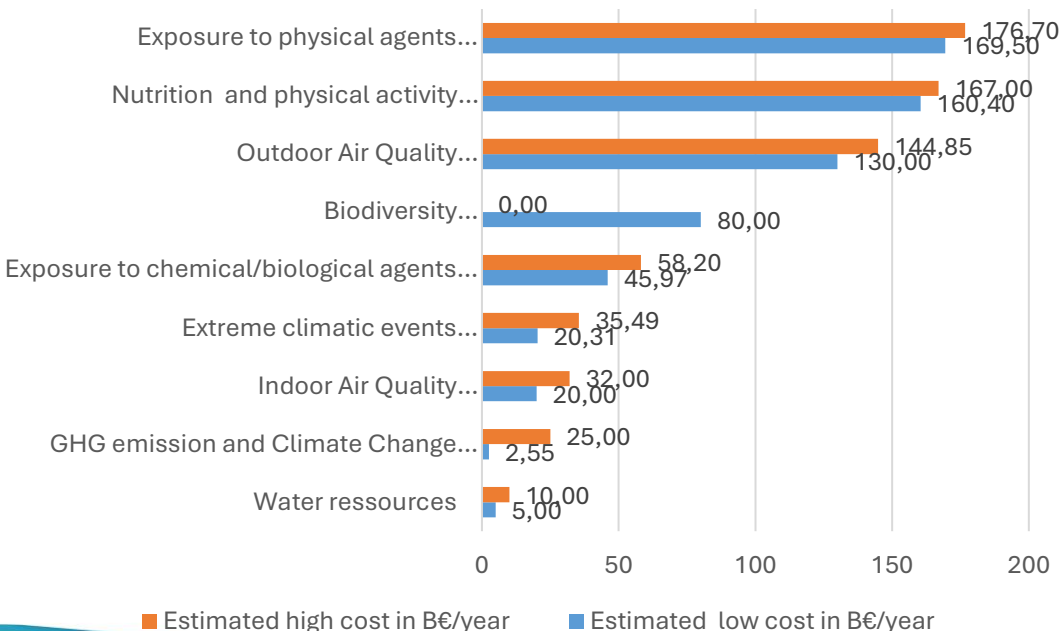
**Not possible if
health effects are
interconnected**
(ex : PM2.5 and NOx
in Outdoor Air
Quality)



4. Results : Prioritization according to annual socioeconomic costs

Socioeconomic cost diagram of 9 Environmental Health Determinants

(non cumulative) in Billion Euros per Year (B€/yr)



Noise : 147 B€/yr

Annoyance : 45,3 B€, Sleep perturbation : 34,9 B€, Cardiovascular diseases : 12,9 B€, Obesity : 18 Md€, Mental Health : 14 B€



Outdoor Air Pollution : 130 B€/yr

Economic cost of 40 000 premature death due to PM 2.5 exposure



Nutrition and Physical Activity : 167 B€/yr

- Overweight/ Obesity: 20-27 B€/yr
- Sedentary lifestyle/ Physical Inactivity: 140 B€/yr (38 000 premature death, 62 000 associated pathologies/yr)

5. Limits and Discussion

Results are tributary of available data

- Environmental Health Determinants are **interconnected and of variable nature** : The hierarchization principle is rendered inadequate
- Costs **do not take into account the same perimeters**
- Socioeconomic costs **do not account for social and environmental** inequalities in health
- Annual costs do not account for extreme episodic phenomena nor for the potentially increasing costs of **Climate Change** and **Biodiversity Loss**

Interests

- **Overview of environmental issues** and **socioeconomic burden of environmental health determinants**
- Potential **decision-making / prioritization tool in public health-environment policies**
- Air, Noise and Mobility have intertwined sources and impacts and **Environmental Public Policies could be Synergistic**

A cluster of several small, colorful geometric shapes (triangles and polygons) in shades of pink, teal, and blue, arranged in a circular pattern.

THANK YOU



QUESTIONS?