

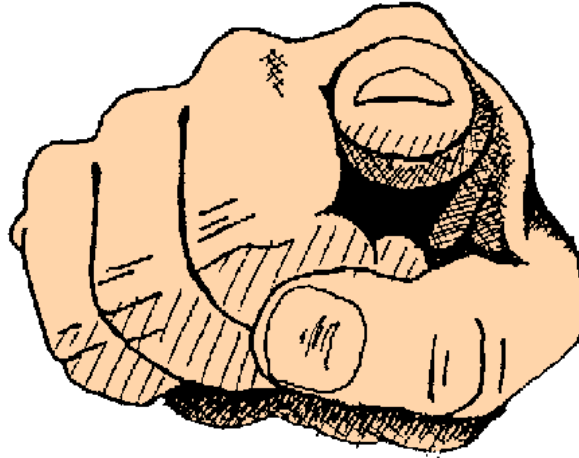
# Environmental Health Indicators: Some Principles and Challenges

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# What is an indicator?



An indicator is a tangible (measurable?) variable that represents the state of condition of something more profound or less easy to measure

# What indicators do

1. Indicators indicate!
2. Indicators inform
3. Indicators summarise
4. Indicators simplify ...
5. Indicators predict??
6. Indicators represent a relationship or a link

# Linkage

Indicators represent a link:

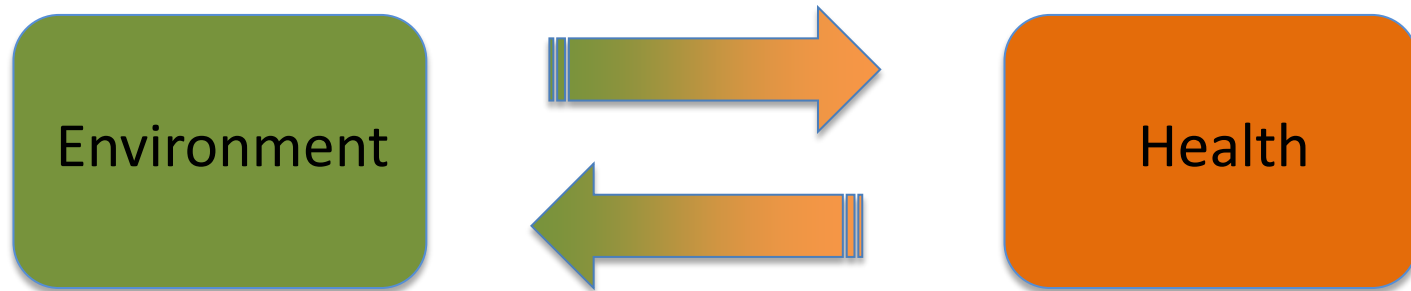
between the thing that is measured (the determinand)  
and the thing it represents (the target)



Unless we understand the link between the  
two, we cannot interpret indicators

# What are environmental health indicators?

An expression of the link between environment and health, targeted at an issue of specific policy or management concern and presented in a form that facilitates interpretation for effective decision-making (Corvalan, Briggs and Kjellstrom 2000)



# Purpose

## Tracking

- Temporal

## Targetting

- Spatial

## Public information

- Topical

## For assessment

- To assess policy effectiveness

## For regulation

- To check compliance with standards etc

## For issue alert

- To be ready for the next problem

## For reassurance

- To make policy makers feel good

# Selecting indicators

## 1. Rationale

- Complex environmental/social/health issues
- Multiple objectives and stakeholders to satisfy
- Limited resources (money, data, knowledge)
- Choice of indicators predetermines (and biases) policy decisions

## 2. Criteria for indicators

- Scientific credibility – causality
- Practicability – data etc
- Utility – relevance/acceptability etc



**Fitness for purpose**

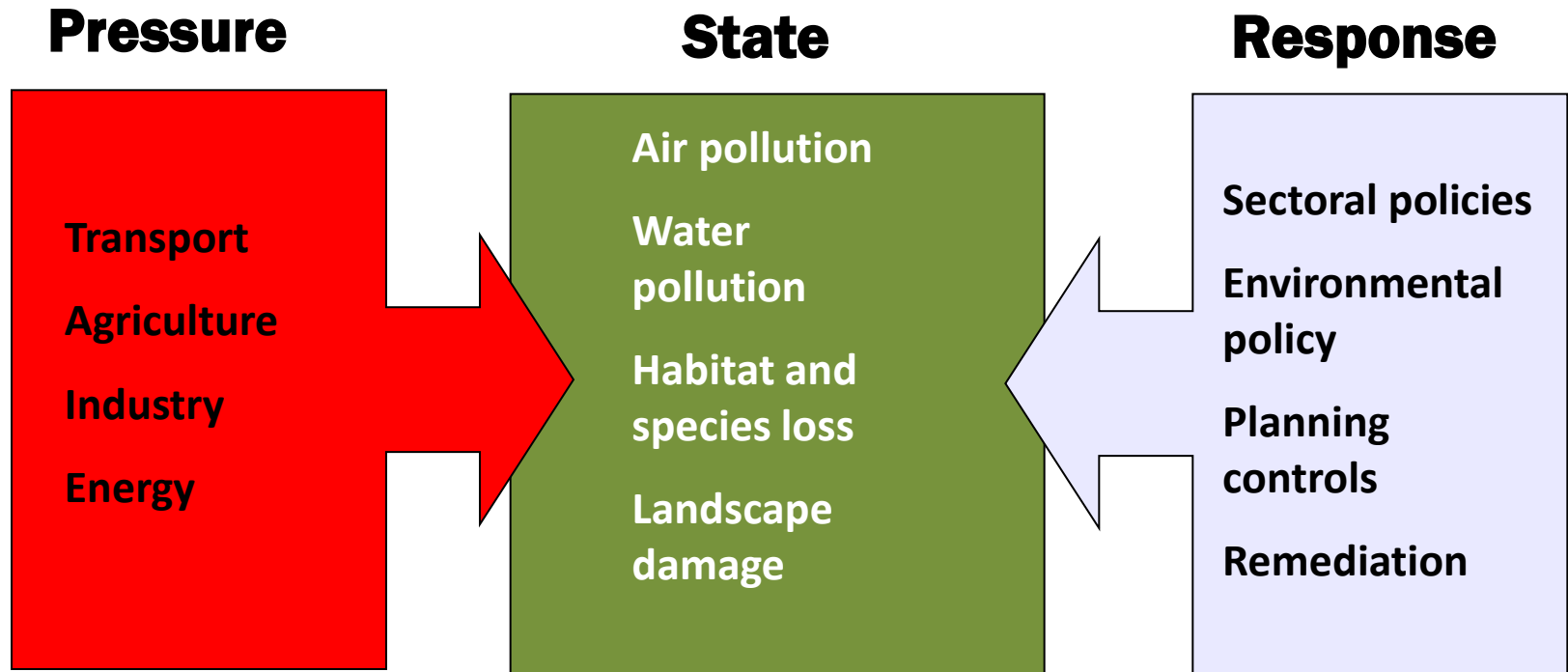
## 3. Criteria for indicator set

- Balance
- Completeness
- Coherence
- World-view – causal chains/webs



**Need for clear framework**

# The P-S-R Framework





Distal

**Driving force**

*Population growth*  
*Economic development*  
*Technology*

**Pressure**

*Production*  
*Consumption*  
*Waste release/emission*

**State**

*Natural resources*  
*Natural hazards*  
*Pollution*

**Exposure**

*External exposure*  
*Absorbed dose*  
*Target organ dose*

**Effect**

*Well-being*  
*Morbidity*  
*Mortality*

**Action**

*Economic policy*  
*Social policy*  
*Clean technology*

*Process/product control*  
*Emission control*

*Environmental improvement*

*Education*  
*Awareness raising*

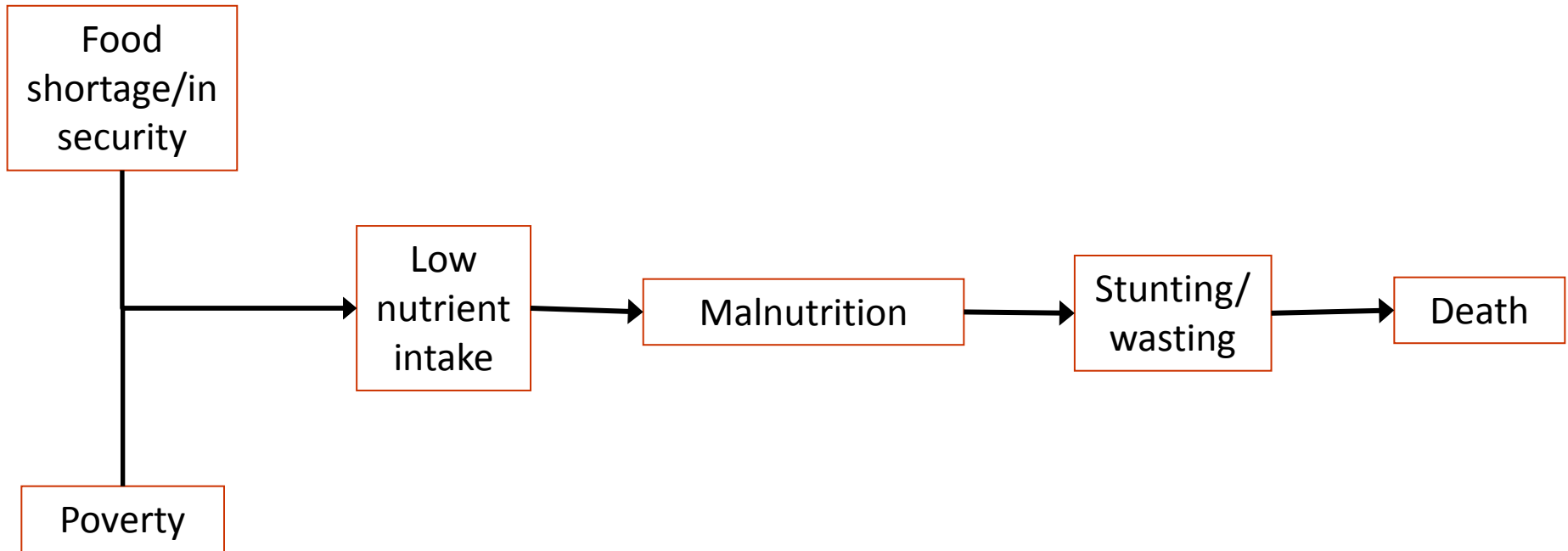
*Treatment*

Proximal

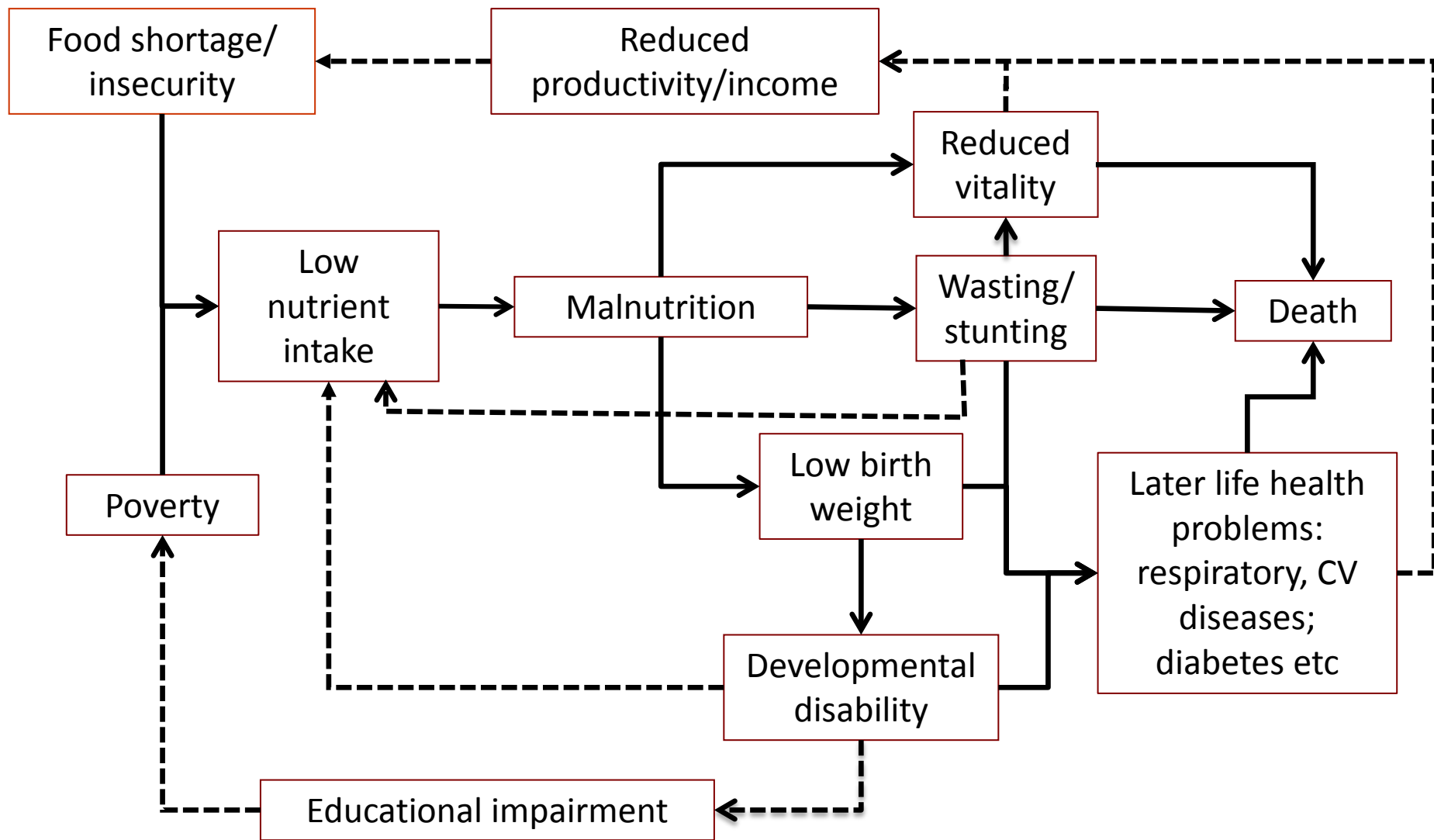


**The  
DPSEEA  
Framework**

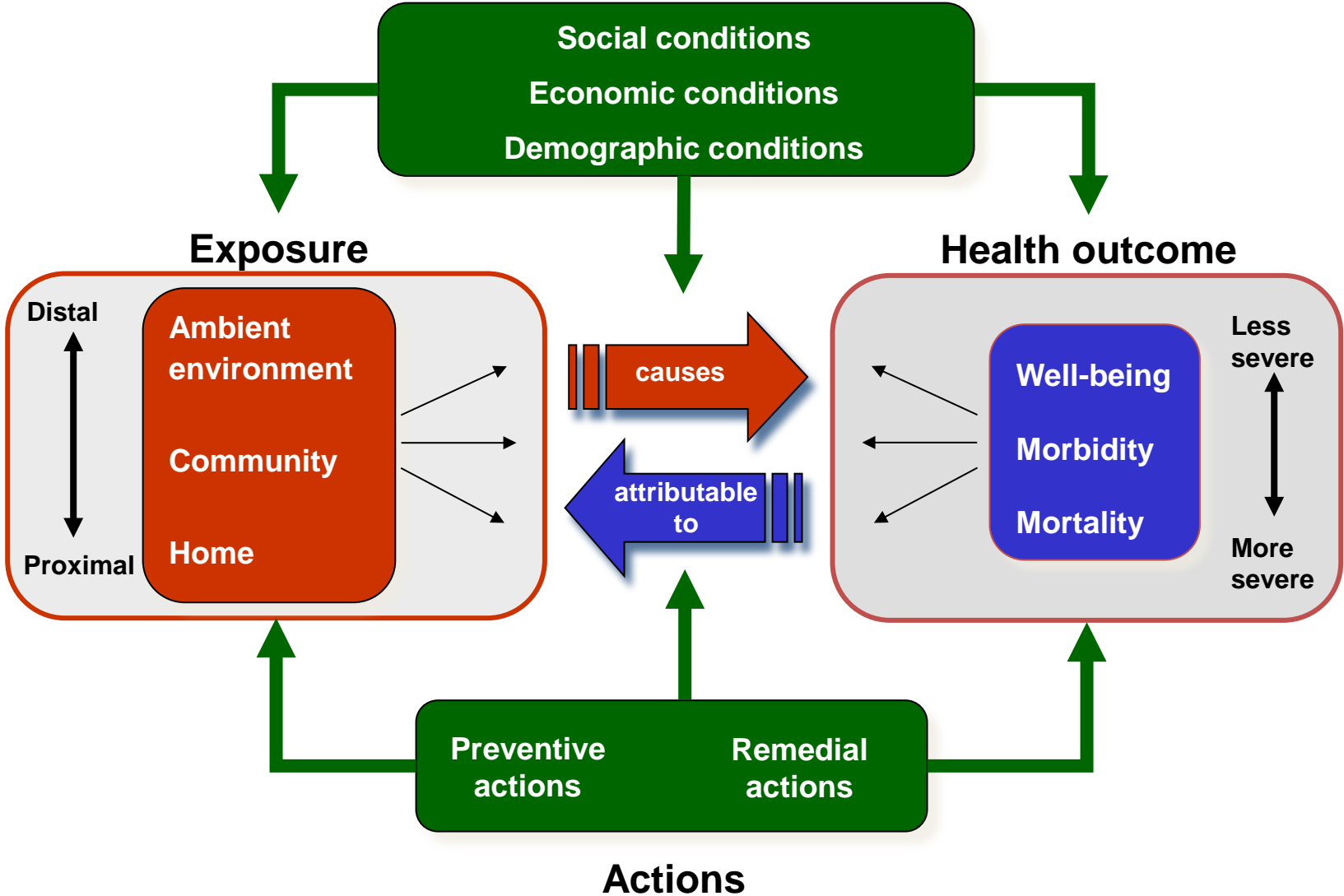
# Malnutrition: the causal chain



# Malnutrition: the causal web



# The MEME Framework



# **Bias and Predetermination**

**We manage what we measure**

**We measure what we manage**

**Therefore our choice of indicators  
constrains and biases our interests and  
actions**

# Issues and challenges

## 1. Data

- Lack of data
- Gaps in coverage
- Inconsistencies over space/time
- Costs



- Make the indicator
- Leave it blank
- Work to get the data

## 2. Uncertainty

- Measurement errors
- Scientific uncertainties
- Conceptual fuzziness



- Report
- Explain
- Interpret

## 3. Users

- Naivety and lack of expertise
- Misinterpretation and misuse
- Lack of interest
- Need for change in working practices



- Inform
- Support
- Train

**Expect, plan for and welcome change!**

# A recipe for success?

