

Involving vulnerable groups in environmental health research

Experiences from the Flemish human biomonitoring program

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Human Biomonitoring (HBM)

Method for assessing human exposure to chemicals by measuring chemicals, their metabolites or reaction products in human tissues or specimens, such as blood or urine

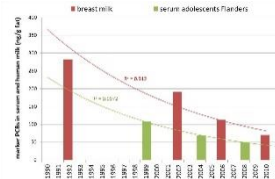
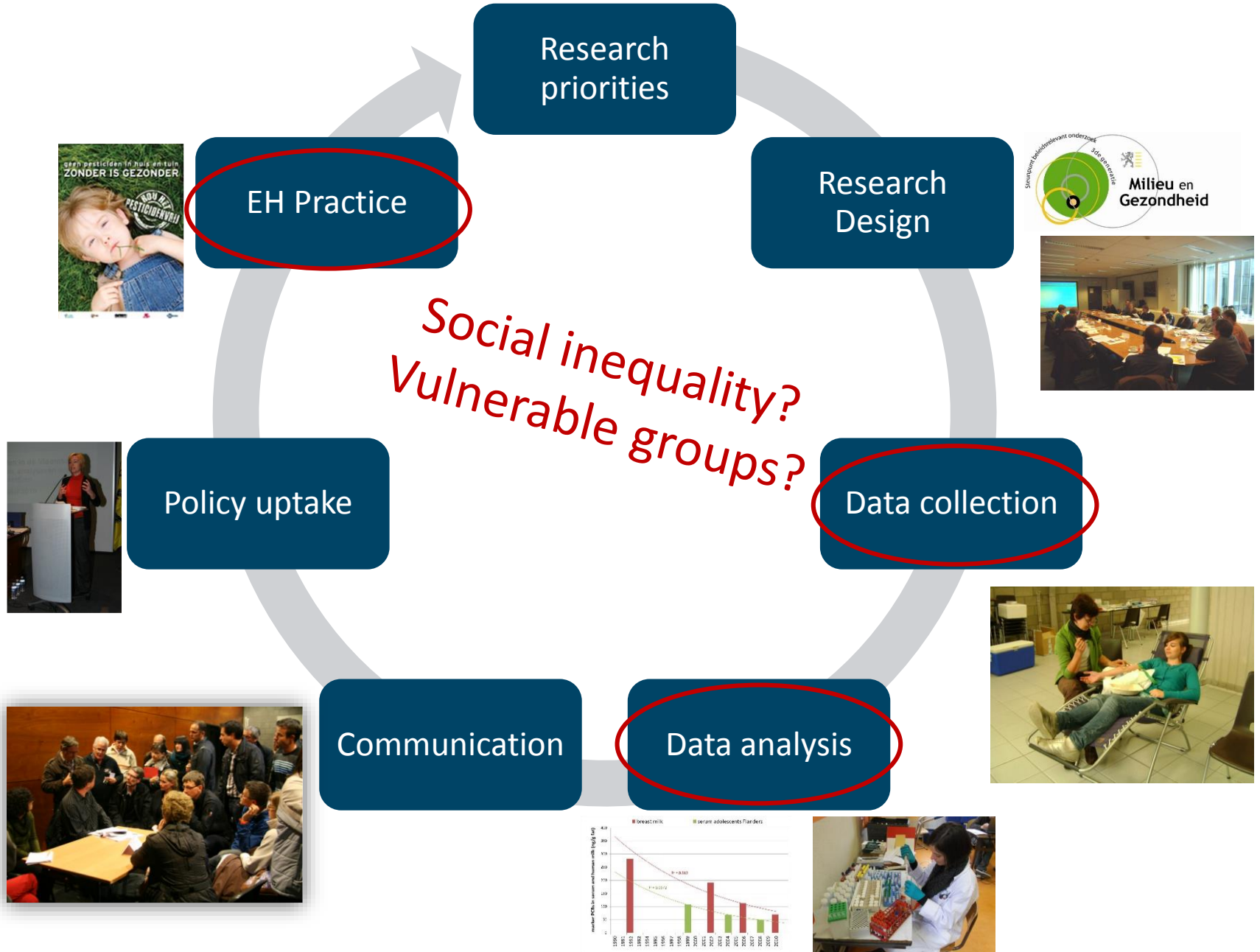


Flemish Environmental Health Study (FLEHS)

- Multidisciplinary research consortium
- 17 years surveillance of **general population** and **hot spots**
- More than 5.500 participants in **3 age groups**
 - Newborns & mothers
 - Adolescents
 - Adults
- Financed by Flemish government



The FLEHS research cyclus



Environmental injustice

Based on D. Schlosberg 2013

Distributive injustice

Socially disadvantaged groups are more **exposed** and more **vulnerable** to environmental pollution (= double jeopardy)

Procedural injustice

Socially disadvantaged groups have less **access** to information and less opportunities to **participate** in decision-making and research

Recognitional injustice

Socially disadvantaged groups are less (fairly) **represented** in the environmental health arena and have less **capabilities** to cope with risks

1. HBM results:
socio-stratifying human exposure data

2. HBM procedure:
transforming research practice

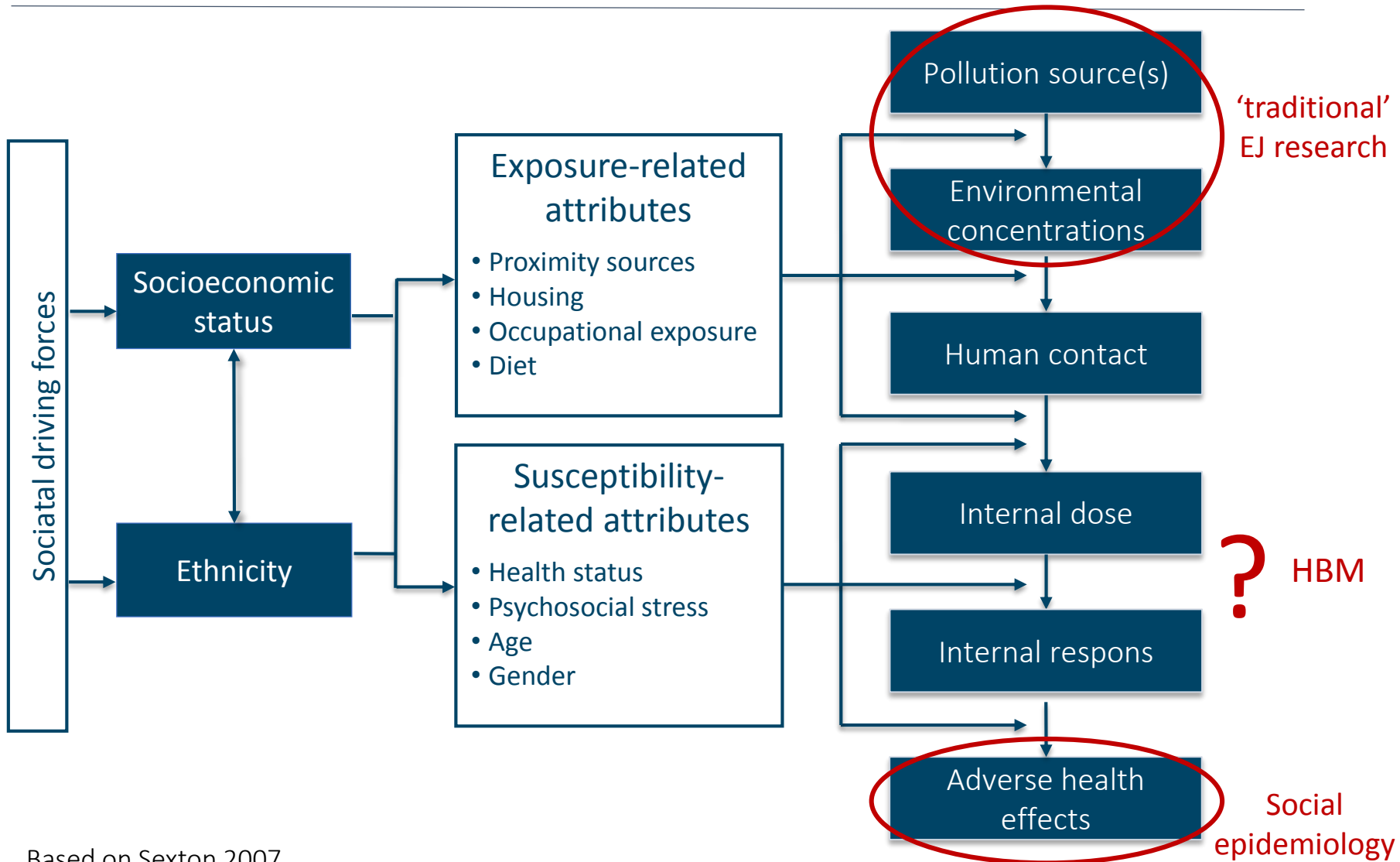
3. HBM experience:
impact of research on people and politics

1. Socio-stratifying HBM data



Environmental justice (EJ) paradigm

Environmental health (EH) paradigm



Method



Socioeconomic status (SES)

• Education

- Primary
- Secondary
- Tertiary (=ref)



• Equivalent income

- Q1
- Q2
- Q3
- Q4 (=ref)



Migrant background

• Country of birth parents

- Non-Western
- Western
- Native (=ref)



- Lifestyle factors
- Dietary factors
- Metabolic factors

Toxic metals

- Lead
- Cadmium
- Manganese
- Arsenic

Plastic compounds

- BPA
- MnBP

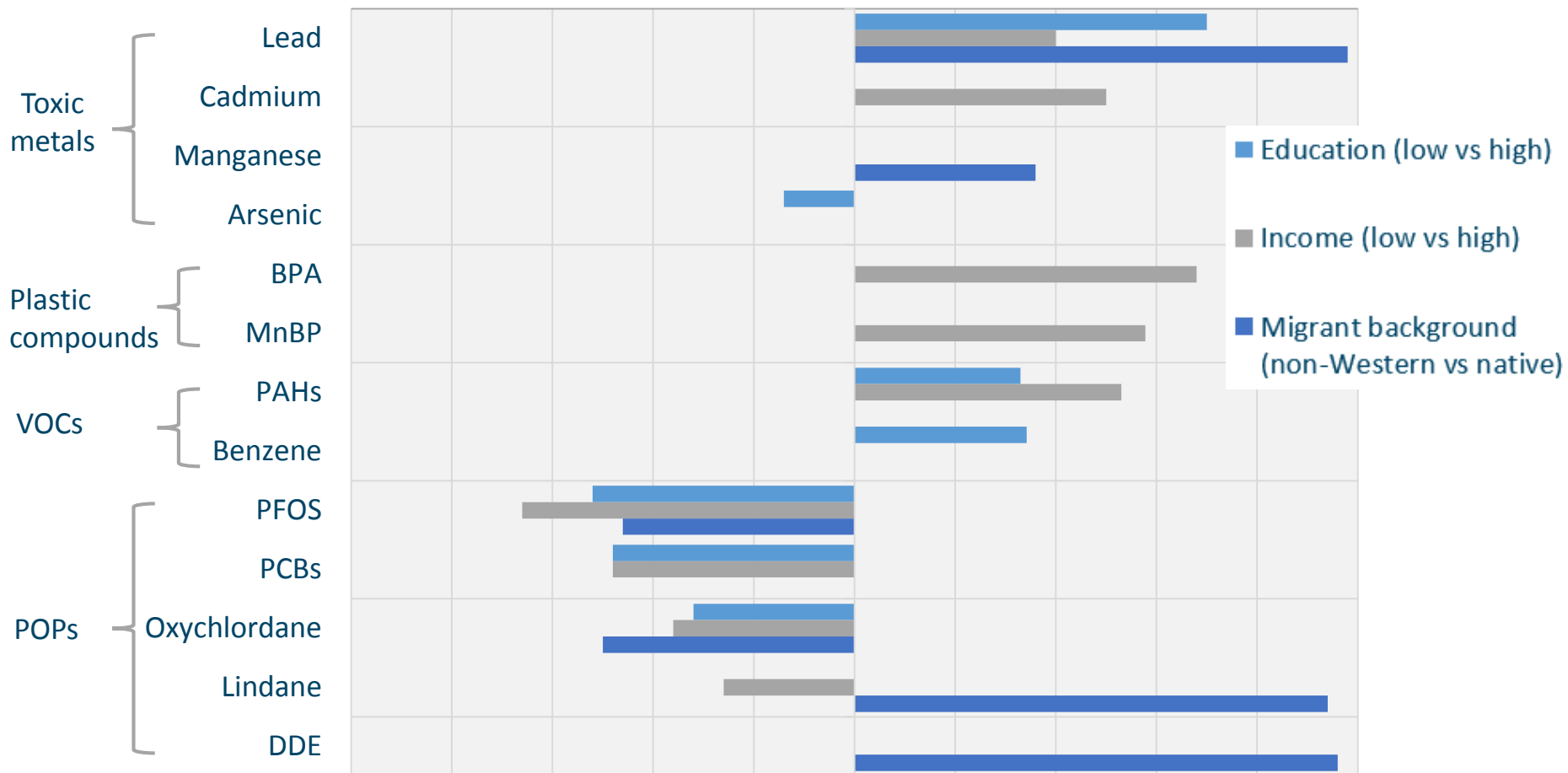
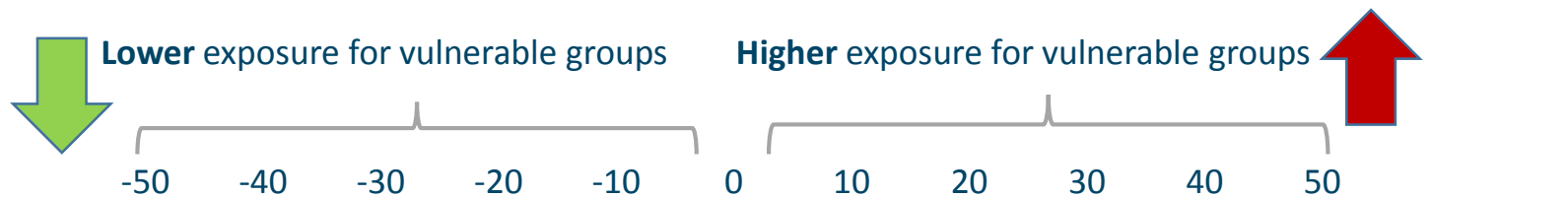
Volatile organic substances

- PAHs
- Benzene

Persistent organic pollutants

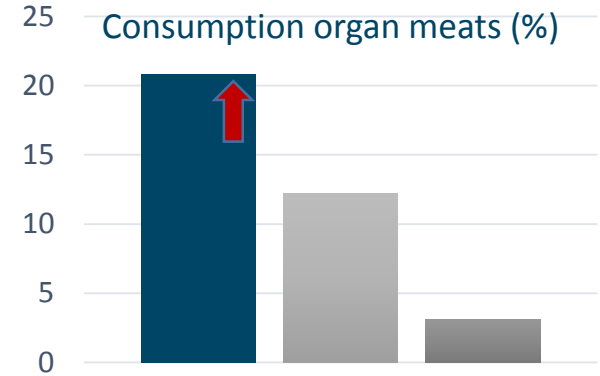
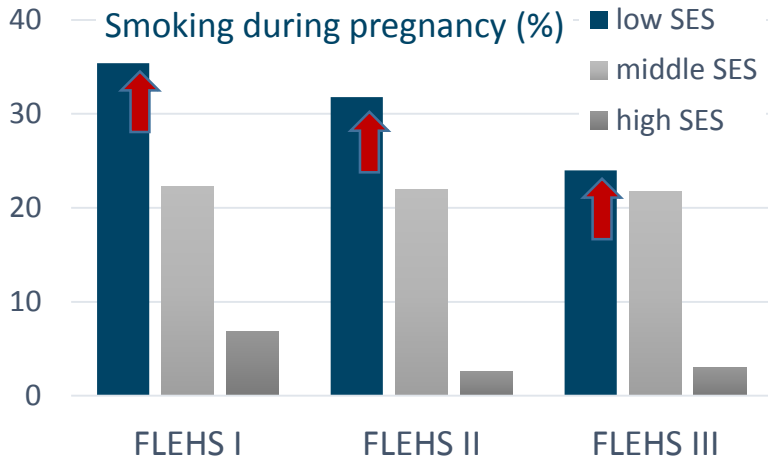
- PFOA
- PCBs
- Oxyclordane
- Lindane
- DDE

Results



% change in GM biomarker concentration ($p \leq 0.05$)

Data: FLEHS III newborns (n=281) and FLEHS II adolescents (n=210)



Lead
Cadmium
Manganese
BPA/MnBP
PAHs/Benzene



Dietary factors

Organ meats



Legumes



Canned food



Aromatic processed food



Metabolic factors

Iron/calcium deficiencies



Housing conditions

Lead paint and plumbing

PVC floors and walls



Lifestyle factors

Smoking behaviour



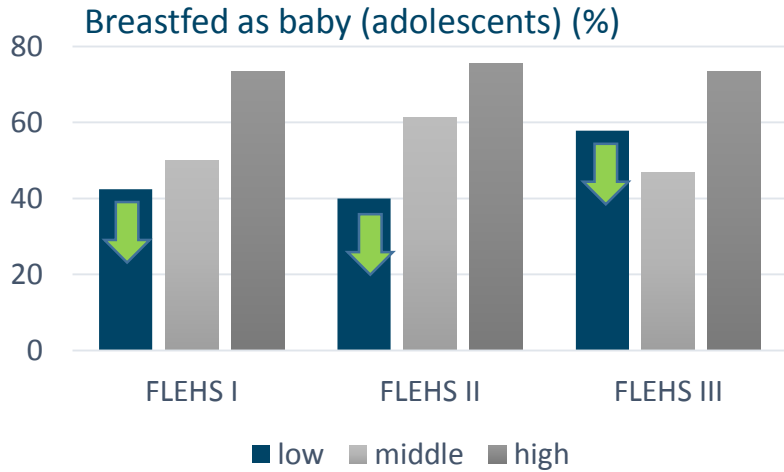
Consumer products

Beauty products



Toy jewelry





Lifestyle factors

Breastfeeding



Alcohol consumption



Arcenic
PCBs
Oxychlorthane
PFOS



Dietary factors

Fish and shellfish



Dairy products



Home grown vegetables



Metabolic factors

BMI

Consumer products

Expensive textiles



Sunscreen use

2. Transforming HBM research practice

Procedural justice = having equal opportunities to get monitored

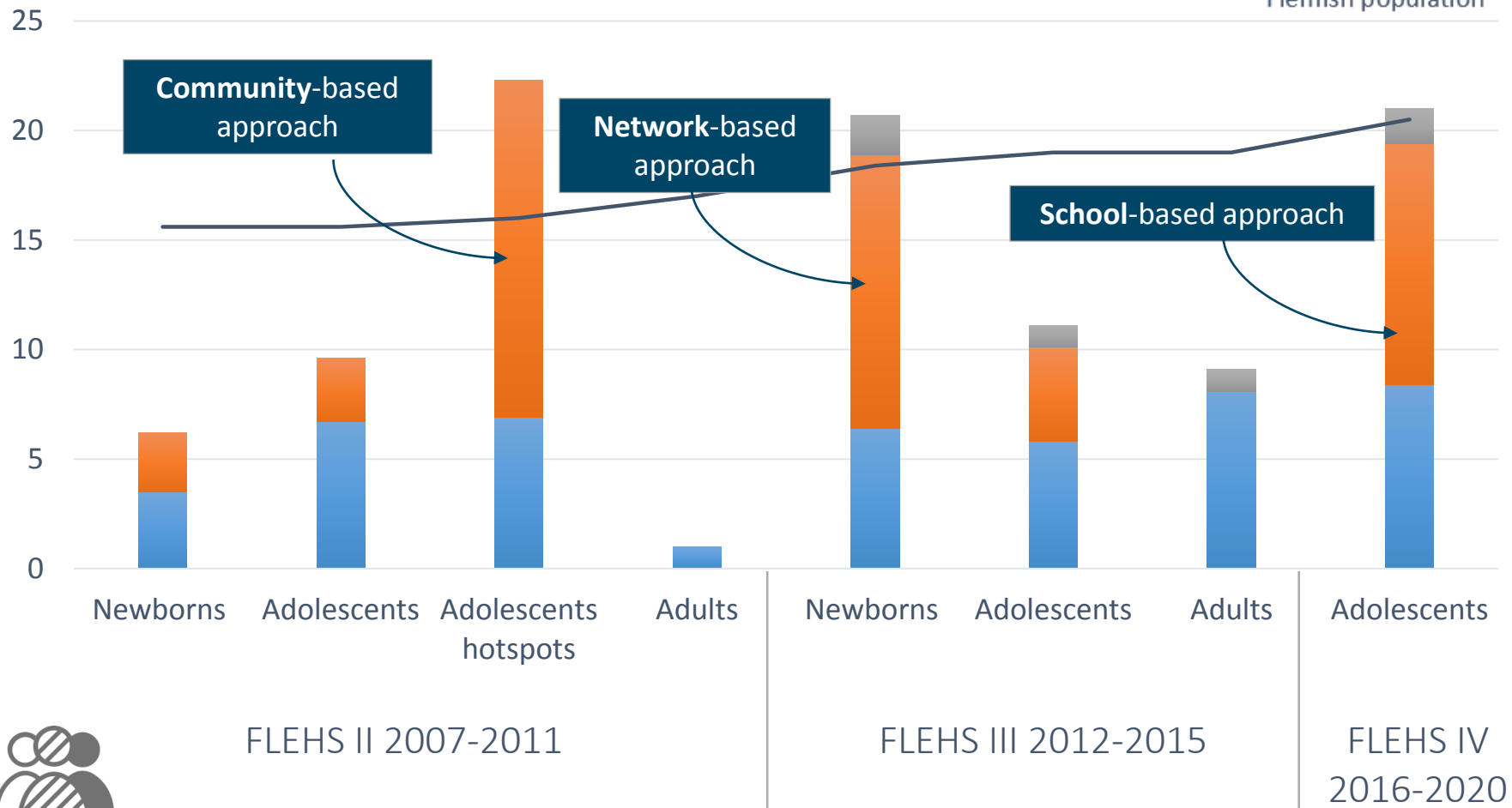
- Addressing social participation bias in HBM research
- Creating open HBM research agenda setting



Ethnic diversity in FLEHS study samples

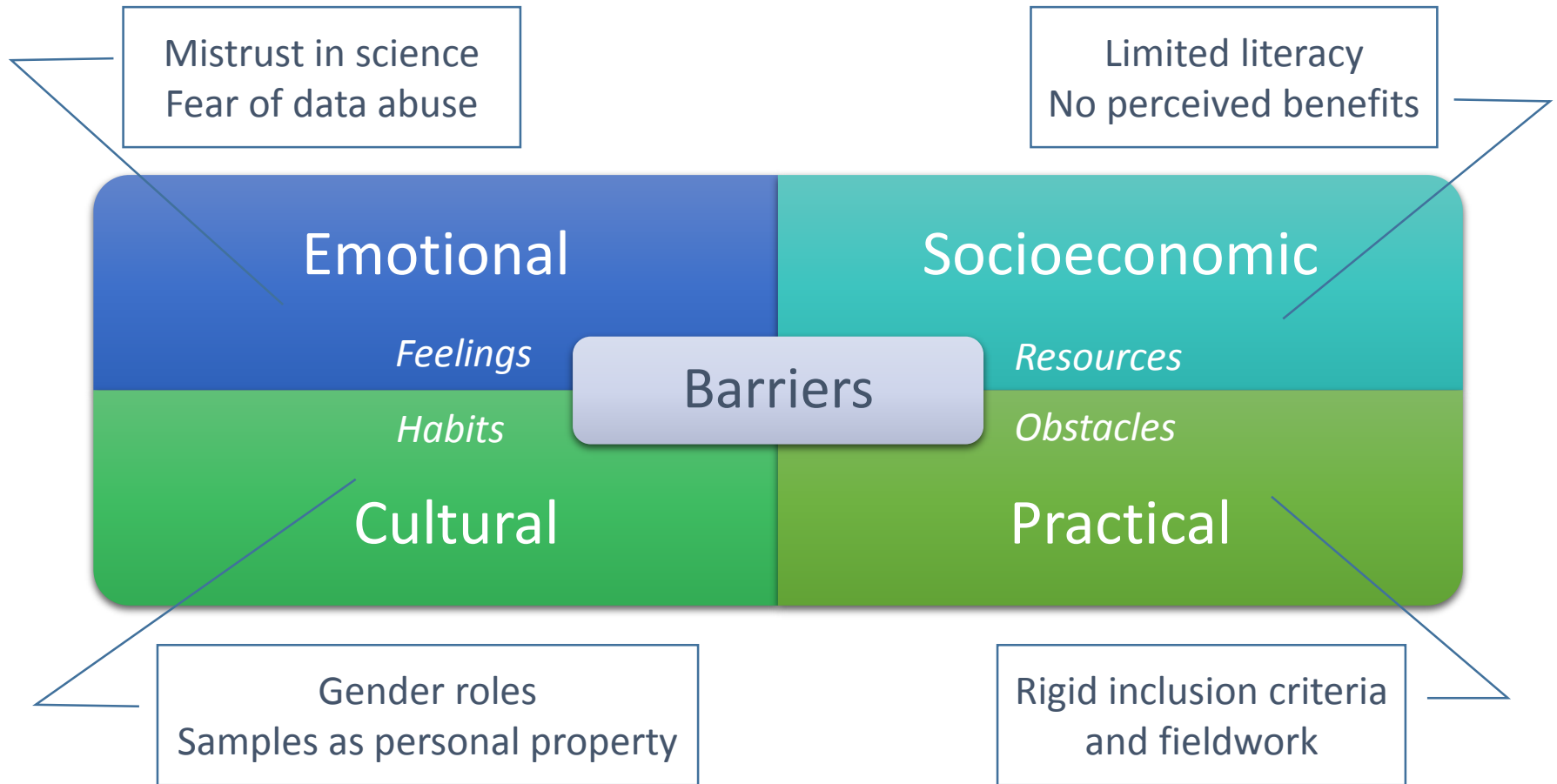


% participants with migrant background (birth country parents)



4 participation barriers for vulnerable groups

Focus on women of Turkish and Moroccan decent



Increasing participation of vulnerable groups in HBM research is possible, but demands...

- Building trust and dialogue with **target group**:

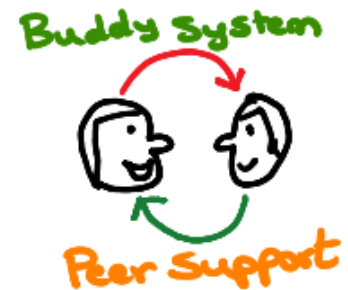
- ‘Ethnic matching’ of study design: cultural and linguistic sensitivity
 - Pilot testing study materials!
- Buddy system: third-party women with same ethnic background
 - Tailored information transfer before recruitment
 - Individual follow-up after recruitment: support with questionnaire

→ **Empathic** attitude

- Openness and flexibility in the mind-set of **researchers**:

- From linear to organic research approach
- Creating ‘productive disruptions’ in research practices and ethics
- Accepting extended timeframes and costs

→ **Reflexive** attitude



3. HBM experience

= facilitating equal impact of HBM research on people and politics

- Supporting translation of results into practice
- Raising capabilities of vulnerable groups and local communities



Tailored environmental health promotion project

“How to better reach and empower vulnerable groups with environmental health information and education?”

- Setting: deprived urban neighbourhood in Antwerp
- Network people in poverty, local welfare organisation

Migrant women

Healthy homes

- Interactive info sessions:
 - Ventilation
 - Cleaning products
 - Fire safety
- Integration in language courses
- **EH quiz**

Community gardeners

Healthy gardening

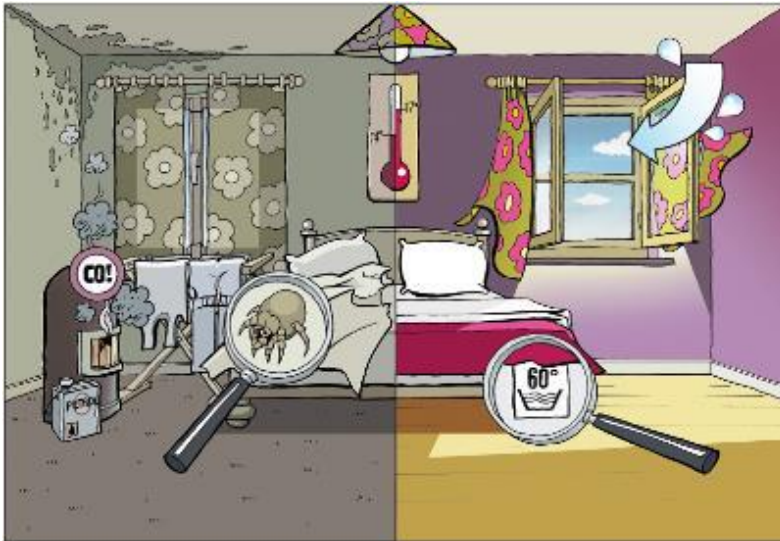
- Interactive info sessions:
 - Ergonomics
 - Healthy soil
- Soil and water samples
- Co-developed **quartet game**



Barriers



- EH education (implicitly) rooted in middle class vocabulary
 - Grounded in scientific approach
 - Victim blaming, focus on behaviour



- Ambivalent health perceptions
 - Healthy = wat is clean (women)
 - Healthy = what is sustainably (gardeners)



Success factors




- Identify good **entry point** to transfer EH messages to vulnerable groups
 - Use existing social networks
 - Language teaching, parenting advice
- Put EH in a **positive** frame
 - Not as a threat but as a quality
 - Focus not (only) on risks but on exposure reduction actions
- Apply a **holistic** approach
 - No fragmentation of information (e.g. fire safety, ergonomics)
 - Acknowledge broader cultural context (e.g. detergent use)

RESEARCH

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Human biomonitoring from an environmental justice perspective: supporting study participation of women of Turkish and Moroccan descent

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Social distribution of internal exposure to environmental pollution in Flemish adolescents

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