

German Environment Agency

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# Vulnerability in the field of environment and health: Conceptual background and selected activities of the German Environment Agency

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Section II 1.1 „General aspects of environment and health“

German Environment Agency

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# 1 Concepts of vulnerability

## Concepts of vulnerability

- Origin of the word can be traced back to the Latin meaning *vulnus* (wound)
- Lack of a uniform understanding of the concept of vulnerability in the scientific literature
- Vulnerability refers to a broad spectrum of social, economic, institutional and environmental hazards and their interactions
- Depending on the specific focus and policy area, a distinction is made between:
  - the economic vulnerability of a country
  - the ecological vulnerability of a region/an ecosystem
  - the vulnerability of a population group



## Concepts of vulnerability

### ***NATURAL-HAZARD-APPROACH:***

- In nature-deterministic vulnerability concepts, often only the side of the exposure is considered
- Intensity and frequency of an external event determine the degree of vulnerability (e. g. a natural disaster)

### ***SOCIAL VULNERABILITY APPROACH:***

- multidimensional perspective
- Vulnerability of certain population groups or individuals is the product of:
  - spatial structural factors
  - socio-cultural attributes
  - personal attributes (ethnicity, gender, age, state of health)

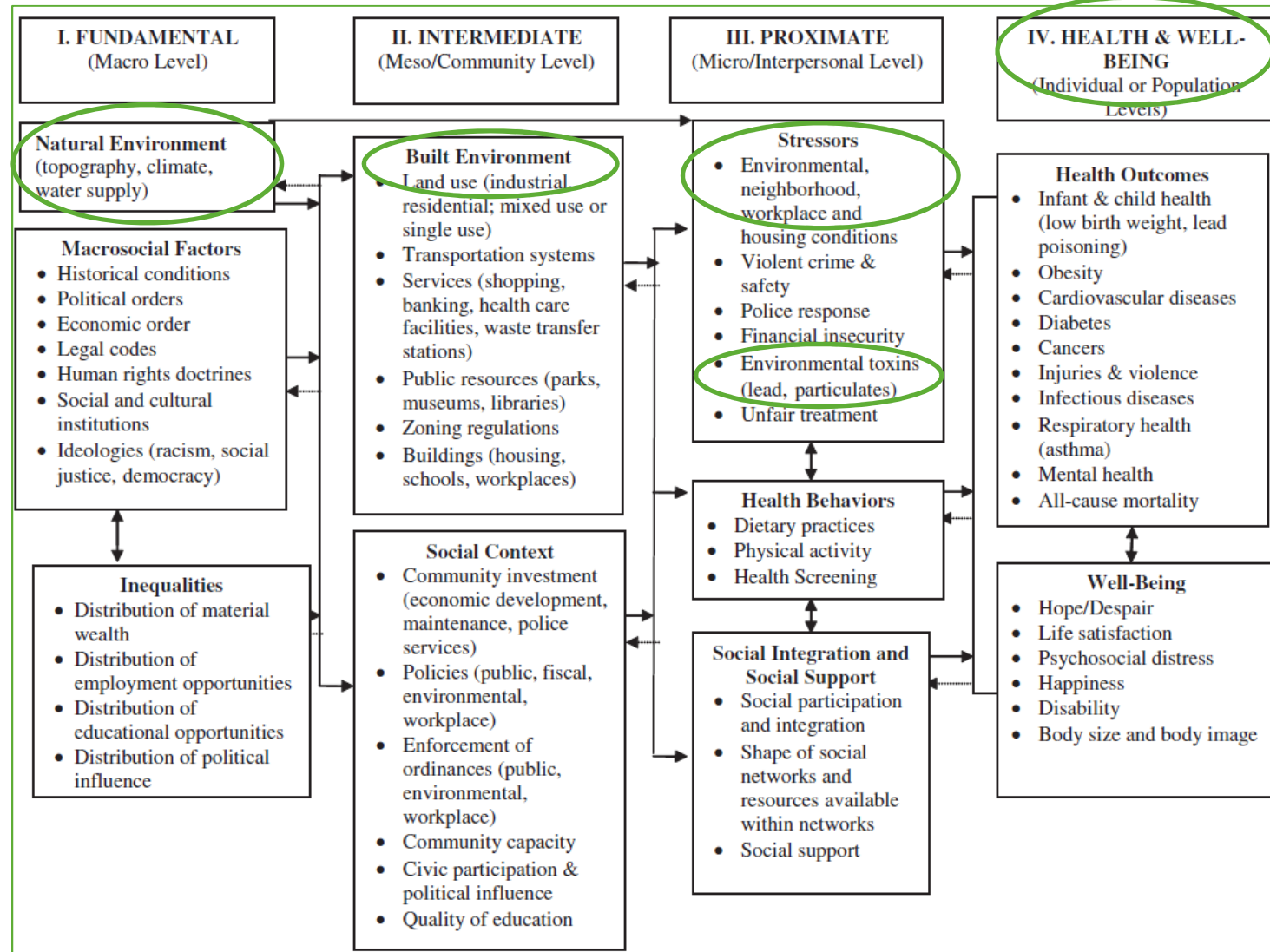
## Concepts of vulnerability

### VULNERABILITY IN PUBLIC HEALTH

- Vulnerability means an increased risk of morbidity and mortality
  - increased likelihood of illness, disability and death
  - helplessness or need of protection
- Various mutually overlapping or potentiating causes for health burdens that can increase vulnerability, e. g.:
  - inadequate participation in society, combined with precarious material circumstances
  - sociodemographic characteristics such as age, gender and the social situation can influence vulnerability
  - self-perception of the personal sensitivity to exposures (e.g. environmental pollution)
  - **A population group cannot be classified as vulnerable in general**

# Concepts of vulnerability

## DETERMINANTS OF HEALTH



## 2 Examples for vulnerability in the field of environment and health



## Examples for vulnerability in the field of environment and health

### I. CLIMATE CHANGE

- Various health risks in association with climate change
  - health consequences due to floods
  - increased spread of vector-borne diseases
  - colonisation of invasive (allergenic) animal and plant species
  - prolongation of the pollen season
  - extreme heat events
- One of the most important health-related risks of climate change: exposure of the human organism to extreme heat



## Examples for vulnerability in the field of environment and health

### I. CLIMATE CHANGE

- Certain population groups are particularly vulnerable to prolonged high temperatures (heat waves):
  - old and very old people persons with pre-existing illnesses
  - infants and young children
  - persons with limited access to information on individual adaptation measures
  - people with certain working conditions
  - persons with high sensitivity to heat
  - persons who already live in an environment affected by a limited supply of green and open spaces



References: 7, 15, 17

## Examples for vulnerability in the field of environment and health

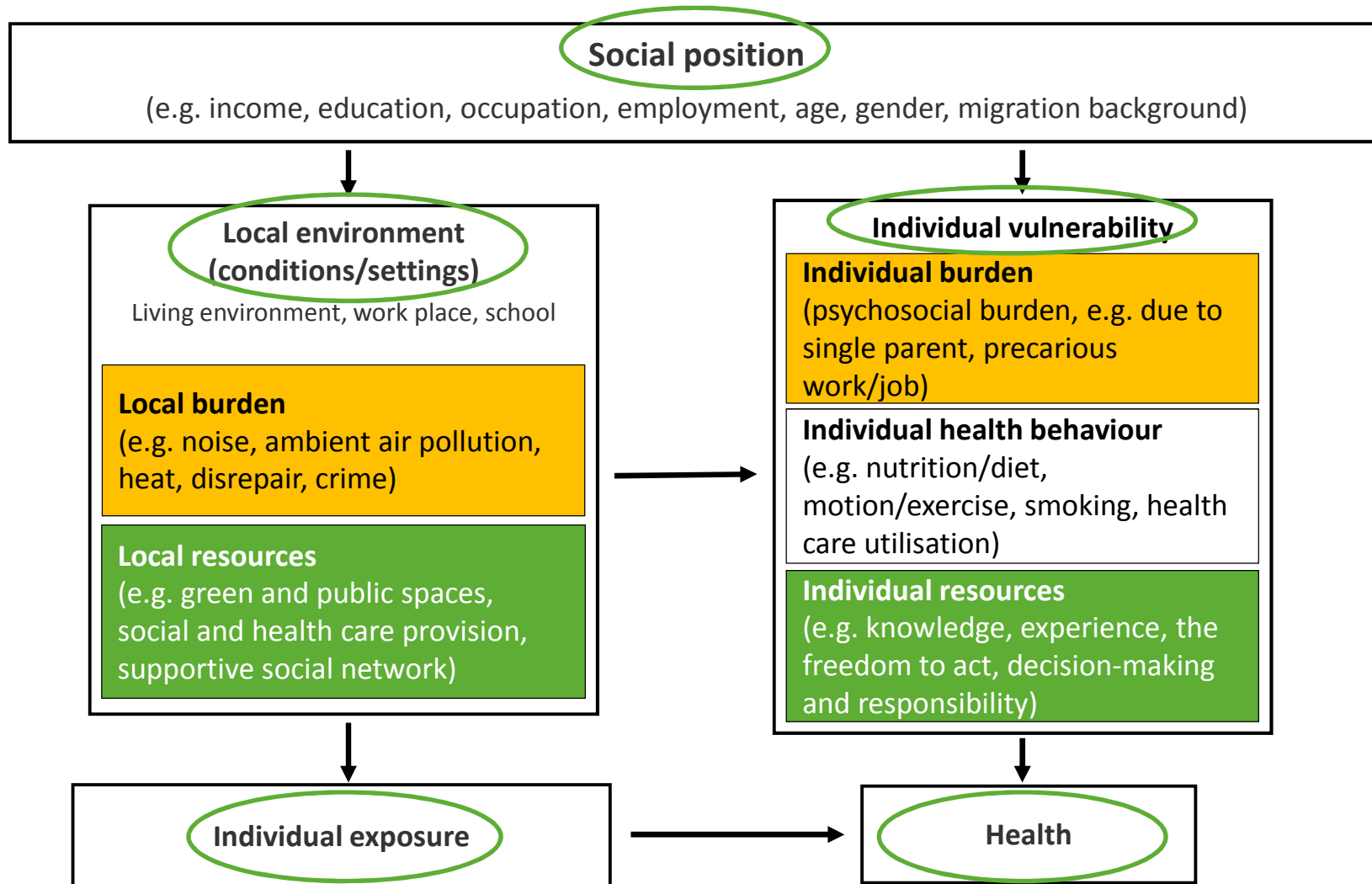
### II. ENVIRONMENTAL JUSTICE

- Socially deprived population groups
  - are more affected by environmental burden,
  - have poorer access to environmental benefits,
  - contribute less to the development of environmental problems,
  - have poorer access to information on the state of the environment and
  - are hardly or not reached through participation processes.

→ **UNEQUAL HEALTH RISKS**

# Examples for vulnerability in the field of environment and health

## II. ENVIRONMENTAL JUSTICE

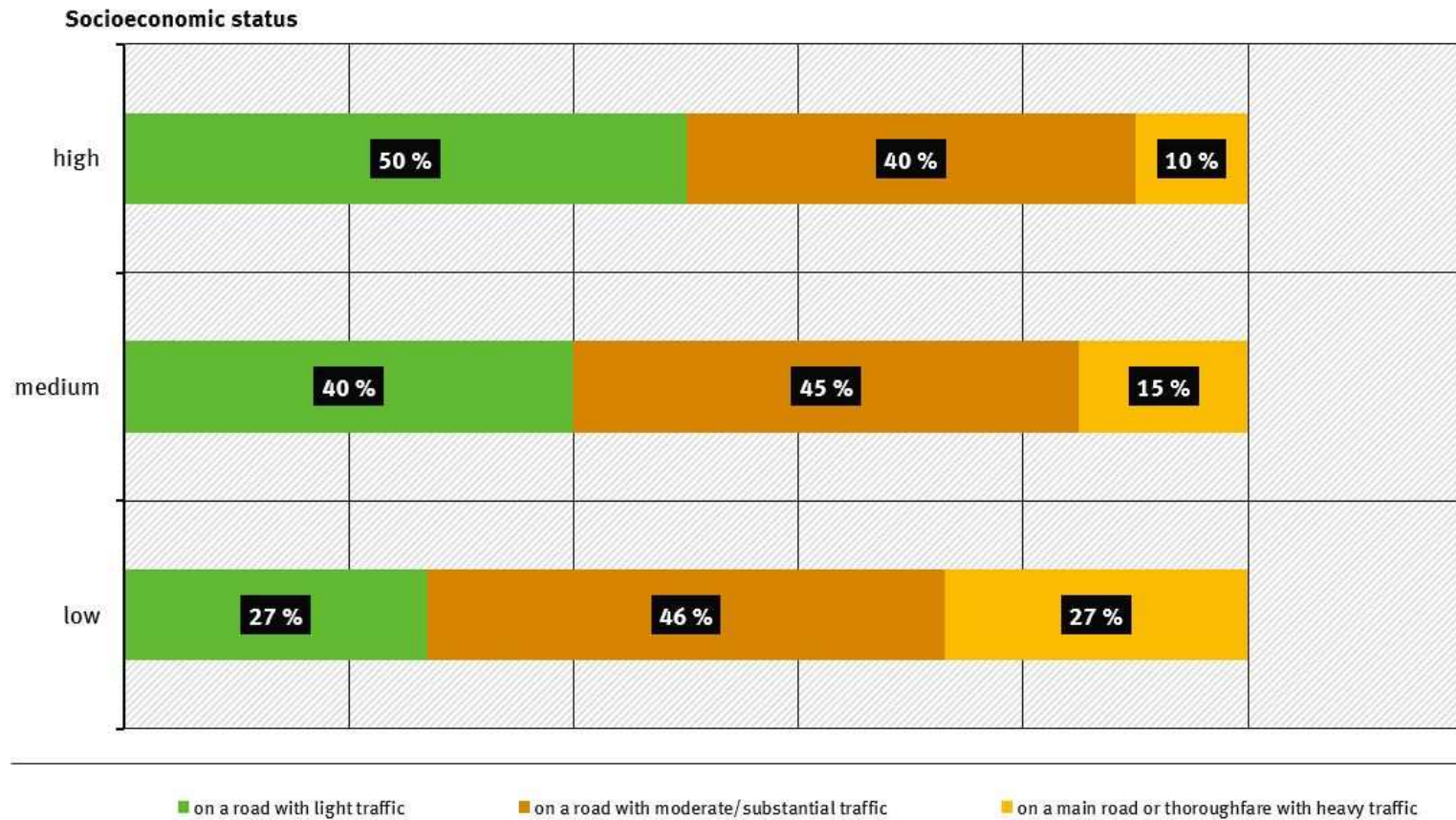


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## Examples for vulnerability in the field of environment and health

### II. ENVIRONMENTAL JUSTICE

#### Location of residence and socioeconomic status\*



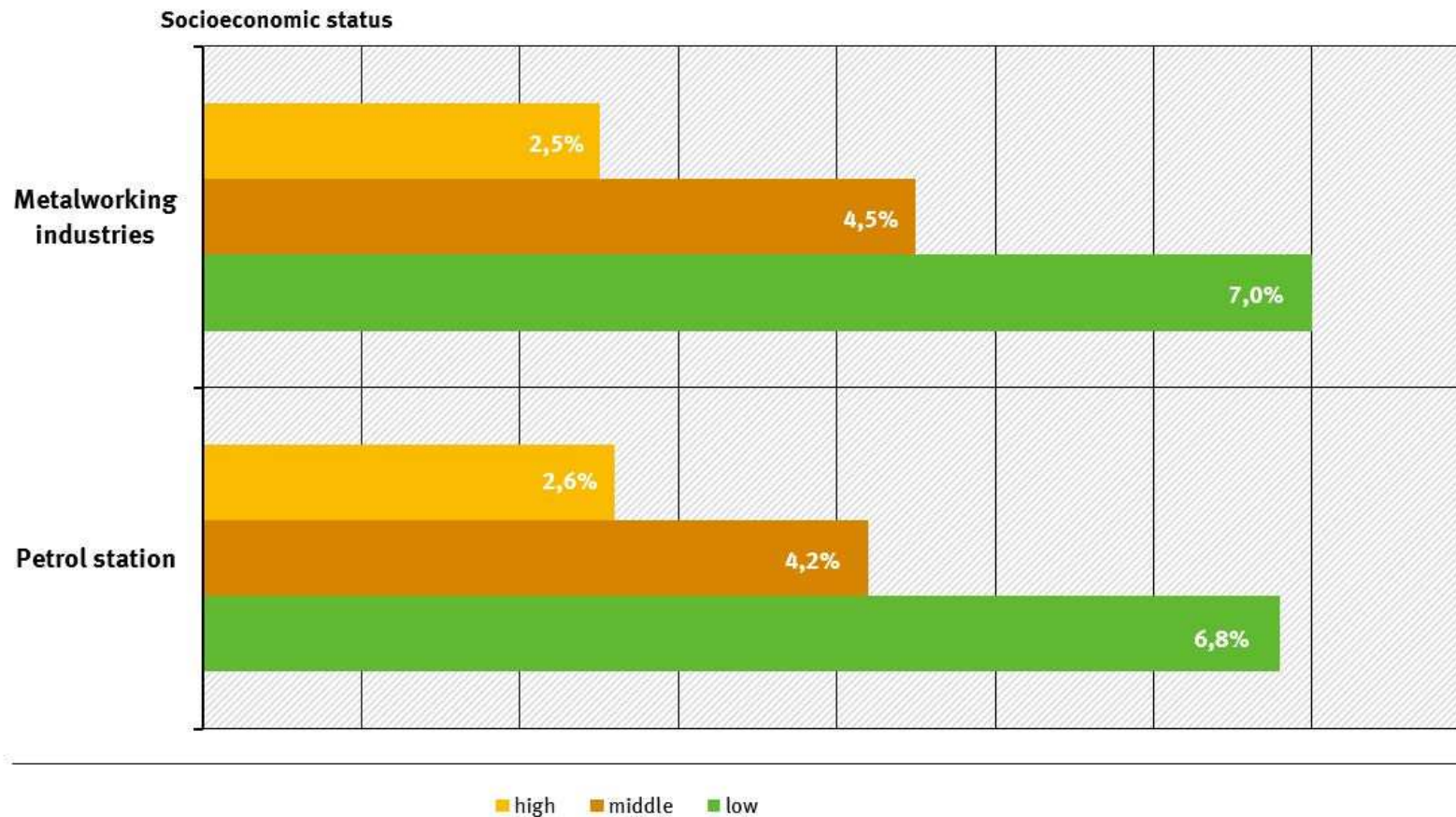
\* Winkler Index measured by educational qualifications, income and professional status of the parents

Quelle: German Environment Agency, German Environmental Survey of children (GerES IV) 2003-2006

# Examples for vulnerability in the field of environment and health

## II. ENVIRONMENTAL JUSTICE

Industrial sites near (50 m radius) residences of 3 to 14 years old children and socioeconomic status\*



\* Winkler Index measured by educational qualifications, income and professional status of the parents

Quelle: German Environment Agency, German Environmental Survey of children (GerES IV) 2003-2006

## Examples for vulnerability in the field of environment and health

### III. GENDER DIFFERENCES

- Gender inequalities can have a vulnerability-modifying influence
- Not only the (biological) sex, but also social and cultural aspects of gender and gender role behaviour determine differences between men and women
- Gender = e. g. living conditions, gender-specific role assignments, positioning of women and men in society
- Both the dimensions of sex and gender are complex and influence each other mutually

→ It is relevant to examine both dimensions in their interaction



## Examples for vulnerability in the field of environment and health

### III. GENDER DIFFERENCES

- Considering health-related differences females tend to have
  - a more distinct health and preventive behaviour,
  - a lower risk behaviour in general and
  - higher morbidity on average in many societies (but longer life-spans) than males.
- Gender/sex differences in environment and health – a few examples:
  - Women feel more affected by different environmental hazards than men
  - Men and women react differently to short-term and chronic noise pollution and
  - are affected by unequal exposure to environmental hazards to some extent (e. g. because of their work or living environment).

→ **Currently: scientific evidence is not sufficient to derive gender-sensitive measures for prevention and environmental health promotion**



## 3 Selected projects of the German Environment Agency

## Selected projects of the German Environment Agency

### PROJECT I:

#### **VULNERABILITY OF ELDERLY PEOPLE TO AIR POLLUTION, CLIMATE CHANGE, NOISE AND CHEMICALS (LITERATURE REVIEW) (09/2018 – 8/2019)**

- one-year project starting in September 2018
- Background:
  - Older people have so far received fewer consideration in environmental health research (than e.g. children and young people)
  - Age-physiological changes and accumulation of harmful substances over the life course
  - Demographic change in Germany is increasing the proportion of older people and decreasing the proportion of younger people

## Selected projects of the German Environment Agency

### PROJECT I:

#### **VULNERABILITY OF ELDERLY PEOPLE TO AIR POLLUTION, CLIMATE CHANGE, NOISE AND CHEMICALS (LITERATURE REVIEW) (09/2018 – 8/2019)**

- Objectives:

- Identify areas in which older people represent a relevant vulnerable group through a systematic review
- Consider possible gender differences and the impact of the social situation on the vulnerability of this population group
- Provide a framework for adequate protection of the elderly from environmental health risks

- Current state:

- project was assigned to the contractor two weeks ago
- kick-off meeting will take place in the next weeks

## Selected projects of the German Environment Agency

### PROJECT II:

#### **IMPLEMENTATION OF AN INTEGRATED STRATEGY FOR ENVIRONMENTAL JUSTICE – PILOT PROJECT IN GERMAN MUNICIPALITIES (11/2015–12/2018)**

- Testing key elements of the EJ approach by implementing strategies and measures in three municipalities in Germany
- Background:
  - Socially deprived urban areas with multiple burden (including noise, air pollution, poor access to green spaces)
  - Lack of strategic approach on the municipal level
  - Results of a previous project: Development of strategies to reduce socially unequal distributed health-related environmental burden (2012-2014)

## Selected projects of the German Environment Agency

### PROJECT II:

### IMPLEMENTATION OF AN INTEGRATED STRATEGY FOR ENVIRONMENTAL JUSTICE – PILOT PROJECT IN GERMAN MUNICIPALITIES (11/2015–12/2018)

- Objectives:
  - Testing recommendations in three pilot municipalities
  - Analysing the implementation process
  - Generating transferable findings
  - Creating an Online Toolbox “Environmental Justice“
- Project will be completed by the end of 2018



## Selected projects of the German Environment Agency

### PROJECT III:

#### ENVIRONMENTAL AWARENESS STUDY

- Since 1996: Conducting the environmental awareness study every two years
- Responsibility and coordination of the study in UBA Section I 1.4 (*Economical and social-scientific environmental issues, sustainable consumption*)
- General objectives:
  - Reflect environmental attitude and behaviour changes over time
  - Identify current developments (“social seismograph”)
  - Receive hints for the conceptual development of environmental policy and environmental communication



Reference: 2

## Selected projects of the German Environment Agency

### PROJECT III:

#### ENVIRONMENTAL AWARENESS STUDY

- Background of the 2016 Environmental Awareness Study:
  - About 4,000 people in Germany were interviewed
  - Key topics: mobility, climate protection, nutrition, environment and health
  - Health related research questions referred to perceived environmental pollution
- Selected findings of the 2016 Environmental Awareness Study:
  - People with a low social status feel more burdened by different environmental factors than people with a high social status
  - Women and older people state, more often than men/younger people, that they feel burdened by environmental factors

## 4 Conclusion

- Various vulnerabilities when it comes to environment and health
- Vulnerability is a complex and fluid term
  - Determinants of health have to be considered in their interaction
  - These interactions have an impact on the vulnerability of a population group or an individual
  - Sometimes it is difficult to identify relevant vulnerable groups
- Objective of our research projects is:
  - To improve the consideration of vulnerability in environmental health and
  - to derive target group-specific measures and strategies for health protection and health promotion.



# Thank you for your attention!

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