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iSCAPE
IMPROVING THE SMART CONTROL
OF AIR POLLUTION IN EUROPE

H2020 iSCAPE:
Urban AQ control tools
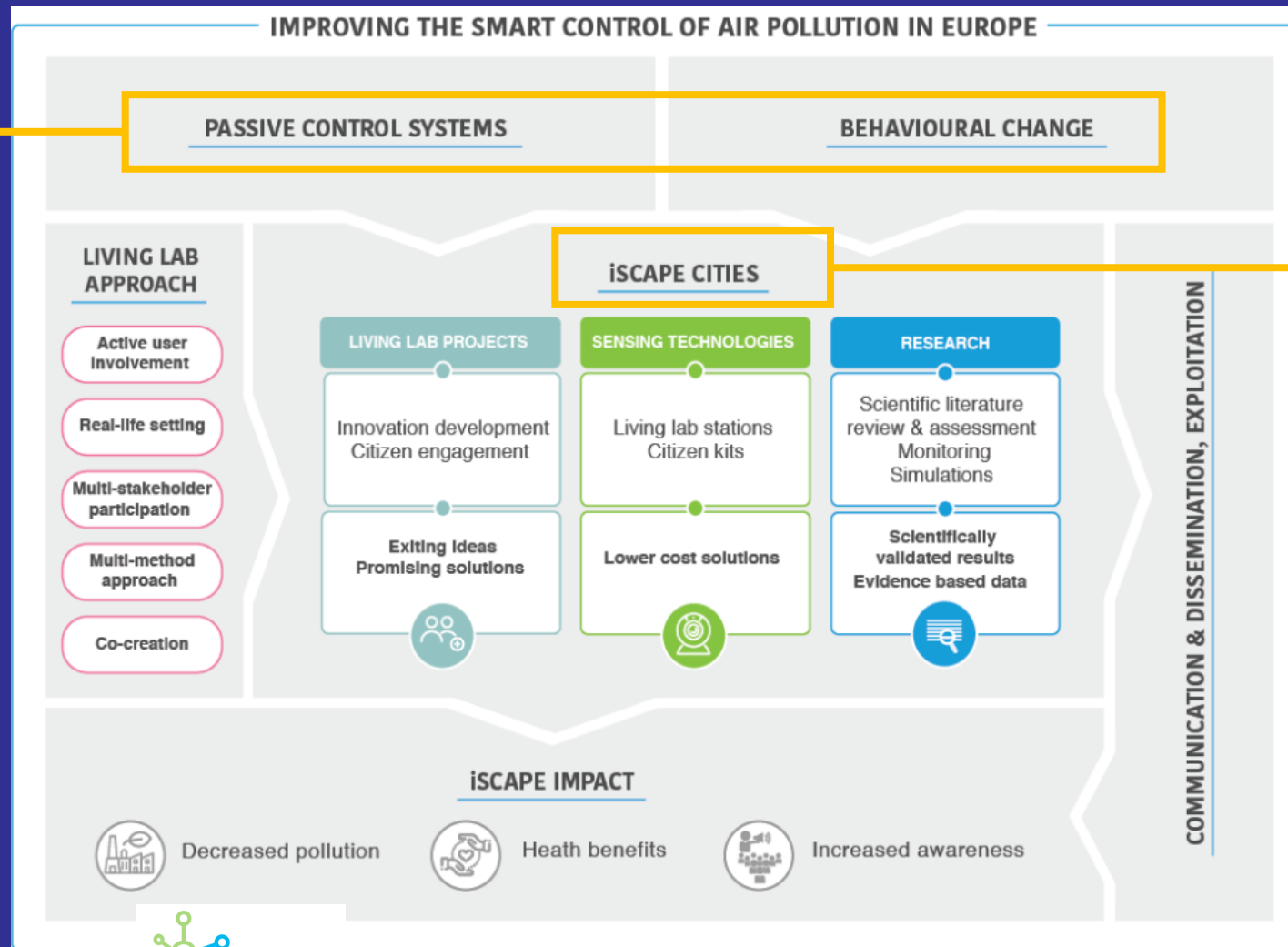
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iSCAPE: Improving the Smart Control of Air Pollution in Europe

- Green roofs
- Green land patches
- Travelling trees
- Mobility behaviour
- Low boundary walls
- Photocatalytic painting

- Bologna (IT)
- Lazaretto (IT)
- Bottrop (DE)
- Dublin (IE)
- Guildford (UK)
- Hasselt (BE)
- Vantaa (FI)

IMPROVING THE SMART CONTROL OF AIR POLLUTION IN EUROPE

PASSIVE CONTROL SYSTEMS

BEHAVIOURAL CHANGE

LIVING LAB APPROACH
- Active user involvement
- Real-life setting
- Multi-stakeholder participation
- Multi-method approach
- Co-creation

iSCAPE CITIES

LIVING LAB PROJECTS
Innovation development
Citizen engagement

Exiting Ideas
Promising solutions

SENSING TECHNOLOGIES
Living lab stations
Citizen kits

Lower cost solutions

RESEARCH
Scientific literature review & assessment
Monitoring
Simulations

Scientifically validated results
Evidence based data

COMMUNICATION & DISSEMINATION, EXPLOITATION

iSCAPE IMPACT
- Decreased pollution
- Heath benefits
- Increased awareness

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...if hazards & solutions are identified, what next?

What planning/policy interventions could be effective?

(for controlling vulnerability/exposure to climate and weather impacts)
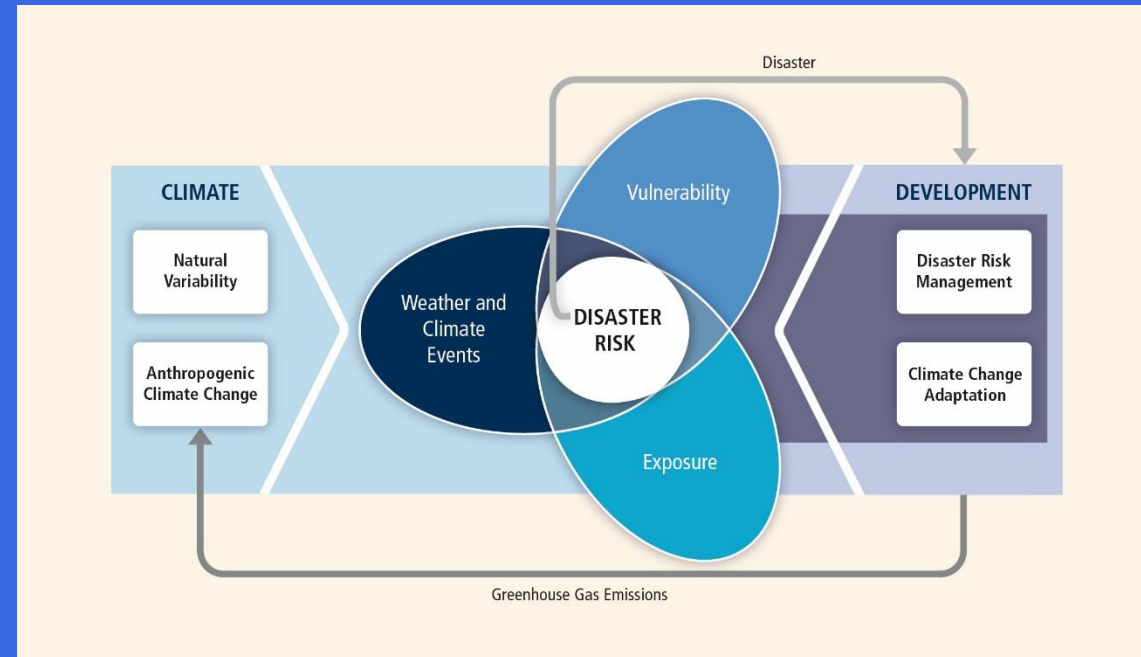
(IPCC SREX & AR5)

Tinbergen's rule

…there should be at least the same number of policy instruments as there are targets.

otherwise some targets will not be achieved = **trade-offs unavoidable**

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Overview of the economic assessments

Interventions

Passive control systems (PCS's)
Behavioural change

- Green roofs
- Green infrastructure

- Travelling trees
- Mobility behaviour

- Low boundary walls
- Photocatalytic paint

- Living Labs
- Citizen sensor kits

Effects

- Reduced exposure to air pollution
- Regulation of Urban Heat Island effect

Economic Assessment

Non-market economic impacts:
- Health
  (reduced mortality/morbidity)

Market economic impacts:
- Housing prices
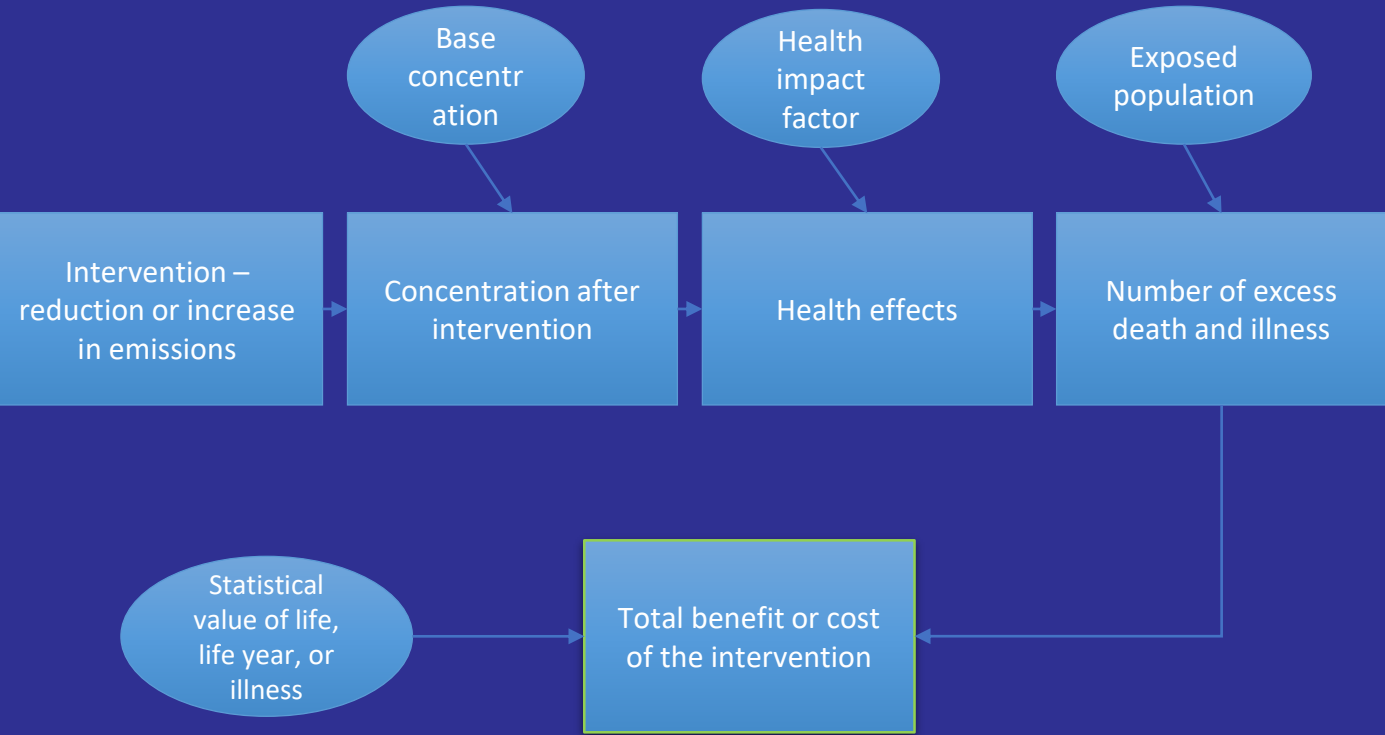- Willingness to Pay for citizen kits

Portfolio analysis:
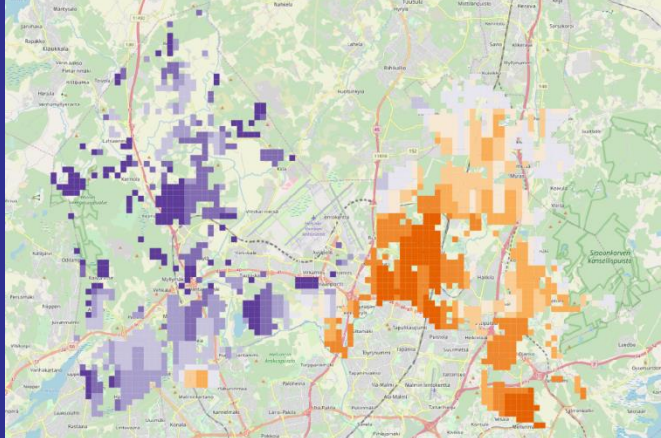- Accounting for uncertainty of economic impacts.

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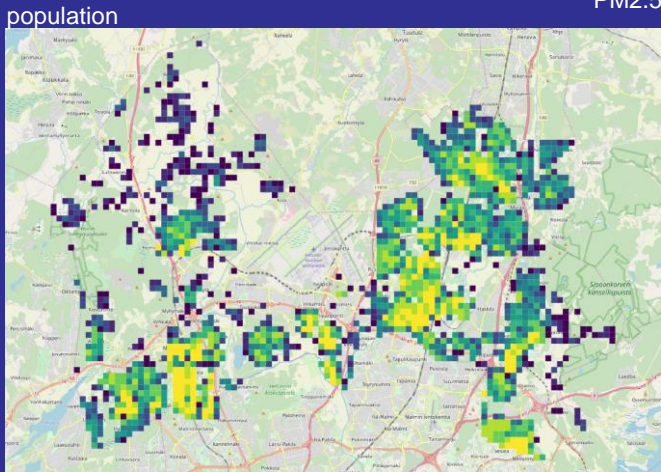FINNISH METEOROLOGICAL INSTITUTE

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5

Impact pathway approach

Base concentration

Health impact factor

Exposed population

Intervention – reduction or increase in emissions → Concentration after intervention → Health effects → Number of excess death and illness

Statistical value of life, life year, or illness → Total benefit or cost of the intervention

In practice: GIS data + detailed response functions, e.g.:

PM2.5

population

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Hedonic price approach

Matzarakis et al. (2008)

PET index (physiologically equivalent temperature)

Air quality

Green infrastructure

Big parks (> 1ha)   Simulation 1   Simulation 2

km   1   ½   0   1
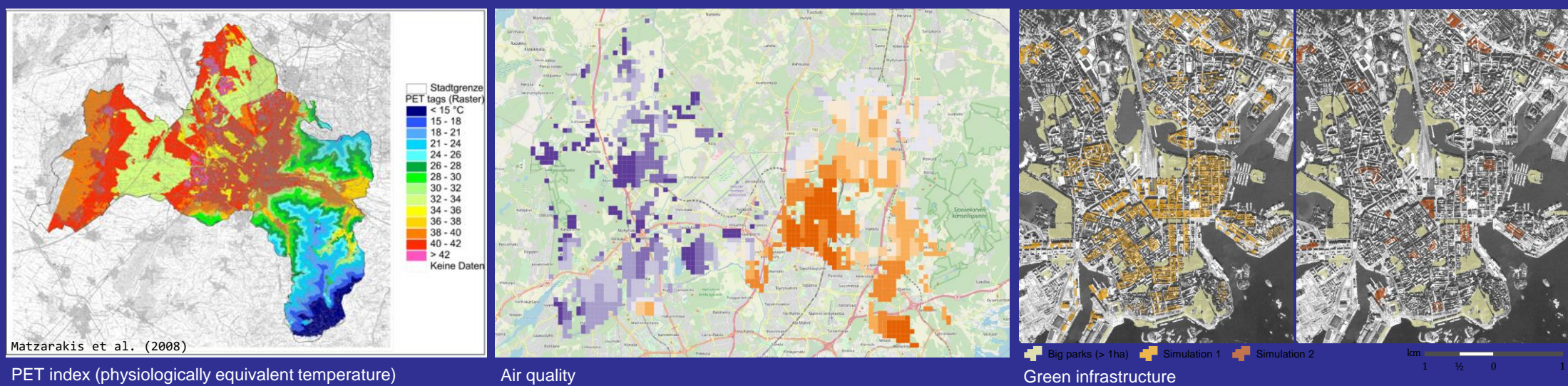
$$Price/_{m^2} = f(structural, locational, neighborhood\ attributes\ of\ properties)$$

We get "shadow prices" for AQ, PET, interventions: indicators for costs/benefits to households and the city

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Thank you ☺

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