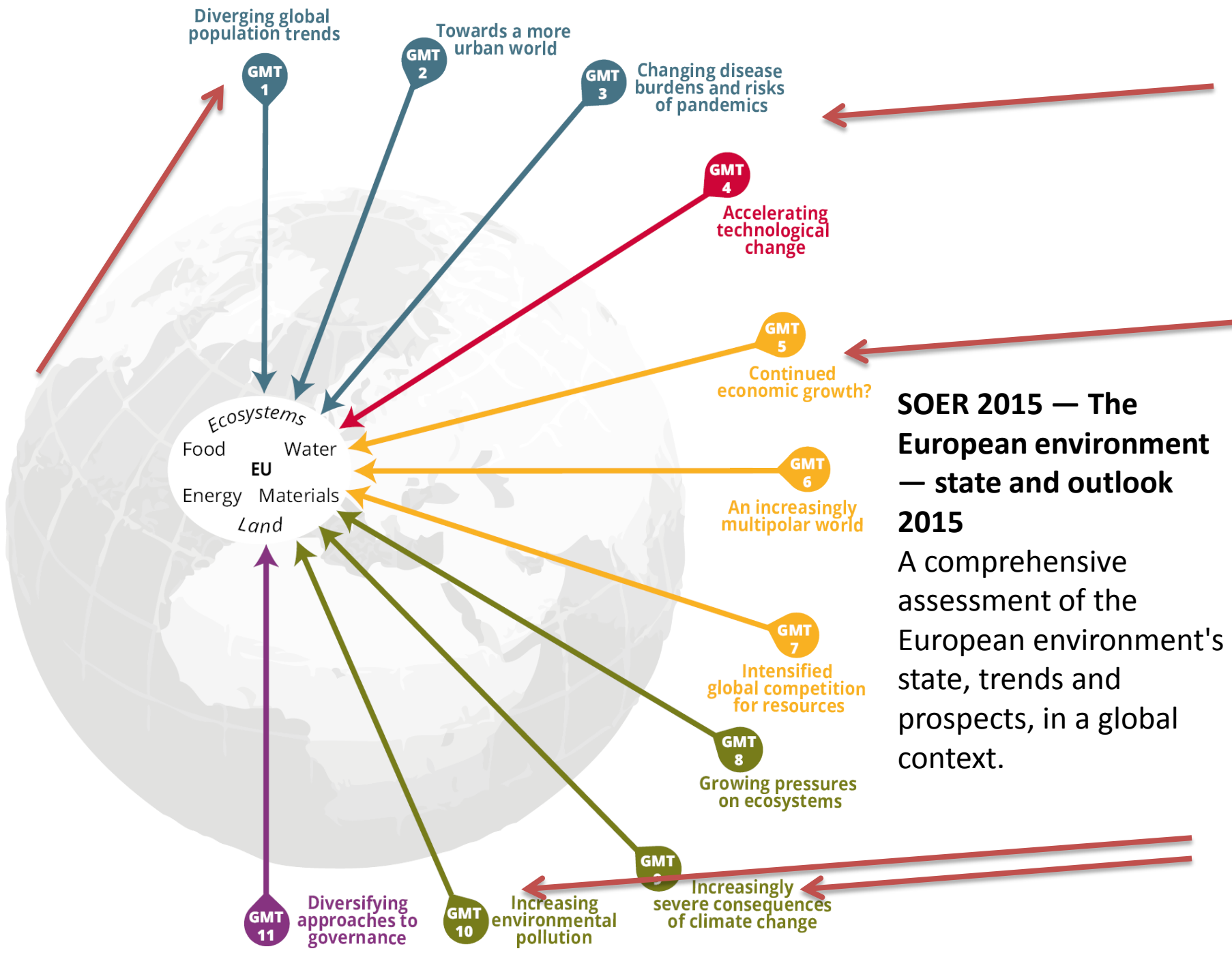


**Environmental health
situation in Hungary -
major challenges related to global
megatrends**

Anna Paldy, MD, PhD

National Public Health Center



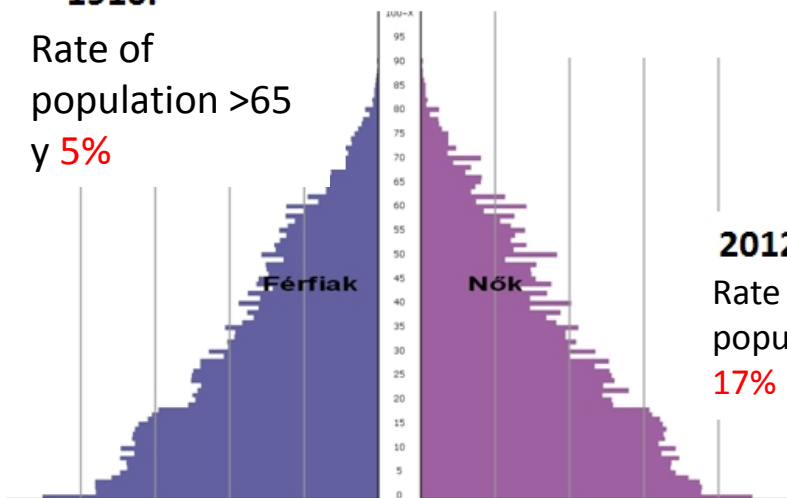
SOER 2015 — The European environment — state and outlook 2015

A comprehensive assessment of the European environment's state, trends and prospects, in a global context.

1. Diverging global population trends – age distribution of Hungary 1910., 2012, 2048

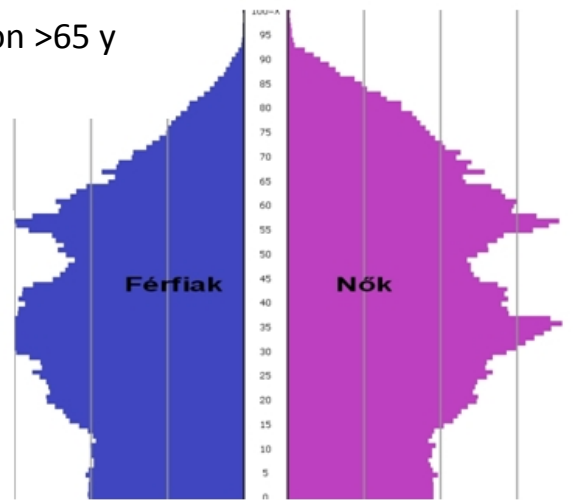
1910.

Rate of population >65 y 5%



2012.

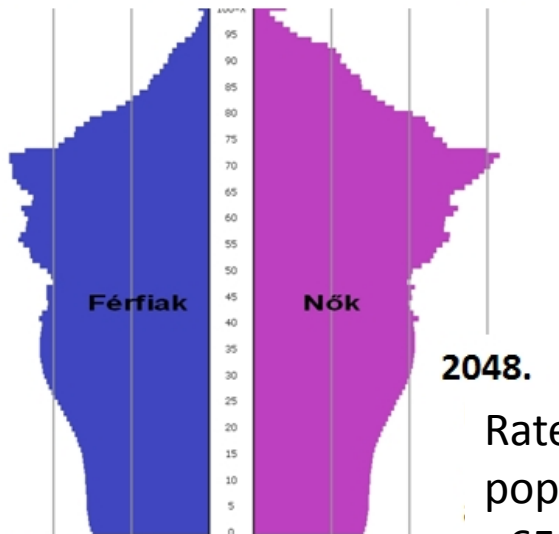
Rate of population >65 y 17%



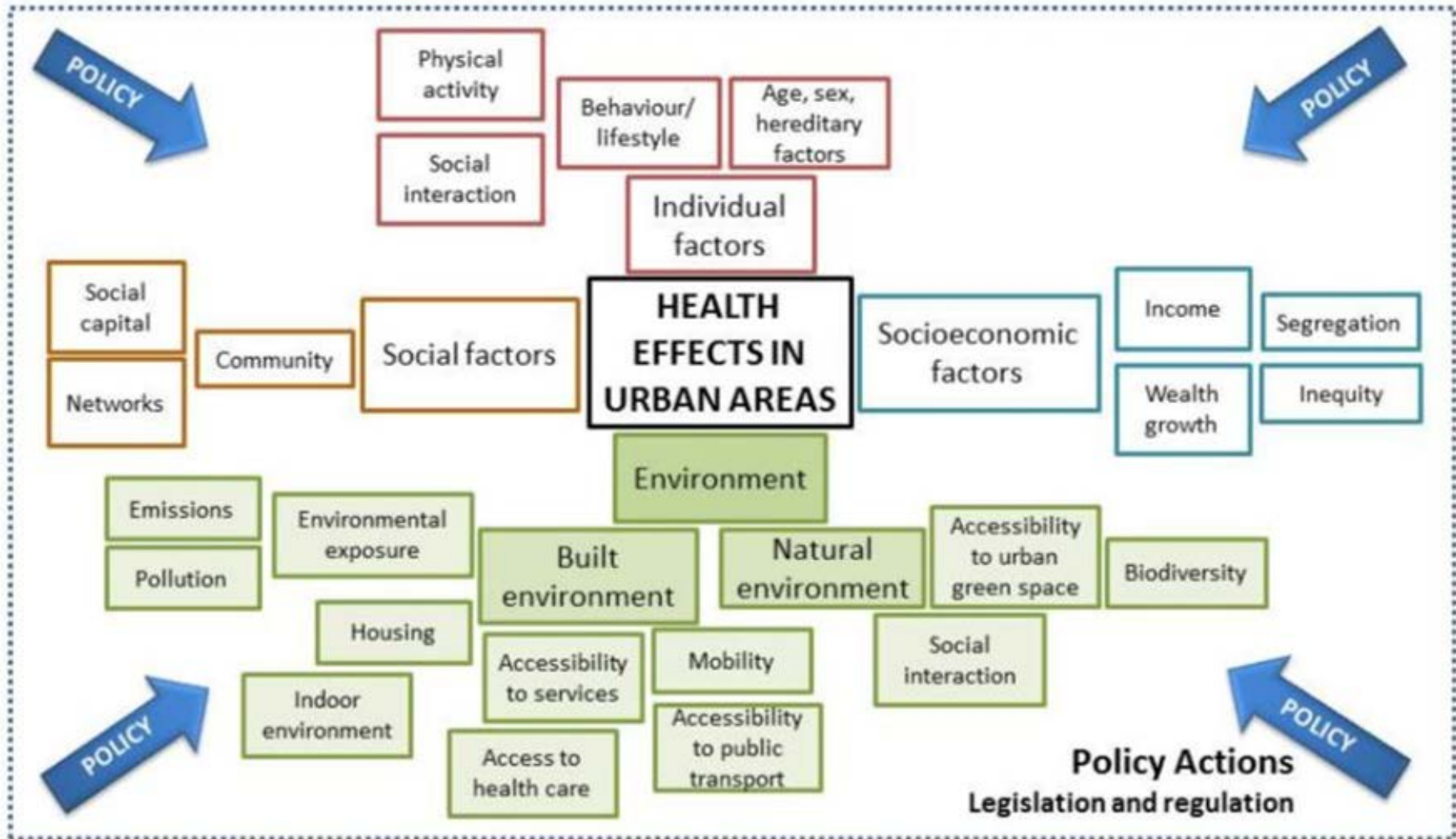
Life expectancy at birth 74.4 y – continuously increasing

2048.

Rate of population >65 y 30%

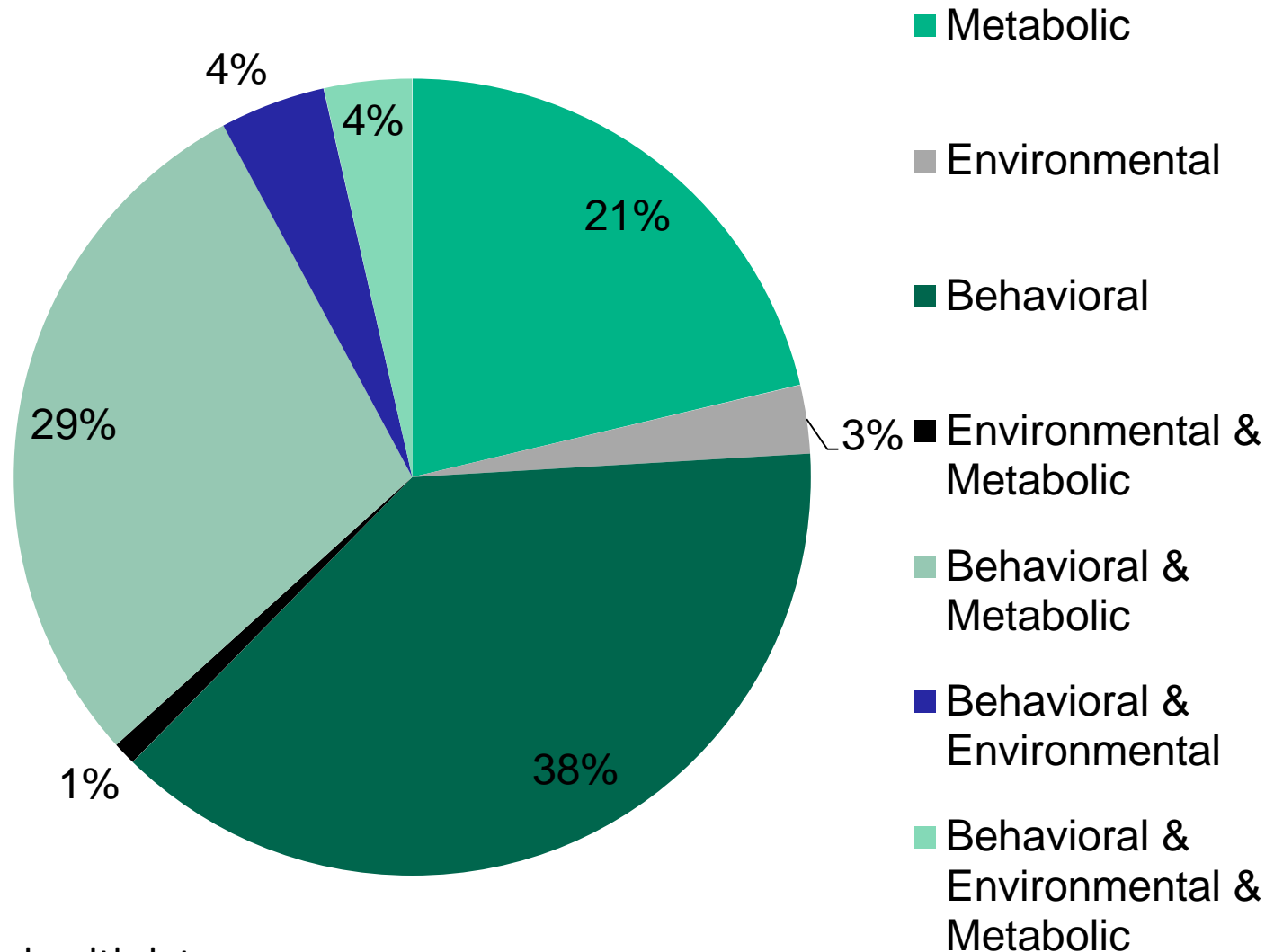


2. Towards a more urban world – Relationship of urban environment and health



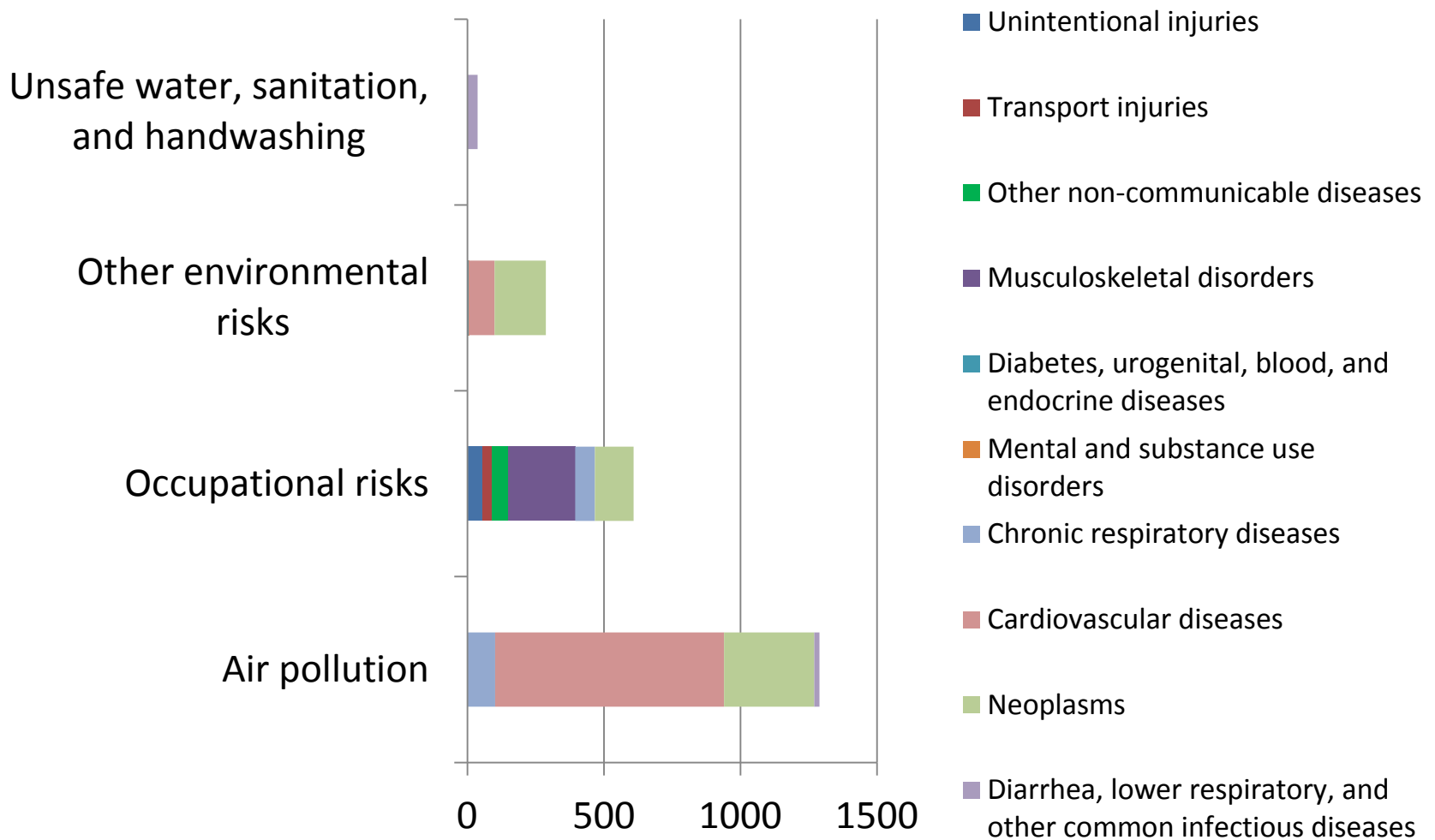
3. Changing disease burden

Percent of DALYs attributable to Global Burden of Disease risk factors, Hungary, 2013



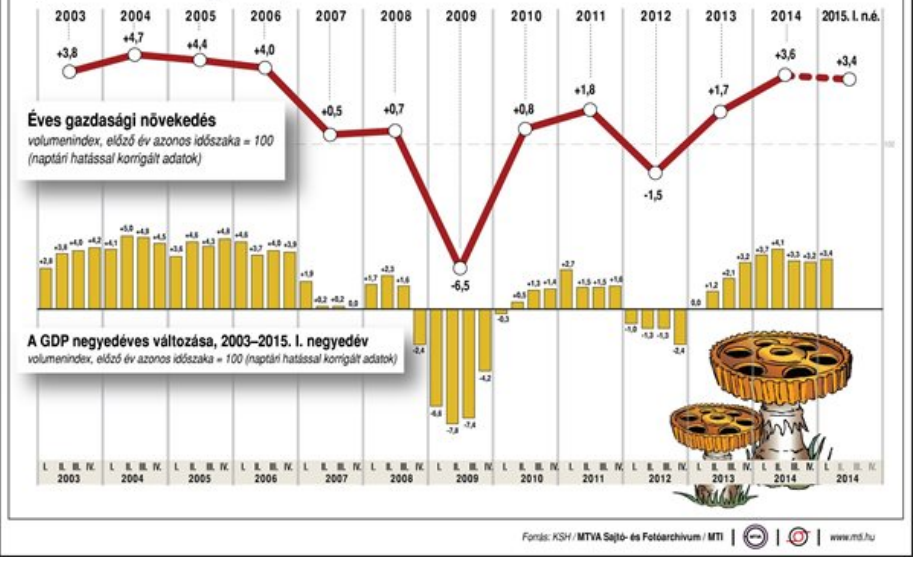
Data source: healthdata.org

Years Lived with Disability per 100,000 due to environmental risk factors, Hungary, both sexes, 50-69 years, 2013

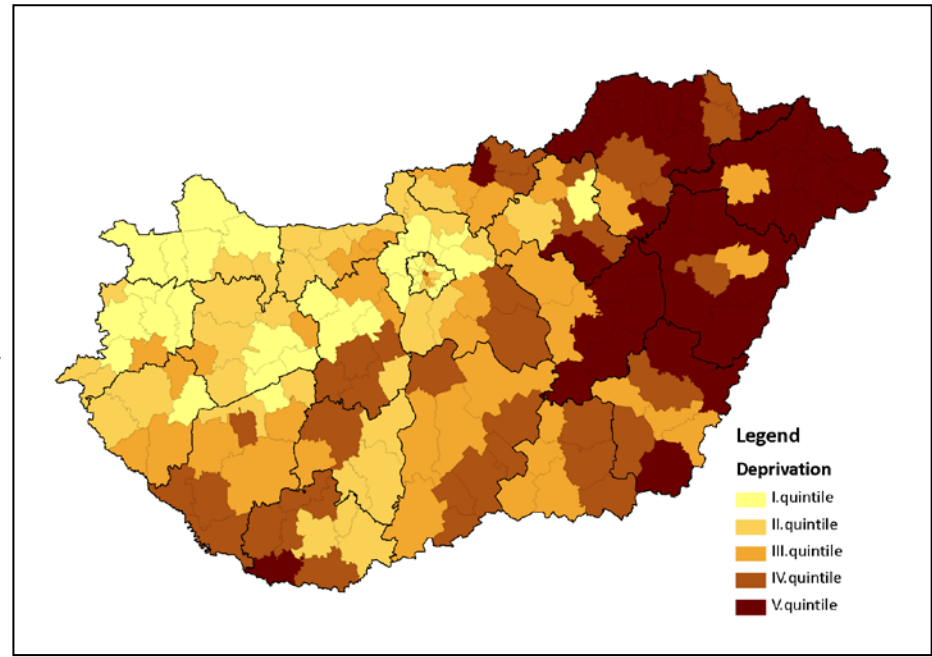


5. Continued economic growth

Change of GDP in Hungary 2003-2015. 1st quarter of year



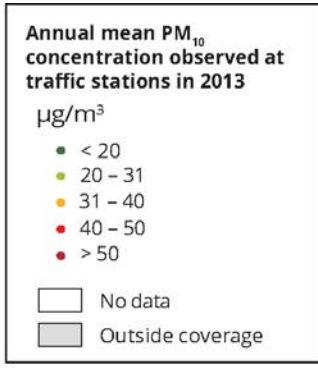
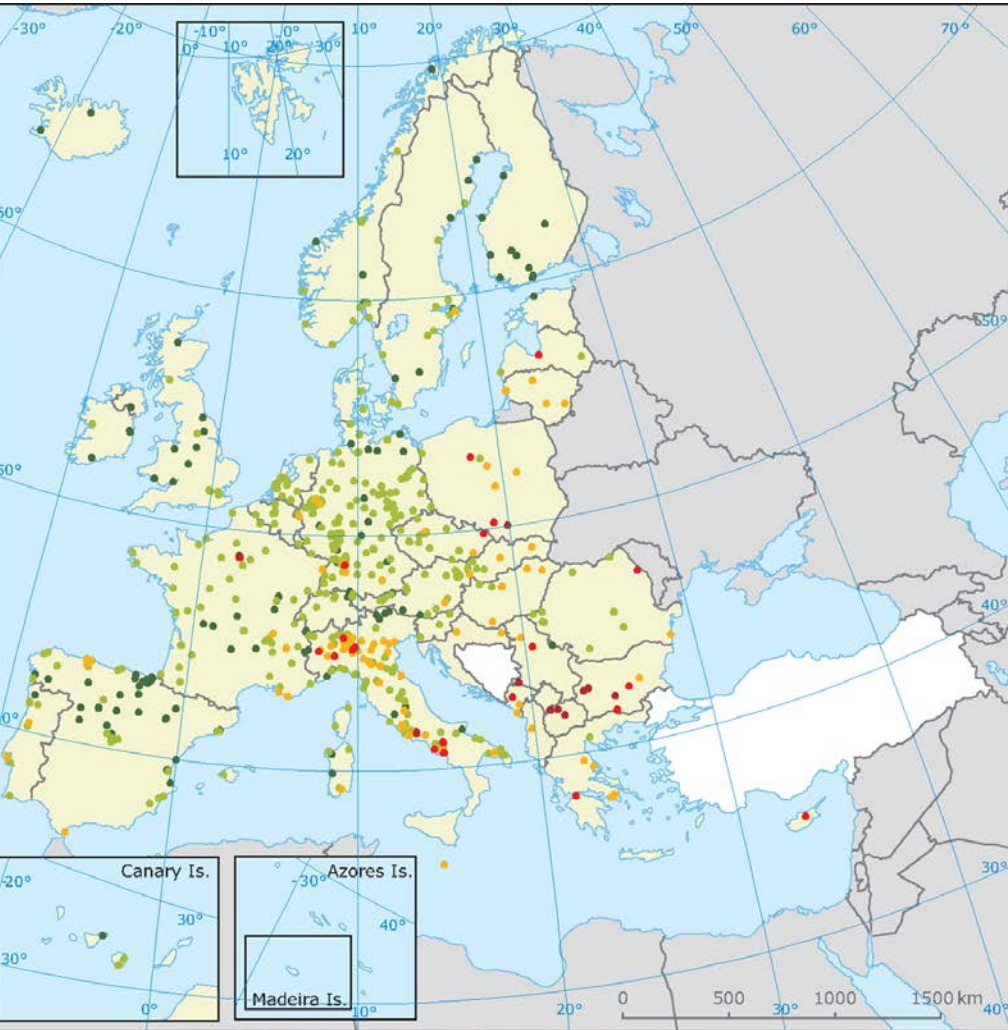
Spatial distribution of deprivation in Hungary



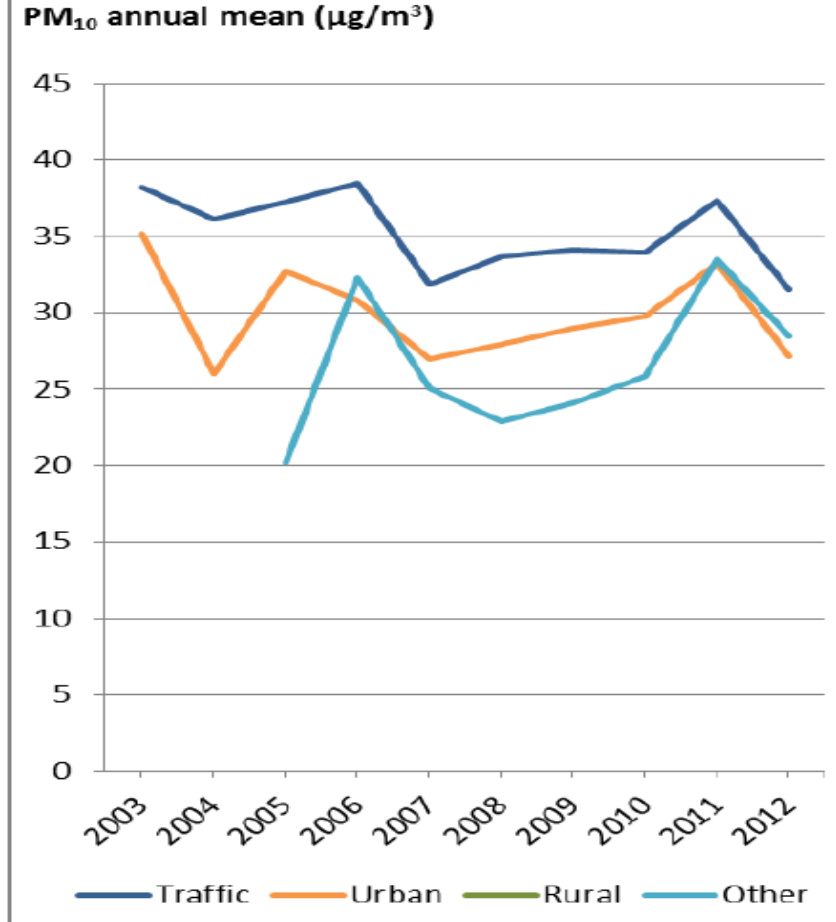
GDP and life expectancy at birth of males in Europe, 2012.



Juhász A, Nagy C, Pályi A, Beale L. Development of a Deprivation Index and its relation to premature mortality due to diseases of the circulatory system in Hungary, 1998-2004. Soc Sci Med. 2010 May;70(9):1342-9. Epub 2010 Feb 12. PubMed PMID: 20199838.

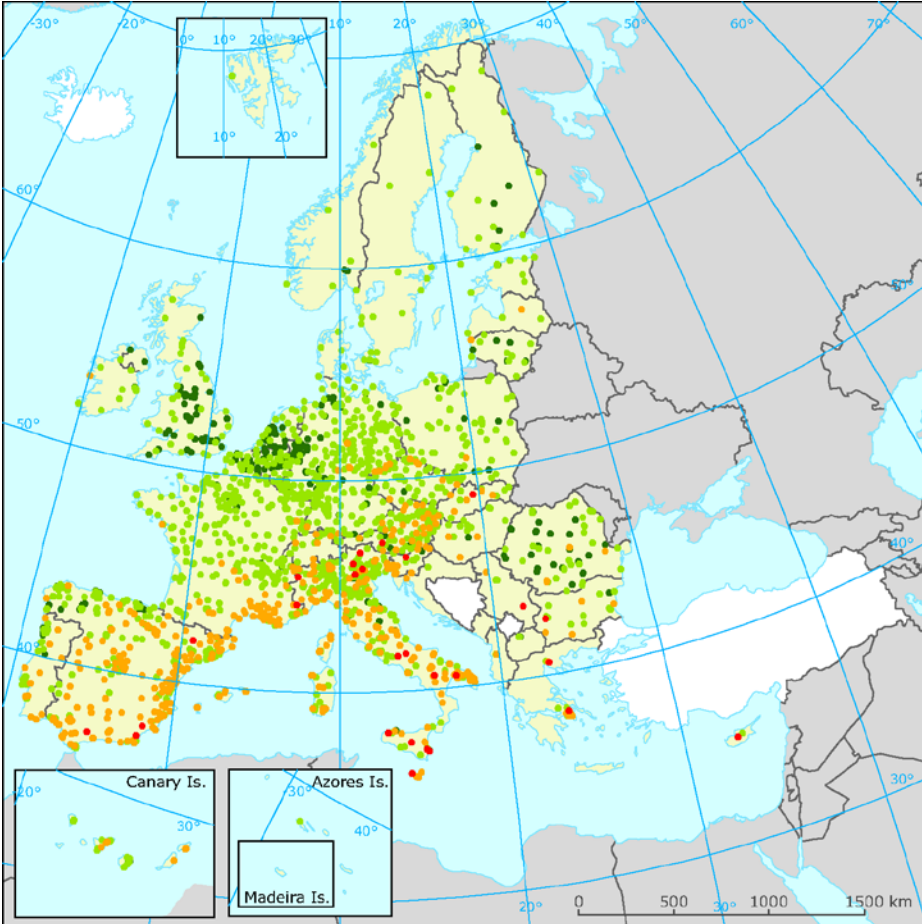


Changes in annual mean concentrations of PM₁₀ (2003-2012) per station type



8. Increasing environmental pollution- Air quality- PM10

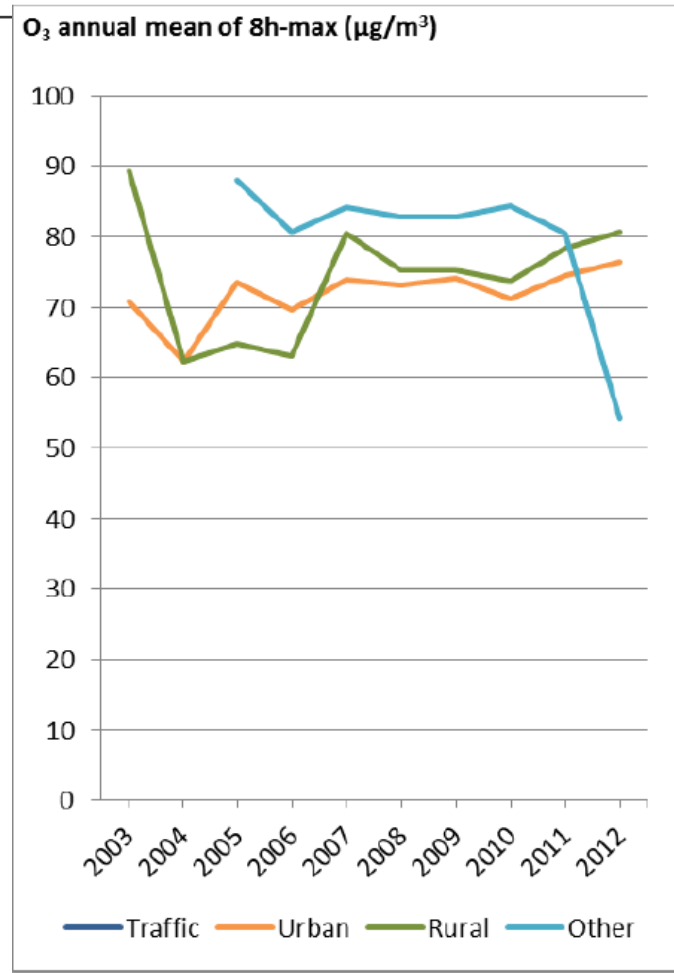
Source: Air pollution fact sheet, Hungary 2014. EEA



Annual mean ozone 2012, based on daily running 8h max with percentage of valid measurements $\geq 75\%$ in $\mu\text{g}/\text{m}^3$

- ≤ 60
 - 60-80
 - 80-100
 - > 100
- No data
 Countries/regions not included in the data exchange process

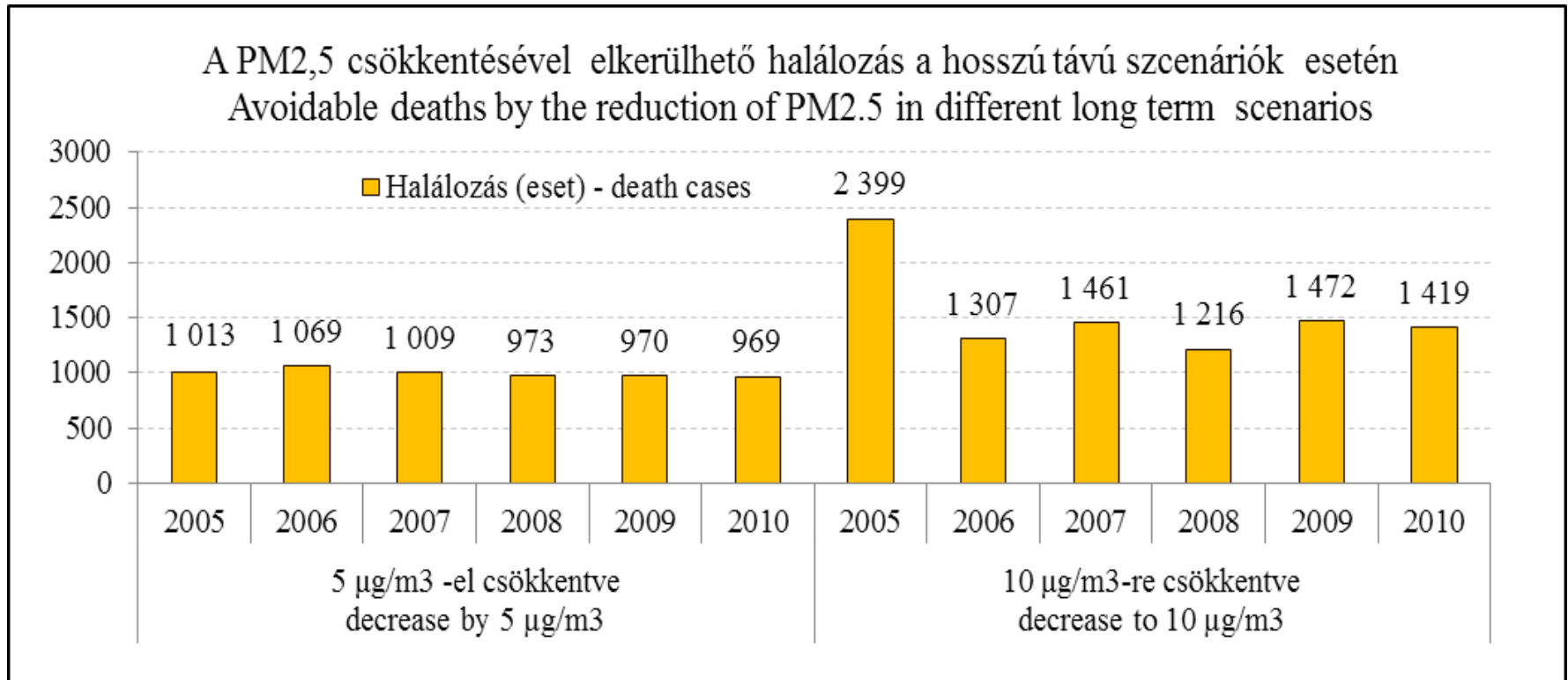
Changes in annual mean of the daily maximum 8-h average O_3 (2003-2012) per station type



8. 8. Increasing environmental pollution- Air quality - O_3

Source: Air pollution fact sheet, Hungary 2014. EEA

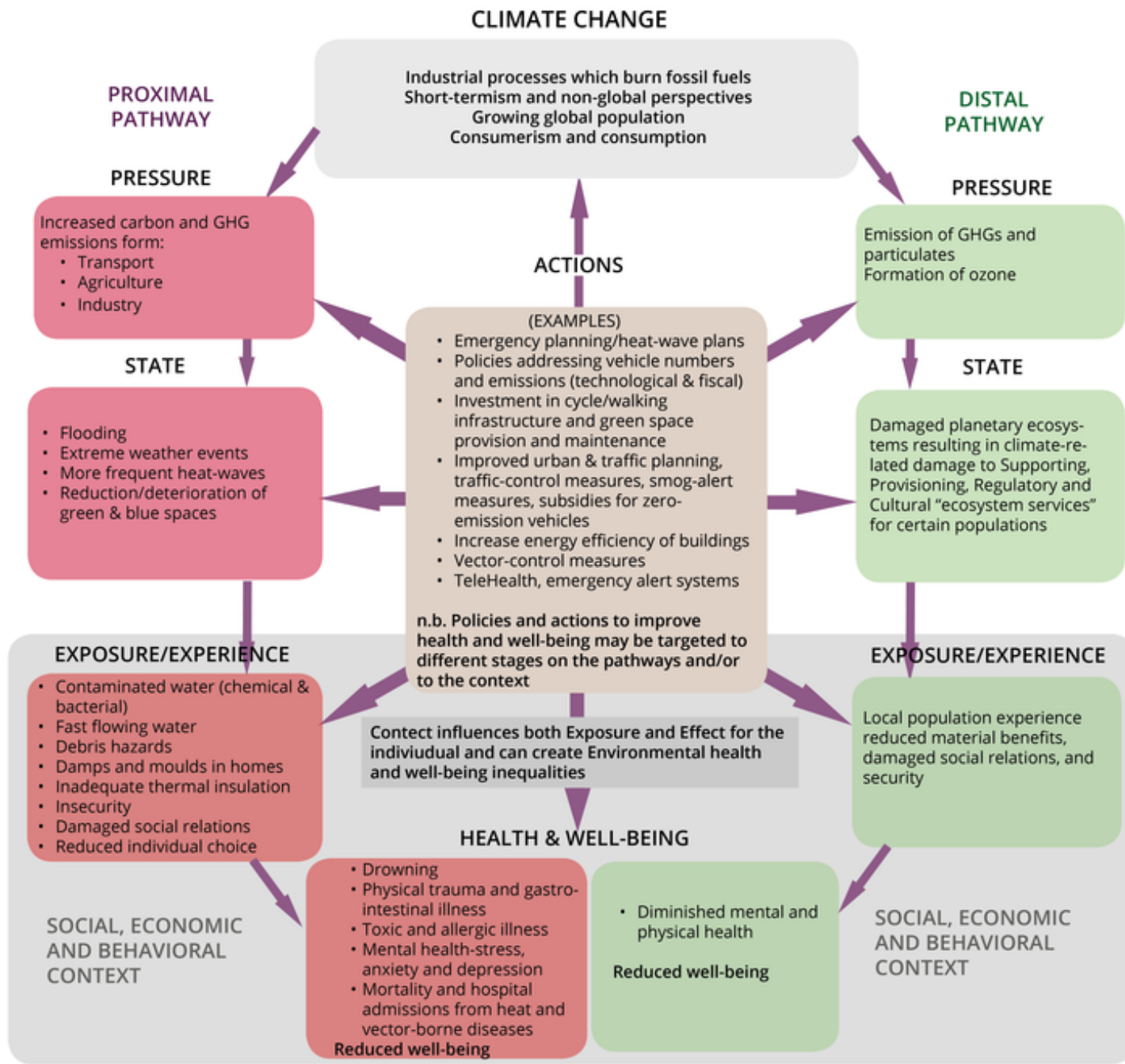
Environmental health impact assessment of ambient PM exposure in 14 Hungarian cities, 2005-2010: assessment of avoidable deaths in different long term scenarios related to the decrease of PM2.5 concentration



Extrapolating for the population of Hungary, assuming similar PM_{2.5} exposure, the attributable excess mortality due to the > 10 µg/m³ PM_{2.5} concentration would be ~8000 cases based on the air quality in 2005, respectively ~4800 cases based on the air quality in 2010 (using APHEKOM methodology for HIA).

The FRESH project

- The project on **Foresighted Reasoning on Environmental Stressors and Health** (FRESH) ran from 2013 to 2014 and investigated the frameworks and evidence base for undertaking integrated assessments of environmental health and well-being.
- Tracking multifaceted impacts on health and well-being demands **a diverse set of indicators**. In developing an indicator base for environment, health and well-being, it is also important to include indicators that combine health, environment and socio-economic dimensions.
- In the next figure, we take the example of **climate change** to demonstrate how conceptual mapping can help us to understand the complex relationships between ecosystems, natural, built and social environments, and human health. By identifying the pressures that impact on the state of the environment and determining human exposures and experiences, via both distal and proximal pathways, we can then start to build a portfolio of relevant policy actions.



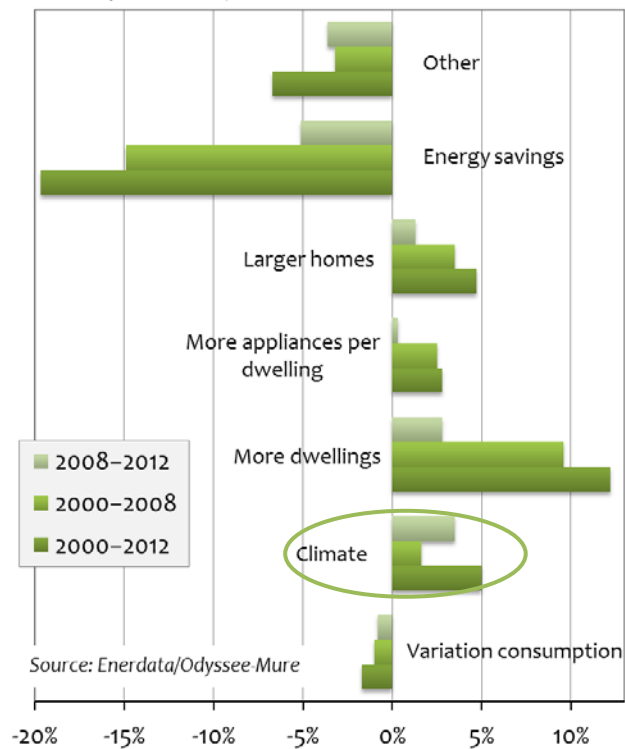
Modelling approach derived from Reis et al (2013)
<http://www.publichealthjnl.com/article/50033-35066%2813%2900242-4/abstract>

n.b. Global economic social and ecosystem connectivity means the distal pathway can impact on the proximal pathway in health relevant ways and vice versa

Climate change, health and well-being in Hungary

A demonstration of the implementation of FRESH indicators to assess the situation

Changes in energy consumption of households by main causal factors
(2000–2012., and before / after the economic crisis)

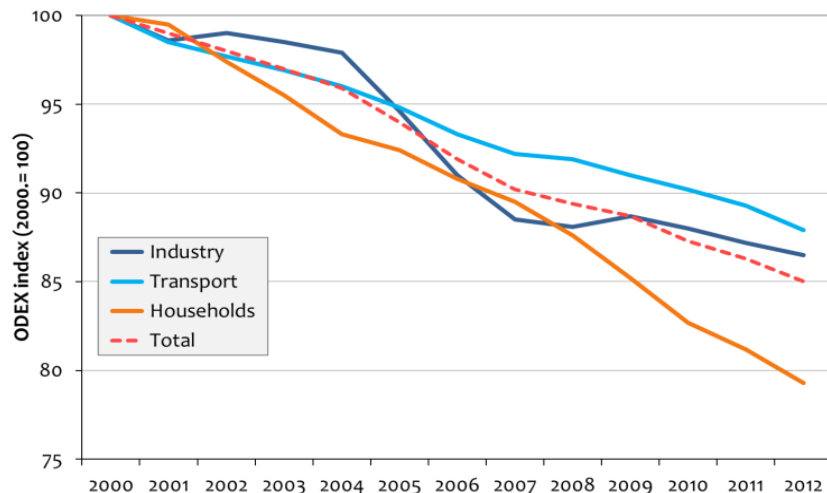


Driving forces

Use of energy by households: slightly decreases in EU between 2000-2012, due to energy saving instalments and buildings.

Climate change contributes to the increase of energy consumption – this is the only factor increasing after the economic crisis of 2008.

Energy efficiency index (ODEX) for final consumers (EU) by sector, 2000–2012.



Energy efficiency:

At the level of consumers it increased by 15% (by 20% in the households).

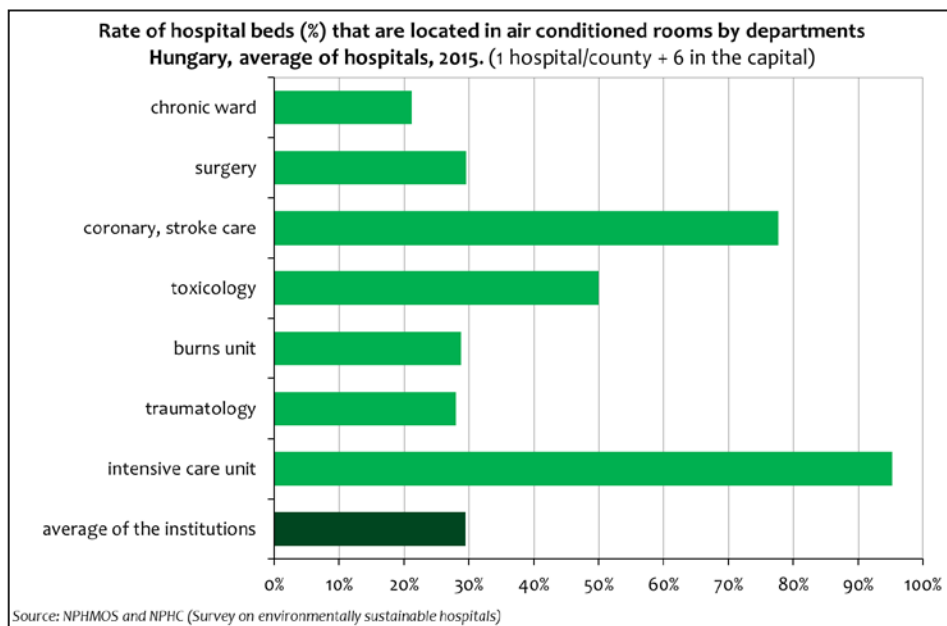
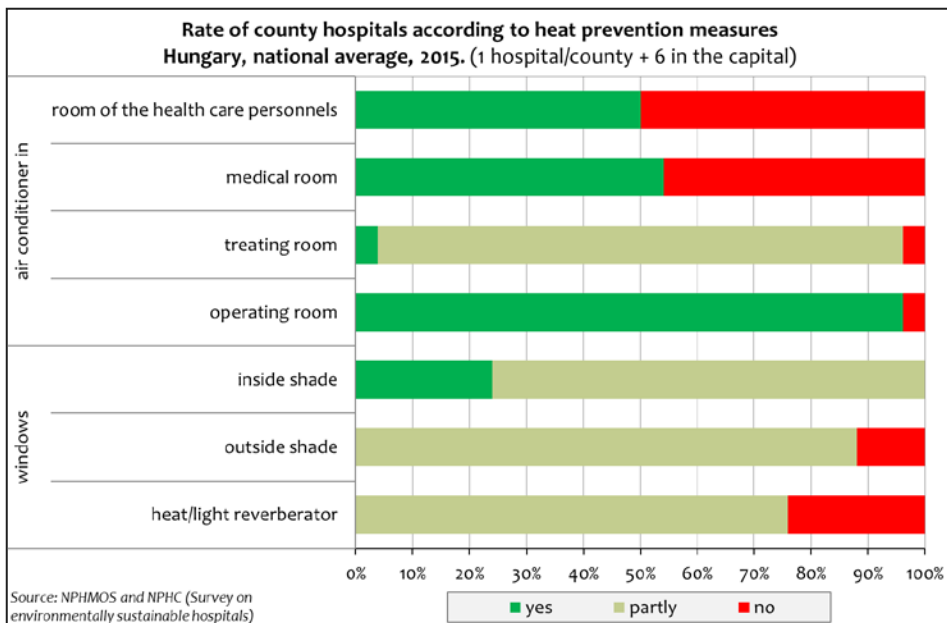
In Hungary the rate of increase is higher (>2.7%/year) than the EU average.

State of the environment

It is very important to ensure optimal **indoor air temperature** in hospitals and social care institutions. Acc. to a survey in 2015 carried out in the leading county hospitals in Hungary, there is AC in most of the operating rooms, in 50% of staff rooms, in 80-90% of intensive and coronary care units and in 30% of other types of rooms.

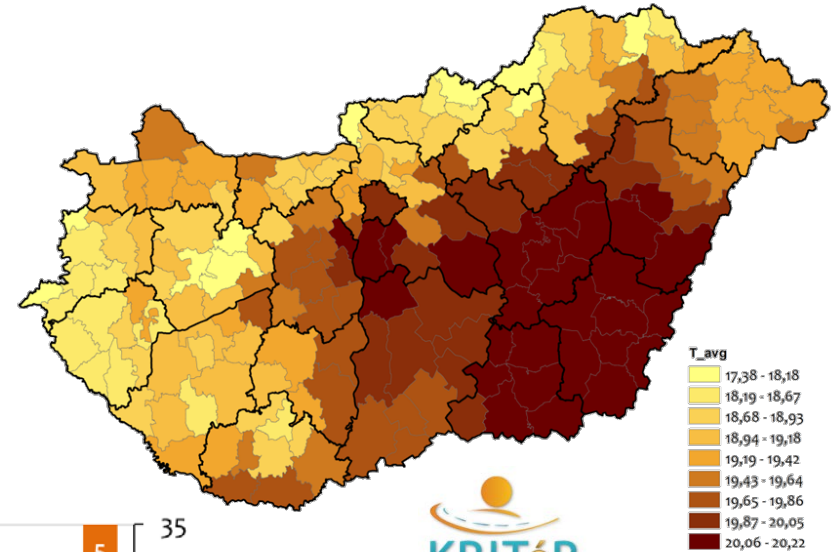
~10% of the rooms of social care units have AC (2011)

25% of private homes have AC (2015)



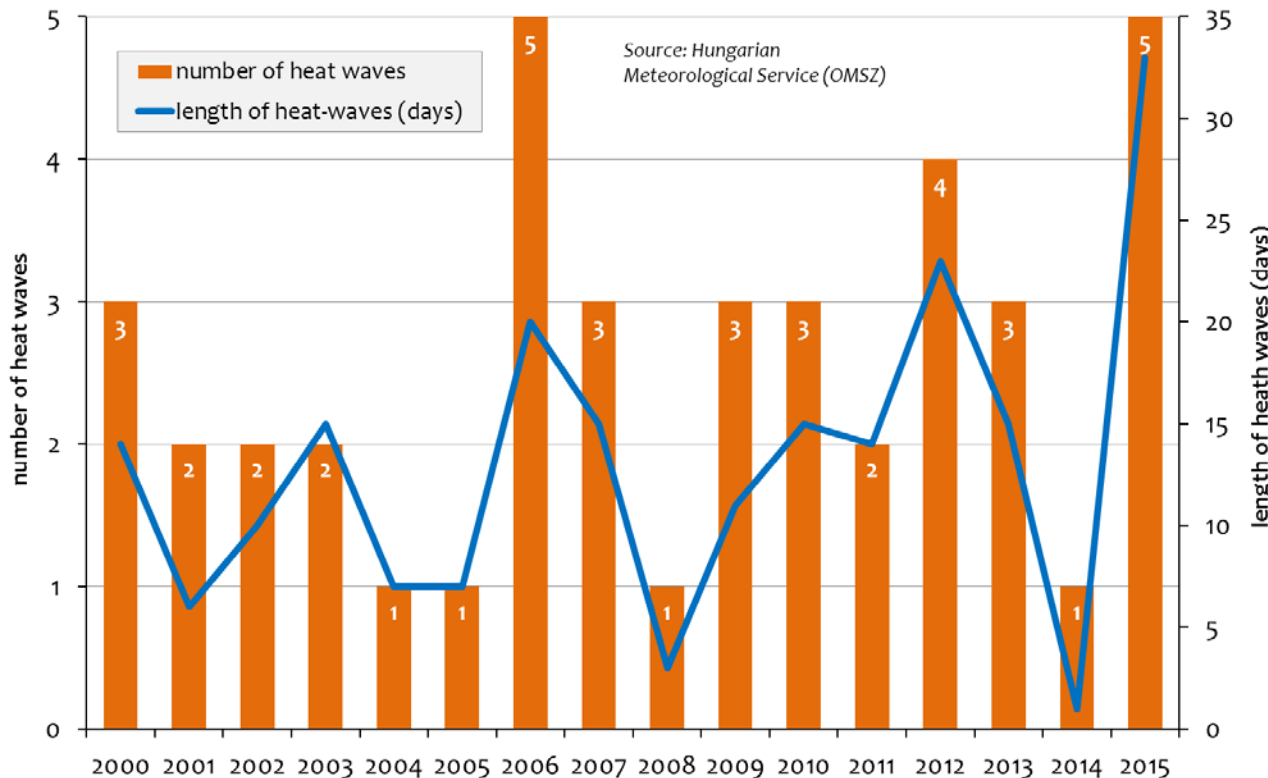
Mean temperature during the summer period, 2005-2014

Exposure



<http://www.met.hu/KRITeR/hu/publikacio/>

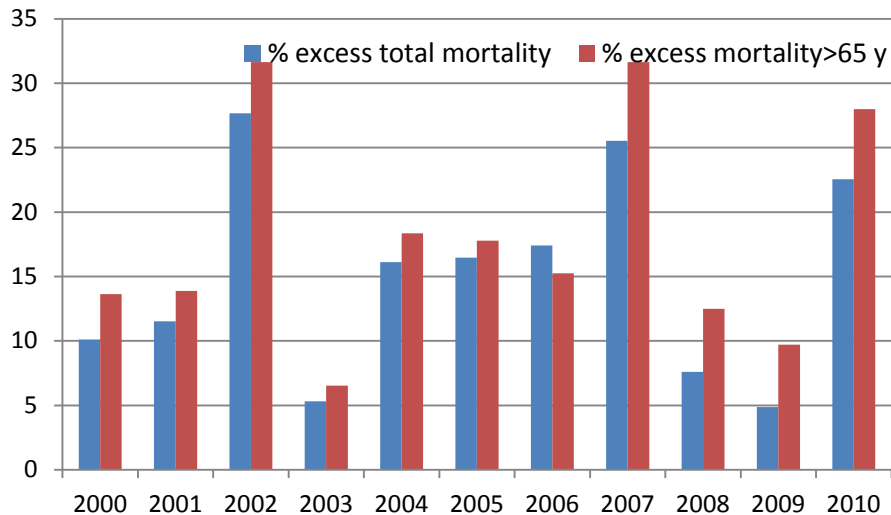
Annual number and length of heat-waves in Hungary, 2000–2015.



Source: Hungarian Meteorological Service (OMSZ)

Excess mortality during heatwaves

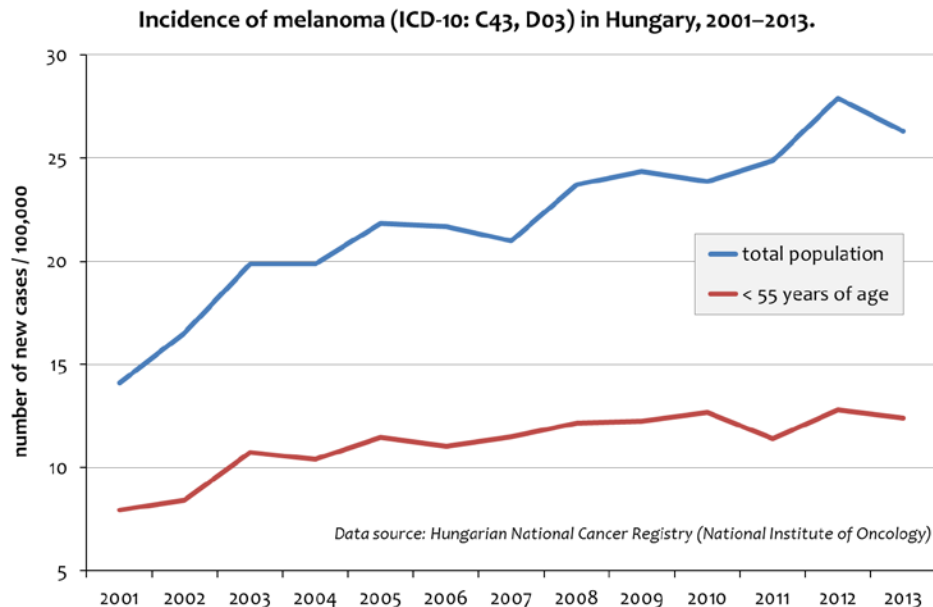
over the cut off TEMP (p90% 25°C) in the total population and over 65 year in Budapest, 2000-2010



Data source: Central Statistical Office

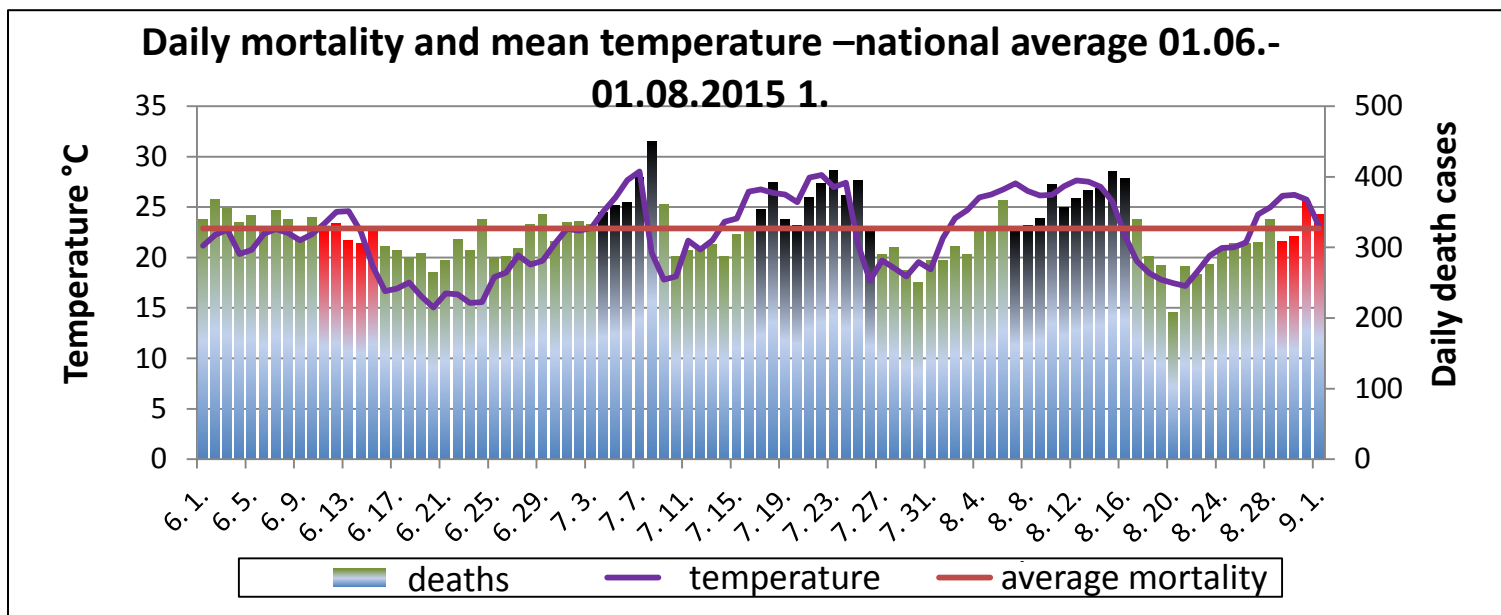
The heat related excess mortality can be proved in each year, it is between 5- 30%

The incidence of melanoma is indirectly associated with climate change with increase UV radiation. In Hungary we can observe an increasing tendency in the last decade.

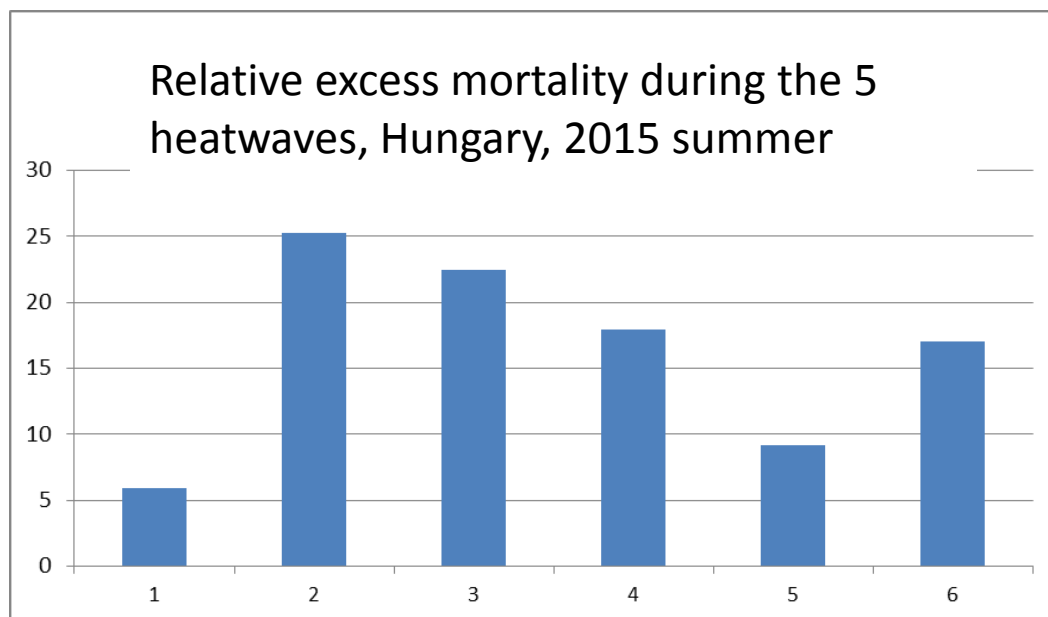


Data source: Hungarian National Cancer Registry (National Institute of Oncology)

Daily all cause mortality and daily mean temperature, Hungary, 2015



Heat alerts 2015	level	Relative excess mortality (%)	Excess mortality cases
06.11-06.15	II.	5,9	91
07.04.-0.08.	III.	25,2	387
07.17.-07.26.	III.	22,4	550
08.07.-08.16.	III.	17,9	716
08.29.-09.01.	II.	9,2	141
Mean/total		17,0	1884



Measures to improve the environmental health situation in Hungary

Adaptation and implementation of national strategies and policies:

- 2nd National Climate Strategy – needs a Parliament Resolution
- National Energy Strategy 2030
- 4th National Environmental Program 2014-2019
- Governmental Decree on the Intersectoral Action Program on reducing PM10 concentration

Thank you for your attention