



Latest information on climate change and health

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Content

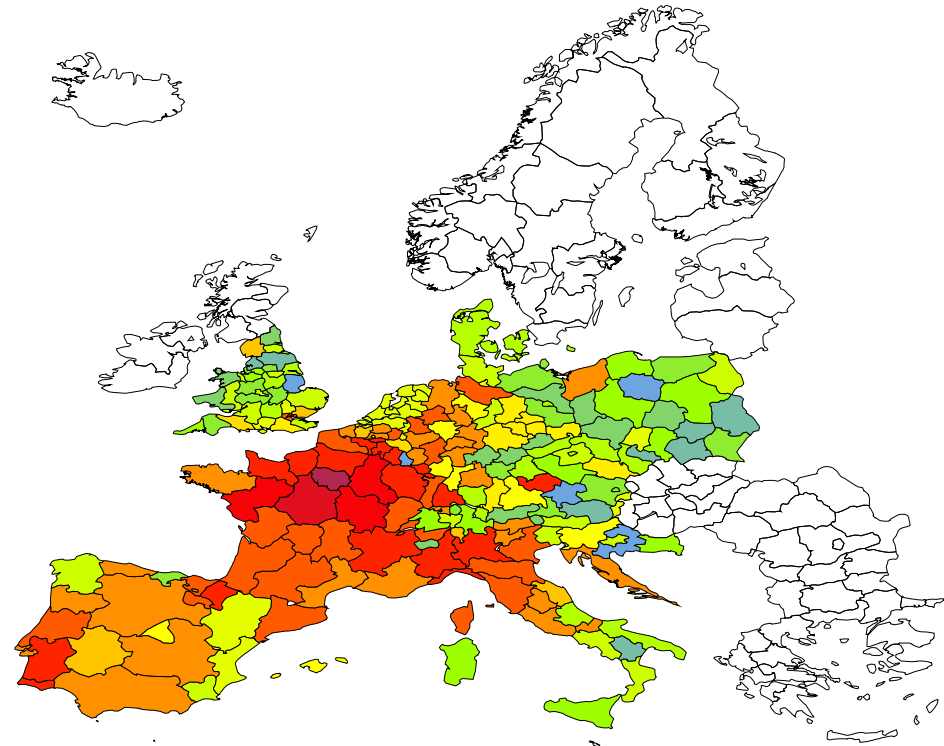
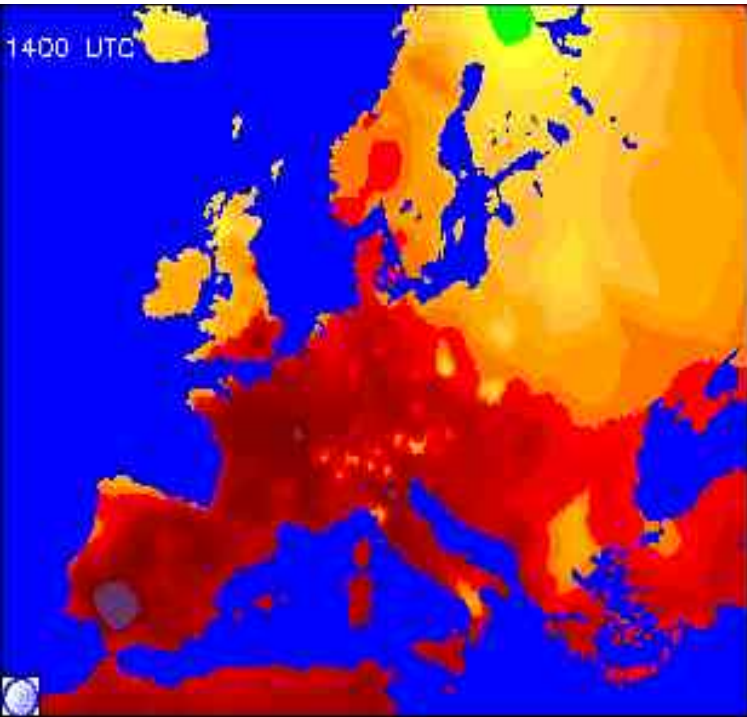
- **The climate is changing;**
- **It has already affected health;**
- **Projected climate change-related exposures are likely to affect the health status of millions of people;**
- **All regions in the world are exposed but some are more vulnerable;**
- **Action is needed NOW:**
 - **Improving health while reducing emissions;**
 - **Review, development or adjustments of public health activities are necessary;**
- **Can health guide development?**

Climate, an ancient health determinant

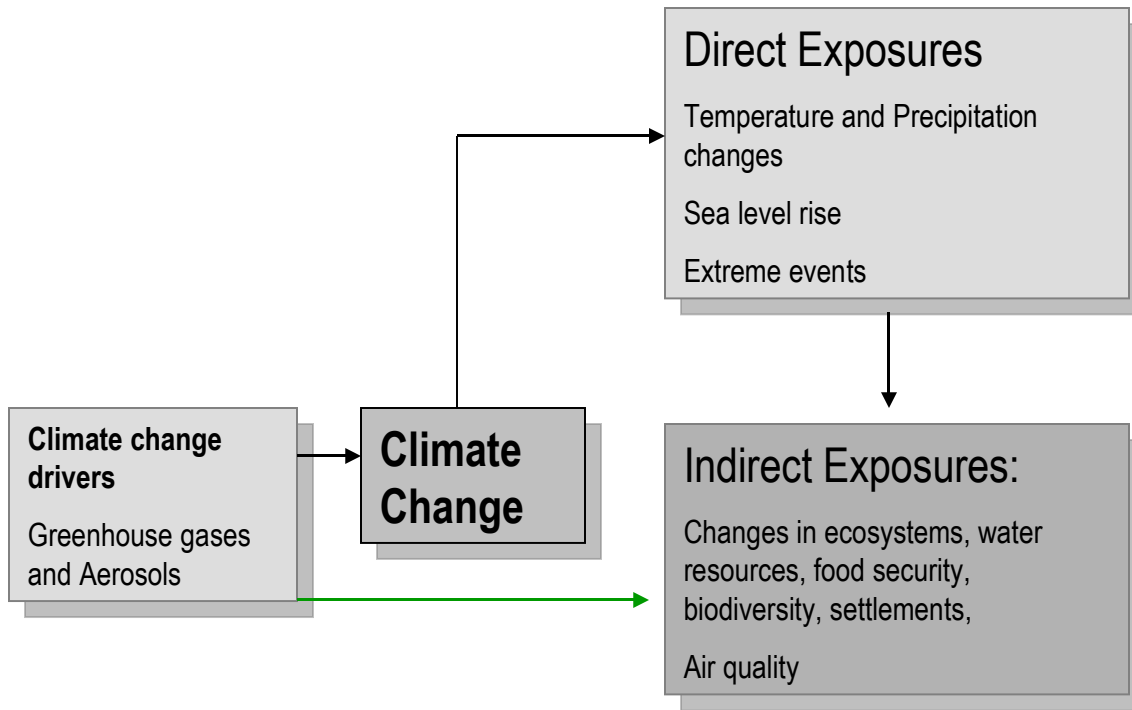
“Whoever wishes to investigate medicine properly, should proceed thus: in the first place to consider the seasons of the year, and what effects each of them produces for they are not at all alike, but differ much from themselves in regard to their changes. Then the winds, the hot and the cold, especially such as are common to all countries, and then such as are peculiar to each locality”

On Airs, Waters and Places. Hippocrates (Circa 400 B.C)

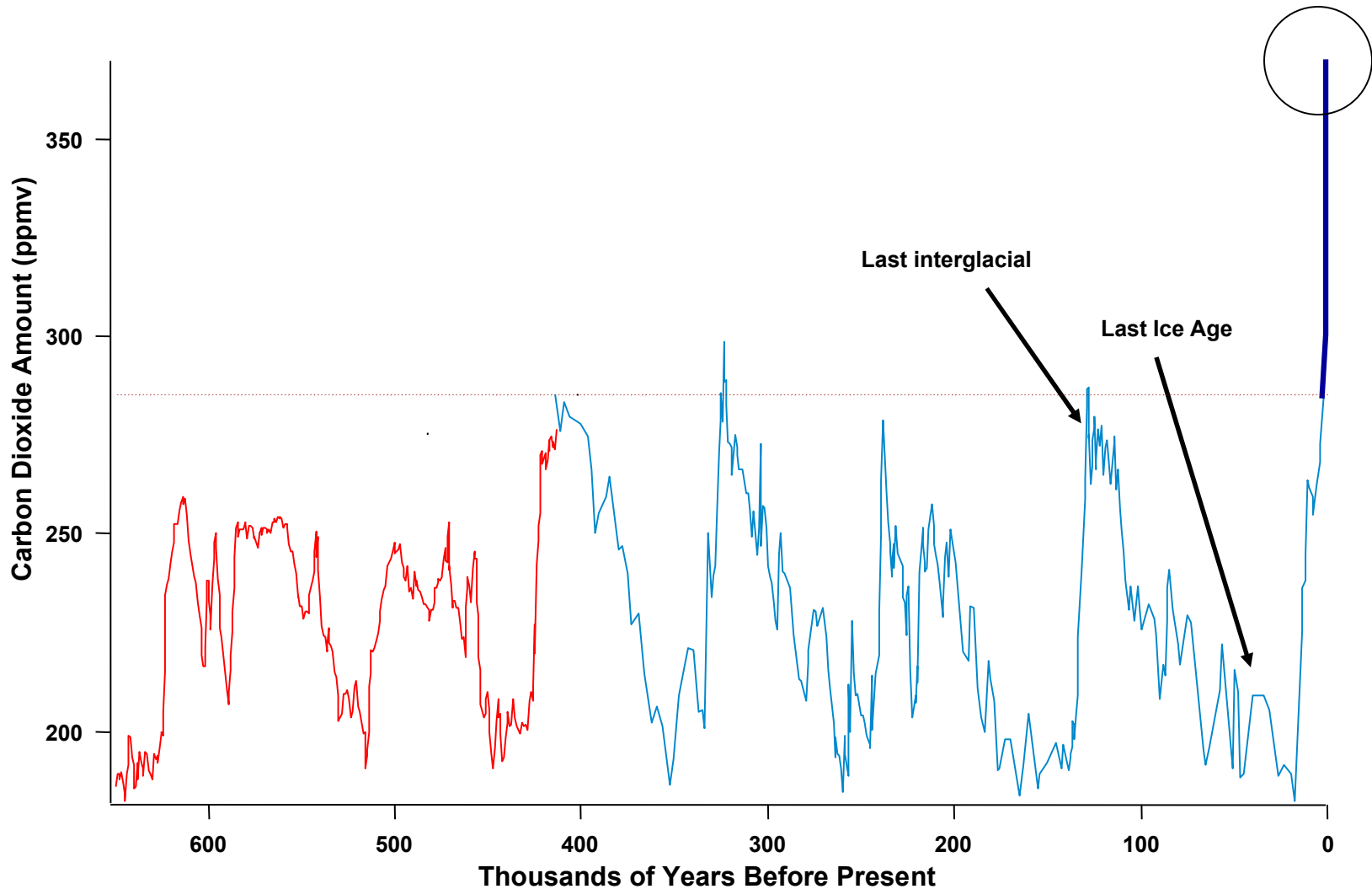
Climate change, the “new” health determinant



**Deaths During Summer 2003 in Europe: 70.000 excess
deaths have now been counted
INSERM (2007)**



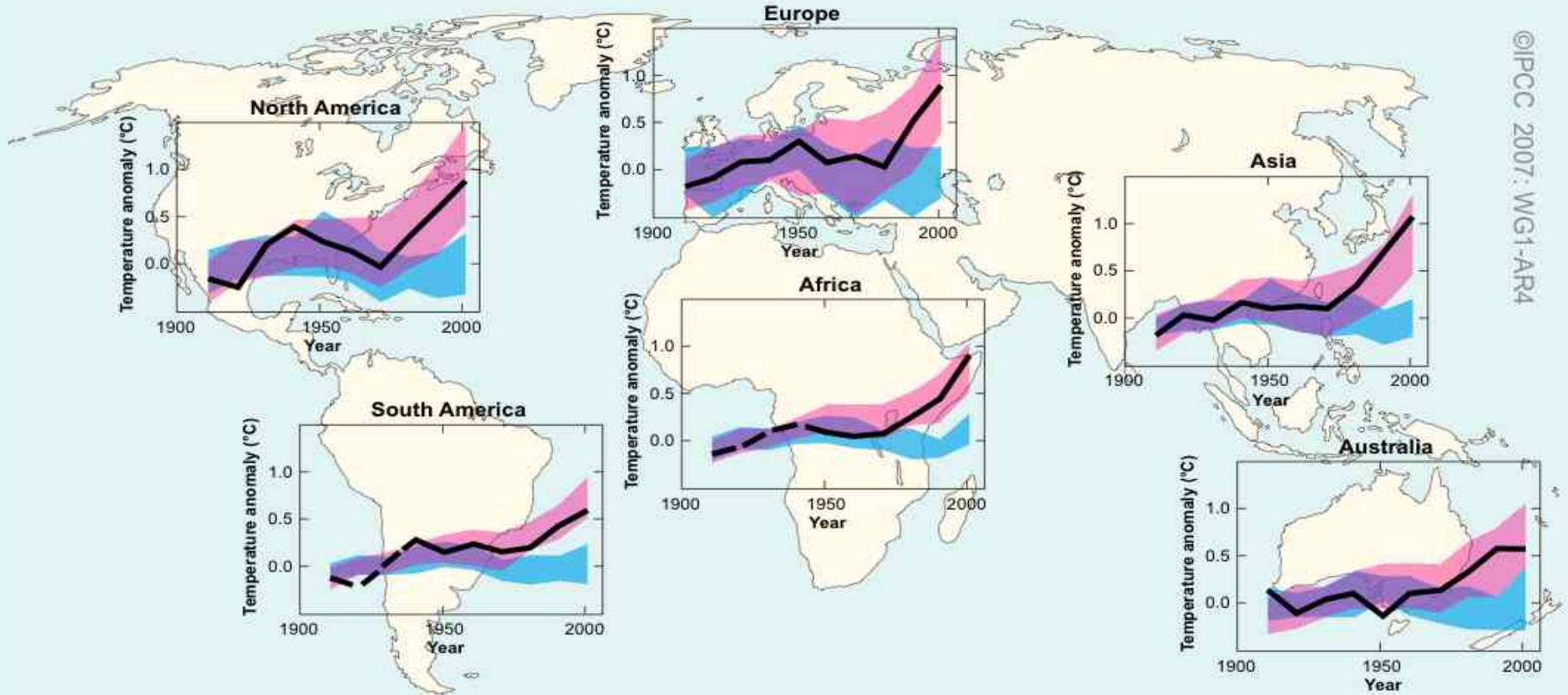
CO₂ has not been this high in more than half a million years.



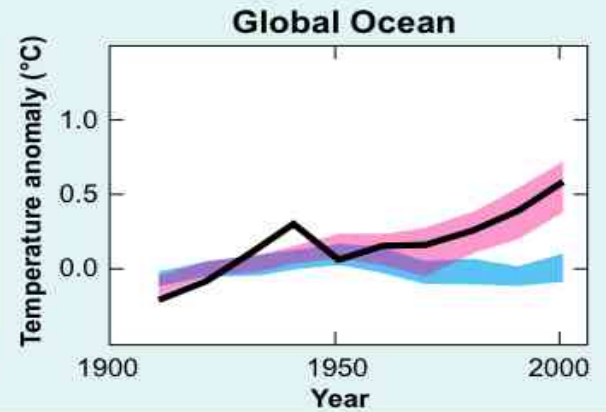
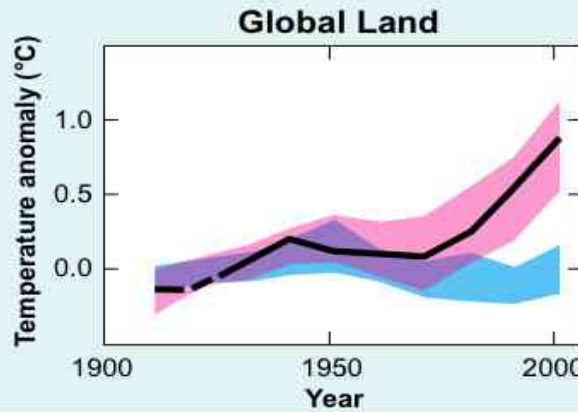
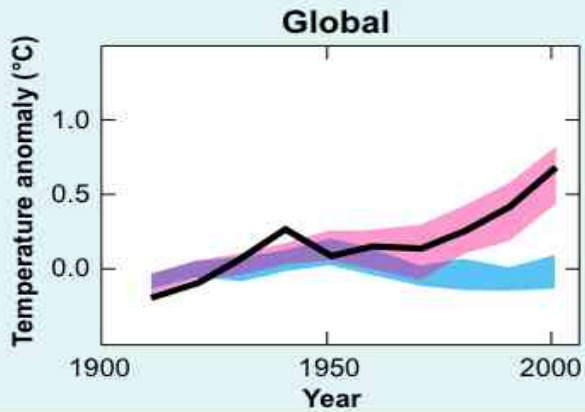
[Adapted from Figure 6.3, ©IPCC 2007: WG1-AR4]

CO₂ increases due to fossil fuel burning are the dominant cause of global warming

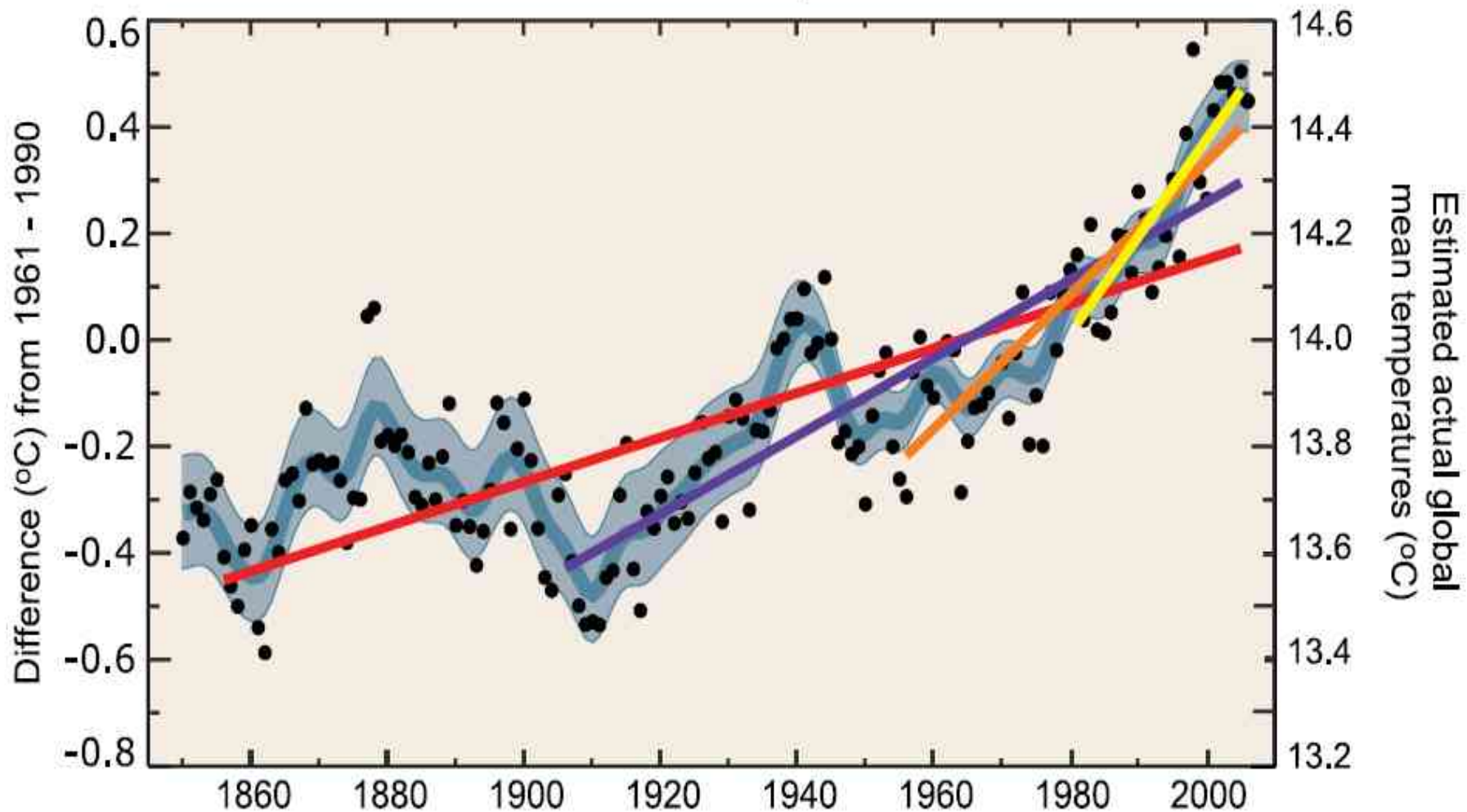
Global and Continental Temperature Change



©IPCC 2007: WG1-AR4

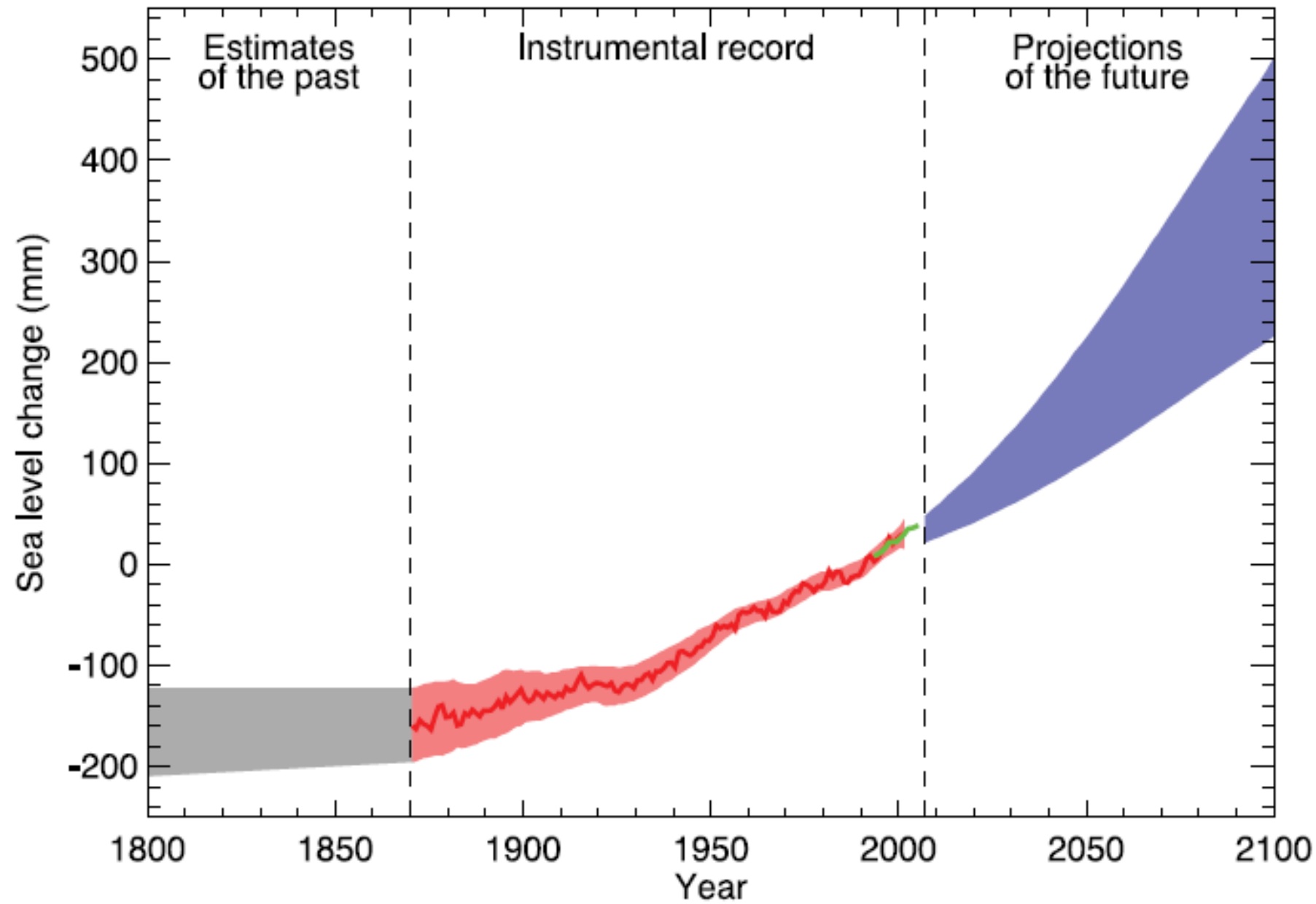


Global Mean Temperature

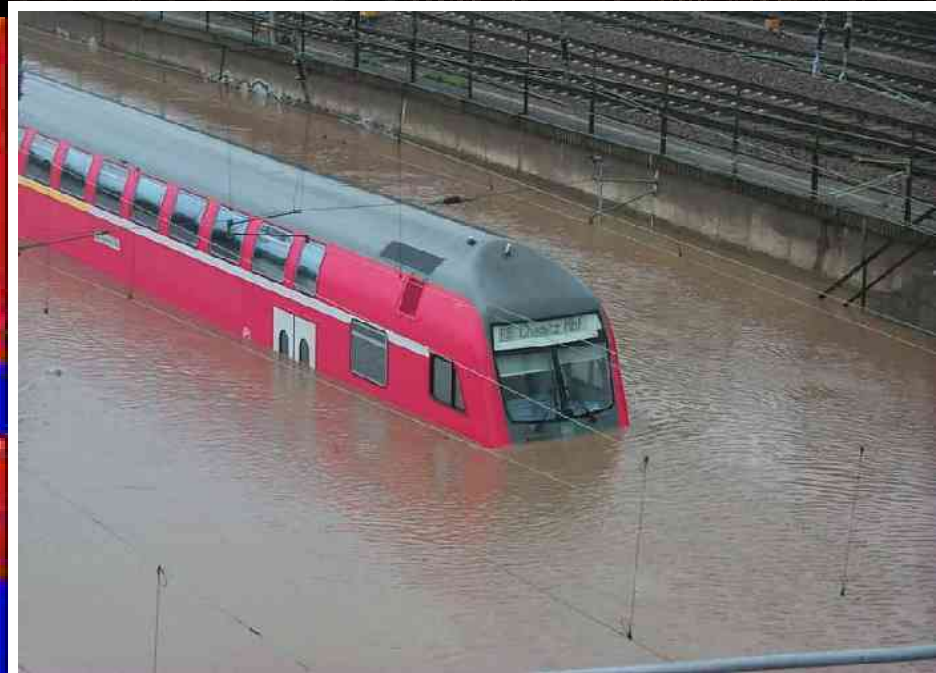
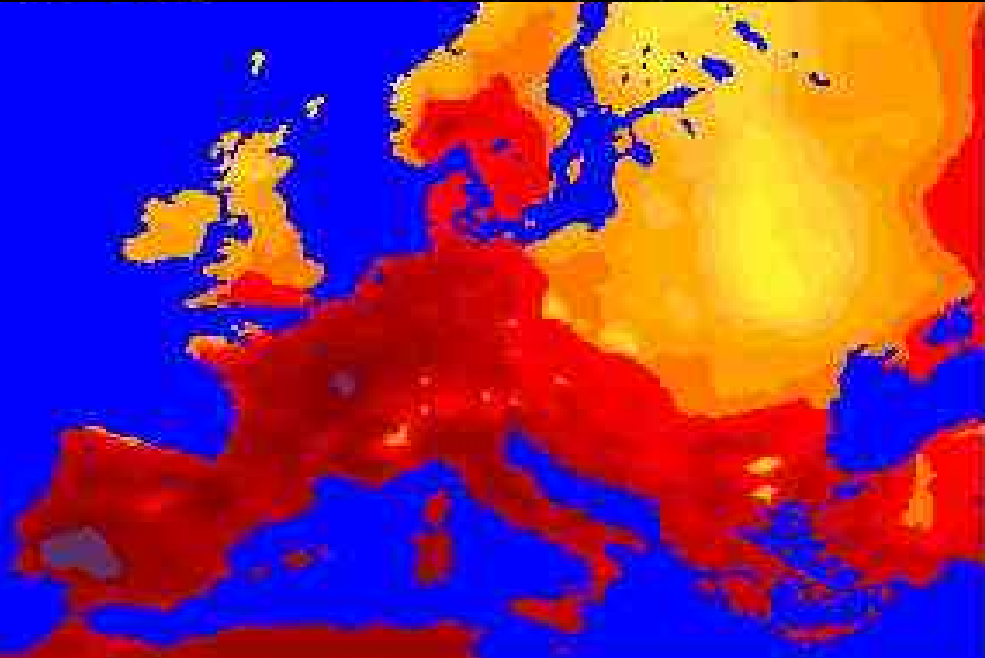


- Annual mean
- Smoothed series
- 5-95% decadal error bars

Period	Rate
Years	°C per decade
25	$0,177 \pm 0,052$
50	$0,128 \pm 0,026$
100	$0,074 \pm 0,018$
150	$0,045 \pm 0,012$



More heat-waves, heavy precipitation and more droughts....



Impacts are occurring NOW

Retreat of glaciers



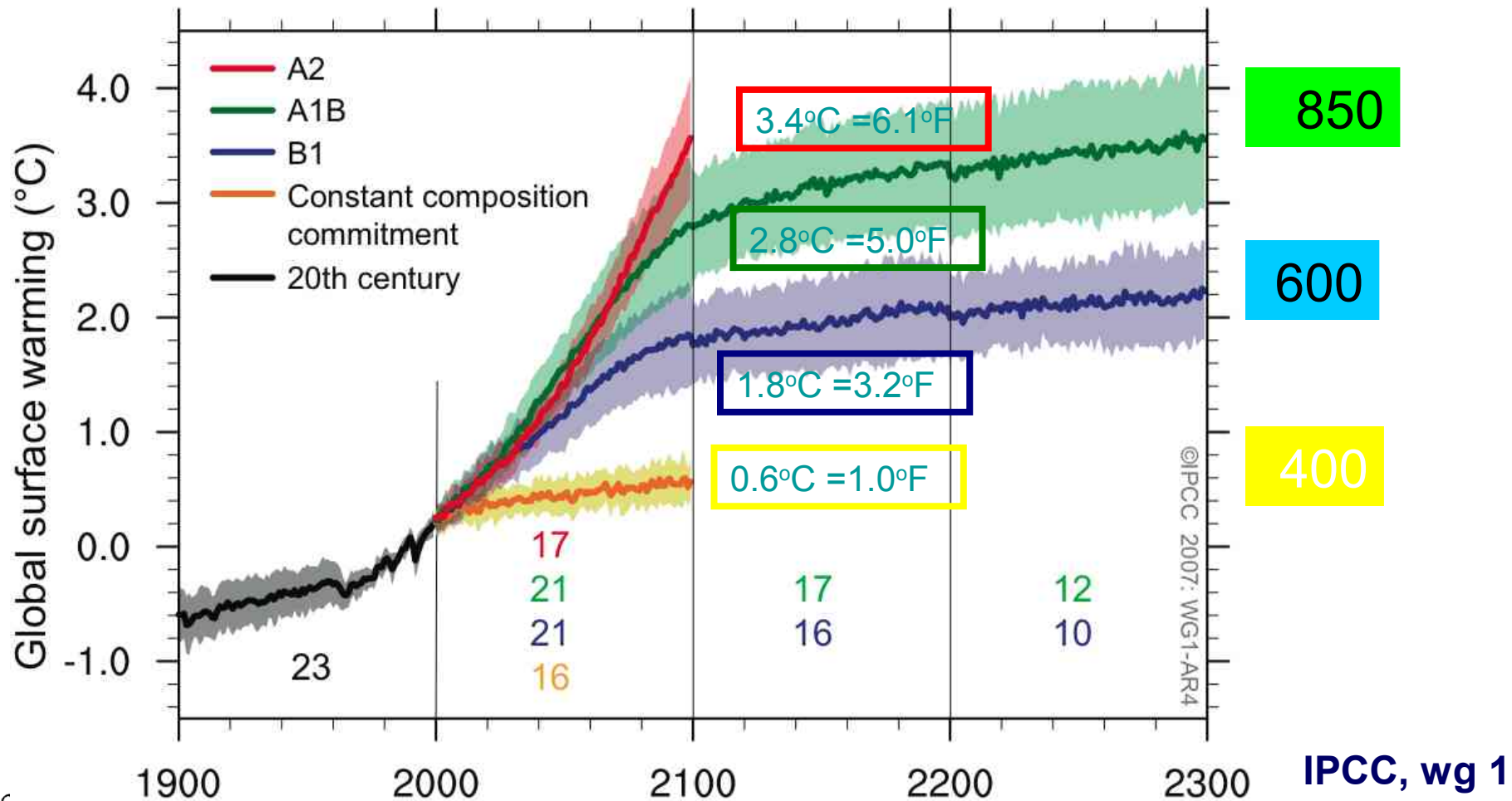
Ice melting



Higher tree line



What's in the pipeline and what could come?



Projected climate change related exposures



Water: By 2050, water availability is projected to decrease by 10-30% over some dry regions at mid-latitudes and in the dry tropics.



Food: At lower latitudes, especially seasonally dry and tropical regions, crop productivity is projected to decrease for even small local temperature increases (1-2°C), which would increase risk of hunger.



Air quality: Future climate change may cause significant air quality degradation by changing the dispersion rate of pollutants, the chemical environment for ozone and aerosol generation and the strength of emissions from the biosphere, fires and dust.

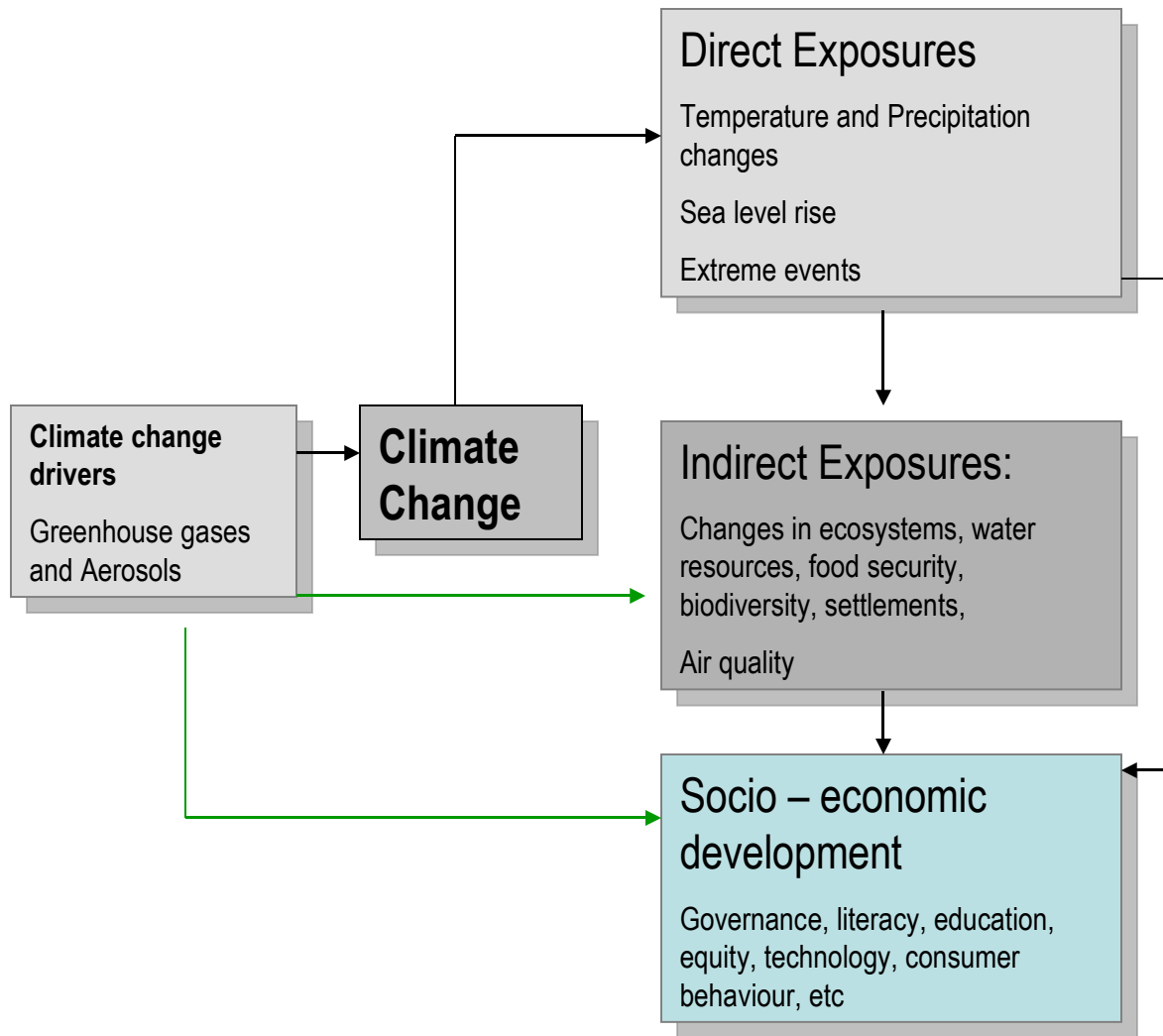


EUROPE

be flooded every year due to sea-level rise by the 2080s.



Figure TS-8: Relative vulnerability of coastal deltas as indicated by the indicative population potentially displaced by current sea level trends to 2050 (Extreme ≥ 1 million; high = 1 million – 50,000; medium 50,000 – 5000 [B6.3]. Climate change would exacerbate these impacts.



The economic damage will be large

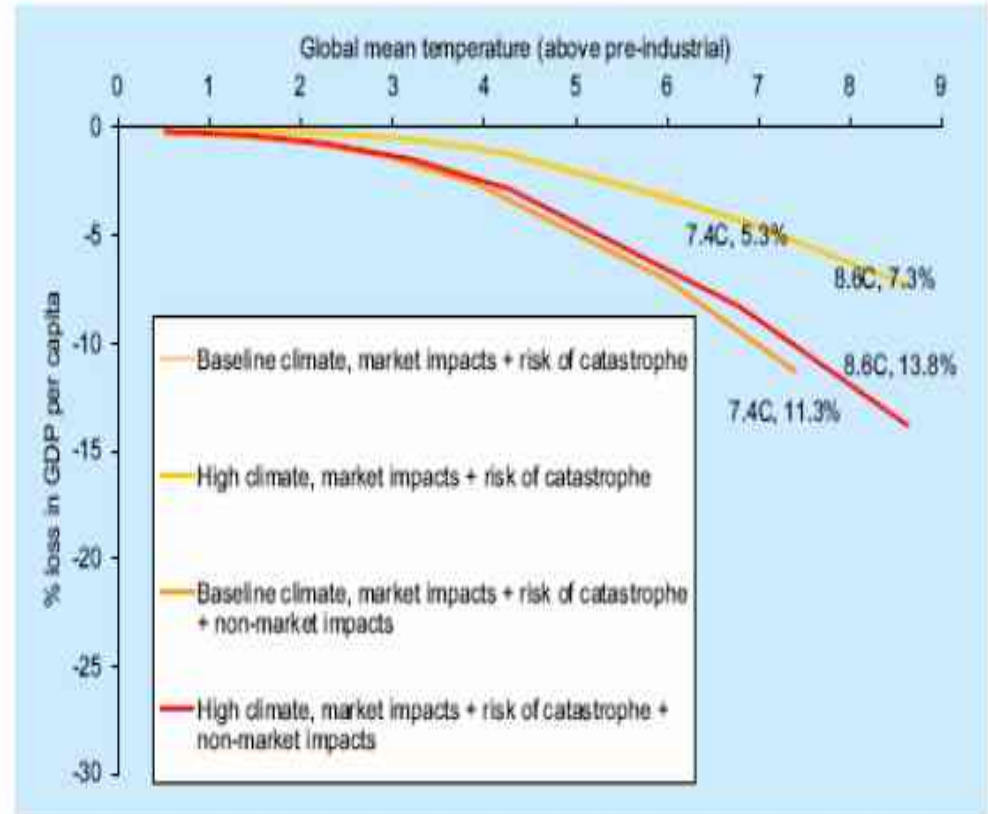
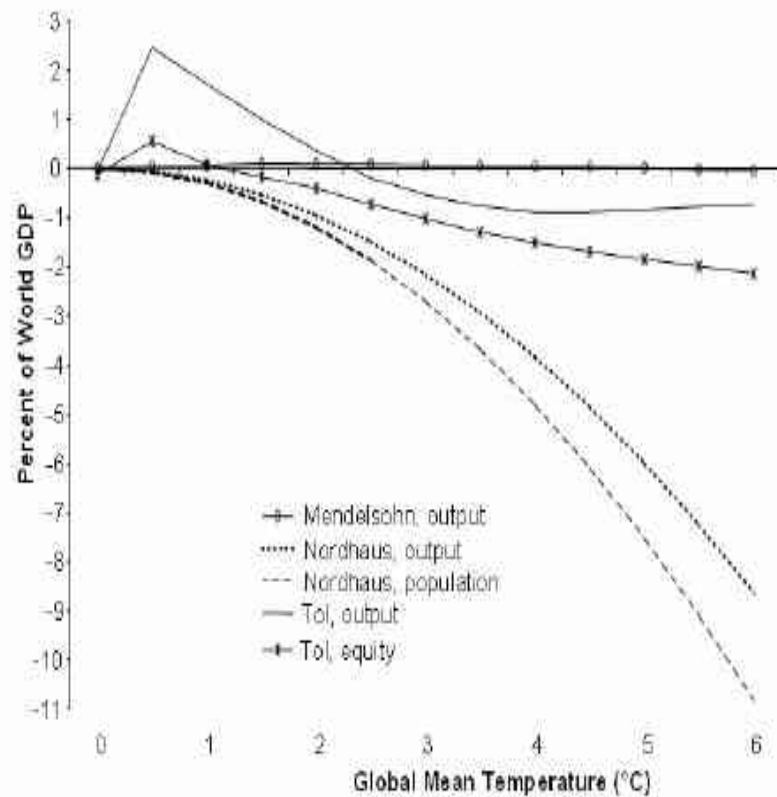
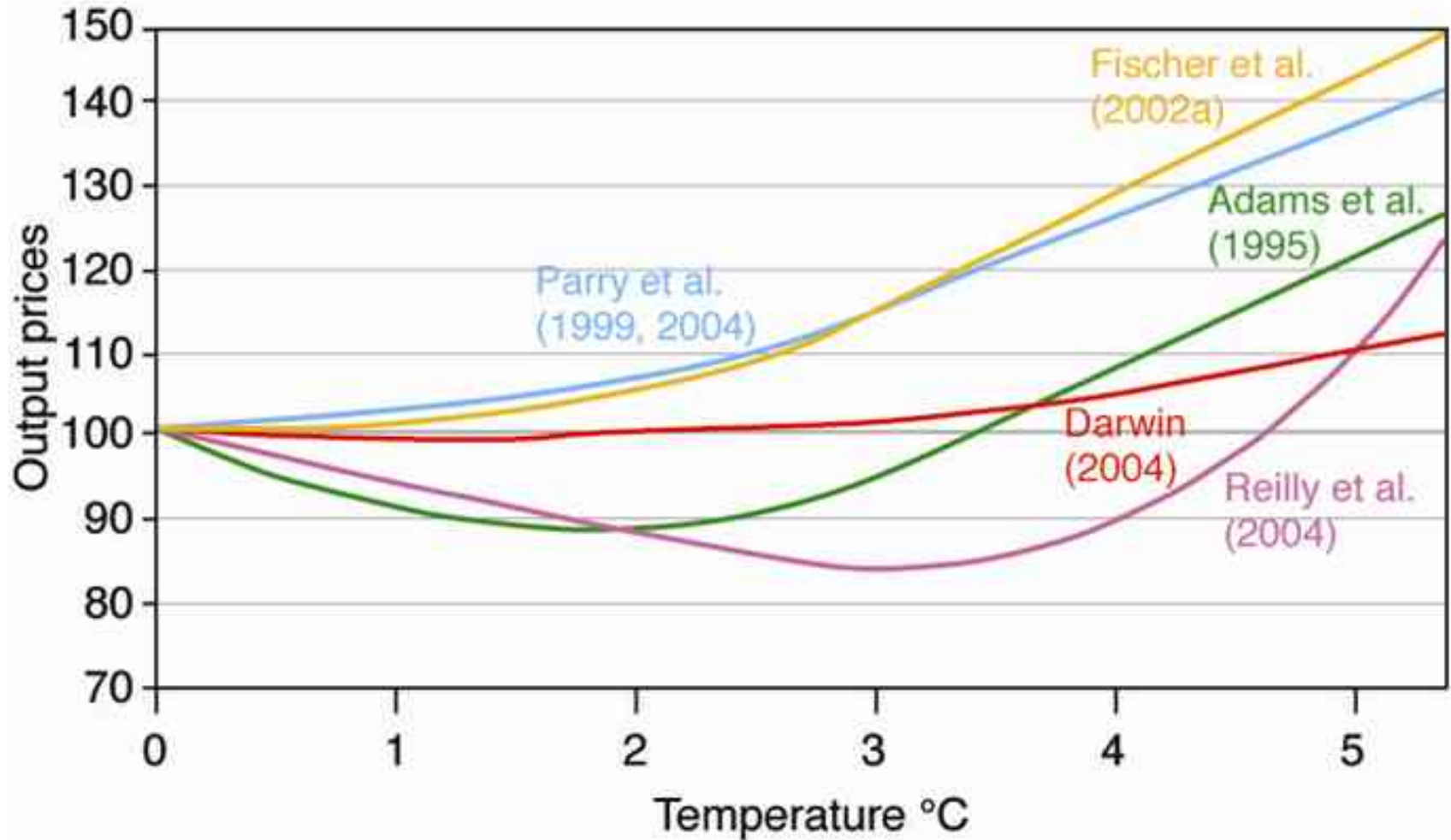
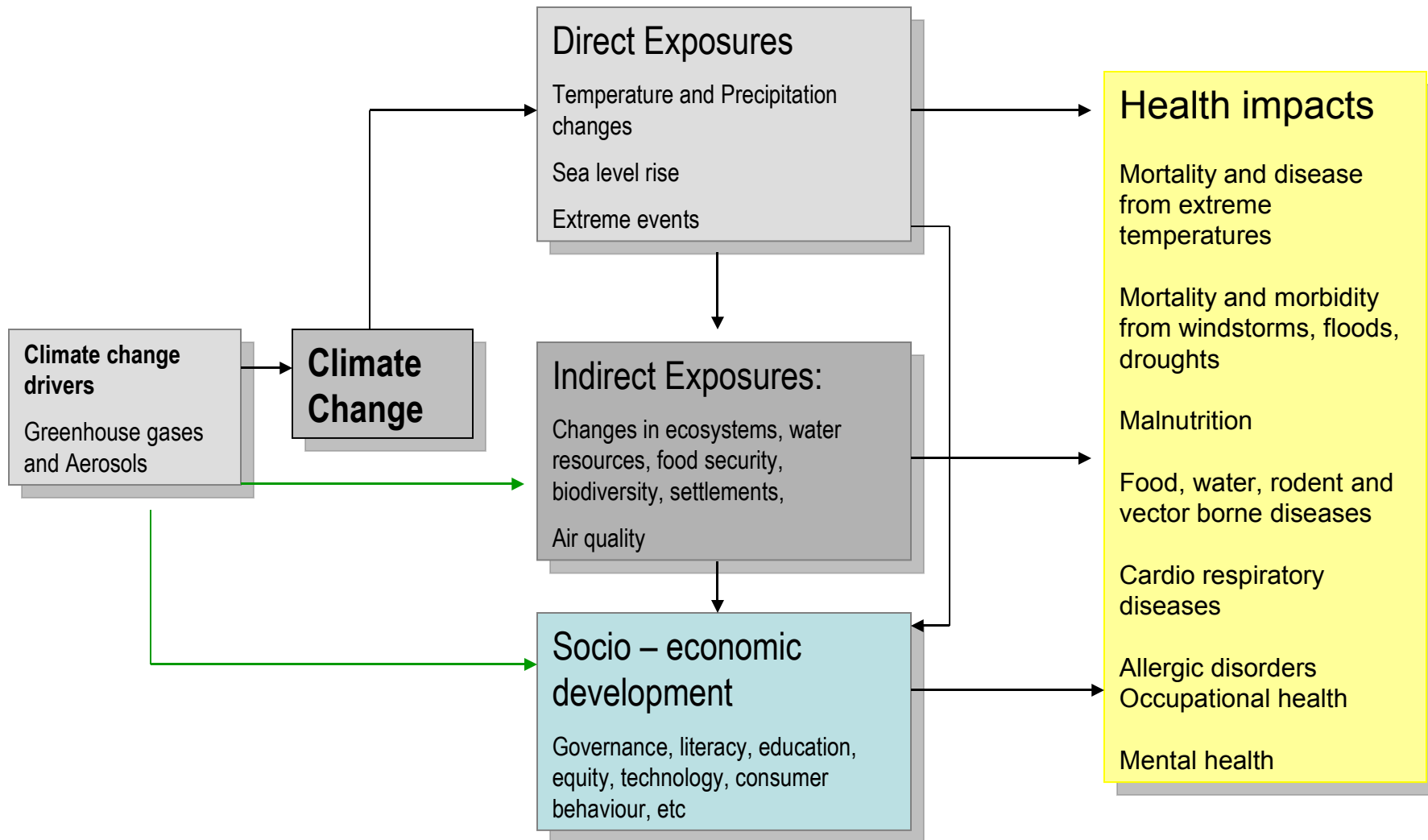


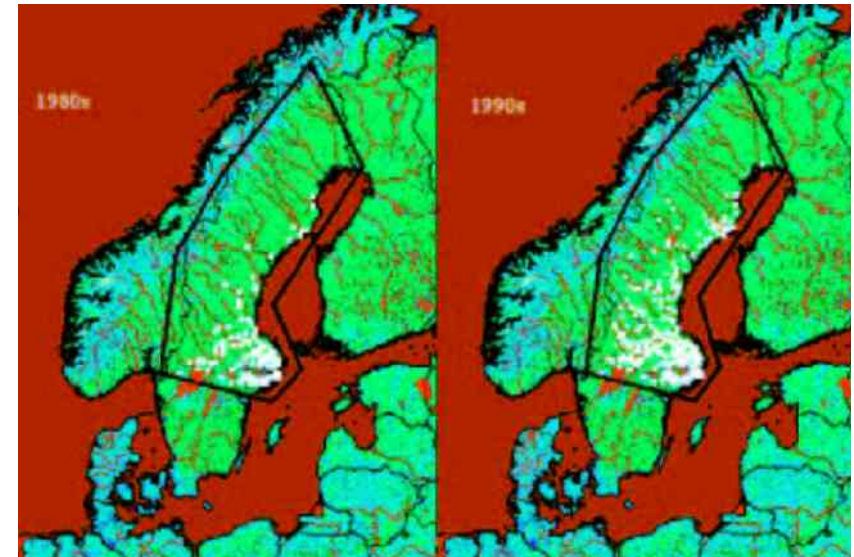
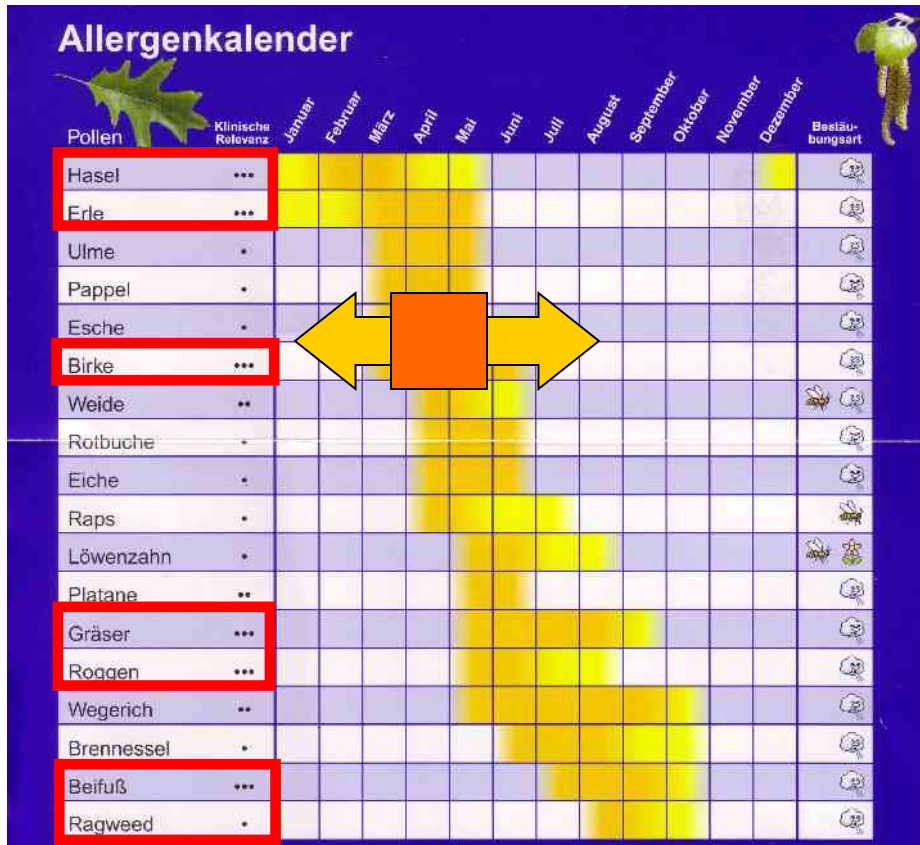
Figure 20.3a: (left): Damage estimates, as a percent of global GDP, as correlated with increases in global mean temperature. Source: IPCC, 2001b. **Figure 20.3b:** (right): Damage estimates, as a percent of global GDP, as correlated with increases in global mean temperature. Source, Stern et al. (2006).

Impacts on food prices by global temperature increases





Allergic pollen - vector-borne disease



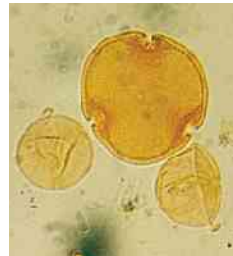
Lindgren et al. 2001



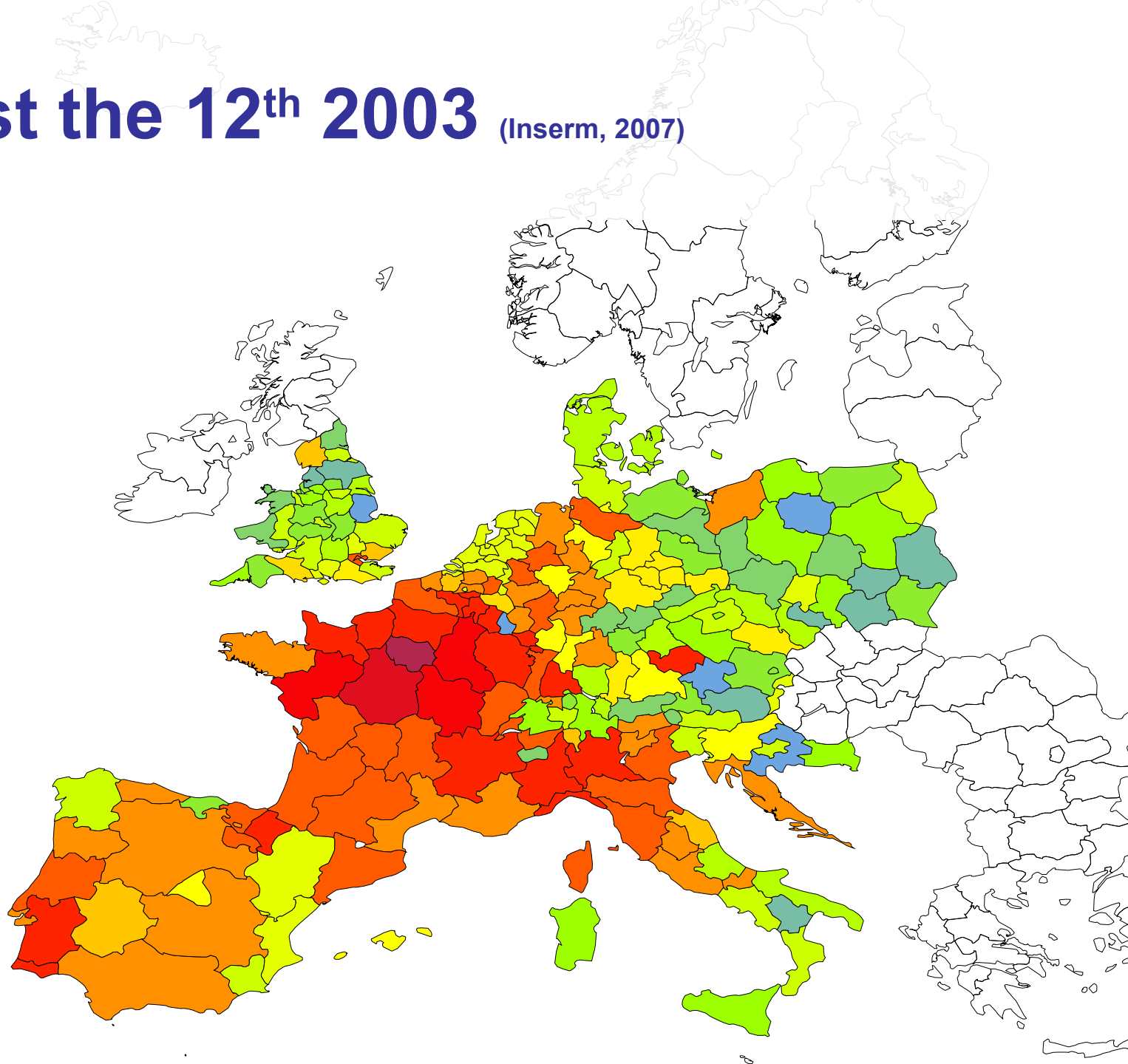
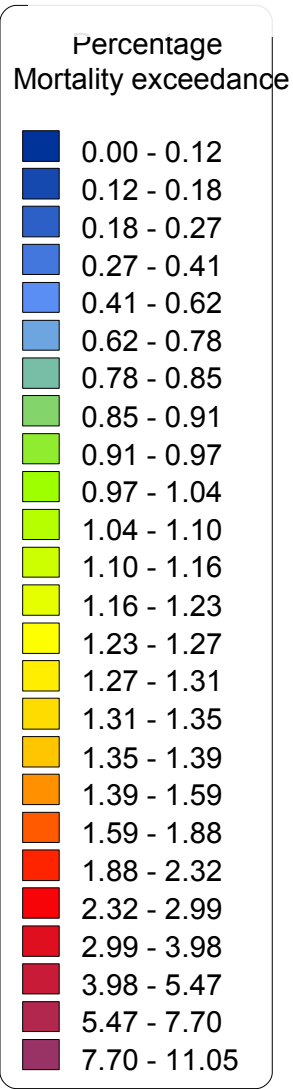
Ticks (*Ixodes ricinus*)

TBE Tick-borne encephalitis

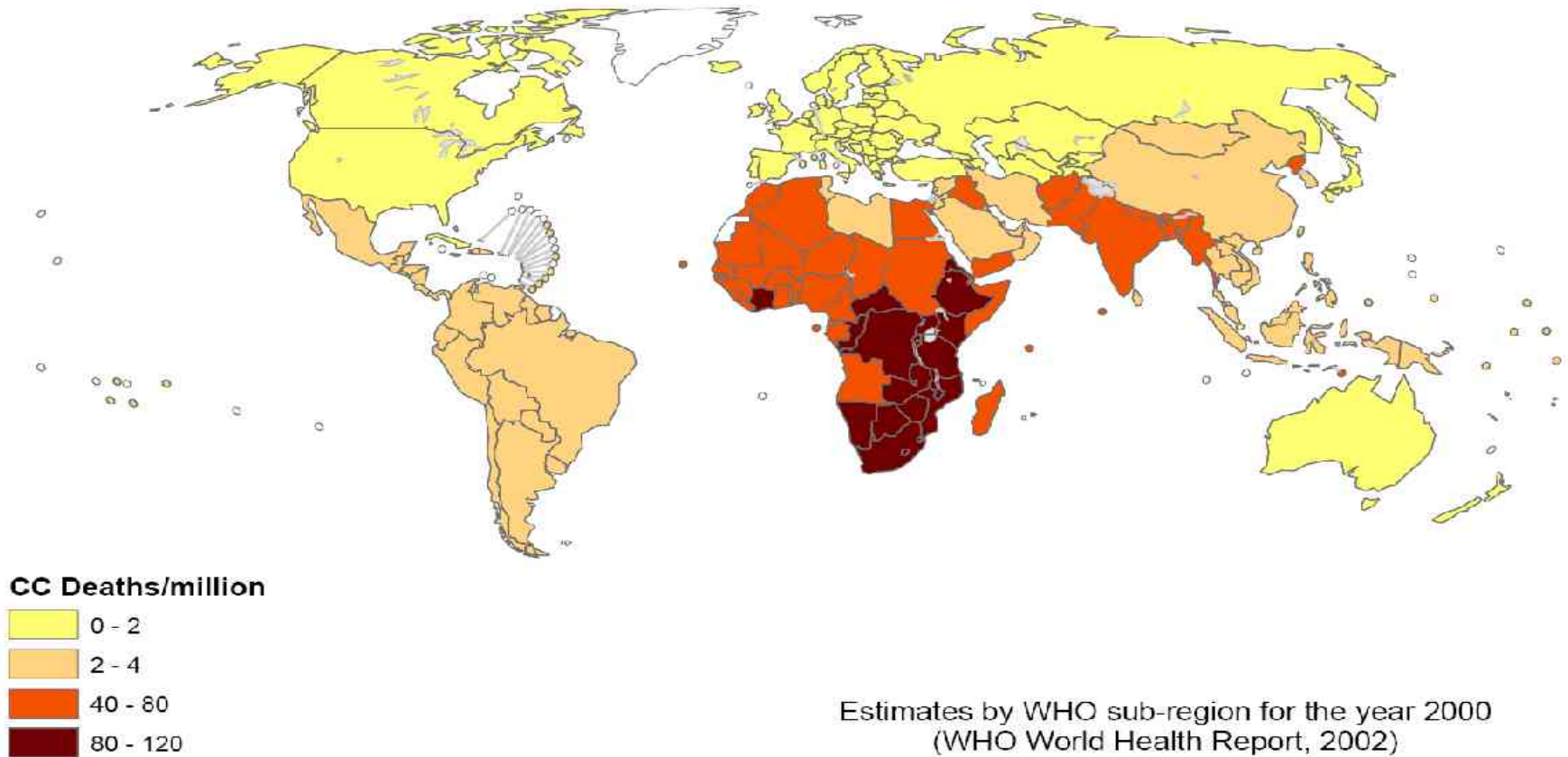
LB Lyme borreliosis



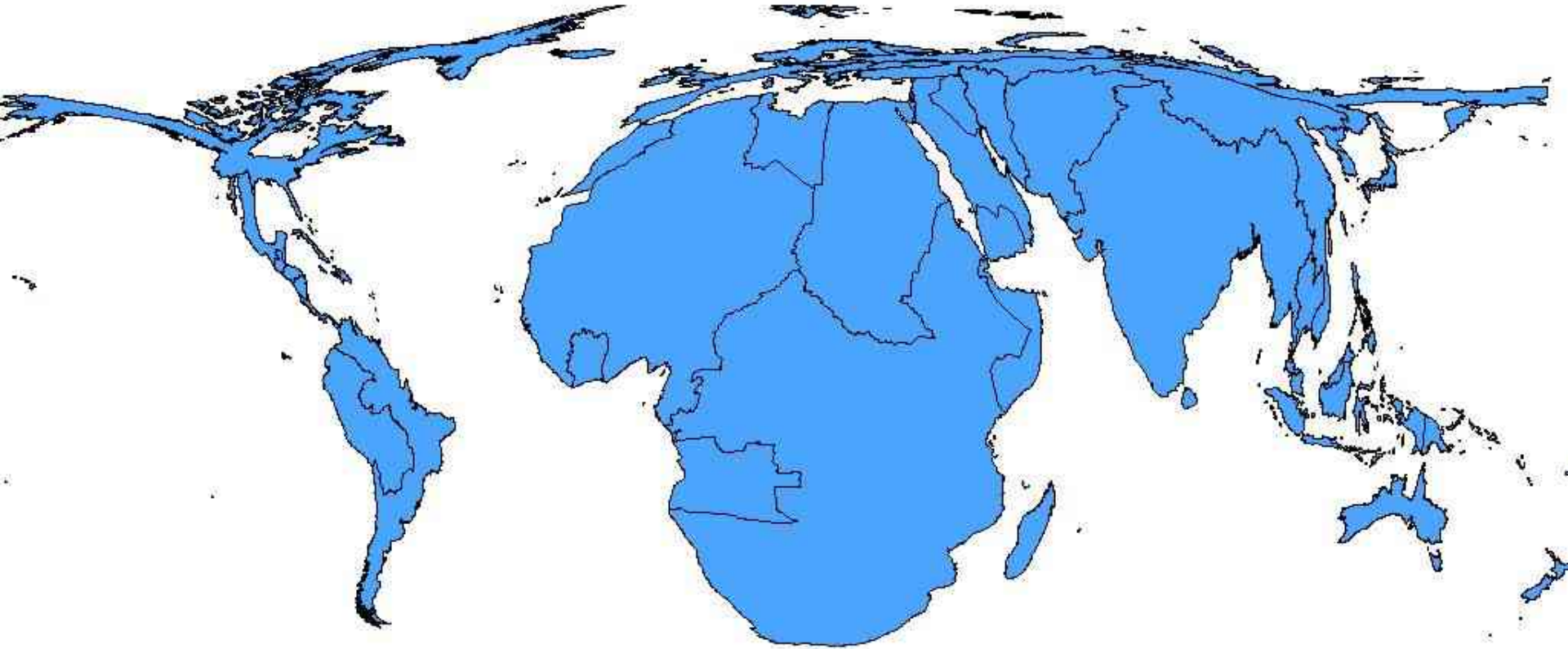
August the 12th 2003 (Inserm, 2007)











The global burden of disease

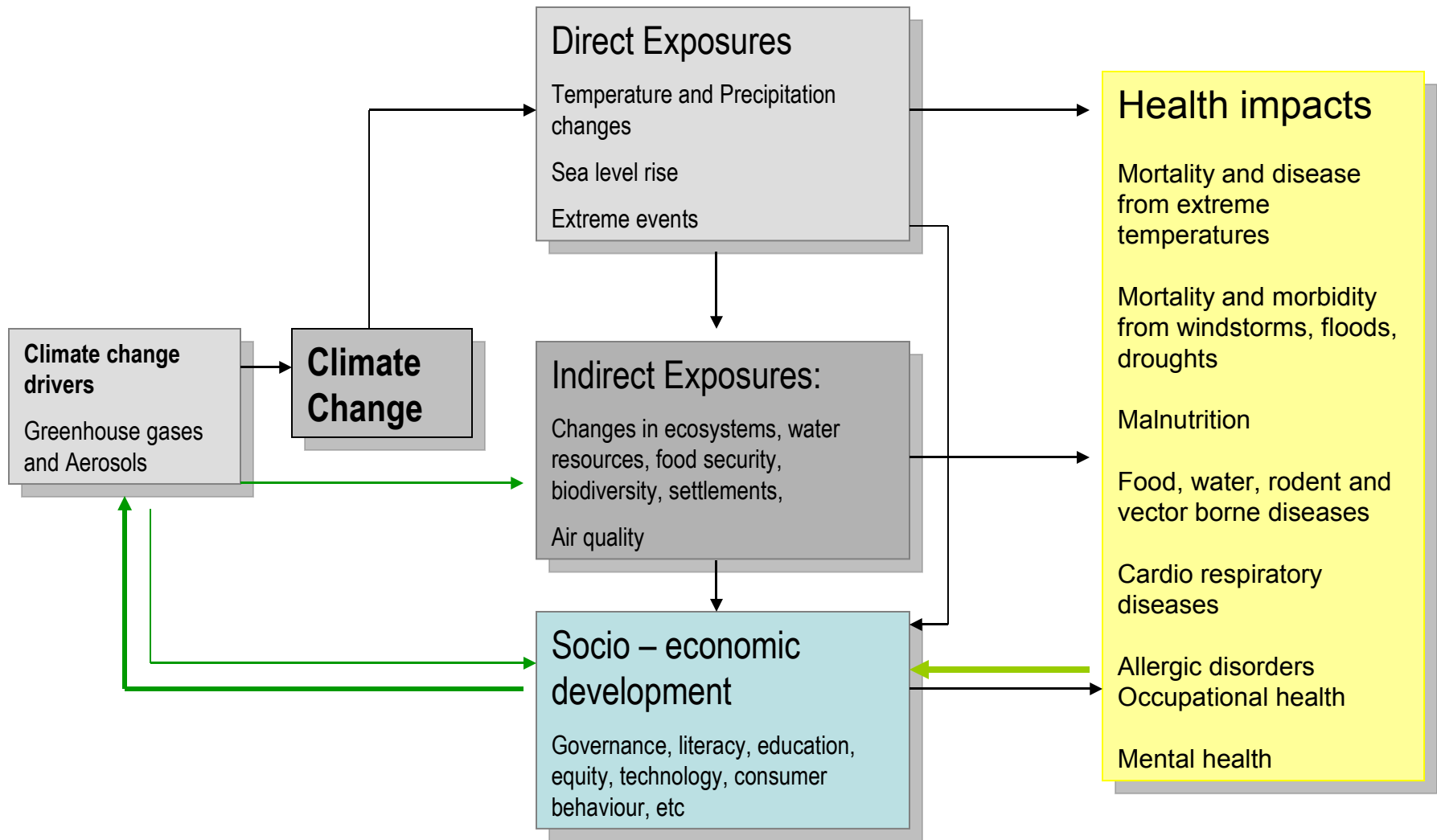


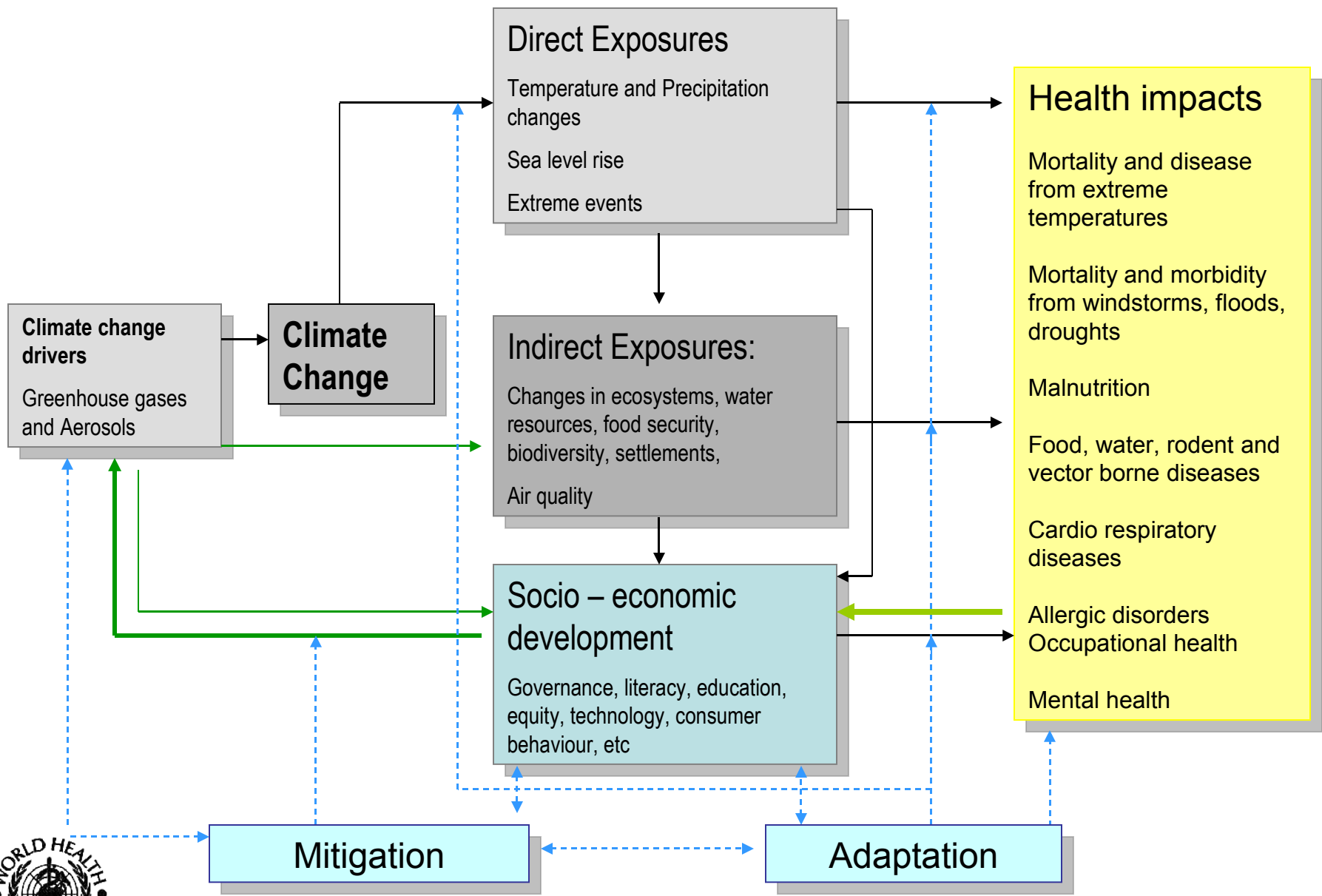
Health impacts of climate change



Density equalling cartogram. WHO regions scaled according to estimated mortality (per million people) in the year 2000, attributable to the climate change that occurred from 1970s to 2000. Gibbs et al, in prep.

	Negative Impact	Positive Impact
<p>Very High Confidence</p> <p><i>Malaria: Contraction and expansion, changes in transmission season</i></p>		
<p>High Confidence</p> <p><i>Increase in malnutrition</i></p>		
<p><i>Increase in the number of people suffering from deaths, disease and injuries from extreme weather events</i></p>		
<p><i>Increase in the frequency of cardio-respiratory diseases from changes in air quality</i></p>		
<p><i>Change in the range of infectious disease vectors</i></p>		
<p><i>Reduction of cold-related deaths</i></p>		
<p>Medium Confidence</p> <p><i>Increase in the burden of diarrheal diseases</i></p>		





Protecting health while reducing Emissions

Global CO₂ emissions by sector

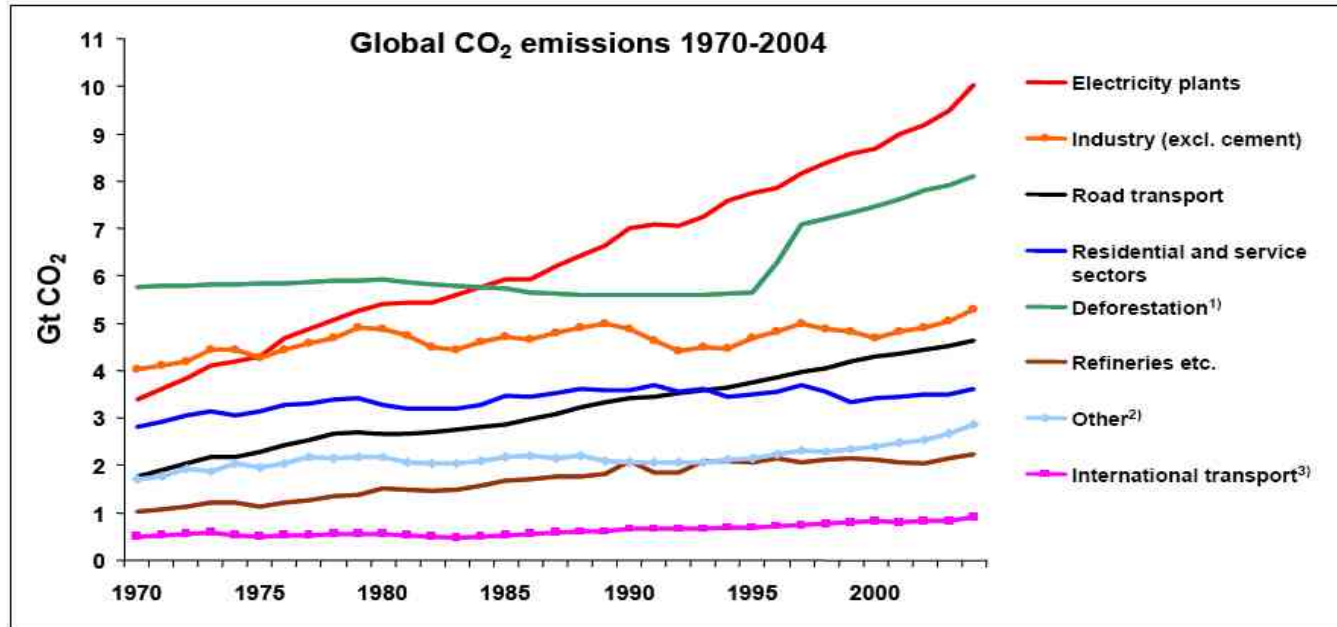


Figure 1.2: Sources of global CO₂ emissions, 1970-2004 (only direct emissions by sector)

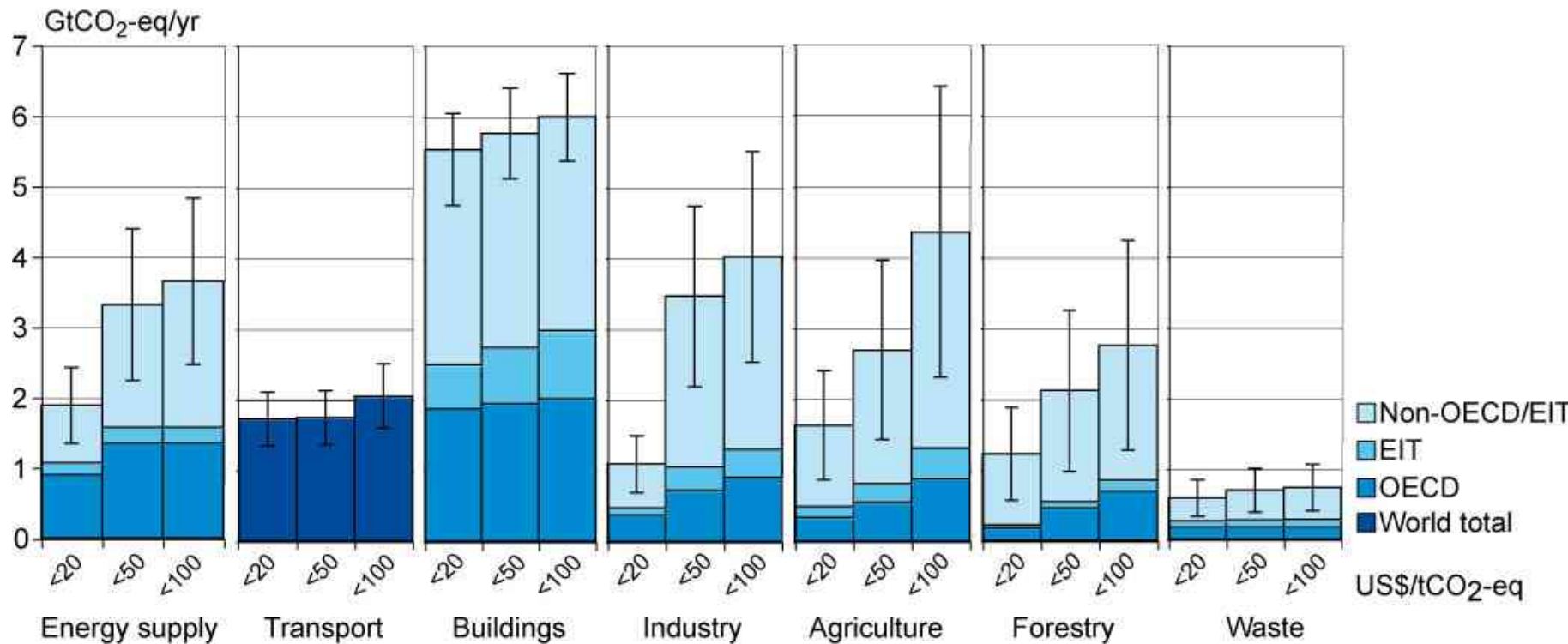
Source: Adapted from Olivier et. al, 2005; 2006).

1. Including fuelwood at 10% net contribution. For large-scale biomass burning averaged data for 1997-2002 are based on Global Fire Emissions Database satellite data (van der Werf et. al, 2003). Including decomposition and peat fires (Hooijer et al., 2006). Excluding fossil fuel fires.
2. Other domestic surface transport, non-energetic use of fuels, cement production, and venting/flaring of gas from oil production.
3. Including aviation and marine transport

[Figure 1.2, ©IPCC 2007: WG3-AR4]

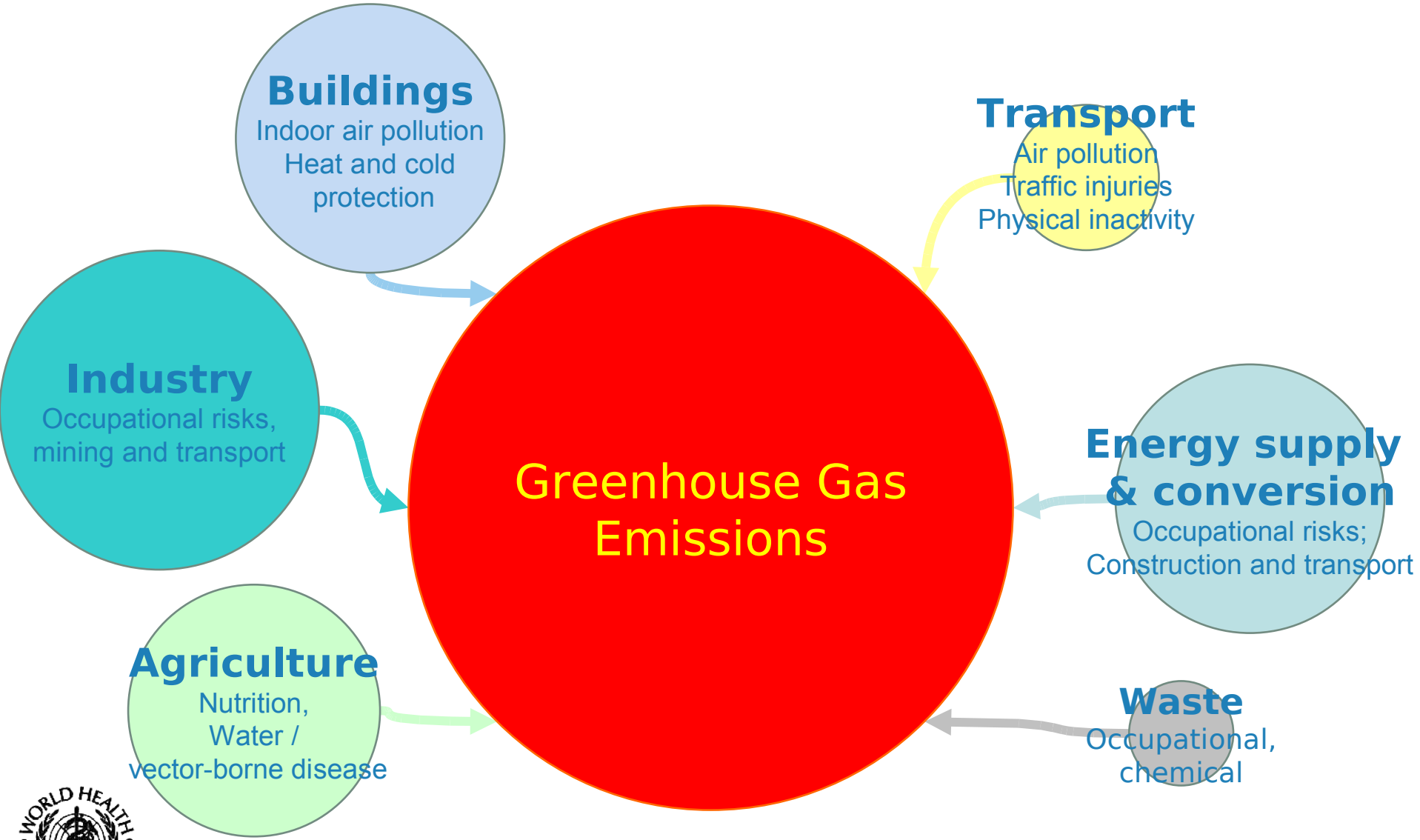


All sectors and regions have the potential to contribute (end-use based)



Note: estimates do not include non-technical options, such as lifestyle changes.

Protecting health while reducing Emissions

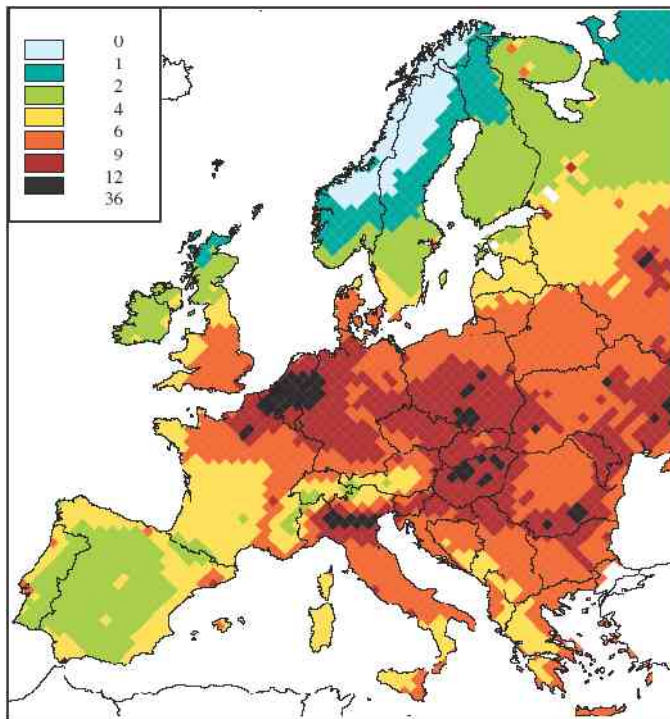


Tackling transport and health: solutions are available

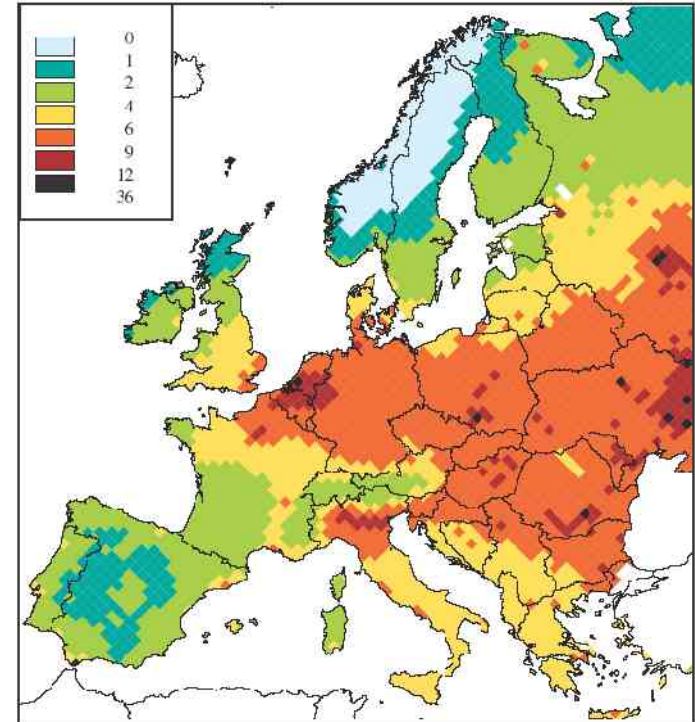
Policy	Reducing crashes	Reducing air pollution	Mitigating climate change	Promoting psysical activity
Speed management	+	+	+	+
Traffic calming and speed reduction in residential areas	+	+	+	+
Reducing transport demand (such as (by telecommunication	+	+	+	+
Road pricing	+	+	+	+
Cleaner fuels and more efficient vehicles	/	+	+	/
Promotion of safe cycling, walking and public transport	+	+	+	+
Safer cars (including fronts protecting pedestrians)	+	/	/	/
Implementing noise reduction barriers	/	/	/	/
Investment in safe infrastructure for cyclists and pedestrians	+	+	+	+
Urban parking management	+	+	+	+
Environmentally differentiated fees for motorized transport in urban areas	/	+	+	/
Reducing the power of vehicles	+	+	+	-



Loss of life expectancy due to PM2.5 from anthropogenic sources



2000



2020

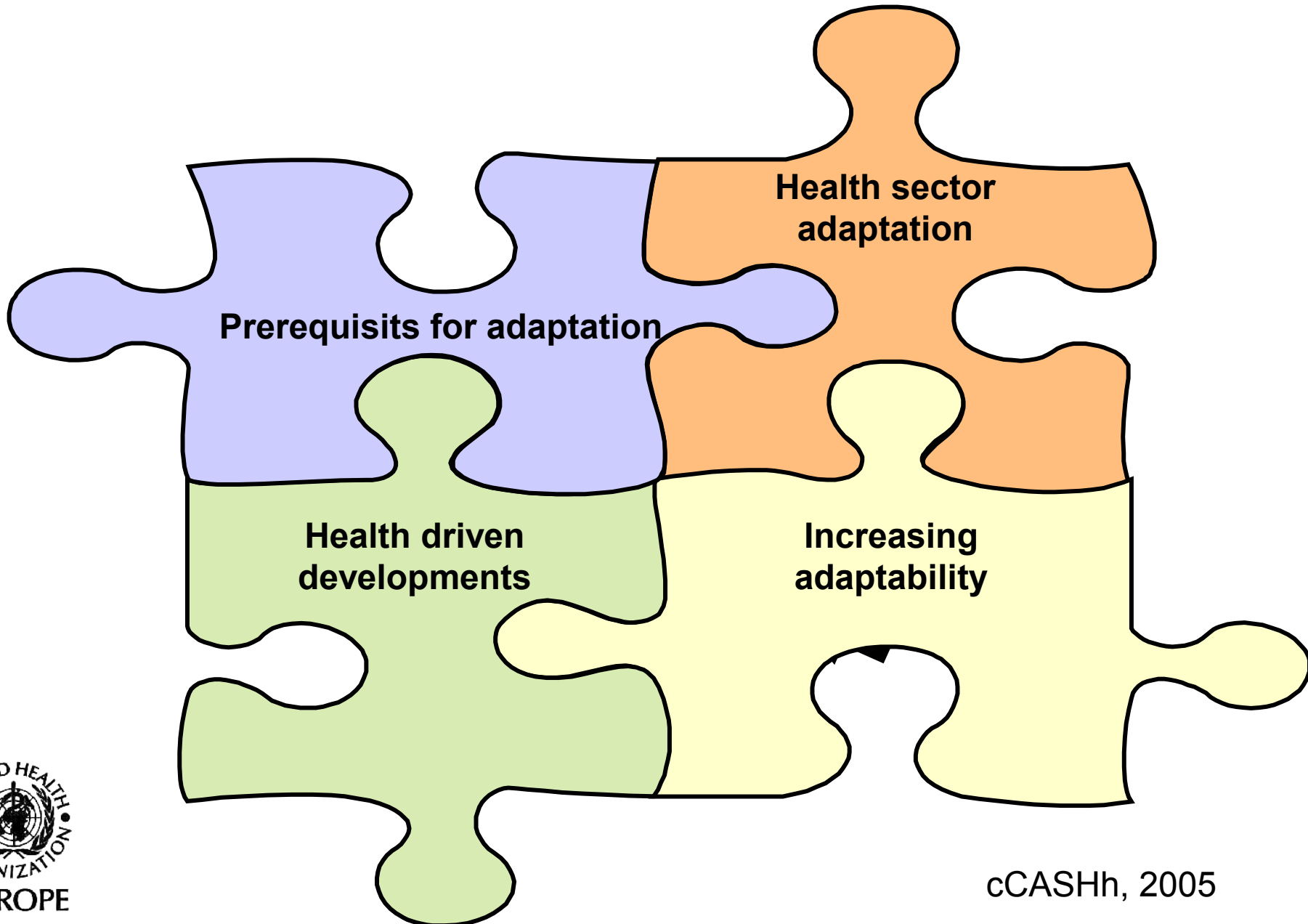
Loss of Life expectancy in months

Key message: action

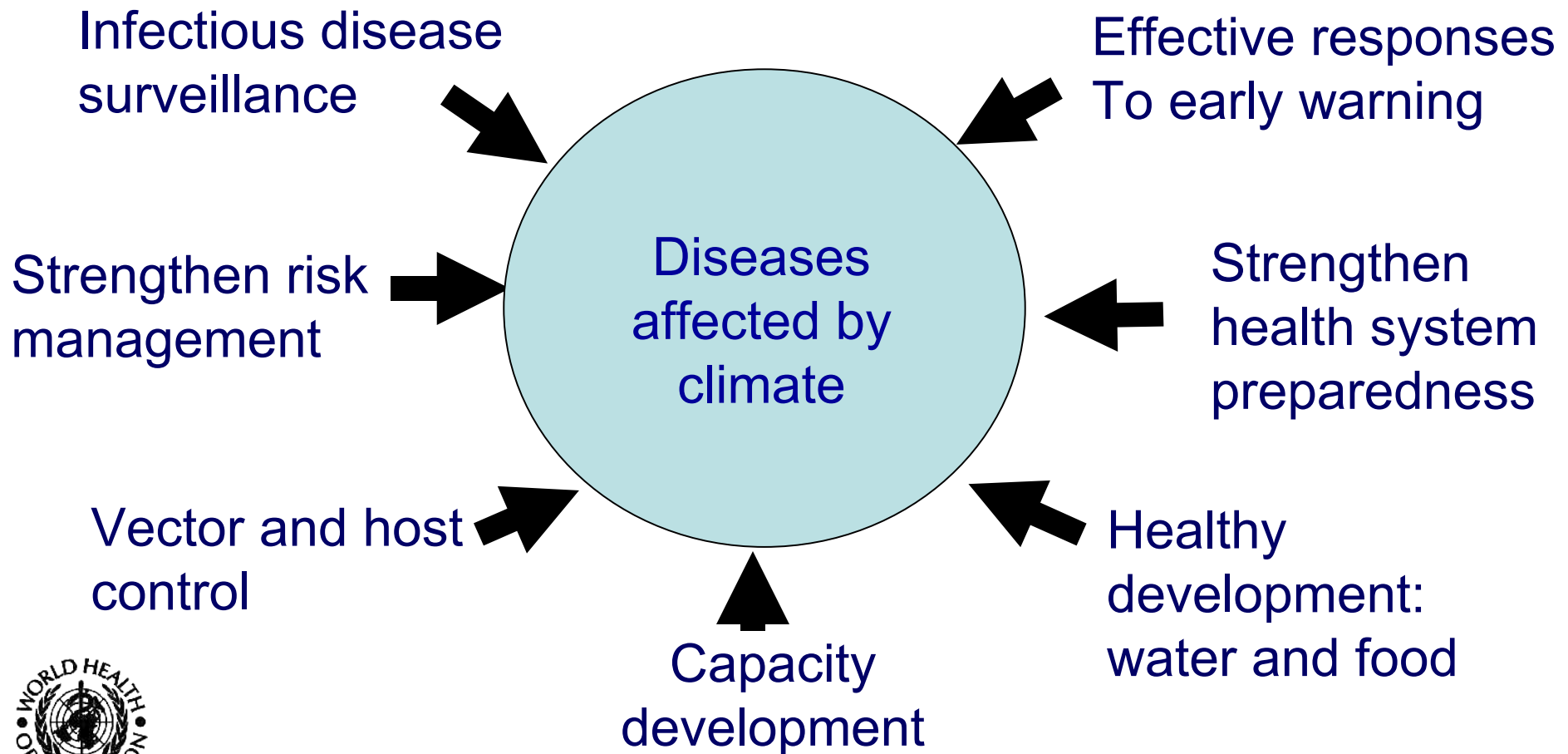
- The benefits of reducing GHG through air quality improvement can offset the costs of climate change mitigation
- Policies concerning energy sources and use (e.g. transport), have strong direct links to globally important health impacts.
- Energy policy decisions are becoming more important, especially in rapidly developing economies.
- Making good choices can dramatically improve health prospects.

Review, development or adjustments of public health activities are necessary

The interlinkages



Health sector actions are the first defence against climate change impacts



The WHO response:

Underlying principles

“There are two things that we can and must do to respond to this challenge. First, we need to strengthen public health systems, which are the first line of defence against climate-related health risks.

Second, we need to remember that prevention is just as important as cure. Many of the actions that are necessary to reduce our impact on the global climate can also .reduce pollution and save lives now

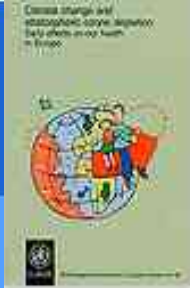
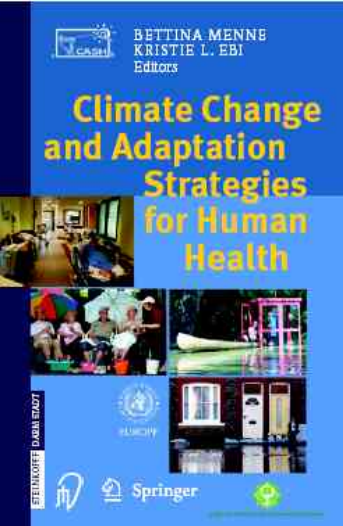
*Together, we must act to reduce the impact of climate change, for healthy populations
“.and a healthy planet*

Margaret Chan, Director General, World Health Organization
.Statement on World Environment Day, 5th June 2007

Key messages

- **The earth has warmed by 0.7 degree over the last century**
- **150.000 deaths were attributed to climate change in 2000;**
- **Allergies earlier, vectors further North and 45.000 deaths in August 2003**
- **Millions of people are likely to be affected in the future;**
- **The poor will suffer most;**
- **CO2 as high as 375 PPM**
- **Do we further need to wait?**





<http://www.euro.who.int/globalchange>

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WHO Euro activities

Providing leadership on matters critical to health and engaging in partnerships where joint

Two Ministerial Environment and Health Conference Declarations

RC resolution:

Shaping the research agenda

Articulating ethical and evidence-based policy options

Providing technical support

Monitoring the health situation