

Promoting health in the Anthropocene

Prof Tony Capon
UNU-IIGH Director



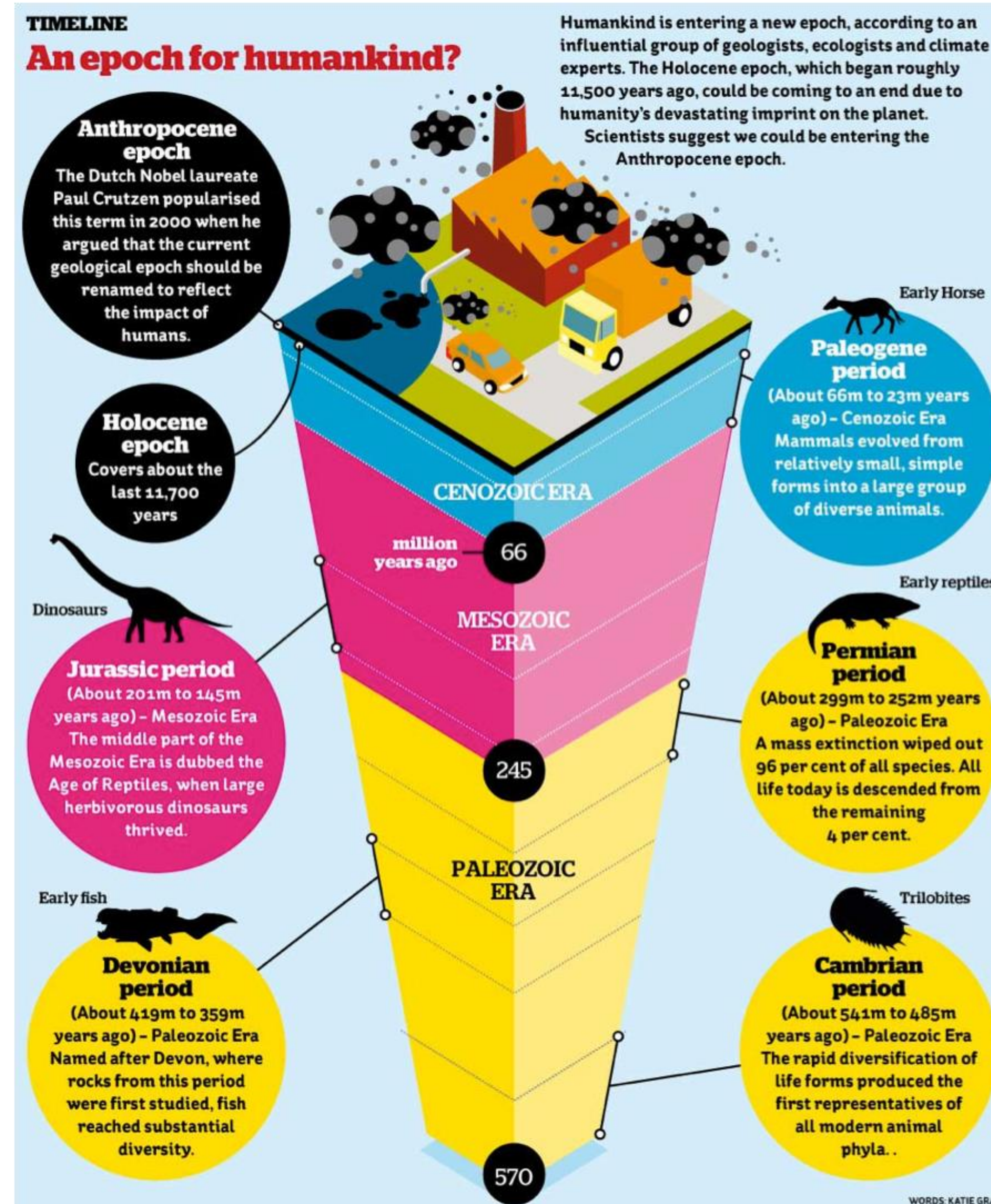
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This talk

- The Anthropocene epoch
- Urbanization and health to illustrate the value of eco–social understandings in health promotion
- Human ecology and systems thinking as methods for promoting health
- The Rockefeller Foundation–*Lancet* Commission on planetary health
- Implications for health research and capacity building

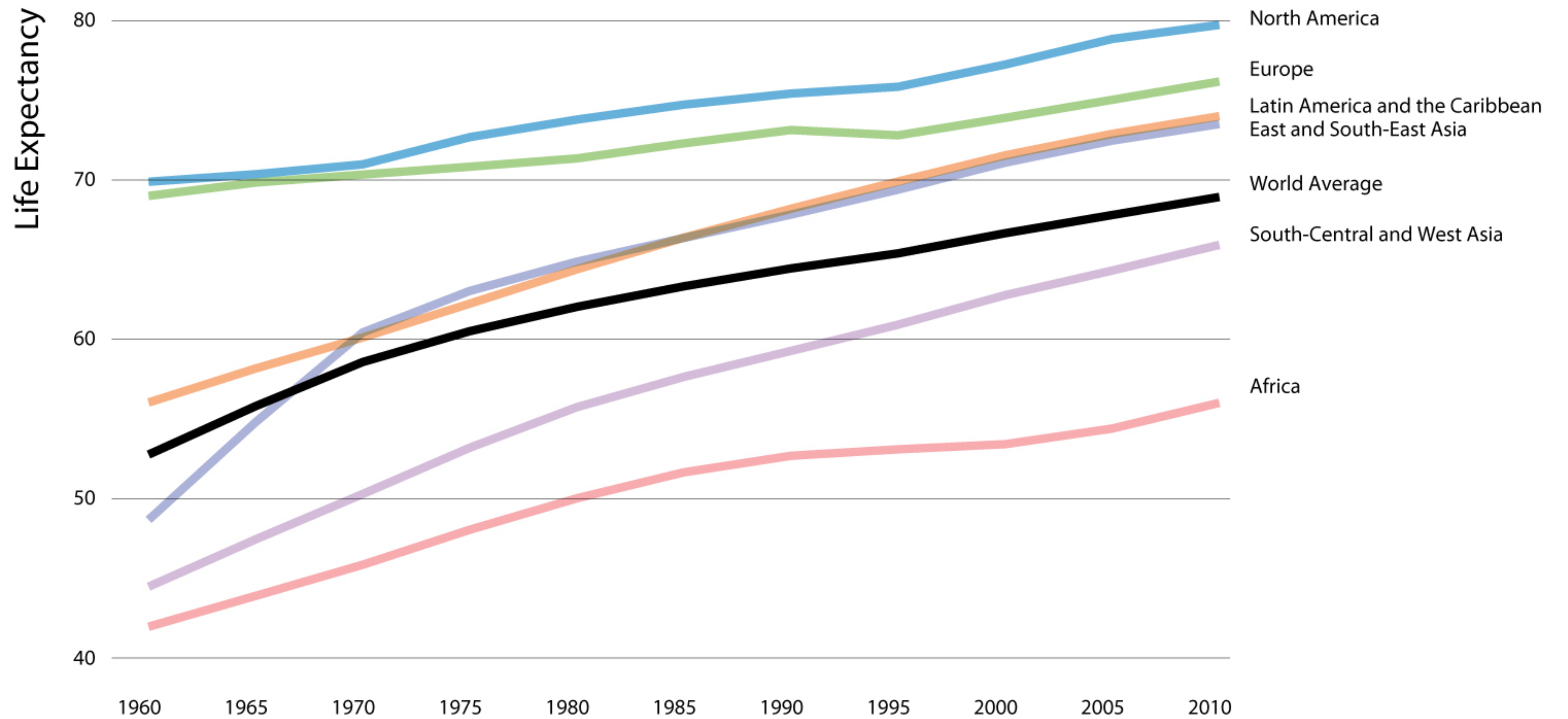


The Anthropocene epoch



Life expectancy in years

(World Bank)



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Global epidemics of NCDs

(Nature, 2011)

HEALTH

UN target stop killers

International summit considers how to stem the rise in non-communicable diseases.

BY DECLAN BUTLER

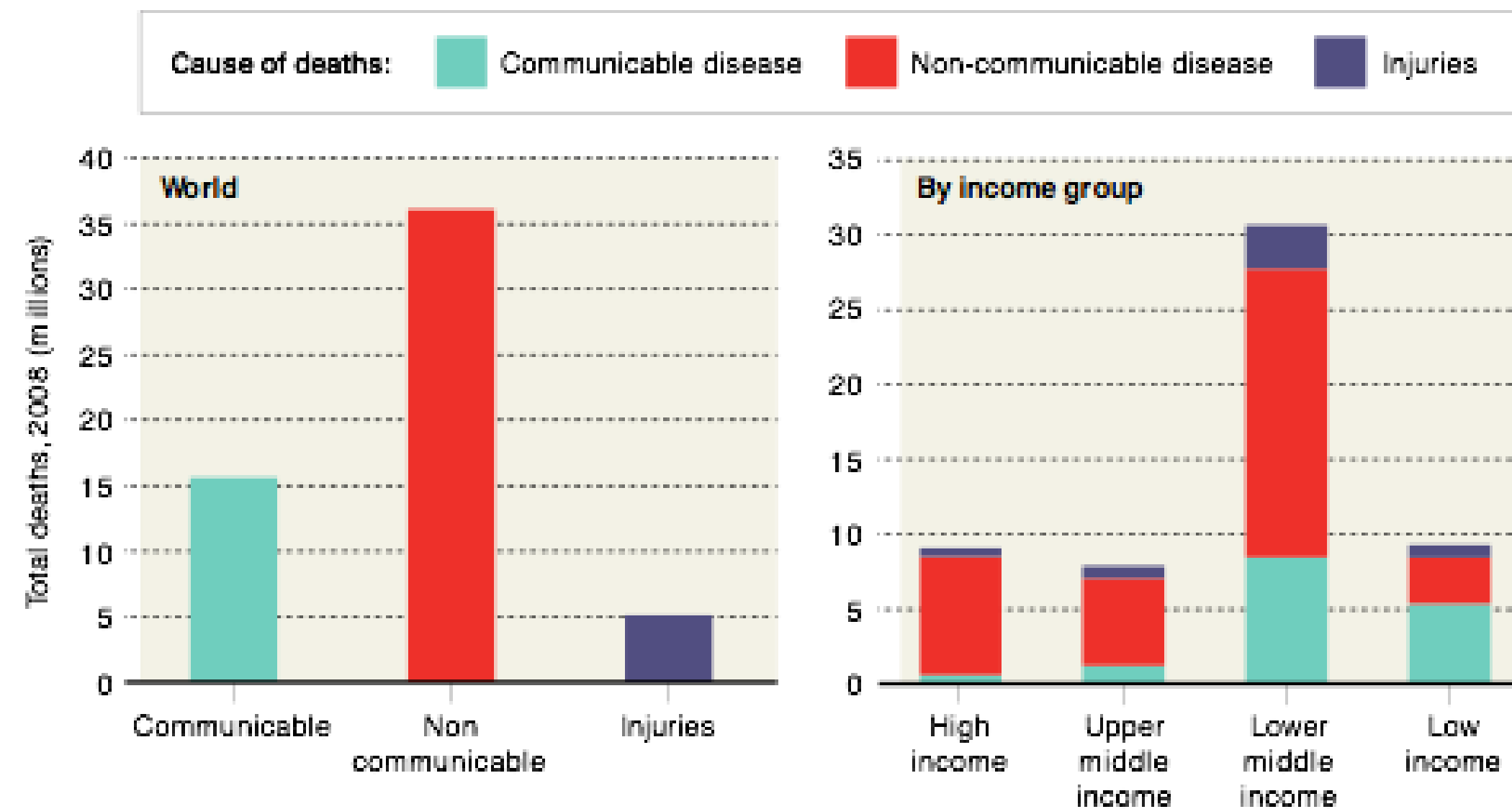
When heads of state and health ministers gather in New York next week for the first United Nations (UN) high-level summit on non-communicable disease (NCD), they will be presented with some jaw-dropping statistics. According to UN reports released before the meeting, NCDs such as cardiovascular disease and cancer killed 36 million people in 2008, accounting for 63% of all deaths. Although NCDs are often mistakenly thought of as diseases of affluence, more than 80% of the NCD deaths occurred in low- and middle-income countries (see 'Total deaths'). By 2030, says the UN, the global annual toll of NCD will rise to 52 million deaths.

Total death statistics also suggest that apart from in the poorest countries in Africa, NCDs kill many more people than communicable diseases such as AIDS, malaria, tuberculosis or meningitis. This has led a growing number of health campaigners to demand global action

TOTAL DEATHS

Non-communicable disease (NCD) surpassed communicable disease as the greatest cause of all deaths in 2008, in all income groups except low-income countries. Middle-income countries have made progress against communicable disease in recent years, but a population bulge of young people, as well as increasing longevity, mean that more people have been exposed to NCD.

SOURCE: WHO

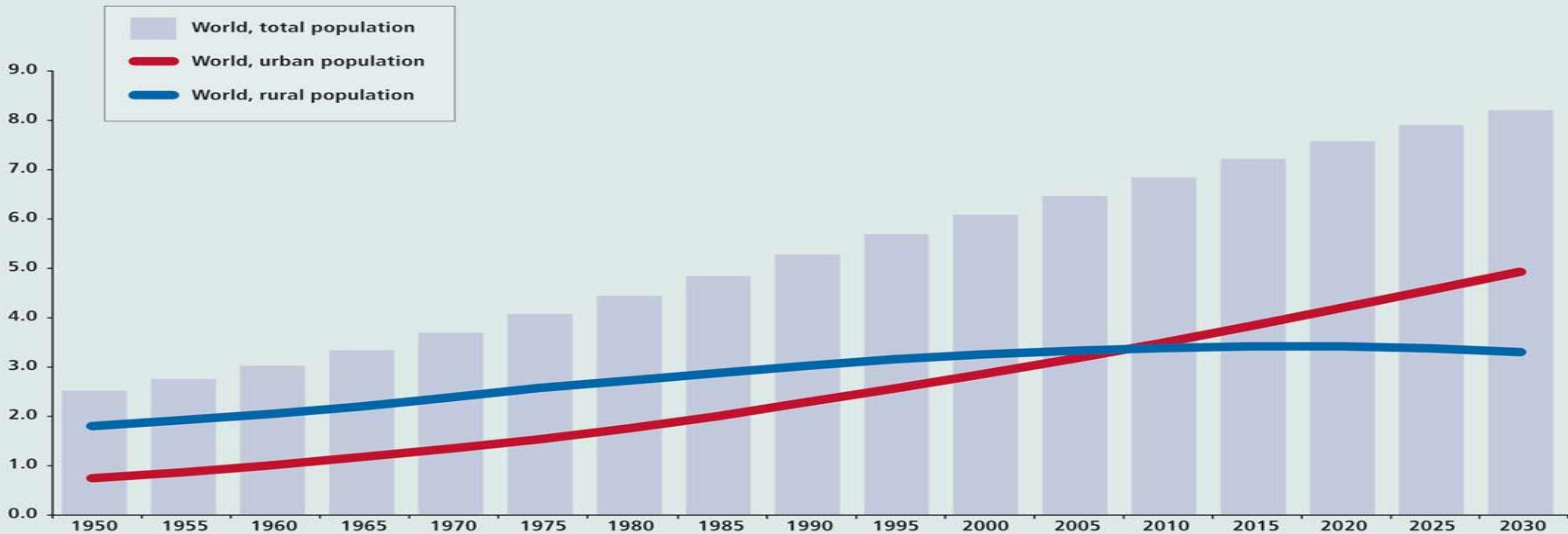


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Population of the world

(billions, UN estimates)

The urban and rural population of the world, 1950-2030



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Urbanism, environment and health

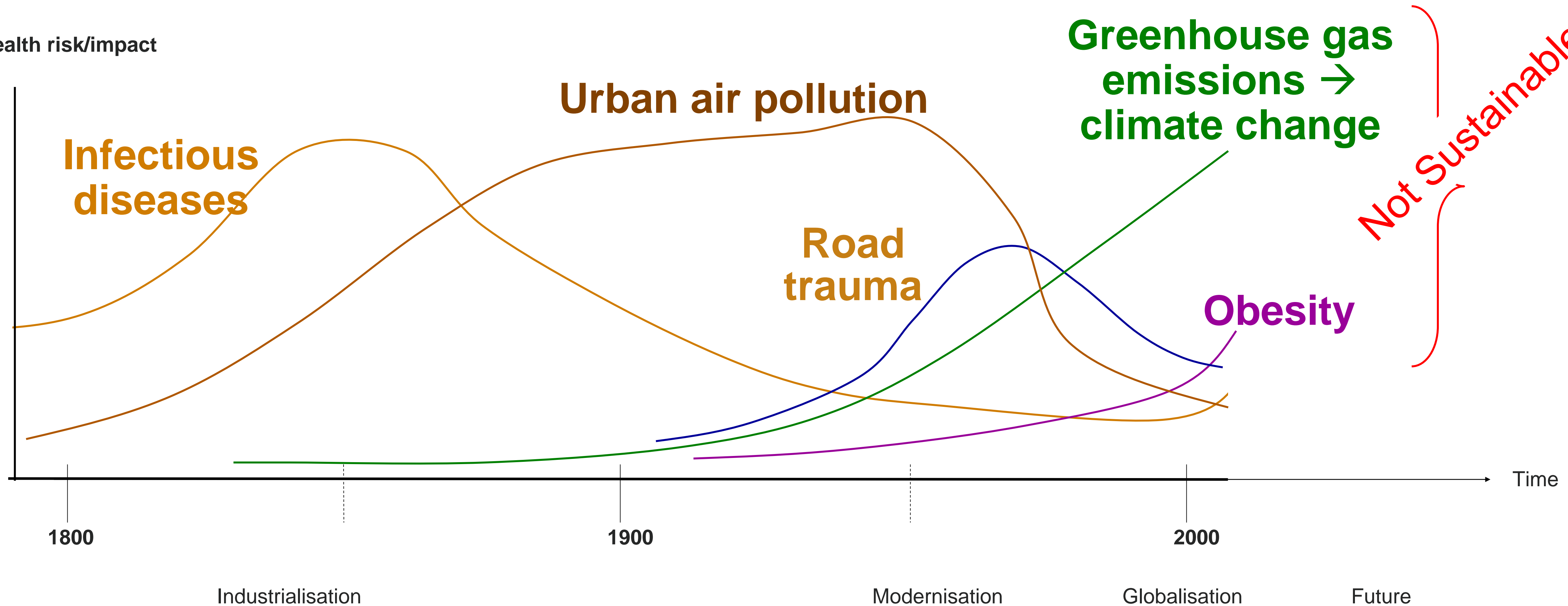
2006 AAS Fenner Conference on the Environment



Historical view of urban health penalties

(developed country perspective)

Health risk/impact



Transport systems and health



Urban planning:
values,
preferences,
theories

↓
Transport
system
(inherited/ev
olved/
planned)

↑
History

- Energy needs
- Transport Modes
 - public/private
 - convenience
 - costs
- Associated infrastructure

Influences on green
space (**heat island
effect; visual calming;
biodiversity**)

Air pollution

GHG emissions

Noise

Easy personal
mobility

Road safety

Urban/suburban
landscape; local
'walkability' →
impacts on
neighbourhood/co
mmunity

Respiratory disease
Asthma
Cardiovascular disease
Fetal /infant brain debt

→ Global climate change →

Stress (hypertension)
Sleep disturbance
Impaired child learning

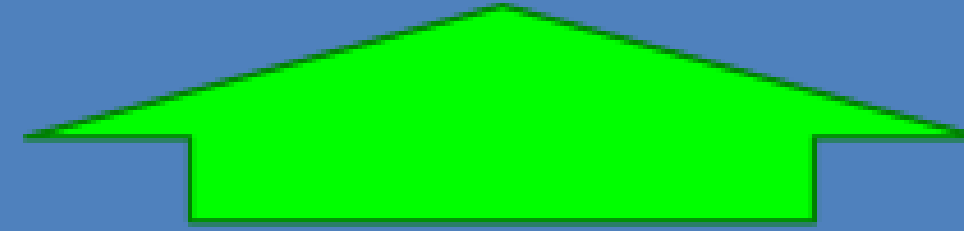
Physical
activity
patterns →

Weight;
Endorphins
(wellbeing);
Social contact

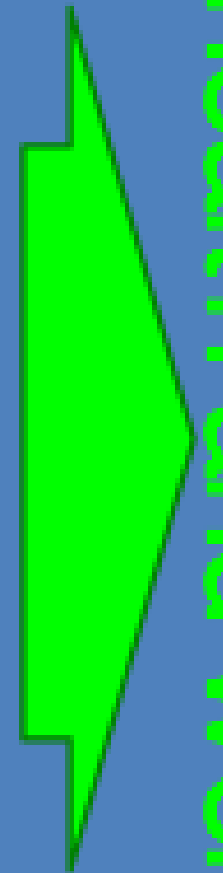
Social contact patterns;
reliance on
supermarkets (**food
choices**); etc.

Framework for urban sustainability and population health

Ecological footprint



Economy and work	Transport and urban form	Housing and buildings	Water and sanitation	Nature and landscape	Media and communication	Culture and spirituality	
							Air, water, noise, infection, allergens, chemical exposures, local climate
							Food security
							Physical activity
							Safety
							Family relationships
							Social capital



Human health and wellbeing

The Lancet

“Climate change is the biggest
global health threat of the
21st Century”

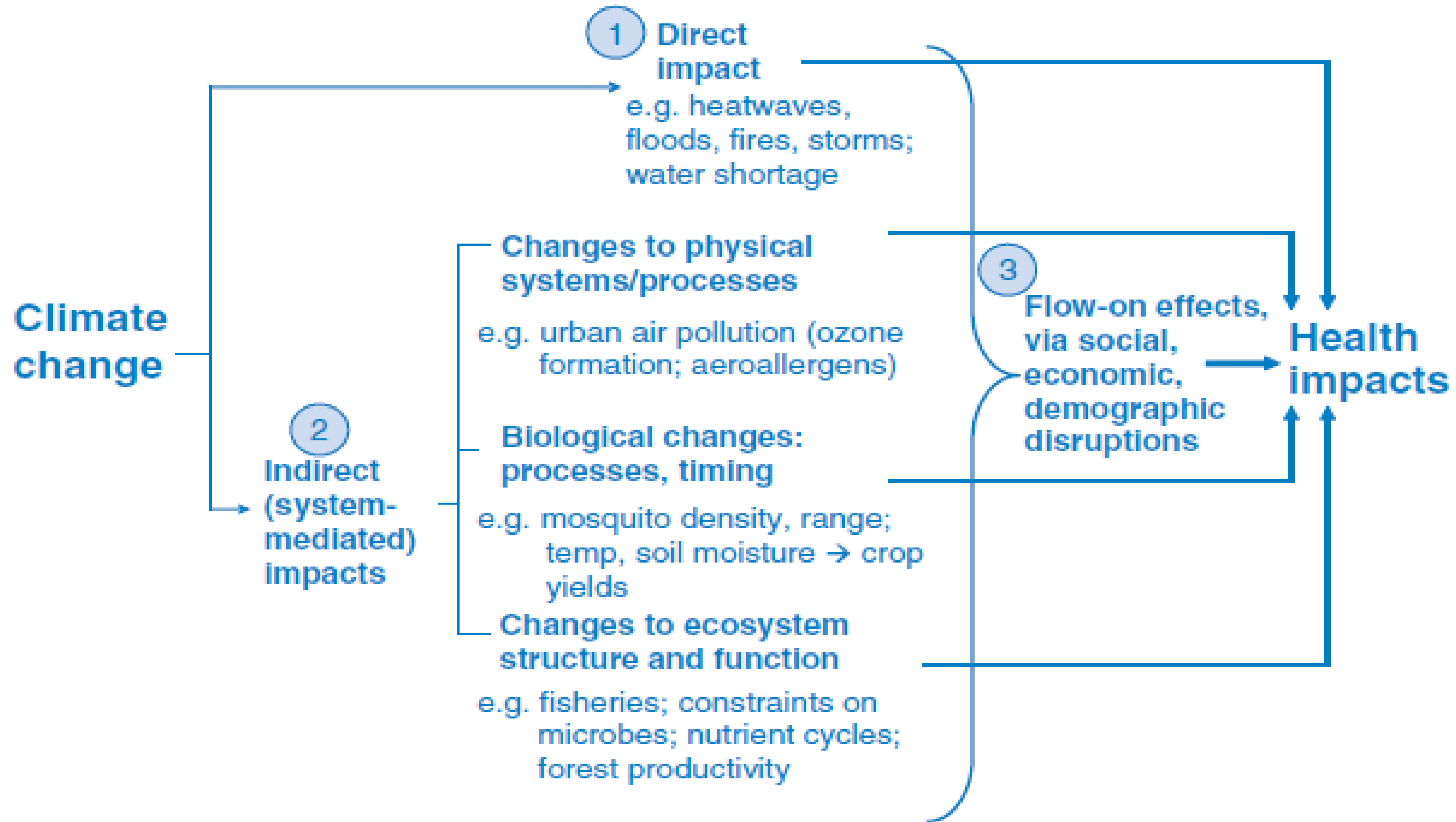
May, 2009



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Pathways between climate change and human health

(McMichael 2009)



Good news story – ‘co-benefits’

Health co-benefits from action on climate change

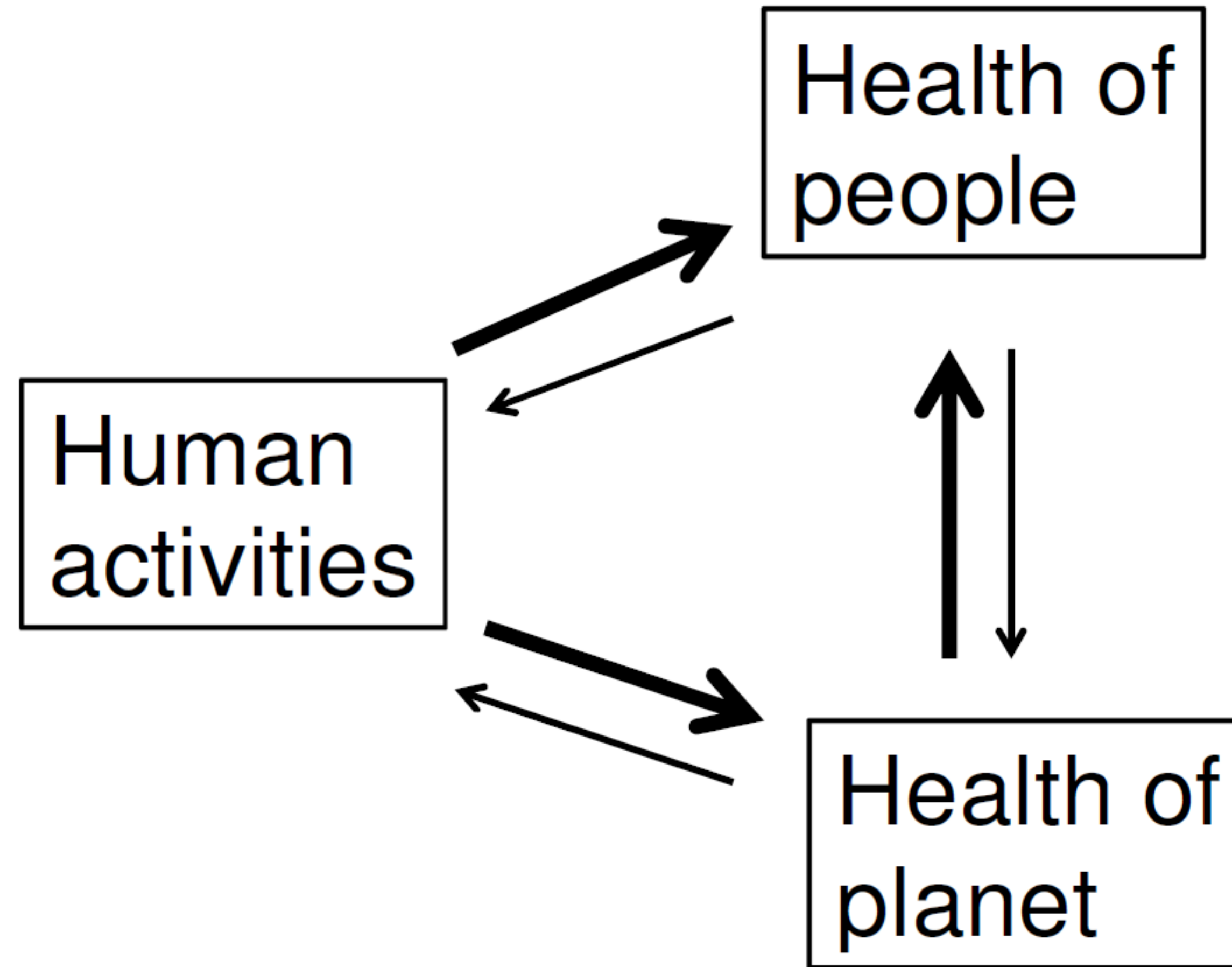
Lancet series on health and climate change:

<http://www.thelancet.com/series/health-and-climate-change>

- Energy generation
- Mobility
- Food choices
- Housing



Boyden's biosensitivity triangle



Universal health needs of the human species

Bio–physical

Clean air
Clean water
A natural diet
Absence of harmful levels of radiation
Minimal contact with pathogens
Protection from extremes of climate
A natural amount of physical activity
Sleep

Psycho–social

An emotional support network
The experience of conviviality
Opportunities for co-operation
A natural level of sensory stimulation
An interesting environment
An aesthetically pleasing environment
Opportunities for creative behaviour
Opportunities for learning
Opportunities for recreation
Opportunities for spontaneity
Variety in daily experience
Absence of alienation and deprivation
A sense of belonging, purpose and love



Systems thinking

- Dynamic interactions
- Feedback
- Policy resistance
- Leverage points
- Unintended consequences



Examples of 'system' problems

Unintended consequences

200 years ago, health problems in industrialising cities in England led to the 'garden cities' movement. In the 21st century, we face new health problems from urban sprawl

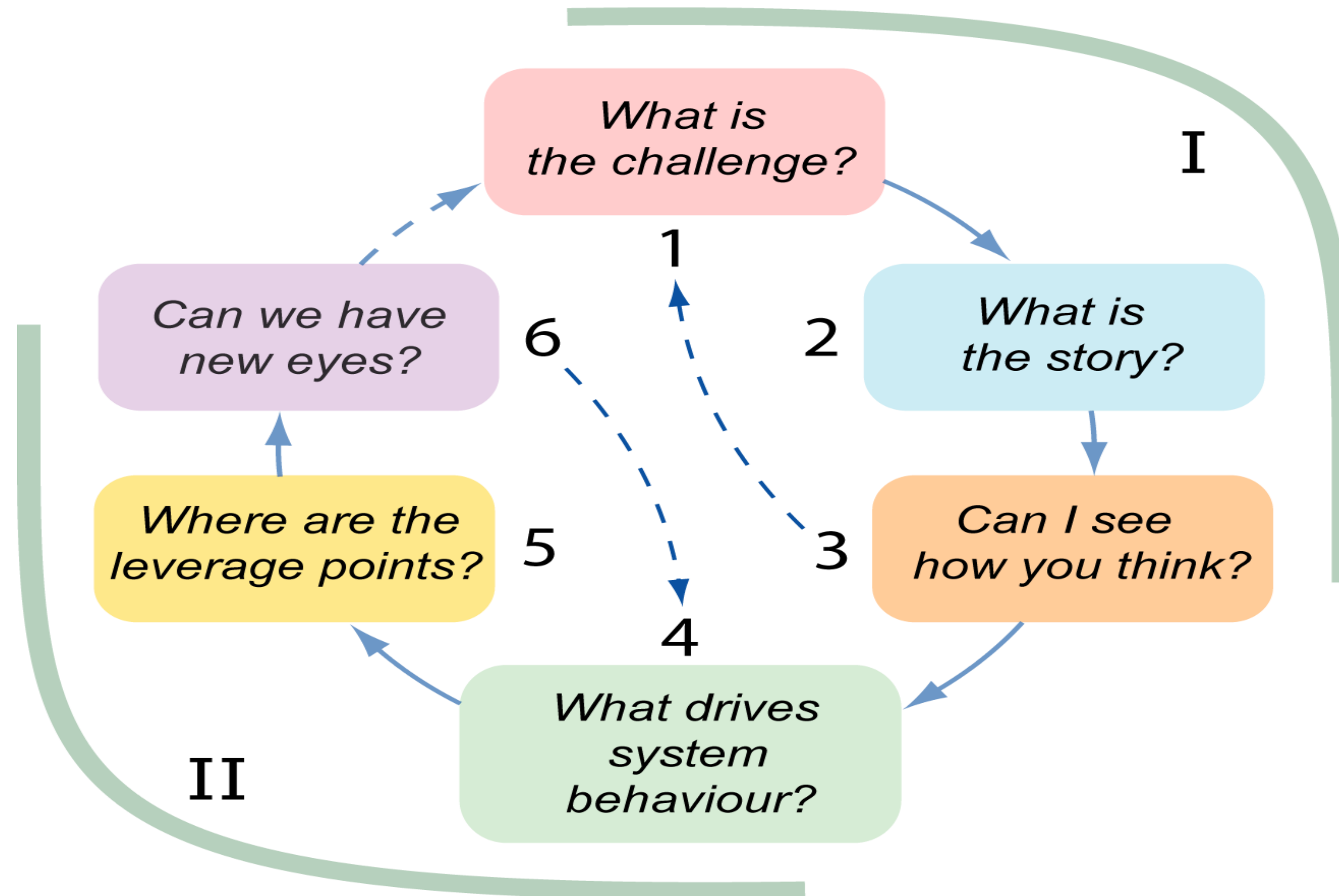
Feedback

Climate change is increasing the intensity of heat waves which is leading to increased demand for air conditioning, thereby increasing energy use and greenhouse gas emissions from climate control in homes and workplaces

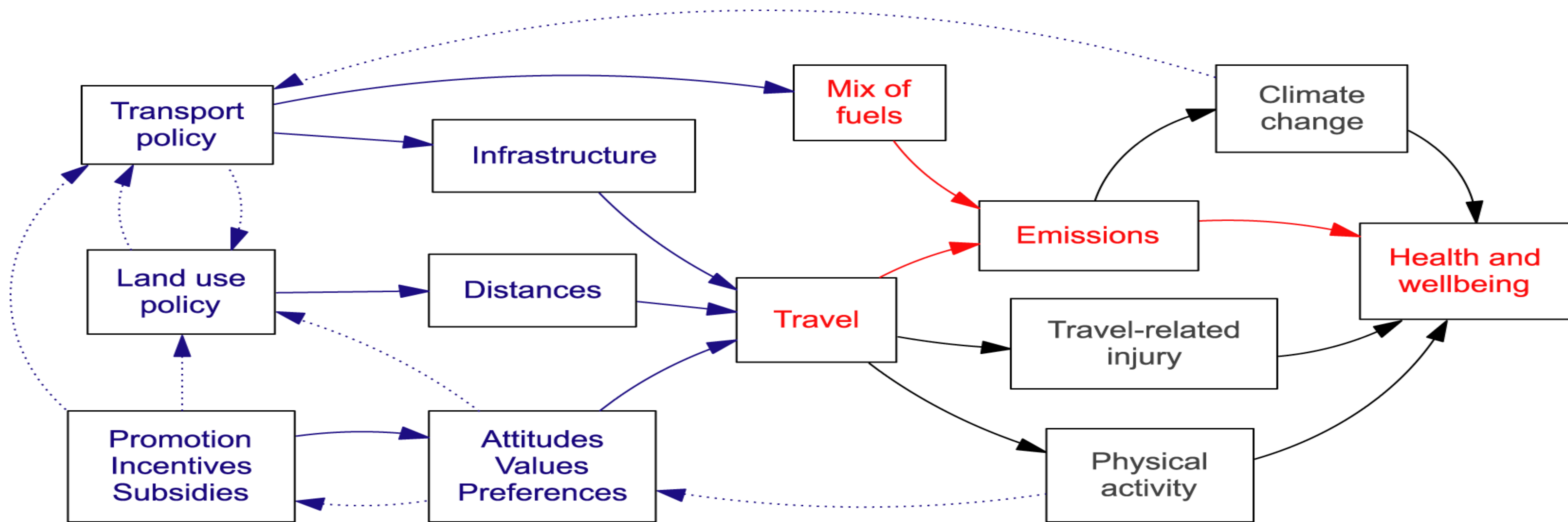


Collaborative conceptual modelling

(Newell and Proust)



Relationships between urban transport, land use and health and wellbeing



ICSU—IAP for Health—UNU



Health and Wellbeing in the Changing Urban Environment using Systems Approaches

<http://www.icsu.org/what-we-do/interdisciplinary-bodies/health-and-wellbeing-in-the-changing-urban-environment>



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International programme office
Xiamen, China



The
ROCKEFELLER
FOUNDATION

THE LANCET

Commission on Planetary Health



THE LANCET

July, 2015

www.thelancet.com

Safeguarding human health in
the Anthropocene epoch: report of The Rockefeller
Foundation–Lancet Commission on planetary health



“Put simply, planetary health is the health of human
civilisation and the state of the natural systems on
which it depends.”



<http://www.thelancet.com/commissions/planetary-health>



Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–*Lancet* Commission on planetary health

Commissioners:

Prof Chris Beyrer

Dr Fred Boltz

Prof Tony Capon

Dr Alex Ezeh

Prof Gong Peng

Prof Sir Andy Haines (Chair)

Dr Richard Horton

Dr Sam Myers

Dr Sania Nishtar

Dr Steve Osofsky

Prof Subhrendu Pattanayak

Dr Montira Pongsiri

Dr Agnes Soucat

Dr Jeanette Vega

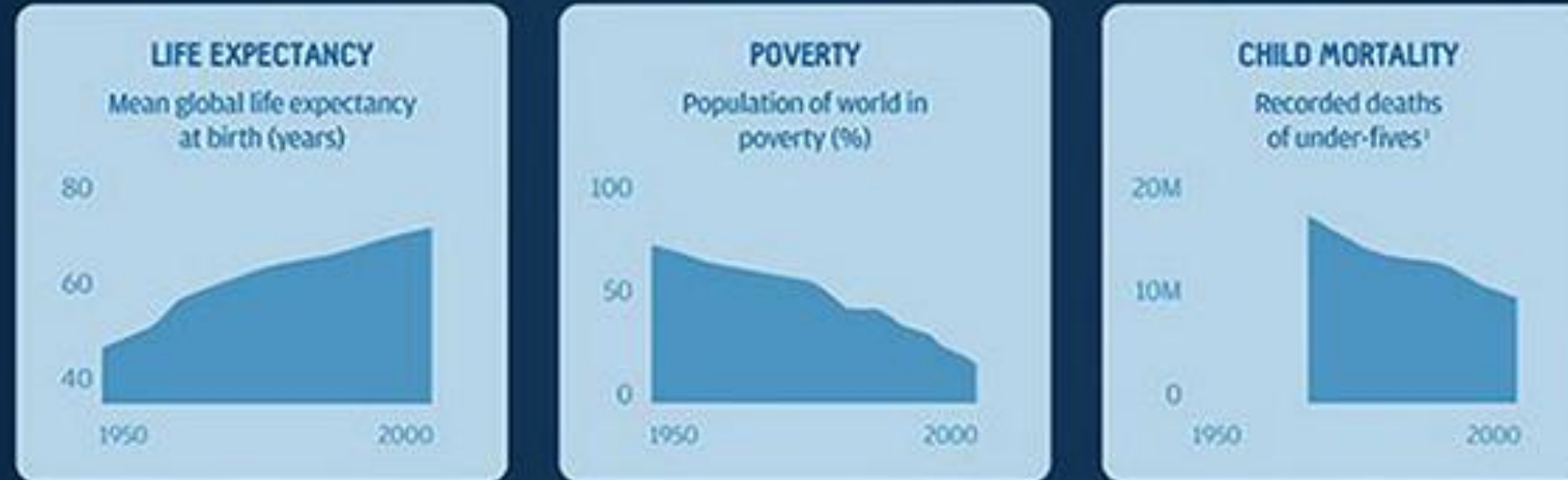
Dr Derek Yach

Dr Sarah Whitmee
(Commission Researcher)

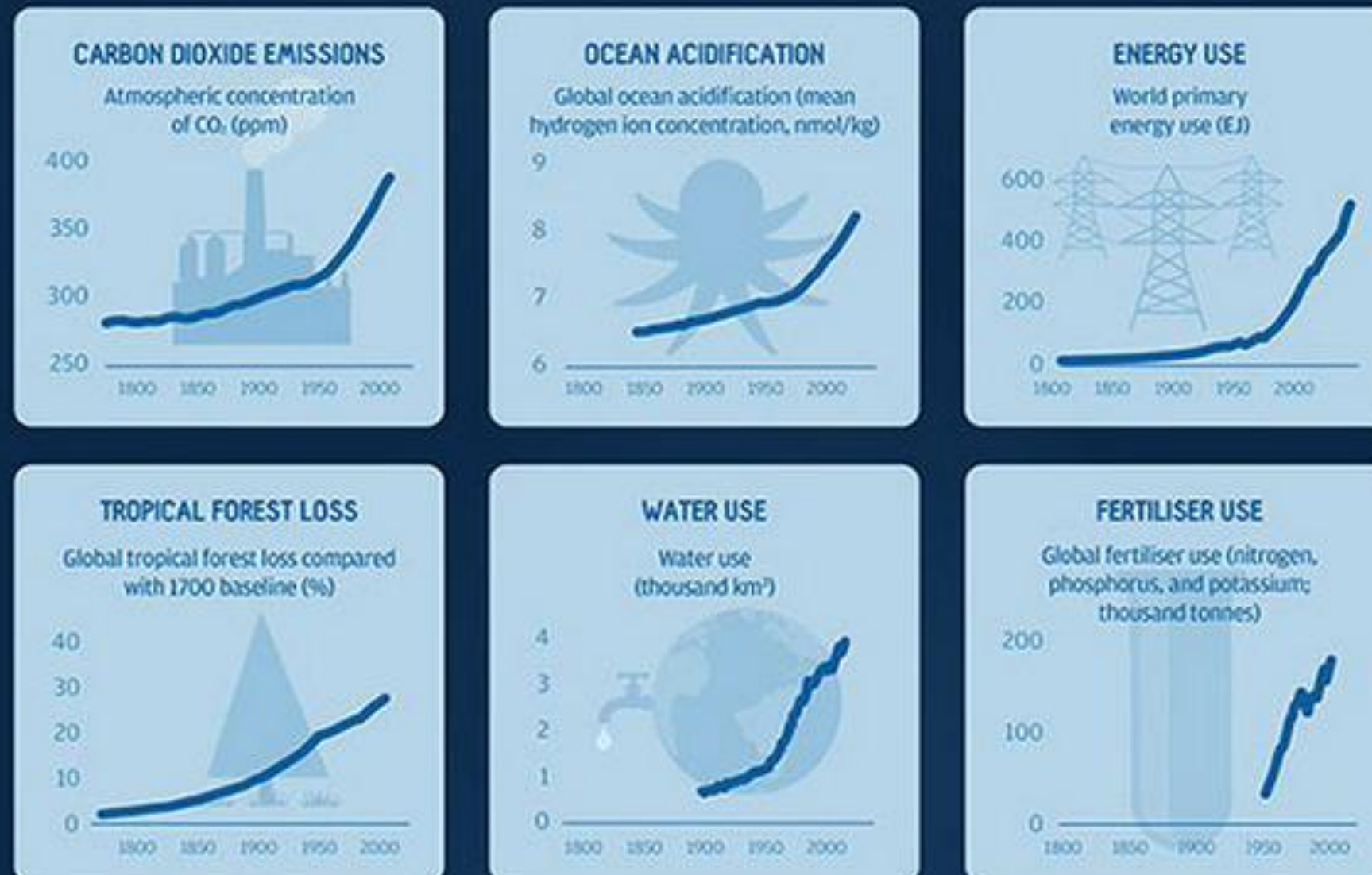
Building on previous work e.g. Brundtland Commission, IPCC, MA, CBD/WHO, Tony McMichael



THE HUMAN POPULATION IS HEALTHIER THAN EVER BEFORE



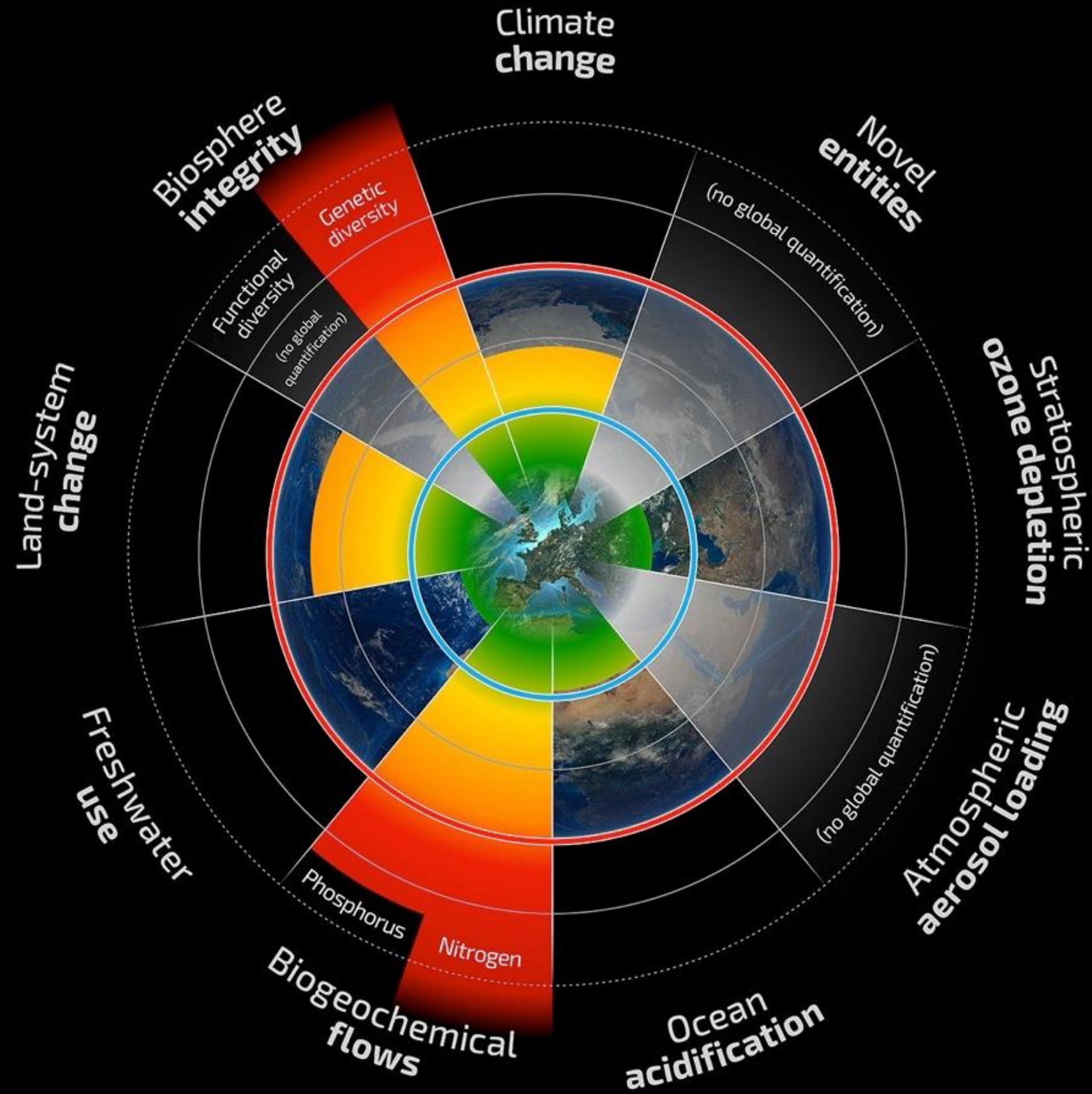
BUT TO ACHIEVE THIS WE'VE EXPLOITED THE PLANET AT AN UNPRECEDENTED RATE





Planetary boundaries

(Steffen et al Science 2015)



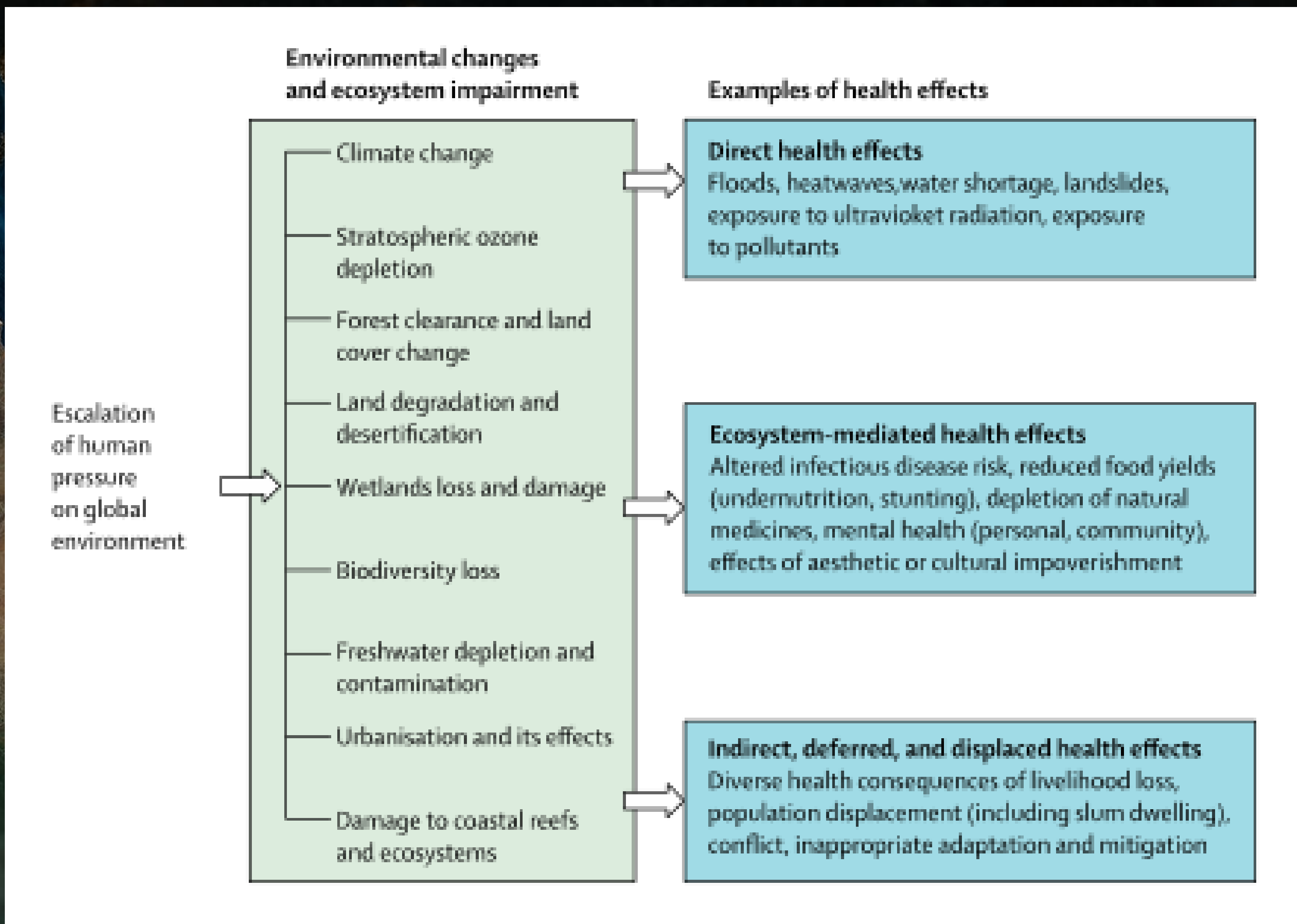


What is planetary health?

“ Put simply, planetary health is the health of human civilisation and the state of the natural systems on which it depends. ”

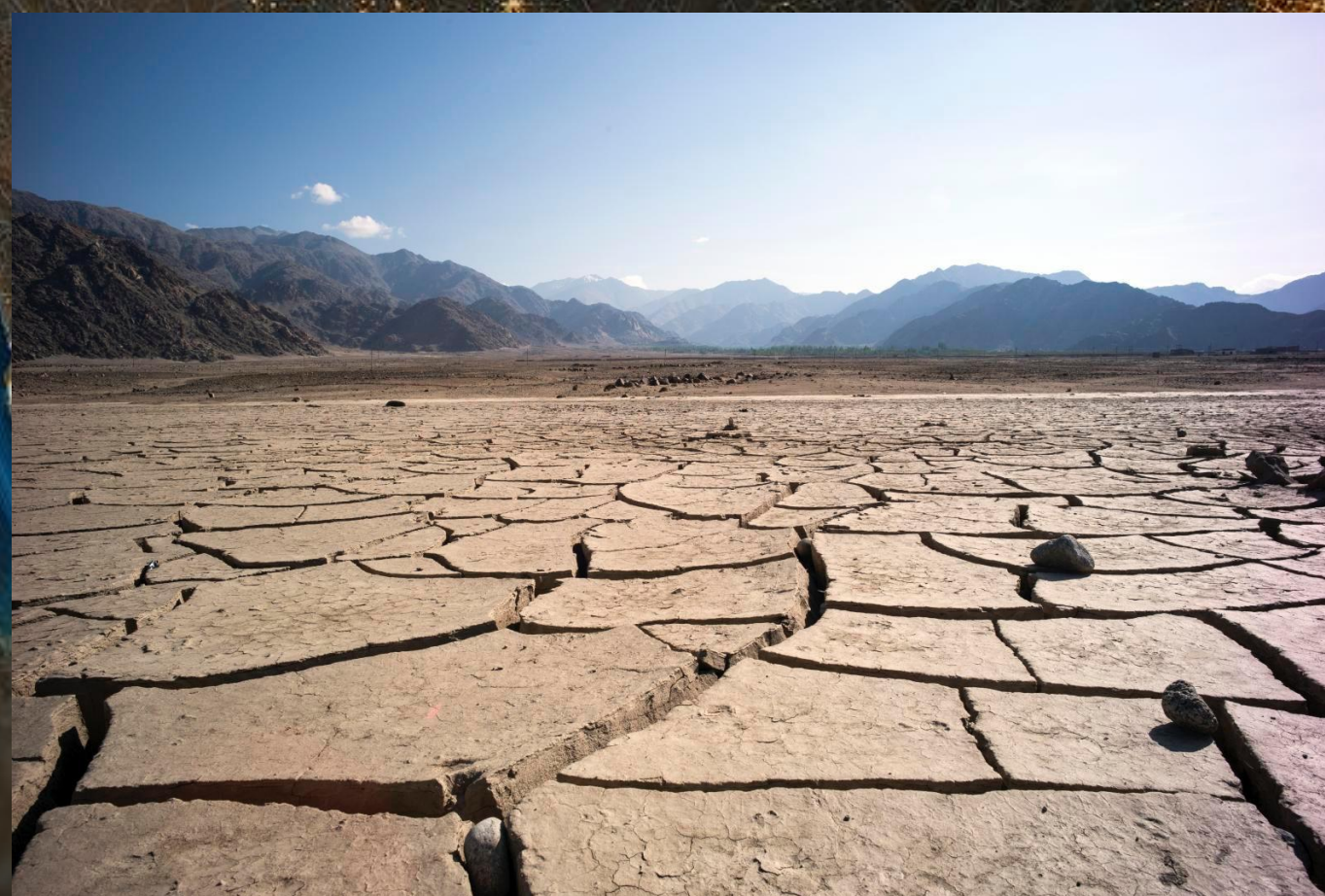


Links with health





Effects of multiple environmental changes on food availability and quality



- Climate change
 - Temperature/extreme events
 - CO₂ fertilization
 - Ozone
 - Pests, mold and fungi
- Land degradation and soil erosion
- Water scarcity (from overconsumption, diversion to non-food crops, climate change and changes to ecosystem function)
- Loss of pollinators
- Overfishing/Ocean acidification



Estimates of air pollution deaths

(WHO 2014, Lim et al LANCET 2012 ;380)

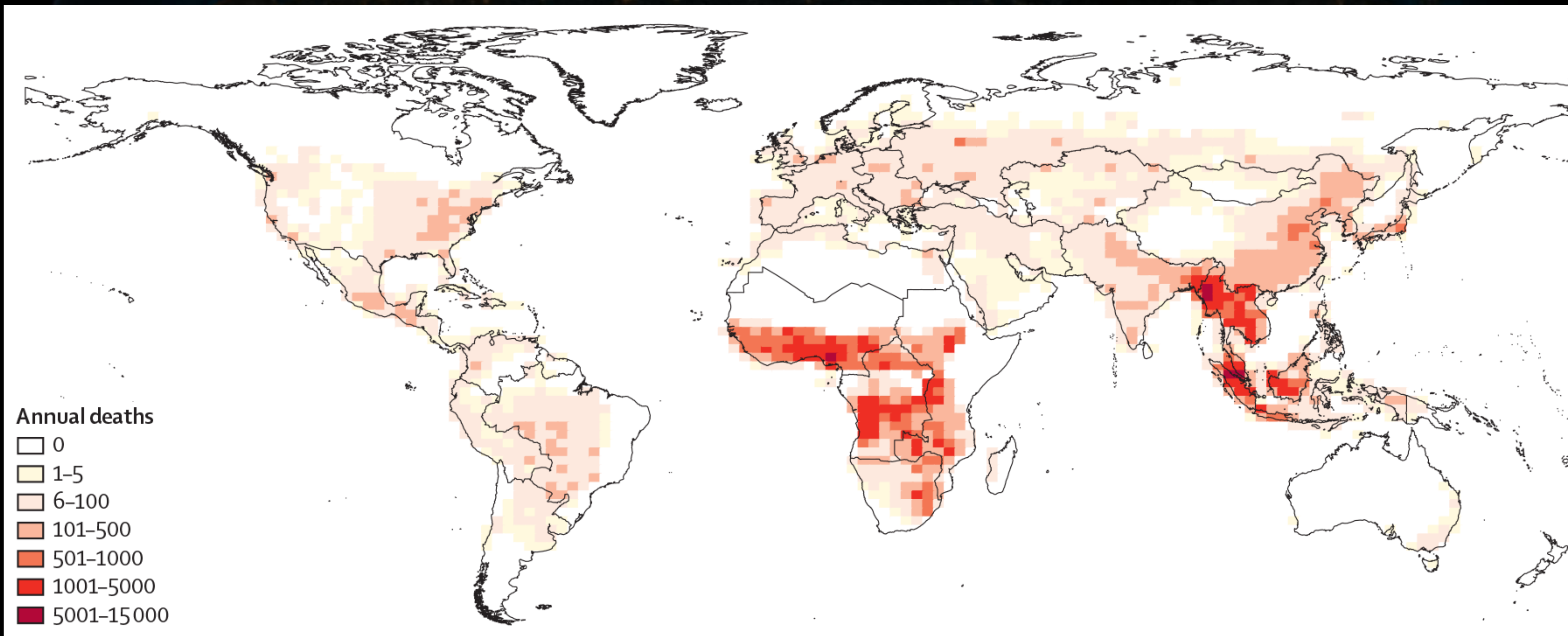


- Ambient particulates >3 m deaths p.a.
- Household from solid fuels >4 m deaths p.a.
- More than 7 million in total





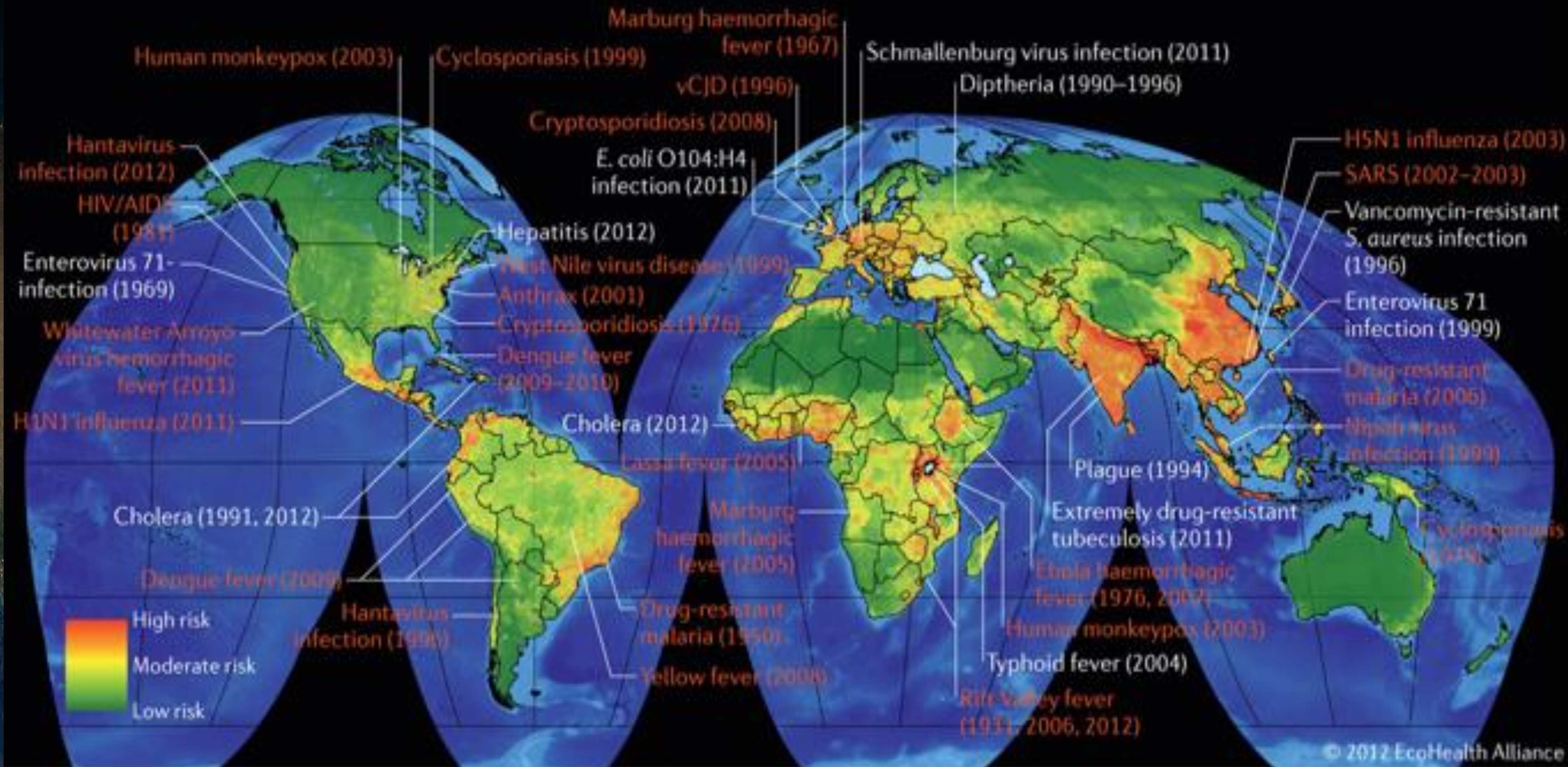
Annual average global mortality (1997–2006) due to Landscape fire smoke



Reproduced from Johnston and colleagues 2012; by permission of Environmental Health Perspectives.



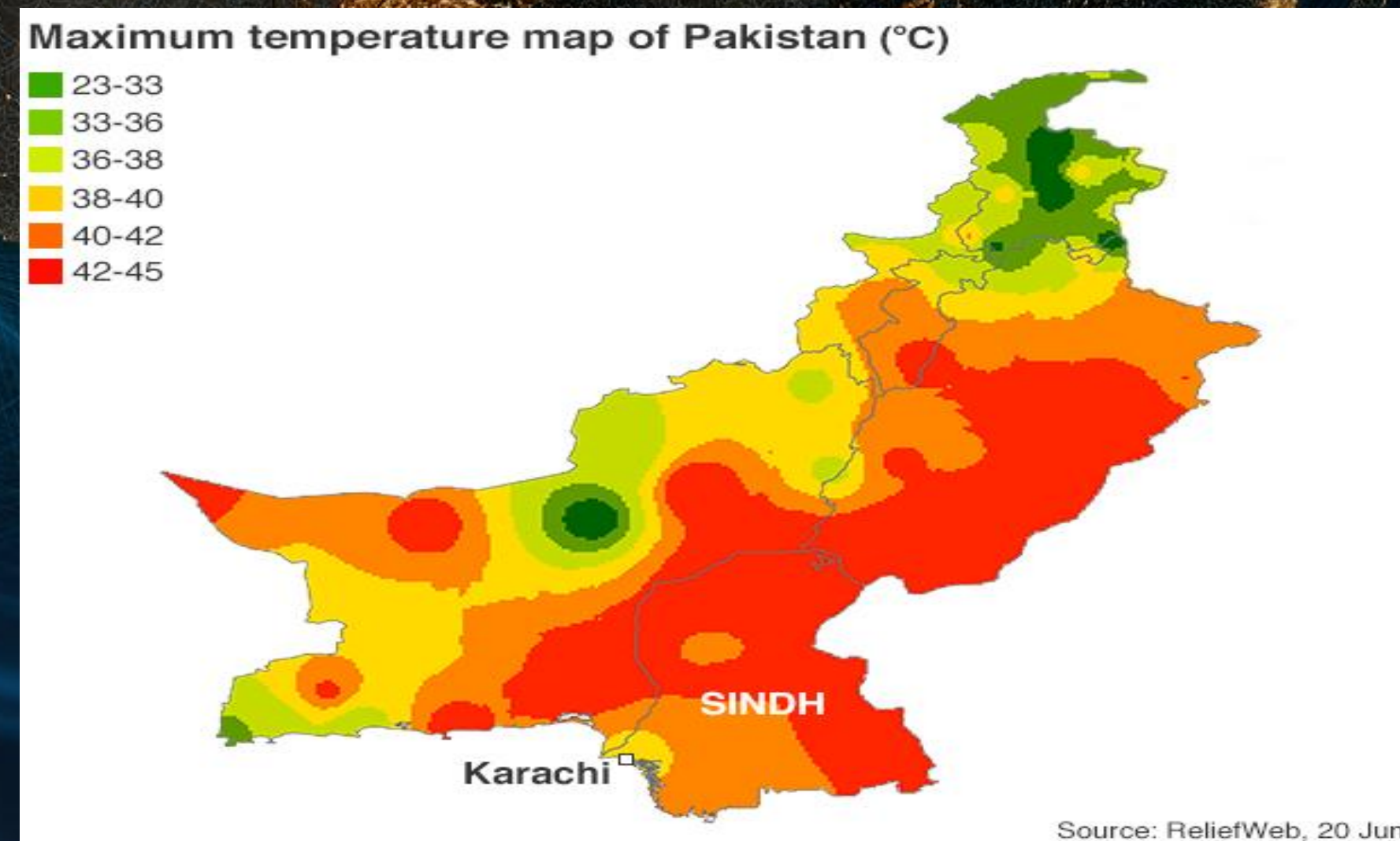
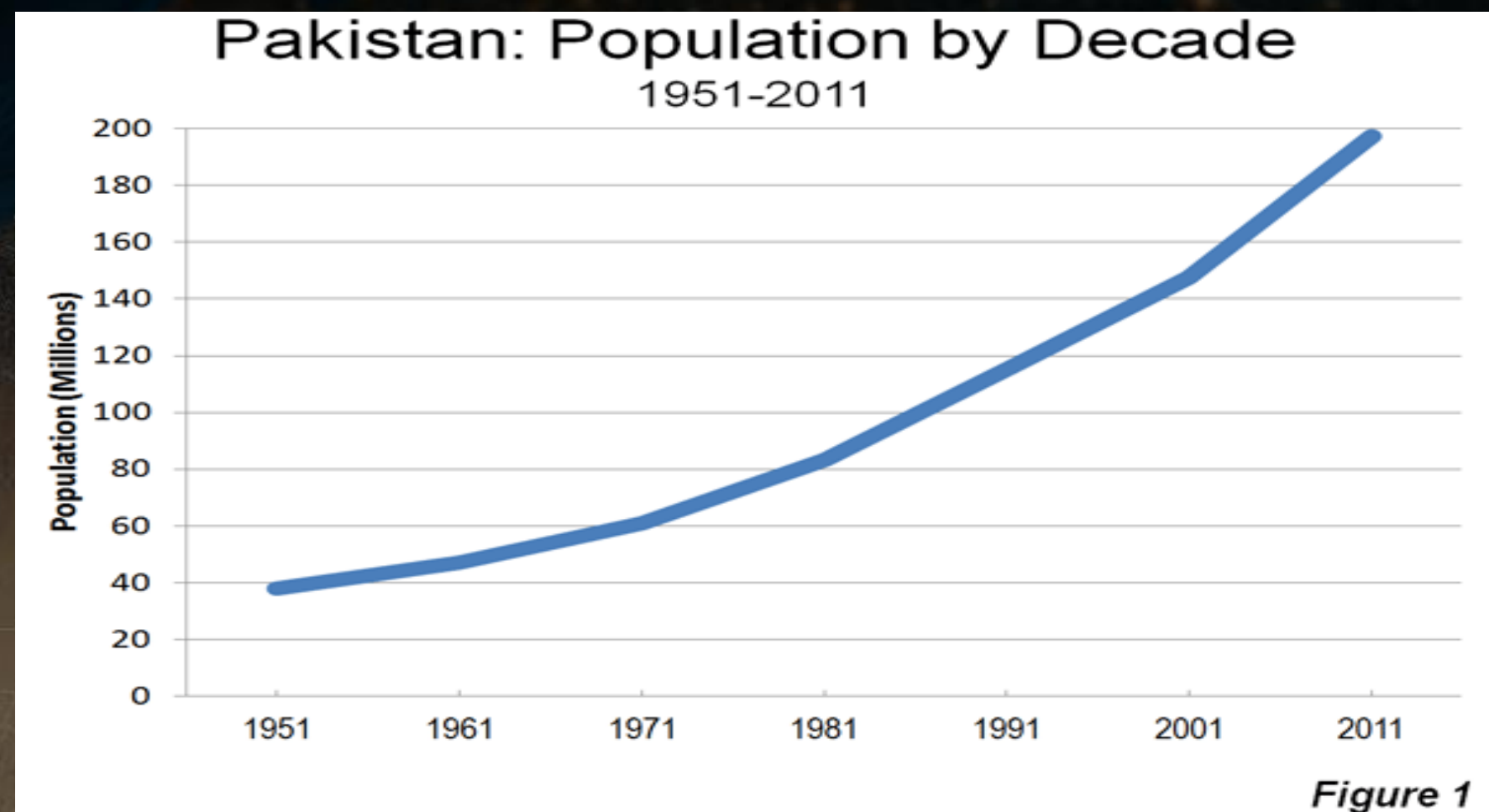
Emerging diseases



© 2012 EcoHealth Alliance

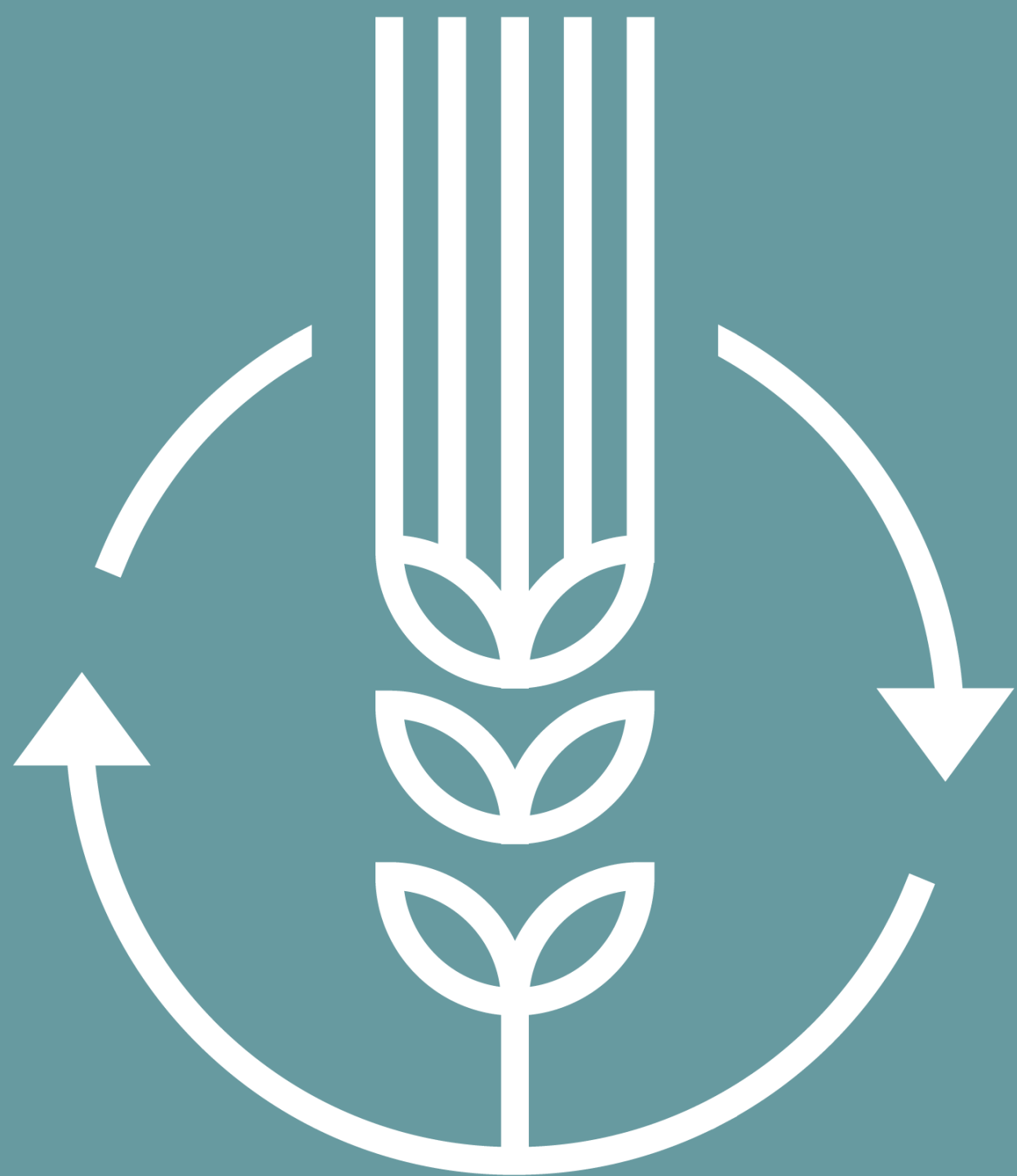


Disasters and displacement – the example of Pakistan





Meeting the challenges





Developing sustainable and healthy cities

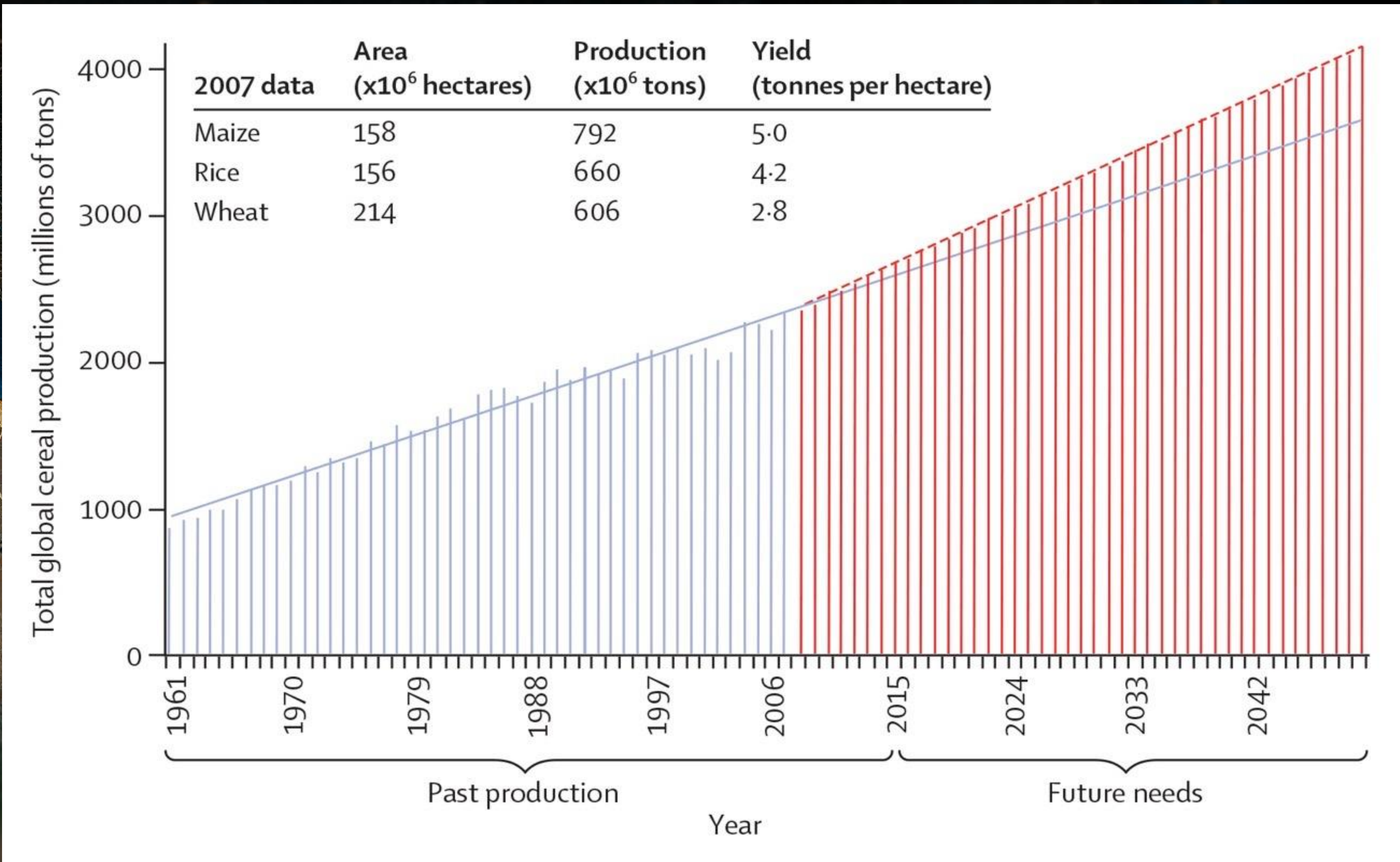


- Active travel /public transport
- Reduced fine particulate air pollution
- Green spaces –biodiversity, reduced heat island and mental health benefits
- Watershed conservation
- Access to healthy food
- Increased resilience to floods, storms and droughts



Multiple approaches for meeting increased food requirements

- Sustainable intensification
- Efficient use of water and fertilizer
- Sustainable aquaculture
- Support for subsistence farmers
- New sources of nutrition + diversification
- Biofortification
- Change of diets and redirect landuse back to food.
- Reduced food waste





Reducing food waste



Nearly 30% of the world's total agricultural land is used to produce food that is never eaten. Various strategies needed e.g. ---



Reducing aflatoxin through aflasafe

http://www.iita.org/2009-press-releases/-/asset_publisher/hB8z/content/maize-farmers-enjoy-better-grains-with-aflasafe;

UN World Food Programme's 'Training Manual for Improving Grain Postharvest Handling and Storage'



The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.

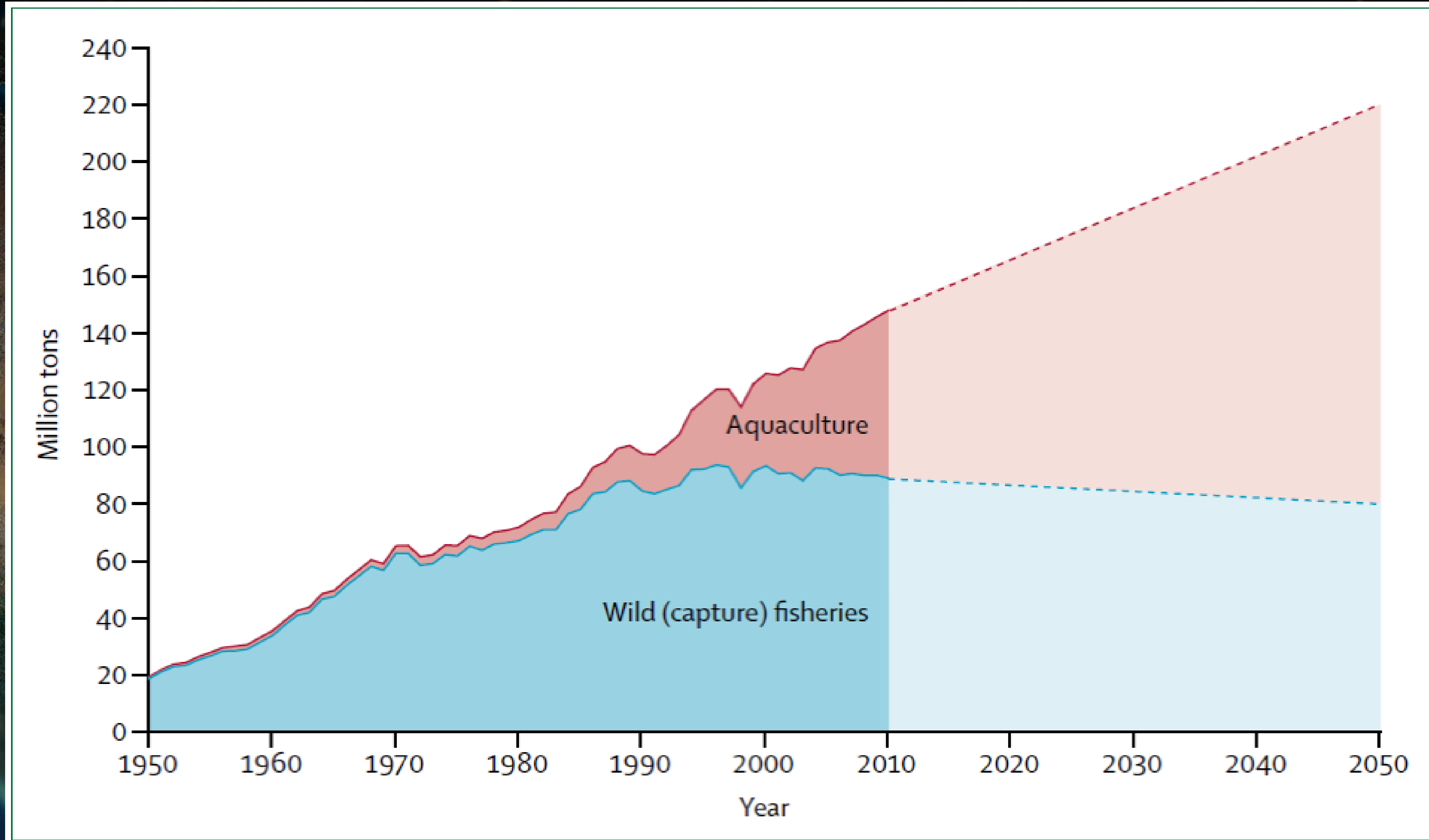


Public Health England in association with the Welsh Government, the Scottish Government and the Food Standards Agency in Northern Ireland





Future fish requirements





How Forest Conservation Reduces Disease risks – examples from the Brazilian Amazon



Malaria transmission

- (-) fewer vector breeding sites.
- (-) larger vector predator populations and greater diversity of mammalian species (promoting dilution effects)
- (-) microclimate inhibits anopheline mosquitoes.

Acute Respiratory Infections (ARI)

- (-) forests may filter air particulates .
- (-) fewer fires and lower smoke emission
- (-) reduced collection and burning of biomass fuels

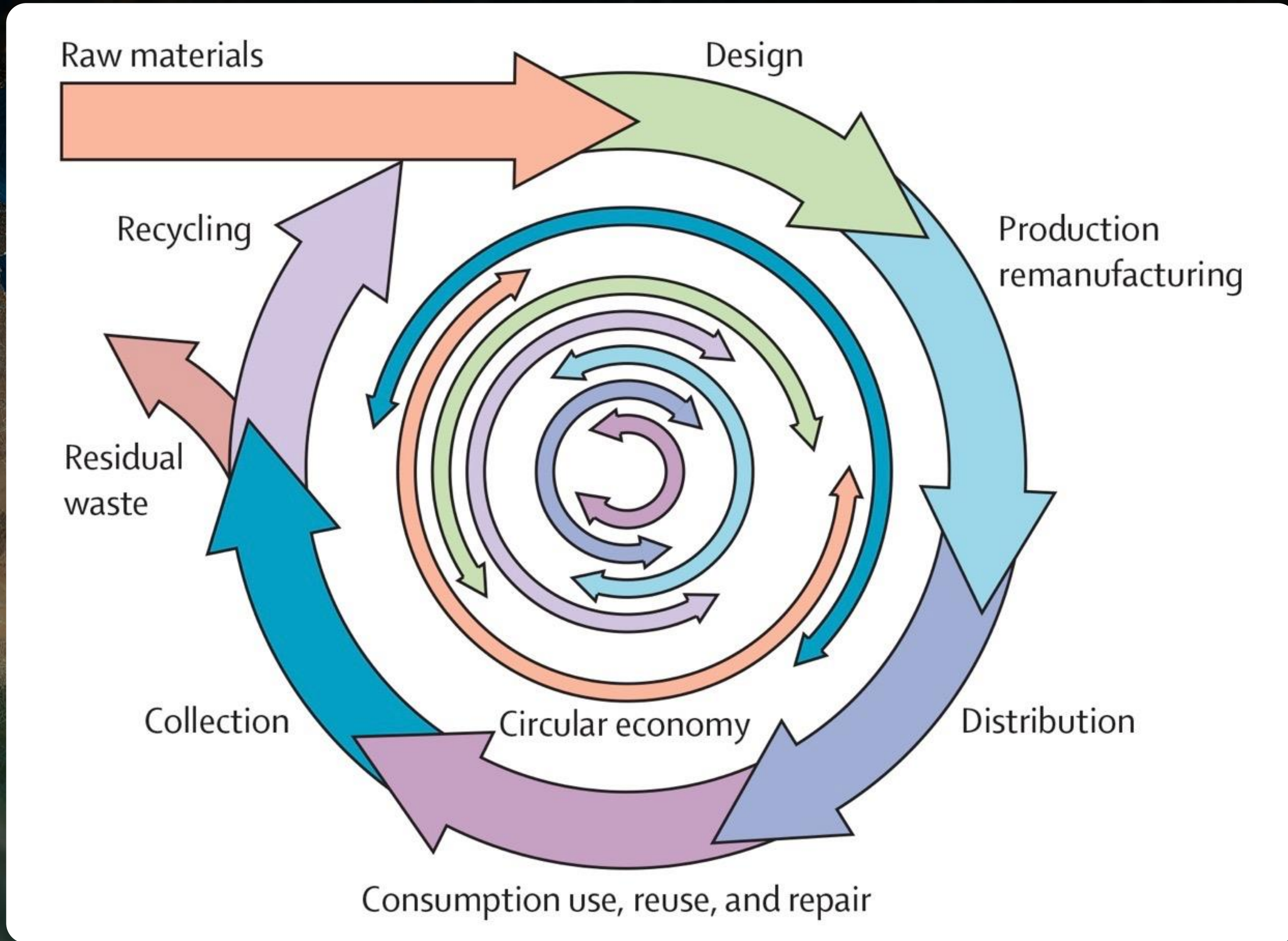
Diarrhea

- (-) forest may reduce flooding and filter pathogens from surface water.

Bauch, Birkenbach, Pattanayak and Sills PNAS 2014



Circular economy



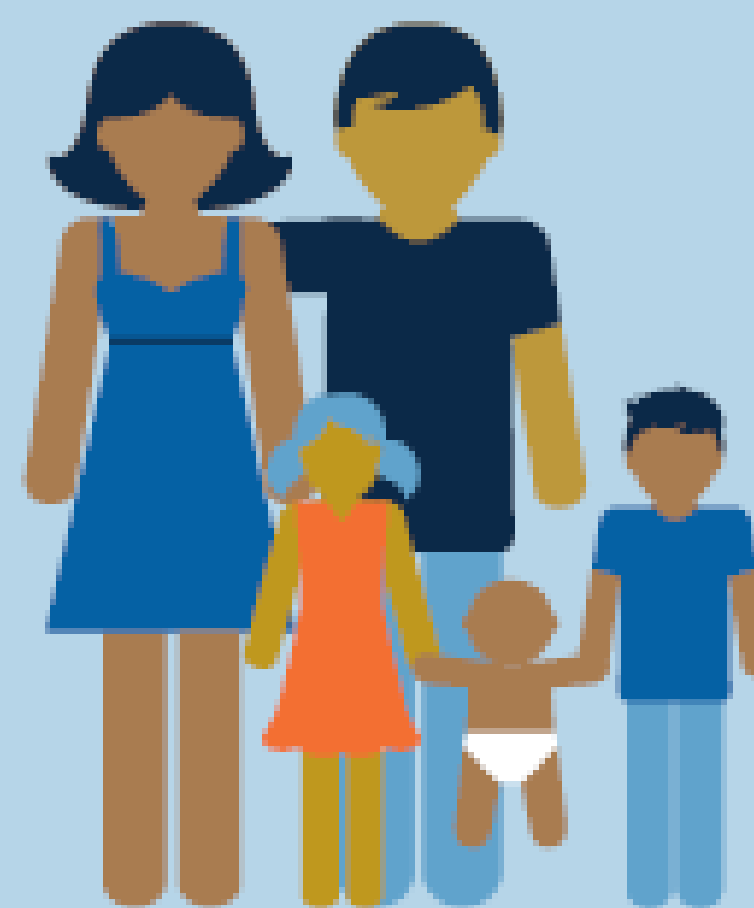


Increasing access to modern family planning

Around 225 million women who want to avoid pregnancy are not using effective contraception.

Access to family planning could cut maternal deaths by around 30%.

FAMILY PLANNING



Meeting the needs for modern contraception in low-income countries would cost only an additional \$5.3 billion per year



Solutions lie within reach and require a redefinition of prosperity to focus on quality of life and improved health for all, together with respect for the integrity of natural systems

This endeavour will necessitate that societies address the drivers of environmental change by promoting sustainable and equitable patterns of consumption, reducing population growth, and harnessing the power of technology for change

Implications for health research and capacity building

- Stronger focus on ecological determinants of health:
'eco-social approach' to health
- Health and wellbeing of future generations:
intergenerational health equity
- Interdisciplinary and integrative research:
human ecology and systems thinking

