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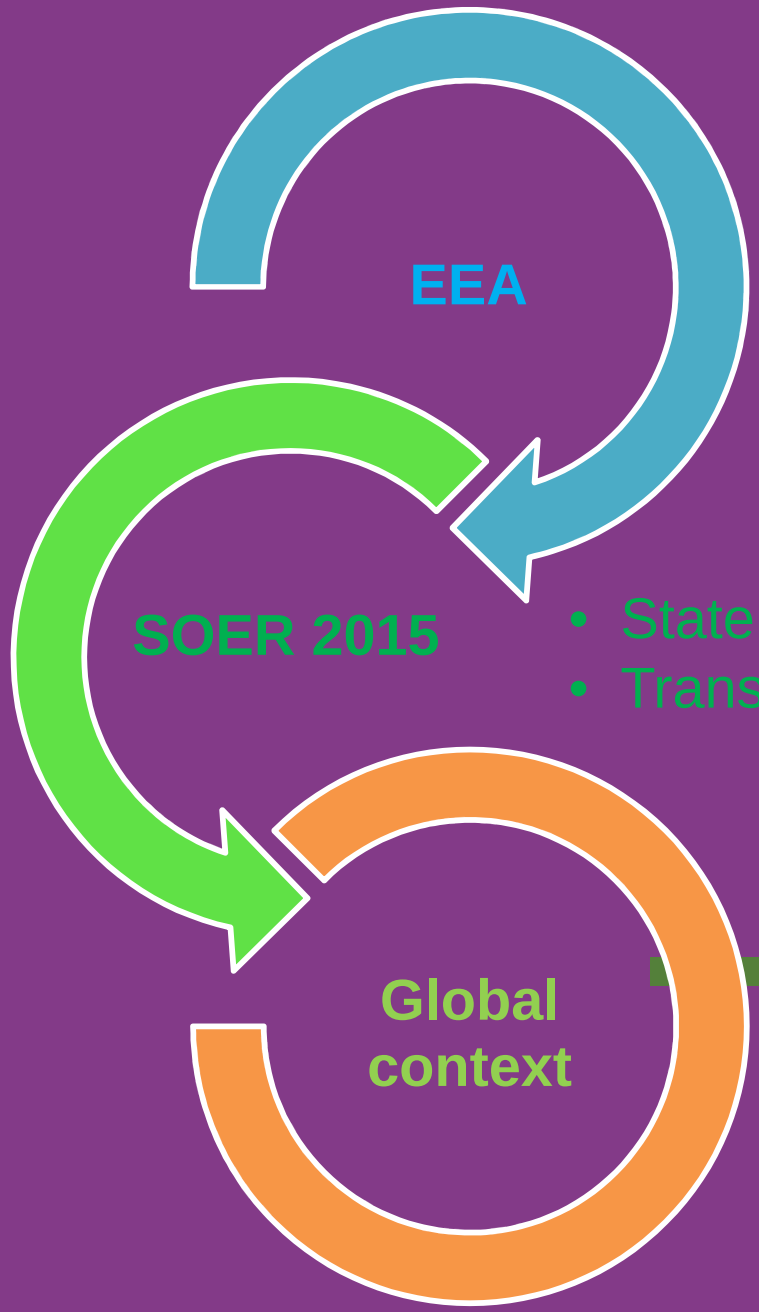
European Environment Agency



- Mission
- Geographical coverage

- State and outlook 2015 - key messages
- Transitions towards EU vision

- Global megatrends

- Global challenges
- European implications

European Environment Agency

About the European Environment Agency

The European Environment Agency (EEA) is an agency of the European Union.

The EEA aims to support sustainable development and to help achieve significant and measurable improvement in Europe's environment, through the provision of timely, targeted, relevant and reliable **information to policymaking agents and the public.**

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EEA member and collaborating countries

Member countries
Collaborating countries

THE EUROPEAN ENVIRONMENT
STATE AND OUTLOOK 2015

European Environment Agency

SOER 2015

SYNTHESIS REPORT | GLOBAL MEGATRENDS | EUROPEAN BRIEFINGS | COUNTRY COMPARISONS | COUNTRIES & REGIONS

A comprehensive assessment of **past trends and future outlooks** and of opportunities to recalibrate policies, knowledge, investments and innovations in line with the long-term vision of the 7th EAP.

SOER 2015 Synthesis report

SOER 2015 Assessment of global megatrends

Global megatrends	European briefings	Cross-country comparisons	Countries and regions
11 briefings	25 briefings	9 briefings	39+3 briefings

Related content

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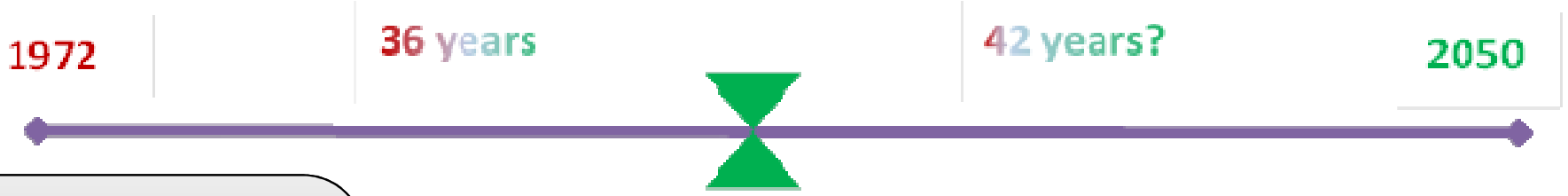
Key messages from SOER 2015

We can see short term gains and growing systemic risk

- **Policies** have delivered substantial benefits for the environment, economy and people's well-being; major challenges remain
- Europe faces **persistent and emerging challenges** linked to production and consumption **systems**, and the rapidly changing **global** context
- Achieving the 2050 vision requires system **transitions**, driven by more ambitious actions on policy, knowledge, investments and innovation
- Doing so presents major **opportunities** to boost Europe's economy and employment and put Europe at the frontier of science and innovation

Related content

EU vision 2050



UN Conference on the Human Environment in Stockholm, Sweden:

- awareness of the global nature of environmental problems
- idea of "sustainable development

Natural capital

Low carbon-resource efficient

Health protection

EU VISION
We live well within the planet's ecological limits

Other EU policies offer similar perspectives: Europe 2020 Strategy, EU Energy Roadmap 2050, Roadmap to a Resource Efficient Europe, Roadmap for a competitive low carbon economy in 2050, etc.

Related content

THE EUROPEAN ENVIRONMENT

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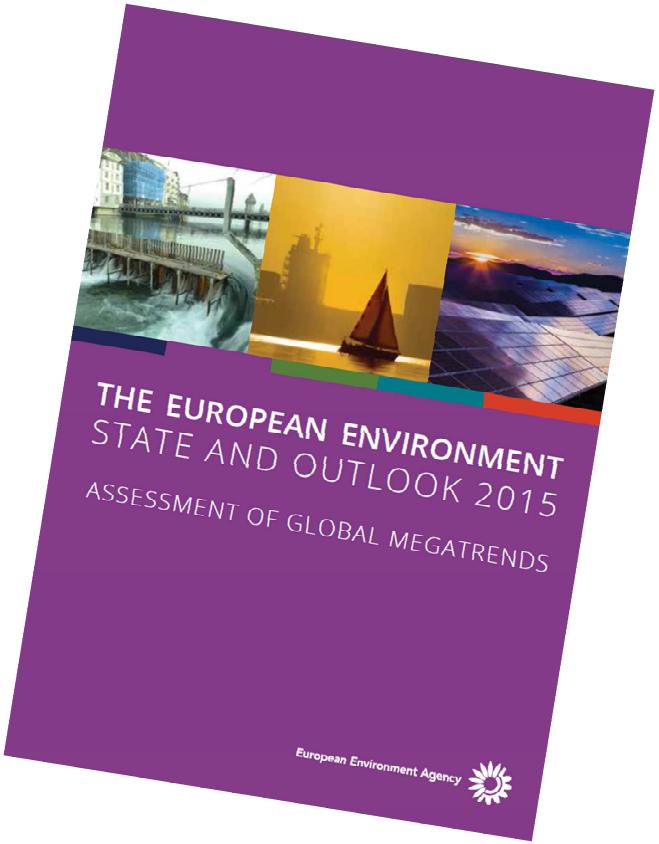
ASSESSMENT OF GLOBAL MEGATRENDS

European challenge to deal with global threats and uncertainties.

Setting the scene: global megatrends relevance



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- Global megatrends are **large-scale, high impact, expected to extended over decades** and often interdependent social, economic, political, environmental or technological changes.
- Europe is **bound to the rest of the world through multiple systems**. This means that global megatrends will significantly affect Europe's future ecological and societal resilience
and its response options.
- **Challenges for European environment governance** arise from increasingly globalised drivers, trends and impacts.

Global megatrends

11

- Diverging global population trends
- Towards a more urban world
- Changing disease burdens and risks of pandemics
- Accelerating technological change
- Continued economic growth?
- An increasingly multipolar world
- Intensified global competition for resources
- Growing pressures on ecosystems
- Increasingly severe consequences of climate change
- Increasing environmental pollution
- Diversifying approaches to governance

Global megatrends

1

environmental

- Increasingly severe consequences of climate change

GMT 9: Increasingly severe consequences of climate change

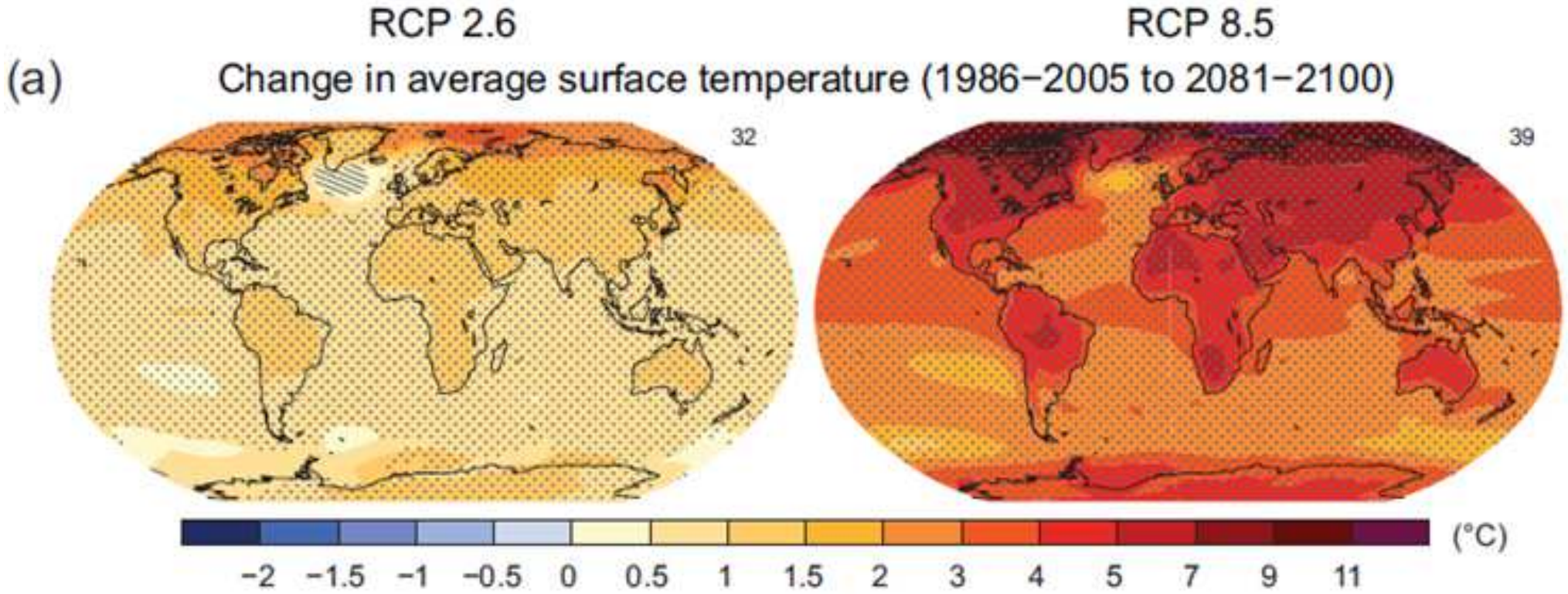
Recent changes in the global climate are **unprecedented over millennia and will continue**.

This megatrend is strongly **interlinked to other** GMTs which are clearly shaping future GHG emissions, which are in turn also the driver of environmental change in its own right.

It represents **the pressure on the top of other socio-economical pressures** (urban sprawl, use of natural capital) aggravating the complexity of problems.

Impacts damage ecosystems and biodiversity, as well as infrastructure and human well-being.

Rising temperatures increasingly threaten the Earth's most vulnerable natural ecosystems

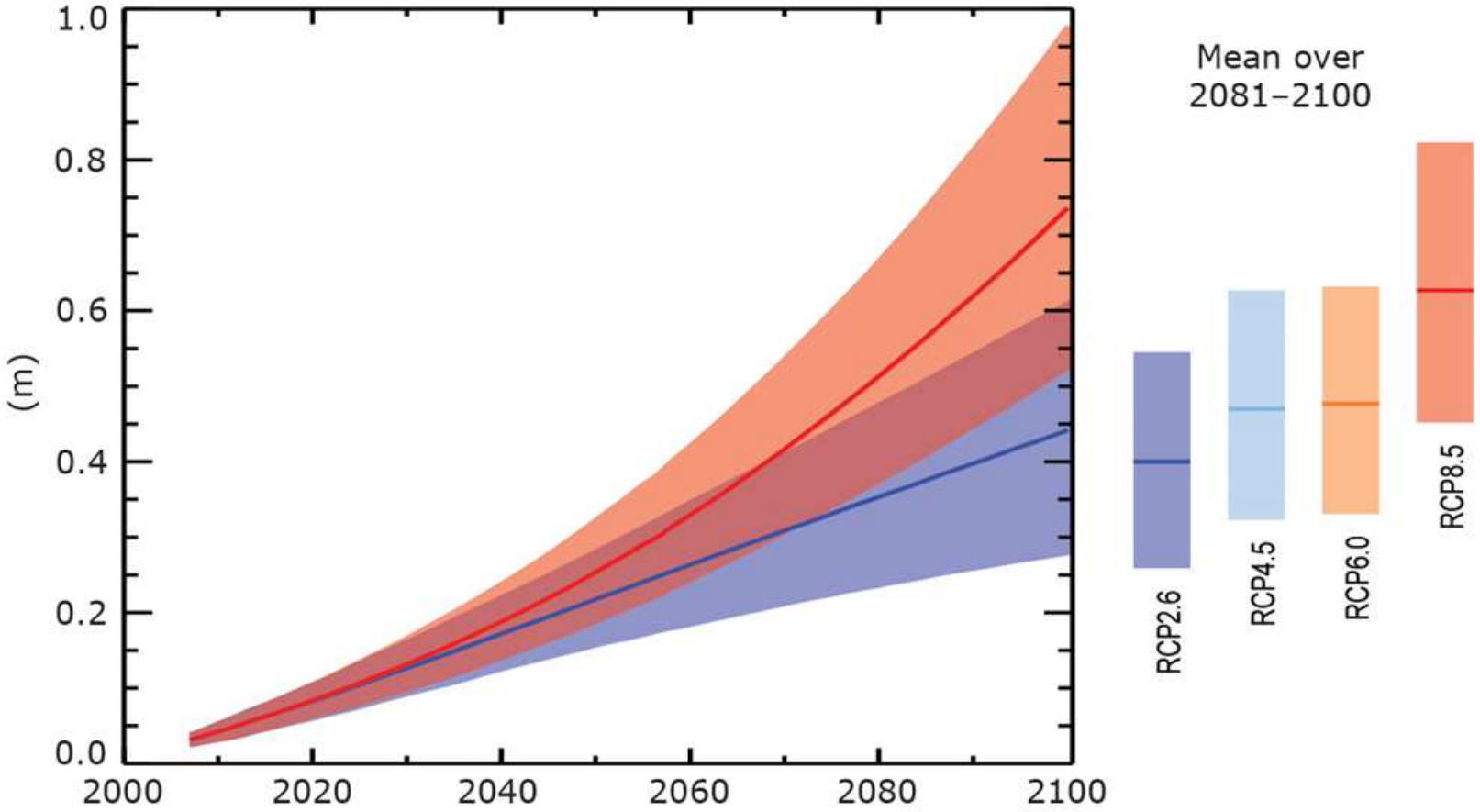


Data source: IPCC (2013)

Change in average temperature, 2081–2100 relative to 1986–2005

The most severe socio-economic impacts of cc are expected in low-income countries and low-lying coastal areas

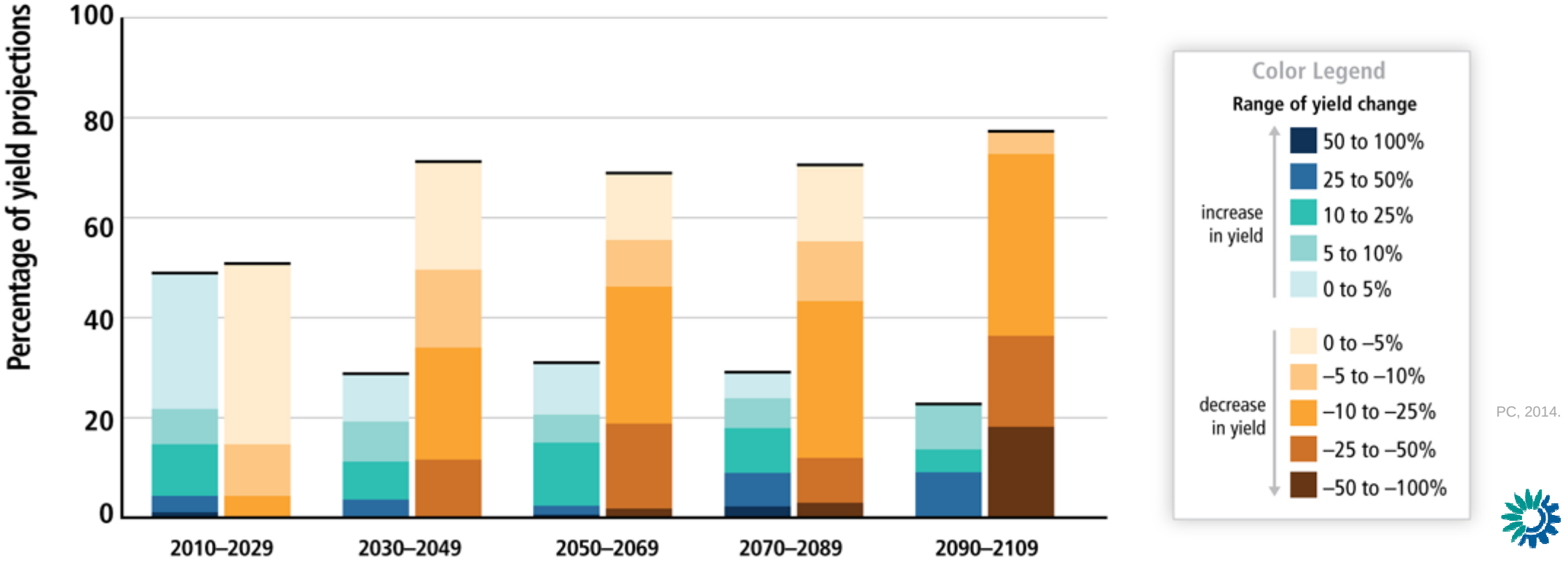
Projected change of global mean **sea level** (21st century)



Source: IPPC, 2013.

Global implications of climate change on ecosystems and human wellbeing:

- Unique and threatened ecosystems (extinction) and associated services
- slowed economic growth
- increased inequalities
- Increased migrations
- Eroded food security: global temperature increases of 4°C or more by 2100 would create significant risks to global food security (mostly decreased crop yields and increased demand); threatened drinking water quality
- Health impacts



PC, 2014.

Key impacts of climate change in European regions

Map 3.6 Key observed and projected impacts from climate change for the main regions in Europe

Arctic
Temperature rise much larger than global average
Decrease in Arctic sea ice coverage
Decrease in Greenland ice sheet
Decrease in permafrost areas
Increasing risk of biodiversity loss
Intensified shipping and exploitation of oil and gas resources

Coastal zones and regional seas
Sea-level rise
Increase in sea surface temperatures
Increase in ocean acidity
Northward expansion of fish and plankton species
Changes in phytoplankton communities
Increasing risk for fish stocks

North-western Europe
Increase in winter precipitation
Increase in river flow
Northward movement of species
Decrease in energy demand for heating
Increasing risk of river and coastal flooding

Mediterranean region
Temperature rise larger than European average
Decrease in annual precipitation
Decrease in annual river flow
Increasing risk of biodiversity loss
Increasing risk of desertification
Increasing water demand for agriculture
Decrease in crop yields
Increasing risk of forest fire
Increase in mortality from heat waves
Expansion of habitats for southern disease vectors
Decrease in hydropower potential
Decrease in summer tourism and potential increase in other seasons

Northern Europe
Temperature rise much larger than global average
Decrease in snow, lake and river ice cover
Increase in river flows
Northward movement of species
Increase in crop yields
Decrease in energy demand for heating
Increase in hydropower potential
Increasing damage risk from winter storms
Increase in summer tourism

Mountain areas
Temperature rise larger than European average
Decrease in glacier extent and volume
Decrease in mountain permafrost areas
Upward shift of plant and animal species
High risk of species extinction in Alpine regions
Increasing risk of soil erosion
Decrease in ski tourism

Central and eastern Europe
Increase in warm temperature extremes
Decrease in summer precipitation
Increase in water temperature
Increasing risk of forest fire
Decrease in economic value of forests

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Global megatrends

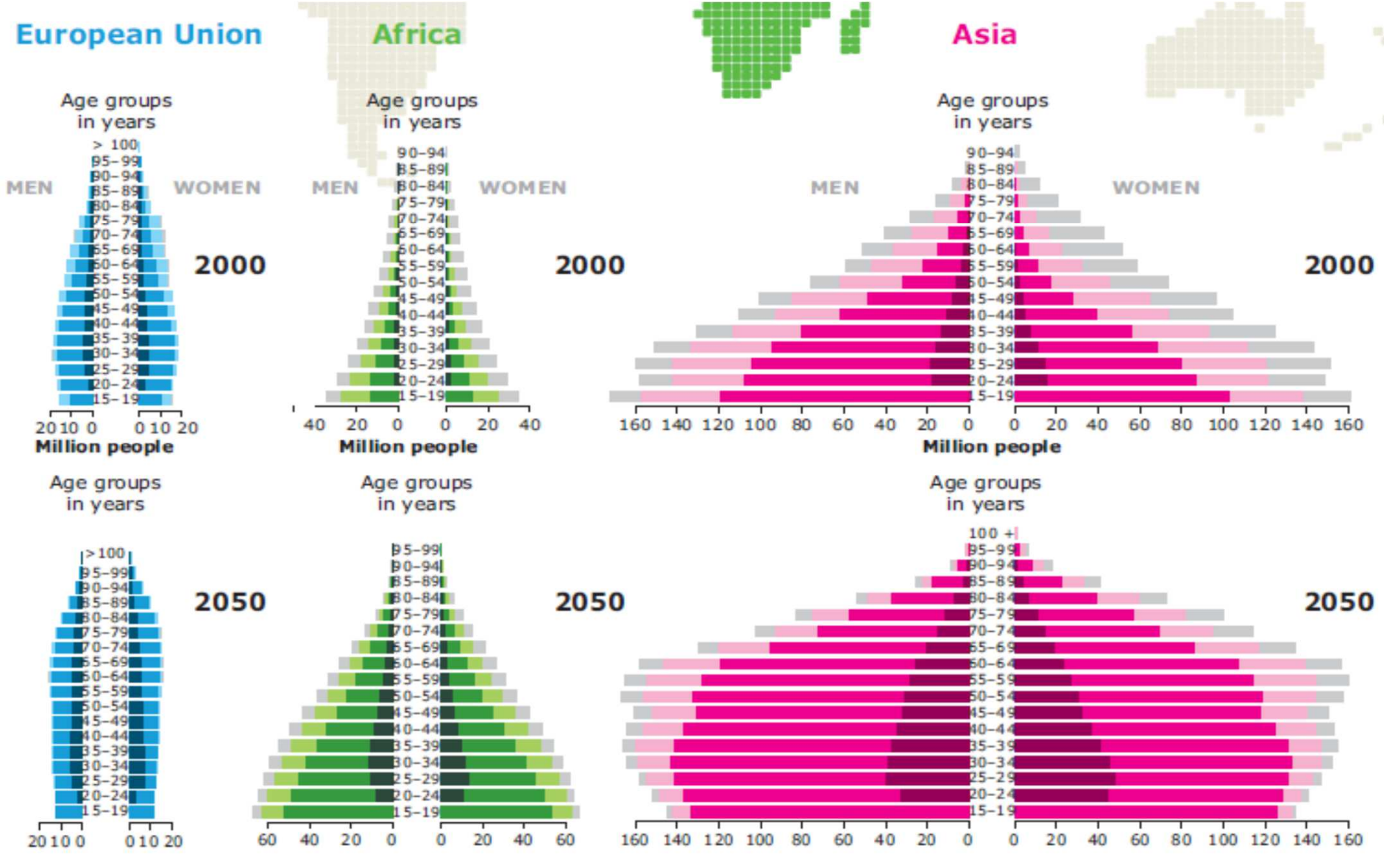
3

- Diverging global population trends
- Towards a more urban world
- Changing disease burdens and risks of pandemics

social

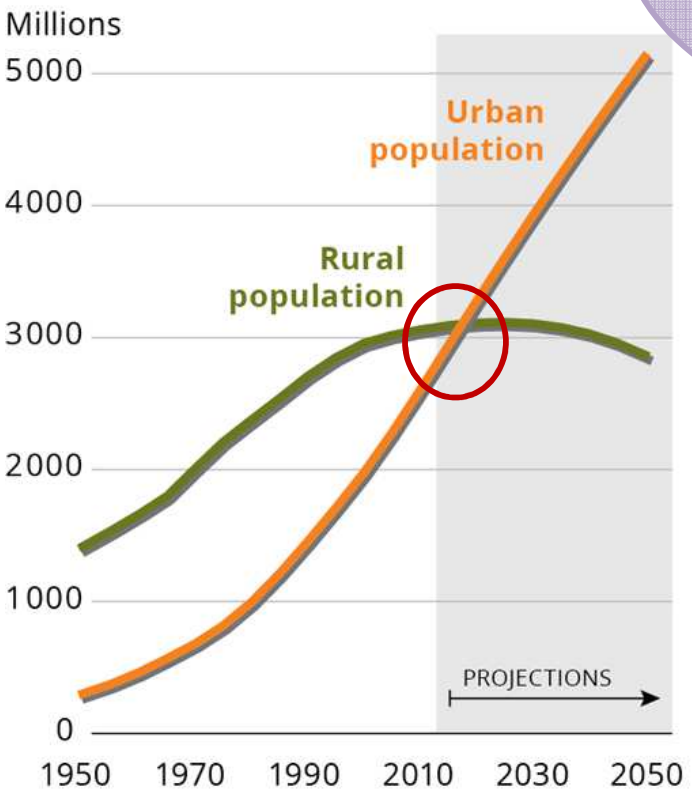
GMT 1: Diverging global population trends

The world population may rise beyond 9.6 billion by 2050, despite the rate of growth slowing..



GMT 2: Towards a more urban world

GMT 3: Changing disease burdens and risks of pandemics



Urban and rural population in developed and less developed world regions, 1950–2050

67%

… of the world population will live **in cities** by 2050

Most of the population increase will **occur in developing world** urban areas, particularly **slums and megacities.**

25%

…of the global burden of disease and deaths can be attributed to **environmental causes** (mostly urban air pollution, PM, ozone)

Source: UN World urbanization prospects: The 2012 revision

Global megatrends

3

economic

- Intensified global competition for resources
- Continued economic growth?
- An increasingly multipolar world

GMT 5: Continued economic growth?

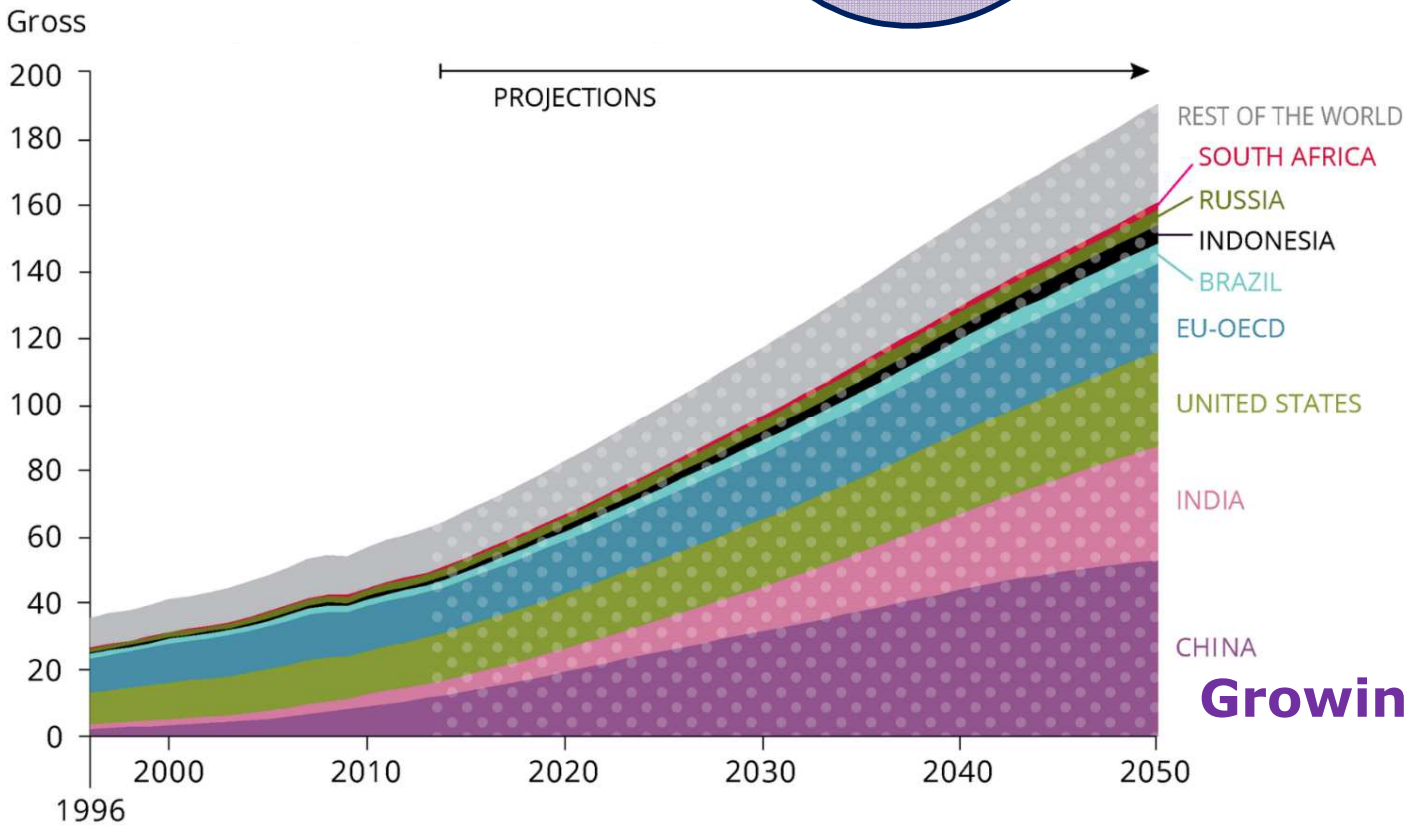
GMT 6: An increasingly multipolar world

World economic output has increased **25-fold** since 1900

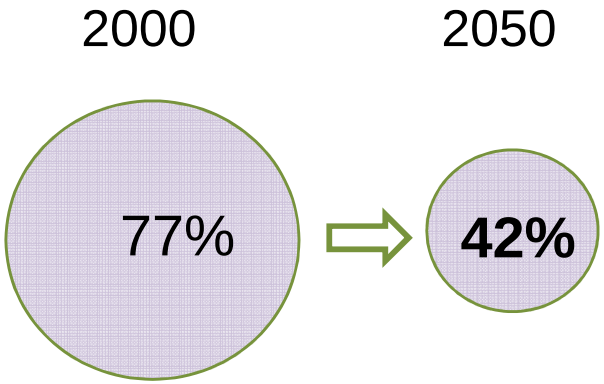
In the period 2010-2050, global GDP is expected to grow by…

300%

but growth rates are slowing as countries become more prosperous



Shrink of OECD share of global GDP



Growing of middle consumer class.

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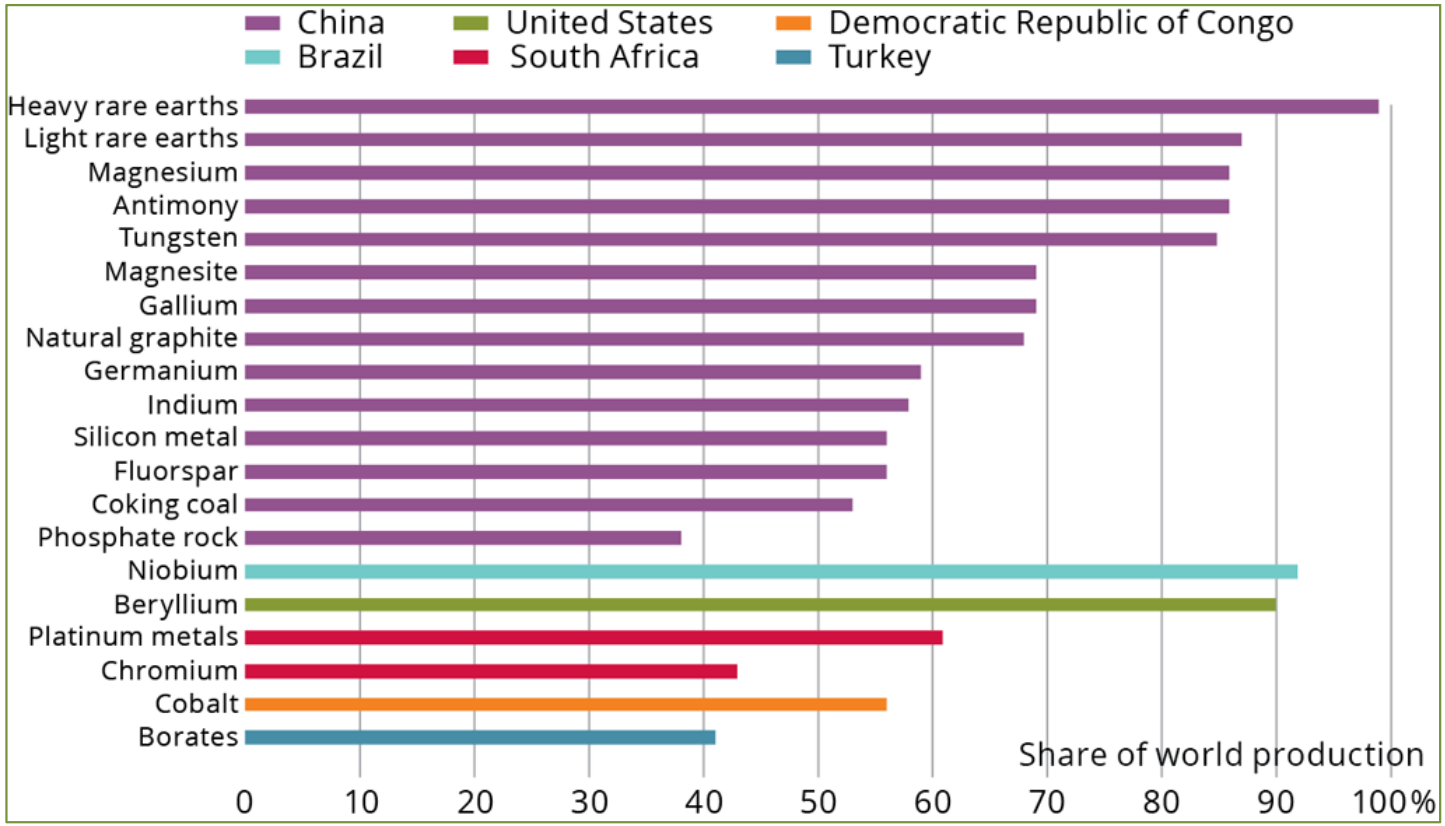
Source: OECD Long-term Baseline Projections 2014.

GMT 7: Intensified global competition for resources

World materials use has grown 10-fold since 1900 and **may double again by 2030.**

The geographic concentration of some reserves **creates supply risks**.



Proportion of global production of EU critical raw materials within a single country, 2010–2012

Source: European Commission 2014.

Imports from outside the EU accounted for 58 % of EU-27 consumption of metal ores and products in 2011 and 79 % of fossil fuels.

Global megatrends

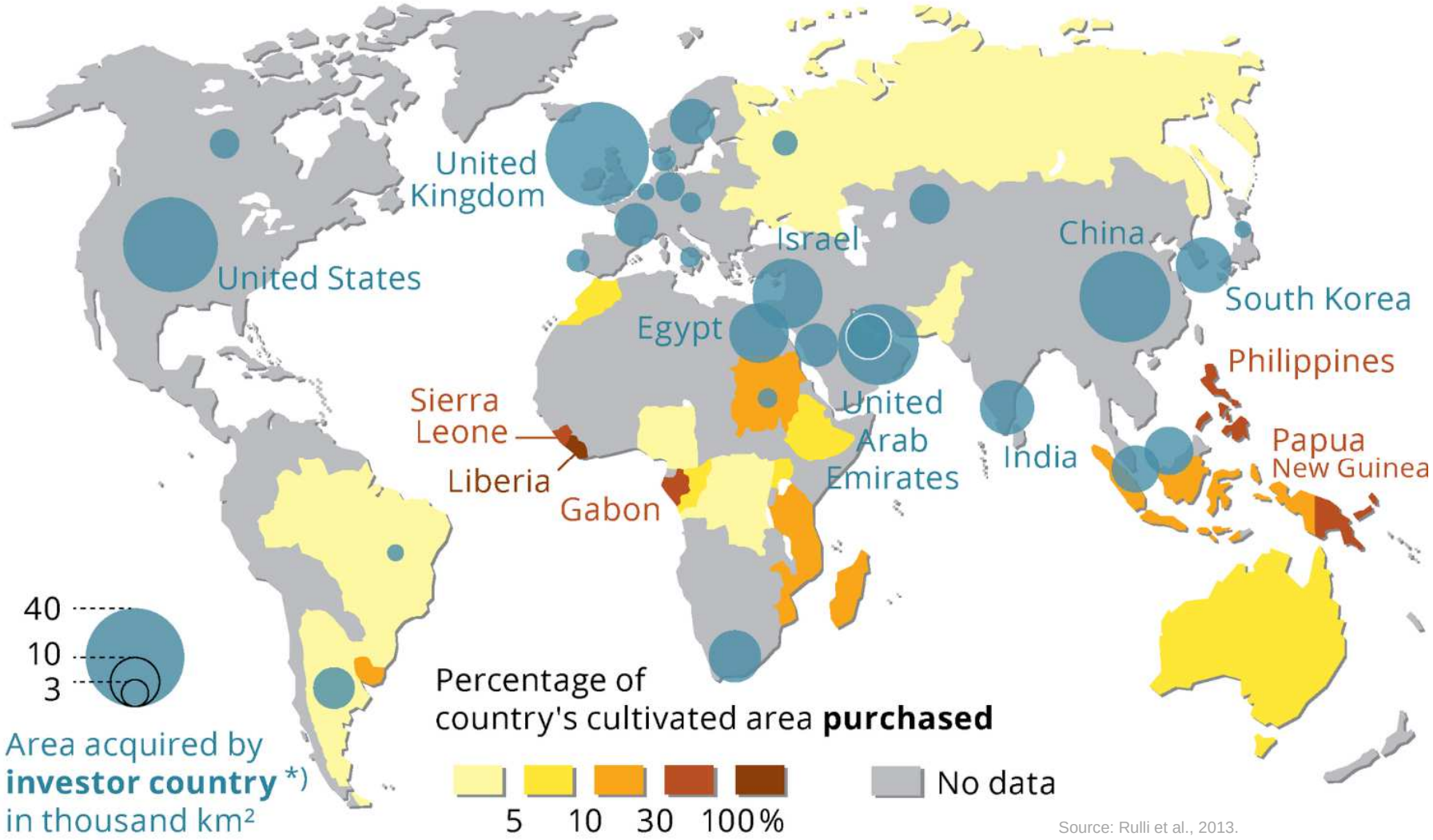
3

environmental

- Growing pressures on ecosystems
- Increasingly severe consequences of climate change
- Increasing environmental pollution

GMT 8: Growing pressures on ecosystems

Transnational land acquisition, 2005–2009



*) Acquired areas over one thousand km² only

Demand for meat, water and bioenergy is driving global competition for land resources

Global megatrends

Impacts

Global challenges:

Food (+ 70% meat by 2050)
Good water availability
Energy (+30-40% in 20 years)
Raw materials (+100% by 2030)
Ecosystem depletion (10-40% loss by 2050)

Four of the top 10 global **risks** are linked to the environment:

(extreme weather events; natural catastrophes, failure of climate change adaptation, water crises, biodiversity loss and ecosystem collapse)

WEF report Global Risks 2015

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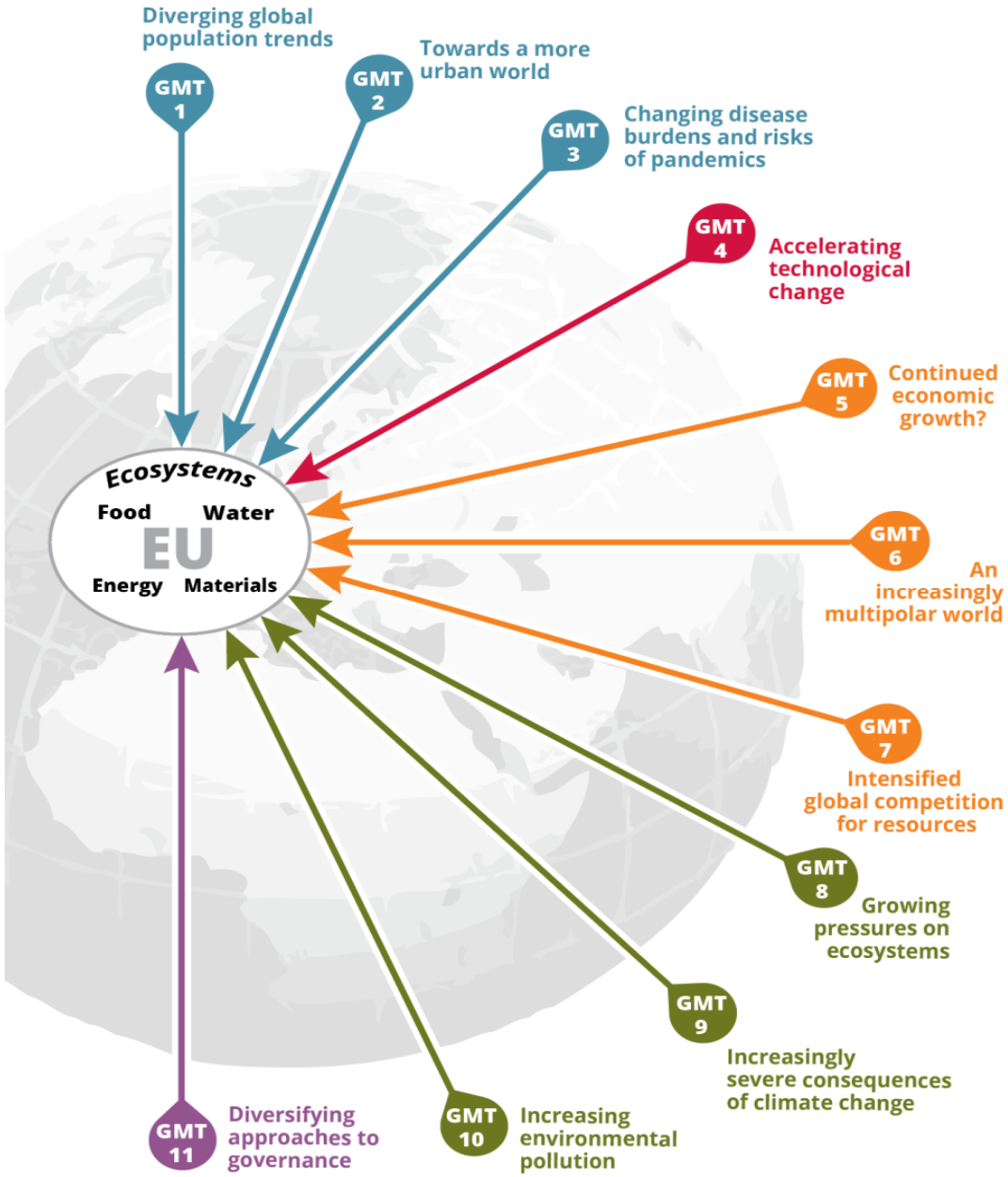
Impacts of GMTs to Europe



Global megatrends strongly impact Europe's ability to meet its ***basic resource needs***:

- **Food**
- **Water**
- **Energy**
- **Materials**
- **Ecosystems** and their services

Europe has opportunities through different response options to ***shape and adapt*** to global megatrends

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