UNIVERSITÀ DI SIENA 1240

GREENING USIENA
STUDENT ENVIRONMENTAL NETWORK

FONDAZIONE SCLAVO
vaccines against poverty

Salute, Inclusione Sociale, Sviluppo Sostenibile

Sfide globali e Mediterraneo

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Aula Magna Storica del Rettorato
via Banchi di Sotto 55, Siena

con il patrocinio di:

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS | MED Solutions

Dario Piselli
President, Greening USiena

The social dimension of environmental sustainability

Salute, Inclusione Sociale, Sviluppo Sostenibile
Università degli Studi di Siena, 20 maggio 2014

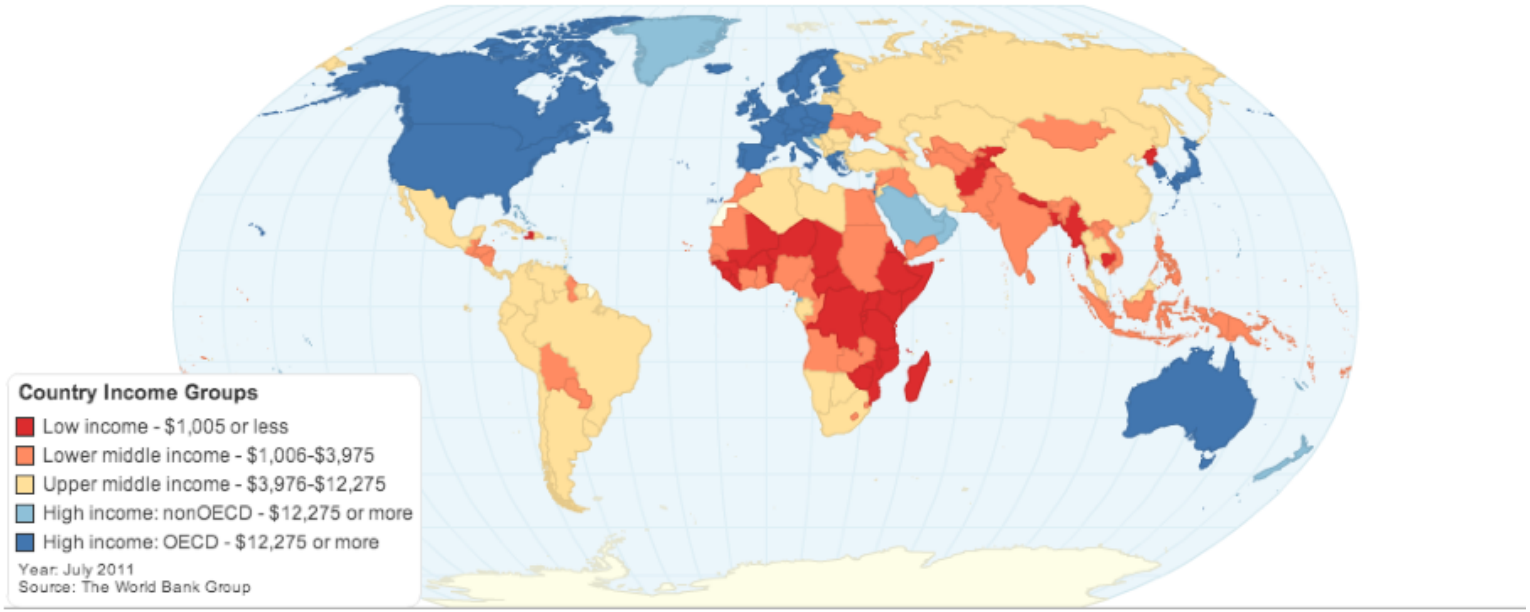
1. What exactly is social sustainability?

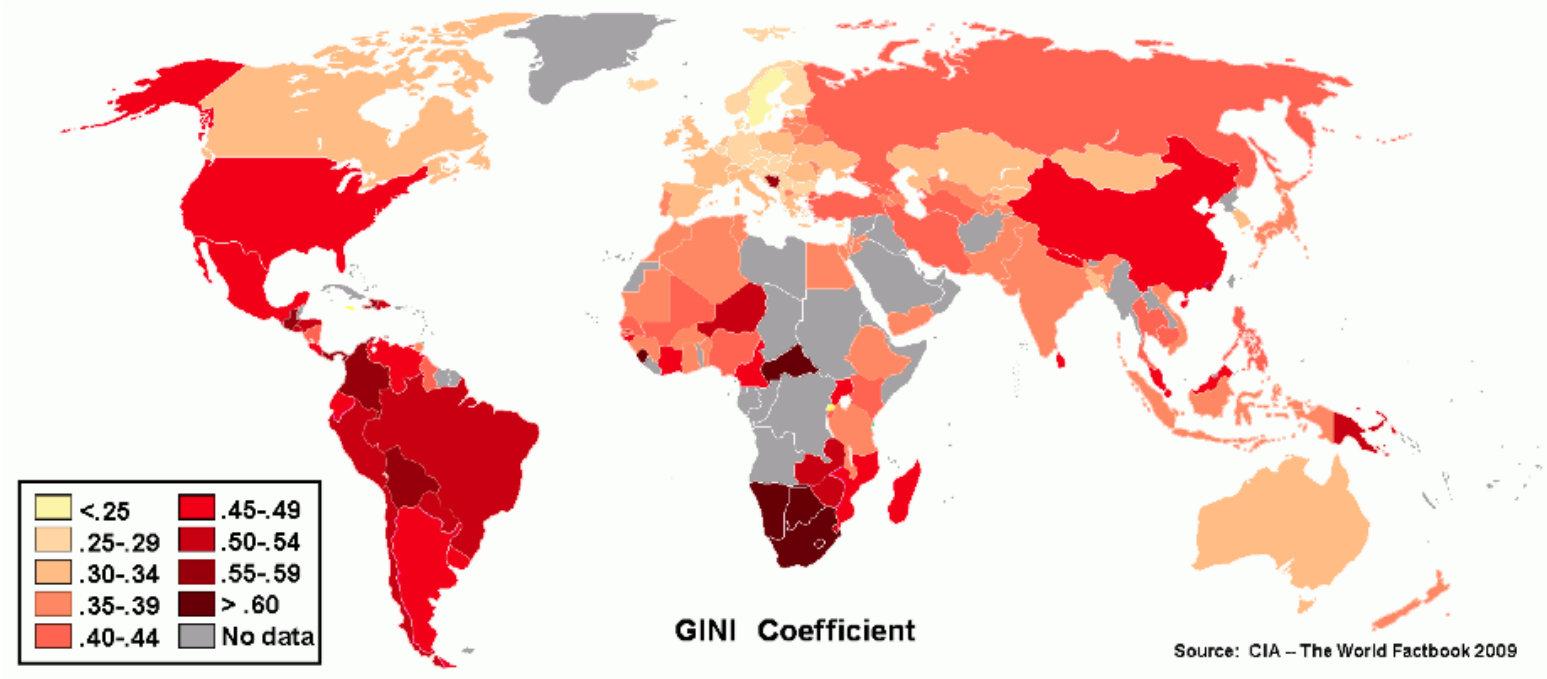
1.1. The social sustainability framework

"The world economy is vast, growing rapidly (by 3-4 percent per year in scale), and highly unequal in the distribution of income within countries and between countries. Ours is a world of fabulous wealth and extreme poverty, of billions of people enjoying longevity and good health unimaginable in previous generations. Yet it is also a world in which at least 1 billion people live in such abject poverty that they struggle for mere survival every day. The poorest of the poor face the daily life- and-death challenges of insufficient nutrition, lack of health care, unsafe shelters, and the lack of safe drinking water and sanitation."

Sachs (2014) The Age of Sustainable Development

Country Income Groups (World Bank Classification)





1.2. Social sustainability: some definitions

"Social sustainability occurs when the formal and informal processes; systems; structures; and relationships actively support the **capacity** of current and future generations to create healthy and liveable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life."

Western Australia Council of Social Services (WACOSS)

According to the World Bank, pursuing social sustainability means:

- responding better to local communities
- ensuring responses are tailored to local country contexts
- promoting social inclusion, cohesion and accountability

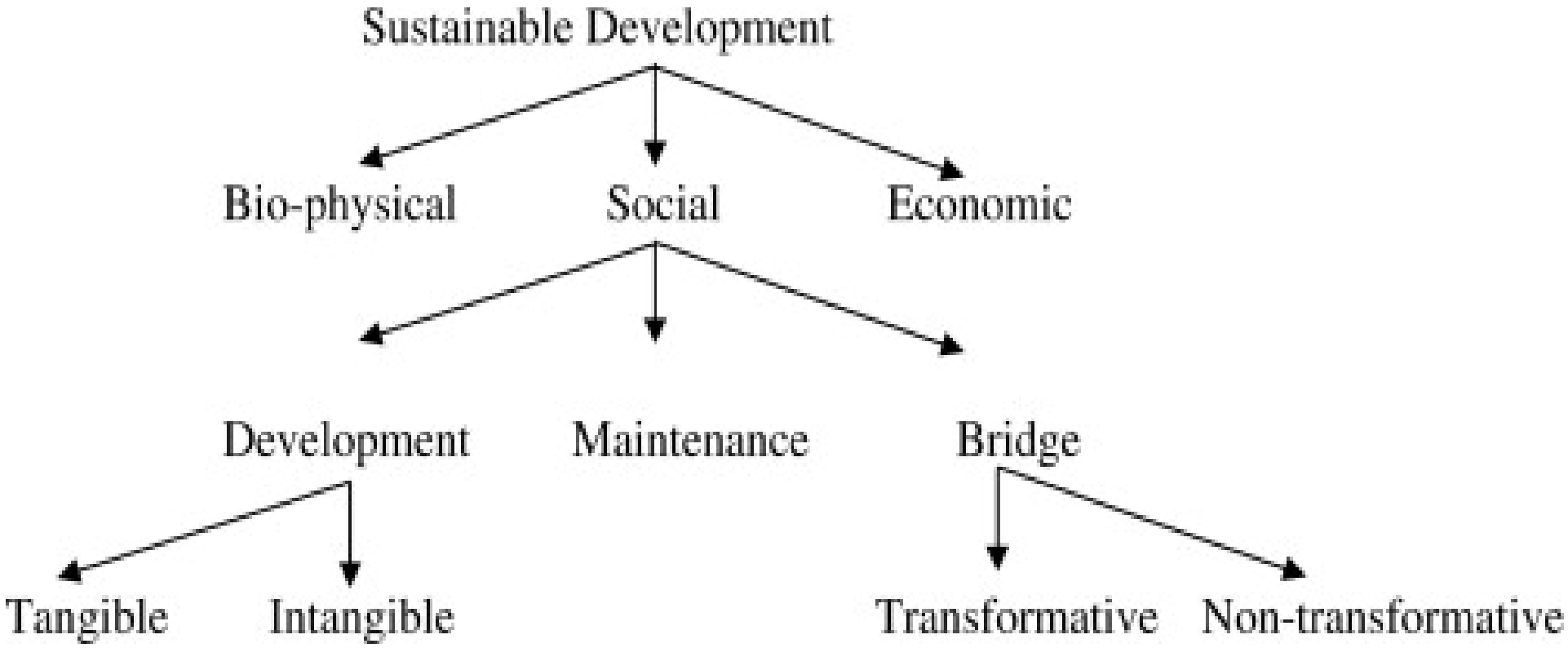
With regard to the basic notion of sustainability, social sustainability "takes the larger wordview into consideration in relation to communities, culture and globalization".

1.2. Social sustainability: some definition

The concept of social sustainability encompasses such topics as:

social equity, livability, health equity, community development, social capital, social support, human rights, labor rights, placemaking, social responsibility, social justice, cultural competence, community resilience, human adaptation.

1.3 Three concepts of social sustainability



Source: Vallance et al. (2011)

1.3 Three concepts of social sustainability

Vallance et al. (2011) identify three concepts of social sustainability:

(a) '**development sustainability**' addressing basic needs, the creation of social capital, justice and so on;

(b) '**bridge sustainability**' concerning changes in behaviour so as to achieve bio-physical environmental goals and;

(c) '**maintenance sustainability**' referring to the preservation – or what can be sustained – of socio-cultural characteristics in the face of change, and the ways in which people actively embrace or resist those changes.

All these three dimensions, we shall see, are **inextricably linked to a healthy biophysical environment**.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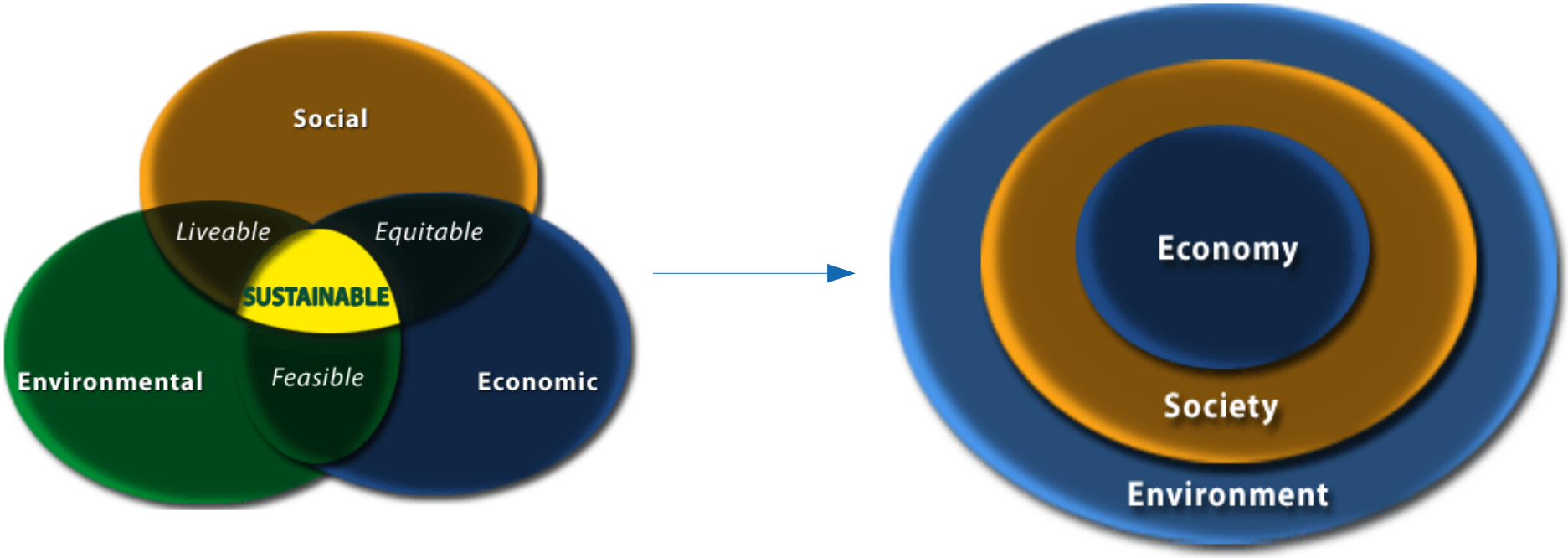
2. Why "the social dimension of environmental sustainability"?

2.1. Social sustainability is not to be seen in isolation

Social sustainability is not merely an in(ter)dependent component of the concept of sustainable development (e.g. that contained in the *Our Common Future* report), as its intrinsic possibility relies on Earth's *life-support systems*.

" Despite all the advances in modern technology, society remains irrevocably dependent upon natural systems for life support" *(Ulanowicz, 1989)*



2.2. Life-support systems and the planetary boundaries

Research

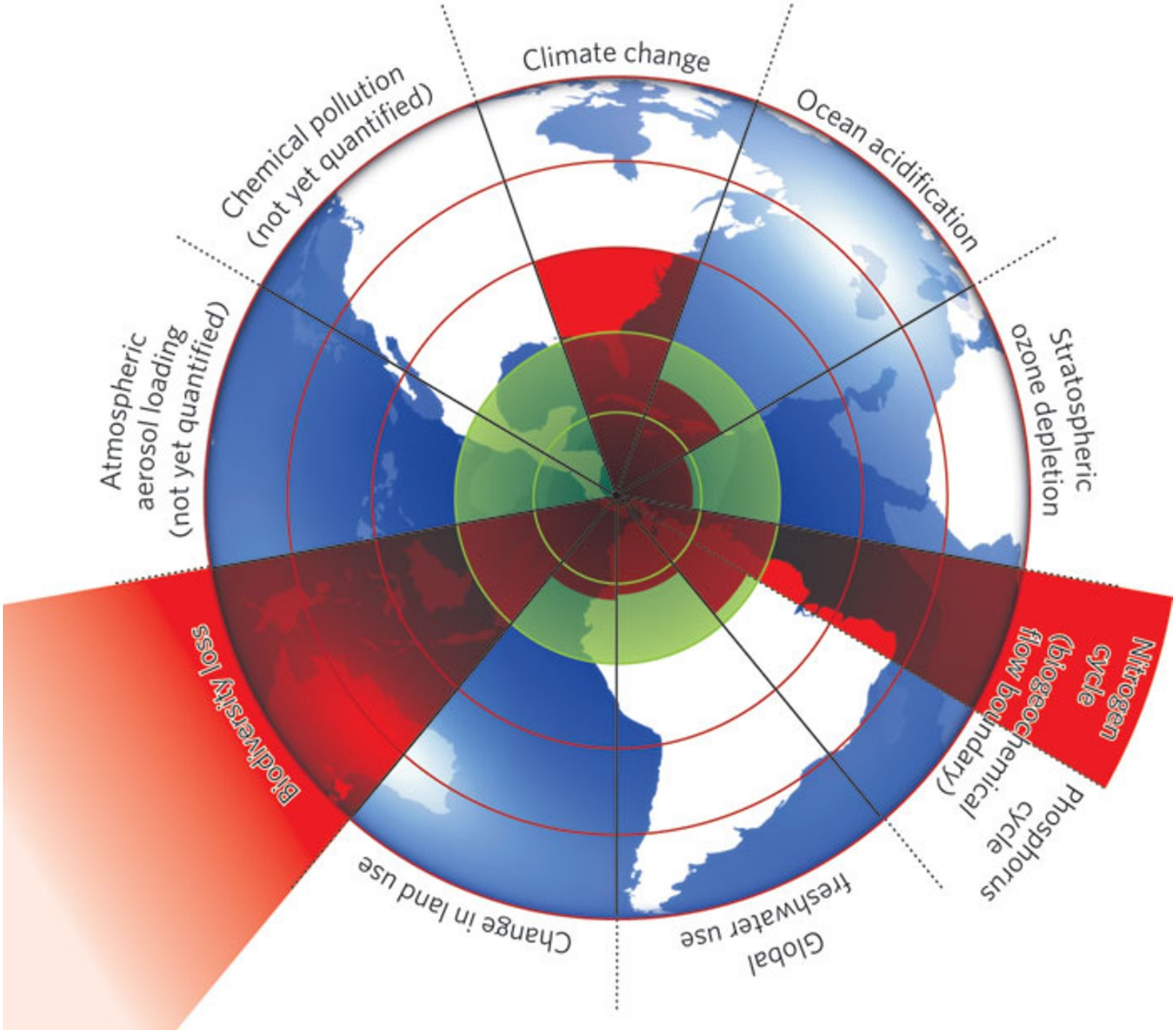
Planetary Boundaries: Exploring the Safe Operating Space for Humanity

Johan Rockström [1,2], Will Steffen [1,3], Kevin Noone [1,4], Åsa Persson [1,2], F. Stuart III Chapin [5], Eric Lambin [6], Timothy M. Lenton [7], Marten Scheffer [8], Carl Folke [1,9], Hans Joachim Schellnhuber [10,11], Björn Nykvist [1,2], Cynthia A. de Wit [4], Terry Hughes [12], Sander van der Leeuw [13], Henning Rodhe [14], Sverker Sörlin [1,15], Peter K. Snyder [16], Robert Costanza [1,17], Uno Svedin [1], Malin Falkenmark [1,18], Louise Karlberg [1,2], Robert W. Corell [19], Victoria J. Fabry [20], James Hansen [21], Brian Walker [1,22], Diana Liverman [23,24], Katherine Richardson [25], Paul Crutzen [26] and Jonathan Foley [27]

Ecology and society (2009) Vol.14, No.2

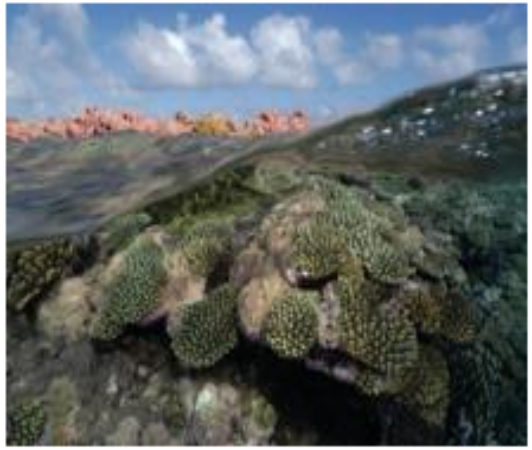
- Rockstrom et al. (2009) proposed a new approach to global sustainability, identifying nine planetary boundaries within which they "expect that humanity can operate safely"

"Transgressing one or more planetary boundaries may be deleterious or even catastrophic due to the **risk of crossing thresholds that will trigger non-linear, abrupt environmental change** within continental- to planetary-scale systems"

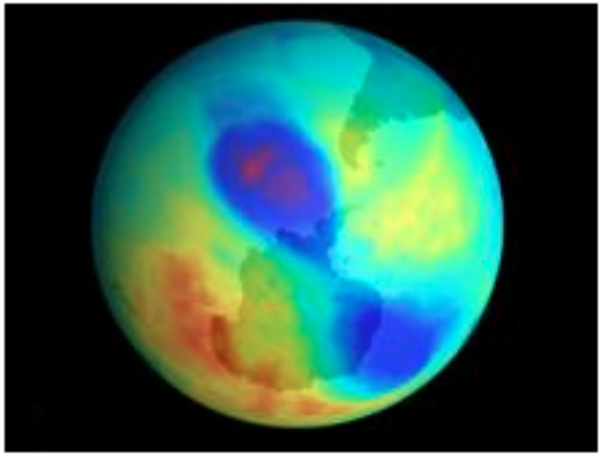

Climate change
Ocean acidification
Stratospheric ozone depletion
Nitrogen cycle (biogeochemical flow boundary)
Phosphorus cycle
Global freshwater use
Change in land use
Biodiversity loss
Atmospheric aerosol loading (not yet quantified)
Chemical pollution (not yet quantified)

2.2. Life-support systems and the planetary boundaries

› Acid oceans



› Ozone depletion



› Fresh water

› Biodiversity

› Nitrogen and phosphorus cycles

2.2. Life-support systems and the planetary boundaries

› Land use

› Climate change

› Aerosol loading

› Chemical pollution

2.2. Life-support systems and the planetary boundaries

Possible attitudes towards planetary boundaries are defined by a comparison: **BAU** (Business-as-usual, e.g. economies continue to be run mainly on fossil fuels, farmers continue to overuse groundwater so much that the aquifers are depleted) v. **SD** (Sustainable Development).

What are the risks of business as usual, not just for environmental sustainability but also (and as a consequence) for social progress and economic prosperity?

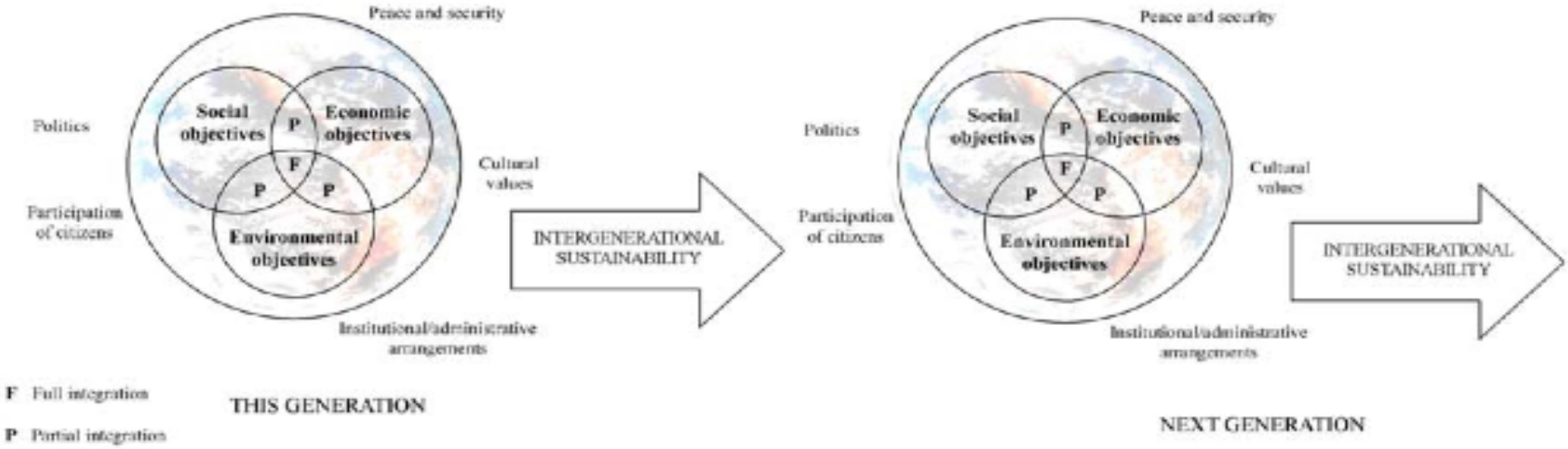
"Certainly there would continue to be many kinds of progress […]. The poor will benefit from advances in information and communications technologies, such as access to higher education through free, online learning. Poverty would continue to fall in many places. The rich might continue to become richer for another decade or two. **Yet eventually**, the negative consequences of rising inequality and rising environmental destruction will come to dominate the positive tendencies. Progress will peak. Calamities, both social and environmental, will start to dominate. More than 200 years of progress could be choked off, and even sacrificed to war."

Sachs (2014) The Age of Sustainable Development

2.3 Social sustainability as a driver of environmental sustainability

At the same time, the "essential needs" of society, especially those of the world's poor, provide the quest for environmental sustainability with considerations that must be incorporated in development policies.

"A development path that is sustainable in a physical sense could theoretically be pursued even in a rigid social and political setting. But physical sustainability cannot be secured unless development policies pay attention to such considerations as changes in **access to resources** and in the **distribution** of costs and benefits." *Our Common Future (1987) chapter 2, par.3*

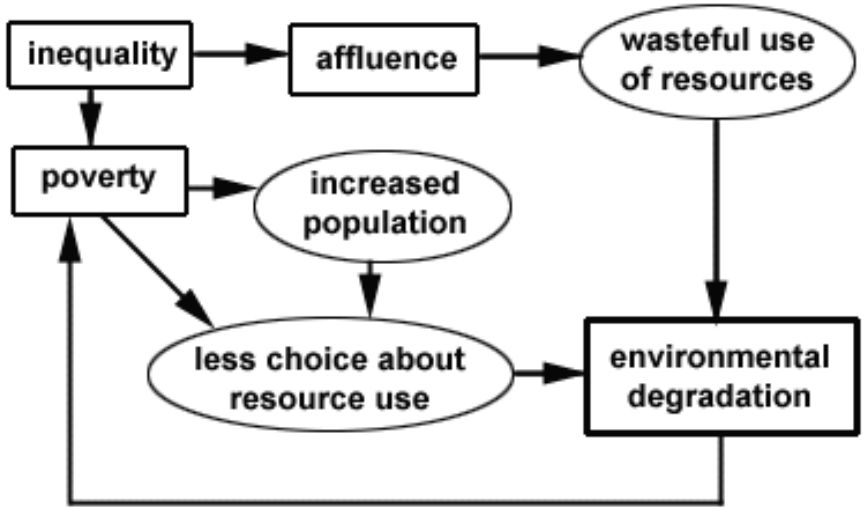


Source: Lozano (2003)

2.3 Social sustainability as a driver of environmental sustainability

It has been suggested (World Bank, 1992) that alleviating poverty is in fact a prerequisite for environmental conservation.

- Half of the world's poor live in rural areas that are environmentally fragile, and they rely on natural resources over which they have little legal control.
- Poor families often lack the resources to avoid degrading their environment.
- Their fragile and limited resources, their often poorly defined property rights, and their limited access to credit and insurance markets prevent them from investing as much as they should in environmental protection.



Source: Beder (2001)

2.4 Sustainable Human Development

Acknowledging the mutual relationship that exists between social and environmental sustainability, many have also argued for a "sustainable human development".

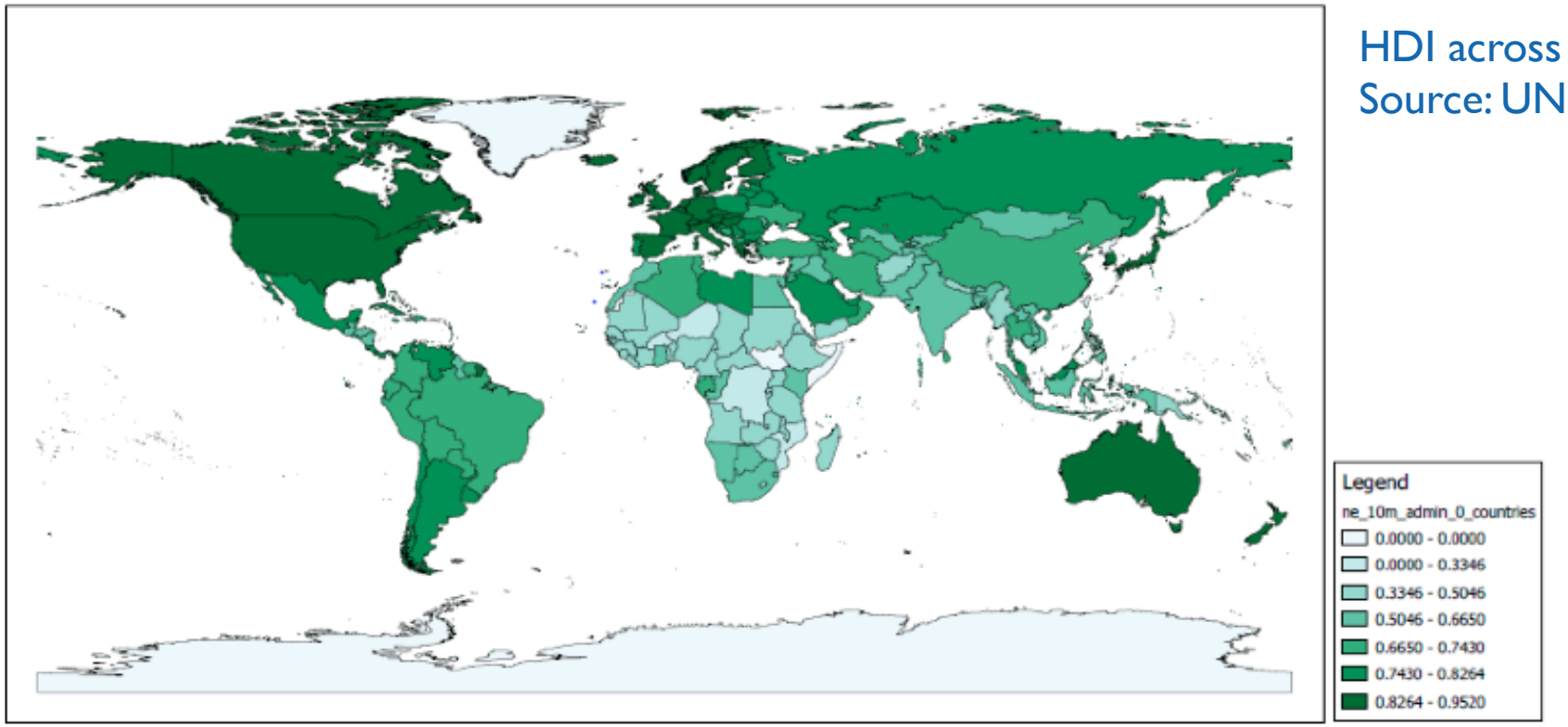
"[…] This goal of sustainability […] would make little sense if the present life opportunities that are to be "sustained" in the future were miserable and indigent. **Sustaining deprivation cannot be our goal**, nor should we deny the less privileged today the attention that we bestow on generations in the future."

"[...] The integration of human progress and environmental conservation has emerged as one of the central challenges faced by the modern world (Pronk & Haq, 1992; Speth, 1992; Brundtland, 1993). **The moral value of sustaining what we now have depends on the quality of what we have**, and the entire approach of sustainable development directs us as much toward the present as toward the future. There is, in principle, no basic difficulty in broadening the concept of human development to accommodate the claims of the future generations and the urgency of environmental protection."

Anand & Sen (1996) Sustainable Human Development: Concepts and Priorities

2.4 Sustainable Human Development

In the last few decades, measuring human wellbeing has shifted from the simple calculation of GDP per person to the **Human Development Index** (HDI), championed by UNDP. Now, the UNDP itself is considering adopting a Human Sustainable Development Index to integrate environmental considerations and social progress.

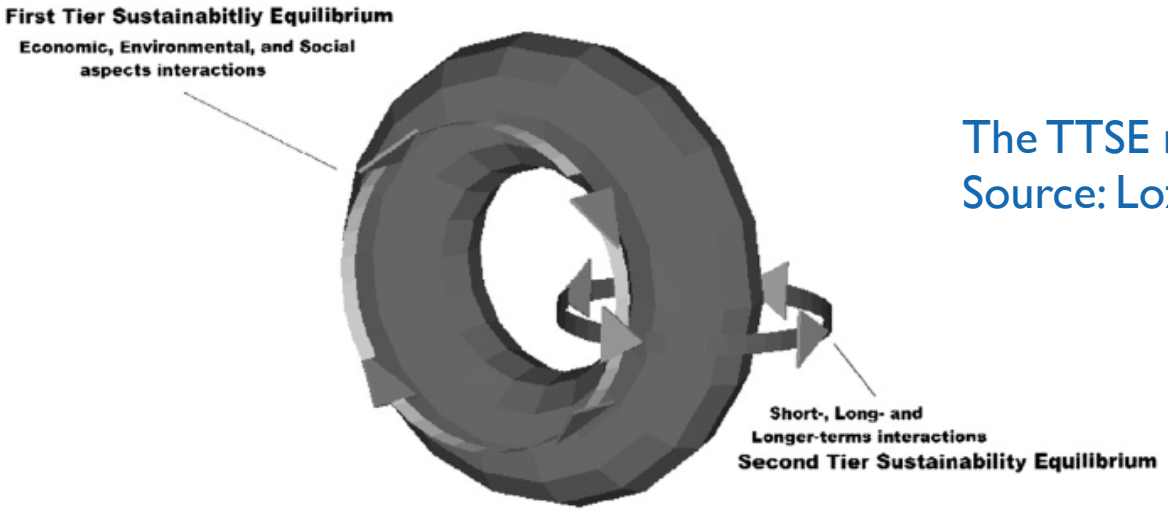


HDI across the world.
Source: UNDP

2.5 Conclusions

- Respecting planetary boundaries is the only means of achieving both social and economic progress over the long term. Maintaining ecosystem services and life-support systems provided by the biosphere constitutes the foundation of a sustainable development.

- If pursued, intra-generational equity and social inclusion are in turn necessary to guarantee that living and consumption standards have regard for long-term sustainability.



The TTSE model.
Source: Lozano (2007)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3. Interactions:
the Millennium Development Goals

"The Millennium Development Goals set timebound targets, by which progress in reducing income poverty, hunger, disease, lack of adequate shelter and exclusion — while promoting gender equality, health, education and environmental sustainability — can be measured. They also embody basic human rights — the rights of each person on the planet to health, education, shelter and security."

United Nations Secretary-General BAN Ki-moon

Goal 7

Ensure environmental sustainability

Source: UNDP, The Millennium Development Goals Report 2013

TARGET 7.A

Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

TARGET 7.B

Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

TARGET 7.C

Halve by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation

TARGET 7.D

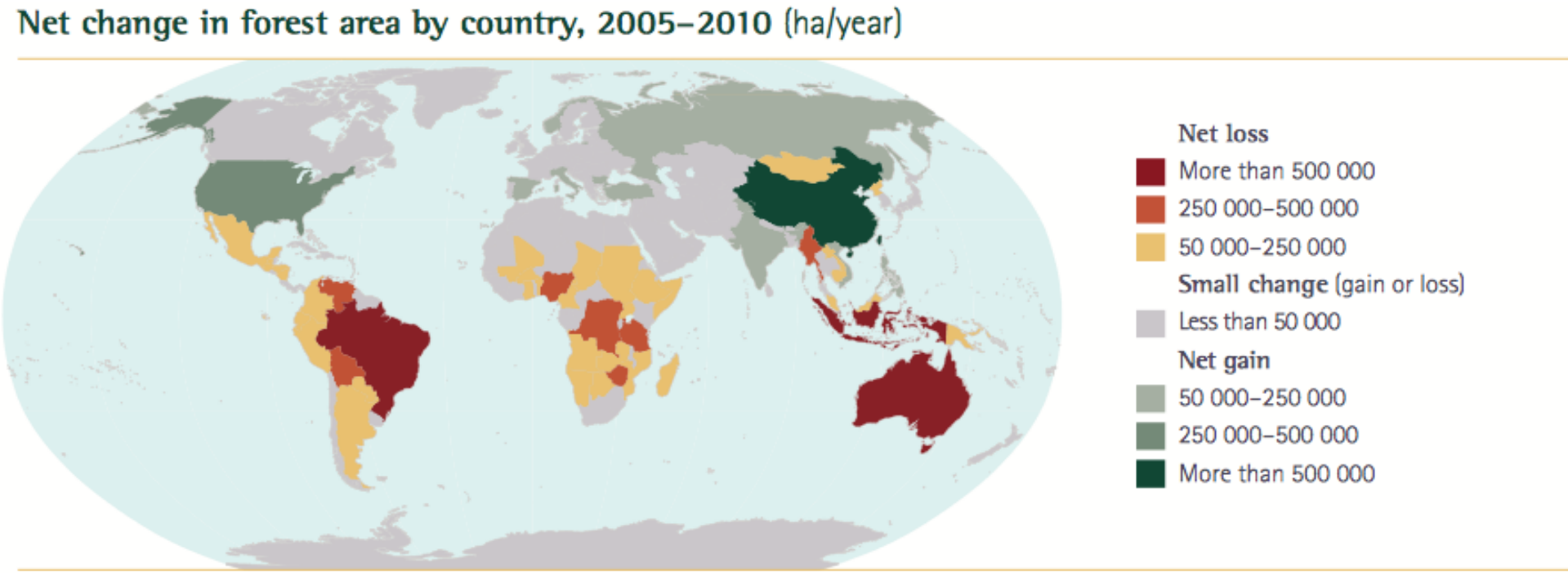
By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers

Quick facts

- Global emissions of carbon dioxide (CO_2) have increased by more than 46 per cent since 1990.
- Nearly one third of marine fish stocks have been overexploited.
- Many species are at risk of extinction, despite an increase in protected areas.
- More than 2.1 billion people and almost 1.9 billon people, respectively, have gained access to improved water sources and sanitation facilities since 1990.
- An estimated 863 million people reside in slums in the developing world.

3.1 Interactions: deforestation

Forests are disappearing at a rapid pace. The largest net loss of forests has occurred in South America and Africa—around 3.6 million hectares and 3.4 million hectares per year, respectively from 2005 to 2010 (UNDP 2013).



Source: FAO 2010

3.1 Interactions: deforestation

The loss of forests takes its greatest toll on the rural poor, for whom they are 'safety nets'. They contribute to poverty reduction and sustainable livelihoods by providing food, wood fuel, medicines and other non-wood products used in the households of millions of the world's poorest people or sold in traditional or informal sector markets.

Deforestation is also an issue for human health, influencing the emergence and spread of vector-borne diseases (e.g. Walsh et al., 1993).

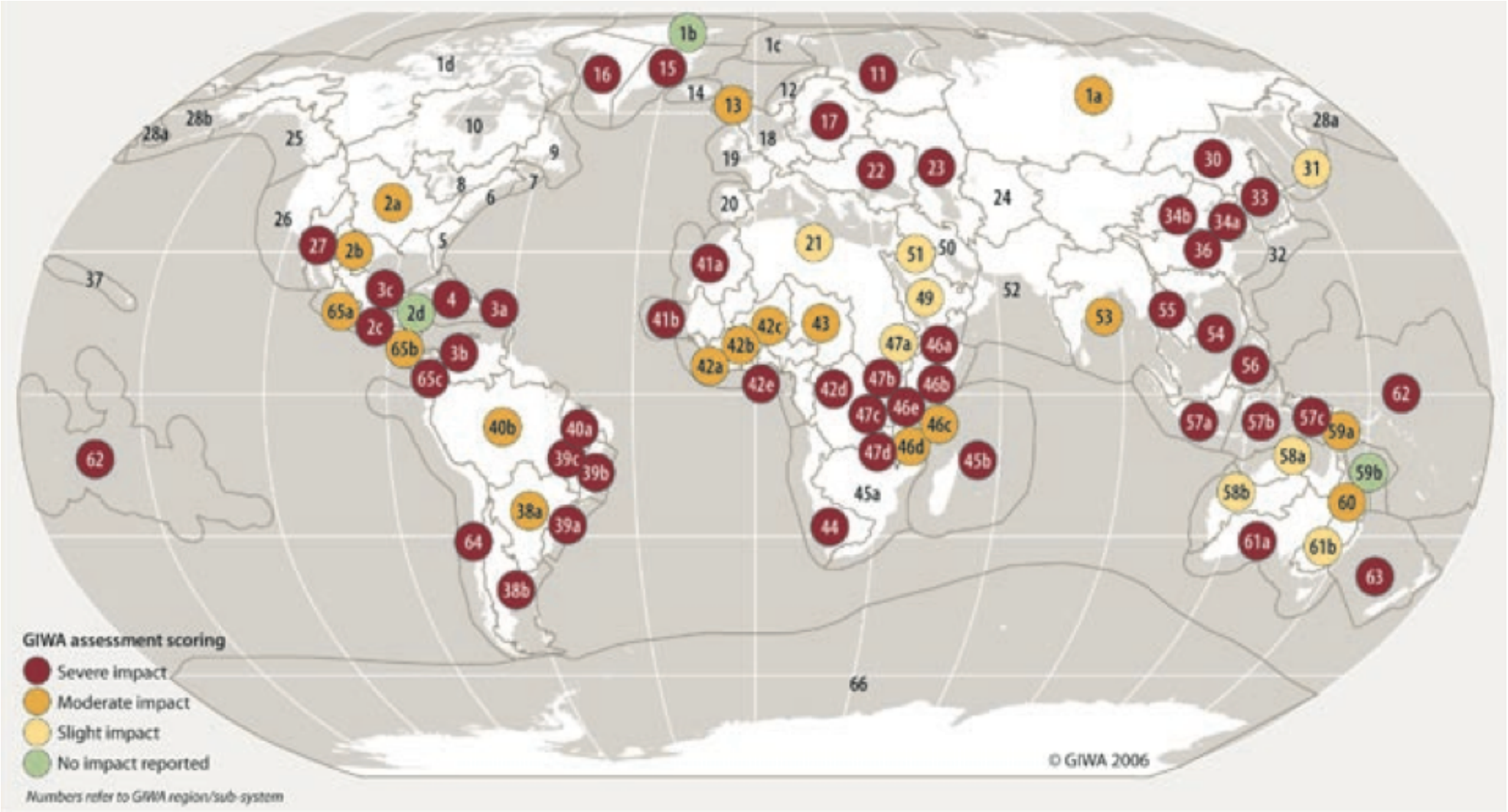
It will become essential for countries to learn how to assess these aspects of the value of forests, which will greatly increase the visibility and profile of the sector in poverty reduction.

3.2 Interactions: the collapse of fisheries

Eradicating hunger will be partly dependent on the ability of the fisheries and their ecosystems to supply animal protein to the populations of most developing countries. However, there is widespread concern over the sustainability of the fisheries. 57% of the world's marine fish stocks are fully exploited and 29% are overexploited (FAO 2012). Furthermore, many of the ecosystems that support critical fisheries are degraded.

- The reduction and collapse of the fisheries is leading to a widespread loss of income and employment.
- In many areas in developing countries fish are mostly exported contributing to the malnutrition of many children.
- Injuries and deaths from blast fishing and diving are common.
- Conflicts provoked as a result of declining fish stocks are frequent among local fishing groups, and with foreign fishers.

Source: UNEP 2006

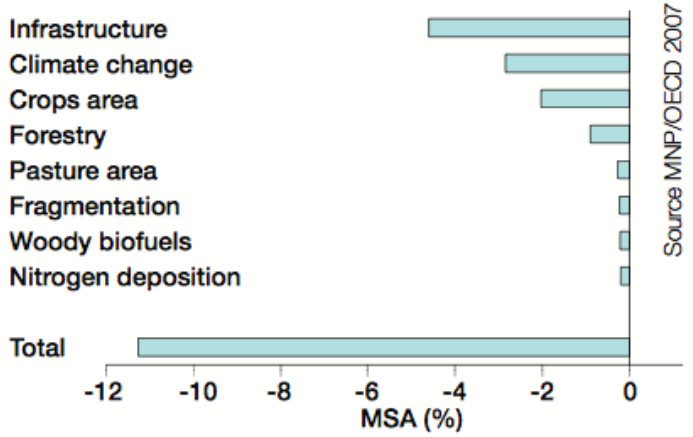


Impact of overexploitation of fish. Source: UNEP 2006

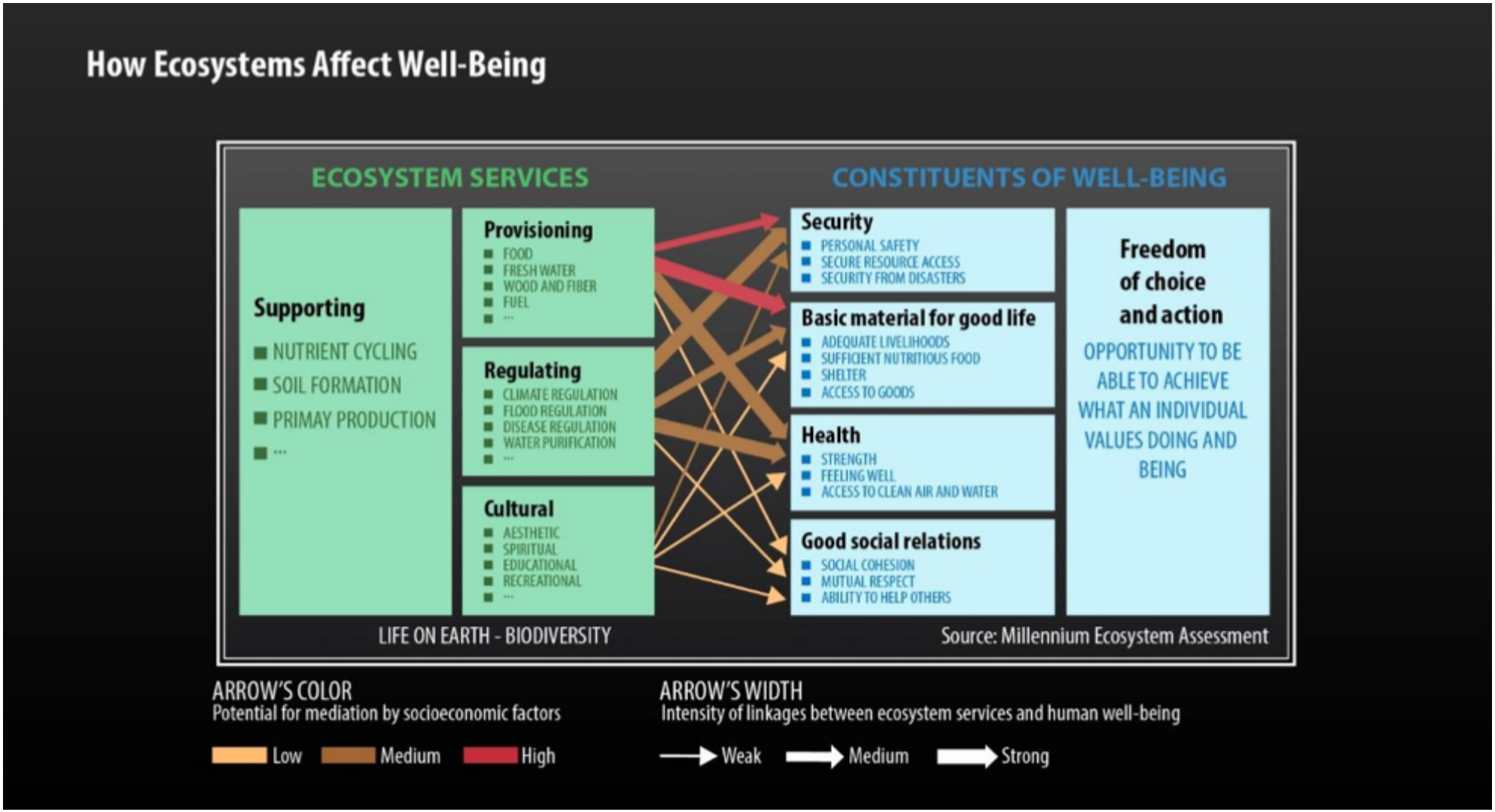
3.3 Interactions: biodiversity loss

- Despite an increase in the coverage of protected areas, species are moving towards extinction at an ever faster pace, with declines in both populations and distribution.
- Reduced biodiversity will have serious implications for the ecosystem services upon which all people depend, yet...
- ...the consequences of biodiversity loss and ecosystem service degradation are not being shared equitably across the world.
- The areas of richest biodiversity and ecosystem services are in developing countries. Subsistence farmers, fishermen, the rural poor and traditional societies face the most serious risks from degradation.

Figure 2.3: Global biodiversity (MSA) loss 2000-2050 and contribution of pressures



Source: MNP/OECD 2007



Source: Millennium Ecosystem Assessment 2005

Table 2.1: Ecosystem services and the Millennium Development Goals: links and trade-offs

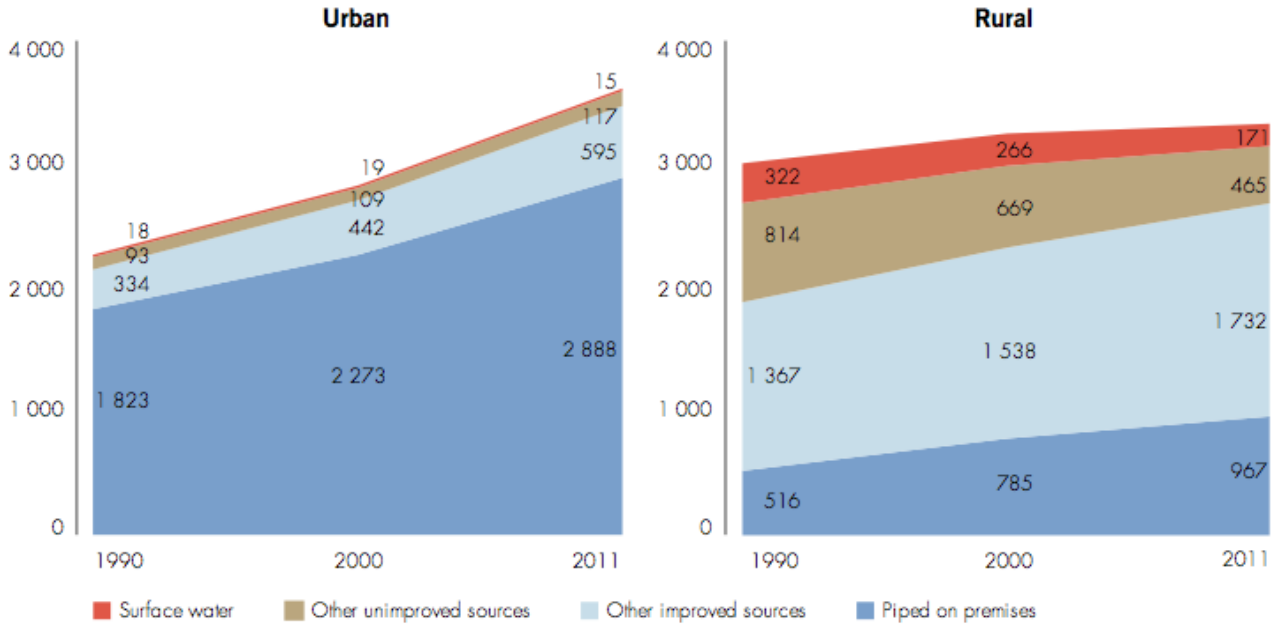
Ecosystem services	Related MDG	Links with targets	Conflicting outcome	Evaluation
Provisioning and regulating services	MDG 1: Eradicate extreme poverty and hunger	Steady daily supplies of water, fuelwood and food: these influence the material minimum standard of the lives of the poor, alleviating poverty and hunger	Greater conflicts over water, exploitation of top soil, coastal and marine resources and the resilience of agri-biodiversity could constitute trade-offs	Strong and direct links: Intervention needs to be receptive to ecosystem services, biodiversity and the resilience of cultivated ecosystems
Services from, wetlands and forests	MDG 3: Promote gender equality and empower women	Fuelwood and water: adequate availability and and proximity – would help gender equality by reducing this burden that falls mainly on women (see Box 2.3)	There could be greater extraction of groundwater. The enforcement of land rights for women would, however, ensure the prevention of biodiversity loss to a greater extent	Indirect link
Provisioning (medicinal plants) and regulating services (water)	MDG 5: Improve maternal health	Better availability of clean water and traditional medical services would create enabling conditions (see Box 2.5)		Indirect link
Provisioning and regulating services	MDG 6: Combat HIV/AIDS, malaria and other dieases	This would be facilitated by widening the availability of clean water		Indirect link
Provisioning services	MDG 8: Develop a Global Partnership for Development	Fair and equitable trade practices and a healthy world economic order would reflect the true cost of export/import from the ecosystem services perspective		Indirect link
Provisioning and regulating services	MDG 4: Reduce child mortality	Creating enabling conditions, e.g. through clean water (see Box 2.5)		Indirect link
Provisioning and regulating services	MDG 2: Achieve universal primary education	Provisioning services might be affected by expansion of education-related infrastructure (schools and roads)		Weak or unclear link

Source:
TEEB – Interim Report 2008

3.4 Interactions: access to drinking water

Despite unprecedented progress, 768 million people still drew drinking water from an unimproved source in 2011. Eighty-three per cent of the population without access to an improved drinking water source (636 million) live in rural areas. Furthermore, concerns about the quality and safety of many improved drinking water sources persist. The number of people without access to safe drinking water may be two to three times higher than official estimates.

Population with access to drinking water, urban and rural areas, 1990, 2000 and 2011 (Millions)

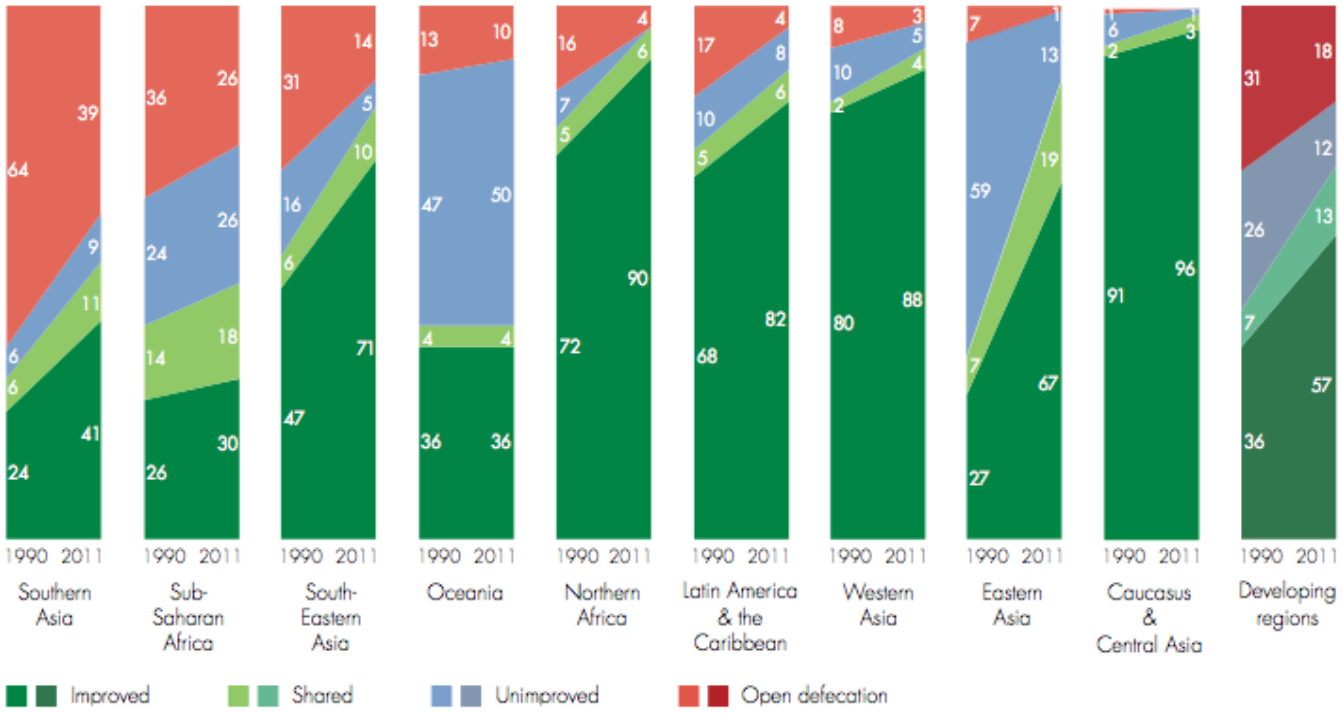


Source: UNDP, The Millennium Development Goals Report 2013

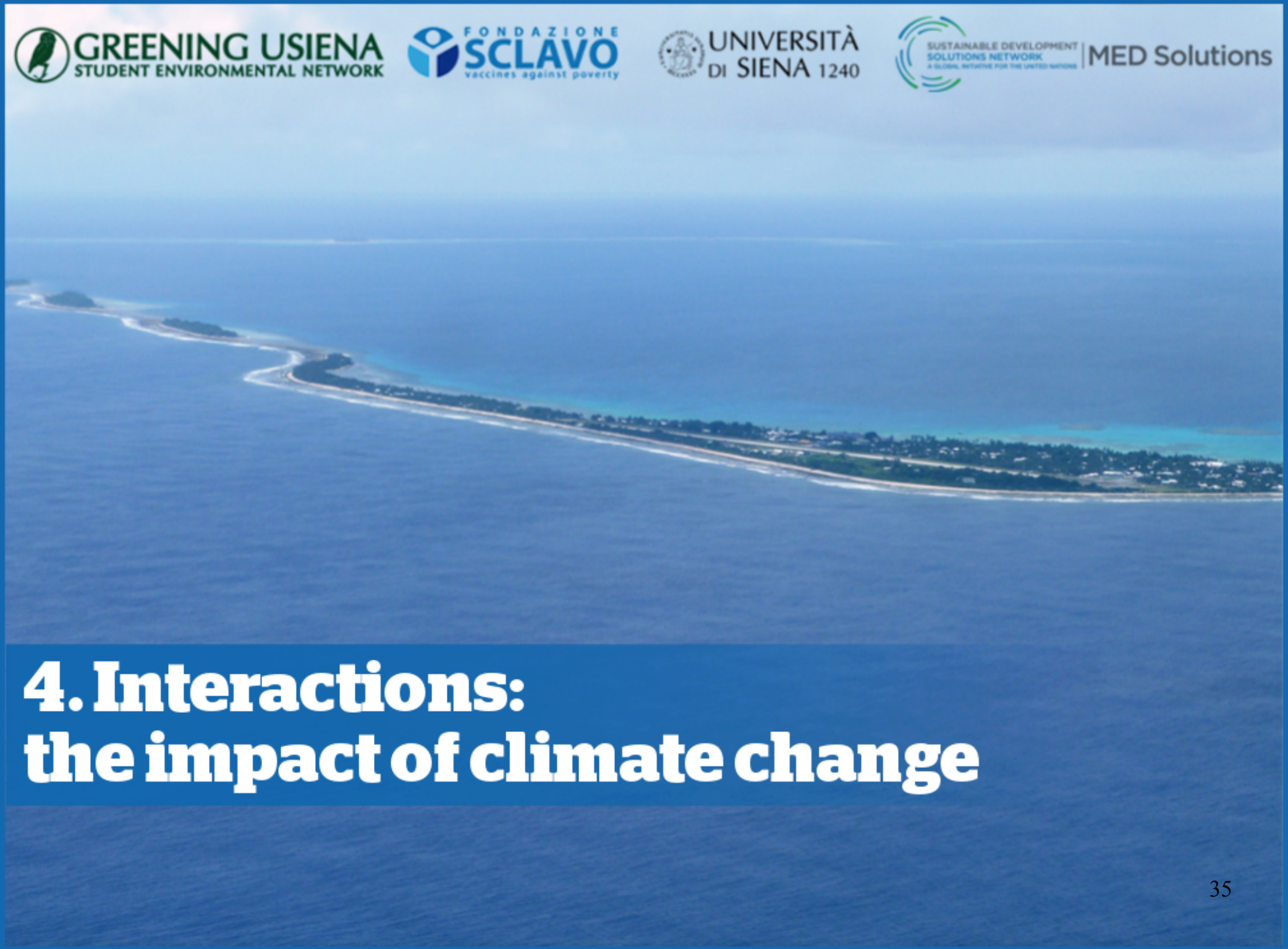
3.5 Interactions: access to sanitation

The proportion of the global population that resort to open defecation declined from 24 per cent in 1990 to 15 per cent in 2011. Still, over one billion people lack sanitation facilities and continue a practice that poses serious health and environmental risks to themselves and entire communities.

Proportion of population by sanitation practices, 1990 and 2011 (Percentage)



Source: UNDP, The Millennium Development Goals Report 2013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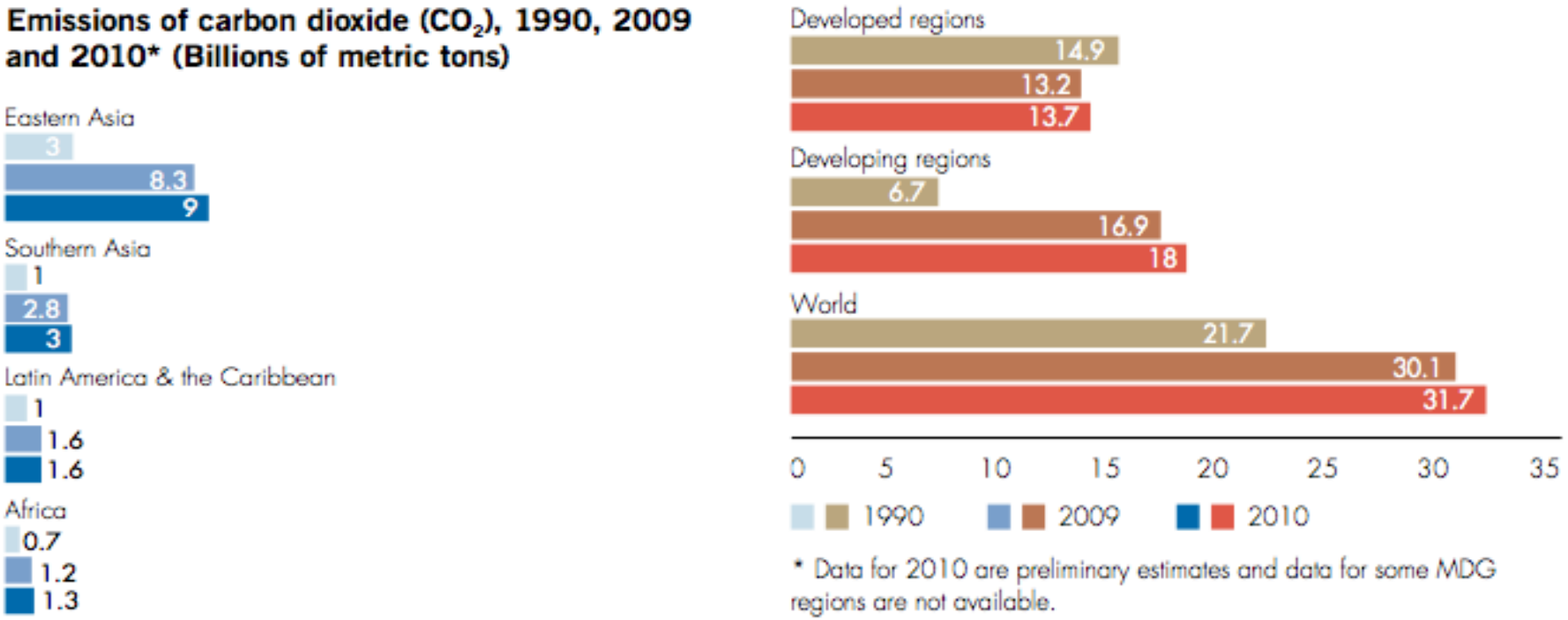
4. Interactions:
the impact of climate change

4.1 Greenhouse gas emissions

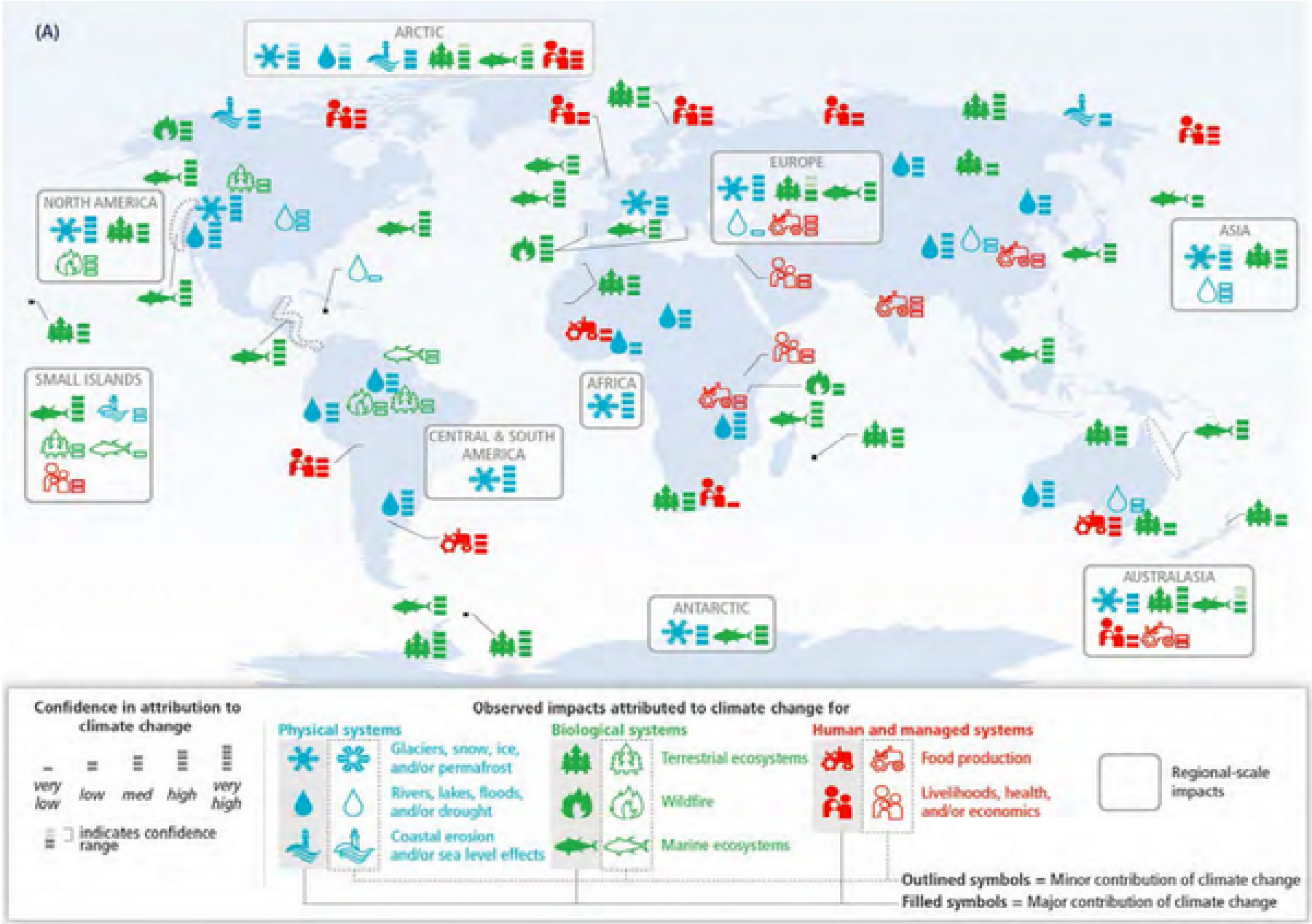
The rise in emissions has been spurred largely by fast-paced growth in developing regions. In those regions, CO2 emissions increased by 7 per cent between 2009 and 2010, versus 3 per cent in developed regions. In the decade between 1990 and 2000, emissions in developing regions grew by 48 per cent; during the following decade (2000–2010), they increased by 81 per cent. In contrast, emissions in developed regions declined by 7 per cent and by 1 per cent, respectively (UNDP 2013).



4.2 Climate Change 2014: Impacts, Adaptation and Vulnerability

- On 31 March 2014 the IPCC Working Group II published its latest report "Climate Change 2014: Impacts, Adaptation and Vulnerability".

- The report considers the vulnerability and exposure of human and natural systems, the observed impacts and future risks of climate change, and the potential for and limits to adaptation. The chapters of the report assess risks and opportunities for societies, economies, and ecosystems around the world.



Source: IPCC 2014

4.3 The report: observed impacts, vulnerability and exposure

- In many regions, changing precipitation or melting snow and ice are altering hydrological systems, affecting water resources in terms of quantity and quality. Glaciers continue to shrink almost worldwide due to climate change, affecting runoff and water resources downstream.

- Many terrestrial, freshwater, and marine species have shifted their geographic ranges, seasonal activities, migration patterns, abundances, and species interactions in response to ongoing climate change.

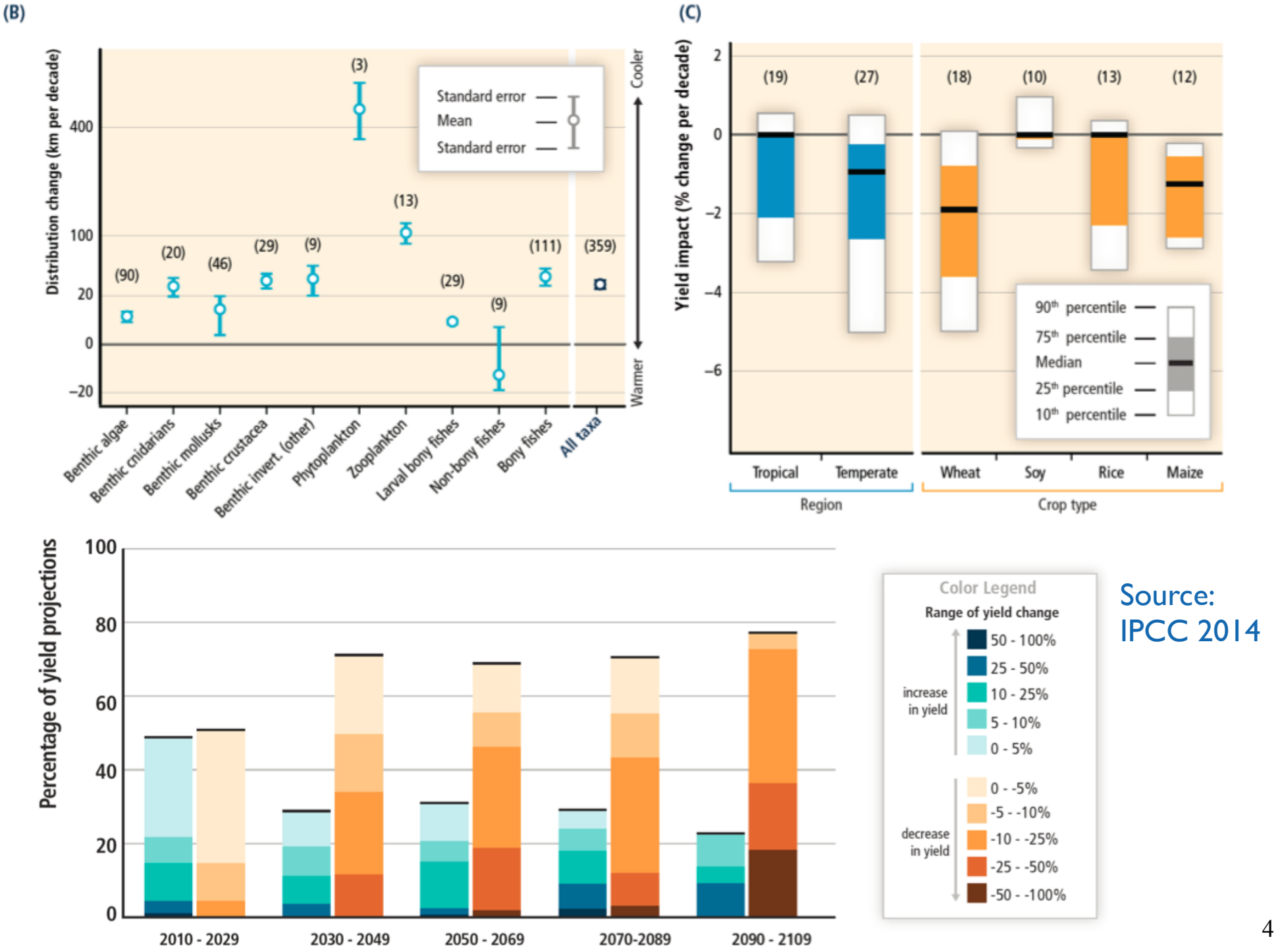
- Based on many studies covering a wide range of regions and crops, negative impacts of climate change on crop yields have been more common than positive impacts.

- At present the world-wide burden of human ill-health from climate change is not well quantified […] but local changes in temperature and rainfall may have altered the distribution of some water-borne illnesses and disease vectors.

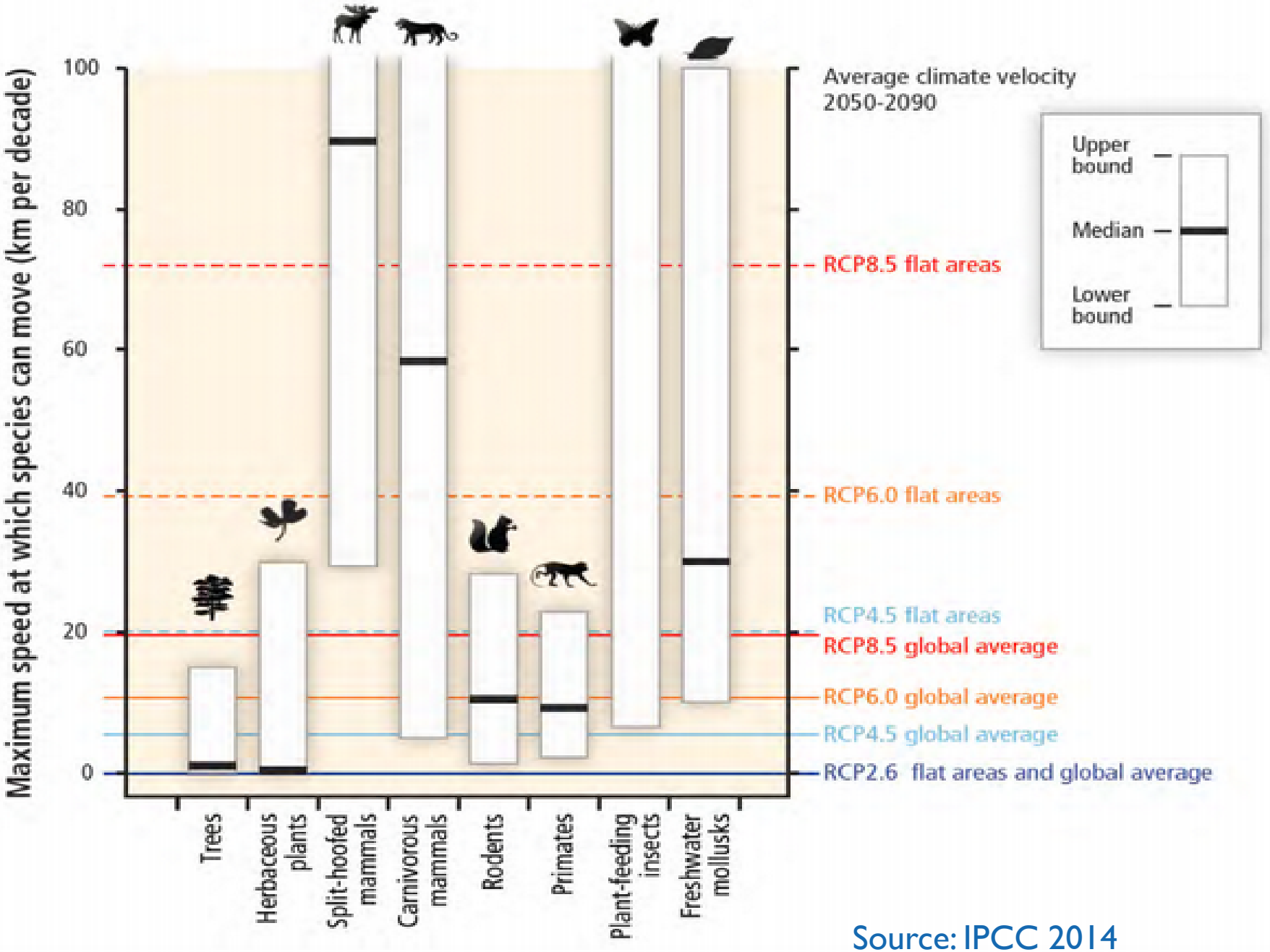
4.3 The report: observed impacts, vulnerability and exposure

- Differences in vulnerability and exposure arise from non-climatic factors and from multidimensional inequalities often produced by uneven development processes.
- Impacts from recent climate-related extremes, such as heat waves, droughts, floods, cyclones, and wildfires, reveal significant vulnerability and exposure of some ecosystems and many human systems to current climate variability.
- Climate-related hazards exacerbate other stressors, often with negative outcomes for livelihoods, especially for people living in poverty (e.g. Increased food prices and food insecurity).
- Violent conflict increases vulnerability to climate change. Large-scale violent conflict harms assets that facilitate adaptation, including infrastructure, institutions, natural resources, social capital, and livelihood opportunities.

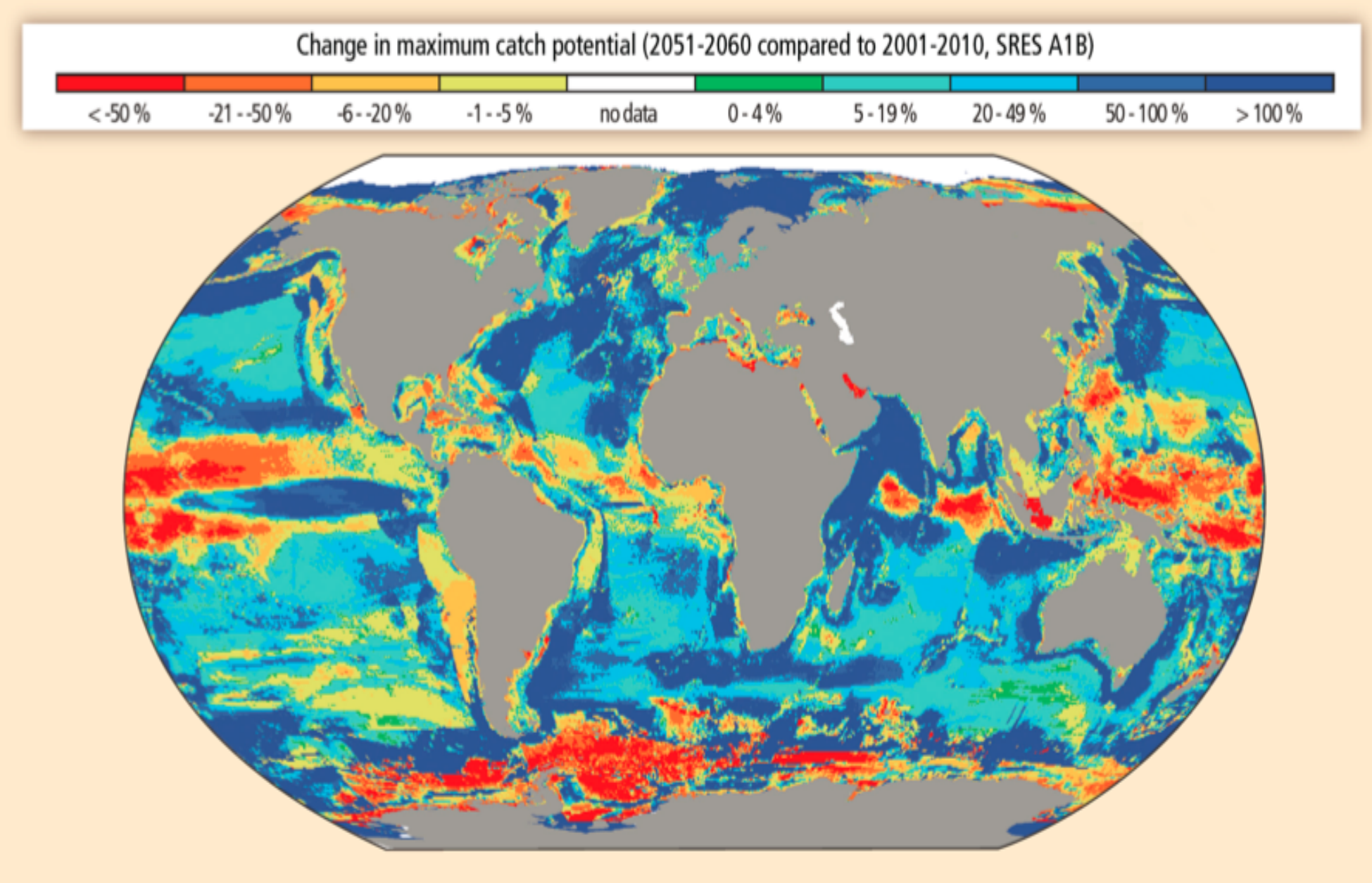
Source: IPCC 2014



Source: IPCC 2014



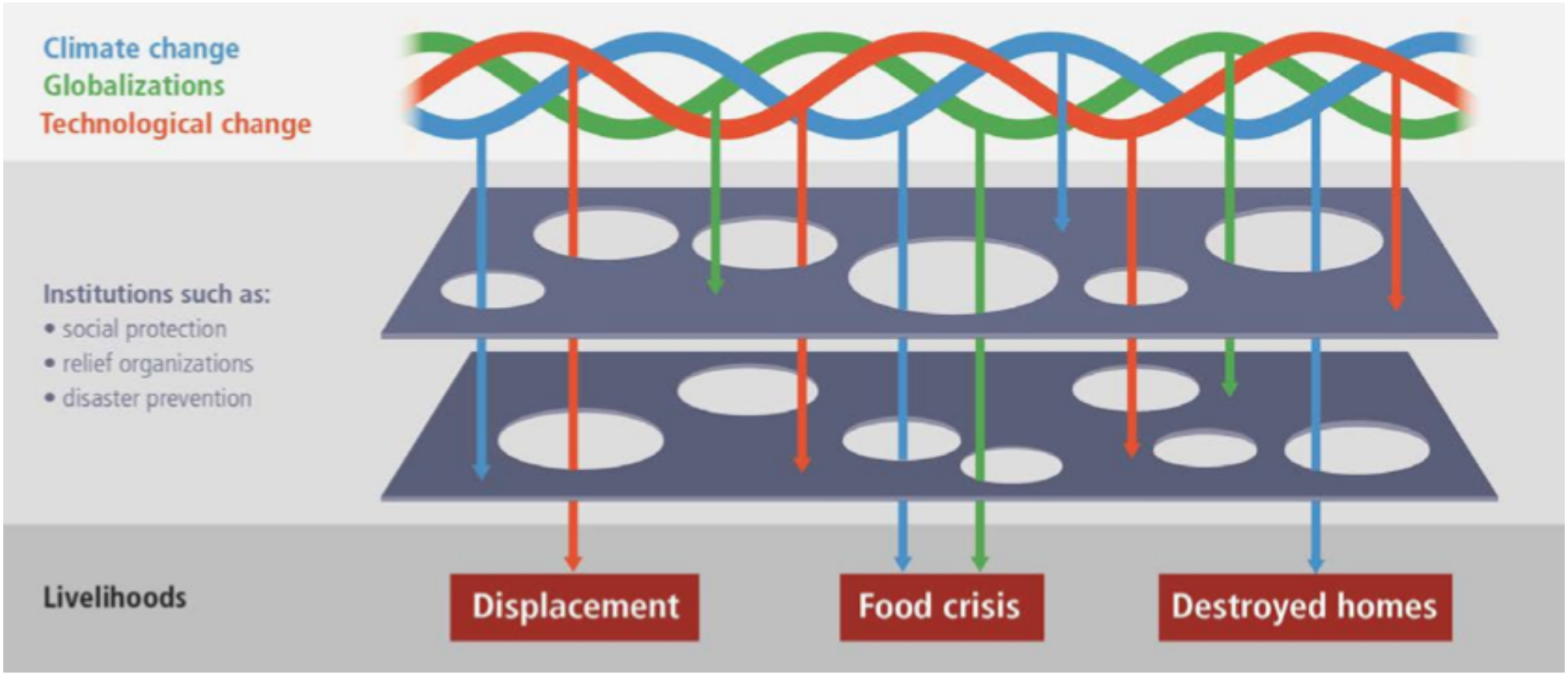
Source: IPCC 2014



Source: IPCC 2014

4.4 Livelihoods and poverty

- Observed climate variability, climate change, and extreme events will constitute an additional burden to rural and urban people living in poverty. These climate-related hazards act as a threat multiplier, often with negative outcomes for livelihoods.
- Observed evidence suggests that climate change and climate variability will worsen existing poverty, exacerbate inequalities, and trigger new vulnerabilities.
- Climate change will create new poor between now and 2100, in low-, medium, and high-income countries, and jeopardize sustainable development.
- Current policy responses for climate change mitigation or adaptation may result in mixed, and in some cases even detrimental, outcomes for poor and marginalized people.



Multiple stressors related to climate change, globalizations, and technological change interact with national and regional institutions to create shocks to place-based livelihoods. Source. IPCC 2014; inspired by Reason (2000)

4.5 Human Health

There are three basic pathways by which climate change affects health:

a) direct impacts, which relate primarily to changes in the frequency of extreme weather including heat, drought, and heavy rain

b) effects mediated through natural systems, for example, disease vectors, water-borne diseases, and air pollution

c) effects heavily mediated by human systems, for example, occupational impacts, undernutrition, and mental stress

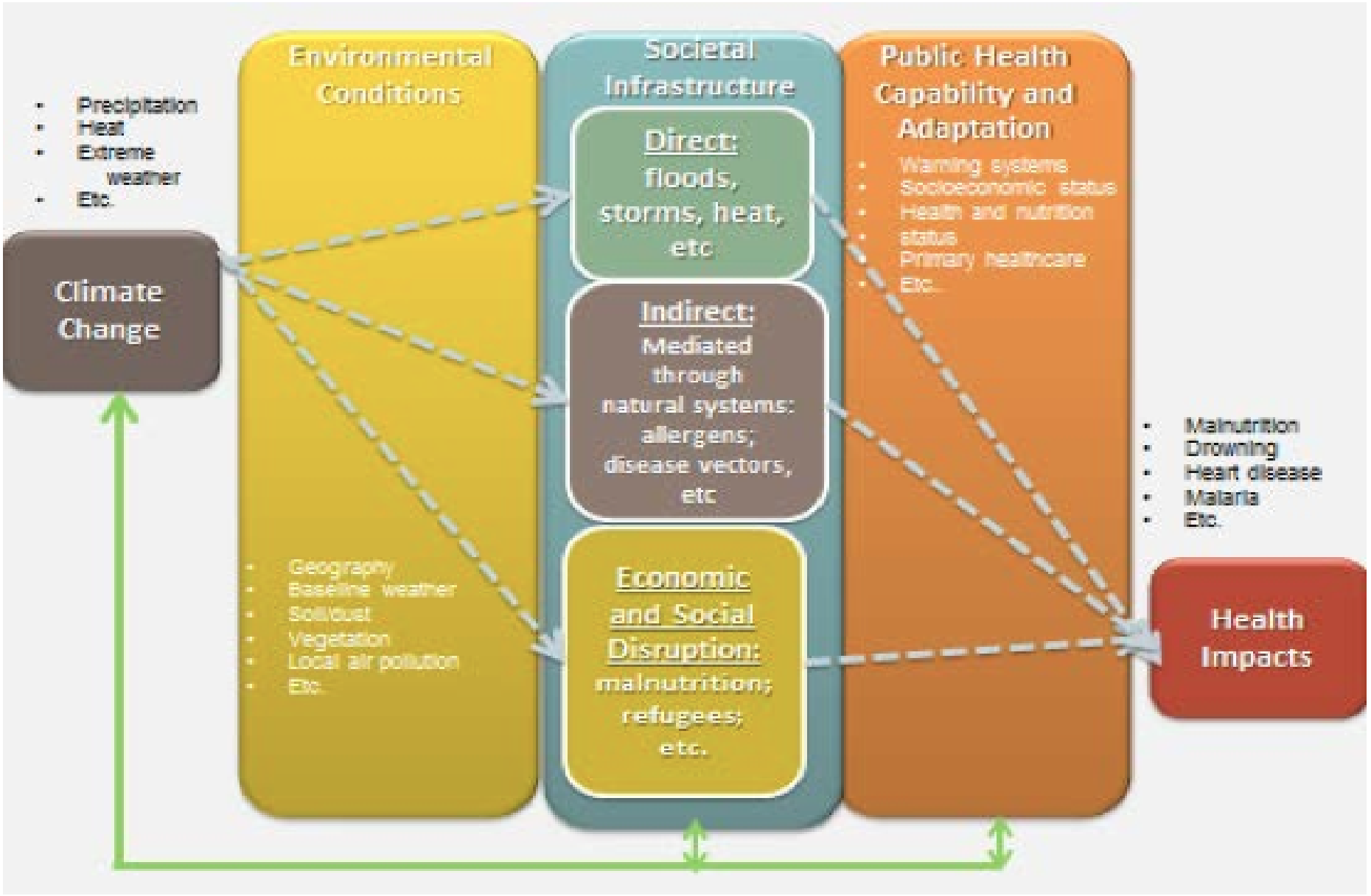
If climate change continues as projected until mid-century, some major increases of ill-health compared to no climate change will occur through:

a) greater risk of injury, disease, and death due to more intense heat waves and fires

b) increased risk of under-nutrition resulting from diminished food production

c) consequences for health of lost work capacity and reduced labor productivity in vulnerable populations

d) increased risks of food- and water-borne diseases and vector-borne diseases

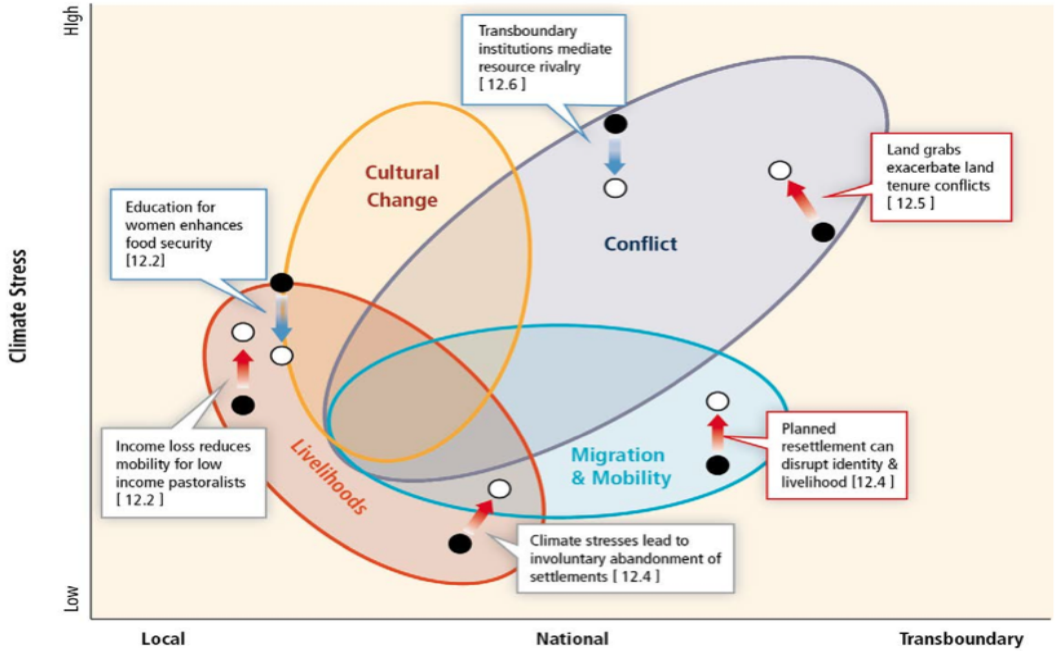


Conceptual diagram showing three primary exposure pathways by which climate change affects health. Source: IPCC 2014

4.6 Human security

Climate change is an important factor in threats to human security through

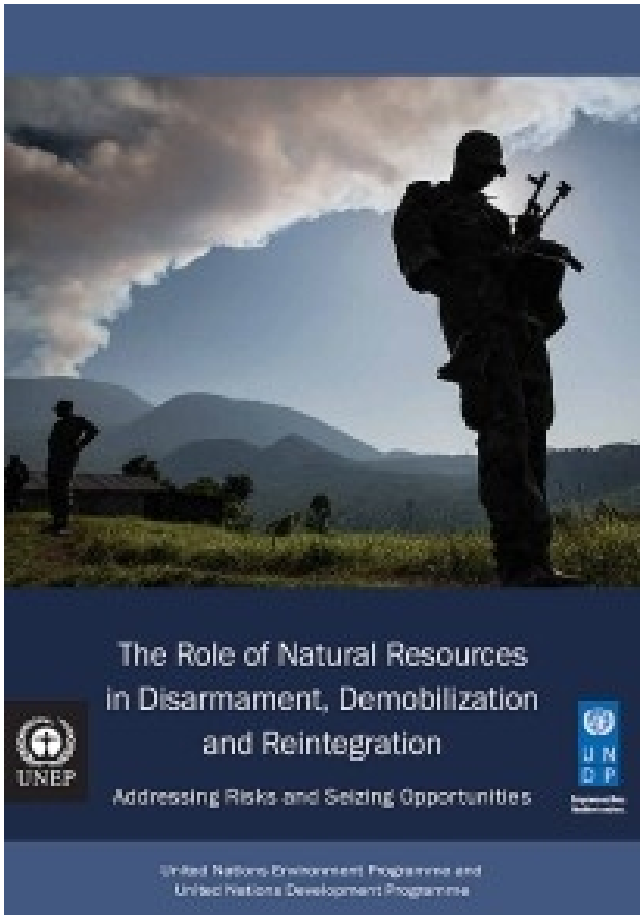
a) undermining livelihoods
b) compromising culture and identity
c) increasing migration that people would rather have avoided
d) challenging the ability of states to provide the conditions necessary for human security



Synthesis of evidence on the impacts of climate change on elements of human security. Interventions and policies indicated by difference between initial conditions (solid black) and outcome of intervention (white circles). Some interventions (blue arrows) show net increase human security while others (red arrows) lead to net decrease in human security. Source: IPCC 2014

5. Interactions: armed conflicts and violence

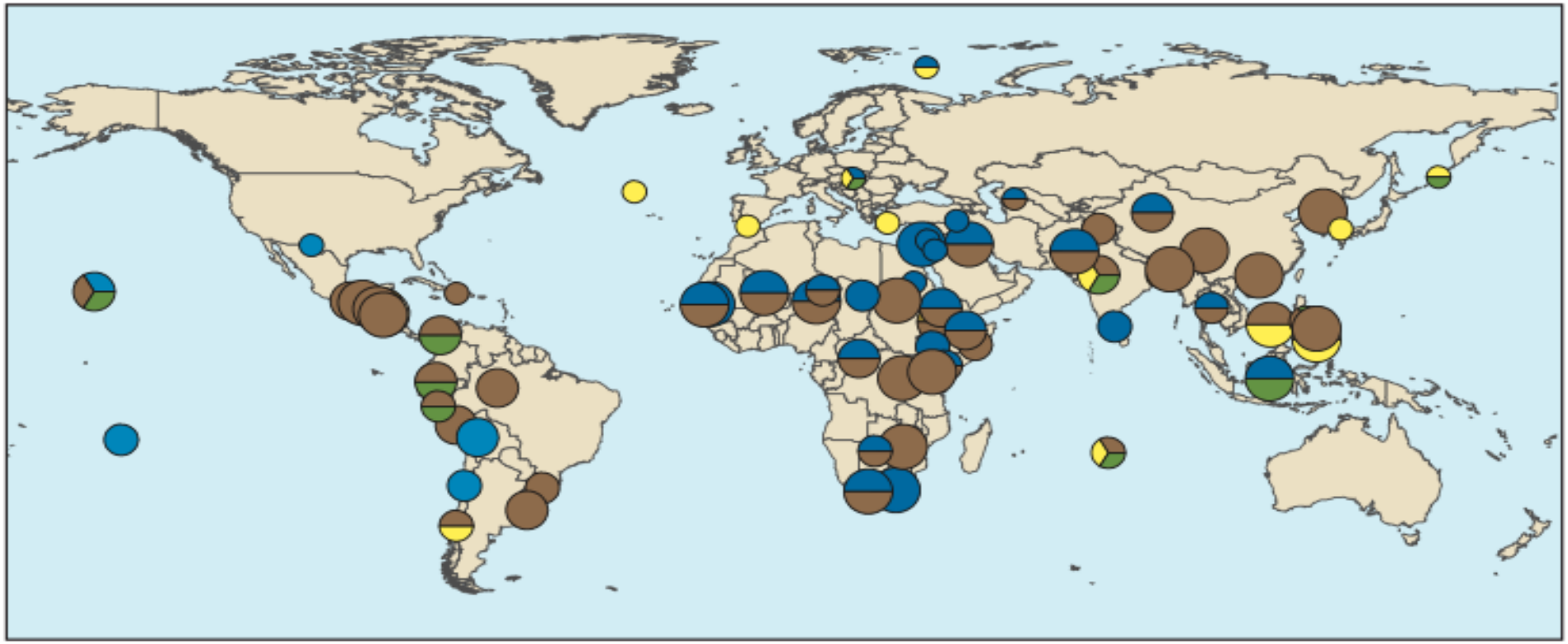
5.1 Natural resources and armed conflicts



- Natural resources, both renewable and non-renewable, offer enormous potential for helping people in developing countries to escape from poverty and build resilient societies.

- Natural resources have not only fuelled major conflicts, but have also contributed to recurrent outbreaks of violence, both within and between communities. By financing the rise of rebel groups and militias in fragile settings, natural resources have played a key role not only in instigating but also in prolonging conflict and violence.

UNDP & UNEP, The Role of Natural Resources in Disarmament, Demobilization and Reintegration (2013)



Environmental conflicts.
Source: WBGU 2008

5.1 Natural resources and armed conflicts

- Natural resources, in and of themselves, are rarely a cause of conflict. However, when they are mismanaged and misused they can have a multiplier effect on other causes and drivers, including underlying social divisions, governance deficits, fragile institutions and more.

- Prior to or during violent conflict, changes in access or the degradation of natural resources and the environment may directly aggravate already existing societal cleavages around ethnicity, nationality, geographic identity, religion or politics.

- Violent conflict can prevent people from accessing their land for agriculture, grazing livestock or harvesting non-timber forest products, thereby increasing the pressure on land and natural resources that are safely accessible.

- Violent conflict can also degrade natural resources directly or indirectly, either through targeted actions or unintentionally (for the impact of conflict on biodiversity hotspots, see also Hanson et al., 2009).

5.2 Potential of sustainable natural resource management

- Effective natural resource management also has the potential to generate important opportunities for peacebuilding, through economic growth, employment and sustainable livelihoods recovery amongst others.

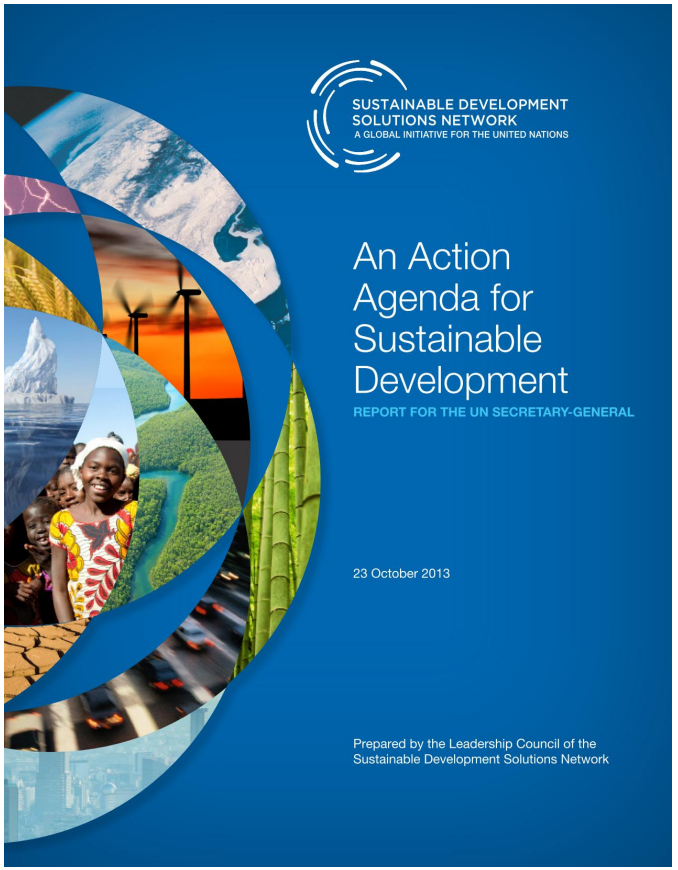
- Decisions taken around the management of natural resources can impact the ability of Disarmament, Demobilization and Reintegration processes to achieve their stabilization and security objectives. Likewise, a better understanding of the connection between DDR and natural resources provides several entry points for promoting more strategic socio-economic reintegration opportunities in natural resource sectors.

Source: UNDP & UNEP 2013

6. Conclusions

6.1. From the MDGs to the SDGs

- Integrating social and environmental sustainability within a holistic framework that takes both intra-generational and inter-generational equity into account must be the goal of a new global sustainable development agenda.
- Despite shortcomings, progress has been made in fighting poverty, reducing child mortality, improving health and education and so on through the MDGs.
- At Rio+20, world leaders agreed to make the transition to a new set of goals, the SDGs.
- Unlike the MDGs, which apply largely to poor countries, and reference the rich countries mainly as donors, the SDGs will be universally applicable. They will need to address and be focused on all priority areas to make **sustainable development** possible.



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Thank you for your attention

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