



Convention on
Biological Diversity



Biodiversity and Human Health in the Face of Climate Change
Knowledge, Challenges & opportunities for cross-sectoral collaboration

**European Conference on Biodiversity and Health in the Face of Climate
Change**

Bonn, Germany

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Diversity, CBD-WHO Joint Work Programme on biodiversity and health***



Convention on Biological Diversity

One of 3 Rio Conventions (1992 Earth Summit)

Three primary objectives:

1. **Conservation** of biological diversity
2. **Sustainable use** of its components
3. **Fair and equitable sharing** of benefits arising from the sustainable use of genetic resources

Biological Diversity (Art. 2) “...includes all **plants, animals, microorganisms**, the **ecosystems** of which they are part, and the **diversity** *within* species, *between* species, and *of* ecosystems.”

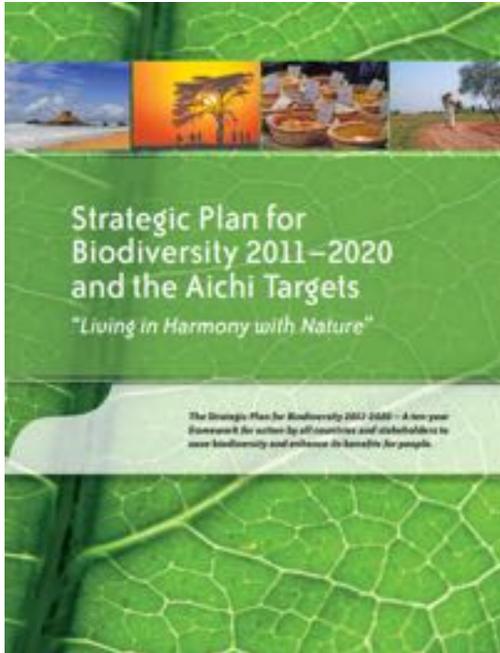
Decision V/4 para. 11

Strategic Plan for Biodiversity 2011-2020: Vision

By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a **healthy planet** and delivering **benefits** essential for **all people**.



Strategic Plan for Biodiversity 2011-2020



Mission

Take effective and urgent action **to halt the loss of biodiversity** in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, **and contributing to human well-being, and poverty eradication.**

www.cbd.int/sp

5 strategic goals and 20 Targets

Aichi Target 14: ...Ecosystems that **provide essential services**, including services related to water, **and contribute to health, livelihoods and well-being**, are restored and safeguarded taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Strategic Plan : Opportunities for enhancing human health

* Note: T1, T2 & T14 are relevant to all topics in this table

Biodiversity and Health Topic	Health Sector	Biodiversity Sector (Aichi Biodiversity Target)
<p>1. Food Species, varieties and breeds incl. domesticated and wild components Diversity of diet Ecology of production systems Total demand on resources</p>	<p><i>Direct responsibility</i></p> <ul style="list-style-type: none"> •Recognize and promote dietary diversity, food cultures and their contribution to good nutrition •Recognize synergies between human health and sustainable use of biodiversity (e.g. moderate consumption of meat) <p><i>Indirect responsibility:</i></p> <ul style="list-style-type: none"> •Promote sustainable production harvesting and conservation of agricultural biodiversity 	<p>T1; T14 T2 (poverty reduction) T4 (sust. production/consumption) T5 (reduce habitat loss) T6 (sustainable harvesting) T7 (sustainable management) T13 (genetic diversity)</p>
<p>2. Water Water quantity, quality and supply</p>	<p><i>Direct responsibility:</i></p> <ul style="list-style-type: none"> •Integrate ecosystem management considerations into health policy <p><i>Indirect responsibility:</i></p> <ul style="list-style-type: none"> •Promote protection of ecosystems that supply water and promote sustainable water use 	<p>T1; T14 T5 (reduce habitat loss) T8 (reduce pollution) T9 (invasive alien species) T11 (protected areas)</p>
<p>3. Disease regulation Ecosystem integrity and diversity</p>	<p><i>Direct responsibility:</i></p> <ul style="list-style-type: none"> •Integrate ecosystem management considerations into health policy <p><i>Indirect responsibility:</i></p> <ul style="list-style-type: none"> •Promote ecosystem integrity 	<p>T1; T14 T2 (poverty reduction) T5 (reduce habitat loss) T8 (reduce pollution) T9 (invasive alien species)</p>
<p>4. Medicine Traditional medicines Drug development (genetic resources and traditional knowledge)</p>	<p><i>Direct responsibility:</i></p> <ul style="list-style-type: none"> •Recognize contribution of genetic resources and traditional knowledge to medicine <p><i>Indirect responsibility:</i></p> <ul style="list-style-type: none"> •Protect genetic resources and traditional knowledge •Ensure benefit sharing 	<p>T1; T14 T2 (poverty reduction) T5 (reduce habitat loss) T13 (genetic diversity) T16 (Nagoya Protocol) T18 (local/traditional knowledge)</p>
<p>5. Physical, mental and cultural well-being Physical health benefits Benefits for mental health Cultural/spiritual enrichment</p>	<p><i>Direct responsibility:</i></p> <ul style="list-style-type: none"> •Integrate 'value of nature' into health policy <p><i>Indirect responsibility:</i></p> <ul style="list-style-type: none"> •Promote protection of values, species and ecosystems 	<p>T1; T14 T2 (poverty reduction) T11 (protected areas) T12 (preventing extinctions) T13 (genetic diversity) T18 (local/traditional knowledge)</p>
<p>6. Adaptation to climate change Ecosystem resilience and Genetic resources (value of 'options' for adaptation)</p>	<p><i>Indirect responsibility:</i></p> <ul style="list-style-type: none"> •Promote ecosystem and social resilience and conservation of genetic resources 	<p>T1; T14; T15 (ecosystem resilience) T3 (reduce negative subsidies) T5 (reduce habitat loss) T8 (reduce pollution) T10 (vulnerable ecosystems)</p>

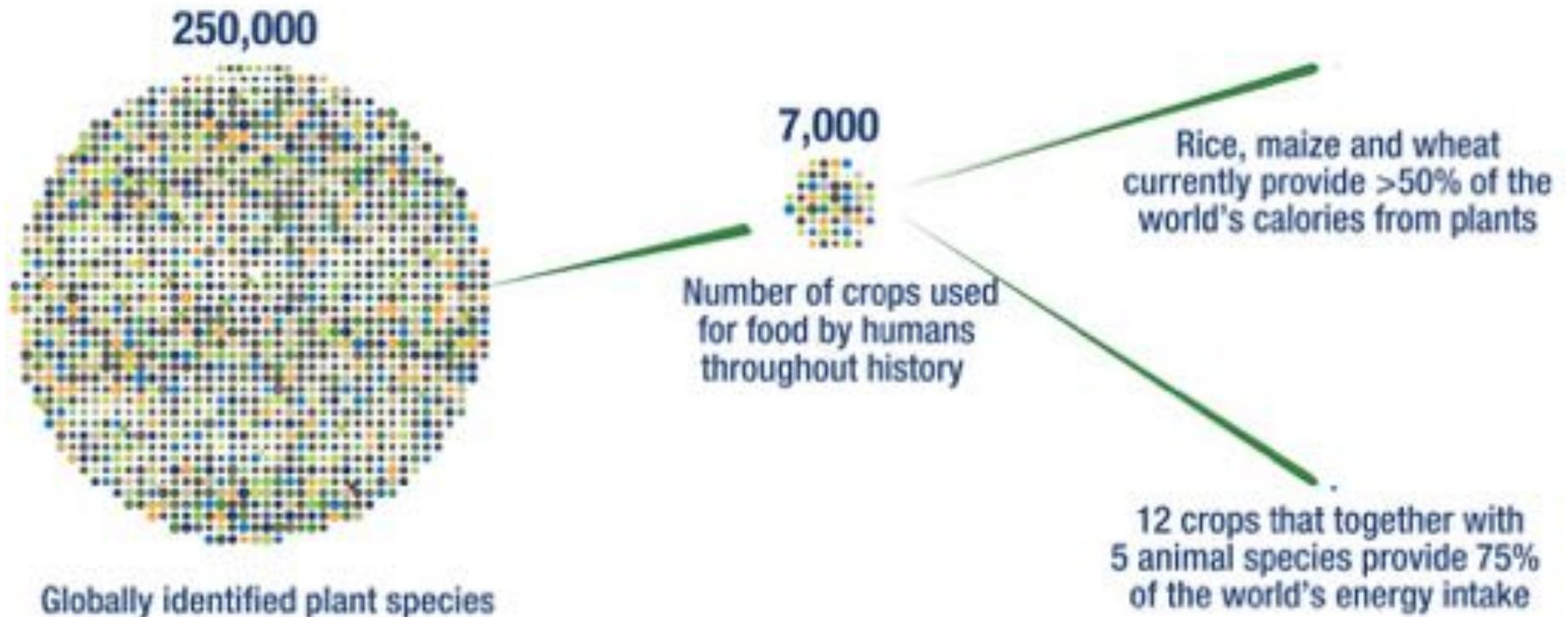
Impacts of anthropogenic pressures

- Up to 95 % of **wetlands** have been lost in some areas;
- 80 % of **grasslands** are suffering from soil degradation;
- 20 % of **drylands** are in the danger of becoming deserts;
- 90 % of all large **fish species** have disappeared from the oceans in the past half century;
- Tropical **forest** shrinking at about 5% per decade, adding 3 billion tons of **CO₂** to the atmosphere yearly;
- Atmospheric **CO₂ emissions** have now surpassed 400 ppm as a global average (more than 120ppm since pre-industrial times, more than half since 1980).

Rapid loss of genetic diversity

Agrobiodiversity underpins resilience yet...

Shrinking diversity



Diet-related noncommunicable diseases



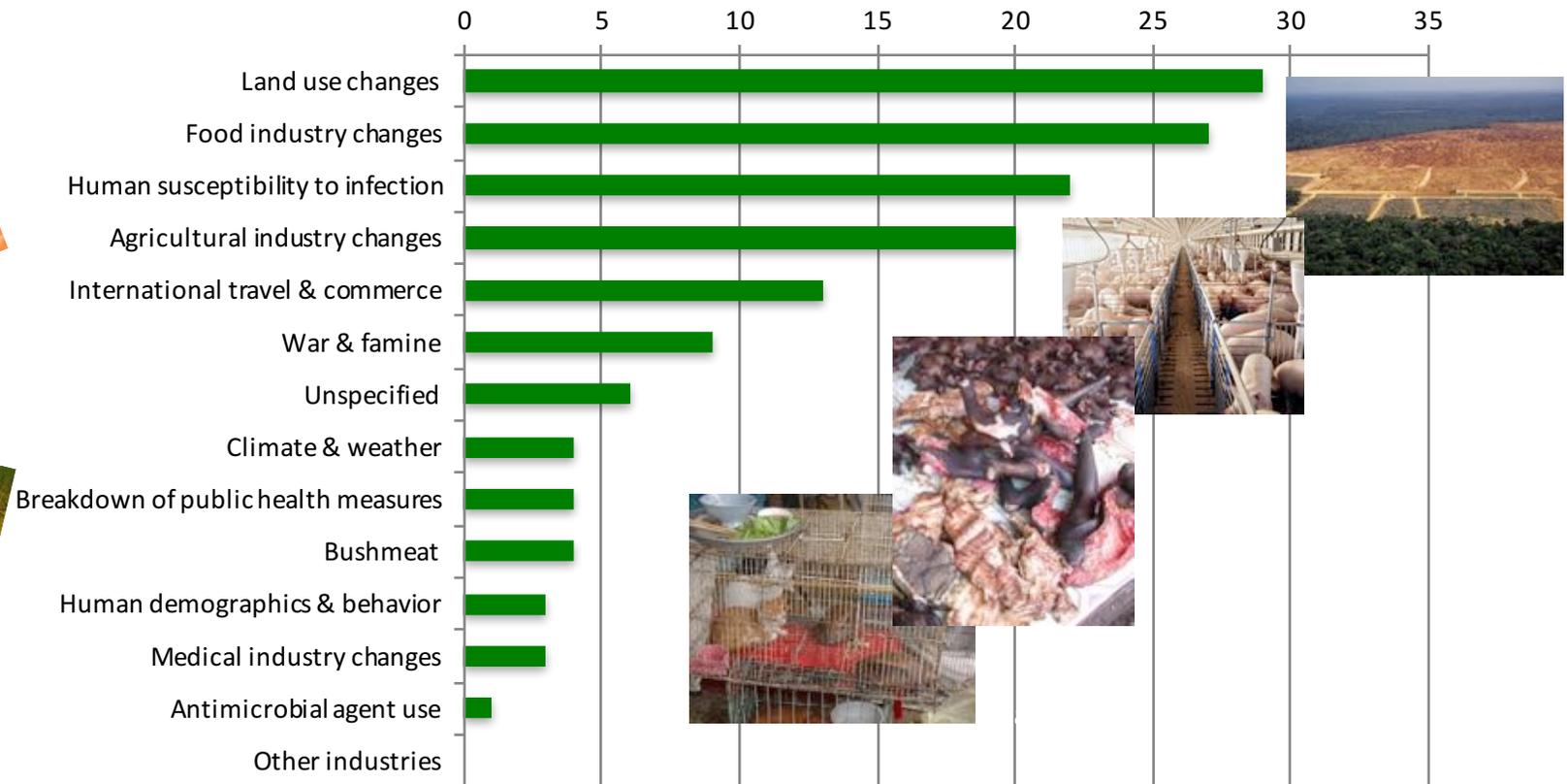
1. Ng et al. 2014 2. FAO State of Food and agriculture, 2014 3. Global hunger index 2014

Dietary energy supply *can* be satisfied without diversity
Micronutrient supply *cannot* be satisfied without diversity

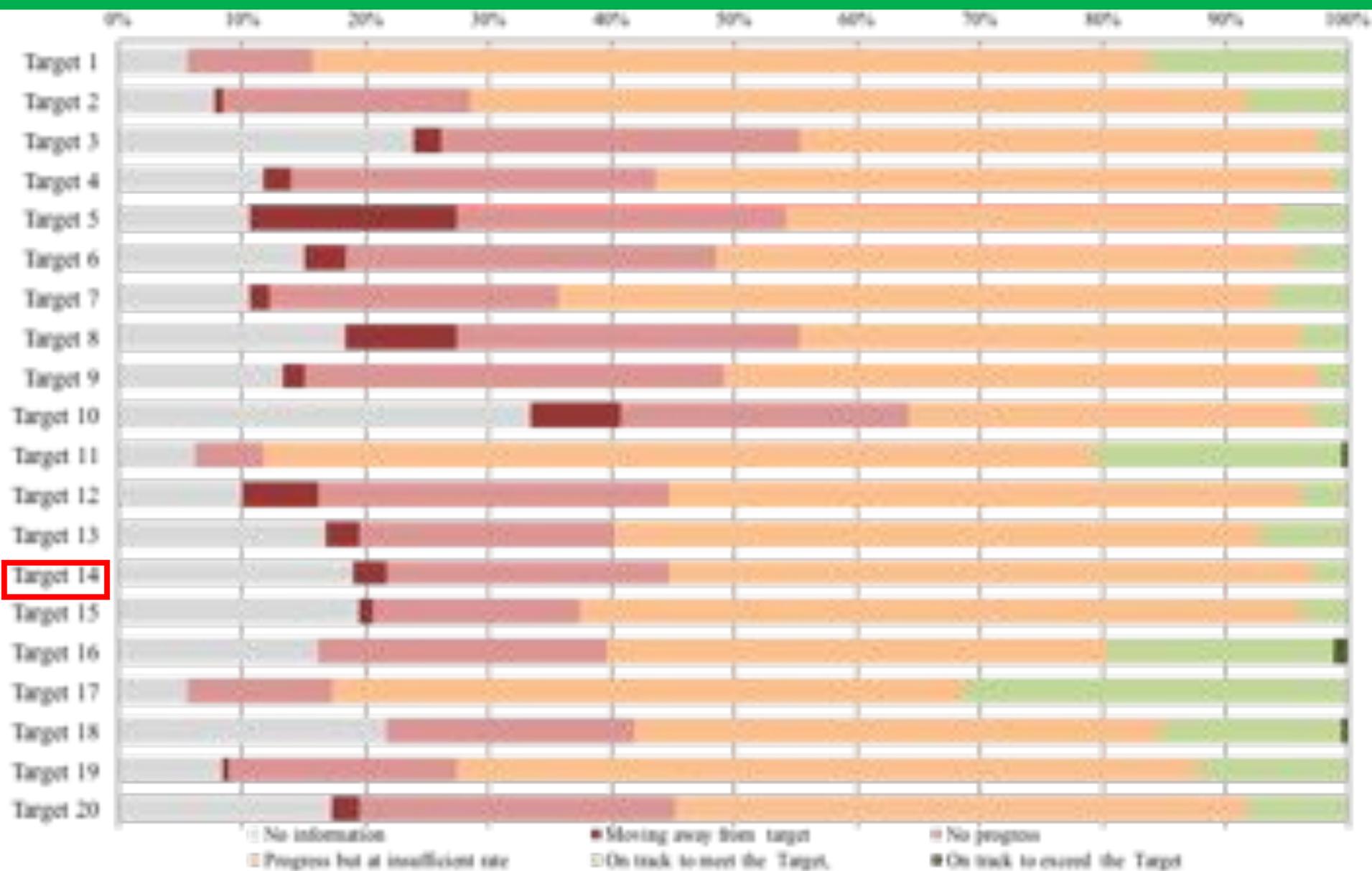
Shared Drivers of Biodiversity loss and ill health

Emerging Infectious Diseases and Biodiversity Loss

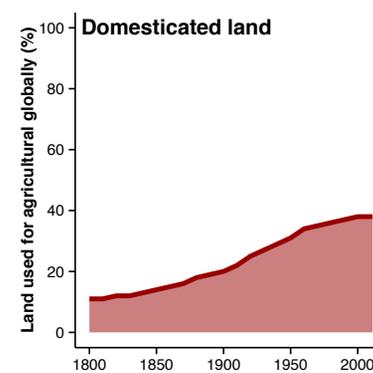
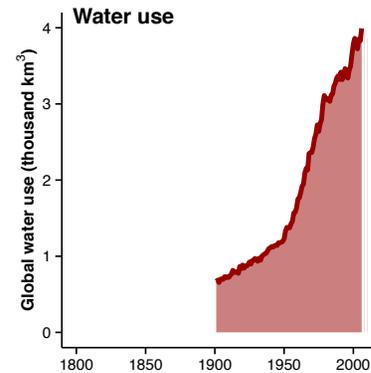
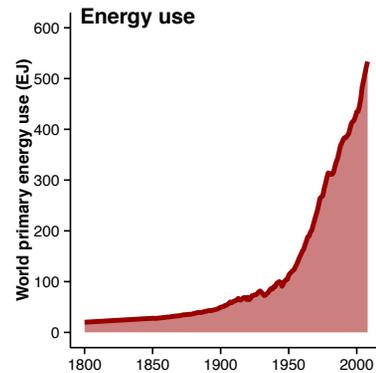
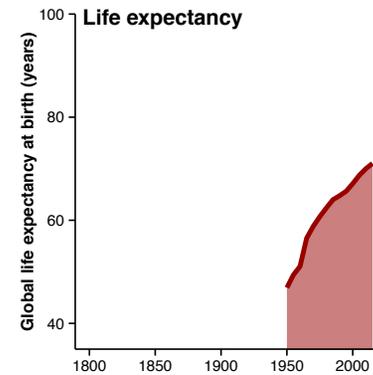
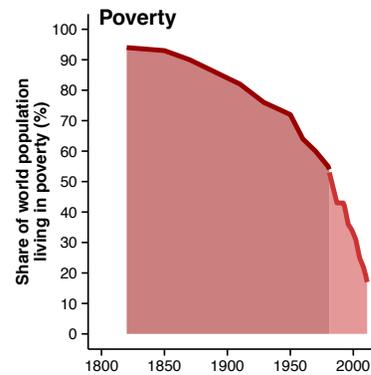
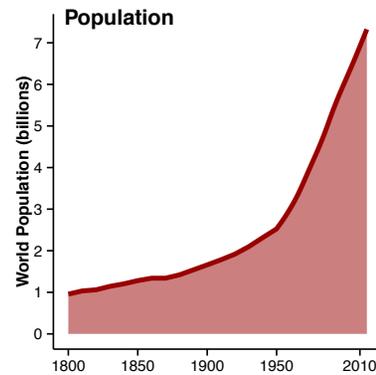
Drivers of recently-emerging infectious diseases in humans from wildlife



Mid-term Progress toward Aichi Targets based on (179) 5th National Reports

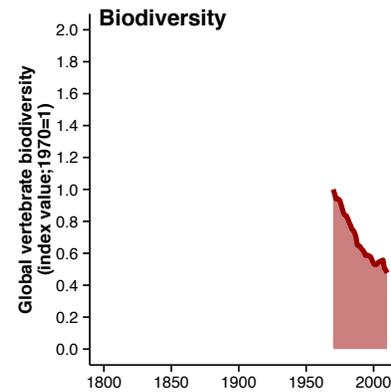
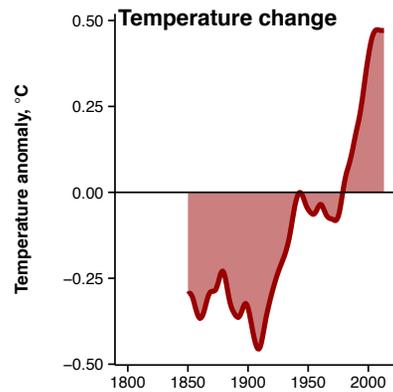
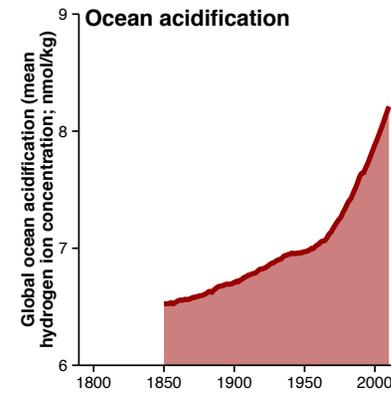
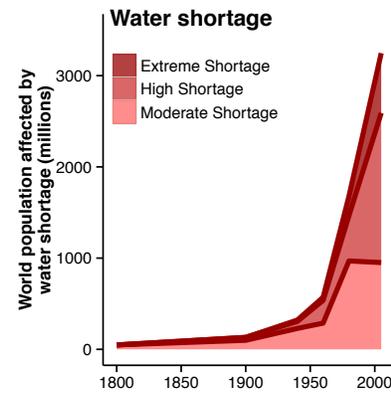
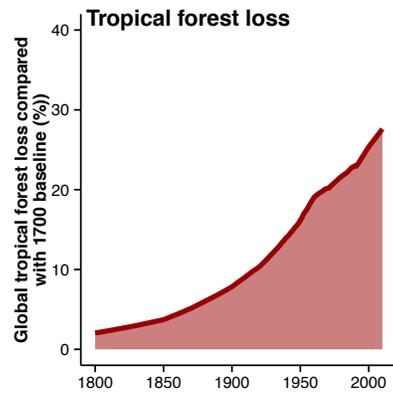


Human health in the anthropocene



Source: Whitmee et al. 2015

Environmental Trends



Source: Whitmee et al. 2015

ENVIRONMENTAL IMPACTS ON HEALTH

WHAT IS THE BIG PICTURE?

FACT:

23%

of all global deaths are linked to the environment.

That's roughly **12.6 million deaths** a year.



WHERE IS IT HAPPENING?



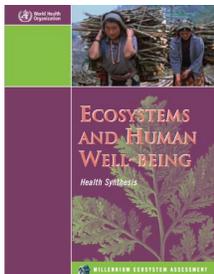
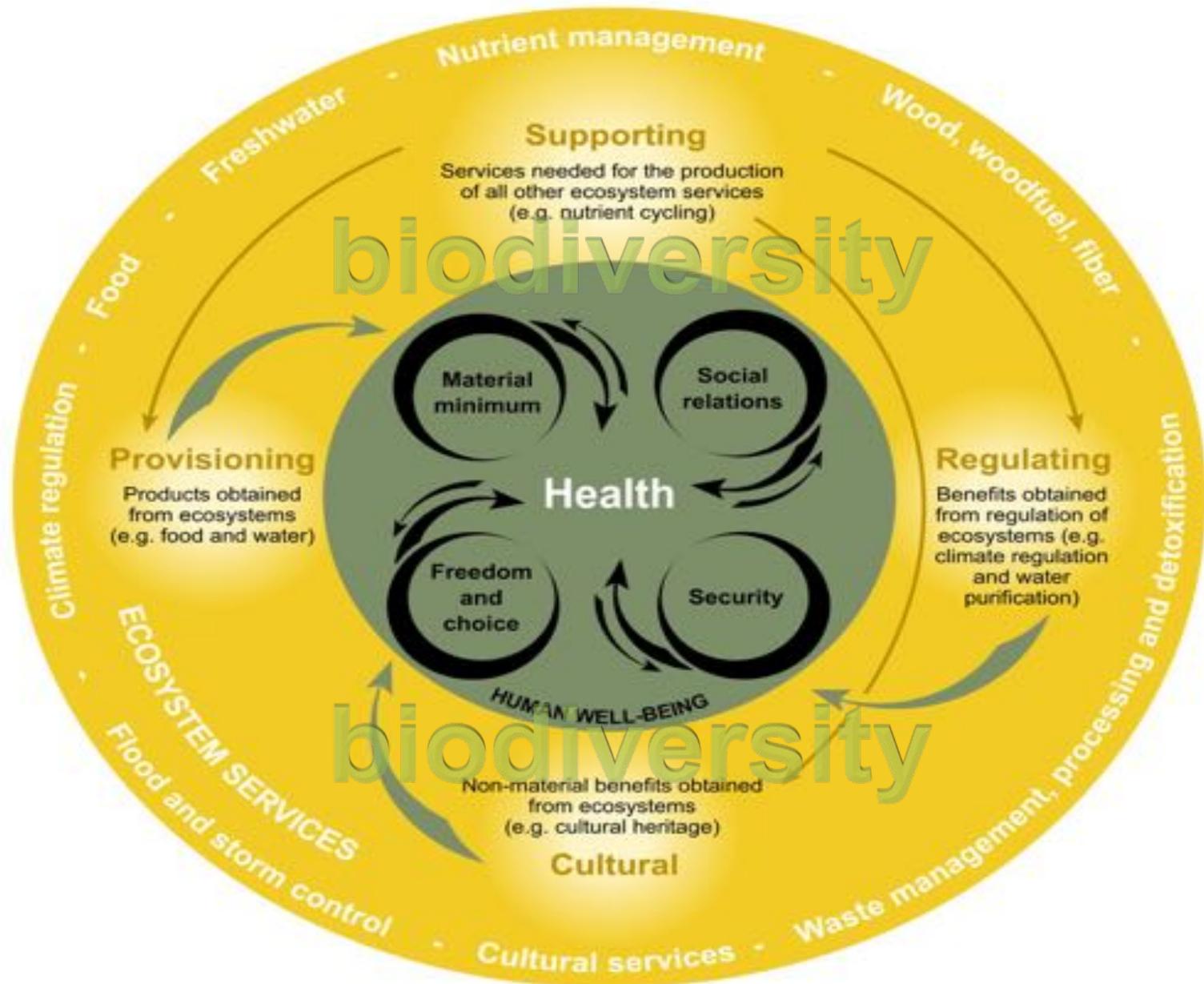
PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENTS

A global assessment of the burden of disease from environmental risks

A. Pope (Editor), J. Wolf, C. Corvalán, S. Bose and M. Neira

Ecosystem Services

Tangible determinants of human health



We all depend on biodiversity for human health, and some more than others

- **≈33% globally** living under moderate to severe water stress.
 - **20-120 million** people live in areas affected by desertification;
- More than **3 billion people** depend on marine and coastal biodiversity for their livelihoods and subsistence;
- **1.3 billion** live from agro-forestry resources;
 - **60 million** indigenous peoples almost wholly dependent on forests;
 - **≈ 70% of world** population relies on medicinal plants in some areas;
 - **350 million people** depend on forests for subsistence & income;

PART II

**From challenges to opportunities:
New era of collaboration on biodiversity
and health**

Early mandates on biodiversity and health

1. **Strengthen collaboration with WHO and other partners** to support mainstreaming of biodiversity into health policies, programmes & plans.
2. Investigate how implementation of the **Strategic Plan** can best **support efforts to address global health issues**...and the MDGs
3. **Bridge gaps** between work on **impacts of climate change on public health** and its impacts on **biodiversity**.
4. Continue collaborating with relevant organizations in these fields to support the **mainstreaming of biodiversity** issues into **health policy and action** plans. (Decision X/20, para 17)

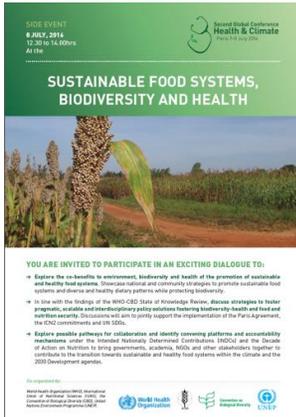
2012: COP 11 (Decision XI/6)

Called for the establishment of a **joint work programme with the WHO**, and others, to support the contribution of the SP to achieving human health objectives;

CBD-WHO Joint Work Programme

Awareness Raising

Building Capacity



KEY MESSAGES

...Sustainable food systems can contribute to better protection of ecosystems and improved public health and nutritional outcomes. ...

...Biodiversity sustains our food supply, is a source of medicines, and an integral part of our environment. ...

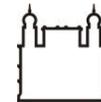
...Sustainable food systems, biodiversity and health: Opportunities to advance the Sustainable Development Goals. ...

...The Rio+20 Summit provides an opportunity for governments to take action on these issues. ...

...The WHO is committed to working with the CBD and other partners to advance the Sustainable Development Goals. ...



Expanded Partnerships



Ministério da Saúde
 FIOCRUZ
 Fundação Oswaldo Cruz



Biodiversity and Health Mandates (cont.)

COP 12 (decision XII/21): **First full decision on biodiversity and Human health** welcomes KM of the State of Knowledge Review, new emphasis on building capacity and evidence based policy on biodiversity and health

Consider implications of the findings of ... *Connecting Global Priorities: Biodiversity and Human health, a State of Knowledge Review...* (Dec. XII/21)

COP 13 (decision XIII/6): **Second full decision on biodiversity and Human health** considers findings of the State of Knowledge review for Parties, new impetus on supporting integration, coherence and implementation and aligning with the SDGs & the Paris Agreement

Evidence-based decision making

Connecting Global Priorities: Biodiversity and Human Health

A State of Knowledge Review



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World Health
Organization

Concepts, themes & directions

Water and air quality

Agricultural biodiversity and nutrition

Infectious diseases

Microbial diversity and noncommunicable diseases

Biomedical discovery and impact of pharmaceuticals

Traditional medicine

Physical and mental health and cultural well-being

Climate change and disaster risk reduction

Population, consumption and production patterns

Strategies, tools and ways forward

Key finding: Build on findings of the MEA, anthropogenic drivers of biodiversity loss are hindering the capacity of ecosystems to provide essential services, from provision of clean air, freshwater, and the regulation of pests and disease to the discovery and production of medicines & support for spiritual and cultural values

Biodiversity and human health

Health "is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

Biological diversity (biodiversity) is "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."

Biodiversity underpins ecosystem functioning and the provision of goods and services that are essential to human health and well-being.

The links between **biodiversity and health** are manifested at various spatial and temporal scales. Biodiversity and human health, and the respective policies and activities, are interlinked in various ways.



Direct drivers of biodiversity loss include land-use change, habitat loss, over-exploitation, pollution, invasive species and climate change. Many of these drivers affect human health directly and through their impacts on biodiversity.

Women and men have different roles in the conservation and use of biodiversity and varying health impacts.

Human population health is determined, to a large extent, by social, economic and environmental factors.

The social and natural sciences are important contributors to biodiversity and health research and policy. Integrative approaches such as the Ecosystem Approach, Eco-health and One Health unite different fields and require the development of mutual understanding and cooperation across disciplines.

Opportunity & imperative for leadership



Implementation

Science

Partnership Communication Resource Mobilization
 Mainstreaming Capacity Building Monitoring



Policy

InterAgency Liaison Group on Biodiversity and Health

Platform to:

- Bring together leading international institutions to support implementation
- exchange information, best practices develop guidance
- coordinate lead joint activities on links between biodiversity, health and global environmental change.

Comprised of international agencies and expert observers with demonstrated expertise in the areas of human health and biodiversity.

Next Steps

MANDATE: Support decisions XII/21 and XIII/6

One Health Guidance, MOOC modules, Compile Best Practices

Connecting Global Priorities: Biodiversity and Human Health, From Knowledge to Implementation (Part II, to be comprised of case studies)



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World Health
Organization



<https://www.cbd.int/health/ilg-health/default.shtml>

Opportunity to Link Health, Biodiversity and Climate Change



Important for the climate change community to explicitly recognize that human health and well-being are influenced by the health of local plant and animal communities, and the integrity of the local ecosystems



Source: Courtesy of WHO, 2016

Opportunity to Transcend institutional and sectoral siloes



Credit: Golden, 2013 CBD-WHO Regional workshop on biodiversity and health for Africa

Challenges: political will, capacity, resources, competing interests...

Integrated approaches to health: Planetary Health



The
ROCKEFELLER
FOUNDATION

THE 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.”

Image: Globalis

Biodiversity loss is exacerbating these challenges and the impacts of global environmental change on human health

One Health/EcoHealth/Planetary Health

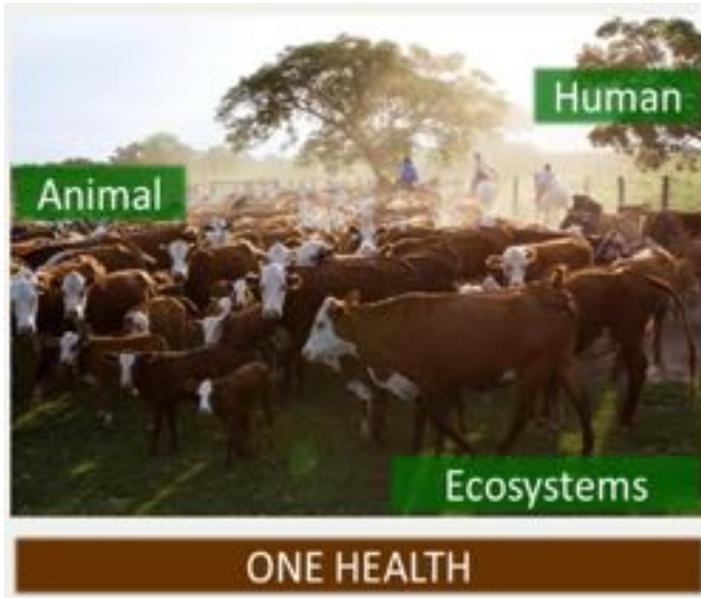


Image credit: www.oie.int

“...summarised an idea that had been known for more than a century; that **human health and animal health are interdependent and bound to the health of the ecosystems** in which they exist.”

www.oie.int

Health threats at the human-animal-ecosystem interface pose risks to public health, animal health and global health security

Planetary Health: “....the achievement of the **highest attainable standard of health, wellbeing, and equity** worldwide through judicious attention to the **human systems** -political, economic, and social- **that shape the future of humanity** and the Earth’s natural systems that **define the safe environmental limits within which humanity can flourish.**”

Unique opportunities for leadership

Major motivator for policy change & opportunity to:

- Invest in **EDUCATION** and awareness-raising
- Adopt **integrated, inclusive, cross-sectoral approaches**
- **Reduce inefficiencies of siloed approaches**
- **Assess and address the common drivers of biodiversity loss and ill health**
- **Link policies to conservation as a delivery mechanism for health**
- **More holistic assessments & evaluation of co-benefits and trade-offs**
- **Integrate health-biodiversity nexus in more coherent strategies, plans and actions (NBSAPs)**

Additional opportunities to...

- Adopt **preventive health strategies** (upstream drivers)
- Strengthen national and **local capacity**
- Build the **evidence base**:
 - **Translational science**
 - **Co-production** of knowledge: Including scientific and other forms of knowledge...and the social sciences!
 - Carry out, share and **scale up pilot studies & best practices**
- Support **traditional knowledge and practices**
- Strengthen the **science-policy interface**
- Enhance **policy coherence**
- Engage the **private sector**
- **Transformative change & intergenerational equity**

