Biodiversity and Human Health:
Context and opportunities for cross-sectoral collaboration

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European One Health/EcoHealth Workshop

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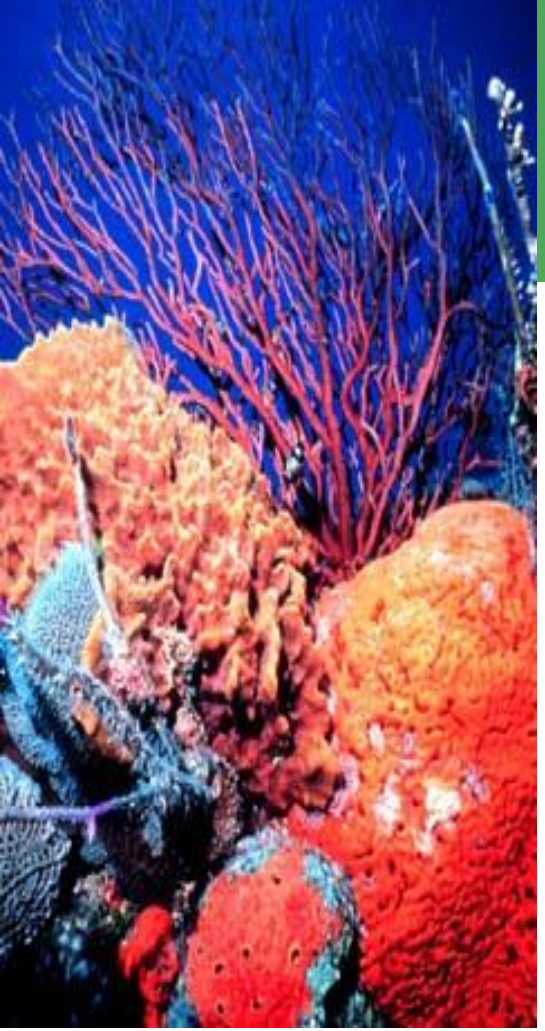
Convention on Biological Diversity

United Nations Decade on Biodiversity

Overview

- Convention on Biological Diversity
- Context & Mandates for Collaboration
- Biodiversity & Health: Global Commitments
- WHO-CBD State of Knowledge Review: Thematic Areas & KM
- Global Challenges and Opportunities



Convention on Biological Diversity

In force since 1993 (196 Parties) 3 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

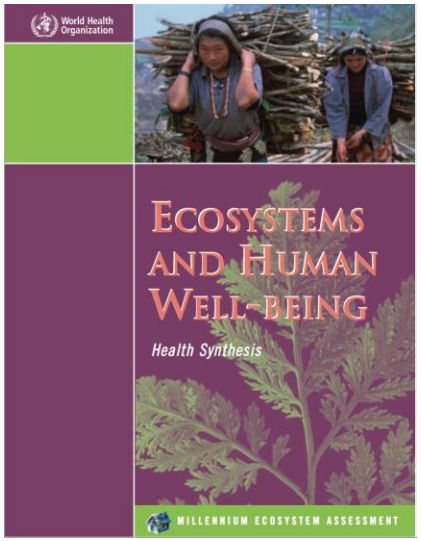
Biological Diversity (Art. 2)

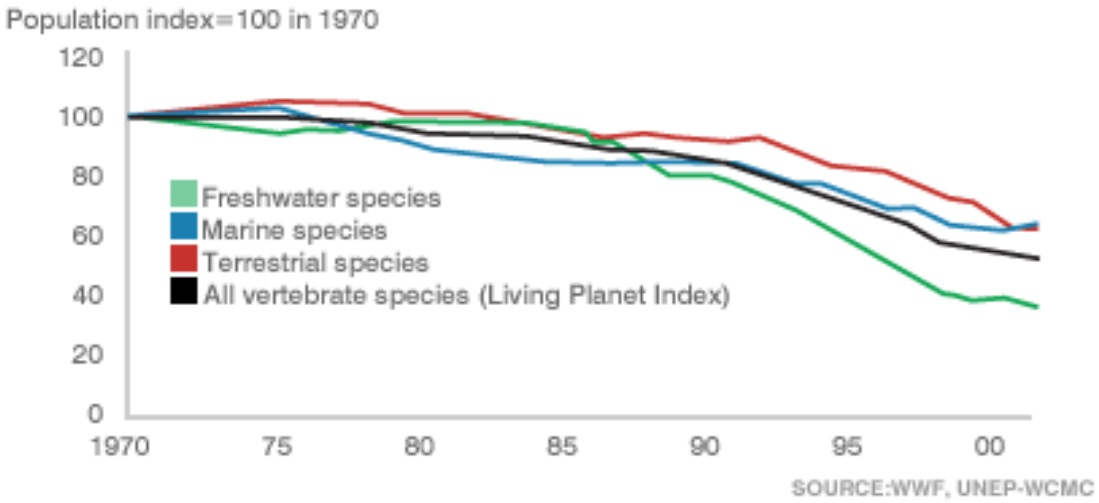
"…includes all **plants, animals, microorganisms,** the **ecosystems** of which they are part, and the **diversity** *within* species, *between* species, and *of* ecosystems." Decision V/4 para. 11

Context of international collaboration

Status of biodiversity as measured by LPI (1970-2006)

- Vertebrates ↓ by 1/3
- Birds & mammals used for food & medicines at greatest risk (CBD, 2010)





An increasing recognition in the health sector of the **environmental drivers of ill health** contributed to calls for increased collaboration between the biodiversity, human health & other sectors

ENVIRONMENTAL IMPACTS ON HEALTH

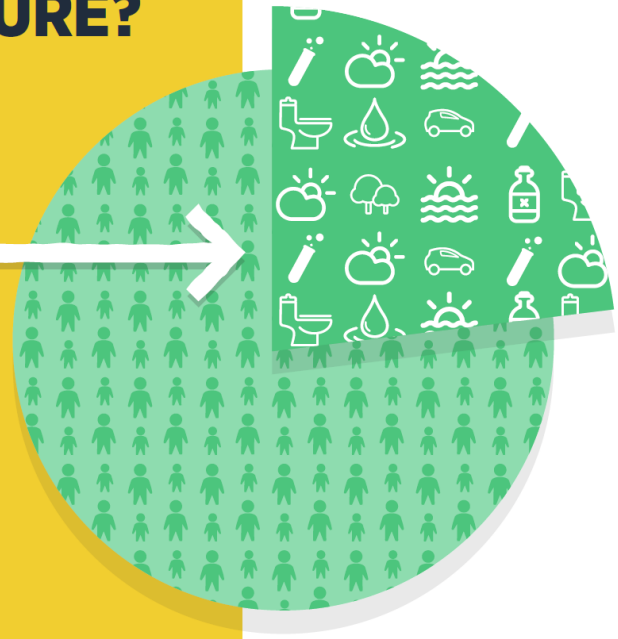
WHAT IS THE BIG PICTURE?

FACT:

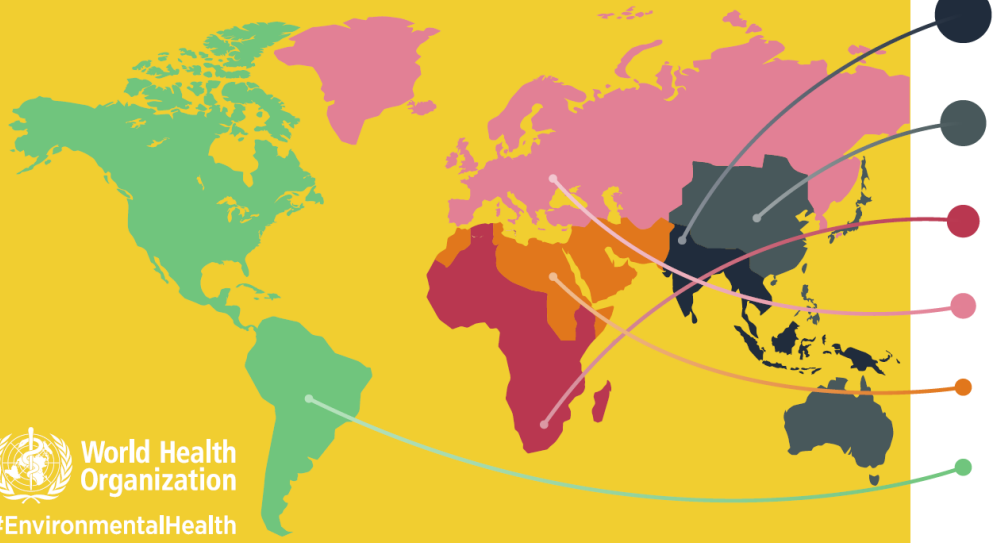
23%

of all global deaths are linked to the environment.

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



WHERE IS IT HAPPENING?



3.8 million
in South-East Asia Region

3.5 million
in Western Pacific Region

2.2 million
in Africa Region

1.4 million
in European Region

854 000
in Eastern Mediterranean Region

847 000
in the Region of the Americas

World Health Organization

#EnvironmentalHealth

PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENTS

A global assessment of the burden of disease from environmental risks

A Prüss-Ustün, J Wolf, C Corvalán, R Bos and M Neira

World Health Organization

Early CBD Mandates: cross-sectoriality

COP 7 (2004): **Collaboration with FAO on sustainable use** of biodiversity, for poverty alleviation & health

COP 8 (2008):

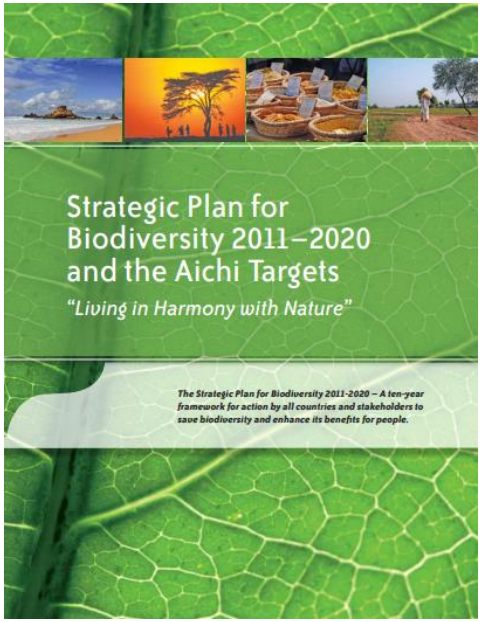
•Proposed a **headline indicator** (2010 Target) focusing **on health & well-being** of communities most reliant on **ecosystem services** (VIII/15)

•Framework for **Cross-cutting Initiative for Food and Nutrition** (FAO & UNEP)

- Mainstream biodiversity as source of food security, nutrition, traditional food cultures & to support sustainable livelihoods
- **Interdisciplinary initiative** on biodiversity for food and nutrition, based on the **ecosystem approach**

COP 10 (2010): **Strategic Plan for Biodiversity 2011-2010**

Strategic Plan for Biodiversity 2011-2020

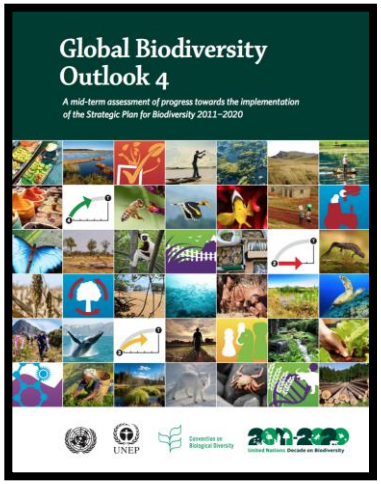


www.cbd.int/sp

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.

5 strategic goals and 20 Aichi Targets

…Ecosystems that **provide essential services,** including services related to water, **and contribute to health, livelihoods and well-being**, are restored and safeguarded…



www.cbd.int/gbo4

Relevance of the Strategic Plan to health (examples)

Biodiversity and Health Topic	Health Sector	Biodiversity Sector (Aichi Biodiversity Target)
1. Food Species, varieties and breeds incl. domesticated and wild components Diversity of diet Ecology of production systems Total demand on resources	Direct responsibility •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) *Indirect responsibility:* •*Promote sustainable production harvesting and conservation of agricultural biodiversity*	**T1; T14** T2 (poverty reduction) T4 (sust. production/consumption) T5 (reduce habitat loss) T6 (sustainable harvesting) T7 (sustainable management) T13 (genetic diversity)
2. Water Water quantity, quality and supply	Direct responsibility: •Integrate ecosystem management considerations into health policy *Indirect responsibility:* •*Promote protection of ecosystems that supply water and promote sustainable water use*	**T1; T14** T5 (reduce habitat loss) T8 (reduce pollution) T9 (invasive alien species) T11 (protected areas)
3. Disease regulation Ecosystem integrity and diversity	Direct responsibility: •Integrate ecosystem management considerations into health policy *Indirect responsibility:* •*Promote ecosystem integrity*	**T1; T14** T2 (poverty reduction) T5 (reduce habitat loss) T8 (reduce pollution) T9 (invasive alien species)
4. Medicine **Traditional medicines** **Drug development** (genetic resources and traditional knowledge)	Direct responsibility: •Recognize contribution of genetic resources and traditional knowledge to medicine *Indirect responsibility:* •*Protect genetic resources and traditional knowledge* •*Ensure benefit sharing*	**T1; T14** T2 (poverty reduction) T5 (reduce habitat loss) T13 (genetic diversity) T16 (Nagoya Protocol) T18 (local/traditional knowledge)
5. Physical, mental and cultural well-being Physical health benefits Benefits for mental health Cultural/spiritual enrichment	Direct responsibility: •Integrate 'value of nature' into health policy *Indirect responsibility:* •*Promote protection of values, species and ecosystems*	**T1; T14** T2 (poverty reduction) T11 (protected areas) T12 (preventing extinctions) T13 (genetic diversity) T18 (local/traditional knowledge)
6. Adaptation to climate change Ecosystem resilience and Genetic resources (value of 'options' for adaptation)	*Indirect responsibility:* •*Promote ecosystem resilience and conservation of genetic resources*	**T1; T14; T15 (ecosystem resilience)** T3 (reduce negative subsidies) T5 (reduce habitat loss) T8 (reduce pollution) T10 (vulnerable ecosystems)

CBD 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)



A new era of collaboration & partnerships

Courtesy of IISD

Our Planet, Our Health, Our Future, WHO, jointly prepared with UNFCCC, SCBD and UNCCD (2012)

RIO+20 the future we want

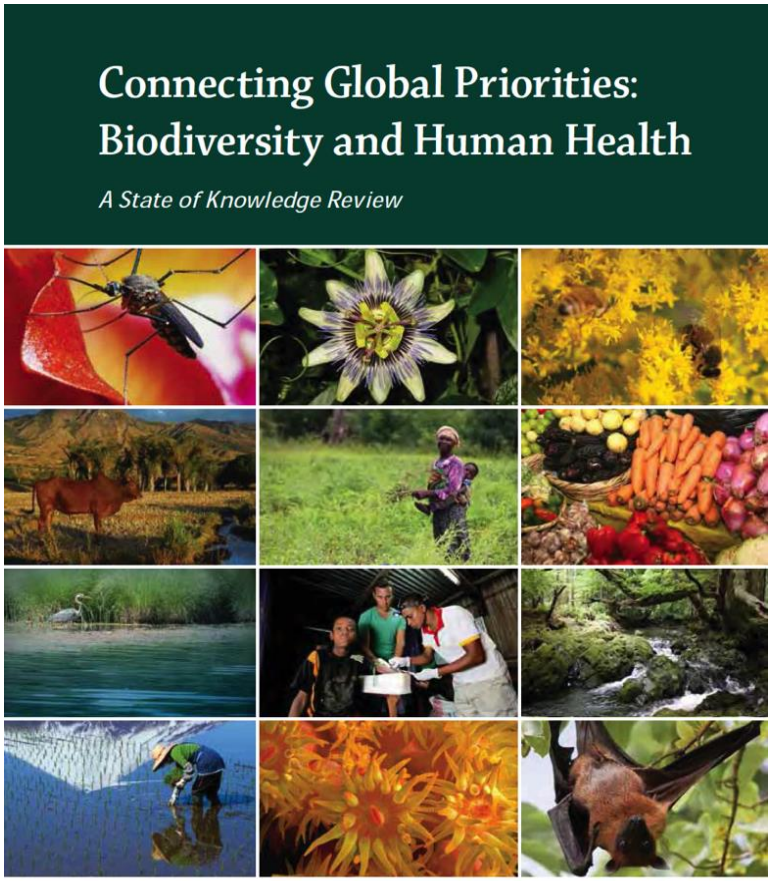
Capacity-Building

Encourage cross-sectoral dialogue, identify knowledge gaps and lesson sharing: to help bridge the gap between science and policy…but first NEED to ADDRESS Knowledge gaps among policy makers

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;

Evidence-based decision making



Contributions from 100+ interdisciplinary experts

- 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

UNEP · Convention on Biological Diversity · World Health Organization

www.cbd.int/health/stateofknowledge

European Commission · Bioversity International · cohabinitiative · EcoHealth Alliance · DIVERSITAS · UNITED NATIONS UNIVERSITY · CENTER for HEALTH and the GLOBAL ENVIRONMENT · Food and Agriculture Organization of the United Nations · Ministério da Saúde · FIOCRUZ Fundação Oswaldo Cruz · HEAL HEALTH & ECOSYSTEMS: ANALYSIS OF LINKAGES · WILDLIFE CONSERVATION SOCIETY

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.

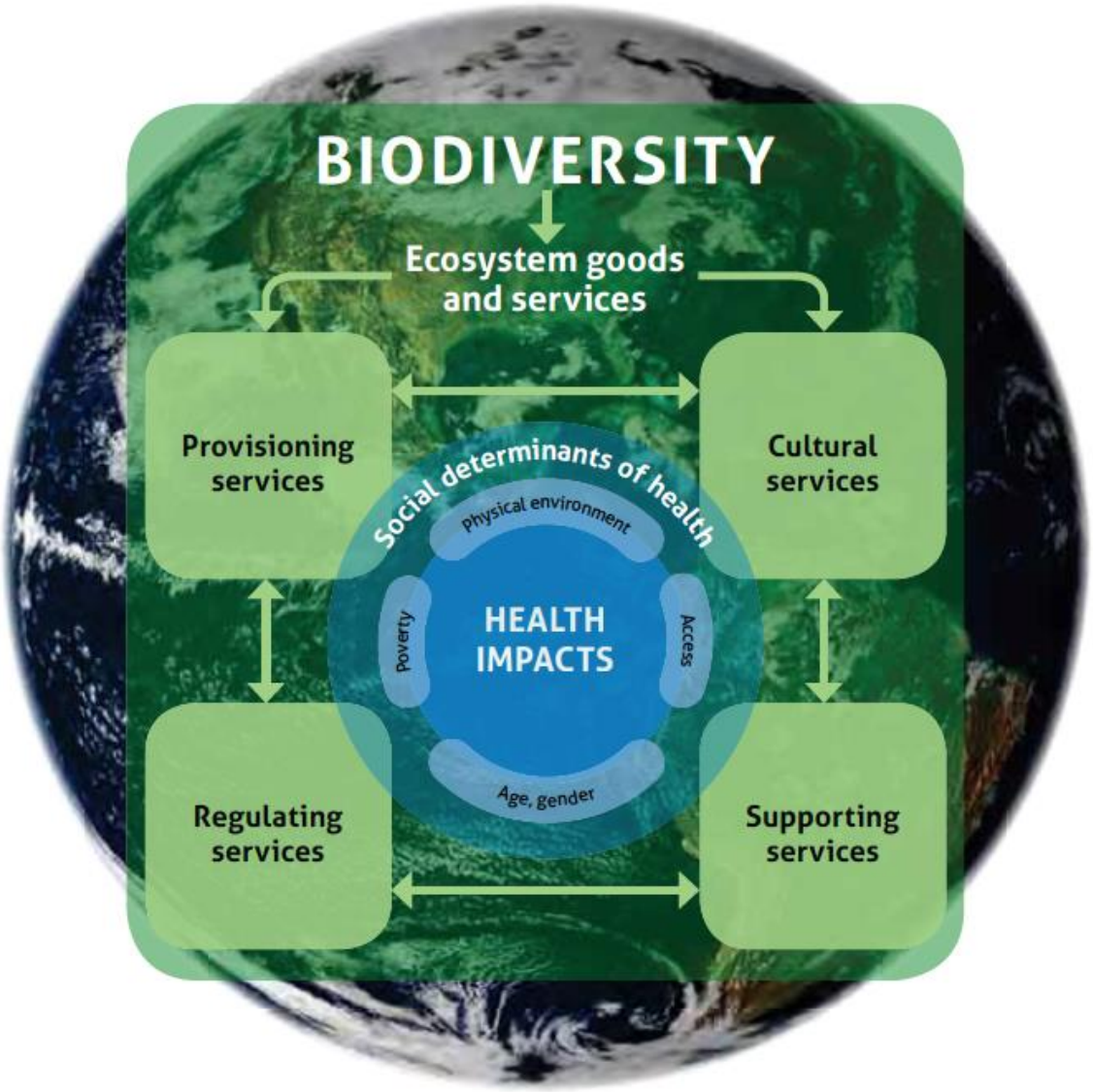
Human population health is determined, to a large extent, by social, economic and environmental factors.

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

World Health Organization

Convention on Biological Diversity

Complex linkages and co-dependencies at the intersection of biodiversity and human health



www.cbd.int/en/health/stateofknowledge

- Biodiversity, health and respective policies are **interlinked** in numerous ways
- Relationships are **non-linear, complex,** and diffuse in **space** and **time**
- Anthropogenic activity is **hindering the capacity of ecosystems to provide essential services;**
  - from the provision of clean air & freshwater to the regulation of pests and disease, and from biomedical discovery to traditional knowledge, food cultures & spiritual and cultural values.

Toward evidence-based decision making: The need for holistic "One Health" approaches

Key message:

"The **social and natural sciences** are important contributors to biodiversity and health research and policy.

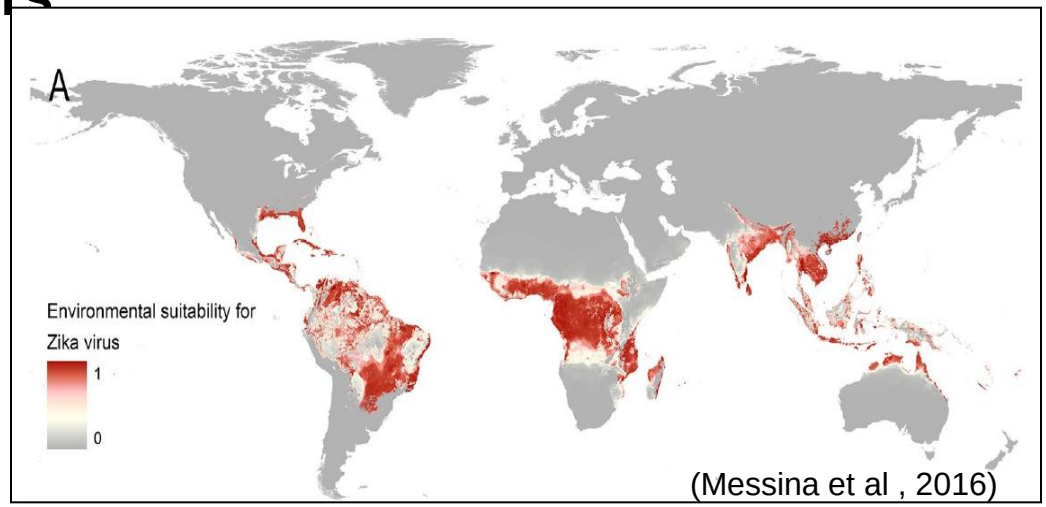
Integrative approaches, such as the ecosystem approach, ecohealth and One Health, **unite different fields** and require the development of **mutual understanding and cooperation** across disciplines."

Why are integrative approaches to biodiversity and health needed?

- Over **3 billion** depend on **marine and coastal** biodiversity for their livelihoods and subsistence;
- **1.3 billion** directly depend on **agro-forestry** resources;
  - Up to **70% of population** in some areas relies on medicinal plants;
- **350 million** depend on **forests** for subsistence and income
  - among them **60 million indigenous people** almost wholly dependant on forests
- **800 million** chronically undernourished while **1 billion adults + 20 million children** are overweight.
- Over the next 20 years cost of **NCDs > US$ 30 trillion** (48% of global GDP in 2010)
  - Millions below the **poverty** line.

New challenges are emerging

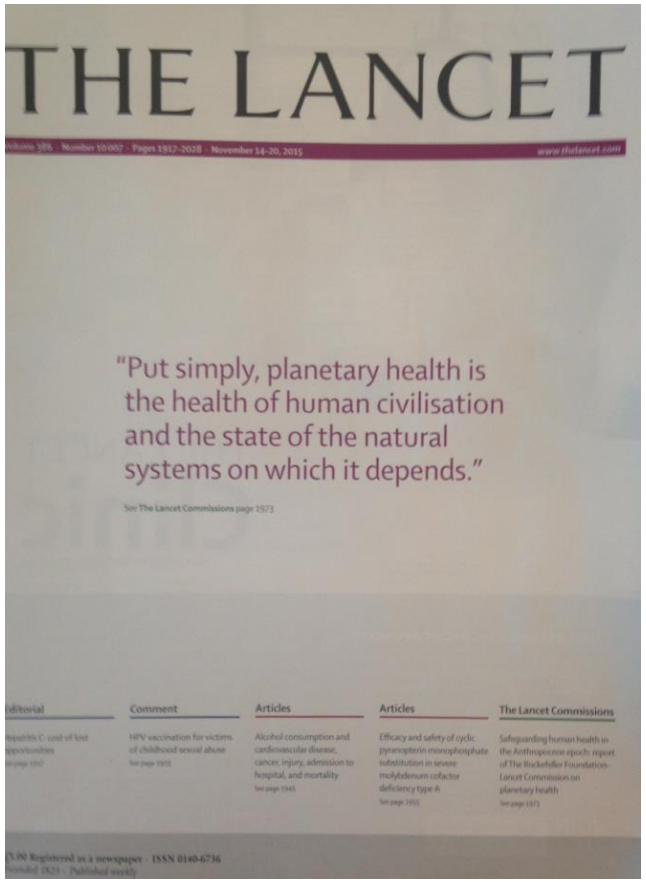
- By 2050 World population will ↑ to 9.2 billion = (37% growth)
  - Food production must increase sustainably by **> 70%. YET** changes in food production & consumption patterns have led to **"nutrition transition"**
- AMR is contributing to ↑ burden of NCDs
  - driven by many interconnected factors. Single, isolated interventions have limited impact.
- > 60% of known human pathogens are zoonotic
  - SARS, Ebola, Anthrax, Type A Influenzas, Rabies, Toxoplasmosis, and **800+ others**

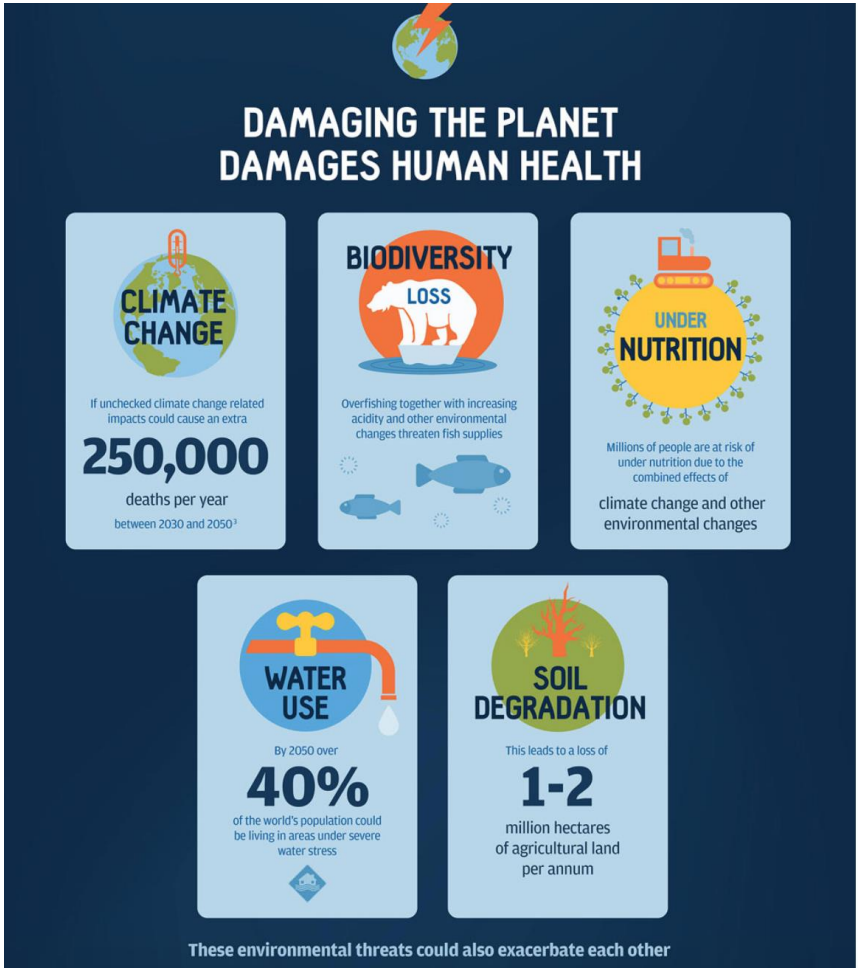


(Messina et al , 2016)

SHARED DRIVERS of Biodiversity loss and ill health

- **Land-use change:** Leading driver of infectious disease emergence in humans; reduces resilience, exacerbates climate change
- **Overexploitation and destructive harvest:** Loss of subsistence food sources; can contribute to the spread of disease; erode cultural ES
- **Pollution, pesticides, extractive industry :** Bioaccumulation of toxins in food chain; respiratory diseases; chemical exposures; changes in microbial composition and development of antimicrobial-resistant infections
- **Invasive alien species:** Alterations in species competition and displacement, leading to impaired ecosystem functions, e.g. food and water sources; disease introduction to humans, native wildlife and agricultural species
- **Climate Change and Ocean Acidification:** Shifts in species and pathogen range; extreme weather disasters; treats to agriculture, food and nutrition security





Challenges:

1. Conceptual & empathy failures
2. Knowledge failures
3. Implementation failures

Read the full series at http://www.thelancet.com/commissions/planetary-health

NEW Mandates: First COP decision on biodiversity & health (XII/21)

- *Encourages* Parties to **consider the linkages between biodiversity and human health** in the preparation of NBSAPs, development plans, and national health strategies…

- *Encourages* Parties and other Governments to **promote cooperation between sectors and agencies** responsible for biodiversity and those responsible for human health;

- ***Recognizes* the value of the "One Health" approach to address the cross-cutting issue of biodiversity and human health, as an *integrated approach consistent with the ecosystem approach*** (decision V/6) that integrates the complex relationships…

- *Recognizes* of the relevance of the **cross-cutting initiative on biodiversity for food and nutrition** (Decision IIX/23)…

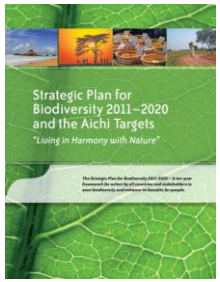
Consider implications of the findings… (Dec. XII/21)

COP13-COPMOP8-COPMOP2
CANCUN, MEXICO 2016

MAINSTREAMING BIODIVERSITY FOR WELL-BEING
CONVENTION ON BIOLOGICAL DIVERSITY

Opportunities in the SDG era

- CBD-WHO joint work programme
  - Interagency Liaison Group on Biodiversity & Human Health
    - Assist Parties in mainstreaming efforts
    - Build capacity & raise awareness of value of holistic approaches: One Health, Ecohealth, Planetary Health…



COP13 · COPMOP8 · COPMOP2
CANCUN, MEXICO 2016
MAINSTREAMING BIODIVERSITY FOR WELL-BEING
CONVENTION ON BIOLOGICAL DIVERSITY

MARRAKECH
COP22 | 2016 | CMP12
UN CLIMATE CHANGE CONFERENCE

Sendai Framework for Disaster Risk Reduction 2015-2030

Opportunities for leadership

Major driver for transformational change

1. Strengthen the **evidence base**
2. Evaluate & target the **common drivers**
3. Address ongoing **social challenges**
4. Devise policies/strategies as a **delivery mechanism** for planetary health
5. **Co-production** of knowledge
6. Maximize **co-benefits** (conservation, sustainable use & health)
7. Carefully manage **trade-offs**
8. Strengthen local, national, regional **capacity & engagement**
9. **Reduce inefficiencies** of siloed approach
10. Strengthen **political will**
11. Sustain **behaviour change**
12. Meet the objectives of **SDGs** and 2030 agenda for SD
    - …Many more!

Thank you! Merci!

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Biodiversity and Human Health

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