# THE IPBES GLOBAL ASSESSMENT



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**#IPBES7** 



# The Author Team

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~156,000 Hours of Voluntary Hours = ~17 years 145 experts: 3 co-chairs 24 coordinating lead authors 87 lead authors 310 contributing authors 15 review editors 16 fellows From 51 countries

2 expert and Government reviews

> Supported by: The Global TSU 6 Chapter scientists 1 resource person

Other supporting TSUs: Indigenous and local Knowledge, Scenarios, Values, Knowledge & Data, Capacity Building



Management Committee

# Nature underpins and sustains human quality of life



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More food, energy and materials than ever before are now being supplied to people across distant regions, but

Nature and its vital regulating and non-material contributions to people are deteriorating worldwide



0 45 00

# Global trends in nature's contributions to people since 1970

	Nature's con	tribution to people	50-year global trend	Directional trend across regions	Selected indicator
s	AG	1 Habitat creation and	$\mathbf{O}$	0	<ul> <li>Extent of suitable habitat</li> </ul>
SЕ		maintenance	•	0	<ul> <li>Biodiversity intactness</li> </ul>
ROCES	-	2 Pollination and dispersal of seeds and other propagules	8		<ul> <li>Pollinator diversity</li> <li>Extent of natural habitat in agricultural areas</li> </ul>
	$\approx$	3 Regulation of air quality		+t	<ul> <li>Retention and prevented emissions of air pollutants by ecosystems</li> </ul>
NTA		4 Regulation of climate		<b>↓</b> ↑	<ul> <li>Prevented emissions and uptake of greenhouse gases by ecosystems</li> </ul>
NME		5 Regulation of ocean acidification		+t	<ul> <li>Capacity to sequester carbon by marine and terrestrial environments</li> </ul>
/IR 0	•••	6 Regulation of freshwater quantity, location and timi	ng	<b>↓</b> †	<ul> <li>Ecosystem impact on air-surface-ground water partitioning</li> </ul>
EN		7 Regulation of freshwater and coastal water quality		0	<ul> <li>Extent of ecosystems that filter or add constituent components to water</li> </ul>
ON OF		8 Formation, protection and decontamination of soils and sediments	۲	-tt	• Soil organic carbon
A TI(	*	9 Regulation of hazards and extreme events		+t	<ul> <li>Ability of ecosystems to absorb and buffer hazards</li> </ul>
REGUL	$\bigotimes$	10 Regulation of detrimental organisms and biological processes	0	00	<ul> <li>Extent of natural habitat in agricultural areas</li> <li>Diversity of competent hosts of vector-borne diseases</li> </ul>
ANCE	S	11 Energy			<ul> <li>Extent of agricultural land – potential land for bioenergy production</li> <li>Extent of forested land</li> </ul>
ASSIST	511	12 Food and feed	0 0		<ul> <li>Extent of agricultural land – potential land for food and feed</li> <li>Abundance of marine fish stocks</li> </ul>
LS AND	000	13 Materials and assistance			<ul> <li>Extent of agricultural land — potential land for material production</li> <li>Extent of forested land</li> </ul>
IATERIA	Ō.	14 Medicinal, biochemical and genetic resources			<ul> <li>Fraction of species locally known and used medicinally</li> <li>Phylogenetic diversity</li> </ul>
2				ŏ	Number of people in close proximity to
ERIA		15 Learning and inspiration		8	nature • Diversity of life from which to learn
·MAT		16 Physical and psychologic experiences			<ul> <li>Area of natural and traditional landscapes and seascapes</li> </ul>
NON	-	17 Supporting identities		0	Stability of land use and land cover
		10 Maintenance of antione			<ul> <li>Species' survival probability</li> </ul>
		18 Maintenance of options	$\bullet$		<ul> <li>Phylogenetic diversity</li> </ul>
	DIB	De Gloal trend		rease	LEVELS OF CERTAINTY
	DI	TREND		iablo	Established but incomplete
		Across regio	Uns Consistent Val		Lipresolved

The biosphere and atmosphere, upon which humanity as a whole depends, have been deeply reconfigured by people.

L Vat Michael

75% of the land area is very significantly altered
By 2050 90% of land is projected to be significantly altered

Land degradation negatively impacts the well-being of 3.2 billion people

66% of the ocean area is experiencing increasing cumulative impacts;

Solution of wetland area has been lost
By 2010, 4.% of global biodiversity had been lost with a projected increase to 38-46% by 2050

# Human activity has changed the surface of the planet in profound and far-reaching ways.



The Intergovernmental Platform on Biodiversity and Ecosystem Services

www.ipbes.net

# More species of plants and animals are threatened with extinction now than at any other time in human history



One million species (500,000 plants and animals and 500,000 insects) are at risk of extinction assuming a total of 8.1 million species (2.6 million plants and animal and 5 million insects), however, we are not in a 6<sup>th</sup> mass extinction

## **C** EXTINCTION RATE



# The number of local varieties and breeds of domesticated plants and animals has decreased sharply

Proportion of the world's mammal and bird breeds by risk status category





Photocredit Daniel M. Cáceres



# Drivers of change have accelerated during the past 50 years to levels unprecedented in human history



Underpinning the proximate causes of deterioration in nature are the root causes, or indirect drivers of change.



# **Contributions of Indigenous Peoples and Local Communities: knowledge, innovations, practices, and institutions**



### **Aichi Biodiversity Targets**

### **Sustainable Development Goals**



# **Progress towards the Aichi Biodiversity Targets**

	Townst (shis we sisted)		Progress towards elements of each target							
Goal	lar	get (abbreviated)	Poor	Moderate	Good	Unknown				
		Awareness		$\sim \sim$						
Driv	$Q_2^{C}$	Planning & accounting	8	$\sim \sim$						
/ers		Incentives	$\otimes$							
		Production & consumption	$\otimes$							
		Habitat loss	$\otimes$							
τ		Fisheries	$\otimes$			?				
res	27	Agriculture & forestry	$\otimes$	$\sim$						
sure	2	Pollution	$\otimes$							
Ň	88	Invasive alien species	$\otimes$		$\checkmark$	?				
	70	Coral reefs etc	$\otimes$							
S	11	Protected & conserved areas		$\sim \sim \sim \sim$						
tatu	12	Extinctions prevented	$\otimes \otimes$							
<u>v</u>		Genetic diversity		$\sim \sim \sim \sim$		?				
Be	4	Ecosystem services	8			?				
nefi	<b>1</b> 5	Ecosystem restoration				<b>??</b>				
its	16	Access & benefit sharing		$\sim$	$\checkmark$					
Imp	247	Strategies & action plans		$\sim \sim$						
lem	18	Indigenous & local knowledge		$\sim$		??				
enta	19	Biodiversity science		$\sim$		?				
tion	20	Financial resources		$\sim$						

While progress looks good for target 11 (protected areas) it hides the fact that important biodiversity is not within the current protected area system, many of the protected areas are not well managed, and the design of the protected areas does not take the implications of climate change into account

# **Relationship between NCPs and SDGs**

Regulation of ocean acidification		•	-					-	•			•	•		•	-	
Regulation of freshwater and coastal water quality	•		-		-				-		-		•		-		
Regulation of freshwater quantity, flow and timing	•	•	•	•	-			•	•	•		•	•	•	•		•
Regulation of air quality			-	-	-									•	-		
Regulation of hazards and extreme events	•	•		•	•			•	•		•	-	•			•	•
Regulation of climate	•	•		-	•			•	•	•	•	•	•	•		•	•
Energy	$\bullet$	•	$\bullet$	•	•	•	•	•	•	•	•		•	•	•	•	
Physical and psychological experiences					lacksquare		•		-	-	-		-	-			
Supporting identities		•	-	•	•			•					•	•			
Maintenance of options	•	•	•	•	•	•	•					•	•	•	•	•	•
Learning and inspiration	•	•	•	•	-			•	•			•	$\bullet$	•			•
Regulation of organisms detrimental to humans	•				•	•			•						•	-	
Medicinal,biochemical and genetic resources	•	•	-	•			•		•			-	•	•			
Formation, protection and decon- tamination of soils and sediments	-		-			-		-			-		•			-	-
Pollination and dispersal of seeds and other propagules	•		-	•													
Habitat creation and maintenance	•	-	-			•		-	-	-		-	•	•	•		-
Materials and assistance		-	•	-	-	•	•	•	•	•	•	•	$\bullet$	•		-	
Food and feed				-	$\bullet$	•	-	•	$\bullet$	-	•			•	•		•
es est	3 S	So <sup>2</sup> ese	22 EDE	2 <sup>150</sup> 650	3 <sup>2</sup> 5	5ª 55	6° 65	6° 65	3 <sup>NO</sup> 655	3 <sup>NO</sup> 65	3 <sup>51</sup> 65	5° 5	5° 55	3 <sup>~</sup> 55	2 25	56° 65	343

#### LEVEL OF CONSENSUS

• 3-25%								
<b>•</b> 26-40%								

- 41-70%
  - 71-100%

#### PRIORITY NCP/SDG BUNDLES

- Food and Material Security • Health Energy and Climate • Water Quality and Quantity
- Relational Values Affecting Quality of Life

#### SUSTAINABLE DEVELOPMENT GOALS (SDG)

SDG 1:	No poverty	SDG 10:	Reduced inequalities
SDG 2:	Zero hunger	SDG 11:	Sustainable cities and
SDG 3:	Good health and well-being		communities
SDG 4:	Quality education	SDG 12:	Responsible consumption and production
SDG 5:	Gender equality	SDG 13:	Climate action
SDG 6:	Clean water and sanitation	SDG 14:	Life below water
SDG 7:	Affordable and clean energy	SDG 15	Life on land
SDG 8:	Decent work and economic growth	SDG 16:	Peace, justice and strong institutions
SDG 9:	Industry, innovation and infrastructure	SDG 17:	Partnerships for the goals

\*The Delphi method is a structured and iterative evaluation process that uses expert panels to establish consensus regarding the assessment of a specific topic. For more information on the method, see section 2.7. Source: Data collected by C.B. Anderson, C.S. Seixas & O. Barbosa from >1/3 of the experts actively contributing to the Americas Assessment in all the chapters. Analysis by J. Diaz in R software package.

# Progress towards the UN Sustainable Development Goals

		Recent status and nature's support	Uncertain			
Selec Deve	ted Sustainable Iopment Goals	Poor/Declining Partial support Unkno		Unknown	relationship	
1 poverty <b>Å∗†††</b> *¶	No poverty	00			ΟΟ	
2 ZERO HUNGER	Zero hunger	0	$\bigcirc \bigcirc \bigcirc \bigcirc$			
3 GOOD HEALTH AND WELL-BEIN	Good health and well-being				ΟΟ	
6 CLEAN WATER AND SANITATIO	Clean water and sanitation	000	•			
11 SUSTAINABLEC	Sustainable cities and communities	0000	<₽			
13 action	Climate action	0	•			
14 LIFE BELOW WATER	Life below water	0000	$\bigcirc \bigcirc \bigcirc \bigcirc$			
15 UFE AND	Life on land	000 000				

\* There were no targets that were scored as good/positive status and trends

# Successfully addressing the Sustainable Development Goals requires simultaneously halting and reversing land degradation.



#### Goal 15 also goals on water, consumption, climate, hunger, poverty and cities

# Shared Socio-economic Pathways (SSPs)

SSP5: Economic optimism Rapid technology develop High demand High economic growth Low population	A		<b>SSP3: Regional</b> <b>competition</b> Slow technology develop. Barriers to trade Very slow economic growth
SSP1:Global Sustainability	SS Middle of	P2: the Road	SSP4: Inequality
Rapid technology develop High environmental awareness Low energy demand <i>Medium-high economic</i> growth Low population			Slow technology develop. High inequality Low energy demand Slow economic growth High population

**Challenge to adaptation** 



% Change between 2015 and 2050

BES-SIM results Global scale

# **Biodiversity**

# SSP5xRCP8.5 = Economic optimism SSP3xRCP6.0 = Regional competition SSP1xRCP2.6 = Global sustainability



Chapter 4



BES-SIM Results Global Scale

## Ecosystem Services (≈ Nature's Contributions to People = NCP)





Chapter 4

Plausible scenarios, which include transformative change, are compatible with the 2030 sustainability objectives and the 2050 Vision for Biodiversity.

Changes in production and consumption of energy and food

Low to moderate population growth Nature-friendly and socially fair climate adaptation and mitigation

Photocredit Daniel M. Cáceres

# **Options for the futures we want**

Need for rapid implementation of existing instruments and bold decisions for transformative change.

Knowledge and tools available, they simply need better deployment and implementation

Many societal responses and successful examples of rapid transformative change are already happening in many sectors, but just not at the scale needed to match that of the crisis.

Dolpo woman sheperd in high pasture and agriculture areas in Nepal . Photocredit Yildiz Aumeeruddy-Thomas

Integrative, adaptive, informed and inclusive governance approaches including smart policy mixes, applied especially at leverage points

MULTI ACTOR GOVERNANCE INTERVENTIONS (LEVERS)

- · Incentives and capacity building;
- Cross-sectoral cooperation
- Pre-emptive action
- Decision-making in the context of resilience and uncertainty
- · Environmental law and implementation

#### DIRECT INDIRECT Human activities DRIVERS DRIVERS Examples: S Demographic **Fisheries** Land/sea-use and 0 change sociocultural Agriculture ൽ Energy Economic and Direct Φ technological ā Forestry exploitation σ Mining Institutions and Climate change ៧ governance Tourism Pollution Φ Infrastructure Conflicts and 3 Invasive species epidemics Conservation đ Others etc.



#### LEVERAGE POINTS

- Embrace diverse visions of a good life
- Reduce total consumption and waste
- . Unleash values and action
- Reduce inequalities
- Practice justice and inclusion in conservation
- Internalize externalities and telecouplings
- Ensure technology, innovation and investment
- Promote education and knowledge generation and sharing

Iterative Iearning Ioop Challenges related to climate change, nature deterioration and achieving a good quality of life for all are interconnected.

Therefore they need to be addressed synergistically, from local to global levels, but also recognizing that there may be trade-offs

- Nature-based solutions, e.g., reforestation with native vegetation and restoration can have multiple benefits
- Large scale afforestation and bioenergy will lead to the loss of biodiversity and undermine food and water security if native vegetation is replaced by monoculture crops

# Land degradation is a major contributor to climate change. Climate change can exacerbate the effects of land degradation.

- Between 2000-2009, land degradation was responsible for annual global emissions of up to 4.4 billion tonnes of CO<sub>2</sub>
- Deforestation alone = 10% of all human-induced greenhouse gas emissions.
- Halting and reversing land degradation can provide more than 1/3 of the most cost-effective greenhouse gas mitigation activities to keep global warming under 2°C
- The combination of land degradation and climate change projected to reduce global crop yields by 10% (up to 50% in some regions) by 2050, forcing up to 700 million people to migrate

Meeting global societal goals through urgent and concerted efforts addressing the direct drivers and especially the root causes (indirect drivers) of nature deterioration:

- Governance inclusive (inc IPLCs)
- Economic systems an evolution and complementary to GDP
- Equity
- Cross-sectoral planning
- Incentives
- Social narrative and values

# **Cross-Sectoral, Integrated Management at Multiple Levels**

- → Food production and conservation goals: <u>complementary</u> and <u>interdependent (e.g., use agro-ecological practices, reduce food waste)</u>
- →Sustainable fisheries: integrated management on land, in freshwater and oceans
- → Land-based <u>climate change mitigation</u>: attention to trade-offs (especially with large-scale afforestation and bioenergy)

→<u>Nature-based solutions in cities</u>: crucial for global sustainability

A key constituent of sustainable pathways is the evolution of global financial and economic systems to build a global sustainable economy

# One that steers away from the current limited paradigm of economic growth

- Incorporate natural capital into national accounting systems
- Recognize both market, non-market and social values in decisionmaking
- Eliminate harmful agricultural, energy and transportation subsidies
- Incentives for sustainable production and consumption
- Internalize extranalities

# In Conclusion

- Trends worrying (loss of species, degradation of ecosystems, loss of ecosystem services) and business-as-usual clearly unsustainable
- A call for action transformational change:
  - Tackle the direct and indirect drivers of biodiversity loss
  - Address climate change and loss of biodiversity together
  - Replicate and scale successful policies and projects
  - Coordinate and integrate cross sectoral actions
  - Evolve economic and financial systems
    - Eliminate harmful agriculture, energy and transportation subsidies
    - Incorporate natural capital into decision-making
    - Provide incentives to stimulate sustainable production and consumption
    - Embrace circular economy

Ensure inclusive governance structures (inc Governments, private sector, civil society and IPLCs)

# **Diversified valuations**



FOCI OF VALUE	TYPES OF VALUE	EXAMPLES
		Animal welfare/rights
NATURE	Non-anthropocentric	Gaia, Mother Earth
NATURE	(Intrinsic)	Evolutionary and ecological processes
		Genetic diversity, species diversity
		Habitat creation and maintenance, pollination and propagule dispersal, regulation of climate
	Instrumental	
NATURE'S		Food and feed, energy, materials
CONTRIBUTIONS		
TO PEOPLE		
(NCP)	jç.	Physical and experiential interactions
	ent	inspiration
	8 Relational	
	three	Physical, mental,emotional health
GOOD	An	Way of life
OF		Cultural identity, sense of place
LIFE		Social cohesion
		Current Opinion in Environmental Sustainability



### **Evolution of nature's contributions to people**



### Mapping of the 18 NCP reporting categories used in IPBES assessments onto three broad groups distinguished within the generalizing perspective

## Africa's natural assets are unique



The Intergovernmental Platform on Biodiversity and Ecosystem Services

www.ipbes.net

### Nature's Contributions to People (NCP) in the Americas



#### Valuation of goods and ecosystem services



