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world of biodiversity

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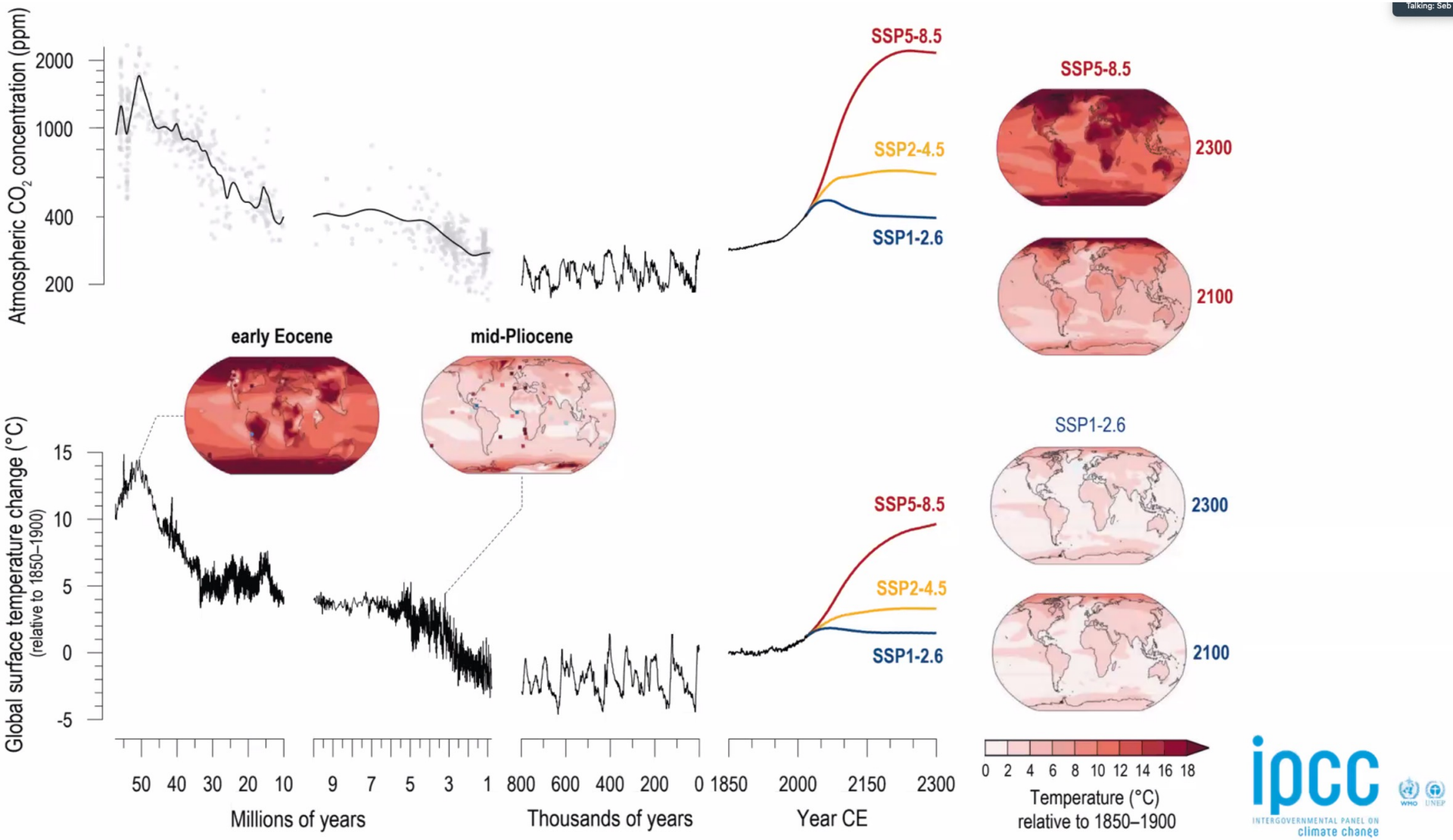
Why our economy has to change and the climate challenge and biodiversity loss need to be addressed together

Thomas Hickler

We must avoid strong climate change



IPCC, AR6, WG I (physical science basis), summary for policy makers is a must read!

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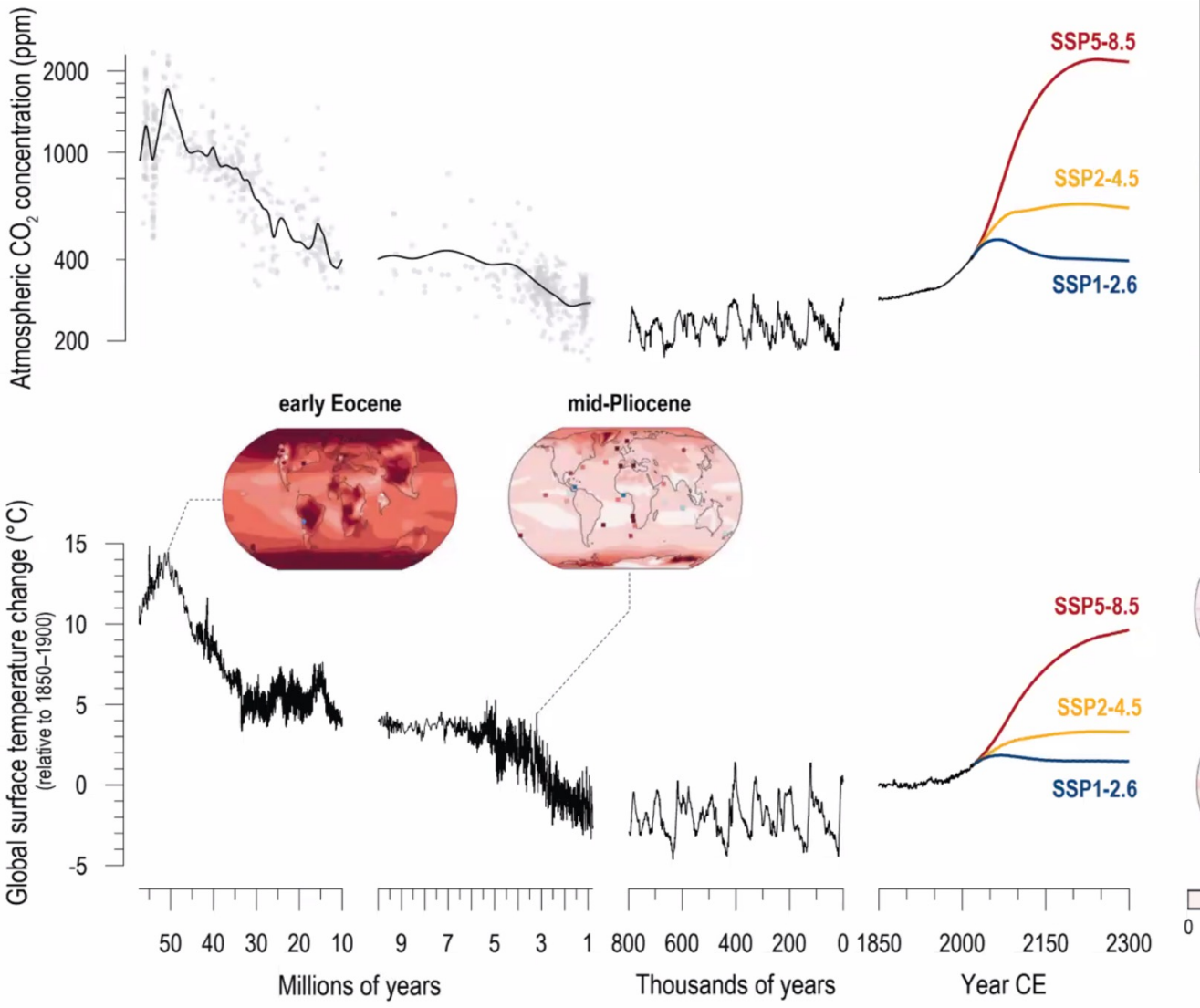

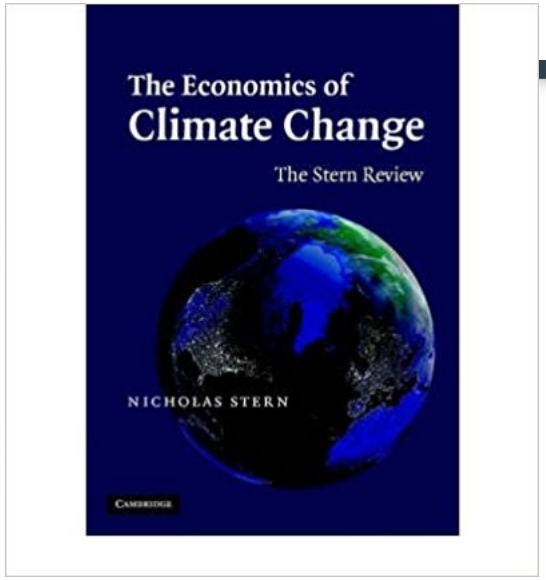

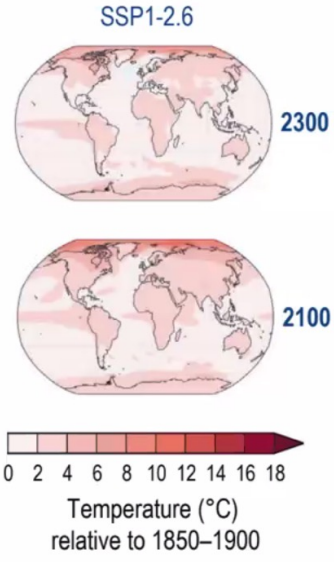

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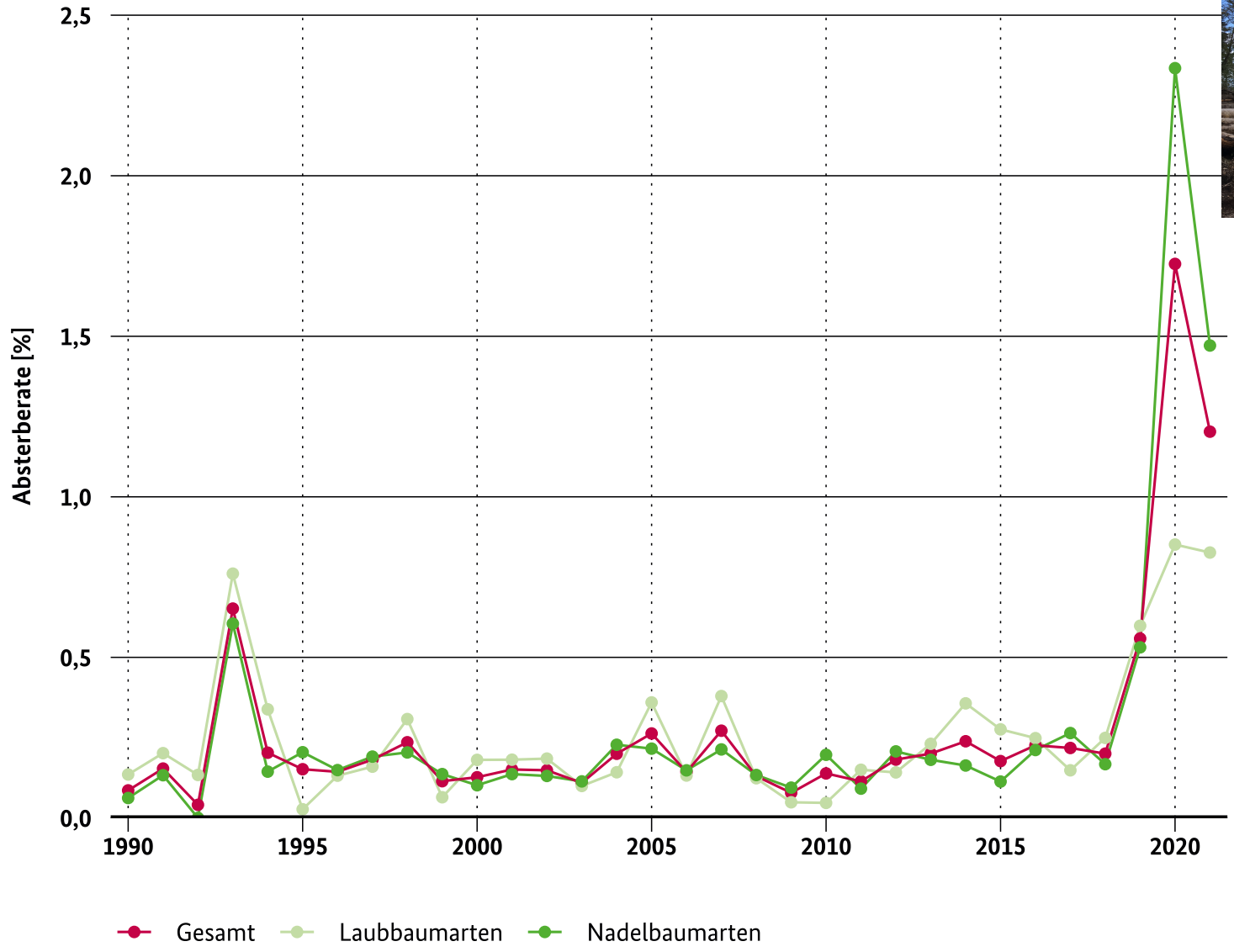
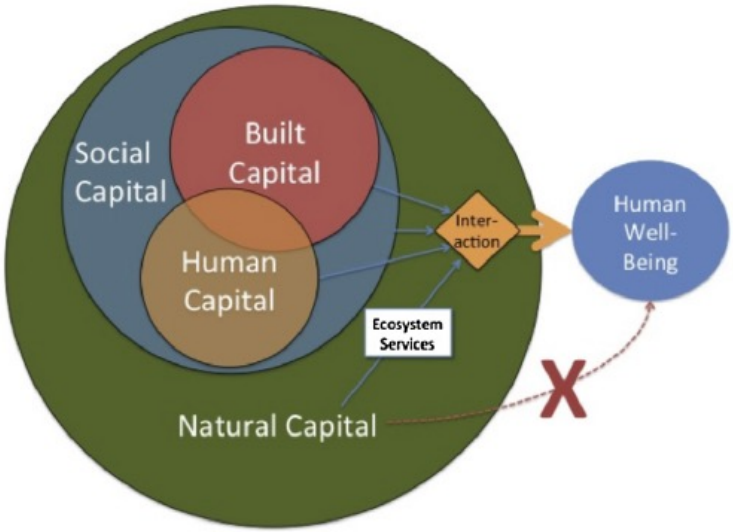
We need biodiversity to cope with climate change



But we destroy biodiversity and ecosystem services



Monetary value of ecosystem services about $125-145 trillion/yr (global GDP in 2007: $75.2 trillion/yr)

Annual loss due to land use change:

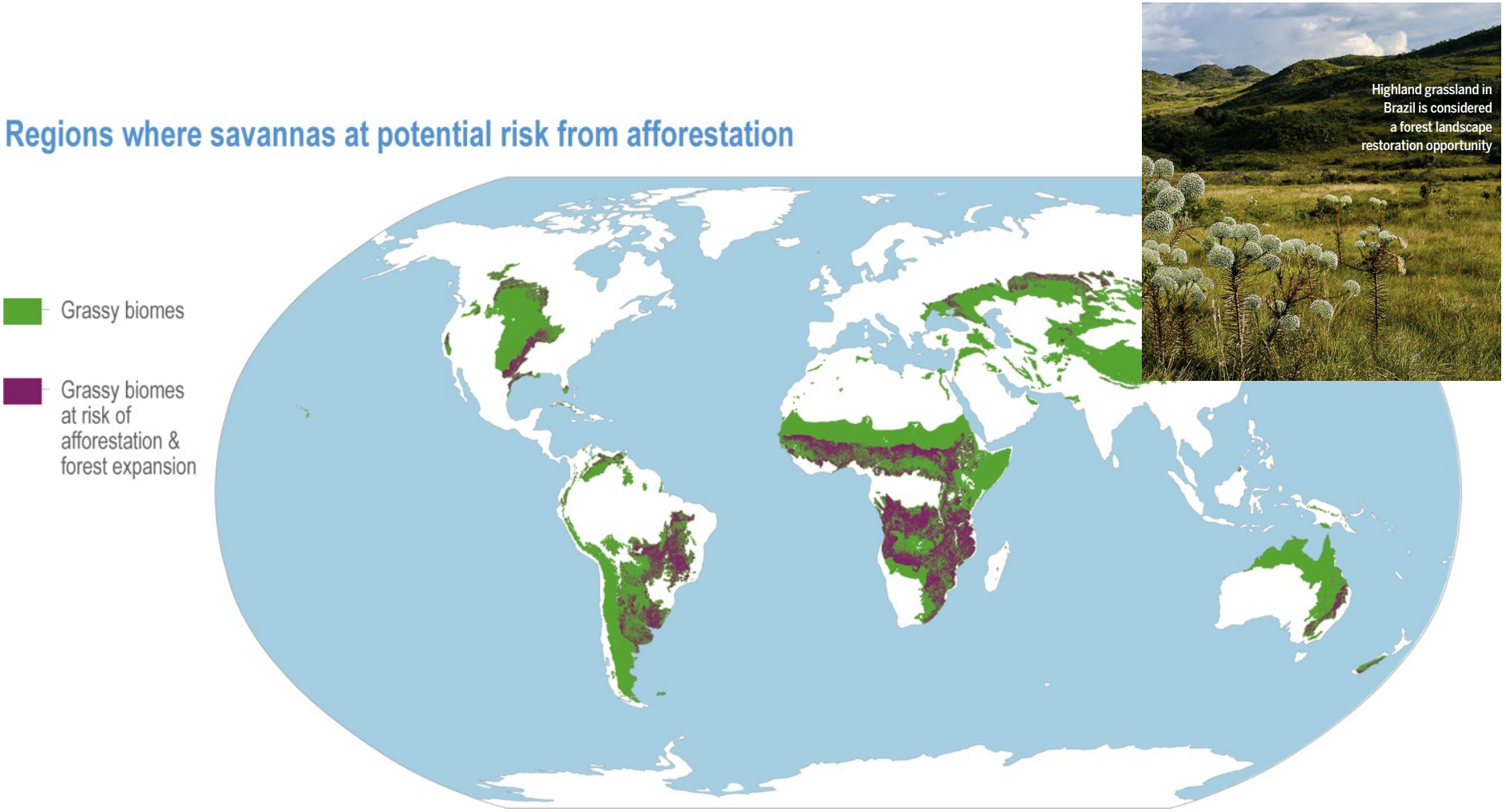
$4-20 trillion

Table 4
Summary of the number of estimates, mean, standard deviation, median, minimum and maximum values used in de Groot et al. (2012). derived from the ESV database.

	No. of estimates	Total of service means (TEV)	Total of St. Dev. of means	Total of median values	Total of min values
Open oceans	14	491	762	135	85
Coral reefs	94	352,915	668,639	197,900	36,794
Coastal systems	28	28,917	5045	26,760	26,167
Coastal wetlands	139	193,845	384,192	12,163	300
Inland wetlands	168	25,682	36,585	16,534	3018
Rivers and lakes	15	4267	2771	3938	1446
Tropical forest	96	5264	6526	2355	1581
Temperate forest	58	3013	5437	1127	278
Woodlands	21	1588	317	1522	1373
Grasslands	32	2871	3860	2698	124

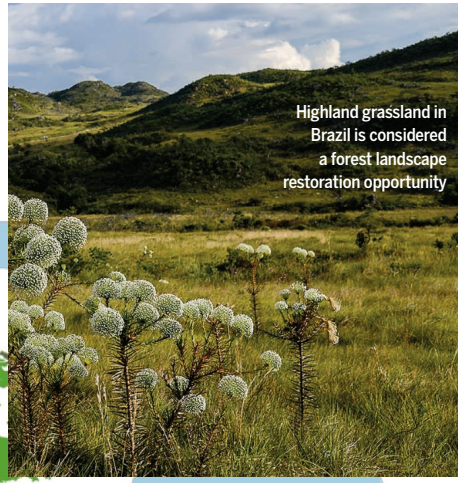
Costanza et al. (2014) Global Environmental Change

Action on climate change can make things worse

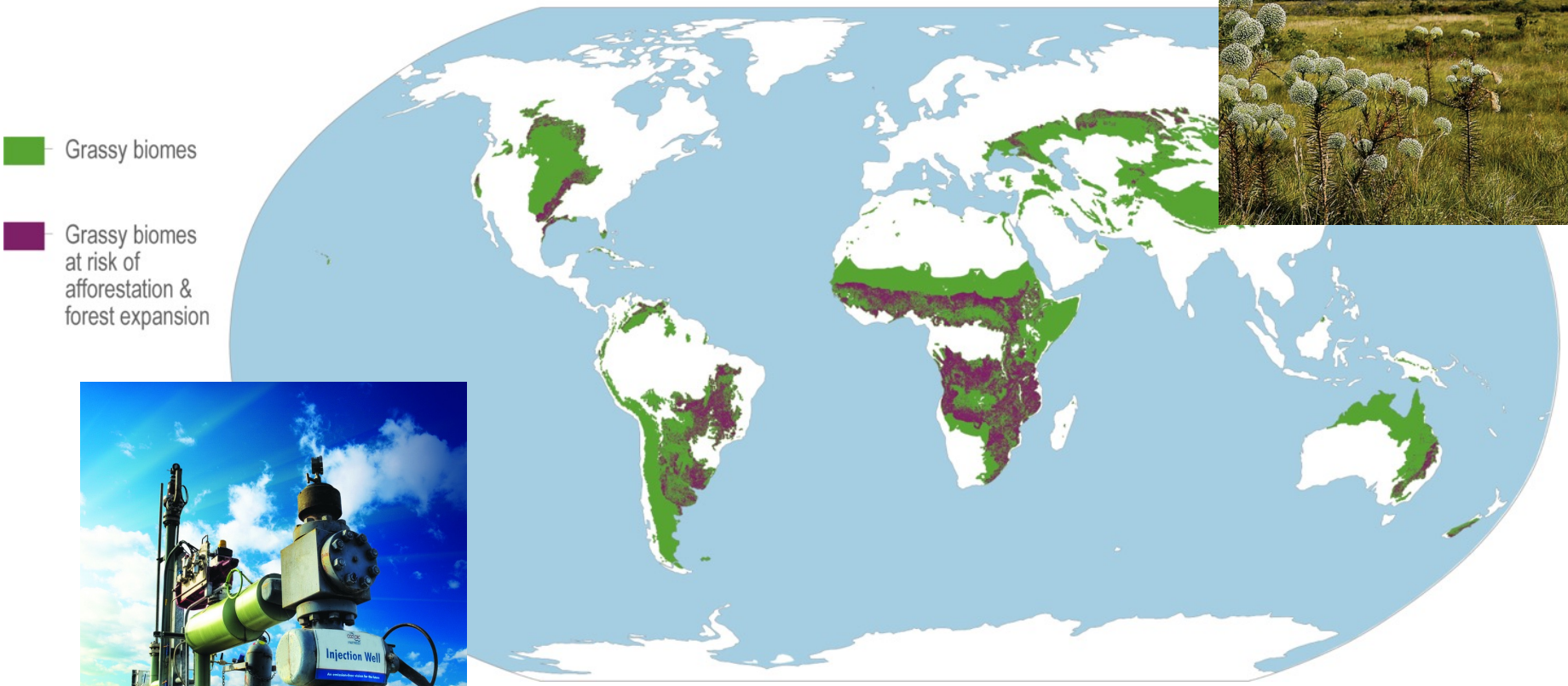


IPCC, AR6, WG II (impacts, adaptataion, vulnerability)

Action on climate change can make things worse



Regions where savannas at potential risk from afforestation



IPCC, AR6, WG II (impacts, adaptataion, vulnerability)

Biodiversity is complex (gene to ecosystem) and poorly known

- Most species unkown (1.7 million species of an estimated 5-25 million species described)

2. One of the largest shark species, "megamouth," was discovered in 1976.

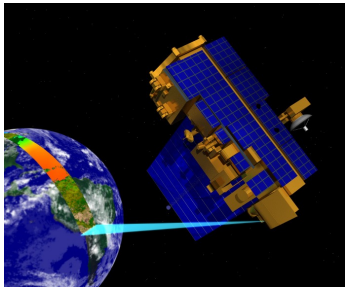
5. Perhaps 90 percent of tropical forest insects remain unknown.

6. It has been estimated that perhaps 1.5 million fungi remain to be discovered.

7. About 4000 bacterial species have been described; a gram of soil may contain 4000 to 5000 species.

8. Even among mammals, one of the best-studied groups of relatively large organisms, new species continue to be discovered, including some 349 species described between 1992 and 2008.

We have many good indicators of biodiversity change



Here fraction of IPBES indicator list, suppl. to global assessment

	Status (%)	Decadal trend (%)	Years	Years with estimates	Estimates since 1970	Is indicator Core, Highlight or Other?
Natural habitat extent	62.3	-1.00	1961-2011	51	42	Other
Percentage live coral cover	53.2	-4.01	1972-2016	41	41	Other
Permanent surface water extent	–	0.62	1984-2015	2	2	Other
Remaining primary vegetation	38.6	-4.12	850-2015	1166	46	Other
Remaining primary vegetation (Hotspots)	35.2	-5.12	1970-2015	2	2	Other
Remaining primary vegetation (Indigenous Lands)	49.9	-2.79	1970-2015	2	2	Other
Seagrass meadow area	53.0	-10.89	1879-2000	9	4	Other
Soil organic carbon (correlative model)	92.0	–	2010	1	1	Other
Soil organic carbon (mechanistic models)	103.5	0.47	1860-2015	156	46	Other
Tree cover	54.2	2.09	1982-2016	2	2	Other
Vegetation biomass (mechanistic models)	49.1	1.20	1860-2015	156	46	Other
Wetland Extent Trends Index	–	-7.74	1970-2015	46	46	Highligh
Ecosystem function						
Biological pump efficiency	–	-0.42	1982-2014	33	33	Other