

UN SDGs: 17 Goals to Transform Our World
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SDG 15 Life on Land Part 2

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SDG 15, Life on Land that is what we are studying. So some global challenges, if we see this prevent extinction of flora and fauna on the planet caused by direct effects destroying habitats and for profit and indirect effects climate change. Increased biodiversity by reintroducing ancestral regional species of flora and fauna as well as minimizing monocultures in agriculture and forestry, reduce impact and insertion of alien species.

Well, what is alien species, in this context you may be wondering, it is not that some alien arriving in some flying saucer, that is not what you are discussing over here, the real alien species means any a place for example if you are talking about any local place, your native place, so there are native species of plants, animals, birds, reptiles, and insects, etc etc.

Like along with the native humans also, Indian subcontinent if you see we are all native to this place and for thousands and lakhs of years our ancestors our forefathers and they have lived over here. And similarly the all of those other life forms also of flora and fauna. So you may call them as native to this place, that they are naturally have made in this place as their habitat and this is place there, where they have been living for several generations, for all of these hundreds and thousands of years. So that becomes our native of this thing.

Any species which is non-native that it is coming from some other place or for example in Indian subcontinent if some species comes from for example South American continent, so

that will become as a non-native or alien species. Because conditions here geographic, climatic, weather, and all of those things are very unique and different compared to what is what we have in Indian subcontinent.

So it may fit in, or it may not fitting, or it may pose challenges, or it may get threatened by local species, anything can happen, it depends. But whatever may happen is not actually going to be favorable for either this place or this place, or for that species, or for the other local species. So that is why, this practice is a kind of attracts attention to prohibit any such illegal, transfers often animal species, or plant species, birds, etc etc to stop this alien species is an invasion.

Sometimes there are invasive species also you may be aware some weeds actually came in the wheat which was imported from United States of America long back several decades earlier, when I know India used to import its food. And it got scattered in the whole of the India and now we are facing this very strong invasive species which kills local plants, and which is not good for human health also, it creates a lot of skin irritation, eye disease, and several such things.

So that is this is what we are discussing over here as an alien species. Further ensure the protection of all endangered species financially. Create a global understanding how much humankind's survival depends on sustainable use and protection of plants ecosystems. So everybody must be aware of the criticality of our dependence on all of these living forms. Create alternative income for people who depend on the exploitation of land ecosystems.

Well traditionally there are culture, societies in a tribe tribal who are dependent on forests and they have been using it for a long time. So in a way it is their right even to use it now, but in the renewed context definitely we can motivate them or create some alternate methods and ways to earn their livelihood in order to save these local species, so that is what we are talking here.

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15 What does SDG 15 mean for the Global North?

In most of the countries in the Global North only few places are still untouched wilderness, as most ecosystems are used for food production and the extraction of resources. Paradoxically, the highest biodiversity is found in urban gardens and most encounters with big predators happen in zoos. Especially urban residents experience a growing disconnection from wilderness, leading to bizarre effects. Even though urban citizens are concerned about messages on the extinction of important insect species, on wildfires and storms that destroy forests and on vast degradation of fertile soil, they usually struggle to realize the connection to their lifestyle and a growing rate of environmental

degradation. Moreover, people are scared hearing about the wolves' comeback in rural areas or about growing numbers of raccoons, foxes and boars living in their urban neighbourhood. These new urban animals trigger odd situations and challenge the perception of nature in the Global North. Despite the age of growing urbanisation and biodiversity crisis, nature is still conceptualized as a romantic place that people long for.⁴ This conception can be helpful as in Germany people feel strongly about nature conservation and expect their government to act. 69% of German citizens strongly agree that nature is important for a good life. They also feel closely tied with the nature of their region. While 51% do not feel threatened by the destruction of nature in Germany, 65% fear that there will not be any intact nature left for their children or grandchildren.⁵

Against this background, the German government acknowledges in its "German National Strategy for Sustainable Development" that intact ecosystems are crucial for a sustainable development and human existence on earth. Politicians have introduced agendas to protect biodiversity and to enlarge nature conservation areas and created measures for the sustainable cultivation of German forests and rank soil. However, the limits of the governmental consistency become evident in the practical implementation, as for example once the aim to reduce soil sealing appeared to fail, it was shortly prolonged for 10 years from 2020 to 2030.⁶



Mass extinction of insects especially of bees is a real problem.

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So what does it mean for the global North, if you see, well it is a very humble honeybee here in this picture is you may have, may have read some research papers, some articles, and this news that this honeybee is so critical for the survival of our own agriculture, and the plantation, and flowering, and crops, and all of these systems. Basically our food system that if this species actually goes extinct our agriculture will come to a halt.

That much is the criticality of one species of these bees, these insect, they are so important for our survival. So many places actually there is extinction or it is recorded that their numbers is falling down drastically. Directly it poses existential threat to the Human Society. So let me read this for you.

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However, the limits of the government, governmental consistency become evident in the practical implementation, as for example once the aim to reduce soil ceiling appeared in to fail, it was shortly prolonged for 10 years from 2020 to 2030. So you see this underlines the importance and some after effects, since there is no loss of forest cover. Some of the wild animals are moving towards urban areas and stuff.

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The slide features a black vertical bar on the left side. The main content is titled "15 What does SDG 15 mean for the Global South?" with a globe icon. The text discusses biodiversity in the Global South, mentioning species like gorillas and elephants, and the impact of land use expansion. A photograph shows a Masai person in a savanna landscape. Below the photo is the caption "Masai are used to live with wildlife." and a list of footnotes. The slide is attributed to Dr. Shiva Ji at IIT Hyderabad, India.

15 What does SDG 15 mean for the Global South?

Many countries of the Global South are known for their rich biodiversity in plants and wildlife. Some countries are home for big mammals like gorillas, elephants, rhinos or several species of big cats. In some cases, they are national symbols. Lush and biodiverse tropical rainforests cover the area of many equatorial countries in the Global South. Economically seen, this high level of biodiversity is a precious resource. From an ecological perspective, it is crucial for the planet and its ecosystems to survive.¹ However, the intensified extraction of natural resources to satisfy the constantly increasing global demand often leads to the destruction, pollution and contamination of precious natural habitat, not to mention the labour conditions and dependency relations that are thereby often upheld. The export of these natural resources, however, is also crucial to enhance economic development, fight poverty and hunger and tackle economical, educational and health issues. This sustainability dilemma of natural resource extraction is complemented by the agricultural sector. Farming methods are intensified and land use expanded in order to enhance economic development, leading to massive stress for many ecosystems.² Many more



Masai are used to live with wildlife.

¹ LOU, R. (2018). Last child in the woods. Saving our children from nature deficit disorder. Atlantic Books, London.

² IAN (2016). 2015 Nature awareness study: Population survey on nature and biological diversity, pp. 41-43. IANIG, Ph.D.thesis, Berlin.

³ GERMAN GOVERNMENT (2016). Deutsche Nachhaltigkeitsstrategie. Neuaufgabe 2016. Retrieved at: <https://bilj3r2qj.6c3j>

⁴ UNEP (2016). Enhancing Synergies across Global Biodiversity Conventions - Experiences from the Global South. Workshop Proceedings and Country Reports. United Nations Environment Programme, Nairobi, Kenya.

⁵ iact (2014). Extractives and Sustainable Development. West Africa Trends Newsletter, Issue 11.

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So there is so much kind of imbalance kind of thing which is happening. Another example, for the global South, what does it SDG 15 means for a global South. So let us see this. This is the picture from Masai Mara, this Masai is a tribe. They have been the traditional hunter

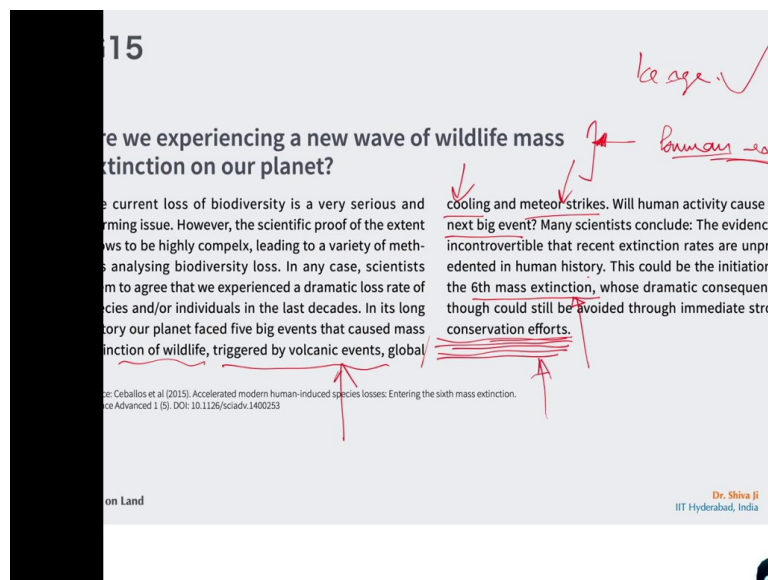
gatherers from on this land for several hundreds and thousands of years. Their forefathers have inhabited and they have lived in sick with this wildlife and nature for a long time, all of this time.

Many countries of the global South are known for their rich biodiversity in plants and wildlife. Some countries are home for big mammals gorillas, elephants, rhinos, or several species of big cats, in some cases they are national symbols. Lush and biodiverse tropical rainforest cover the area of many equatorial countries in the global South. Economically seen this high level of biodiversity is a precious resource from the ecological perspective it is crucial for the planet and its ecosystems to survive.

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This sustainability dilemma of natural resource extraction is complemented by the agricultural sector. Farming methods are intensified and land is expanded in order to enhance economic development leading to massive stress for many ecosystems.

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So that is the condition in the global South. So the question is, are we experiencing a new wave of wildlife mass extinction on our planet, because there has been episodes you may be aware there are ice ages, it comes cyclic fashion comes and goes and all of that it drives mass

extinction, then again on its revival several excuse SPC actually revive or new ones actually come back. But there have never been an instance where one species of humans has driven other species to their extinction as such a rate.

So that is definitely unprecedented and first time happening in the planets existence. So here the current loss of biodiversity is a serious and alarming issue. However, the scientific proof of the extent shows to be highly complex, leading to a variety of methods analyzing biodiversity loss. In any case, scientists seem to agree that we experienced a dramatic loss rate of species and or individuals in the last decades. In its long history our planet faced five big events that caused mass extinction of wildlife, triggered by volcanic events, global cooling, and meteor strikes.

So these used to have been the major events for driving extinction. Really, human activity cause the next big event is the kind of a concentration going on because already human society, if not all but some of them society some of the countries and communities, they have done biggest harm. Many scientists conclude the evidence is incontrovertible that recent extinction rates are unprecedented in human history.

This could be the initiation of sixth mass extinction, whose dramatic consequences though could still be avoided through immediate strong conservation efforts. So you can see another round of extinction it looks it has begun, in human, under human influence but there is still time that it can be reversed.

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What can be improved about SDG 15?

All countries have to strengthen their efforts to protect life on land. This means, we have to remodel the human thinking about nature to understand ourselves again as an essential part of it. Humans have gained a formative influence and responsibility for the well-being of all beings on this planet. Nevertheless, most humans live alienated from nature, know little about ecosystems and are not aware of their everyday influence on nature. Therefore, SDG 15 also has to implement measures and goals for environmental education. Indigenous people are a very good source concerning this knowledge and their experience with nature should be valued.⁹

What can I do to help achieving SDG 15?

In my private live, I can... <ul style="list-style-type: none">Volunteer in a garden initiative to improve biodiversity in my surroundings.Donate money to wildlife organisations.Plant trees and use <u>ecolia</u> instead of google as my search engine.Reconnect with nature and promote its values.Buy organic food from local farmers.	To increase my Hand Print, I can... <ul style="list-style-type: none">Start an urban gardening initiative in my area.Promote sustainable agriculture in my community.Address companies and demand from them to support and establish sustainability programs for wildlife.Engage in politics and start lobbying for nature conservation.
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More Information:
① <https://sustainabledevelopment.un.org/sdg15>
① <https://www.iucn.org>

What is a Hand Print?
① <http://www.handprint.in>
① <http://www.handprint.de>

⁹ IRISE (2017). Arbeitshilfe für die erwerbsqualifizierte Bildungarbeit zu den Zusammenhängen zwischen SDG 15 und Indigenem Wissen, retrievable at: <https://doi.org/10.23910/1704>

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So what can be done about it, what can be improved on this, I can as a private person volunteer in a garden initiative to improve biodiversity in my surroundings, donate money to wildlife organizations for betterment plant trees and use Ecosia instead of Google as my search engine. This is also one of the things you can do another search engine, alternate search engine of compared to Google, Ecosia.

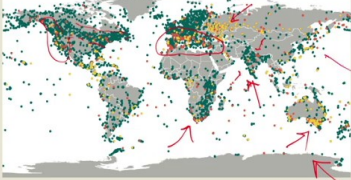
Maybe you make a search and if you can use it. Reconnect with nature and promote its values, buy organic food from local farmers. Well to increase my handprint I can start an urban gardening initiative in my area, so that my green handprints will increase, promote sustainable agriculture in my community, address companies and demand from them to support and then establish sustainability programs for wildlife.

Engage in politics and start lobbying for nature conservation, so this also you can do, wherever you are, in whatever capacity you must advocate for this. For more details you can refer sustainable development.un or iucn International Union for Conservation of Nature. And along with that, you can refer these websites also handprint.in handprint.te for more information about volunteering and being part of these organization like iucn works for the conservation of nature.

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The LPI explained



How to read the Living Planet Index

- In 2020, the LPI shows an average rate of decline in population size of 68% between 1970 and 2016.
- The LPI now tracks the abundance of almost 21,000 populations of mammals, birds, fish, reptiles and amphibians around the world.
- The LPI includes data for threatened and non-threatened species – if it's monitored consistently over time, it goes in!
- Species and populations in the LPI are increasing, declining or stable.
- About half of the species in the LPI show an average decline in population size.

What the LPI does not tell us

- The LPI doesn't show numbers of species lost or extinctions.
- It does not mean that X% of species or populations are declining.
- Or that X% of populations or individuals have been lost.

Figure 24: Locations of Living Planet Index species populations
Locations of Living Planet Index species populations. Map showing the locations of the monitored populations in the LPI. Newly added populations since the last report are highlighted in orange or in yellow for species new to the LPI. Source: WWF/2020 Living Planet Report.

Key

- New species
- New populations
- Existing data

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LPI index, what is LPI, Living Planet Index. So you see the listens new species by yellow, new populations by red, and existing data by green. So how to read this LPI index? In 2020 LPI shows an average rate of decline in population size of 68 percent between 1970 to 2016. LPI now tracks the abundance of almost 21000 populations of mammals, birds, fish, reptiles, and amphibians.

The LPI includes data for threatened and non-threatened species, if it is monitored constantly over time it goes in. Species in population LPI are increasing declining or stable. About half of the species in LPI show an average decline in population size. Well what it does not tell? The LPI does not show numbers of species lost or extinction, it does not mean that X percent of species or populations are declining or the x percent of populations or individuals have been lost.

So you can see these locations on this map. So green ones existing data, new populations by red, some new populations you can see here in the Indian subcontinent also. Mostly in India there are lots of greens, few reds, and a few yellows. A lot of yellows in the western Russia, and lot of reds and yellows in the southern Europe, and in the west coast U.S, and partly here on Massachusetts side, and South Africa, more yellows and reds the south of Australia, in Japan, Korea also.

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15 The Living Planet Index is one indicator among many showing severe declines or changes in recent decades

Humanity's influence on the decline of nature is so great that scientists believe we are entering a new geological epoch, the Anthropocene. Yet, measuring biodiversity, the variety of all living things, is complex, and there is no single measure that can capture all of the changes in this web of life. Nevertheless, the vast majority of indicators show net declines over recent decades.

ABUNDANCE

EXTINCTION RISK: the IUCN Red List Index

Humans have driven at least 680 species of vertebrates, the best studied taxonomic group, to extinction since 1500. This equates to ~1% of species in this group. Many other species are now at elevated risk of extinction owing to human impacts. The IUCN Red List represents the most comprehensive and objective system for assessing the relative risk of extinction of species. Over 100,000 species have now been evaluated using information on life-history traits, population and distribution size and structure, and their change over time to assign each species into one of eight categories (Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern or Data Deficient). For five groups in which all species have been assessed at least twice, the Red List Index (RLI) shows

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LIVING PLANET REPORT 2024

trends over time in their relative survival probability based on these Red List categories. Baseline RLI values are available for a range of additional groups that have only been assessed once. These data show that corals (an ancient group of plants) are most threatened, while corals are declining fastest.

Community composition: the Mean Species Abundance Index and Biodiversity Intactness Index

Biological communities can change fundamentally as a result of human pressures compared to what they would have been in pristine conditions, even without any species going locally extinct. Tracking community composition – the species that are present and their local abundances – can give an indication of both the intactness and functioning of ecosystems. The Mean Species Abundance (MSA) Index and Biodiversity Intactness Index (BII) are two modified indices that estimate the intactness of animal and plant communities spatially. The indices range from 100-0%, with 100 representing an undisturbed natural environment with little to no human footprint. The MSA Index has fallen to 66% of its pre-impact value and is falling by 1.1% per decade, whereas the BII has fallen to 79% of its pre-impact value and is declining by 0.8% per decade. Both the MSA and BII are projected to continue to decline under business-as-usual socio-economic trends.

Species distribution: the Species Habitat Index

Species distributions are dynamic by nature, with local populations constantly adapting to the environment. The magnitude of these dynamics has, however, been greatly altered by human pressures, especially those that have caused the loss of habitats. The Species Habitat Index captures changes in species range and incorporates information about species habitat preferences with observed or modelled data on habitat loss and restoration, habitat fragmentation and climate change. This index has fallen by 1% per decade since 1970 and, on average, the geographic distribution of terrestrial mammals, the only group for which baseline distribution could be estimated, has been reduced to 83% of pre-impact values.

Andy Purvis (Natural History Museum)



COMMPOSITION

Walter Jetz (Yale University)



DISTRIBUTION

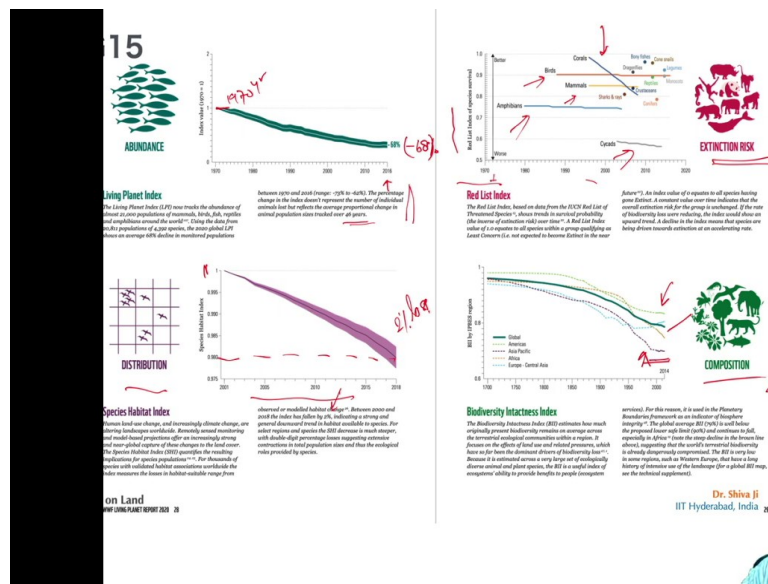
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A beautiful frog. So LPI is one indicator among many showing severe declines or changing in the recent decades. So you can see this abundance the LPI measures the population abundance of thousands of vertebrates species around the world. Other indices measure different things or have broader taxonomic breadth giving us different information about, how biodiversity is responding to human pressure. And here the IUCN Red List Index, extinction risk you can see here.

Humans have driven at least 680 species of vertebrates the best studied taxonomy group to extinction since year 1500. This equates to 1 percent of species in this group, many other species are now at elevated risk of extinction owing to human impacts. The IUCN Red List represents the most comprehensive and objective system for assessing the relative risk of extinction of species or one lakh species have now been evaluated, using information on life history rates.

Next on composition, community composition the mean species abundance index and biodiversity intactness index species distribution, habitat index, species distribution or dynamic by nature with local populations constantly adapting to environment. The magnitude of these dynamics has, however been greatly altered by human pressure.

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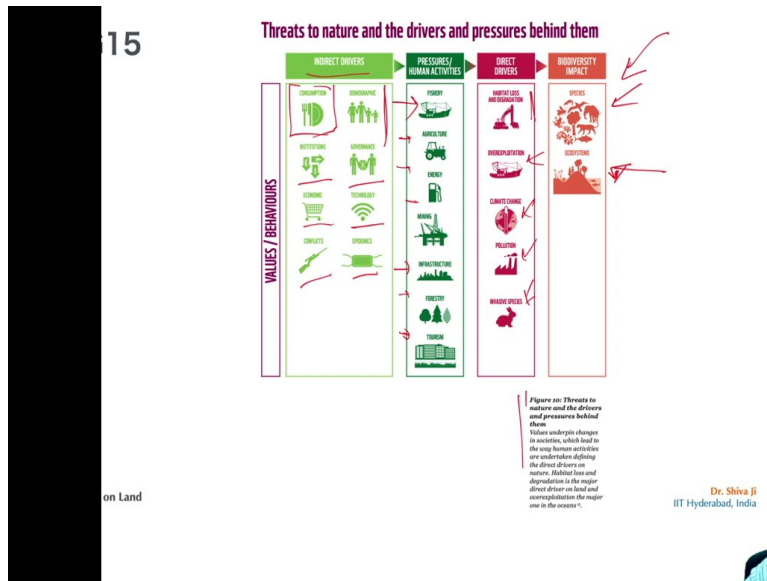
So you can see these graphs over here which talks about index value of 1 in year 1970 to 2016, there is a loss of 68 percent, minus 68 percent we are seeing this figure, between this these years the percentage change in the index does not represent the number of individuals animal lost but reflects the average proportional change in the animal population size is tracked over 46 years.

In distribution, species habitat index may if you see from 1 this has come down to 0.98. Observed our model habitat change between year 2000 and 2018. So under a range of around 17-18 years, it has fallen by 2 percent, 2 percent loss. Indicating a strong and general downward trend inhabitat available to species, for select regions and species sh-1 decrease is much deeper.

Red list index if you see, extinction risk. So red list index of species survival on this side and decades on this side 1970 to year 2020, so a span of around 50 years, you can see how fast certain species have declined. So corals extremely fast, you see this has an almost come down at a rate of, at an angle of around 45 degrees. Then we have, I think all of these are coming down slowly cycads, amphibians, mammals, birds they are all gradually coming down.

Biodiversity intactness index in this one, composition you can see, this is, this dark green is the global figure which is drastically coming down. The biggest loss has happened in the Asia Pacific and in that I think the minimal loss has happened in Americas, global average is this one.

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So threats to nature and the drivers and pressures behind them. So as we see these numbers are declining. So what are the direct threats, so some indirect drivers if you see a large consumption of resources, demographics, institutions, governance, economic, technology, conflicts, epidemics they are causing a pressures and lot of other human activities fisheries, agriculture, energy, mining, infrastructure, forestry, tourism, etc. which in turn is driving many things direct drivers are listed over here. Loss of natural habitat, over exploitation, climate change, pollution, invasive species, then lastly we have biodiversity impact, so several species and ecosystem they are all at the verge of damages, severe damages. So this is like a threat we are seeing.

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MAPPING THE LAST WILDERNESS AREAS ON EARTH

Advances in satellite technology allow us to visualise how the Earth is changing in real time. Human footprint mapping then shows where we are and aren't impacting land on Earth. The latest map reveals that just a handful of countries – Russia, Canada, Brazil and Australia – contain most of the places without a human footprint, the last remaining terrestrial wilderness areas on our planet¹⁴.

James Watson University of Queensland and WCS, Bruce Williams University of Queensland and Oscar Venter University of Northern British Columbia

In the last two decades increasingly powerful computing, which aims to track human pressure across Earth using a network of satellites combined with bottom-up census and crowd-sourced data¹⁴, allows us to quantify and locate even sparse human settlements, low-intensity agricultural farming and road construction, and other forms of human pressure^{14,15}.

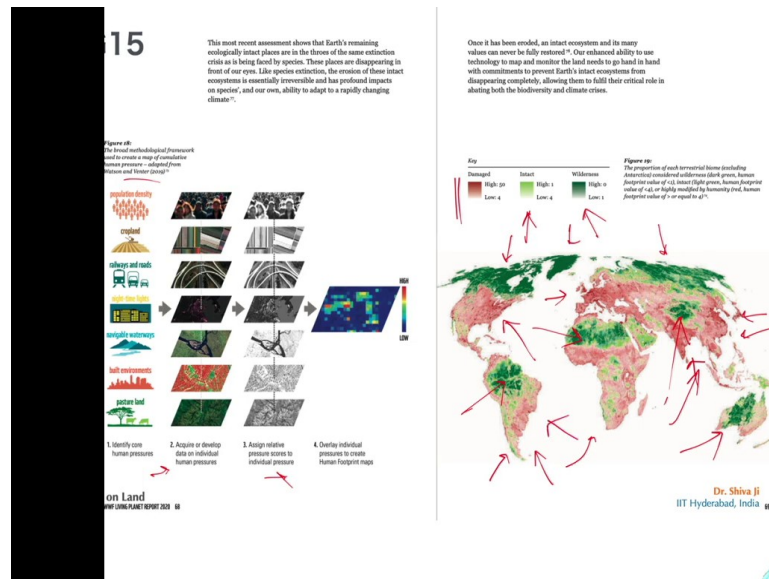
The new field of cumulative human pressure mapping¹⁶ has helped to integrate this data to provide a new view of the terrestrial biosphere and humanity's role in shaping its patterns and processes (Figure 18). The latest human footprint map clearly shows the spatial extent of humanity's environmental footprint, with 49% of the land's surface under intense human pressure (Figure 19). Since 2000, a 16 million km² area the size of Mexico of ecologically intact land – that is, ecosystems that remain free from significant direct human pressure – has been lost, with most losses occurring within the world's tropical and subtropical grasslands, savannahs and shrubland ecosystems, and the rainforests of Southeast Asia. It also illustrates that only 2% of terrestrial Earth can be considered 'wilderness' (i.e. areas having no human footprint score), and that most of this is contained in just a small number of nations – Russia, Canada, Brazil and Australia.

Polar regions represent areas of Earth's last wilderness areas (Sullivan, Greenland)

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Mapping the last wilderness areas on earth, how do you map. So again technology comes to the rescue and mainly from satellites. So satellite technology allows us to visualize how the earth is changing in real time. Human footprint mapping, then shows where we are, and are not impacting land on earth the latest map reveals that just a handful of countries Russia, Canada, Brazil, Australia, etc. But more also can be seen now maybe you can check again for new set of such data.

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So this is an assessment which shows, this correlation the broad methodological framework used to create a map of cumulative human pressure adopted from Watson and Vendor. So you can see all of these are the actually human pressures and that is leading to huge pressure from humanity and there are results.

So if you see this graphic damaged is represented by reds and intact light green wilderness dark green. So you can see portion of Canada, in north of Russia, Siberian region, and Tibet here, and Sub-Saharan Africa, and parts of Amazon in Brazil, and in other countries even in Chile here slightly green I see, and Central middle Australia. So these are having greens, rest of the countries, rest of the regions of the world if you see that has fallen into the red trap.

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DRIVER OF CHANGE	POTENTIAL NEGATIVE IMPACTS	EXAMPLES OF ECOLOGICAL CONSEQUENCES
Fishing	Overexploitation, bycatch of non-target species, seafloor habitat destruction from seabed trawling, illegal, unregulated, and unreported (IUU) fishing, gathering of organisms for the aquarium trade.	Reduced population sizes, ecosystem restructuring and trophic cascades, reductions in biodiversity, local and commercial extinction of species, "ghost-fishing" due to lost or damaged fishing gear.
Climate change	Warming waters, ocean acidification, increased oxygen minimum zones, more frequent extreme events, change in ocean currents.	Reef die-off through bleaching, species moving away from warming waters, changes in ecological interactions and metabolism, changes in interactions with human activities (e.g. fishing, coastal development) alter their location and space use, changes in ocean circulation patterns and productivity, changes in disease incidence and the timing of biological processes.
Land-based pollution	Nutrient run-off, contaminants such as heavy metals, micro and macro-plastics.	Algal blooms and fish kills, accumulation of toxins up the food web, ingestion of and entanglement in plastics and other debris.
Ocean-based pollution	Waste disposal, fuel leaks and dumping from ships, oil spills from offshore platforms, noise pollution.	Toxic impacts on marine organismal physiology, noise pollution impacts on marine animal behaviour.
Coastal development	Destruction of habitats, increased pressure on local shoreline, increased pollution and waste.	Reduction in area of habitats such as mangroves and seagrasses, limits the ability of coastal habitats and organisms to shift, and migrate, to adapt to climate change.
Invasive alien species	Invasive species accidentally (e.g. through ballast water) or deliberately introduced, more climate-driven invasions likely.	Invasive species can outcompete native species, disrupt ecosystems and cause local or global extinctions.
Offshore infrastructure	Physical disturbance of the seafloor, creation of habitat structures.	Local seafloor habitat destruction, provision of structures for organisms to colonise and aggregate around.
Shipping	Vessel strikes, pollution from dumping.	Impacts on population sizes of endangered marine mammals hit by vessels, physiological and physical impacts of pollution.
Mariculture (aquaculture of marine organisms)	Physical presence of aquaculture facilities, pollution.	Potential for nutrient build-up and algal blooms, disease, antibiotic use, escape of captive organisms and impacts on local ecosystems, indirect impact of capture fisheries to increase followed as byproduct.
Deep-sea mining	Seafloor destruction, settlement plumes on seabed, potential for leachages and chemical spills, noise pollution.	Destruction of physical habitat (e.g. cold-water corals) and benthic layer, potential smothering of organisms by settlement plumes.

on Land

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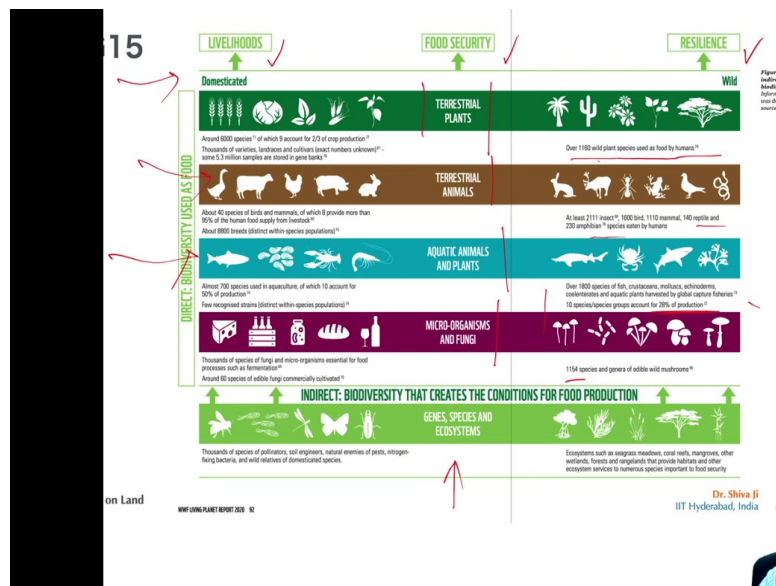
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So drivers of change we saw some more regular potential negative impacts of fishing for example, over exploitation, bycatch of non-target species, seafloor habitat destruction from seafood trawling, illegal unregulated and reported fishing, gathering of organisms for aquarium trade, etc.

Overall for climate change, warming waters, ocean acidification, desertification, etc. increased oxygen, minimum zones, more frequent extreme events change in oceanic currents. Land based population, nutrient runoff, contaminants such as heavy metals, micro and micro plastics. Ocean based pollution, waste disposal, fuel leaks, damaging from ships oil spills, noise.

Coastal development, destruction of habitat, increased pressure on local shoreline, increased pollution and waste. Invasive alien species, invasive species accidentally introduced more climate event invasions likely, offshore infrastructure, physical disturbance of the seaboard, creation of habitat structure. Shipping, vessel strikes, damages to the coral, reefs, etc. pollution and oil spills etc. plus sometimes they carry alien species from one part to the other that also becomes a problem. Mariculture, physical presence of aquaculture facilities. Deep sea mining, examples of consequences you can see here on the right side.

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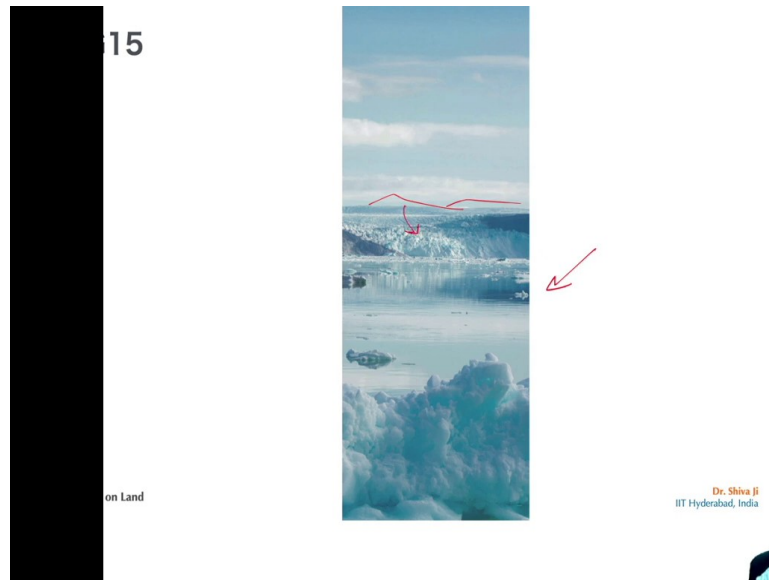


And our livelihoods on the first column, food security, and resilience. So these things are domesticated whether these are crops, or domestic animals, pet animals, etc. They are not domesticated and they like living next to the human society. Well this is essential for food security here, for alteration plants, traditional animals, aquatic animals and plants, microorganisms and fungi, etc.

And resilience over 100, 1160 wild plant species use food by humans at least 2111 insects 600 Birds 110 mammals 140 reptile and 230 amphibians species eaten by humans. Over 1800 species of fish, crustaceans, mollusks, echinoderms, coelenterates, and aquatic plants harvested by global capture fisheries, 10 species group account for 28 percent often such kind of production. 1154 species and genera of edible wild mushrooms.

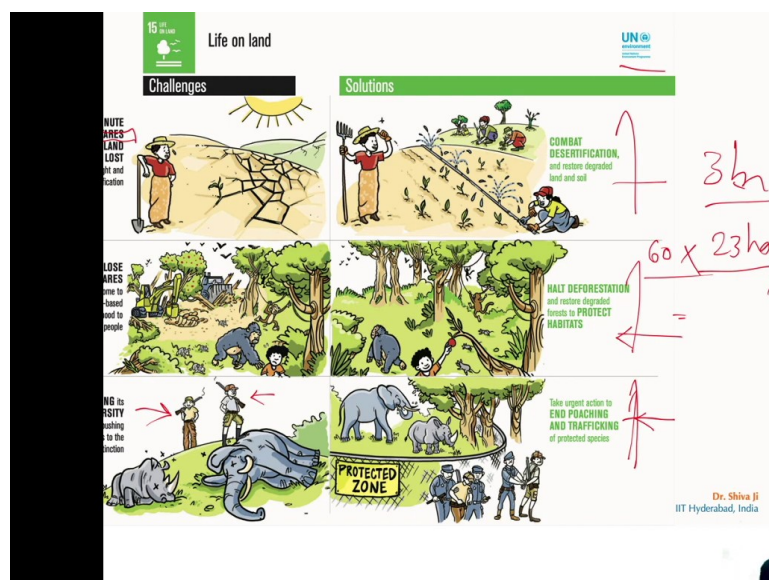
Indirect biodiversity that creates the conditions for food production. So if biodiversity is maintained, all of the rest of the things will be maintained. One nice soothing image for you, you can see there is this crane flying at the top.

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Another picture from Arctic or Antarctic region polar regions, or maybe glacier lake from places you can see the glacier, we are the high mountains from there this glacier is moving down and we have these water, freshly melted water.

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So what are the challenges in this case if you see recommended suggested by UN environment. Every minute we saw 23 billion hectares of land is getting lost and that is translated to every minute 23 hectares of land. So that 3 billion land, hectare land, what we

saw initially, that is getting lost at the rate of 23 hectares per minute, that is the rate at which this loss is happening. During a span of 1 hour of this class 23 multiplied by 60 hectares of land, we have lost during this one session, that is the rate at which this degradation is taking place.

Solution, combat desertification, restore degraded land and soil. Every year we lose 13 million hectares of forest that are home to more than 80 percent of all land-based species and provide livelihood to 1.6 billion people. Halt deforestation, restores degraded forest to protect habitats. The world is losing his precious biodiversity at an alarming rate pushing 22 percent of animals to the brink of extinction, for some selfish weird reasons.

Take urgent action to end poaching and trafficking of protected species and even all these species. So now we have understood the importance of life on land and how it is crucial for our own survival and existence. So I am sure you have now got the lessons from this, look in your vicinity and perhaps you can plan maybe a small assignment or an exercise based on this and maybe you can contribute from your end. So with this we have come to the end of this session, thank you all for joining, see you in the next one.