

**RSTV: In Depth**  
**Biodiversity: Warning Bells**

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**Larger Background:**

- Relentless pursuit of economic growth, coupled with climate change has brought an unprecedented one million species at the doorstep of extinction.
- This is the finding of a landmark report on the damage done by modern civilisation to the natural world.
- The report compiled by 145 expert authors from 50 countries is based on the review of about 15,000 scientific and government sources.
- Their conclusion is that only a wide-ranging transformation of the global economic and financial system can pull ecosystems that are vital to the future of human communities worldwide back from the brink of collapse.
- The report has been endorsed by 130 countries, including the U.S., Russia and China.
- It is also the first comprehensive global report in 15 years at the state of the planet's biodiversity.
- It includes, for the first time, indigenous and local knowledge as well as scientific studies. The authors of the report say that they found overwhelming evidence that human activities are behind nature's decline.
- This episode of In Depth looks at the report and its contents, the imminence of the threat facing mankind and some of the major drivers of species decline including climate change, alongside pollution and other harmful aspects of human life.

**Analysis:**

- Hundreds of thousands of different species of animals, insects, and plants are facing the risk of extinction and many of them, within decades, because of human activity, according to a landmark U.N. Assessment of the State of Nature.
- The 1500 page report compiled by hundreds of international experts and based on thousands of scientific studies, is the most exhaustive look yet at the decline in biodiversity across the globe and the dangers it creates for human civilization.

- A summary of its findings which was approved by representatives from the United States and 131 other countries, was released on the 6<sup>th</sup> of May 2019, in Paris. However, the report also says that these trends can be halted and that it is not yet too late to fix the problem.
- Global capitalism is indeed destroying the earth- on land, in the seas, in the sky, the devastating impact of humans on nature is laid bare in a compelling United Nations report.
- A landmark U.N. report on global biodiversity details how economic systems are driving one million animal and plant species towards extinction and imperiling the survival of humanity. The crux of the report is that incessant economic growth is fundamentally at odds with the survival of life.
- In its new report, from the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services, the U.N. warned that nature everywhere is declining at a speed never previously seen. They authors said that they found overwhelming evidence that human activities are behind nature's decline. From the bees that pollinate our crops, to the forests that hold back floodwaters, the U.N.'s report reveals as to how humans are ravaging the very ecosystems that support their societies. They ranked the major drivers of species decline as land conversion (Including deforestation, overfishing, hunting, poaching, climate change, and pollution).
- The U.N. report said that while the earth has always suffered from the actions of humans through history, over the past 50 years, these scratches have become deep scars. However, the report also tells us that it is not too late to fix the problem but it would take a transformative change in every aspect of how humans interact with nature.

### **Specifics on the report:**

- The report said that species loss is accelerating to a rate that is tens or hundreds of times faster than in the past.
- It said that more than half a million species on land have insufficient habitat for long term survival and are likely to go extinct. The oceans are not any better off.
- The report also said that the world's population has doubled since 1970. The global economy has grown four fold, while international trade has increased 10 times the world over.
- It said that more than a third of the world's land surface and nearly 75% of freshwater resources are now devoted to crop or livestock production.
- To feed, clothe and give energy to this burgeoning world, forests have been cleared at astonishing rates, especially in tropical areas.
- Urban areas have more than doubled since 1992.
- Plastic pollution has increased ten-fold since 1980
- Every year, the world dumps 300-400 million tonnes of heavy metals, solvents, toxic sludge, and other wastes into the waters of the world.
- Between 1980-2000, 100 million hectares of tropical forests were lost.
- Cattle ranching in South America, and palm-oil plantations in South-East Asia have also played a part.
- Soils have been degraded as never before, reducing the productivity of 23% of the land surface of the earth.

- An average of around 25% of animals and plants are now threatened.
- Global trends in insect populations are not known, but rapid declines in some locations, have also been well documented.
- The report also presents a wide range of illustrative actions for sustainability in sectors such as agriculture, forestry, marine systems, fresh water systems, urban areas, energy, finance and many more.
- Based on a review of about 15,000 scientific and government sources, and compiled by 145 expert authors from 50 countries, the Global Assessment Report on Biodiversity and Ecosystem services, is the first comprehensive look in 15 years, at the state of the planet's biodiversity.
- A 40 page summary for policy makers of the forthcoming full report was released on May 6<sup>th</sup>, 2019, in Paris.

### The Problem of Plastic Waste:

- Today, the entire world is grappling with the problem of plastic waste. This not only affects the land, but also affects the sea and marine life. About 8 million tonnes of plastic enters the sea every year. At this rate, we face a future with more plastic in the ocean than fish by the year 2050.
- But, how does plastic enter the oceans?
  - Plastic is dangerous for the environment and the entire ecosystem in all stages, from its production to its use.
  - Plastic is manufactured from the elements and chemicals derived from petroleum substances, which is the reason it produces toxic effects through various chemical reactions, from the initial production to its use and finally as trash. It is severely dangerous for human beings and organisms. Only 15% plastic waste is left on the earth's surface, while the rest of it goes into the sea. By eating this plastic waste, not only is sea life getting destroyed, but it is also affecting the sea salt.
  - Plastic after reaching the sea, acts as a magnet for poisonous substances which sticks to it.
  - According to WWF and London's Geological Society report, **Living Planet**, in the year 2010, about 4.8 million to 12.7 million tonnes of plastic waste went into the sea.
  - A research conducted on loggerhead sea turtles, for 10 years, suggests that 35% turtles ate plastic in the form of food. Apart from this, plastic waste was found in the stomachs of 18% of tuna fish, and swordfish in the Mediterranean Sea.
  - The report says that more than 90% of the sea organisms are eating plastic waste in some form, whereas in the 1960s, this figure was only 5%
  - The report warns that if the plastic flow into the sea is not stopped immediately, then by 2050, plastic waste would be found in the digestive systems of 99% sea organisms. This would be extremely dangerous for biodiversity.

### Microplastics in Oceans:

There are several ways for plastics to accumulate in the oceans. Most plastics in the oceans, break up into very small particles and never decompose. These small plastic bits are called microplastics, which pass unchanged through the waterways into the ocean. Microplastics include:

- a) Microbeads (used in cosmetics, and personal care products)
- b) Industrial Scrubbers (these are used for abrasive cleaning)
- c) Microfibers (used in textiles)
- d) Virgin resin pellets (used in plastic manufacturing processes)

Aquatic life and birds can mistake microplastics for food. Several other factors also contribute to microplastic pollution in oceans. These include:

- a) Plastic waste from sewers
  - b) Construction activities
  - c) Waste-water management
  - d) Fishing
  - e) Shipping
  - f) Tourism
- Microplastic pollution in oceans is far worse than feared. High levels of microplastics are found in the Pacific and Atlantic and Indian Ocean. Floating plastic debris in the marine environment releases chemical compounds to the water which harm the marine ecology.
  - Sea birds and animals often ingest the tiny pieces of plastic. Even some of the deepest areas of the ocean are littered with plastic.
  - Although some plastics float, other polymers are denser than seawater and will sink. A 2017 study found that between 50-100% of animals at the deepest parts of the ocean, had plastic in their stomachs.
  - Increasingly, research has demonstrated the natural world's incalculable importance to our health, wealth, food and security.
  - However, time and again, we have been pushing our planet to the brink. Human activity is taking an unprecedented toll on wildlife and the natural resources that we need to survive on.
  - If we could do our bit, the world could be saved from mass extinction as well as a catastrophe.
  - The world today is passing through a period of unprecedented planetary change. Many scientists believe that our escalating consumption, and increased demand for energy, land and water, is driving a new geological change.

**As of now, humanity has no concrete plan for:**

- a) dealing with the environmental crisis caused by Climate Change
- b) Growing population of people on the planet,
- c) the massive resource depletion and
- d) widespread poverty and pollution, etc.

- The 2018 Living Planet Report from the World Wildlife Foundation (WWF), has found that human activity has killed a shocking 60% of the earth's mammals, birds, fish and reptiles, since 1970.
- According to the report, the earth has lost about 50% of its shallow water corals in the past 30 years.
- The report found that growing consumption of food and resources by the global population, is destroying the web of life that helps humanity survive.
- Many scientists feel that we are in the middle of a 6th major mass extinction- one caused solely by human beings.
- According to the 2018 Living Planet report from WWF:
  - a) Marine and fresh water ecosystems are also facing huge pressures.
  - b) Almost 6 Billion tonnes of fish and invertebrates have been taken from the world's oceans since 1950

Plastic pollution has been detected in all major marine environments worldwide.

- Fresh water habitats such as lakes, rivers, and wetlands are the source of life for all humans, yet they are also the most threatened.

### **Land Degradation:**

- Land degradation is a problem in virtually every terrestrial ecosystem that is reducing the welfare of more than 3 Billion people.
- A recent assessment found that only a quarter of land on the earth is substantively free of the impacts of human activities and this is projected to decline to just 1/10th by 2050.
- This ongoing degradation has many impacts on species, the quality of habitats, and the functioning of ecosystems.

### **Climate Change:**

- Climate Change is yet another environmental problem that has surfaced in the last couple of decades. It happens due to the pollution of the atmosphere by greenhouse gases and other contaminants.
- Climate change already has observable ecological and social effects.
- Climate change affects the fundamental requirements for health, clean air, safe drinking water, sufficient food and secure shelter.
- Another impact of climate change is global warming, which has already had observable effects on the environment, such as shrinking glaciers, earlier break up of ice on rivers and lakes, increased droughts, intensifying extreme weather.

### **Deforestation:**

- It has been estimated that around half of the world's mature forests have been cleared by humans.
- While tropical forests cover only about 6% of the earth's surface, they are an essential part of the global ecosystem.

- Tropical forests help to regulate climate; they protect soils from erosion and they provide habitat for a vast number of plant and animal species.
- The population of the planet is reaching unsustainable levels as it faces a shortage of resources like water, fuel and food.
- Population explosion in less developed and developing countries is straining the already scarce resources.
- Overpopulation is one of the crucial current environmental problems. Besides these, the pollution of air, water, and soil require millions of years to recoup. It is regarded as one of the major global environmental issues.

### **Natural Resource Depletion:**

- Natural resource depletion is another crucial current environmental problem. Other recent analysis has revealed that even if the disruption were to end now, it would take 5-7 million years for the natural world to recover.
- To ensure a sustainable future of all living things, we need to urgently curb the loss of nature. The biggest challenge and biggest opportunity lies in changing one's approach to development and remember that protecting nature also helps protect people. Ultimately, the world needs to come together to save nature.

### **The threat of Extinction:**

- Of the roughly 11,000 different species of birds on earth, nearly 40% are facing a significant decline due to human activity, including plastic and oil pollution, food shortages from overfishing as well as climate change.
- Despite current laws, millions of exotic and wild birds are exploited, hunted and sold as part of the illegal wildlife trade.
- Many species undertake extraordinary migrations- this constant movement helps to disperse seeds and transfer nutrients along the way.
- Birds are also one of nature's best scavengers, helping to eliminate waste and hazardous remains and reducing the spread of disease to humans and other animals.

### **The importance of Bees:**

- One of the most important species that helps us survive are bees. Bees are extraordinary creatures that exist in all types of climates around the world. Bees are in fact a keystone species with others dependent on them to survive.
- Many species of animals depend on bees for their survival, because their food sources rely on pollination. Pollination not only makes food available for other organisms, but also allows floral growth, which provides habitats for animals.
- For the past decade there has been a continuous drop in the worldwide bee population, and as pollinators disappear, the effect on the health and viability of crops and native plant communities, can be disastrous.

- As pollinators, bees also contribute billions to the world economy. Agricultural economies like India are at high risk from the bee decline.
- Without them, India's food production would reduce by 1/3rd, as out of the 160 million hectares of cropped area in India, some 55 million hectares depend on honey bees for pollination. This was revealed by research from the University of Agricultural Sciences, Karnataka.

### **Light Pollution:**

- The inappropriate or excessive use of artificial light, known as light pollution can have serious environmental consequences for humans, wildlife and our climate. Too much of light has consequences- it washes out starlight in the night sky, interferes with astronomical research, disrupts ecosystems, has adverse health effects and wastes energy. All species are dependent on light for natural body cycles. However, excessive artificial light has adverse behavioural changes in insect and animal populations as it confuses the body, affecting the cycle as well as the immune functions.
- From newly hatched sea turtles to migrating birds, fish, frogs, salamanders, artificial night lighting disrupts the cycles of nocturnal creatures in potentially devastating ways. Light pollution can be simply tackled by switching off the lights when and wherever necessary.