Sustaining earth for the future

Life is a unique asset of our planet. India is blessed with an extraordinary richness of life. A myriad of unusual and exquisite species occur in the countless ecosystems spread across our vast lands, rivers and oceans. Woven into this rich fabric of biodiversity is a stunningly vibrant and colourful tapestry of peoples, cultures and traditions.

This unique bio-cultural tapestry has been resilient to change for centuries, but with the unleashing of unprecedented economic and environmental forces, it is now subject to increasing wear and tear. Ultimately, these forces could even destroy our tapestry of life, cultures and traditions — and in the process, ourselves.

Biologists all over the world have been documenting the ongoing loss of life forms. Modern extinction rates are more than a thousand times greater than the rates of the geological past. In recent decades, populations of more than 40% of large mammals have declined and insect biomass has decreased by more than 75%. Natural habitats all over the world have shrunk. For these losses, our country ranks higher than most.

We have entered what scientists are calling the Anthropocene era — a new period in earth's history, when humans have begun to impact our environment at the global scale. We have seen our forests degrade and diminish, our rivers vanish, and our air become unfit to breathe. We constantly talk about cleaning up the Ganga, as if it were the sole festering wound, but we overlook that the whole tapestry covering our body is slowly disintegrating. All life requires nurturing.

To protect life on earth, the famous American biologist E.O. Wilson has described an ambitious project he calls "Half-Earth". He calls for formally protecting 50% of the earth's land surface in order to conserve our rapidly disappearing natural heritage. Others have rightly argued that in the past conservation efforts have often disregarded issues of social justice and equity. Thus the goals of "Half-Earth" should not compromise the rights of indigenous people.

Clearly, we must do more to safeguard biodiversity and the ecosystem services that support all human endeavours. India's forest policy calls for forests to cover almost a third of the country, and if we include other natural systems such as grasslands and wetlands, the area to be protected could amount to almost 40%. In a populous country such as ours, that would be a huge achievement. Some areas could be fully protected while others might be managed by stakeholders for sustainable use and enrichment of biodiversity.

We need a massive new effort to catalogue, map, and monitor life, using fundamentally different approaches. Current efforts to map India's biodiversity are largely restricted to forestlands, while plans for species monitoring are even more inadequate. We have the digital tools and artificial intelligence today to efficiently catalogue, map, and monitor life's fabric in a manner never before attempted — and with the potential engagement of millions of students and citizens. This mapping effort would include not only all life, including cultures, ethnicities, and dialects, but also the use of biodiversity and its vulnerability to changes in land use and climate.

Cataloguing, mapping and monitoring life will give us a glimpse of what we have, and what is most vulnerable. But how do we reconcile the growing needs of society with the need to sustain our vanishing natural heritage?

We still have only the most basic understanding of how society interacts with biodiversity, and how economic, social and political forces can erode the biodiversity that ultimately sustains us. We are

just beginning to learn how myriad species interact to drive our ecosystems, and how these systems in turn maintain our soils, water and breathable air. Wild pollinators, the microbiota of soils, and the many enemies of agricultural pests — these and many other natural services underpin our agricultural productivity and mitigate climate change.

In many of our academic institutions, the ‘Life Sciences’ are still restricted largely to the study of cells and molecules — life at microscopic and submicroscopic levels. In such cases, the words Life Sciences sadly misrepresent a vast area of inquiry vital to humanity’s survival. Our institutions need to place far more emphasis on the scientific study of life at higher levels. We also need a comprehensive inquiry into how our society is shaping as well as responding to changes in biodiversity. A new biodiversity science is taking shape across the globe, focused on the intimate interweaving of nature with human societies. India has not been, but must be, at the forefront of this emerging science, because nowhere on Earth are natural and human systems tied together more inextricably than on the subcontinent.

Fortunately, some in the Indian science establishment, such as the Departments of Biotechnology and of Science and Technology, have recently started programmes and initiatives in the broader areas of science and society. Several non-government think tanks in the civil society sector have strong interdisciplinary programmes in environmental sustainability. The India Biodiversity Portal has the ambitious goal of mapping India’s biodiversity with the engagement of civil society though the portal relies largely on private support.

However, the scale of the problem is so massive and its importance so vital for our future that government and private philanthropy need to bring together multiple stakeholders to develop a programme to document, map and monitor all life, and develop a new knowledge enterprise to fully explore various dimensions of biodiversity and ecosystem services and their critical link to our future.

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An objective evaluation of his performance as Prime Minister is long overdue

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