Can our forests fight human pressures and climate change?

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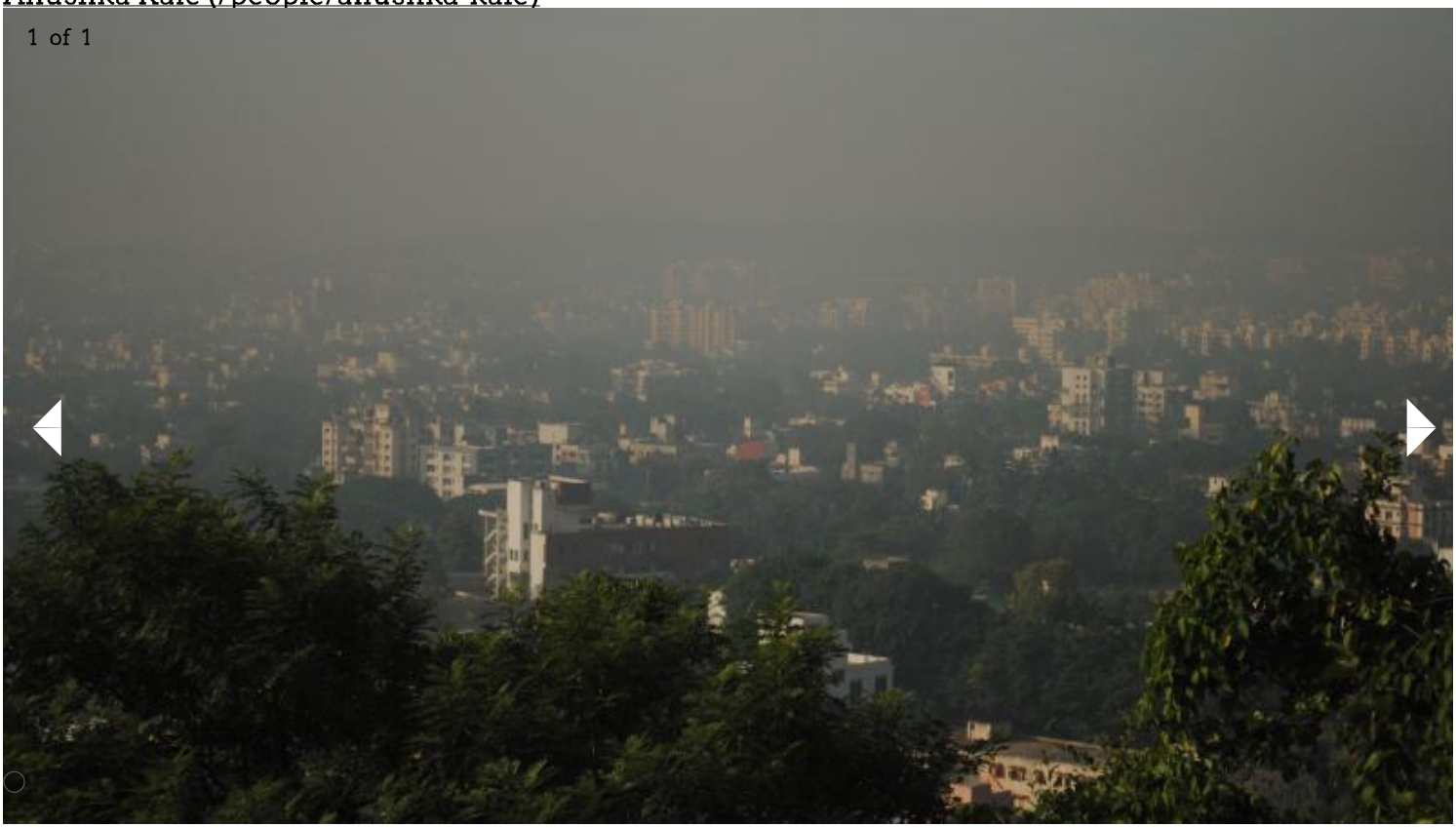

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Does it ever surprise you that large forest patches still exist in India alongside our growing populations and ever-increasing expansions? India is host to one of the richest forest habitats in the world. But like all natural ecosystems today, our forests are extremely vulnerable. They are under stress from a whole host of human-made problems, from encroachment and degradation to climate change.

We cannot lose our forests. Even though India has 77.18 million hectares of forests, it is only about 21% of India's land area, and most of it is under threat today. The forests provide a home to a variety of flora and fauna, , and indispensable ecological services like clean air and water. Tens of thousands of people directly depend on them for their livelihood and survival. It has become paramount that we understand how vulnerable our forests are and implement policies to protect them.

Threats to our forests - human pressures and climate change

Scientists from the Indian Institute of Science (IISc), Bangalore, and Wildlife Institute of India (WII), Dehradun have, in a recent study, assessed the vulnerability of Indian forests, using a measure that tells us how well (or how poorly) the forest can resist or adapt to changes.

They studied the forests' inherent vulnerabilities as well as vulnerability due to climate change. To gauge the inherent vulnerability of the forest, scientists looked at four indicators - biodiversity richness, canopy cover, slope and the disturbance index. These factors take into account the very nature of the forest which makes them resilient or susceptible to degradation. For instance, if a forest has a high disturbance index due to deforestation, it increasingly loses its capacity to cope with stresses. The study mentions that almost 73% of the forest area experiences light to heavy grazing, including grazing by domestic cattle, and 54% of total forest area is prone to fire.

Climate change is a reality. Earlier studies have shown that warmer temperatures have been disrupting the seasonal patterns of the forest. Extreme weather events like droughts and floods have become more common, which will undermine the forest systems even more. This study looks at the effects of present and future consequences of climate change, as well as the inherent factors that are affecting forests.

Measuring our forests' vulnerability

The overall results of this study showed that a whopping 40% of our forests show high or very high vulnerability. When current and future climate change impact predictions are considered, 46% of forests may show vulnerability that is high, very high or extremely high by the year 2035.

To assess vulnerability, the entire forested area of the country was divided into smaller grid-points, which made it easier to determine which sections had low, medium or high vulnerability. The study found that plantation forests, which have less flora and fauna, are more vulnerable than natural forests. Natural forests, like in the Western Ghats, have such rich biodiversity that the organisms form interconnected networks that enable restoration after a disturbance. The study also shows that Himalayan temperate and alpine forests, and tropical evergreen forests, show less vulnerability. Forests which received more rainfall were also shown to be less vulnerable than drier forests.

This is one of the very few studies which have looked at both inherent vulnerability and vulnerability caused by climate change. It enables us to be prepared to take care of our forests in a changing climate. It also prepares us to deal with any uncertainty associated with the climate change projections.

How can we make our forests more resilient?

> Dr. Jagmohan Sharma, one of the researchers from IISc, Bangalore, recommends that we need to reduce vulnerability of all forests as well as plantations to be better prepared to deal with an uncertain future under climate change. He says that "a practical approach to better secure forests under climate change is to minimise human impacts. Cattle grazing, fire hazard, mining, road construction, etc. should all be minimised inside forests." Reduced disturbance will lead to rejuvenation of forests and reduction in vulnerability.

He finally comments that there are still gaps in our understanding about how forests will respond to different climatic and non-climatic stresses acting individually or together and we need to monitor on a long-term scale to manage our forests for the future.

"For reduction of risk or vulnerability, perception of the community is very important," he says. We need to understand that our forests are vulnerable and more so in the context of climate change. Not only is research and policy implementation required, but we, the common people, must also do everything within our capability to preserve our forests.

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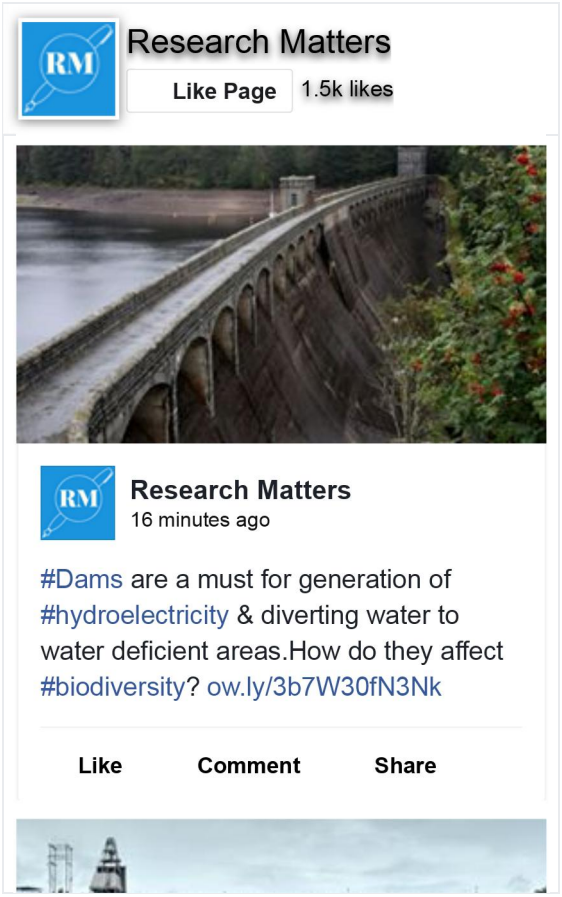
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