



RELATION BETWEEN VEDIC CULTURE, SUSTAINABILITY AND ENVIRONMENTAL STRESS

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ABSTRACT

Environmental degradation is one of the major problems for sustainable development. India is facing environmental stress due to the rapid process of urbanization, industrialization, intensive resource extraction, alteration of consumption patterns, depletion of ground water, pollution and variability due to climate change. In this context, Vedic culture gives us an ethical and philosophical framework of harmonizing with the nature, moderation in consumption, respect towards earth, water, life and natural resources. The present article looks into the correlation between the Vedic culture, sustainability and environmental stress in the light of secondary data present in contemporary India. According to NITI Aayog, around 30% of the country's geographical area was degraded in 2018-19, and the per-capita water availability in the country is set to drop from 1,486 cubic meters in 2021 to 1,367 cubic meters by 2031. The data also indicates that there is measurable improvement in air quality in many of the cities in the target list of National Clean Air Programme. The article contends that the ecological values of the Vedas are not science or environmental policy but they may operate as an adjunct, by promoting responsible consumption, conservation, regeneration and intergenerational responsibility. The focus will be on Vedic Culture, Sustainability, Environmental Stress, Traditional Ecological Knowledge, Prithvi Sukta, Water Conservation, Circular Economy, and India. (MoEFCC, 2024; MoEFCC, 2025; MJS, 2024; NITI Aayog, 2026)

KEYWORDS: Vedic Culture; Sustainability; Environmental Stress; Traditional Ecological Knowledge; Prithvi Sukta; Water Conservation; Circular Economy; India

Sustainability in the environment is achieved through a balance between human needs and the regenerative ability of ecosystems. Environmental stress occurs when resource extraction and pollution or land-use change surpasses the ecological carrying and regenerating capacity. This is very important as India's development path involves an increasing demand for both land and water due to the combined impact of economic growth, urbanization, agriculture, infrastructure and energy transition. India is having a land scarcity of around 0.11 hectares per person which is less than 0.172 hectares per person of the world. The same report reveals that in 2018-19, about 30% of the geographical area of India was degraded. It also predicts that water availability per person per annum is projected to decline from 1486 to 1367 cubic meters per person in 2031, putting India in the water stressed bracket (NITI Aayog, 2026). The Vedic worldview provides a culturally specific view in which the earth, water, plants, animals and other elements of nature are not simply products for sale, but parts of a larger whole. The importance of this for sustainability is primarily in its ability to affect values, behavior and social responsibility (Kala, 2022).

METHODOLOGY

The study is descriptive, analytic and based on secondary data. Current environmental indicators come from official publications of NITI Aayog, the Ministry of Environment, Forest and Climate Change (MoEFCC) and other Government of India publications. Themes of Prithvi, Rta, Panchamahabhuta, moderation, non-harm and responsible use of resources are explored in their context and in their meaning in texts as Vedic concepts (MoEFCC, 2024; MoEFCC, 2025; NITI Aayog 2026).

It is not claimed that Vedic culture directly causes any environmental results. Vedic-sustainability relationship is used as a conceptual and behavioral framework and environmental stress is measured by measurable indicators (Kala, 2022).

VEDIC CULTURE AND ECOLOGICAL SUSTAINABILITY

Prithvi: Earth as a Sustaining Mother

In the Atharva Veda (Prithvi Sukta), the Earth is described as a nourishing mother and the concept of dependency and responsibility of man towards the Earth is highlighted. Earth is my mother and I am her son' is a powerful metaphor in the culture to take care of the earth.

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On the sustainability side, this kind of relationship can foster a sense of care, not an endless exploitation. Aquatic ecosystems and ecological balance (Kala, 2022).

Rta and Ecological Balance

The Vedic concept of Rta means generally a cosmic order and regularity. The concept can be viewed as a metaphor for a balance between natural cycles from a contemporary ecological point of view. The modern science of ecology also highlights the inter-dependency of water, carbon, nutrient and energy cycles. For sustainable development, human activity must not alter these ecological processes (Kala, 2022).

Panchamahabhuta The Five Elements

Prithvi (Earth), Jala (Water), Agni (Fire), Vayu (Air) and Akasha (Space) provide a culturally relevant approach to talking about environmental resources. It has a conceptual mapping with current issues on soil and land, water, energy, air quality and ecological space. The relationship between the vedic concept of Panch mahabhut and contemporary environmental and dimension along with their corresponding sustainable concern is presented table 1, the vedic principal and values their possible sustainable behaviour and the corresponding expected environmental effect are presented in table 2.

Table 1: compare vedic elements with contemporary environmental dimensions and sustainability concern

Vedic Element	Contemporary Environmental Dimension	Sustainability Concern
Prithvi	Land and soil	Land degradation and soil conservation
Jala	Water resources	Water scarcity and groundwater depletion
Agni	Energy and transformation	Energy use and decarbonisation
Vayu	Atmosphere	Air pollution and climate change
Akasha	Ecological space	Carrying capacity and interconnected systems

Table 2: Vedic principal relevant to sustainability: sustainable behaviour and expected environmental effect

Vedic/Indic Value	Possible Sustainable Behaviour	Expected Environmental Effect
Respect for Prithvi	Soil and land conservation	Reduced land degradation
Respect for Jala	Water conservation and harvesting	Reduced water stress
Respect for Vanaspati	Tree protection and regeneration	Improved biodiversity and ecosystem resilience
Ahimsa / non-harm	Reduced ecological damage	Protection of living systems
Moderation	Responsible consumption	Lower resource pressure and waste
Reuse and repair	Circular resource use	Lower material and waste footprint
Community responsibility	Local resource management	Better collective governance
Intergenerational responsibility	Conservation for future generations	Long-term sustainability

EVIDENCE BASED ENVIRONMENTAL STRESS IN INDIA FROM SECONDARY DATA

Land Degradation

NITI Aayog 2026 report states that ISRO's Desertification and Land Degradation Atlas revealed that around 30% of India's geographical area was degraded by 2018-19. Climatic, developmental, social and anthropogenic pressures were cited as factors that contribute to the report (ISRO, 2018; NITI Aayog, 2026).

Per-Capita Water Availability

The water availability per-capita is expected to decrease from 1486 m3/yr in 2021 to 1367 m3/yr in 2031.

The decrease is around 8.0% and both are below the threshold of 1,700 cubic meters for water stress. (Figure 1) (MJS, 2024; NITI Aayog, 2026)

Air Quality and PM10

According to MoEFCC, while implementing the National Clean Air Programme and the associated financial assistance, 97 out of 130 cities monitored have seen improvements in PM10 levels in FY 2023–24 compared to the base period of FY 2017-18. We had 55 cities that reduced by 20% or more and 23 cities reduced by 40% or more. Fewer cities met the national ambient standard for PM10 in 2017-18 (6), than in FY 2023-24 (18) (Figure 2). (MoEFCC, 2025)

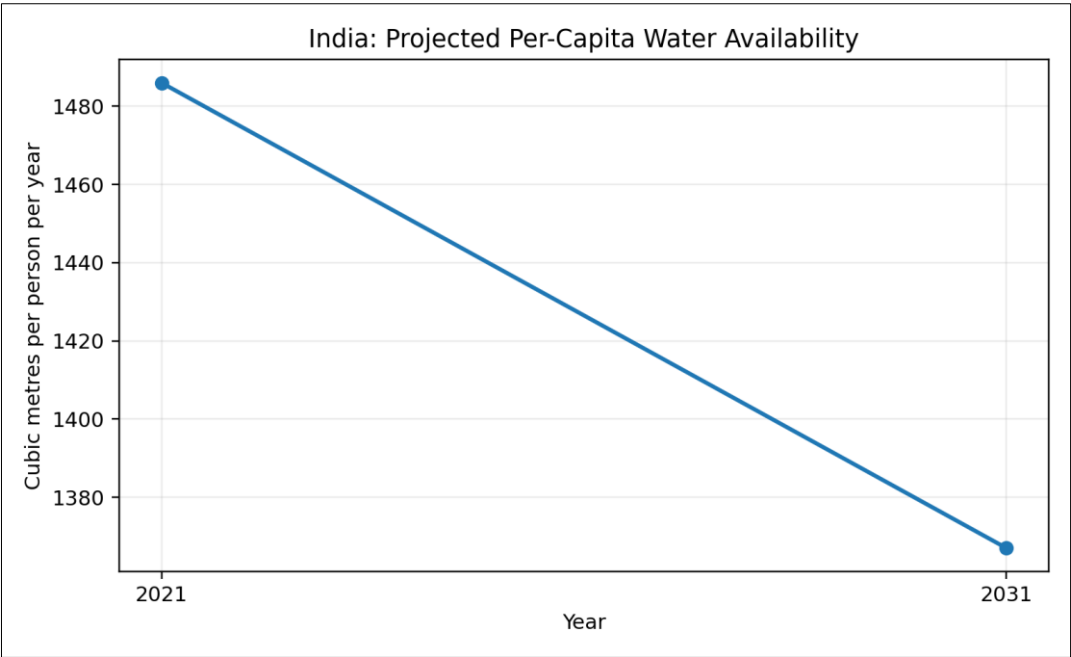


Figure 1: Projected decline in India's average annual per-capita water availability, 2021–2031. Source: NITI Aayog (2026), citing Ministry of Jal Shakti (2024).

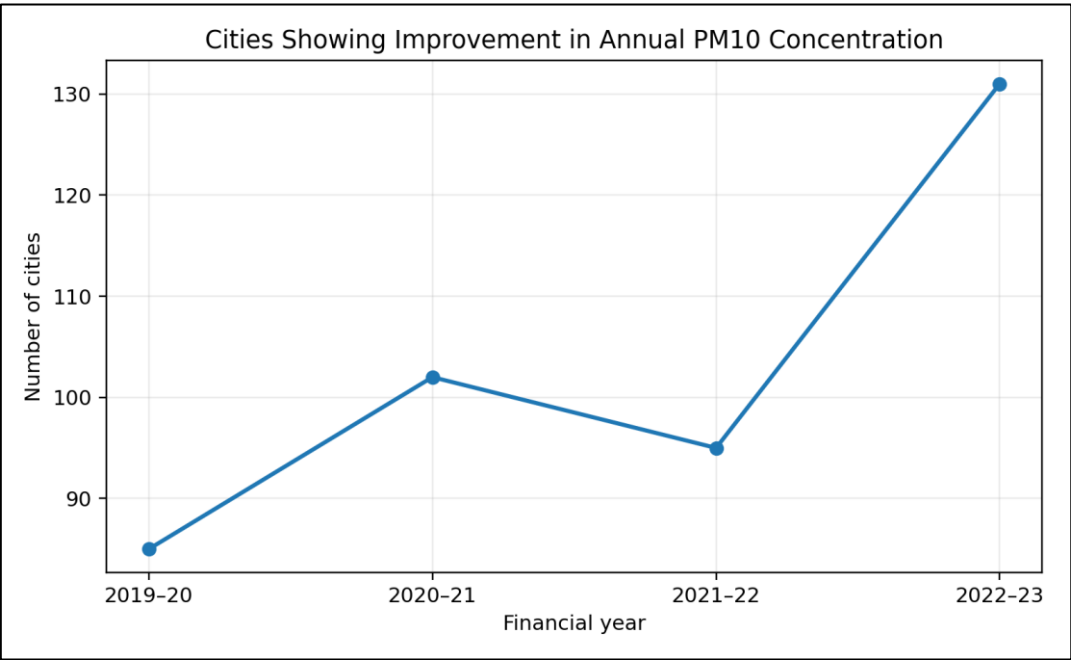


Figure 2: Number of cities showing improvement in annual PM10 concentration, 2019–20 to 2022–23. Source: MoEFCC Annual Report 2023–24.

Forest and Tree Cover

According to the India State of Forest Report 2021, which was used to prepare the Annual Report 2023–24 of MoEFCC, the forest and tree cover in the country is approximately 80.9 million hectares,

accounting for 24.62% of geographical area of the country. It further shows that there was an increase of 1,540 km² of forest cover and 721 km² of tree cover over 2019. The major causes of environmental stress and their corresponding environment pressure across different categories are presented in table 3.

Table 3: Causes of environmental stress and corresponding environmental pressure

Category	Major Causes	Environmental Pressure
Economic	Industrialization, resource-intensive production, fossil-fuel use	Pollution, emissions, resource depletion
Demographic	Population concentration and urbanization	Land-use change, waste and water demand
Behavioral	Consumerism, excessive consumption, wastage	Material and energy footprint
Agricultural	Intensive irrigation, chemical inputs, land-use pressure	Groundwater depletion and soil stress
Ecological/Climate	Temperature rise, rainfall variability, extreme events	Water stress, crop stress, ecosystem disruption
Institutional	Weak enforcement, fragmented governance, poor waste management	Persistent pollution and inefficient resource use

The table 3 show that environmental policy can yield benefits, but it is still important that ecological quality and biodiversity are safeguarded (MoEFCC, 2025).

EFFECTS OF ENVIRONMENTAL STRESS

Environmental stress leads to direct and indirect impacts on ecological systems, on economic productivity and on social welfare.

- Insecurity of water supply and growing competition between agriculture, households and industry.
- Reduce farm productivity due to water stress, heat stress and land degradation.
- An increased risk of health effects from air pollution and poor environmental conditions.
- Loss of biodiversity and ecosystem services. Increased expenses of environmental rehabilitation and resource supply.

- Insecurity in livelihoods and increased vulnerability of resource dependence communities.
- Possible environmental resource depletion and social conflict. Lower climate impact resilience (including drought, floods and heatwaves).

VEDIC CULTURE & CIRCULAR ECONOMY

The modern concept of circular economy aims to change the linear 'take–make–consume–dispose' approach by focusing on reducing, reusing, repairing, recycling and regenerating. Traditional Indian practices where appropriate, can be learnt in terms of principles of low waste, material reuse, cycling of organic matter, community water systems and resource conservation. These practices should not be romanticized as sustainable, but rather assessed on a scientific basis (NITI Aayog, 2026).

Linear Model	Circular/Sustainable Model	Cultural Link
Take → Make → Dispose	Reduce → Reuse → Repair	Moderation and restraint
Waste as unwanted output	Waste as recoverable resource	Resource respect

ECONOMIC INTERPRETATION

Negative externalities can be used to explain the environmental degradation. The private benefit of using a resource may accrue to a producer or consumer while the social cost of the resource is borne by the rest of society. A good example of this is groundwater depletion: the social cost of reducing groundwater tables are borne by

many users, whilst the private cost of extra extraction may be lower than the private benefit of such extraction. Vedic principles of moderation and responsibility can thus be supported by economic measures like environmental taxes, charging for water use, charging for pollution, providing financial incentives for clean technology, payment for ecosystem services and community resource-management institutions.

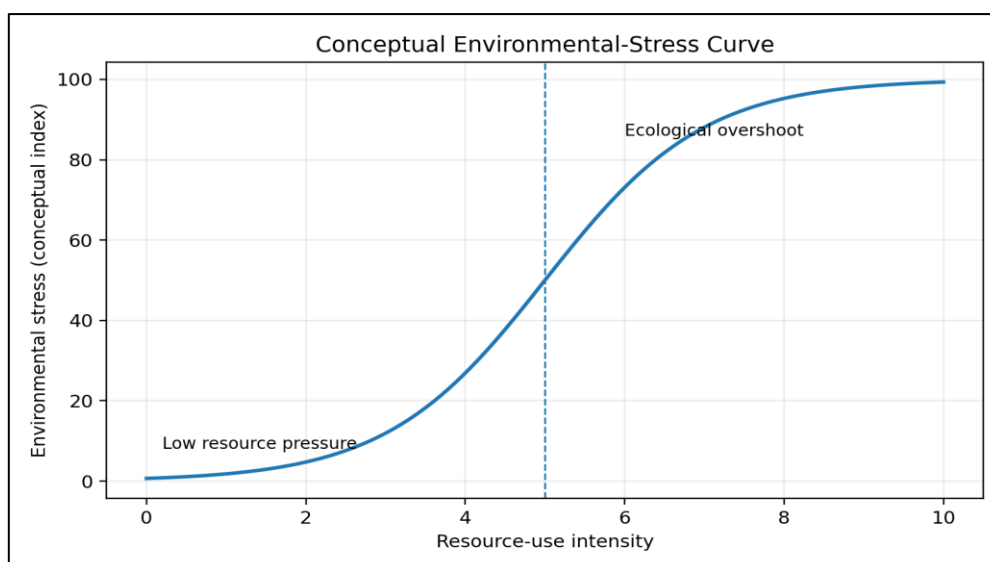
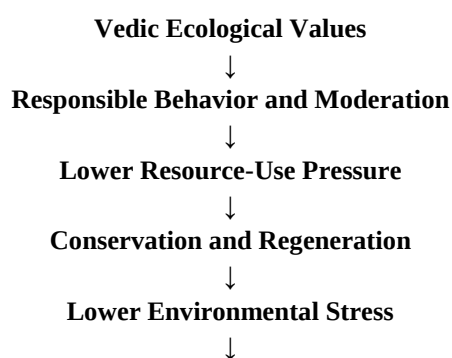


Figure 3: Conceptual environmental-stress curve. This figure is analytical/conceptual and is not a statistically estimated causal curve.

THE CONCEPTUAL RELATIONSHIP FOR VEDIC CULTURE IS SUSTAINABILITY TO ENVIRONMENTAL STRESS

This study's main hypothesis is that cultural values can affect behavior, behavior can affect intensity of resource use, and intensity of resource use can affect environmental pressure (Figure 3). This can be expressed as:



INTEGRATED SUSTAINABILITY FRAMEWORK

Today the best way is to avoid setting aside traditional knowledge and modern science. Rather, the two can be combined. Vedic ecological ethics can offer motivation based on values, environmental science can offer measurement, technology and evidence, economics can offer incentives and public institutions are responsible for regulation and implementation.

$$\begin{aligned}
 &\text{Vedic Ecological Ethics} \\
 &+ \\
 &\text{Modern Environmental Science} \\
 &+ \\
 &\text{Economics and Incentives} \\
 &+ \\
 &\text{Technology and Innovation} \\
 &+ \\
 &\text{Government Regulation} \\
 &+ \\
 &\text{Community Participation} \\
 &= \\
 &\text{Sustainable Development}
 \end{aligned}$$

POLICY RECOMMENDATIONS

1. Include Indian Knowledge Systems and environmental ethics in sustainability education. Encourage conservation and use of local water and rainwater capture, in addition to modern technologies for water management.
2. Improve the management of forests, wetlands and other common resources at the community level.
3. Encourage sustainable agriculture, agroforestry and soil-moisture conservation. Encourage habits of "Reduce, Reuse, Repair and Recycle" – circular economy.
4. Apply economic measures to discourage over-extraction of resources and pollution.
5. Develop local environmental indicators for water, soil, biodiversity, air quality and waste.
6. Combine traditional ecological knowledge with scientific validation and impact assessment. Increase

environmental awareness via schools, colleges and community institutions.

7. Enhance the intergenerational responsibility as key criterion in sustainable development.

FINDINGS

1. Indian stresses are multidimensional, covering land, water, air, forests, biodiversity and climate related stresses.
2. The per-capita water availability is clearly projected to decrease, reflecting increasing water resource pressure.
3. Air-quality indicators show that policy actions can be shown to have measurable effects.
4. Vedic ecological ideas provide a culturally oriented concept of moderation, conservation and non-harm and responsibility
5. Traditional ecological knowledge must be scientifically evaluated and applied selectively and not expected to be sustainable in all cases.
6. For today's sustainability, a shared approach of cultural values and science, economics, technology and governance are more appropriate.

CONCLUSION

The central concept of ecological balance is rooted in the Vedic culture and can be used to explain the relationship between Vedic culture and environmental stress. Vedic ecological values focus on respect towards the earth and the natural resources, moderation, interconnectedness and responsibility. Recent Indian evidence shows that land and water resources are still highly stressed and policy interventions have also had measurable impacts on some environmental indicators.

The most sound conclusion that one may draw from an academic study is not that Vedic culture alone is an answer to the problems of the modern environmental scene. Instead, it offers an ethical and behavioral framework that can enhance the current sustainability practices. These values, in the context of environmental science, economic policy, technology, and regulation and community participation, can contribute to a shift away from resource-intensive development to conservation and regeneration.

The modern sustainability pathway therefore can be summarized as: Ancient ecological wisdom, modern science, economics, technology and public policy = sustainable development.

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