Environment & Ecology · GS - III

Afforestation is widely promoted as a climate-change mitigation strategy, but its ecological outcomes vary across landscapes. Examine the relationship between planted forests, wildfire risk and carbon sequestration. Suggest measures for sustainable afforestation.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 06/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Afforestation, forest plantations, monoculture, biodiversity, wildfire vulnerability, carbon sequestration, climate change, landscape ecology, mixed-species plantations, fuel management, ecological restoration

Model Answer

Introduction

Afforestation contributes to carbon sequestration, timber production and soil conservation. However, its ecological benefits depend on species selection, plantation design and local environmental conditions.

Relationship Between Plantations and Wildfires

Dense monoculture plantations can create continuous fuel loads, increasing the potential for wildfire spread, particularly during droughts and heatwaves. Conversely, appropriate thinning, fuel removal and landscape management can reduce fire intensity.

A 2026 global study analysing 67,248 converted land patches found that afforestation was associated with an average 26% increase in fire occurrence and 23% increase in expected burned area, with substantial differences

among temperate biomes.

Measures for Sustainable Afforestation

Afforestation should prioritise native and mixed-species plantations, ecological suitability and landscape-level planning. Firebreaks, controlled fuel management, regular monitoring and community participation can improve resilience.

Natural forests and biodiversity-rich ecosystems must be protected from inappropriate plantation expansion.

Conclusion

Afforestation should focus on ecological restoration rather than merely increasing tree numbers. Landscape-sensitive planning can strengthen carbon storage while reducing wildfire vulnerability.