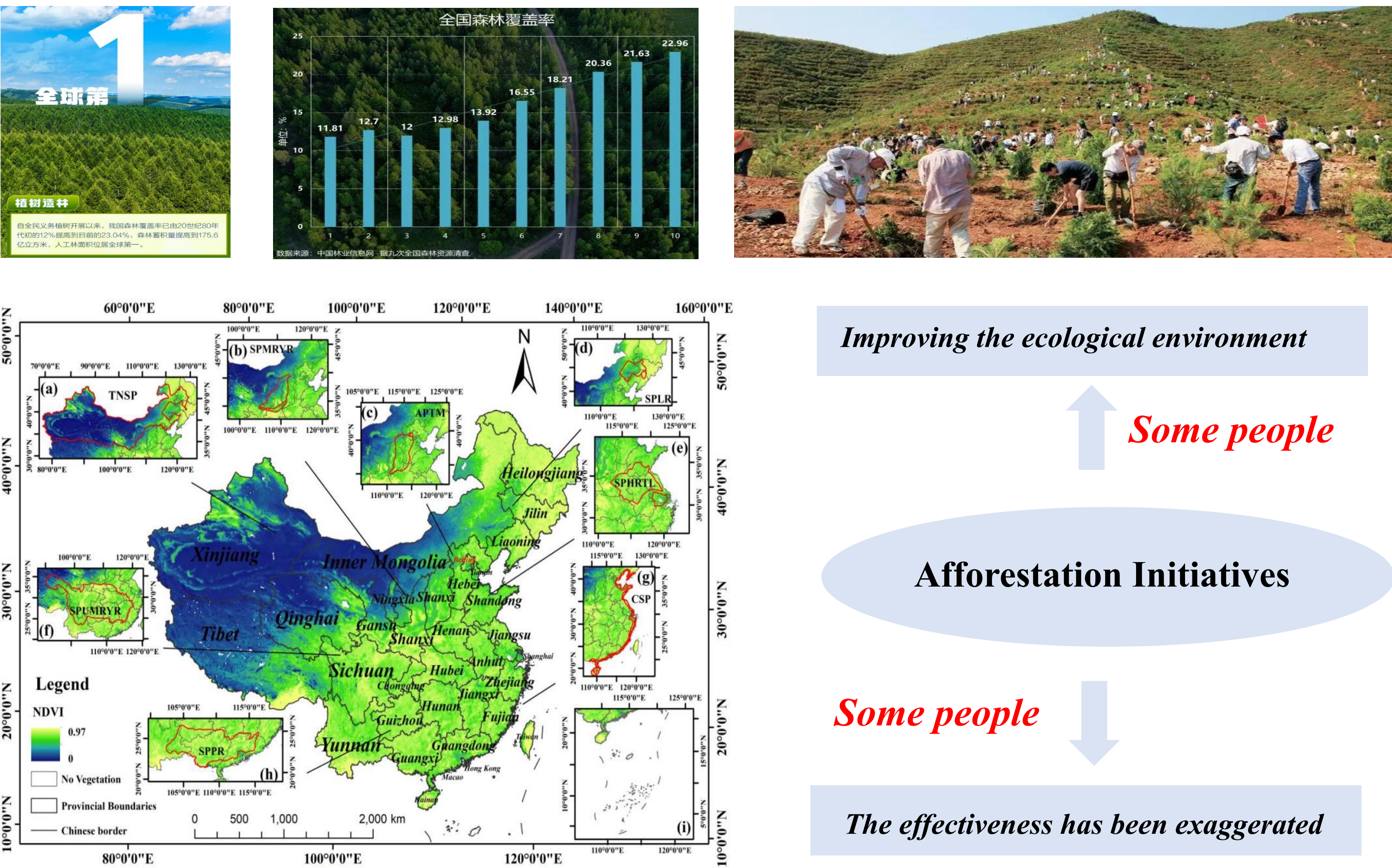


ABSTRACT

Based on satellite data, we investigate the spatiotemporal dynamics of vegetation greenness in China and quantify the relative contributions of climate change and forestry projects to vegetation greenness change. The results show that in the past 39 years, the vegetation greening of eight forestry project areas in China has been significant, and the contribution of climate change to vegetation greening was 72.34%, and that of forestry engineering was 27.36%. Due to the differences in climate conditions and ecological engineering management, the implementation effects of forestry projects are also different. The implementation and benefits of forestry projects are closely related to regional climatic conditions and vegetation growth environments. In areas with suitable climatic conditions, forestry projects will promote regional vegetation restoration. On the other hand, Some forestry projects still have obvious vegetation degradation, and it is necessary to carry out appropriate forestry management.

INTRODUCTION

China is the most populous country in the world and a major emitter of greenhouse gases. Since the late 1970s, China has implemented large-scale ecological restoration, which is considered to be the most important human activity affecting vegetation greening.

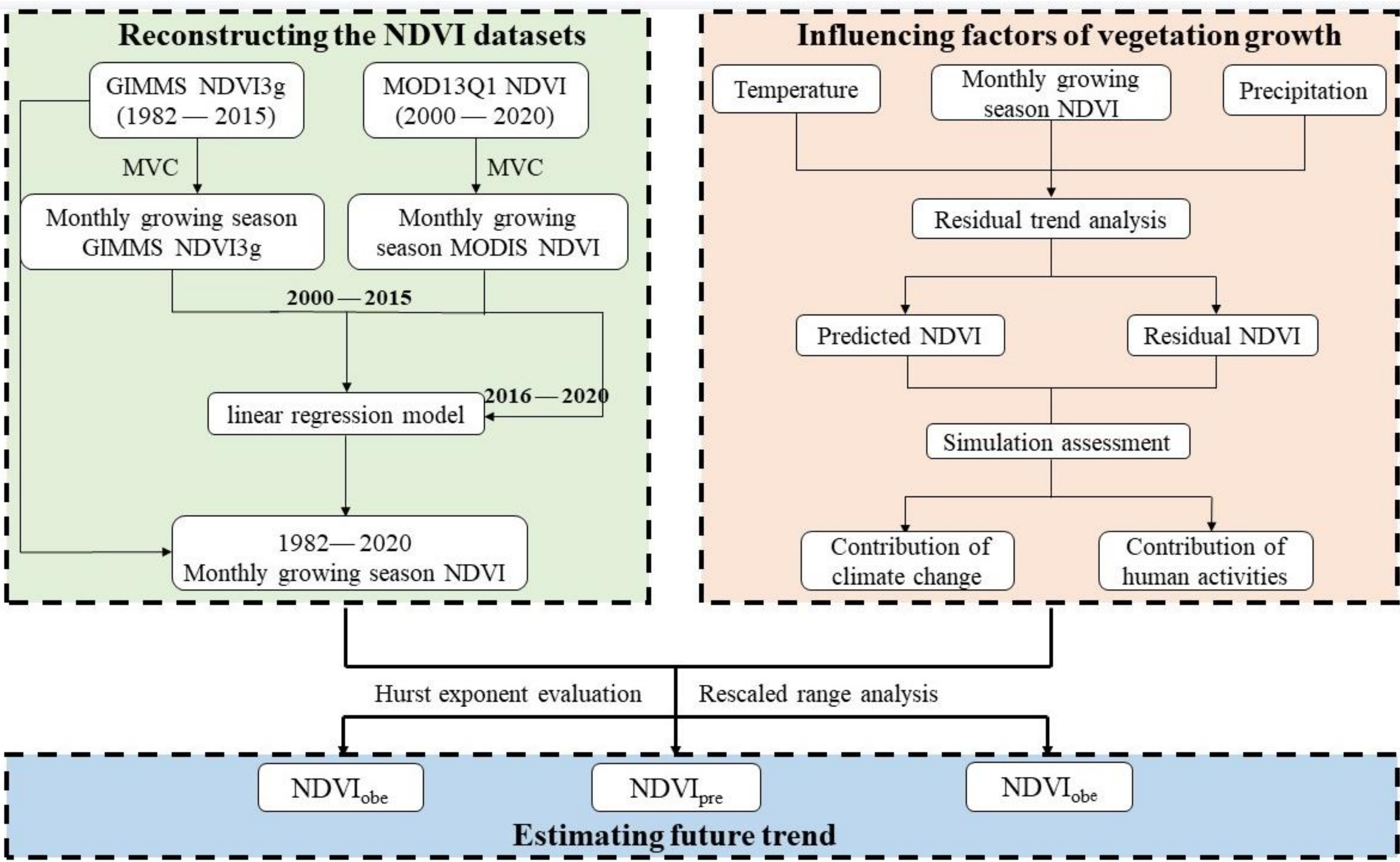


Quantitative calculation of vegetation change influencing factors and evaluation of the contribution of afforestation to vegetation greening in China are critical to coping with climate change and improving the implementation and efficacy of forestry projects.

OBJECTIVE

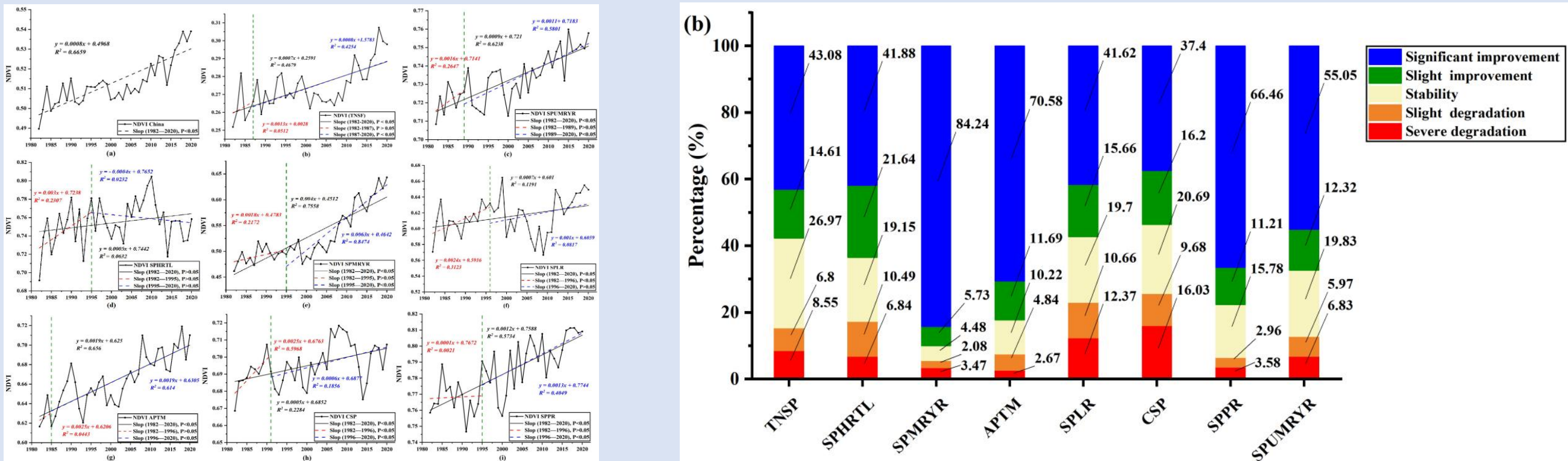
- a. What is the spatiotemporal pattern of China and forestry project NDVI trends?
- b. In the context of climate change, the impact of forestry projects on vegetation greening was quantified, and the implementation effect of forestry projects was evaluated.
- c. Estimating future changes in vegetation and the contribution of forestry projects to vegetation change based on the degree of implementation of current forestry policies.

METHODS

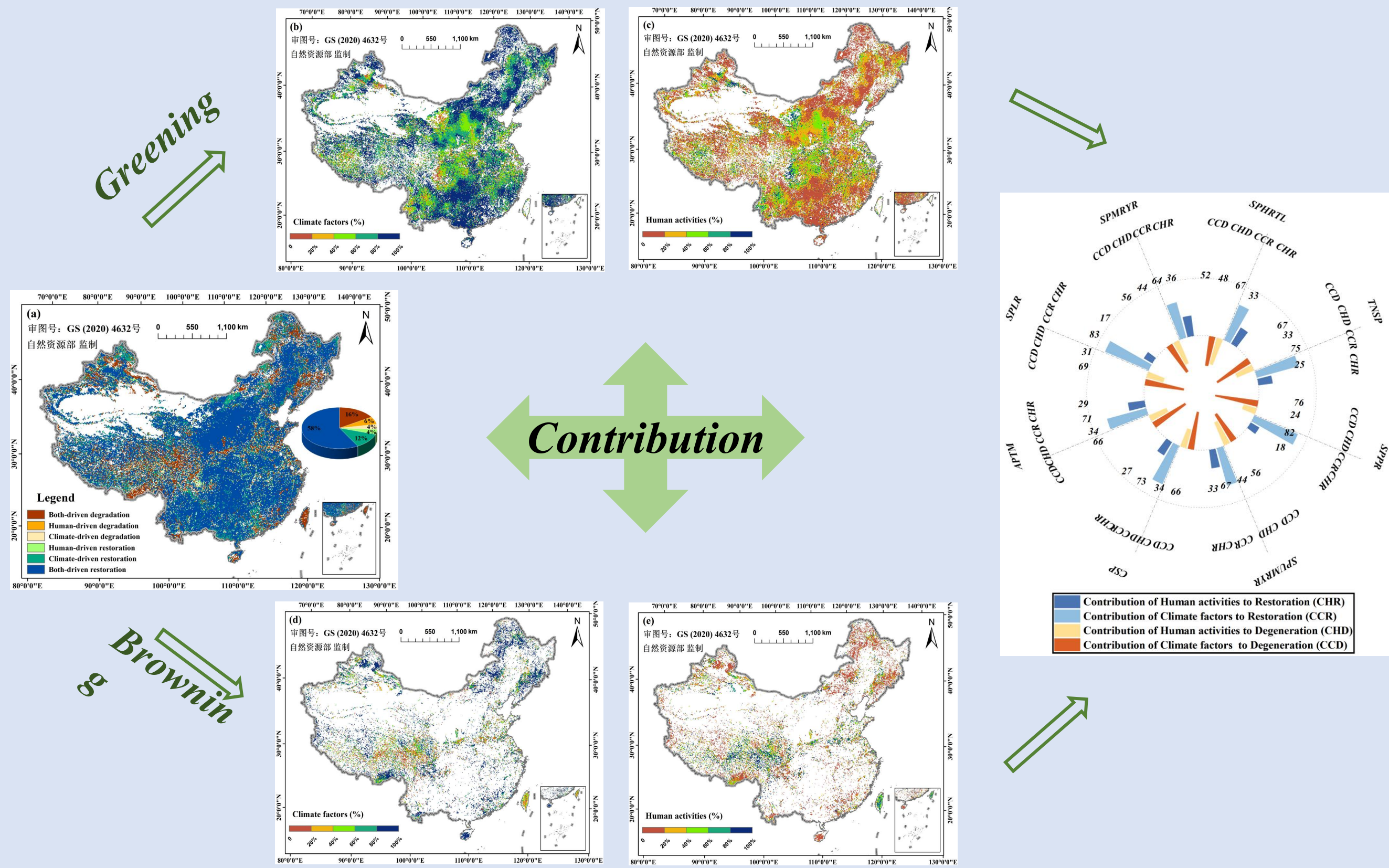


RESULTS

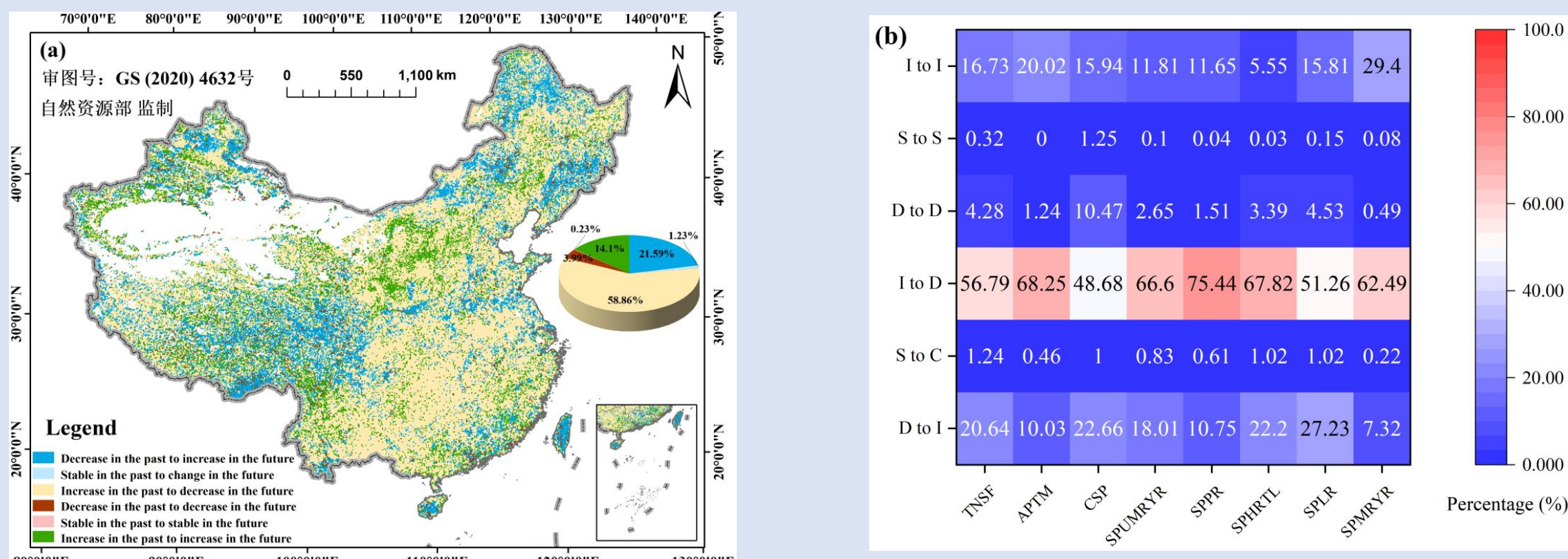
Spatiotemporal Dynamic Changes of Vegetation in Forestry Projects



The Impact of Climate Change and Forestry Projects on Vegetation Dynamic



Estimating Future Vegetation Greenness Changes In Forestry Projects



TNSP: Three North Shelterbelt Program
SPTM: Afforestation Program for Taihang Mountain
SPHRTL: Shelterbelt Program for Huaihe River and Taihu Lake
CSP: Coastal Shelterbelt Program

SPMRYR: Shelterbelt Program for Middle Reaches of the Yellow River
SPLR: Shelterbelt Program for Liaohe River
SPMRYR: Shelterbelt Program for Upper and Middle Reaches of Yangtze River
SPPR: Shelterbelt Program for the Pearl River

DISCUSSION

This work will help to cope with future climate change and provide a reference for the implementation and management of ecological projects.

limitation

Mixed pixel problem in coarse-resolution remote sensing images.
Not considering the impact of extreme climates on vegetation.

CONCLUSIONS

- a. China has achieved remarkable vegetation restoration thanks to its climate and ecological projects. The contribution rates of climate change and forestry projects to vegetation restoration are 72.34% and 27.66%, respectively.
- b. The implementation effects of forestry project measures differed due to differences in land-use types, climate conditions, and topographic conditions among different regions.
- c. There was still obvious vegetation degradation in some forestry engineering areas; therefore, the intensity of ecological engineering construction needs to be further strengthened to better maintain the effectiveness of these projects.

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