

Coordinated Development of Economic Growth and Vegetation Cover in the Yangtze River Economic Belt, China

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SUMMARY

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Vegetation is an important part of terrestrial ecosystems. The ecological balance of the Yangtze River Economic Belt (YEB) is an significant guarantee for maintaining the land surface ecosystem in China and globally. From 2000 to 2021, the surface of the YEB became green widely, and the average value of multi-year growing season fractional vegetation cover (FVC) was 75.113%, with an increasing trend of approximately $0.003 \cdot a^{-1}$, among which, the growing season FVC in Chongqing city had the largest increasing trend of approximately $0.005 \cdot a^{-1}$, and that in Jiangsu province and Shanghai city had the smallest increasing trend of approximately $0.001 \cdot a^{-1}$. Spatially, the growing season FVC trends in the YEB have striking spatial heterogeneity, showing an overall low north and high south, with the downstream region lower than the midstream and upstream regions.

Gross domestic product (GDP) , as the core indicator of modern national economic accounting system, to some extent is linked to the comprehensive national power of a country, which is the wealth base of a country's politics, culture and national defense. From 2000 to 2021, the GDP of all regions in the YEB shows a growing trend, among which, Jiangsu province has the largest GDP increase trend, approximately $5.223 \cdot a^{-1}$, followed by Zhejiang province is $3.158 \cdot a^{-1}$, and Guizhou province has the smallest GDP increase trend, approximately $0.900 \cdot a^{-1}$. In addition, the downstream regions contribute the most to GDP, exceeding 51% of the region-wide GDP, while the midstream and upstream regions each contribute about 20% to

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25%.

As the pace of economic development continues to accelerate, the contradiction between the two has become a prominent issue in sustainable development. We found a low level of coupled coordination of GDP and vegetation cover in the YEB from 2000 to 2003. The region was in a transitional development phase from 2004 to 2006, a few cities (45.455%) entered a coordinated development phase in 2007. By 2010, the majority of cities (72.727%) were at the stage of leapfrogging from intermediate to good coordination. From 2018 to 2021, the YEB achieved a quality and coordinated development of GDP and vegetation cover. The results of the study are intended to provide reference for other regions to achieve a "win-win" development pattern of coordinated development of economic growth and vegetation restoration.

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