



Coupling coordination analysis between urban park wetland water ecological construction and carbon emissions

Dexin Huang

Anhui Xinhua University, Hefei 230088, China, email: 15156882951@163.com

Received 10 June 2023; Accepted 23 August 2023

ABSTRACT

The low-carbon design of wetland park landscape is very important to maintain the water balance and carbon balance of human and ecosystem. The combination of an increase in carbon emissions and a decrease in carbon capture increases net carbon emissions. Based on the coupling and coordination analysis between water ecological construction and carbon emission of urban park wetland ecological landscape, this study constructed a carbon-water (CW) coupling simulation model of urban park wetland ecological landscape, proposed a low-carbon urban park wetland water ecological model, and then analyzed the coupling effect of carbon and water and carbon emission prediction of urban park wetland. The above method is supported by the recognition technology of CW coupling mechanism of urban park wetland and the reasonable allocation technology of water resources based on low-carbon model, and the technical innovation is realized in these two aspects. Finally, the low-carbon water resource allocation plan of urban park wetland is discussed. The results show that economic development and energy consumption will be developed according to the extended or low-carbon model, and the agricultural and forestry irrigation quota will be reduced by 0.01~0.02 mm and 10,000 m³ / ha, respectively. The irrigation water utilization coefficient, the water consumption rate of canal system and channel system were increased to 0.74 and 0.85 respectively. The technological innovation and results of this study provide new ideas and methods for low-carbon landscape design and water resource management of wetland landscape ecology.

Keywords: Wetland; Water ecology; Water resource allocation; Carbon emission; Coupling coordination
