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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

LY/T 3098-2019

**Regulation of monitoring and assessing the benefits of
protective forest projects in**

长江中下游防护林工程效益监测与评价

(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by the Chinese Academy of Forestry and is under the jurisdiction of the State Forestry and Grassland Administration.

This standard was drafted. Forestry Research Institute, Chinese Academy of Forestry, Hunan Academy of Forestry, Hubei Academy of Forestry, Beijing Forestry University.

1 Scope

This regulation specifies the monitoring, evaluation indicators and methods for ecological, economic and social benefits of shelter forest construction projects in the middle and lower reaches of the Yangtze River.

Methods, physical quantity and value measurement methods of benefits, and comprehensive benefit rating methods.

This regulation is applicable to forest ecological projects such as the construction of the Yangtze River shelter forest system, forestry schistosomiasis control projects implemented in the middle and lower reaches of the Yangtze River Benefit monitoring and evaluation of

the project.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document.

For undated references, the latest edition (including all amendments) applies to this document.

LY/T 1952 Long-term positioning observation method for forest ecosystem LY/T 2093 Ecological benefit evaluation rules of shelter forest system LY/T 2241 Forest ecosystem biodiversity monitoring and assessment specifications

3 Monitoring and evaluation indicators

The project monitoring and evaluation index system is shown in Table 1.

Table 1 Monitoring and evaluation index system

Evaluation index

A1. Ecological benefits B1. Conservation water C1. Culvert water storage capacity D1. Precipitation D2. Penetrating rain D3. Trunk runoff D4. Maximum water holding capacity of litter D5. Non-capillary porosity in soil profile C2. Improve water quality D6. Runoff fluid N content D7. Runoff fluid P content D8. COD content of runoff fluid D9. Monthly output B2. Conserving soil C3. Holding the soil D10. Soil erosion modulus D11. Soil density C4. Fertilize the soil D12. N content in soil profile D13. P content in soil profile D14. K content in soil profile D15. Organic matter content in soil profile B3. Carbon fixation and oxygen release C5. Carbon fixation D16. Biomass D17. Soil organic carbon storage C6. Oxygen release D18. Biomass D19. Soil organic carbon storage B4. Conserved species C7. Conserved species D20. Shannon-Wiener Index D21. Endangered index and endemic species index of rare species B5. Regulating microclimate C8. Mitigating high temperature D22. Temperature C9. Reduce harmful wind speed D23. Wind speed B6. Nutrient cycling C10. Nutrient accumulation in vegetation D24. Nutrient content in plants (N, P, K) B7. Purify the air C11. Absorption of sulfur dioxide D25. Leaf S content C12. Absorption of nitrogen oxides D26. Leaf N content C13. Absorption of fluoride D27. Leaf F content C14. Dust retention/adsorption PM2.5 D28. Dust retention D29. PM2.5 adsorption C15. Provide negative ions D30. Anion concentration C16. Noise reduction D31. Noise intensity B8. Repair soil C17. Absorb soil heavy metals D32. Plant heavy metal content (cadmium, lead, arsenic) B9. Disaster prevention and mitigation C18. Prevention and treatment of landslides and debris flows D33. Number of disasters D34. Total disaster area C19. Dike for wave elimination D35. Flow velocity of embankment during flood season B10. Prevention and treatment of diseases C20. Inhibition of Oncomelania snail growth D36. Oncomelania snail density A2. Economic benefits B11. Forest Products Revenue C21. Revenue from wood

products D37. Wood output value C22. Revenue of non-wood forest products D38. Output value of non-wood forest products B12. Forest recreation income C23. Forest recreation income increment D39. Tourism service income A3. Social benefits B13. New employment C24. New employment D40. Employment B14. Public health C25. Reduce schistosomiasis infection D41. Number of schistosomiasis infections and families C26. Forest recreation and rehabilitation D42. Forest rehabilitation B15. Culture, Science and Education C27. Scientific research activities D43. Scientific research projects and personnel C28. Popular science and education activities D44. Public participation

4 Price conversion method

When converting physical quantities into value quantities, since some price parameters are not valuation year price parameters, they need to pass prices in non-valuation years.

The grid parameter is converted into the price parameter of the evaluation year to calculate the current price of each functional value.

4.1 Price Index Method

$\alpha_{nm} = I_m 1 \times I_m 2 \times \dots \times I_n P_n = P_m \times \alpha_{nm}$ --price conversion coefficient
 (n > m) for converting the price of the m-th year of a commodity into the price of the n-th
 year;

Im 1, Im 2,, In--the price index of this category of goods in year m, m2, n, from the official of the National Bureau of Statistics of the People's Republic of China Web query Pn, Pm--respectively the price of a commodity in the nth and mth years, yuan.

4.2 Discount rate method

$P_n = P_m \times (1 + e_m) \times (1 + e_{m+1}) \times \dots \times (1 + e_{n-1})$ P_n , P_m --respectively the price of a commodity in the n th and m th years, yuan.

$r_m, r_{m-1}, \dots, r_{n-1}$ —respectively are the m -th, m -th, and $n-1$ year standard discount rates.

m--The year for which the price parameter of a commodity is available.

n--Evaluation year.

5 Measurement and monitoring methods of physical quantity and value quantity.

5.1 Measurement and monitoring methods of physical value and value of single benefit

See Appendix A.

5.2 Total value

$J_{Total} = \sum J_i$

J_{Total} and J_i are the total value of engineering benefits (or total ecological benefit value, total economic benefit value, total social benefit value) and the value of individual benefits. Unit. Yuan/a.

5.3 Monitoring and evaluation time selection

After the project is completed, a certain year of the structural stability of the shelter forest is selected as the monitoring and evaluation year, or every 2 to 5 years after the project is completed Monitoring and evaluation to monitor and evaluate the changes in the comprehensive benefits of the shelter forest in different periods (early, middle and late), and calculate the average annual benefits.

6.1 Shelter forest quality rating

The ecological benefit comprehensive index (EI) was used to rank the quality of shelter forests. EI calculation method see LY/T 2093.

6.2 Project input-output ratio

The total project input K (yuan/hm²) is only calculated for the direct input, including. seedling costs, labor costs for land preparation, afforestation, management and protection, and harvest Machinery costs, infrastructure construction costs, ecological compensation costs, etc. The total project input is converted into the price in the year of evaluation.

The comprehensive benefits of the project are always measured in terms of annual value. Among them, the annual value amount can be the value of a certain monitoring year when the protection forest has entered a stable stage.

The total amount can also be the average annual value of the whole growth period of the shelter forest.

The input-output ratio R (a) represents the number of years required to recover costs after completion. Calculation.

President

6.3 Comprehensive benefit evaluation classification table

The comprehensive benefit rating is divided into five grades. excellent, good, average, poor, and extremely poor. When the total value of the comprehensive benefits of the shelter forest (Yuan/hm

2) less than