

# Research on Logging Strategy in Northeast China Forest Area Based on Evaluation Result-oriented Decision Model

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## Introduction

The impact of global climate change on world development is becoming more and more serious. The approach to carbon peaking and carbon neutrality involves not only reducing carbon emissions, but increasing carbon sequestration also plays an increasingly important role. Carbon sequestration can be achieved by increasing the amount of carbon dioxide sequestered in the biosphere. Public information shows that the resource cutting strategy of forest farms in Northeast China is relatively extensive. It is urgent to design a forest harvesting strategy to reduce carbon emissions.

## Our Work

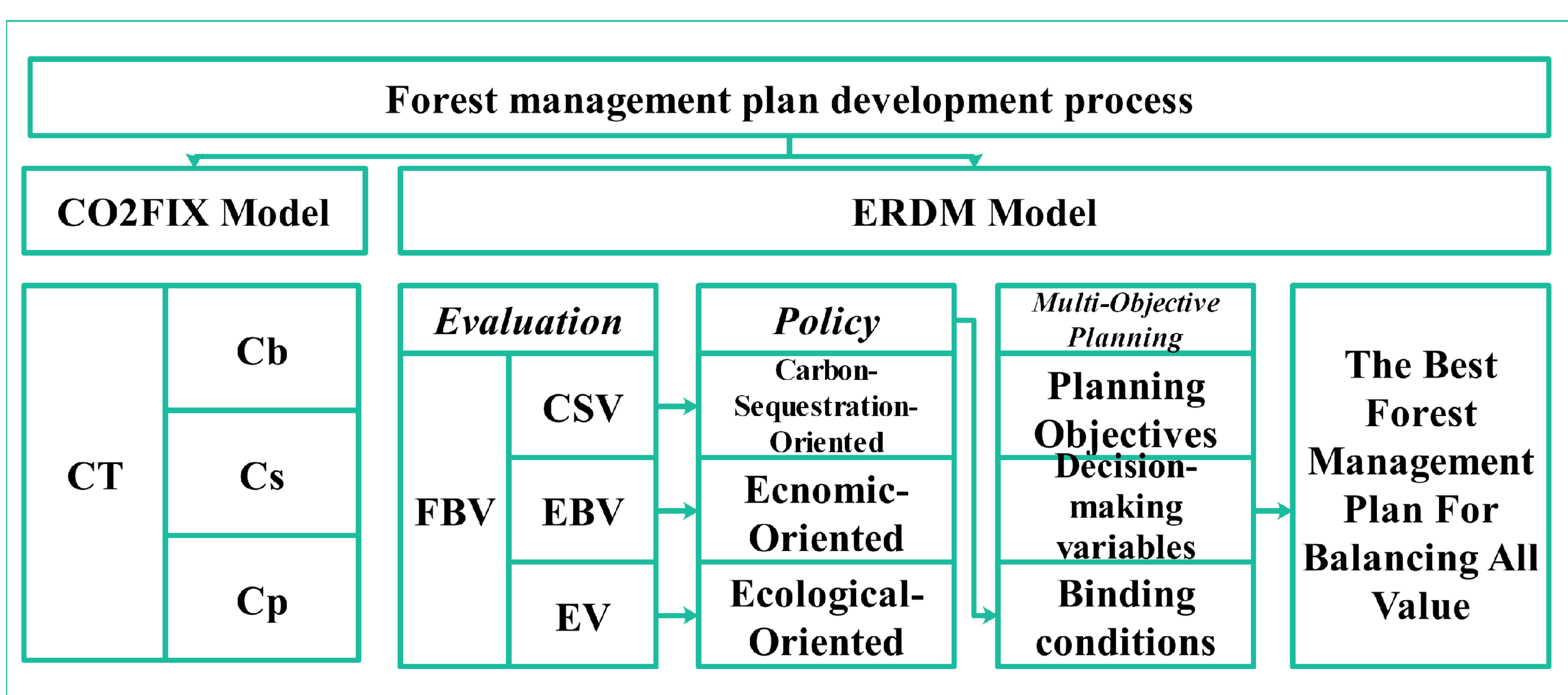


Figure 1. Forest Management Plan Development Process

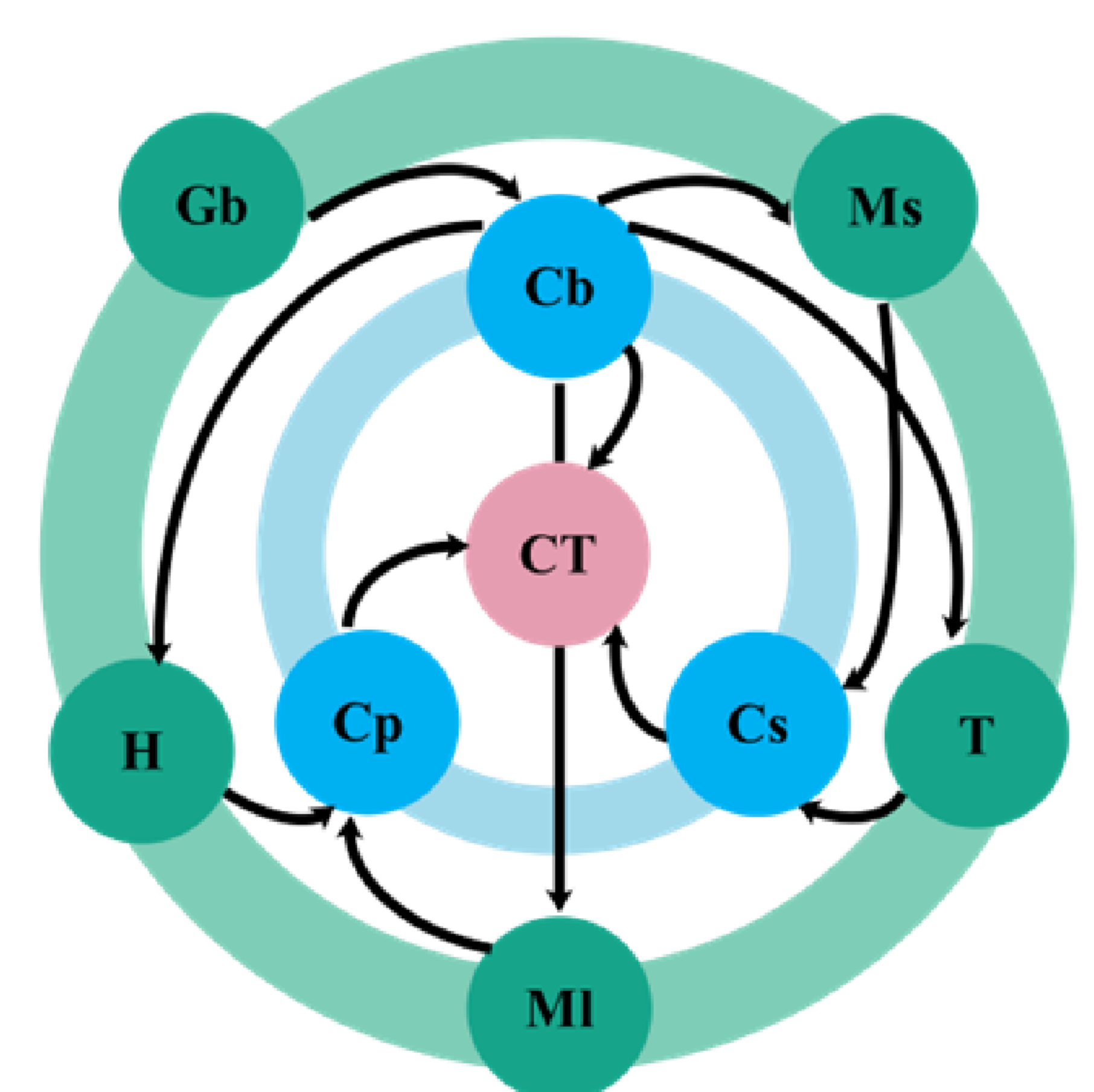


Figure 2. CO2FIX Model

- Firstly, the carbon sequestration of forest can be obtained by substituting various carbon cycle parameters of forest into CO2FIX model.
- Secondly, the evaluation system of the total forest value uses the quantitative value of carbon sequestration, economic value and ecological value as evaluation indicators. Guided forest management plans are proposed for lower-scoring indicators that affect the constraints of multi-objective planning.
- Finally, a multi-objective planning process is used to calculate the quantitative indicators of the forest management plan.

## Results & Conclusion

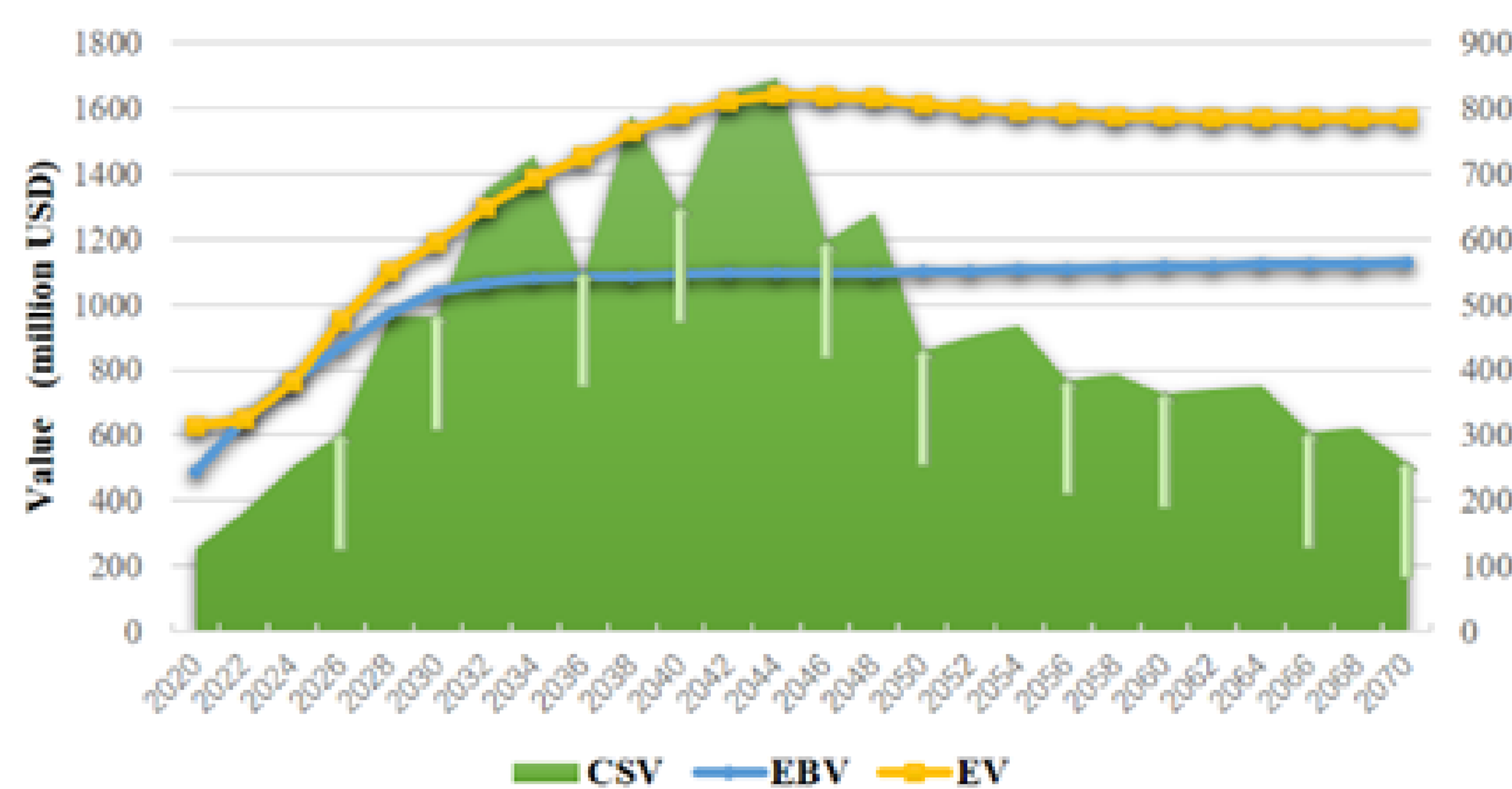


Figure 3. Before the Implementation of Forest Management Plan

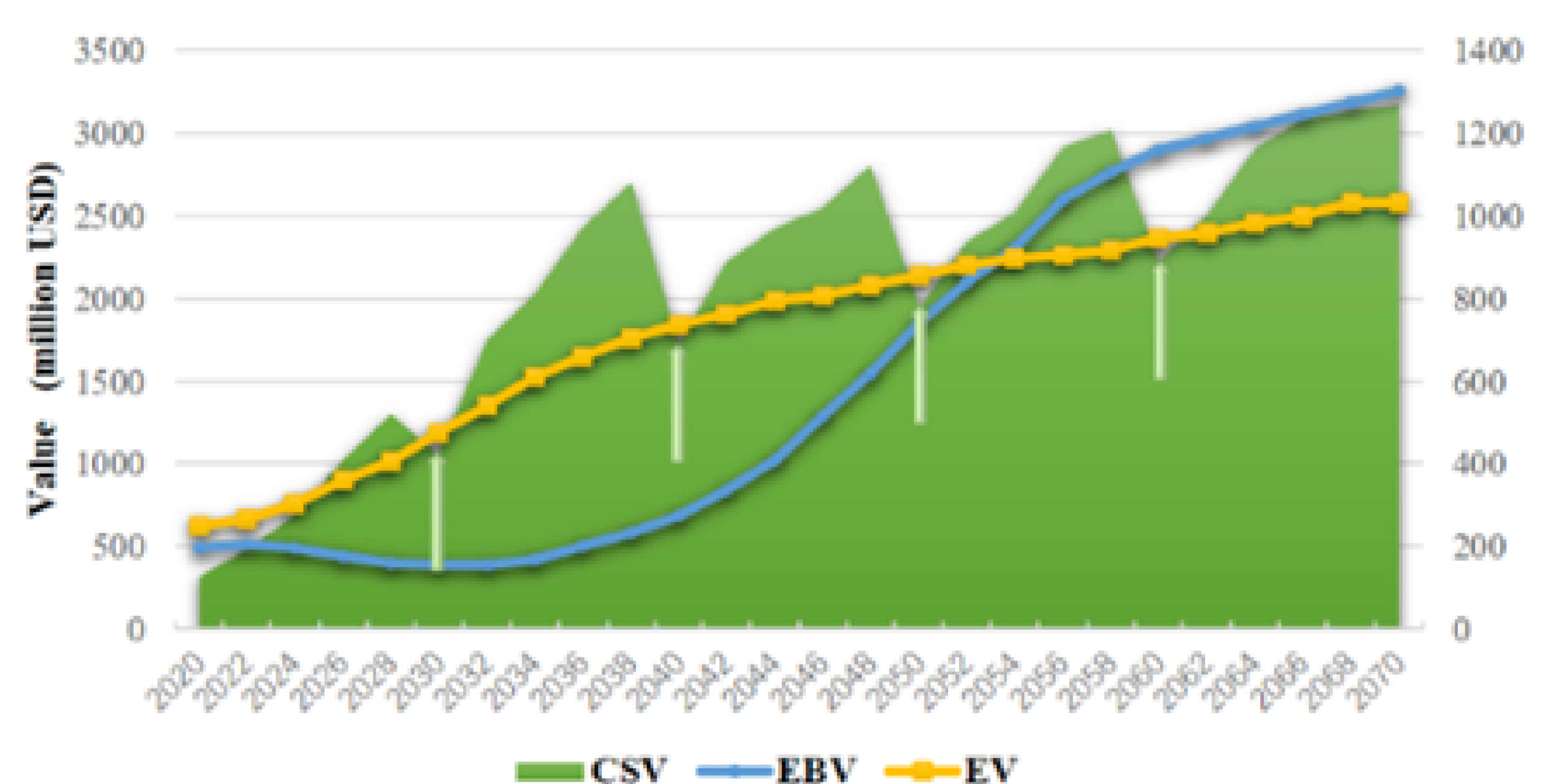


Figure 4. After the Implementation of Forest Management Plan

- After the implementation of the first phase of the plan, the value of forest carbon sinks has been well supported. Compared with before the implementation of the plan, the growth rate is faster, and the growth level of ecological value is basically the same as that before the implementation of the policy. The economic value of forests has actually declined due to a reduction in the proportion of short-term production.
- However, the economic value of the forest recovered quickly after the implementation of the second stage of the management plan. Although the growth of forest carbon sink value and ecological value has slowed down, it still maintains a certain growth rate.
- After the arrival of the third stage, the growth rates of the three aspects of the forest gradually stabilized, showing a common growth trend.
- Until the fourth stage, forests in Northeast China can adopt longer rotation periods, and the production of long-term products can ensure both carbon sink value and economic benefits.

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