CASE STUDY OF REFORESTATION PROJECT VIA CDM

FOREST PLANTATION PROJECT in INDONESIA

SUMITOMO FORESTRY CO.,LTD.
TOKYO, JAPAN

AUGUST 28, 2001 IN KITAKYUSHU

THE PURPOSE OF CDM

1. To achieve sustainable development in Parties not included in Annex I

2. To contribute to the ultimate objective of the Convention

3. To achieve compliance with their quantified emission and reduction commitments in Parties included in Annex I

(Kyoto Protocol Article 12-2)

CDM PROJECT FEASIBILITY STUDY BY THE MINISTRY OF ENVIRONMENT OF JAPAN

- Company: Sumitomo Forestry Co., Ltd.
- Survey: Feasibility Study of Reforestation Project in Indonesia
- Survey Period: 1999 - 2000
- Area: East Kalimantan Province, The Republic of Indonesia
- Merit: (1) Survey of quantity volume of fixed carbon through a sustainable industrial forest plantation
- (2) Feasibility study and cost performance for carbon fixing

CRITERIA FOR A FOREST PLANTATION PROJECT VIA CDM

- *Sustainable Forest Management*
- *Base Line*
1. *Indirect & Associated impacts by the project*
- *Risk Evaluation*
- *Carbon Accounting System*
- *Planning of the Project*

Study Sites

➢ East Kalimantan Province, The Republic of Indonesia

➢ Industrial Plantation Area of A-Company

➢Project Model with 10,000 hectare within the Area

Batu Putih
M. Karangan
Pesab

Benua Baru
M. Bengkal
Ngayao

S. Mao
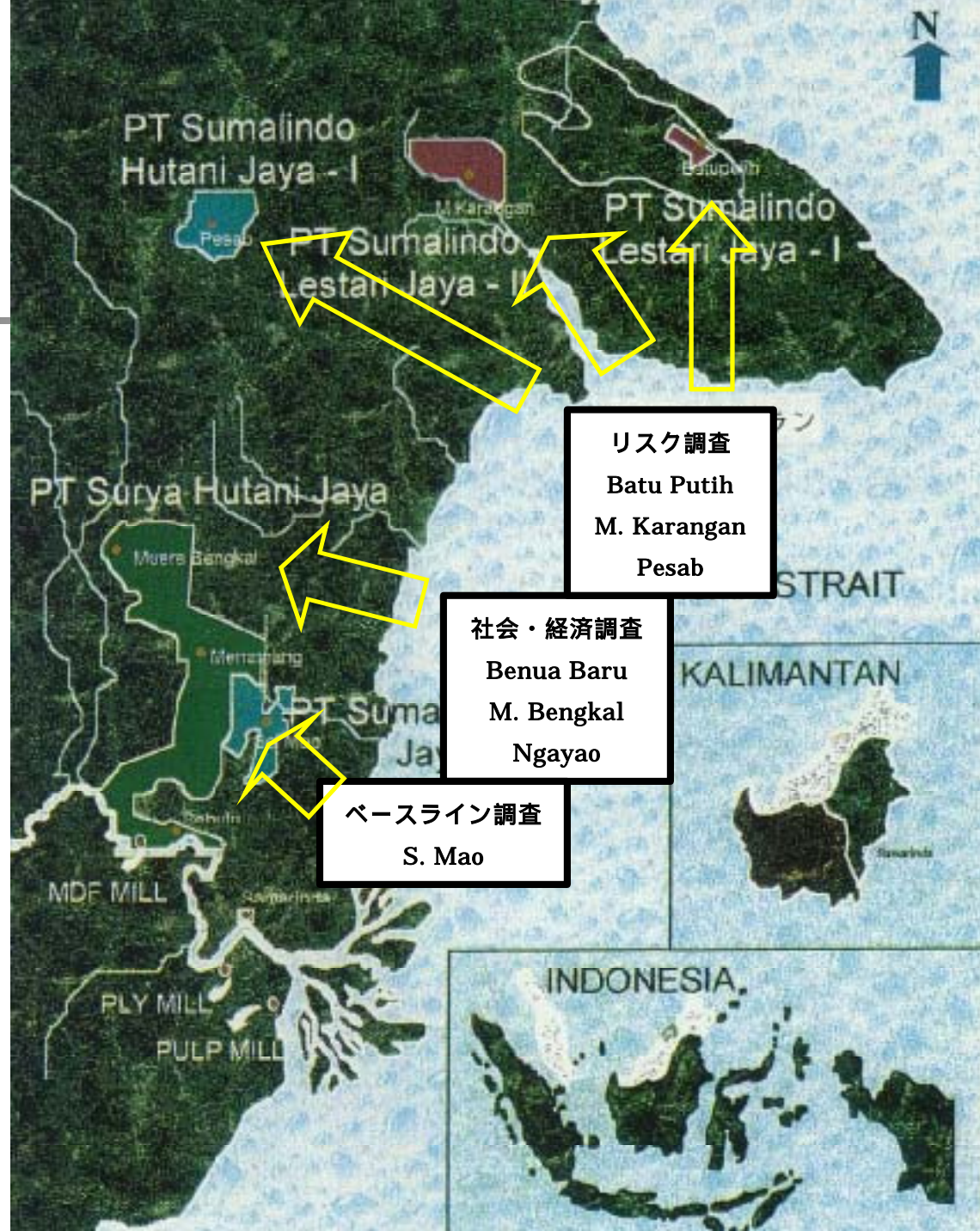
SUSTAINABLE FOREST MANAGEMENT

-*Combination with Short-term, Medium-term and Long-term Harvesting Species*

-*Estimation of Growth of the Plant*

-*Forest Management…land preparation, thinning, planned harvesting*

-*Replant the same area after harvesting*

-*Direct cost, indirect cost, harvest income*

-*Environmental Concern*
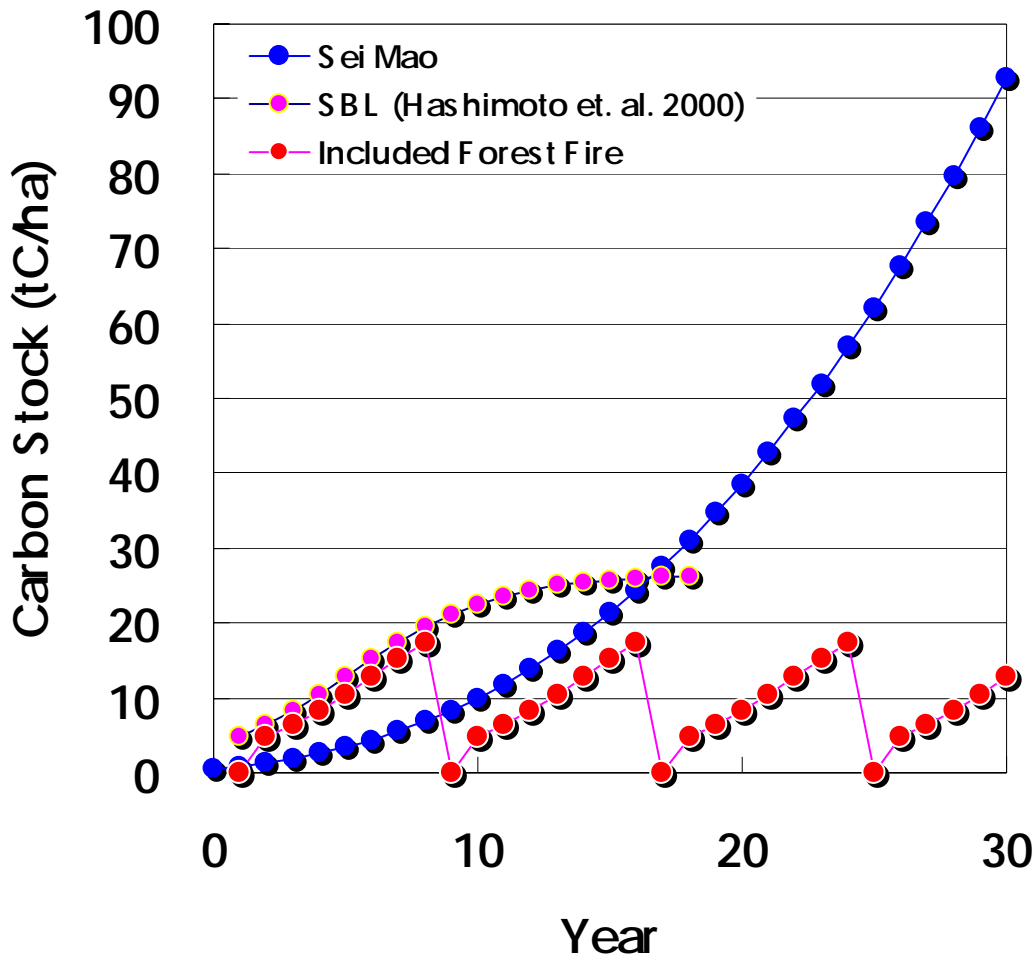
-*Cooperation with Local Community*

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BASE LINE OF A REFORESTATION PROJECT

- Changing of Carbon Stock in the Project Site unless the Project Exists.

- We implemented forest survey.

ESTIMATION of a BASE LINE

- ➢ **Project Based.**
- ➢ **Included impacts of forest fire.**
- ➢ **Recovering of carbon storages after the fire was based on the results of a previous study (Hashimoto *et. al.* 2000).**
- ➢ **PROJECT BASE LINE 2.18C-TON(per 1 hectare)**

INDIRECT & ASSOCIATED IMPACTS

- *Leakage*

- *Impact on Ecology*

- *Impact on Social & Economical Aspects*

RISK ESTIMATION FOR FOREST PLANTATION PROJECT

➢ **Forest Fire**

 - 20% of the plantation area every 8 years

➢ **Pest Insects**

➢ *- 10% of Teak Trees*

➢ *- 30% of Gmelina Trees*

PLANNING of A PROJECT

➢ *Forest Management*

- ✓ **Unit Area:** ***10,000ha***
- ✓ **Site:** ***East Kalimantan, Republic of Indonesia***
- ✓ **Species and Planting Area:Gmelina 5,000ha, Duabanga 1,000ha, Teak 1,000ha, Mahogany 1,000ha, Sungkai 1,000ha, Meranti 1,000ha**
- ✓ **Harvest Time: every 8 - 20 years (one cycle)**
- ✓ **Evaluation of Risks: Considered**
- ✓ **Project Period: 30 years**

➢ *CDM Aspects*

- ✓ **Changing of Carbon Storage in the Project**
- ✓ **Carbon Accounting System**
- ✓ **Feasibility Study with CDM**

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FIXED CARBON VOLUME

> *Difference between nominal fixed carbon volume and the base line*

> *Risk to be considered*

> *Minus counting for harvesting (release)*

> *Our study shows the project fixes initial carbon for the first 9 years and after then fixing and releasing balanced.*

> *Fixed carbon volume for the first 9 years;*

> *164,000 c. ton = 1.82 c. ton/ hectare, year*

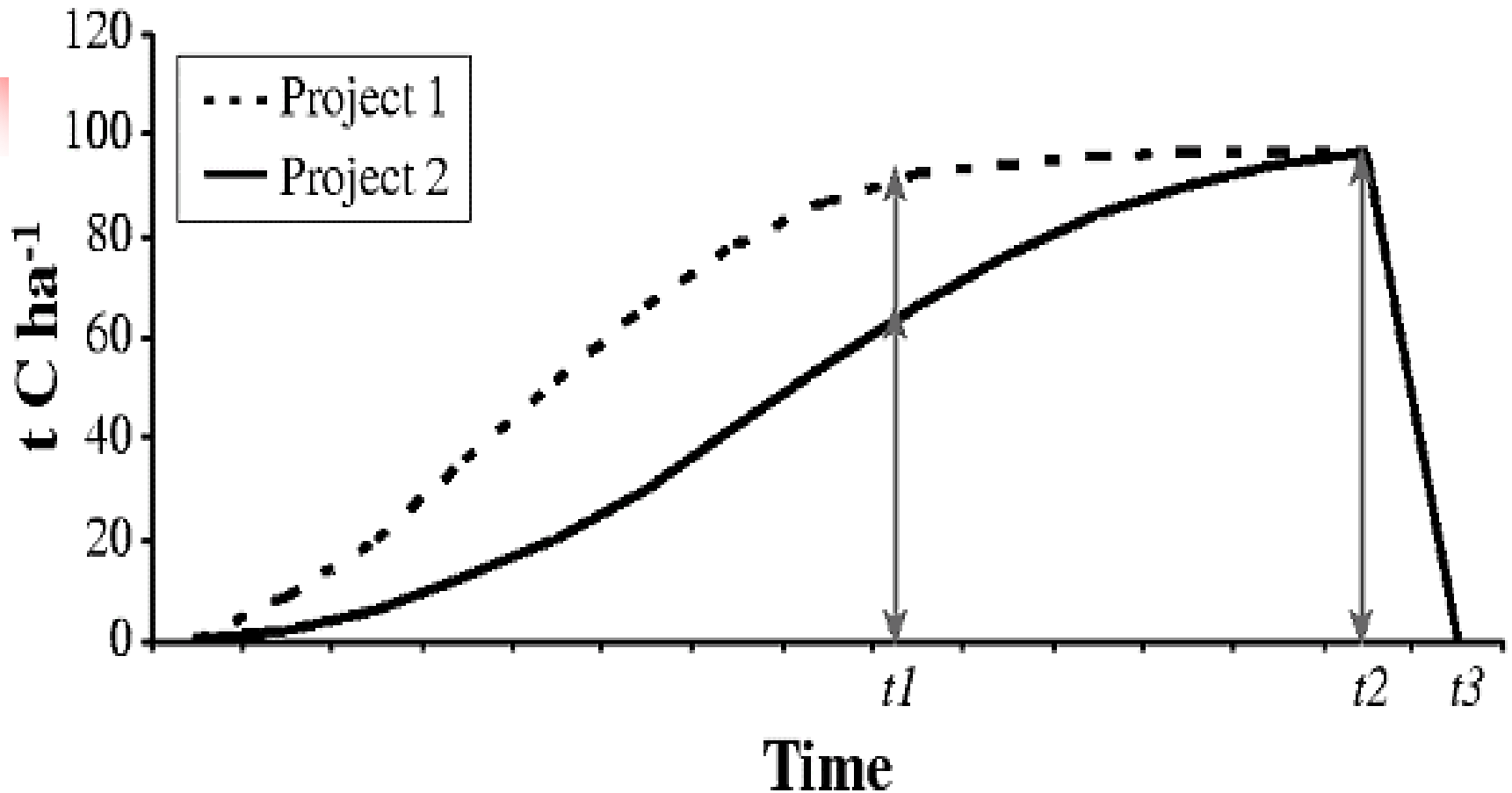> *1,200,000 ha = 20,000,000 c. ton/ 9 years (2002-2010)*

CARBON ACCOUNTING SYSTEM

➤ *Contents of Carbon Accounting Systems*
- ✓ **Calculation Methods of Carbon Storages**
- ✓ **Timing of the carbon credits occurrences: time to get the carbon credit**
- ✓ **Price of Carbon**

➤ *Proposed methods by researchers*
- ✓ **Stock change method**
- ✓ **Average storage method**
- ✓ **Alternative approaches**

Stock change method

Projection of carbon stored in two tree plantation projects with different growth rates. For simplicity, it is assumed that the baseline is zero and that harvesting leads to an immediate release of all carbon stored. Arrows illustrate the net carbon storage of the projects at different points in time, calculated by the stock change method. (IPCC, 2000)

Average storage method
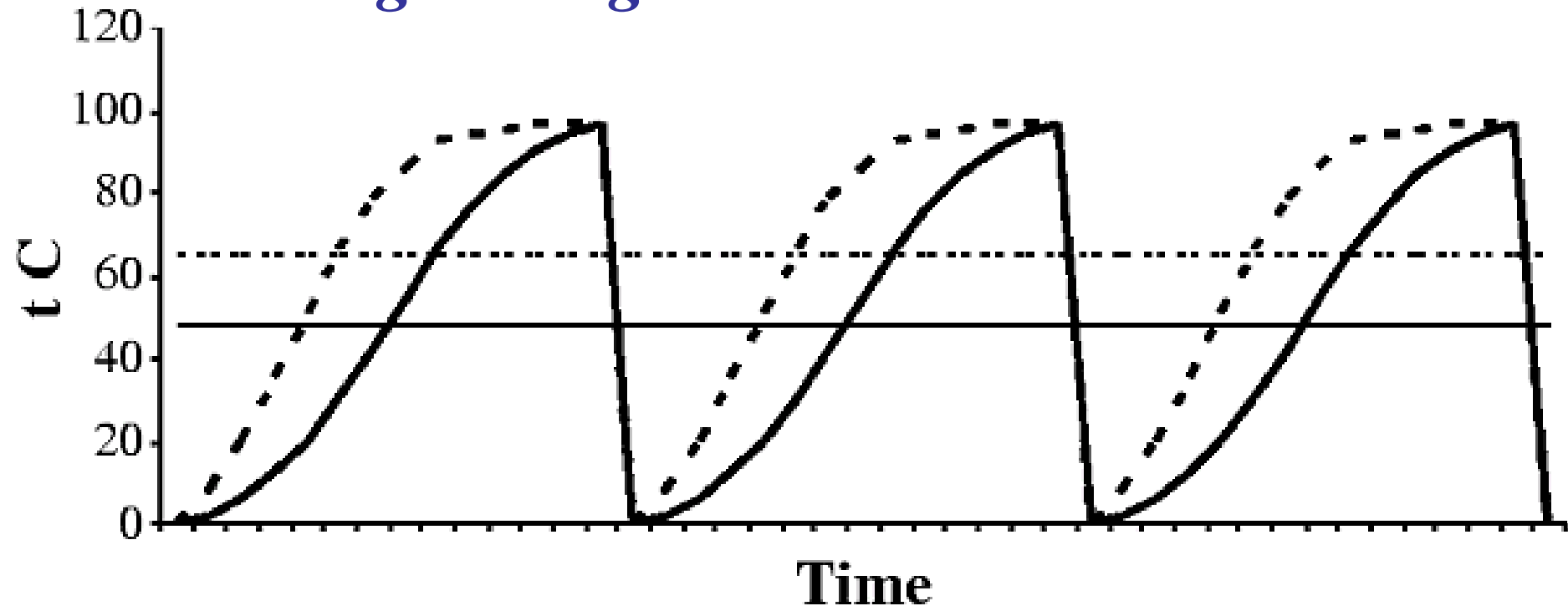
Projection of carbon stored in two tree plantation projects over three rotations.
For simplicity, it is assumed that the baseline is zero, that harvesting leads to an immediate release of all carbon stored, and that equilibrium of carbon pools is reached in the first rotation cycle. The curves illustrate carbon storage over time; the straight horizontal lines show the average storage calculated for the two projects. (IPCC, 2000)

Alternative approaches
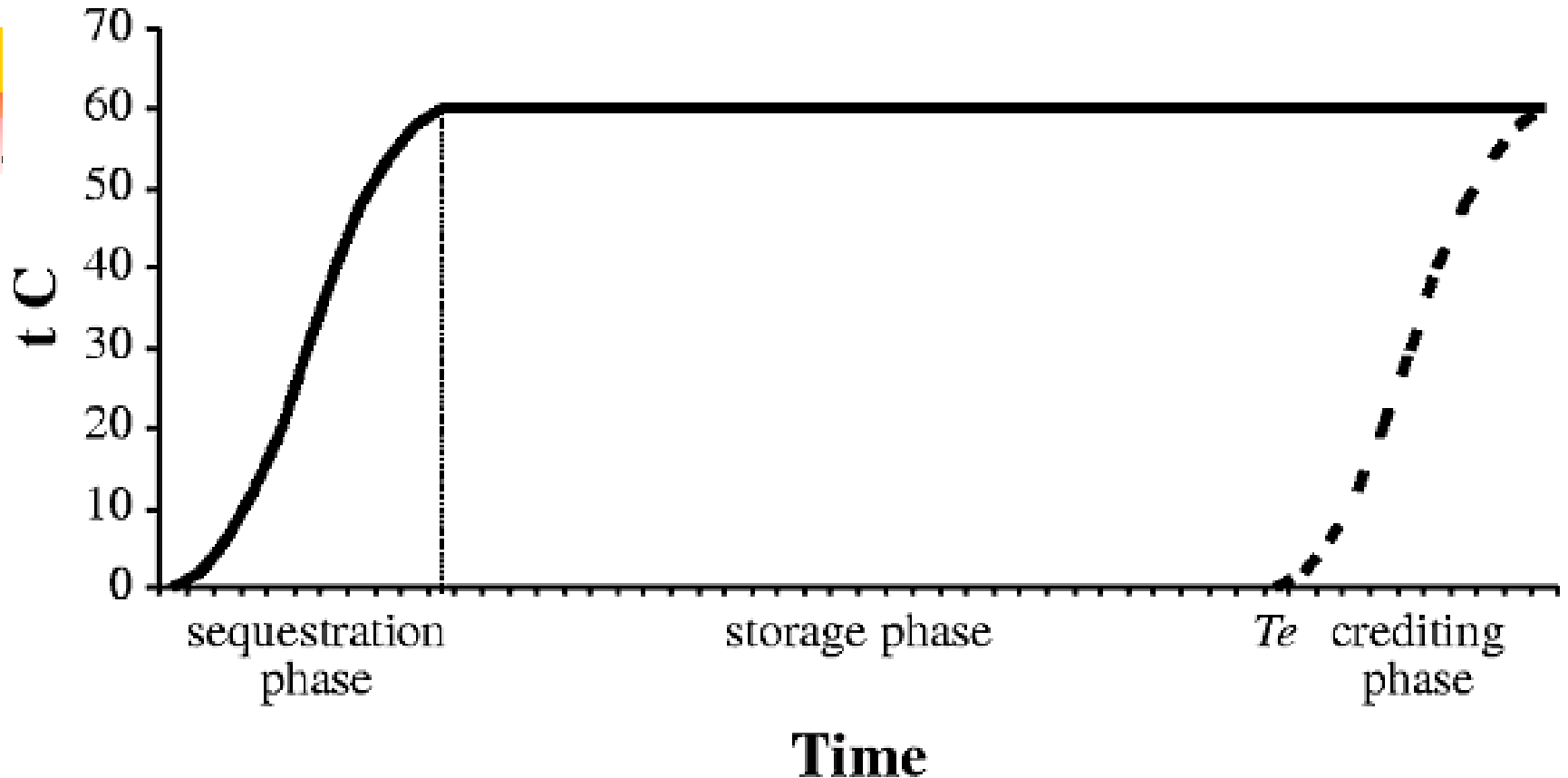
Projection of carbon stored in an afforestation project (with baseline assumed to be zero), illustrating the concept of equivalence-delayed full crediting. In this example, the project receives credits only after planted trees have grown and been kept for a period of time, Te. (IPCC, 2000)

COST PERFORMANCE FOR CARBON FIXING

- **US$68/ CARBON-TON**

- **FOR THE FIRST   YEARS**

Changing of Carbon Stocks
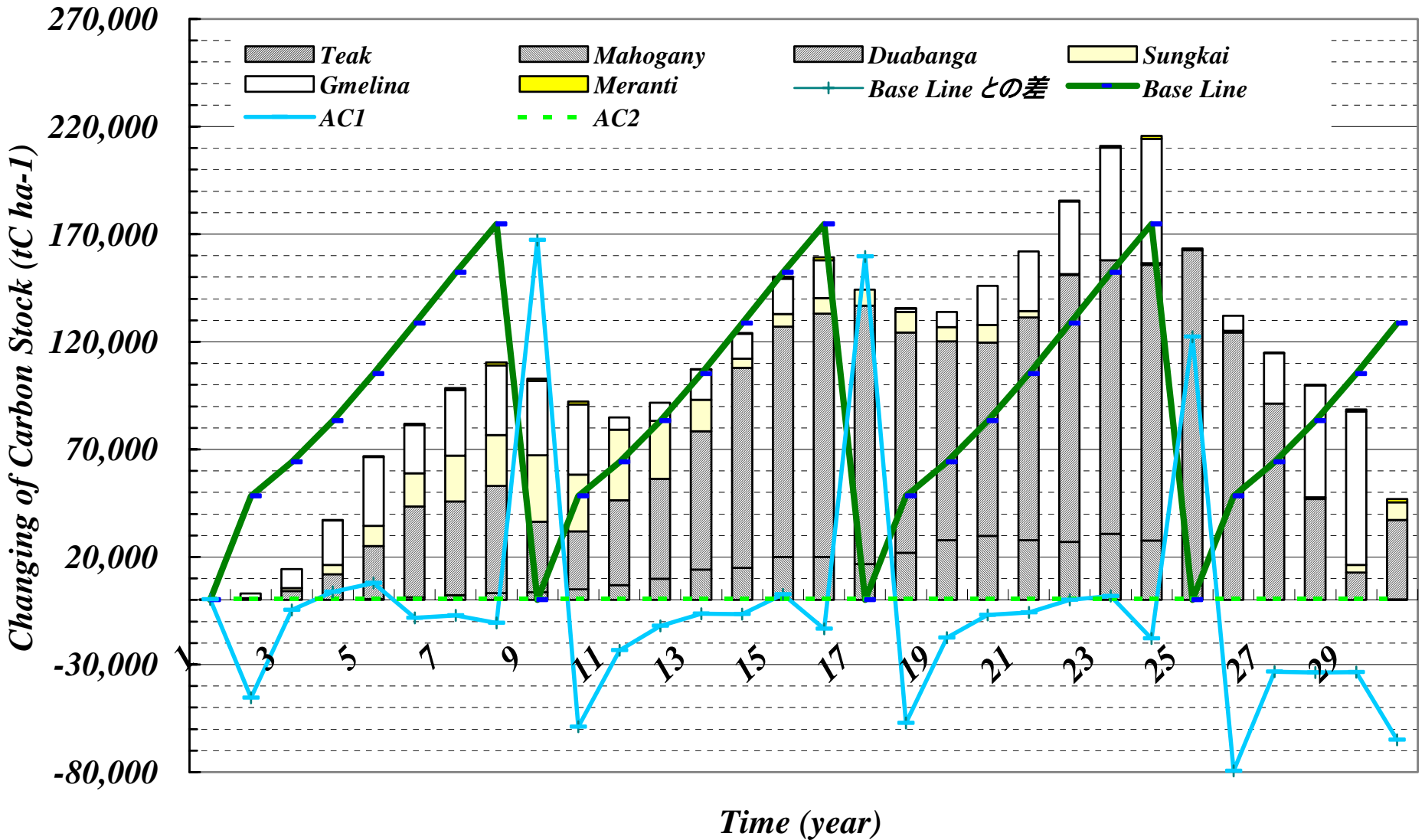
FEASIBILITY STUDY AS a CDM PROJECT

- Feasibility for 30 years
- Total money demand US$14 million
- The 1st year of sales profit: 18th year
- Carbon credit = cash income
- US$50+ feasibility improved
- US$100 strong incentive

Estimated Profit and Loss