CASE STUDY

THE PLANTAR PROJECT

"SUSTAINABLE FUELWOOD & CHARCOAL PRODUCTION FOR THE PIG IRON INDUSTRY"

SUSTAINABLE DEVELOPMENT ANALYSIS

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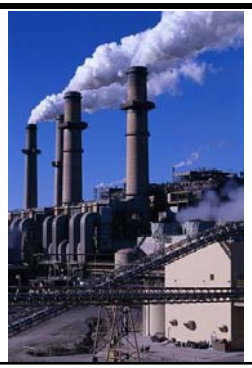
OUTLINE

BACKGROUND

- One of the major industries in Brazil is iron especially in Minas Gerais which became the iron and steel center in 1960s & 1970s
- During the late 1980s, the production of pig iron required 1 M hectares of native forest each year
- To reduce deforestation, the State of Minas Gerais passed a law prohibiting the use of native forest
- 3 segments of pig iron producers in Minas Gerais
    i. Charcoal based
    ii. Charcoal & Coal based
    iii. Coal based

	SOURCE OF CARBON	CARBON OBTAINMENT	CARBONIZATION
COAL ROUTE			
CHARCOAL ROUTE			

BACKGROUND

- The use of coal is harmful to the environment due to its sulfur compound, causing acid rain
- Coal also releases CO_2 to the atmosphere

$$1 \text{ ton of pig iron} = \begin{cases} 1.8 \text{ ton of } CO_2 \text{ (coal)} \\ 1.1 \text{ ton of } CO_2 \text{ (charcoal)} \end{cases}$$

- Use of coal will increase gross production of pig iron by 130%
- The trend over the last decades has been towards the use of coal for pig iron production

OVERVIEW

- Plantar was established in 1967, in the midst of military dictatorship, benefiting from attractive tax incentives
- Plantar CDM project entitled “sustainable fuelwood & charcoal production for the pig iron industry” was accepted by the World Bank Prototype Carbon Fund
- Project Objective
  - To promote environmentally sustainable socio-economic development in rural Minas Gerais, Brazil;
  - To achieve greenhouse gas emissions reductions.

BRAZIL MAP

- Project Location
  - Minas Gerais State, Brazil

OVERVIEW

- Project Baseline
  - Continuing decline in establishment of fuelwood plantation;
  - Ongoing switching to coal for pig iron production;
  - Maintenance of pasture on former natural forest land in Minas Gerais

OVERVIEW

- Project Type

Fuel switching, reducing emissions from charcoal production and afforestation. It involves the following:

- Establishment of 23,100 ha of high yielding Eucalyptus;

  ➔ Needs less trees to produce the required amount of charcoal

- Reduction of methane emissions during charcoal production;

  ➔ Methane Flaring

- The regeneration of “cerrado” native vegetation on 478.3 ha of pasture lands.

OVERVIEW

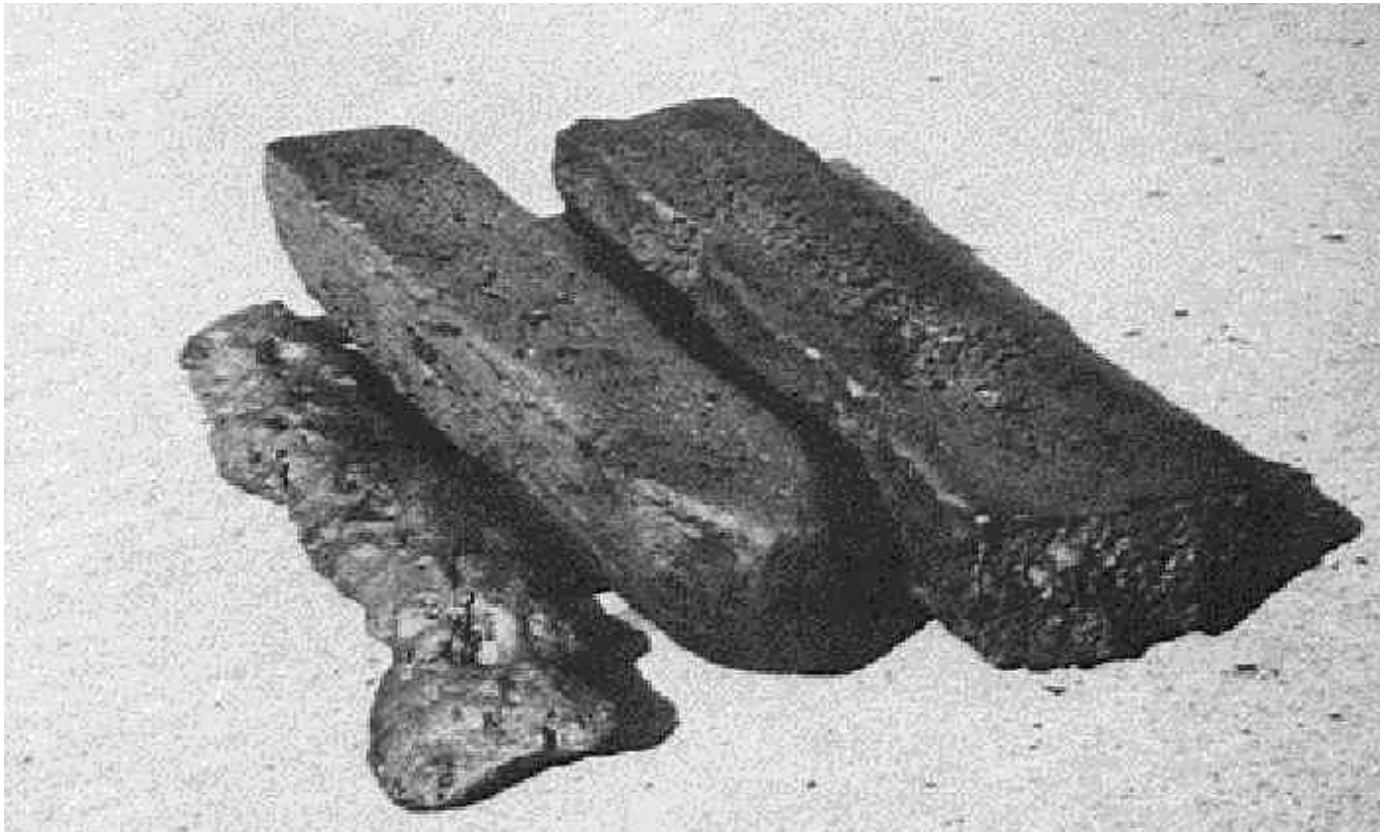
- Crediting Period

  Twenty-One years: three 7-year “renewal” periods depending on the development in the baseline

EUCALYPTUS PLANTATION

EUCALYPTUS TREE

PIG IRON



OVERVIEW

- Estimated CO_2 Reduction

  2002 – 2009 : approx. 19,444 – 2,245,108 tonsCO_2 /year
  2010 – 2023 : approx. 395,246 & 376,346 tonsCO_2/year
  28 years lifetime : 2002 – 2029 ≈ 12.9 million tons CO_2

- Sources of Emissions Reduction
  - Establishing new fuel wood plantations
  - Reducing methane emissions from charcoal production
  - Reducing CO_2 and NO_2 emissions in pig iron production by switching from coal to charcoal;
  - Regenerating native forest on pasture land

OVERVIEW

- Project Sponsor and Operator
  - Plantar, S.A.
- Project Planning and Assistance
  - World Bank, Brazil
  - World Bank Prototype Carbon Fund

OVERVIEW

- Project Background
  - The plantation will be established in blocks of 3,300 ha, repeated each year for 7 years
  - In the 8th year, the first block will be harvested and wood carbonized
  - These trees will regrow from coppice shoots & the growth harvest cycle will continue for two rotation after which the plantation will be re-established with new seedlings
  - Plantar will improve the carbonization process by redesigning the brick kiln

SUSTAINABLE DEVELOPMENT INDICATORS

- ECONOMY
  - Technology
  - Currency
  - Employment
  - Others
- ENVIRONMENT
  - Forest
  - Water
  - Waste
  - Air
  - Others
- SOCIAL
  - Laws
  - Education
  - Health
  - Others

SUSTAINABLE DEVELOPMENT INDICATORS

- ECONOMY - TECHNOLOGY

BASELINE	PROJECT
☐ Advance technology on carbonization is not available in the host country	☑ Improved technology of carbonization & high quality seedling ☑ Methane Flaring from charcoal production

SUSTAINABLE DEVELOPMENT INDICATORS

- ECONOMY - CURRENCY

BASELINE	PROJECT
☐ Small-scale pig iron producers are using foreign currency to purchase coal to be used in the production of pig iron.	☑ Reduce foreign currency dependence due to less importation of coal

SUSTAINABLE DEVELOPMENT INDICATORS

- ECONOMY - EMPLOYMENT

BASELINE	PROJECT
☐ Jobs are available for the local community although unemployment rate is increasing due to pig iron producers are switching to coal form charcoal	☑ More employment is needed for plantation based charcoal fuel than using imported coal ☒ Regional working office sued the project for not obeying Brazilian labor law & illegal subcontracting of work
☐ Raw materials is available for local food product factories	☒ Various food product factories closed due to lack of raw materials

SUSTAINABLE DEVELOPMENT INDICATORS

- ECONOMY - OTHERS

BASELINE	PROJECT
☐	☒ Large plantations are not consistent with the land reform objective of distributing the lands and encouraging small-scale agricultural activities

SUSTAINABLE DEVELOPMENT INDICATORS

- ENVIRONMENT - FOREST

BASELINE	PROJECT
☐ Increasing rate of forest fire	☑ Fire control system
☐ Charcoal is still used to produced pig iron	☑ Project will establish high yielding plantations and efficient carbonization to reduce the overall plantation area and permit soil recuperation of former planted area
☐ Increasing rate of deforestation due to continuous use of charcoal	☑ Managed fuel wood plantation ☑ Regeneration 478.3 ha of pasture lands.

SUSTAINABLE DEVELOPMENT INDICATORS

- ENVIRONMENT – FOREST (continuation)

BASELINE	PROJECT
☐ Increasing rate of deforestation due to continuous use of charcoal	☒ Plantar was responsible for the destruction of some the cerrado since they needed to clear land for eucalyptus plantation

SUSTAINABLE DEVELOPMENT INDICATORS

- ENVIRONMENT - WATER

BASELINE	PROJECT
☐ Water is available for flora & fuana	☒ Plantar eucalyptus plantations were placed on water sources like springs & rivers making it unsafe for drinking & killing the animal life in the stream ☒ The detour on the road paralyzed the rehabilitation project of Boa Monte Stream protecting the vegetation in the stream and diminished flow and quality of water

SUSTAINABLE DEVELOPMENT INDICATORS

- ENVIRONMENT - WASTE

BASELINE	PROJECT
☐ Minimal use of herbicide and pesticide	☒ Bad effects of herbicide & pesticide ☒ Some people were forced to sell their land due to the contamination of water

SUSTAINABLE DEVELOPMENT INDICATORS

- ENVIRONMENT - AIR

BASELINE	PROJECT
☐ Carbonization emits particulates and other pollutants	☑ Improved carbonization will reduce particulates and other pollutants

SUSTAINABLE DEVELOPMENT INDICATORS

- ENVIRONMENT - OTHERS

BASELINE	PROJECT
	☒ Short cycle of eucalyptus monoculture does not allow flora & fuana to flourish

SUSTAINABLE DEVELOPMENT INDICATORS

- SOCIAL - LAWS

BASELINE	PROJECT
☐ Operating with Forest Stewardship Council certification	☒ Plantar operates without Environment Impact Assessment & Report ☒ Forest Stewardship Council only validate 4.8% of Plantar total area & does not guarantee good forest management ☒ SCS (certifier) did not consult workers nor local communities for the certification

SUSTAINABLE DEVELOPMENT INDICATORS

- SOCIAL - EDUCATION

BASELINE	PROJECT
☐ Limited Training Facilities	☑ Plantar is sponsoring local agricultural schools & train students in sustainable forestry & agriculture ☑ Project will provide training for better forest management ☑ Workers will have special training in sustainable forest management & pest control techniques

SUSTAINABLE DEVELOPMENT INDICATORS

- SOCIAL - HEALTH

BASELINE	PROJECT
☐ Health care is available	☑ Improved health care ☒ Workers are exposed to dangerous working conditions due to the carbonization process & health hazards due to exposure to herbicides and pesticides

SUSTAINABLE DEVELOPMENT INDICATORS

- SOCIAL - OTHERS

BASELINE	PROJECT
☐ Local community has access to roads	☒ The project created an additional 5 kilometers detour causing difficulties for the local community
☐ Indigenous people were living at the cerrado forest	☒ People were expelled from their land resulting to migration to poor neighborhoods of urban centers
☐ Cows owned by the local community can graze into neighboring lands	☒ Local communities suffered from the restriction of Plantar on cow grazing on the neighboring lands

SUSTAINABLE DEVELOPMENT INDICATORS

- SOCIAL – OTHERS (continuation)

BASELINE	PROJECT
	☑ Training services are available for other companies involved in sustainable development

REFERENCES

- PDD of the “Plantar” Project submitted for Validation on Oct 17, 2001; Updated and resubmitted for validation on March 2002
- WRM’s bulletin, July 2002
- FERN News Release dated Thursday 27 March 2003 entitled
- http://www.cdmwatch.org/Plantar%20with%20more%20sigs%202%20june.doc (addressed to PCF dated May 23 2003 signed by different organizations / citizens)
- CDM Watch Briefing Paper prepared by:

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THANK YOU

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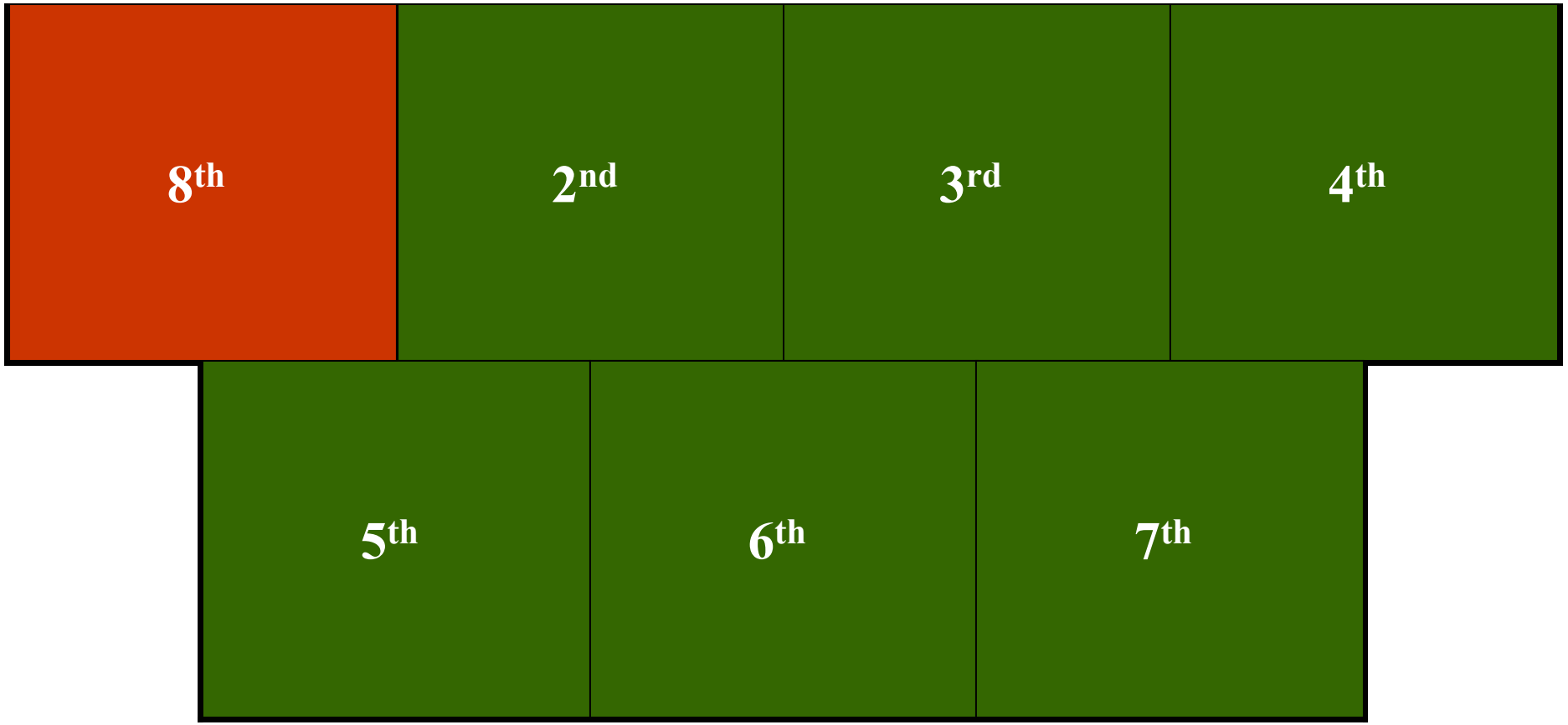
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