

ASICA

PIG IRON PRODUCTION AND
REFORESTATION IN CARAJÁS

AVAILABILITY OF SUPPLY

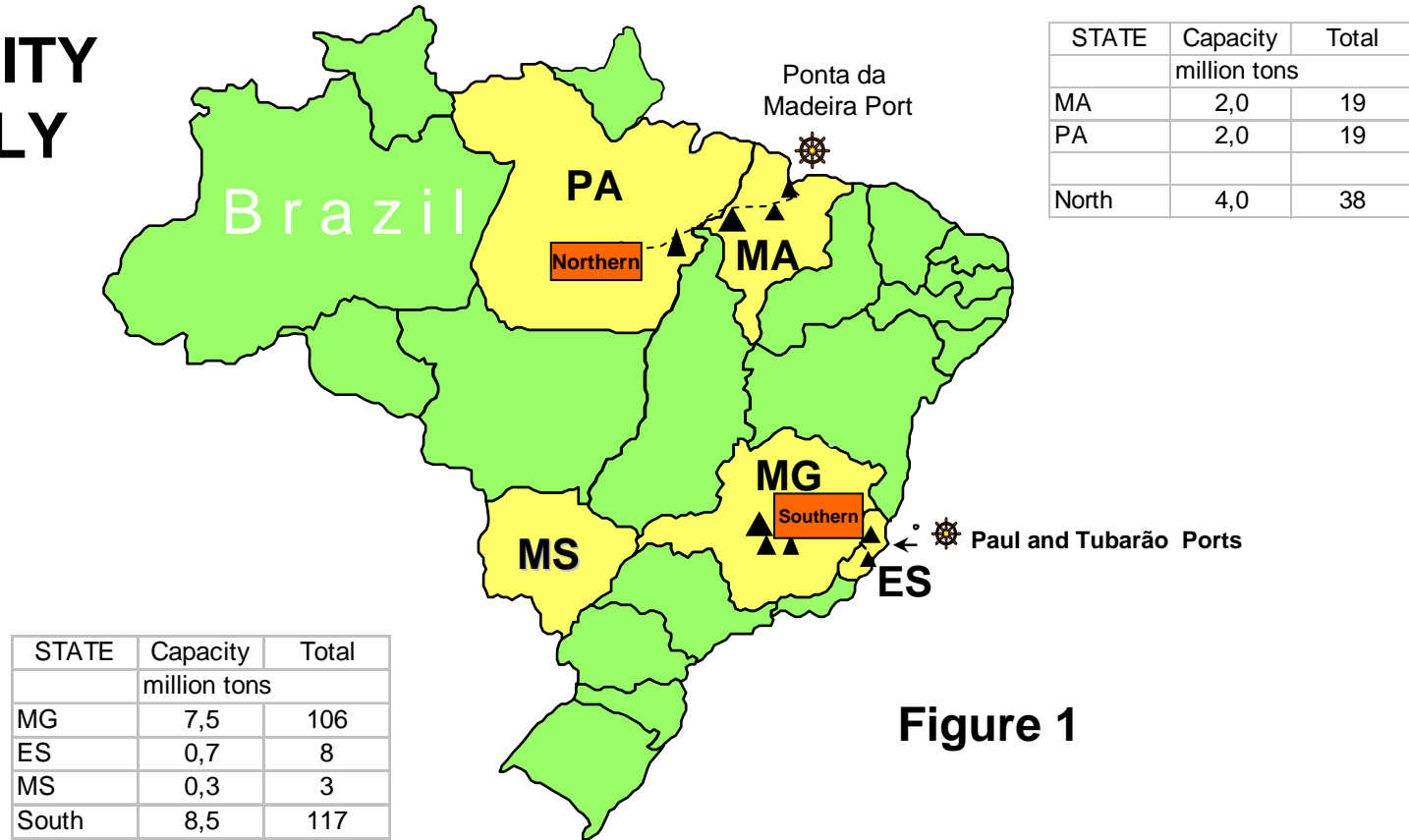


Figure 1

Total Brazilian production capacity increased substantially in the last 2 years achieving 12.5 million tons per year today, or 4 Mt in the Northern Region and 8.5 Mt In the Southern Region .

Today, due to the appreciation of the Real, output has been reduced to about 75% of capacity in the North, targeted mainly to the export market and to about 55% of capacity in the South which is being sold mainly domestically.

EXPORTS OF BASIC PIG IRON FROM BRAZIL

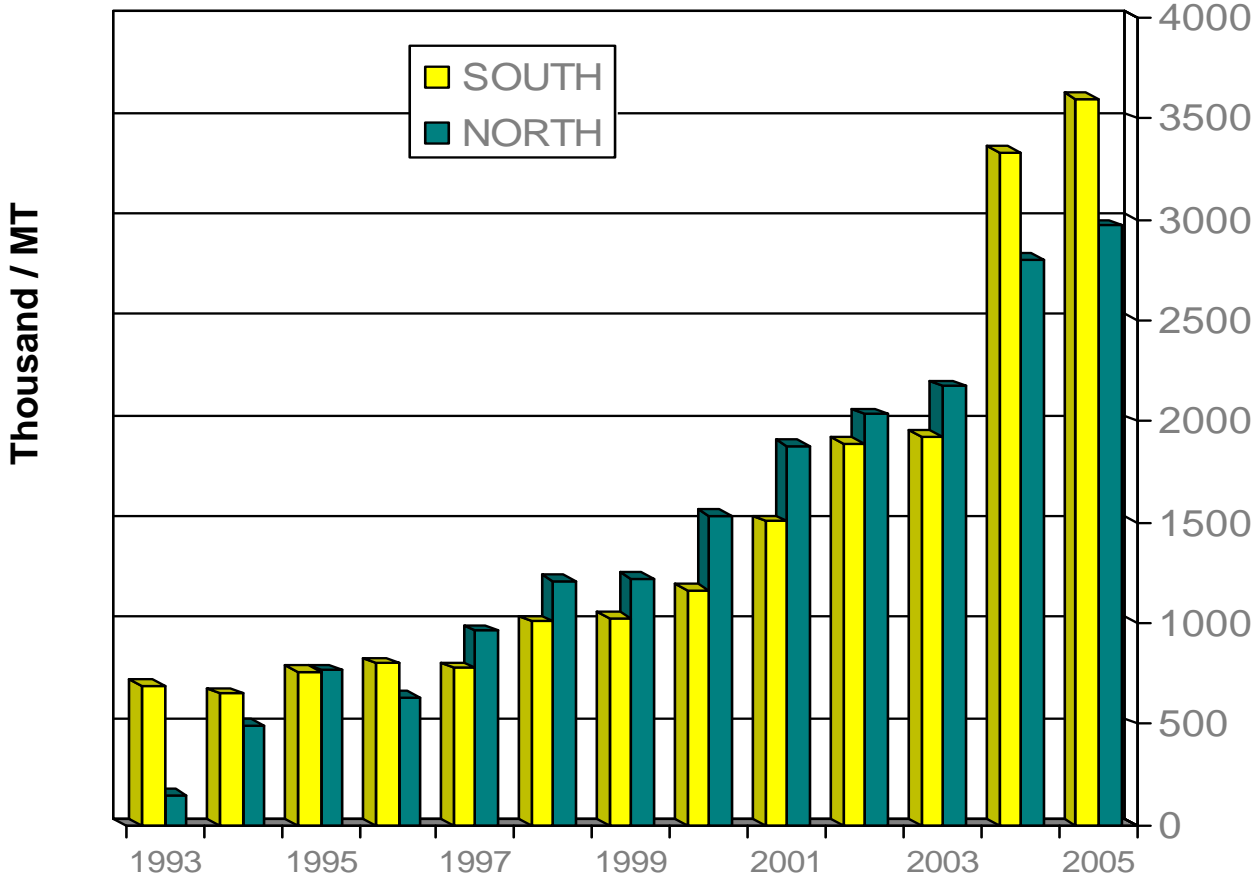


Figure 2

Brazil's major market is North America, followed by Asia and Europe, exports of Basic Pig Iron have been growing continuously in the North and also in the South.

Source
ASICA/SINDIFER

TONNAGE EXPORTED IN 2005

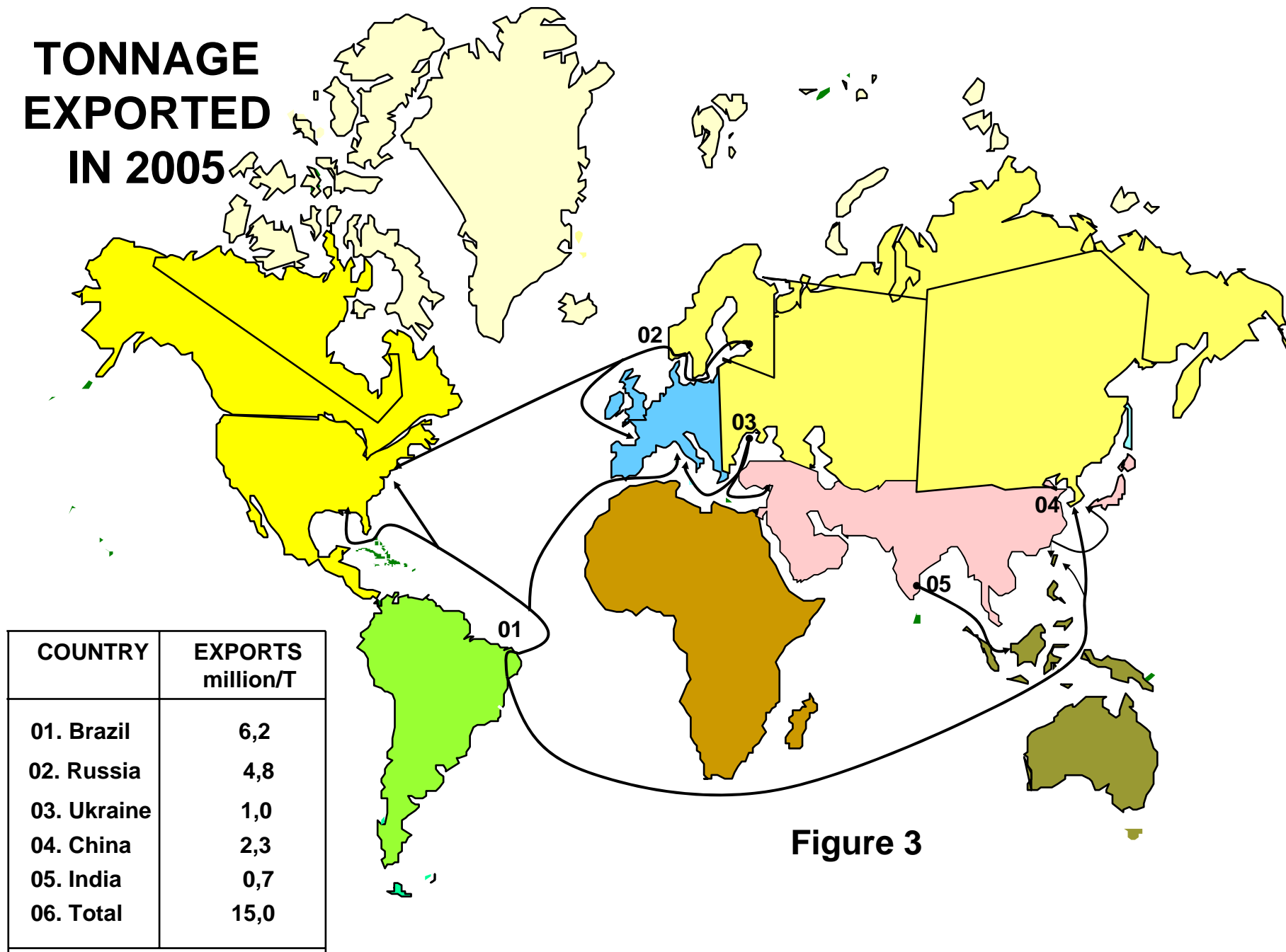


Figure 3

PRICE EVOLUTION OF BPI, DRI AND SHREDDED SCRAP

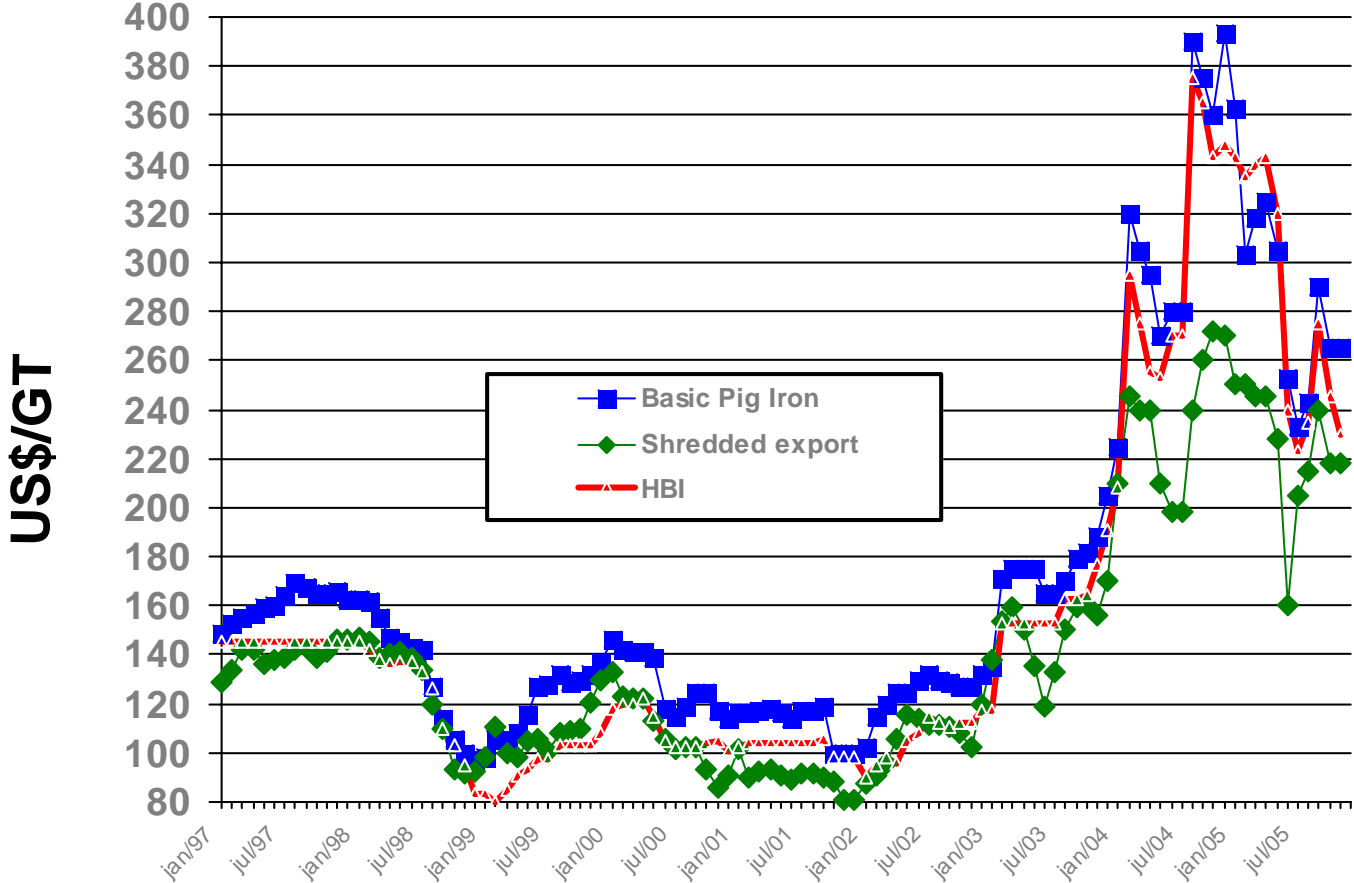


Figure 4

Prices skyrocketed in 2004 because of the worldwide economic recovery initiated by China. Prices now seem to be less volatile and are around \$250 CIF level in the US.

Source
AMM/MBR

➤ **The outstanding climatic conditions of high stable humidity and temperature, together with a large availability of good land and cloning are increasing the quality and productivity of the Brazilian forests .**

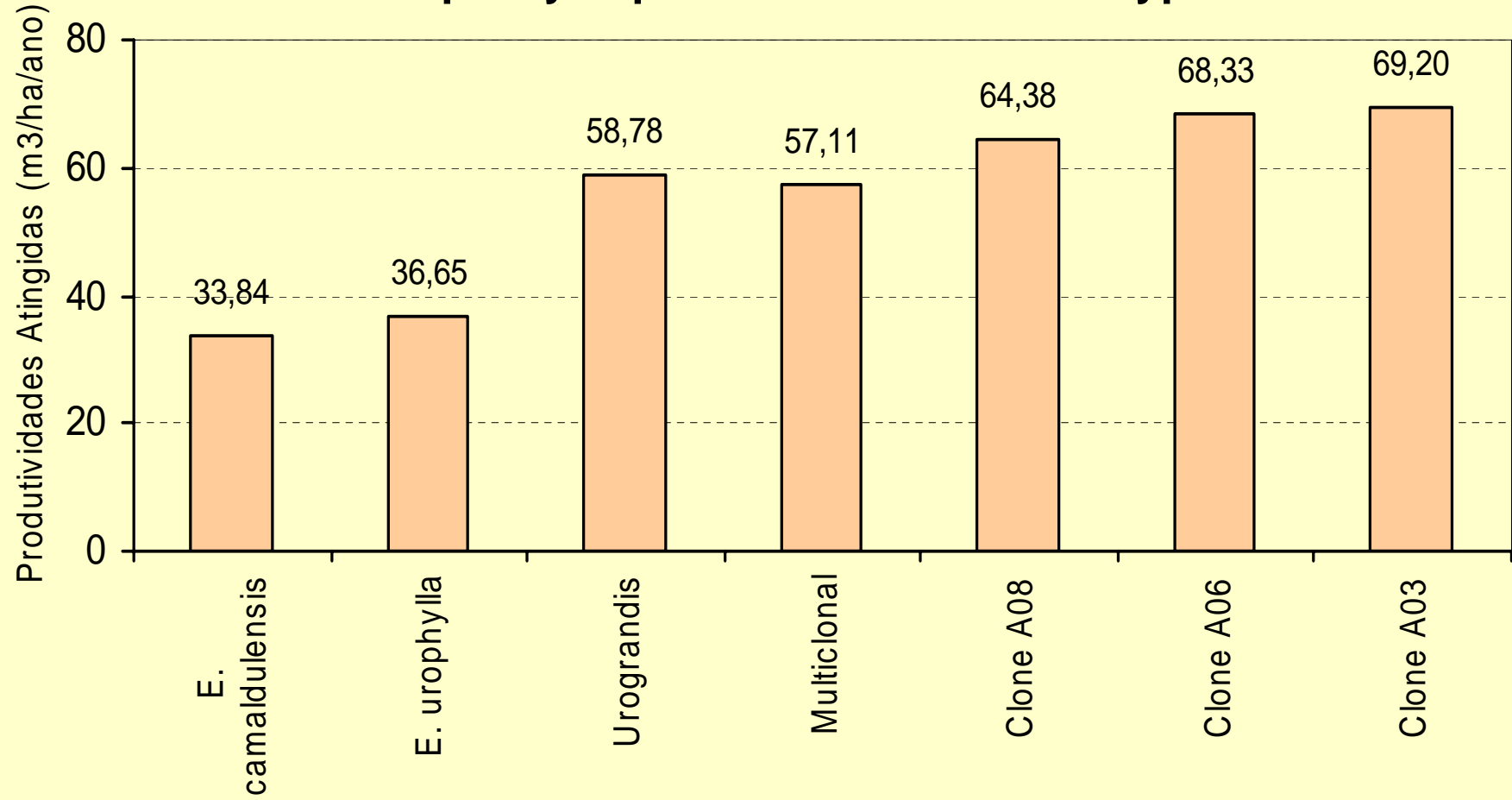
COUNTRY	FOREST YIELD m ³ / ha / year	CO ₂ ABSORPTION t / ha / year
FINLAND	5	4
PORTUGAL	10	8
U S A	15	12
SOUTH AFRICA	18	14.4
NORTHERN BRAZIL	50	40

➤ **Northern Brazil has achieved the highest productivity among several nations that produce lumber.**

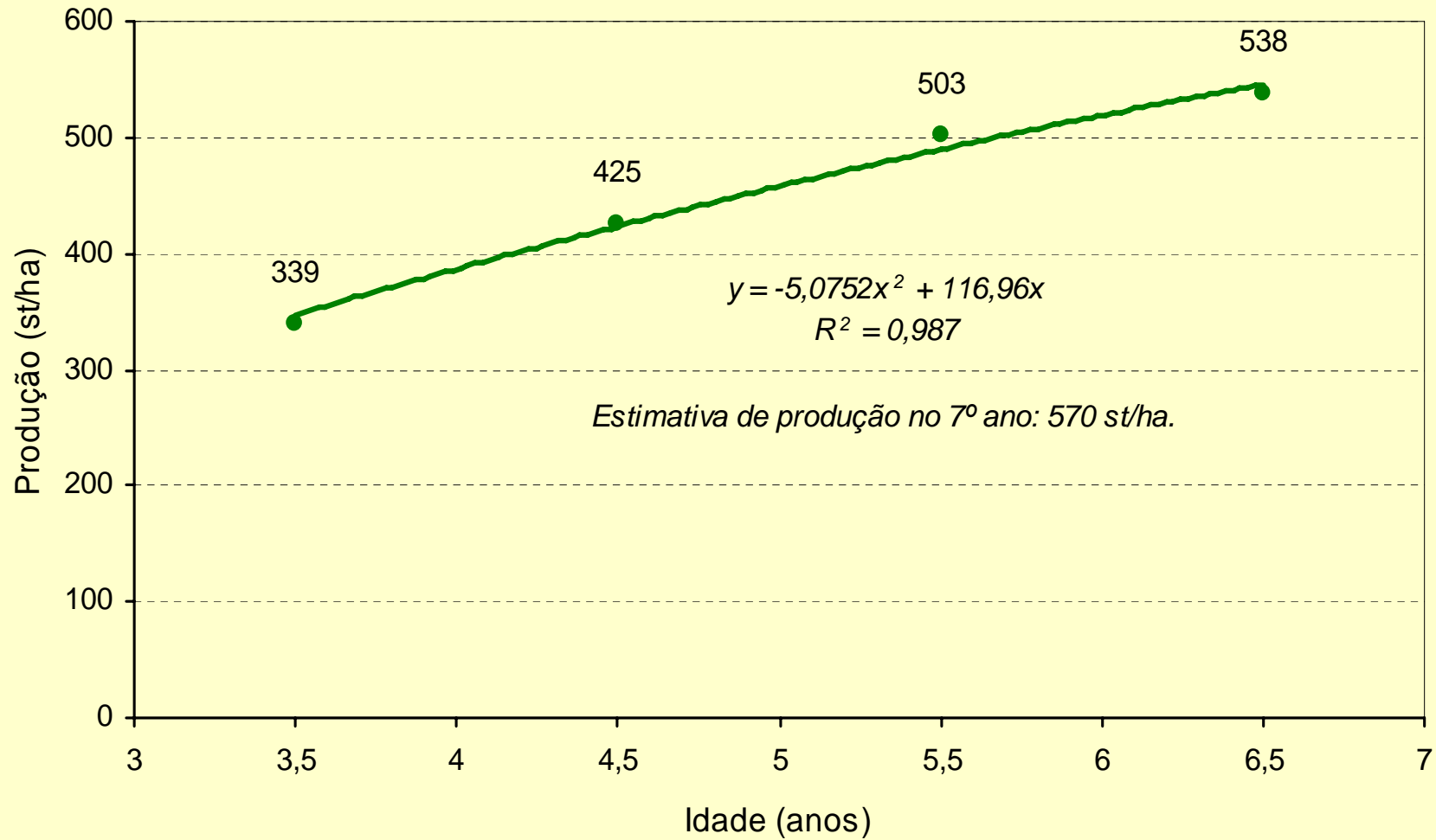
INVENTORY OF THE FORESTS

- There are several different species of eucalyptus planted and the majority of the areas are reforested with clones of high productivity.
- The members of ASICA take annual inventory of their forests older than 3.5 years to reevaluate their forest assets.
- It is noticeable that there are extremely high yields due to the technological development that has been reached. The average projected harvest at the age of 7 years is 370 solid cubic meters/ha (570 st/ha).

Genetic quality improvement of the eucalyptus

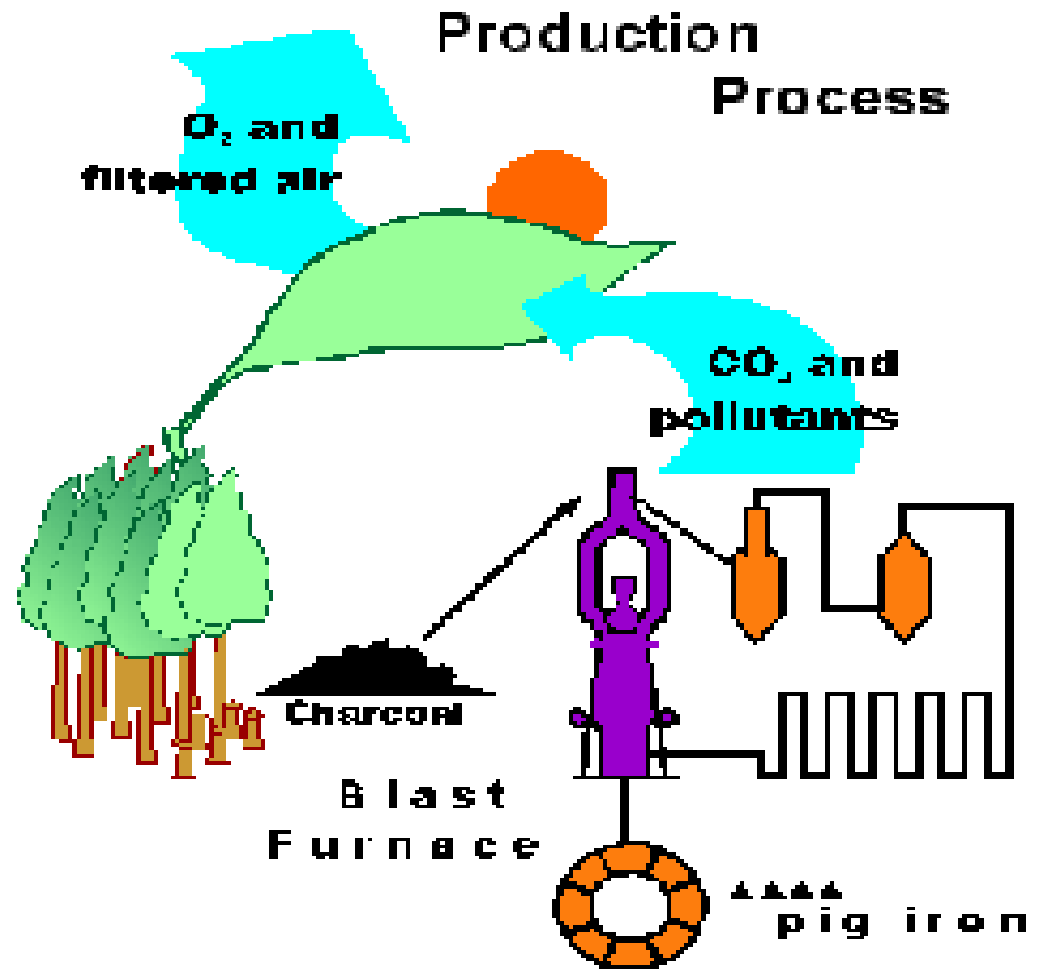


Inventory of forest productivity younger than 7 years



➤ Renewable forests are environmentally friendly because they absorb carbon dioxide and replenish atmospheric oxygen.

➤ If you compare with the traditional BF/BOF method that uses coke, which is non renewable, there is a net positive effect in the sustainable iron making process.





PRODUCTION OF EUCALYPTUS CUTTINGS

- The Carajás region has the capacity to produce 20 million rooted cuttings per year in their 4 nurseries.
- We achieve a high percentage of rooting due to the fertigation of the clonal garden.
- Reforestation, maintenance and carbonization of forests create opportunities for jobs in the countryside reducing drastically the migration to urban centers.
- This makes Self Sustainable Pig Iron, socially and environmentally the best alternative to steel making.

6 9 2005



➤ ASICA´s members are planting clones almost all year round, through irrigation and the use of moisture retaining gel.

➤ Other members have also been planting native species like mahogany, ipê, ingá and others.



Photo: Ingá plantation



Photo: Mahogany plantation.

IMPROVEMENT IN THE PROCESS

- Increase in the use of mechanization in the harvest and carbonization processes.
- Reduction of the quantity of wood in the production of the same amount of charcoal.
- Producers founded the Charcoal Citizen Institute (ICC), which monitors the quality of working conditions in the charcoal making process.

BRAZILIAN ENVIRONMENTAL LAWS



- According to the Brazilian legislation, all companies in the Carajás area will compromise to achieve 80% of their needs through planted forests.
- The needed reforested area of each mill will depend on productivity of its eucalyptus forests.
- The balance can come from legal sources of sawmill residues and renewable Babaçu palm coconuts.
- Sustainability should be achieved in up to 10 years.

ASICA - Associação das Siderúrgicas de Carajás**REFORESTATION PROGRAM OF THE ASSOCIATED MEMBERS**

Companies	Pig Iron Production t/ano	Planted area in 05/06 ha	Area needed for 80%	Total planted area ha	Need to reflorest in 10 yrs	Annual need ha/yr
Viena	500.280	4.014	28.437	19.914	8.523	852
Pindaré	328.680	395	18.683	10.164	8.519	852
Simasa	180.180	1.000	10.242	8.419	1.823	182
Fergumar	196.680	670	11.180	5.888	5.292	529
Gusa Nordeste	316.140	395	17.970	7.548	10.422	1.042
Cosima	217.140	602	12.343	5.682	6.661	666
Margusa	166.320	0	9.454	270	9.184	918
Cosipar	432.960	900	24.610	7.425	17.185	1.719
Simara	186.780	2.160	10.617	5.458	5.159	516
Usimar	198.000		11.255	-	11.255	1.125
Ibérica	344.520	2.500	19.583	5.914	13.669	1.367
Terra Norte	117.480		6.678	1.113	5.565	556
Sidepar	266.640		15.156	1.000	14.156	1.416
F.G.Carajás	330.000		18.758	31.741	-	
Sidenorte	151.800		8.629	-	8.629	863
Total	3.933.600	12.636	223.594	110.536	126.041	12.604

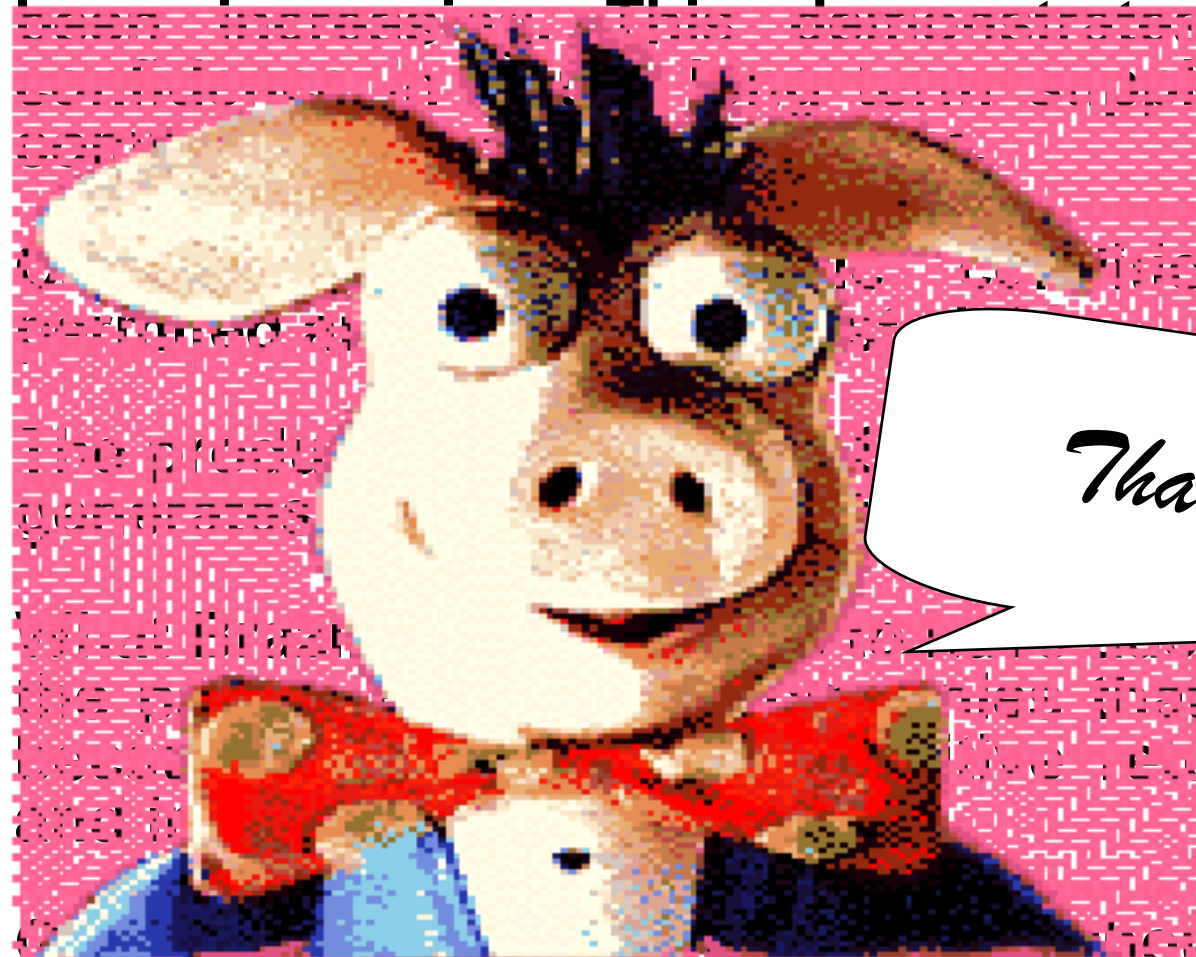
OUR GOAL

- Considering an average productivity of 38 m³ per hectare per year, which is relatively below presented clone experiments of more than 60 m³/ha/year, the whole sector in the Carajás area will achieve self-sustainability with less than 225.000 ha.
- This is less than 1,0% of the total Carajás region that supplies charcoal to the mills nowadays.
- At the end of the 2005/2006 planting season the members of Asica are going to achieve a total planted area of 110,000 ha of eucalyptus forests.
- Our sustainability will be achieved by planting another 12.600 ha per year during the next 10 years.

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CONCLUSION

Year after year exports of Basic Pig Iron from Brazil have been increasing. This demonstrates the consumer's preference for quality and reflects the



and cloning

That's all Folks

need CO2 credits
return on investment

without a doubt the best alternative to the future of steel making.