



*Deforestation in Jari project area has caused ecological problems with unknown long-term effects.*



# Forestry in Brazil: the Jari project

*By Sten Haage*

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For centuries the Amazon – the largest area of virgin forest in the world – has attracted foreign exploiters. The latest example is the so called Jari project, initiated by the American shipping magnate DK Ludwig, reportedly the richest man in the world. In 1967 he purchased an area as large as Northern Ireland in order to manufacture pulp for the world market.

However, it proved considerably more difficult than he had calculated to construct a profitable forest industry in the jungle. The Jari project became a losing project and in early 1983 Ludwig had to withdraw. Today the plant has Brazilian owners supported by the Brazilian government, which had to step in to keep the project going. Sten Haage visited the Jari project in late 1982 and sent us this report.

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Fifteen years ago this place was a tropical forest. Today, on the bank of the river, there is a large factory for the manufacture of pulp. More than 100 000 hectares of jungle have been chopped down to make room for three different kinds of plantations providing raw material for the factory. Here we also find the largest rice paddy in the world and a china-clay quarry with a refinery. Since 1968 36 000 people have moved into this area.

The neighbourhood has no name, but it is called Jari after the river, which is the area's chief connection to the surrounding world. The main centre is Monte Durado with 10 000 inhabitants. This pioneer society is the result of a fixed idea of the richest man in the world, the US shipping magnate Daniel Keith Ludwig. He bought the land in 1967 and immediately started preparations for forestry and factory constructions. Ludwig's idea was that in the 1980s the world would suffer from a lack of cellulose. He had figured out that fastgrowing wood, cultivated in a jungle climate should provide a good basis for new pulp plants.

However, things did not develop along the lines Ludwig had calculated, perhaps mostly due to the stagnation of the capitalist world economy since 1975. It was also more difficult than he had imagined to cultivate new species of trees in the jungle areas opened up for the plantations. The costs for housing, roads, schools, medical care and transports also became heavy. Finally, at the beginning of 1983, Ludwig sold the whole area, including the factories, to a Brazilian consortium. With access to Brazilian capital and supported by the government the new owners hope to carry the project through.

## Problems at Jari

Light, red dust is what a visitor first meets when he arrives in the Jari area. When the virgin forests are cut down to give way to roads and houses the ground comes into the open and is turned into dry red sand. The dust gets in everywhere. Especially

car drivers are affected as no roads are tar-maced, and the vehicles unravel clouds of dust. Houseowners living near to a road have to cover their doors and windows with plastic to prevent dust from penetrating their homes.

The sand also gives a good picture of the problems confronting the Jari project when afforestation started at the end of the 1960s. The ground here is not covered with a surface of rich soil. The earth is very poor. This partly made the afforestation a failure, though with other species and/or with fertilization the outcome might have been better.

During the first years there was hectic activity in Jari. There seemed to be no limit to the amount of money available. Ludwig ordered a floating factory for pulp and a floating station for the production of electricity and steam. The factories were built in Japan. They were then towed on prams across the oceans, up the Amazon to the Jari tributary. When they reached the project area they were fastened to the bank of the river. Today they lie side by side supported by a pilework of suitable jungle trees. The Jari company also built homes for its employees. Roads were constructed to link the different parts of the project area together, it now covers a surface of 1.6 Mha, corresponding to 16 000 km<sup>2</sup> with a side of about 130 km.

At Monte Durado you'll find schools, shops, several churches, restaurants and an airfield. All this cost money. A lot of money. Each cement sack, each spanner and each oil-can had to be transported to Jari by air or up the river by boat. In the long run this could not continue, and at the end of the 1970s Ludwig had to apply the brakes. Plans were considerably scaled down and some personnel were fired. Ludwig's representatives also had endless discussions with the government on the responsibility for financing schools, hospitals, maintenance of roads etc. The company wanted to hand over all this to the government.

The pulp factory started production in



1979, but the revenues did not cover expenses for interest and payment. All in all Ludwig invested 1.2 billion US dollars in the area.

### Ludwig pulls out

But Ludwig had to surrender. 23 Brazilian companies formed an industrial group which took over full responsibility for the Jari project, supported by an aid packet of 180 million USD from the Brazilian government. Ludwig got only 50 million USD in cash, but the Brazilian group accepted his debts, totalling more than 300 million USD. If the Jari projects yields a profit in the future a certain, nondisclosed, percentage of the surplus will be transferred to Ludwig's foundation for cancer research in Switzerland.

What will happen to the Jari project? We asked the new local manager, Janusz Wscieklica sitting in a humble two flat barrack at Monte Durado:

"We must try to stabilize the company. We now have two to three years to produce results showing that the Jari project can be carried through without further losses. At the same time we have wider goals in mind than Ludwig had. We must take the social responsibility for this area."

Janusz Wscieklica speaks of all those people who have moved into the Jari area. Many of them are not employed by the Jari company. But the company has now accepted responsibility for the infrastructure and for the distribution of food.

"But of course the pulp industry is the basis of our activities. Unfortunately the price of pulp is very low right now. If we got 520 US dollars per ton instead of the present 380, our situation would be quite different."

The plant now produces 250 Kt/year of pulp. Ludwig originally had calculated with several plants with a combined production capacity of 1 Mt/year. The plans

also included the construction of a paper mill, which should refine part of the pulp.

### The possibilities of expansion

Today only one sixteenth of the land bought by Ludwig is exploited. The rest is still virgin jungle. But it is very unclear whether the present Jari management wants to fulfill Ludwig's plans and expand the forestry and pulp industry.

The day after we had met with the local manager at the main office we went to study the forestry. John Welker, forestry officer from Florida, USA, picked us up early in the morning. Once inside his dusty Volkswagen, John Welker gave us his view of the project:

"Ludwig went too fast. His people found the fastgrowing tree, the Gmelina, which is a broad-leaved tree and per se no bad choice. But they had no time to test it properly in silviculture."

Ludwig's forestry experts found it in Nigeria. It originally stems from Burma and India. The Gmelina is fast-growing, it gives good pulp and is not especially affected by weeds when the plants are small. However, it has the disadvantage of growing badly in poor soil, which is predominant in large areas of the Jari estates. When first planted the Gmelina sometimes grew only 7 metres high, compared to the 35 metres expected.

John Welker tells us that the forestry people quickly realized that plantations of the Gmelina would not be sufficient to cover the needs of the pulp factory. Secretly one of the employees planted tropical pine in the area. Secretly because Ludwig had a fixed idea that only the Gmelina should be used. But Ludwig had to give in. The pine was much better adapted to the poorest lands. Today both these species are planted with 2/3 of the pulp coming from the Gmelina trees and 1/3 from pine.

### Ecalyptus — a new alternative?

A Gmelina plantation is ready for harvest

after six years. The pine grows somewhat slower. Yield for the Gmelina is about 30 cubic metres per hectare and year. The corresponding figure for pine is 20–25 cubic metres per hectare and year — which is five to ten times more than in Scandinavia, for example. Nevertheless, other species are also being studied: Eucalyptus. Eucalyptus from southern Brazil cannot be grown in this jungle area. Instead the Jari people have imported a variety which endures the jungle climate. "The Eucalyptus research gets top priority right now", John Welker says.

Today 100 000 hectares of the Jari area consist of forest plantations on land that was once virgin forest. The company continues to cut down the jungle, about 1 700 hectares annually.

"In the virgin forests we find kinds of wood which no carpenter has ever heard of", John Welker tells us. "So far we have been able to identify 300 different species. Of these we may find a market for about 60. But the other 240 species will be difficult to sell as saw timber."

Most of the rain forest's trees are therefore chopped into fuel chips. The factory is operated completely without oil. All steam is generated in a wood-fired boiler consuming 600 Kt of wood per year. "I cannot say I like the view of seeing such beautiful trees being turned into fuel" says John Welker as we are watching some logs being transported out of the jungle.

### Power saws

Unfortunately this is still what is most profitable today. We get most of our money from *not* using oil. We earn more money this way than by selling the wood to construction industries and carpenters.

A small quantity of the trees of the rain forest is used in pulping. This mixed hardwood pulp is blended with the Gmelina pulp up to a few per cent.

The harvesting of rain forest as well as planted wood is done with the help of power saws. We drive to a felling place and make our way through ferns and li-





*300 different species of trees have been identified in the Jari project area. (Left).*

*The Jari pulp factory. Note the slum housing on the opposite side of the river. (Bottom).*

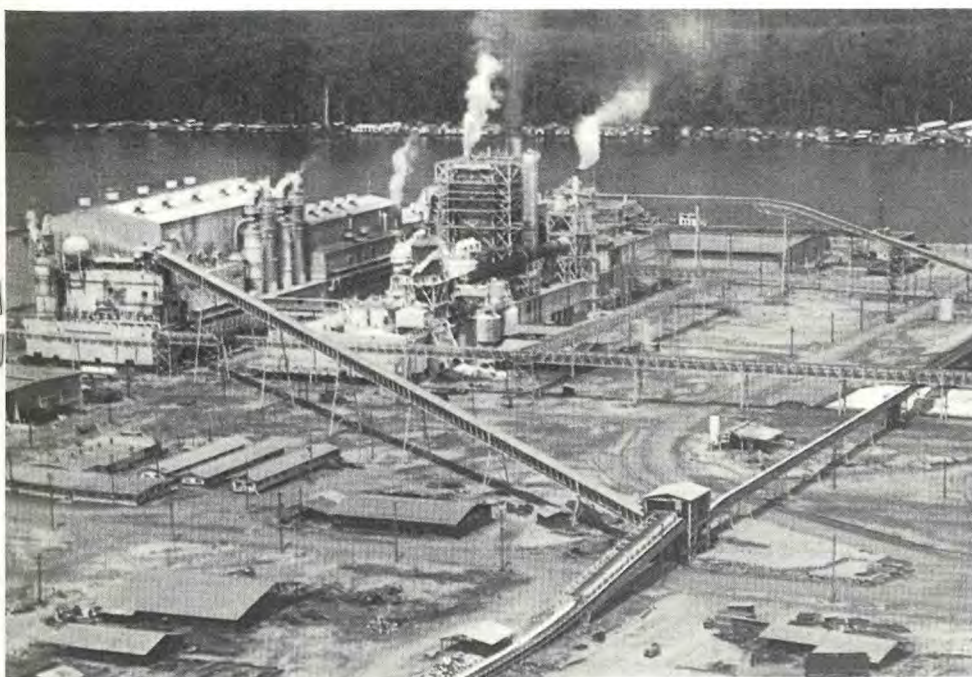
anes to come closer to the actual cutting. John Welker looks nervous when we want to take some photos and approach one of the workers who is busy sawing through a trunk. "Come back", he shouts, "you never know what way these giants are falling".

But there is no danger this time. The tree brings with it two others in the fall, crashing to the ground, but in a direction involving no danger. The workers take away the branches and divide the stem. A tractor takes the logs out to the trucks or the train for transportation to the mill. Where the rainforest has been cut down there are only twigs, stumps and single trees left. Some are so hard that it is difficult to chip the wood, and thus these trees are left. To a Swede, the distances between the felling places and the pulp factory are short. Often not more than a few ten kilometres. The terrain in the Jari area is hilly. It is therefore sometimes difficult for machines to move into the forests. During the rain season part of the forests are cut off from harvesting. Instead they try to pile up stocks of wood during the dry season. How does John Welker like the devastation of the rain forests?

### "A mixture"

"I do not think the Brazilians can do without the Amazonas; they are forced to exploit the resources they have got here. I believe in a mixture of agriculture where the land is rich enough, forestry of the Jari type and areas of untouched rain forest."

He himself wants to stay and work in the jungle. He has been employed by the Jari company for 10 years. John Welker claims that he is earning roughly as much here as if he had been working in the US. But he is able to save more, as he pays almost nothing for his house and there is actually nothing in the neighbourhood worth spending money on. The forest company where John Welker works is part of the Jari group. His company employs about 5 000





*Primitive housing along the Jari river, opposite the pulp mill and power station. (Below).*

people and the entire Jari group about 8 000–9 000 people.

### The forest workers

Most forest workers are hired labourers. They are employed by contractors who in their turn sign the contracts with the Jari company for the delivery of so and so many day-works. The contractor gets about 6.50 USD for each full work-day.

He in turn gives the workers part of this sum. He often supplies the workers with food and shelter and sometimes travel expenses, which are deducted from their wages. Bad conditions are common and the complaints many. With the help of different deductions the workers are cheated on their just part of the wage.

Most forest workers are employed temporarily – they never settle. This creates social misery, alcoholism, prostitution and fighting. One way of solving the problems would be to give the workers permanent employment, to provide them with

subsidised houses like other employees, so that they could bring their families. But this costs money and it is not certain the company and the government can agree on who shall pay.

When we leave the forest to visit the factory it is like coming from the jungle direct to a developed country like Sweden (apart from the heat). In front of us we have a completely modern pulp mill which just as well could have been located along the coast of Northern Sweden. The same desolate mill halls and big air-conditioned and sound-proof control rooms, but a few more people.

### Everything on one Pram

This mill, however, is more compact as it is placed on two prams, together with the power station. Eight batch digesters, washers and cleaners, a bleaching unit, a chemical recovery boiler, a pulp drier, and two bale finishing lines – all within the same walls. The wood yard and chip-plant for sulfuric acid, sodium chlo-

rate, chlorine dioxide, and chlor-alkali, as well as the pulp warehouse are situated on shore.

The Gmelina pulp product has fiber lengths of about 1.1 mm, whereas the pine pulp length is 2.7 mm. The Gmelina pulp is suitable for printing and writing paper, and the pine for sanitary paper, etc. For the quality it has been essential for Jari to have the full operation experience of the Kaukas and Kymmene groups of Finland. For the marketing of the *Jari-pulp* Price & Pierce of Great Britain are world wide agents.

The effluents from the mill via lagoons and reclaim systems are discharged into the river. The volume of the lagoon is 1.6 Mm<sup>3</sup> and the length is several kilometres. The waste is successively broken down as the water is slowly running. At the end of the lagoon the water is sufficiently clear for the alligators. You can see their eyes glowing if you walk down to the artificial lake of 160 ha in the night. ■

