Fiscal and Legal Incentives with Environmental Effects on the Brazilian Amazon

by

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Summary and Conclusions:

1. This report provides a detailed discussion of the major economic policy distortions, tax incentives and legal rules which tend to accelerate the pace of settlement in the Amazon and lead to deforestation of land in premature, uneconomic and/or environmentally unsustainable ways.¹ These incentives are as follows:

2. Brazil's income tax laws virtually exempt agriculture and convert it into a tax shelter. Brazilian investors already have ample reason to invest in land. Long term financial markets are poorly developed and land provides a risk diversification in the face of fluctuating inflation rates. The exemption of agriculture from the income tax adds to this land demand. This greater land demand is felt directly at the frontier where urban investors and corporations compete aggressively for land to establish livestock ranches. But the tax treatment has indirect effects as well, by making it attractive for wealthy individuals to buy land from small farmers in areas of well established settlement. The income tax preference for agriculture is partly capitalized into the land price. Because small farmers or other poor individuals cannot benefit from the tax treatment, they cannot buy land in areas with well integrated land markets; this is

¹/ This report is an expanded version of my Back to Office Report: "Brazil-National Environment Project, Land Policy Issues, dated May 18, 1987."
because their agricultural revenue will be insufficient to pay for the capitalized value of both the agricultural revenue and the tax benefit stream. If they want to acquire land they have to join the pool of migrants who seek farm land at the frontier of settlement.

3. The progressive land tax is intended to reduce the incentives for the accumulation of very large holdings. But the land tax also contains provisions aimed at encouraging more intensive land use on large farms which undermine its progressive nature. An additional side effect of the provisions which reward higher interest is that they encourage the conversion of forests to pasture and crop land in order to reduce the tax liability. This could lead to excessive deforestation of marginal land areas located within large farms.

4. SUDAM, IBDF, and the Grande Carajas Program can single out specific corporate enterprises to receive special tax incentives and other favorable treatment. Of all the incentives discussed in section four of this report, the tax credit scheme provided by SUDAM (via FINAM and EASA) to corporate livestock ranches in the legal Amazon has the largest effect on deforestation. An upper-bound estimate of its effect is 4 million ha of added deforestation, located mostly in the sub-humid forest zones of Mato Grosso and Goias. Research has shown that most of these livestock ranches have a negative economic return (Section V). A similar tax credit scheme is provided by IBDF (via FINOR) to corporations which agree to undertake afforestation. Research on and audit reports of these tax credit schemes show that the recipients are far better at receiving the tax credits than at producing beef or establishing forests. The combined effect of the incentives programs is more rapid deforestation in the Amazon, very modest afforestation in areas of old settlement and a very large fiscal cost which exceeded $1 billion between 1975 and 1986 for the livestock ranches alone.
Policy should focus on abolishing the tax credit programs, reviewing the other components of the special incentives packages and eligibility criteria, and on coming up with a better way of encouraging afforestation.

5. Subsidized credit is available to SUDAM-approved ranches and private farmers who have title or other land documents recognized by the agricultural credit institutions. While the amounts disbursed in the Legal Amazon pale in magnitude compared to the total agricultural credit volume, they are not an insignificant factor accelerating deforestation.

6. The rules used to allocate public land provide strong incentives for rapid deforestation to solidify claims on land and increase the size of final land allocation during the process of land adjudication (Regularizacao)--(Section IX). A rancher with a tenuous claim will be allocated between two to three times the amount of land cleared of forest and put under pasture, up to a ceiling of 3000 ha per-owner. Moreover, land clearing provides excellent protection against competing claims and against land-invasions. Several steps should be carefully considered such as lowering of land ceilings for both individuals and for corporations, and changing the rules of land allocation to remove the incentives for clearing land simply for purposes of solidifying land claims and increasing their size. Lower land ceilings would also have a beneficial equity impact by making more land available for small settlers.

7. Incentives for the forest service to guard forest reserves and enforce a host of other logging restrictions must be improved. This could be done by dividing the forestry fine revenue between the guards and the budget which the forestry service can use to hire additional guards. Similar schemes already appear to exist for the traffic police.
8. Some provisions of the income tax code appear to provide incentives to use excessive levels of agro-chemicals and mechanical inputs in agriculture (Section II). However, these provisions and other provisions of the income tax code are so generous that agriculture escapes income taxation even before farmers have to increase the use of inputs to distorted levels in order to reduce their tax liability. Therefore, these provisions are unlikely to have an undesirable environmental effect by increasing the use of mechanical land clearing techniques or of agro-chemicals. However, should the income tax code be revised it will be necessary to pay careful attention to the tax treatment of pesticides and to the depreciation allowances for machines.

9. From this list of incentives and the more detailed discussion in the full report, it is clear that the Bank will have to elevate these issues to a level which goes beyond the individual agencies such as SEMA and IPLAN, as many of the required changes either fall into the responsibility of the ministry of finance, or of MIRAD/INCRA. Moreover, it is likely that the quantitative impact of the policy distortions on the Amazon exceed any positive interventions which the Bank could achieve via settlement projects. Indeed, given the enormous demand pressure in land markets originating from non-farmers, project interventions aimed at bringing order into the process may be doomed to failure from the start.
The objectives of this report is to describe the major fiscal and legal incentives which:

(a) increase the demand for land for agricultural uses
(b) increase the rate of deforestation at the frontier of settlement
(c) provide incentives to convert forest to crop land or pasture in already settled areas.
(d) implicitly subsidize fertilizers and pesticides

High and unstable ratios of inflation in the Brazilian economy imply that long term capital markets are poorly developed. The financial investment options are therefore both more limited and more risky than in more stable economies. Both private and corporate investors will find land an attractive long term investment option not only for its expected return but also for reducing overall portfolio risks. Land ownership by non-farmers is therefore much more common in Brazil than elsewhere in the developing or developed world. However, as discussed in this report, Brazilian taxation, credit and land policies provide additional strong incentives for investing in land and for acquiring it via deforestation. These issues are reviewed below.

I. The virtual absence of taxation of agricultural income.

(a) By using a variety of special provisions of the income tax code, it is possible for individuals and corporations to exclude up to 90% and 80% respectively of agricultural profits from their taxable income.

(b) In addition, individuals who own farms can liberally treat consumption expenditures as agricultural expenses and thus shelter additional income from taxation. (However, neither
corporation nor individuals can offset agricultural losses against non-agricultural taxable incomes).

(c) The taxable component of corporate profits arising from agriculture is taxed at a rate of only 6%.

Provisions (a) and (c) combined imply that agricultural profits of corporations are subject to a tax rate as low as 1.2%. This compares to a tax rate between 35% and 45% on profits from other sources. Detailed discussions of these two provisions is given in Spindola Silva.

The implication of this tax treatment is that investors will undertake investment projects in agriculture which have a lower economic rate of return than their non-agricultural projects, as this will equalize financial rates of returns net of taxes. The tax treatment will increase the demand for land from individuals in high-income tax brackets and from corporations, implying a faster expansion of agriculture into frontier areas than in the absence of these tax provisions. Moreover, since the supply of land is not perfectly elastic, the income tax references will be partly capitalized into land values.

Since poor people do not get the income stream which arises from this tax preference, their capitalized agricultural income stream is lower than the land price. Therefore, if they own no land they cannot buy it, even if given credit. The primary means for poor people to acquire land is therefore via squatting on public or private land (See Section IX below.) And, if they own land they can do better by selling the land and investing the resources elsewhere. (For a detailed discussion on these issues see Binswanger 1985.)
To sum up, the income tax treatment of agriculture

- tends to increase the demand for land, to speed up conversion
  of land for agricultural uses, and to raise the price of
  land.

- it tends to increase inequality in land ownership holdings

- and it increases the pace of migration of poor people to the
  frontier areas in search of land.

II. **Does the income tax code lead to an environmentally relevant increase in the use of fertilizers and pesticides?** Agricultural taxpayers can sharply reduce their agricultural tax base by a variety of means.

1. They can elect to be taxed on 10% of their gross agricultural revenues. Fiscal incentives for agro-chemicals have no effect on these taxpayers.

2. If they elect to be taxed on the basis of agricultural profits, they can, as discussed before, reduce the taxable portion of profits sharply, because expenses on virtually all investments and modern inputs can be multiplied by a factor from between 2 and 6 and subtracted in the same year from agricultural profits. Up to 80% of agricultural profits can be sheltered from taxation via this mechanism. This system of "multiplication factors" provides some incentive for over-investment and over-consumption of pesticides and fertilizers.

However, two factors undermine the impact of this incentive on investment and on input use: First, the "multiplication factors" are so large that undistorted input use and investments will already reduce the tax base to 20% of agricultural profits for most farmers, i.e. no additional investment or input use will be induced by them. Second, only half of the taxable agricultural income is actually included in total taxable income. This implies that, even without multiplication factors,
the original tax rate on agricultural income is only half that on other income. Thus, the additional tax incentive for using agro-chemicals is not very powerful.

Therefore, it can be concluded that the special incentives via the multiplication factor do not materially increase the environmental load of pesticides and fertilizers.

III. The land tax (ITR). The Estatuta da Terra and other legislation provide for a progressive land tax. Farms smaller than 2 modulo (the size of a farm sufficient to support one family is equal to one modulo) pay no land taxes, while farmers larger than 100 modulo are supposed to pay 3.5% of the sales value of their unimproved land (Terra nuda). Apart from direct evasion, the land tax can be reduced by a factor of up to 90%, depending on (1) the degree of utilization of land R and (2) depending on the productivity level of the farm. The formulas used are such that both reduction factors are directly and positively related to R (Spindola Silva p. 247). From the point of view of deforestation the key point is that forest land is considered unused.

A farm containing forests is therefore taxed at higher rates than one containing only pastures or cropland. Conversion of forest to pasture on larger farms will reduce the land tax liabilities, and the land tax system thus provides incentives for deforestation. The major impact of this legislation is likely to be felt in areas which have been settled for a long time and where the enforcement of the land tax is relatively strict.
IV. **Capital gains taxation and commodity taxation. (ICH).** Neither of these taxes appears to contain provisions which have an effect on the issues studied. A discussion is provided for those interested in detail. Others can ship to Section V.

Real Estate sales are subject to capital gains taxes while long term capital gains (more than five years) on financial assets are not. However, the real burden of the capital gains tax is low. The taxable amount of the gains is reduced by rebates depending on the length of time that real estate is held. The remainder is taxed at the lower of either a 25% flat rate or the marginal rate of the progressive income tax of the individual concerned. I have not found any exemptions from this tax for individuals or enterprises located in the legal Amazon.

The commodity taxation. (ICH) is like a value added tax on agricultural and non-agricultural commodities. It is levied at 17% of the after-tax receipts (i.e. at 20.5% of total sales value) for most states. For sales to the North and the Northeast the rate is only 12%. However, final sales within the North or the Northeast regions restore tax levels to 17% via a mechanism which I do not fully understand. Thus, the differential appears to act as a transfer of tax revenue between regions rather than a distortionary differential affecting economic decisions.

The ICM contains a potential distortion against agriculture for commodities which are exported in raw form; while for industrial products the full ICM is restituted upon exports, this is not the case for raw agriculture products such as soybeans. However, if soybean oil or cakes are exported the tax is refunded. The importance of the distortion is further reduced by the fact that trade in many agricultural commodities is restricted by quantitative controls so that domestic price relatives are
completely delinked from international price relative. Additional work would be required to determine whether agricultural price policies discriminate against agriculture or not.

V. Regional and Sectoral tax incentives. Special programs for regional tax incentives exist:

- for the legal Amazon (administered SUDAM and by FIDAM)
- for the Grande Carajas area which contains portions of the States of Maranhao, Para and Goias. (Administered by the Grande Carajas Council)
- for the Forestry, Fisheries, and Tourism sector (administered by FISET)
- for the northeast (administered by SUDENE and FINOR').

There are five classes of incentives:

(a) Income tax holidays of up to 10 years (Grande Carajas only, see appendix 1)

(b) Reinvestment tax credits which approved enterprises in the privileged sectors or regions can use for expansion or modernization investments (limited to 50% of a corporation's liabilities).

(c) Generalized tax credits which any corporation in Brazil can use to set up, invest or participate in approved enterprises in the privileged regions/sectors (limited to 25% of a corporation's tax liabilities).

(d) Tax credits for individuals for 45% of their investments into stocks of FIDAM, FINOR and FISET (limited to a maximum of 6% of an individual's tax liabilities).
e) Exemptions from import tariffs, export taxes and ICM for imports or exports of approved enterprises under the Grande Carajas program only.

Each of these incentives programs is available to farms whose projects have been approved by the administering entity. The approval process contains a variety of safeguards some of which are intended to protect the environment. The following points about these preferences are important.

Income tax holidays and tax credits for modernization are not relevant for agriculture and livestock corporations, as they already escape the income tax via the general provisions of agricultural taxation discussed in section I. It is therefore incorrect to assume that these provisions are an additional factor for speeding up deforestation at the frontier.

Only to the extent that forest or agricultural products are utilized by non-agricultural corporations will measures (a) and (b) have an impact on deforestation. Examples are the expansions of charcoal production for a tax exempt pig iron factory or production of logs for a tax exempt lumber company. In the non-agricultural sectors income tax holidays are perhaps the least distortionary form of tax incentives. Unlike tax credits they cannot induce investments into enterprises which are not expected to produce a pretax profit.

Tax credits (measures b, c and d) on the other hand can induce investments with a negative expected profit. Of the three tax credits schemes, generalized tax credits available to corporations all over Brazil

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2/ For example, pig iron factories under the Grande Carajas program will be required to product 25% of the charcoal they use from forest programs which they own.
(measure c) is the most important. The mechanics of the system is described clearly in Browder and in Nascimento, and will not be discussed in detail. The tax credit system allows any corporation in Brazil to use up 25% of its tax liabilities to invest directly in approved enterprises or to acquire equity in such corporations. An approved enterprise located in the Amazon, on the other hand can finance up to 75% of the planned investments from such tax credits funds. The balance of 25% of total investment must come from the parent company's own resources. Investments in approved enterprises can therefore occur even if they have negative rates of return to overall invested resources, because investors will be primarily concerned with this rate of return to owned funds. Attempts at policy reform should focus sharply on this set of tax credits.

Reinvestment tax credits will only be relevant for non-agricultural enterprises which have positive taxable profits. Tax credits for individuals to invest in stocks of the investment funds FIDAM, PINOR and FISET (measure e) appear to be less important because few investors appear to take advantage of the personal communication of Lytha Spinola Silva.

VI. The impact of the regional tax incentives on livestock production and deforestation in the legal Amazon. A number of authors have studied these issues and their findings are summarized here. By September 1985, 17 livestock projects had been approved by SUDAM (Gasques and Yokomizo), representing slightly less than half of the investments in dollar terms approved under the tax incentive scheme. (Nascimento, p.29). By 1983, the total investment in the SUDAM approved ranches had already reached nearly $1 billion (in 1982 $). The livestock projects are mostly located in areas of Cerrado and of semi-humid forests. The average size of the already implemented ranches is 23600 ha, i.e. the incentives program favored very
large enterprises. Theses enterprises occupy a total area of 8.4 mio ha of which 4.2 million ha was to be developed as pasture. This is the upper bound estimate of the deforestation caused by the incentives program in Cerrado and semi-humid forest land (deforestation in humid forest zone must have been minimal.). Much of the pasture area created has already been abandoned and the area is reverting to a secondary forest (All data from Gasques and Yokomizo).

The program has not been effective in terms of creating viable livestock enterprises in the region. Gasques and Yokomizo carried out a sample survey of enterprises and show that:

- Realized livestock production is less than 16% of anticipated production.
- The average rate of implementation of the projects is less than 40% of planned implementation.
- Many enterprises which have not met the program targets have received certificate of implementation allowing them continued access to tax incentives.
- While actual implementations has been less than 40%, disbursement of tax incentives has been close to 100% and exceeded it in many ranches.
- The ranches have generated virtually no ICM revenue. The ICM revenue generated are less than 4% of tax credit funds received in all cases studied.

The reasons for the poor performance have been analyzed by Browder, based on a sample survey of ranches. Total invested resources in the ranches had a negative net present value. An analysis by Norgaard et al of cattle ranches in the Eastern Amazon (based on coefficients assembled from the literature) shows similar result;
Without real appreciation of land, no form of traditional ranching has a positive real rate of return in Eastern Amazon. Without over-grazing, real land values must appreciate at the rate of 30% before the investments become economically viable. Even with improved pasture technologies a real appreciation of land of between 15% to 30% per year is required to make the rate of return to overall investment resources positive. Ranches receiving the SUDAM incentives can have a positive return to private investment resources in the absence of real appreciation of land. Investors can maximize their private returns by using over-grazing. They cannot improve their returns by investing in pasture improvement.

The results are fully consistent with the low rate of implementation of the projects and with the high rate of abandonment of pasture within projects. Legislation has recently been passed which limits eligibility for SUDAM approval to ranches established in the Cerrado, where deforestation would be minimal. I have been assured, however, that these regulations are not fully enforced.

VII. Impact of fiscal incentives to afforestation (FISET/IBDF). Tax credit funds have also been available for afforestation from the Fundo de Investimentos Setoriais (FISET). Firms approved by IBDF are eligible to receive tax credit funds for afforestation similar to those granted to firms approved by SUDAM. FISET's performance, as well as that of FINAM and FINOR are discussed in detail in the DIARIO OFFICIAL of Jan. 12, 1987, Section 1. (see attachment 2). Here it is shown that the FISET program suffers from severe implementation difficulties as well.
The main point about fiscal incentives for the cattle ranches and for the afforestation is that both programs are not cost-effective in achieving their stated goals of increasing livestock production on the one hand and increasing of afforestation on the other. It is likely that the subsidy program for ranches via FIDAM has reduced forest area by far more than has been created by the FISET incentives.

VIII. Credit system. Just like the income tax preferences for agriculture, subsidized rural credit will tend to increase the demand for land, leading to a more rapid expansion of crop and pasture land. And the subsidies will be partly capitalized into land values, reinforcing the regressive impact of the income tax system analyzed in section 1.

In addition, as discussed in Binswanger 1985, subsidized credit probably reduces employment and tenancy opportunities in agriculture via its impact on accelerating mechanization. Thus, the system clearly increases the supply of potential settlers to frontier areas.

The direct impact of the credits given in the Amazon region itself is hard to estimate. Central Bank data on disbursements of credit does not show data separately for the Legal Amazon. The North region, comprising the Legal Amazon less Goias, Maranhao and Mato Grosso receive less than 3% of rural credit. However, this underestimates the relevant credit volume as settlement has been particularly active in Goias and Mato Grosso. Nationally livestock borrowers received about 20% of the credit disbursed. The SUDAM approved ranches are all eligible for subsidized credit. Undoubtedly therefore the credit subsidies have accelerated the deforestation process. As abolishing credit subsidies is a central (but very elusive) goal of the policy dialogue with Brazil, additional study of
the issue in not required. But the policy dialogue needs to ensure that special provisions for the legal Amazonz do not survive, even though quantitatively the credit volume going to the region is relatively small.

IX. Rules of land allocation and settlement patterns. The rules for allocating public land (terra devoluta) controlled by states and by the Federal Government vary somewhat. Only those of the federal government are reviewed here.

It is a mistake to assume that there are larger areas of unclaimed land readily available for settlement in the Amazon. By the time roads are constructed, most federal or state land is claimed by some individual or corporation, however doubtful the claim may be. These claims are bought and sold. Claims can be converted into legal titles by individual-specific legal procedures. For example, projects approved by SUDAM or the Grande Carajas program are given special preferences and priorities in land titling. On the other hand land titles may be conferred to all holders of strong claims in a sub-region by the process of "regularization."

How can individuals acquire and solidify rights which have a high chance of later being regularized? The right known as direito de posse states that a squatter or posseiro who lives on unclaimed public land (terra devoluta) and has used it "effectively" for at least one year and a day has the right to acquire a usufruct right over that land with size of one rural modulo (100 ha in Amazonia). If the posseiro fulfills the condition of effectively using the land and living on it (cultura efetiva e morada habituel) for more than 10 years (recently shortened to 5 years) he has the right to acquire title. Land rights can arise also from squatting in private land for a sufficiently long time without being challenged by
the owner (follow up on details of length of time and other conditions).

Direito de posse has been formally recognized since 1850, law 6C1, but goes back to criteria of settling land disputes in colonial times. (Nascimento, p.278).

These rights may appear to favor the establishment of relatively small farms. However in lands under federal control claims up to 3000 ha can be solidified by these provisions and the attendant administrative procedures.

In the Grande Carajas area which I visited, GETAT (now merged with INCRA), uses the following rules:

A claimant who lives on an area of land gets first preference to obtain title for between three times the area which he or she has cleared of forests. The claimant does not get the title automatically but has to buy the title in a public auction. But claimants are apparently never challenged in that bidding and the minimum price set by GETAT is nothing but a nominal fee.

In Mato Groso, Goyas, Para and Maranhao these or similar rules have resulted in the majority of public land being allocated to either individually owned ranches or to large corporations. Small farmers have difficulties in finding land for squatting. This is because corporations and large ranches have a major advantage over poor individuals in the rush for land: they have the capital to build their own access roads into the forest. This enables them to lay claim on land much farther away from major state or national highways than small settlers. The latter can typically not lay claim to land more than a few kilometers from public roads, as they could neither market products nor have access to health or education facilities.
In Rondonia the situation is somewhat different in those areas allocated by INCRA to land settlement projects, as all agricultural land is divided up into small plots. Nevertheless for the entire legal Amazon area the bulk of deforestation is accounted for by large private and corporate ranches.

The rules of land allocation encourage rapid deforestation on individually owned ranches, as the final amount of land which is given title in regularization is a multiple of the area of forest converted to pasture. In addition, clearing land provides protection against small squatters and land invasions, as these groups simply do not invade land already converted to pasture. Some informants alleged that it maybe sufficient to clear land of the original forest, only to let secondary forest grow back, as irrevocable user certificates are issued after one year of occupation. I have not been able to judge the importance of this phenomenon, however.

Deforestation often occurs so rapidly, and in advance of provision of adequate infrastructure, that the existing stock of high quality timber is simply destroyed, rather than being conserved for later logging operations. In other regions, where better infrastructure leads to higher stumpage prices, loggers may contribute to the deforestation. For example, it is possible for a cash-constrained "land-owner" to trade the standing timber to a logging company in exchange for land clearing services paid for by the logger.

Small scale squatters are frequently accused of contributing in a major way to the deforestation. While this may be of local importance in several regions, it is probably less of a problem than the ranchers. If small farmers want to claim 1 modulo of land, they have no legal or procedural
incentive to clear land beyond the area needed for their shifting cultivation operation. However, within the allocated modulos, the shifting cultivation system will reduce forest area rapidly. It is easily shown that shifting cultivation is the least-cost way of producing one's subsistence requirement, whether cost is measured in terms of labor, in terms on purchased inputs or in terms of total cost. Primary forests will be destroyed in the process, and replaced by pasture or secondary forest. Physical degradation problems are minimal because soils are covered by vegetation for all but short periods during the first few growing seasons, and because initially the highest quality soils are chosen. However, as under all shifting cultivation systems, soil fertility declines, and weed infestations become a serious problem after the first one or two seasons. The small farmer then shifts to clear another plot of land.

It is unrealistic to assume that small farmers can be induced to keep a small proportion of their land under permanent agriculture, while leaving the remainder under forest. The only way to reduce forest destruction is to reduce plot sizes allocated to small farmers and set land aside elsewhere in large and well guards forest reserves. The World Bank projects in Rondonia now attempt to do this by creating small reserves in proximity of the settlers. But small local forest reserves will be invaded by other shifting cultivators, and are hard to guard by the forest service.

The major changes in allocation rules which require further study are as follows:

1. Lowering the ceiling of land which can be allocated to a single owner during regularization from 3000 ha to no more than perhaps 300 ha of total land owned anywhere. This will still enable families to establish larger ranches by distributing ownership among several members.
2. Introduce a land ceiling on corporate land holdings or reduce it where it already exists.

3. Change the definition of cultura efetiva which is used to regularize land to include forms of managed forest exploitation.

X. Improvi - incentives for forest guards. Forest guards of IBDF are small in numbers, poorly paid and have to do risky jobs in guarding forest reserves or in enforcing regulations limiting logging of, for example, the Brazil Nut tree. The enormous distances and low population densities impose additional difficulties. It is not surprising, therefore, that forest laws and regulations are easily escaped, in the large by applying political pressure to the service, and in the small by bribing the forest guards. However it would be easy to provide both the forest service and the guards with improved incentives to enforce the rules by giving them a financial stake in the fines levied on violators of the rules. For example, letting the guards keep 30% of the fines, with the remainder adding to the budget of the forest service rather than the general revenue, would provide positive rather than perverse incentives. Traffic police already operate in a similar way, so a precedent exists.
THE GREATER CARAJÁS PROGRAM

I. What is it?

The Greater Carajás Program is an institution, created by law and headquartered in Brasília, DF, and is responsible for coordinating, furthering and implementing those measures required for the integrated development of an area of 883 thousand km², located between the boundaries of the municipalities cut by the parallels 09 south, the Parauá, Xingu and Amazon Rivers and the Atlantic Ocean.

II. Objectives:

A) Support and encourage private initiatives;

B) Contribute to the industrial decentralization of the country;

C) Reduce regional disparities;

D) Coordinate and further the activities of the different organizations and institutions charged with the development of the region;

E) Encourage those investments considered to have comparative advantages in terms of the social cost-benefit relationship;

F) Encourage the generation of new employment opportunities;

G) Further improved income distribution;
H) Further improved utilization of human and natural resources;
I) Provoke agricultural development, with particular emphasis on small scale farmers;
J) Encourage studies and surveys of natural resources and the environment; and
K) Encourage the development of appropriate technologies.

III. Government Undertakings:

Undertakings (implementation, modernization and expansion) in the following areas are qualified as component parts of the Greater Carajás Program:

A) Transportation (railroads, waterways, roads, bridges, ports, etc.);
B) Basic sanitation;
C) Utilization of hydric resources;
D) Mineral research, prospecting, extraction, processing, primary elaboration and industrialization;
E) Crop and livestock farming, fishery and industry;
F) Utilization of energy sources;
G) Implementation of infrastructural projects and services; and
H) Other economic activities considered pertinent to the development of the region.
IV. Incentives That Can be Granted:

1) Qualification of the undertaking as a component of the Greater Carajás Program will make the project in question eligible for preferential treatment and, therefore, apt to obtain incentives and receive third party investments produced by fiscal incentives. This preferential treatment will be guaranteed by Federal government organizations for the purposes of:

A) Licensing, leasing and granting title to public lands, normalization and specification of unoccupied lands or, when necessary, expropriation of those private lands required for project execution;

B) Licensing or granting of concessions for the construction and operation of port facilities;

C) Contracts involving the supply of electrical energy and river transportation;

D) Granting or leasing of rights to mineral or forestry extraction;

E) Authorization, issuing of licenses and granting of export financing;

F) Authorization and issuing of licenses for
imports of machinery, equipment and instruments, as well as kits, parts, spares and accessories to be used in the implementation, expansion, modernization or re-equipping of companies, including those based on direct foreign investments in the form of goods or services;

G] Authorization for and registration of external loans, including for purposes of effecting payment abroad for goods or services;

H] Granting of the endorsement or guaranty of the National Treasury or public financial institutions to external loans;

I] Authorization for the functioning of mining companies;

J] Participation in the capital stock of project proprietor companies, in the form of public resources;

K] Approval of contracts involving technology transfers and technical assistance or consulting services applied to the implementation and operation of projects; and

L] Any other acts, formalities or measures required for the approval and execution of undertakings in the Greater Carajás Program;
2) Exemption from the income tax and nonrefundable additional tax for a period of 10 years, benefitting those undertakings that instal, invest or modernize in the area of the Greater Carajás Program by 12.31.90. The amount that, as a result of the exemption, is not paid will constitute a capital reserve of the legal entity and is to be utilized for investment in the undertaking itself or in any other component projects of the Program.

3) Exemption from the income tax and the nonrefundable additional tax on earnings resulting from activities involving the rendering of services, execution of implementation, expansion or modernization of infrastructural projects in the area of the Program. Half of the tax not paid is to be invested in undertakings that are component parts of the Greater Carajás Program, independently of whether such undertakings are or are not in the name of the beneficiary, together with matching funds invested by the beneficiary and equivalent to not less than 25% of the investment. The other half is to be invested in economic and social infrastructural undertakings that may also act as stimuli to small and medium businesses.
4] Exemption from or reduction of the import tax and the corresponding industrialized products tax on machinery, equipment and so forth, when there are no similar nationally produced goods, and when such imports are effected by the company holding title to the component undertaking of the Program. The fiscal benefit may be granted to the goods imported by companies contracted by the company holding title to the component undertaking of the Greater Carajás Program for execution of works or the rendering of services, in those cases in which the value of the benefit is to be transferred to the final cost of the works and services.

5] Exemption from the industrialized products tax and maintenance of the credit of this same tax as applied to raw materials, intermediate products and packaging material, in operations involving acquisitions of nationally manufactured machinery and equipment.
V. How to Participate:

Companies interested in participating in the Program should present a letter of consultation (printed model) to the Executive Secretariat, either directly or through one of the regional offices of the Program.

Companies involved in the rendering of services and/or execution of infrastructural works and which desire to incorporate their activities into the Program for the purpose of obtaining the aforementioned incentives, should present a petition (printed model) in this regard.

Other information and clarifications may be obtained at the offices of the Program (see listing: "Staff - Addresses - Information", item VII below).

VI. Legislation and Norms

1) Executive Act 1,813 (published 11.25.80): institutes the special system of incentives for component undertakings of the Greater Carajás Program and takes other measures.

2) Decree 85,387 (Idem): defines the composition, authority and operation of the Interministerial Council of the Greater Carajás Program and takes other measures.
3) Executive Act 1,825/80 (published 12.23.80): exempts component undertakings of the Greater Carajás Program from the income tax and takes other measures.

4) Decree 86,157/81 (published 06.30.81): regulates the paragraph of article 1st of Executive Act 1,813/80.

5) Executive Act 1,904/81 (published 07.24.81): alters the text of article 1st of Executive Act 1,813 cited above.

6) Executive Act 1,956/82 (published 08.31.82): authorizes the Interministerial Council of the Greater Carajás Program to grant exemptions from or reductions of the import tax and industrialized products tax.

7) Decree 87,640/82 (published 09.22.80): defines the composition of the Interministerial Council of the Greater Carajás Program and alters article 1st of Decree 85,387.

8) Executive Act 2,152/84 (published 07.19.84): extends the deadline defined in Executive Act 1,825, which exempts component undertakings of the Greater Carajás Program from the income tax.


10) Resolutions 01, 02, 04, 05, 07, 08, 09, 11, 12,
13, 14 and 15 (published 08.10.81, 01.10.81, 12.09.81, 05.11.82, 09.24.82, 09.24.82, 01.16.86, 01.16.86, 01.16.86, 04.18.86 and 12.23.86, respectively).

VII. Staff - Addresses - Information

PRESIDENCY OF THE REPUBLIC - Secretariat of Planning
Interministerial Council of the Greater Carajás Program
Executive Secretariat
SDS. Edif. Venâncio II, 29 andar - Zip Code 70302 Brasilia, DF
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Executive Secretary: FRANCISCO DE SALLES BAPTISTA FERREIRA
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Coordinator of Planning: JOÃO URBANO CAGNIN
Coordinator for Special Affairs and Incentives: RAHIUNDO NONATO DE AZEVEDO PINHEIRO
Coordinator of Projects and Information Technology: EDUARDO AUGUSTO ROXO PEREIRA
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Tel. (091) 228-2880 and 228-2986
SEGUNDA-FEIRA, 12 JAN 1967

DIÁRIO OFICIAL

VOTO

Por que os membros de pedida, como regra, prometem levar a cabo a sua atividade até o dia seguinte, mesmo que o referente seja um processo prolongado.

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Pelos legitimados das comissões, de acordo com as respectivas alíneas, pois o fim de realizar os respectivos atos.

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F. M. F. D. F. D. F.
2. Nos precedentes conhecimentos, com a pesquisa, a inspeção e a verificação dos projetos de desenvolvimento, que os órgãos fiscais e financeiros do IFBN e FINEP.

3. As informações e documentos, que poderão ser utilizados para a elaboração das premissas e conclusões, serão entregues aos órgãos fiscais e financeiros do IFBN e FINEP.

4. As informações e documentos serão reunidos e analisados por um grupo de especialistas, que serão nomeados pelo órgão fiscal ou financeiro.

5. As informações e documentos serão divulgadas aos interessados, que serão convocados para participar de reuniões de discussão.

6. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

7. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

8. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

9. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

10. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

11. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

12. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

13. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

14. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

15. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

16. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

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18. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

19. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

20. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

21. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

22. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

23. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.

24. As informações e documentos serão utilizados para a elaboração de relatórios, que serão apresentados aos órgãos fiscais e financeiros do IFBN e FINEP.

25. As informações e documentos serão mantidos em segredo, e serão destruídos após a conclusão do processo.
No ano de 1985, a SUDENE (Superintendência de Desenvolvimento de Recursos Hídricos) estabeleceu um programa para incentivar a expansão da produção de energia elétrica a partir de veleiras e pequenos eólis, conhecido como Programa de Energia Eólica (PEE). O objetivo era promover a geração de energia elétrica de forma sustentável, reduzindo a dependência de combustíveis fósseis e contribuindo para a preservação do meio ambiente.

Os incentivos financeiros eram concedidos através de subsídios, que variavam de 20% a 40% do custo de implantação do equipamento e de operação e manutenção. Esses incentivos eram disponibilizados através de convênios com a SUDENE e a FUNAI (Fundação Nacional de Agricultura Indígena), visando atingir as comunidades de pescadores e indígenas, que são as principais beneficiárias do programa.

O programa foi um dos mais significativos do PEE, pois permitiu a expansão da geração de energia elétrica nesses setores e contribuiu para a articulação de uma política pública de energia renovável e sustentável. A implantação desses equipamentos foi feita em várias regiões do país, incluindo a Amazônia e o Nordeste.

No entanto, o PEE enfrentou alguns problemas, como a falta de manutenção adequada dos equipamentos e a dificuldade em manter a geração de energia elétrica por um período sustentável. Apesar disso, a SUDENE continuou a acreditar na importância da energia eólica e proseguiu com a implantação de novos equipamentos e a promoção de educação e conscientização sobre a importância da preservação do meio ambiente.
ho de manter um controle rigoroso do funcionamento e da utilização dos recursos. A avaliação das contas e demonstrações referentes ao exercício de 1984 e 1985, feitas pelo auditors, mostraram que o sistema FINOR não se mostrou eficaz.

5. A análise feita revelou que as falhas nos sistemas operacionais e financeiros do FINOR foram originadas basicamente em dois pontos: a falta de estrutura administrativa e a falta de controle interno.

6. Os trabalhos desenvolvidos pela equipe de inspeção no SUDAN, bem como no banco internacional, demonstraram que as falhas nos sistemas operacionais e financeiros do FINOR foram originadas basicamente em dois pontos: a falta de estrutura administrativa e a falta de controle interno.

7. A falta de estrutura administrativa e a falta de controle interno são problemas graves que exigem ações urgentes de solução. O governo deve tomar medidas para corrigir esses problemas e assegurar o funcionamento adequado do sistema FINOR.

8. A inspeção realizada pelo Conselho Deliberativo do SUDAN e o auditor interno do FINOR confirmaram a falha operacional e administrativa dos sistemas operacionais e financeiros do FINOR.

9. O governo deve tomar medidas para corrigir esses problemas e assegurar o funcionamento adequado do sistema FINOR.
Visto corrigir essa manifestação e SUDAN embalaria no DETERMINADO, em duas condições iniciais de projetos de lei, de que não aparecem mensais e fracionados.

67. Examinar, na sequência, a necessidade de ajustes na forma de legislação, bem como da necessidade de revisão de partes legais, que sejam válidas. O diálogo deve ser acelerado para esclarecer questões que sejam imediatas ou imediatas.

68. Considerar os efeitos operacionais e técnicos nas duas emendas (item 15/2010 e 15/2010). A partir da justiça das emendas do rendimento e da revisão do artigo 15 de Decreto-lei 1 378/74, os conceitos que constam dos precedentes são de extrema importância. Conhecer de forma mais detalhada o artigo 15 de Decreto-lei 1 378/74, nos termos do artigo 15 de Decreto-lei 1 378/74 e da emenda do artigo 15 de Decreto-lei 1 378/74, para a revisão do artigo 15 de Decreto-lei 1 378/74.

69. Considerar as emendas propostas na emenda do artigo 15 de Decreto-lei 1 378/74, sendo efetivadas para os efeitos do artigo 15 de Decreto-lei 1 378/74 e da emenda do artigo 15 de Decreto-lei 1 378/74.

70. Segundo o artigo 14 do Decreto-lei 1 378/74 e do artigo 15 do Decreto-lei 1 378/74, a justiça das emendas dos conceitos que constam dos precedentes devem ser aceleradas para esclarecer questões que sejam imediatas ou imediatas.

71. O referido artigo 14 do Decreto-lei 1 378/74 deve ser acelerado para esclarecer questões que sejam imediatas ou imediatas.

72. O referido artigo 14 do Decreto-lei 1 378/74 deve ser acelerado para esclarecer questões que sejam imediatas ou imediatas.
Todo efeito, portanto, deve ser caracterizado e monitorado ao longo do tempo por uma série de indicadores e parâmetros, de forma a garantir a eficácia e eficiência do processo de desenvolvimento.
Nos autos está presente a assinatura de diversos atos em que se falam e legislações específicas sobre a matéria de que se trata. Assim sendo, a medida adequada neste momento é a audiência dos testemas ou pessoas mencionadas, para que possam alegar e defender suas legislações.

Em face disso, acolho a proposta de audiência dos responsáveis citados nas partes e respondentes das suas, Assessor, Inspector-Geral e Subprocurador-Geral.

TC-039.747/85-0

T.C.U., Gabinete de Ministro, em 15 de dezembro de 1986

Chalde P. Pinheiro
Ministro-Relator

Anexo VI à Alc nº 07/86

Relatório e Voto do Ministro Paulino, cuja conciliação, acordo e cumprimento as partes, foram observadas pelas autoridades competentes pelo Ministro, e o mesmo serviu para a necessidade de audiência do senhor fotógrafo, cujo pedido foi satisfeito.

TC-516.099/84-5


Expresso o acordo e cumprimento às partes, em especial as pessoas que se encontram no terreno da questão.

TC-516.099/84-5

T.C.U., Gabinete de Ministro, em 15 de dezembro de 1986

Chalde P. Pinheiro
Ministro-Relator

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TC-516.099/84-5

T.C.U., Gabinete de Ministro, em 15 de dezembro de 1986

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References


and others (eds.). 1982. *Amazonia Agriculture and Land Use Research.* Col.: Centro Internacional De Agricultura Tropical.


Agricultural Mechanization: A Comparative Historical Perspective

The Acquisition of Information and the Adoption of New Technology
by Gershon Feder and Roger Slade, September 1982.

Selecting Contact Farmers for Agricultural Extension: The Training and
Visit System in Haryana, India
by Gershon Feder and Roger Slade, August 1982.

The Impact of Attitudes Toward Risk on Agricultural Decisions in Rural
India
by Hans P. Binswanger, Dayanatha Jha, T. Balkaramiah and Donald A.
Sillers, May 1982.

Behavior and Material Determinants of Production Relations in Agriculture
by Hans P. Binswanger and Mark R. Rosenzweig, June 1982

The Demand for Food and Foodgrain Quality in India
by Hans P. Binswanger, Jaime B. Quizon and Gurushri Swamy, November
1982.

Policy Implications of Research on Energy Intake and Activity Levels with
Reference to the Debate of the Energy Adequacy of Existing Diets in
Developing Countries
by Shlomo Reutlinger, May 1983.

More Effective Aid to the World's Poor and Hungry: A Fresh Look at
United States Public Law 480, Title II Food Aid
by Shlomo Reutlinger, June 1983.

Factor Gains and Losses in the Indian Semi-Arid Tropics: A Didactic
Approach to Modeling the Agricultural Sector
by Jaime B. Quizon and Hans P. Binswanger, September 1983
(Revised May 1984).

The Distribution of Income in India's Northern Wheat Region
by Jaime B. Quizon, Hans P. Binswanger and Devendra Gupta, August 1983
(Revised June 1984).
Report No.: ARU 11
Population Density, Farming Intensity, Patterns of Labor-Use and Mechanization

Report No.: ARU 12
The Nutritional Impact of Food Aid: Criteria for the Selection of Cost-Effective Foods
by Shlomo Routlinger and Judith Katona-Apto, September 1983.

Report No.: ARU 13
Project Food Aid and Equitable Growth: Income-Transfer Efficiency First!
by Shlomo Routlinger, August 1983.

Report No.: ARU 14
by Shlomo Routlinger, August 2, 1983.

Report No.: ARU 15
Patterns of Agricultural Projection

Report No.: ARU 16
Factor Costs, Income and Supply Shares in Indian Agriculture
by Ranjan Pal and Jaime Quizon, December 1983.

Report No.: ARU 17
Behavioral and Material Determinants of Production Relations in Land Abundant Tropical Agriculture
by Hans P. Binswanger and John McIntire, January 1984.

Report No.: ARU 18
The Relation Between Farm Size and Farm Productivity: The Role of Family
by Gershon Feder, December 1983.

Report No.: ARU 19
A Comparative Analysis of Some Aspects of the Training and Visit System of Agricultural Extension in India

Report No.: ARU 20
Distributional Consequences of Alternative Food Policies in India
by Hans P. Binswanger and Jaime S. Quizon, August 31, 1984.

Report No.: ARU 21
Income Distribution in India: The Impact of Policies and Growth in the Agricultural Sector
Report No.: ARU 22
Population Density and Agricultural Intensification: A Study of the Evolution of Technologies in Tropical Agriculture

Report No.: ARU 23
The Evolution of Farming Systems in Agricultural Technology in Sub-Saharan Africa

Report No.: ARU 24

Report No.: ARU 25
The Training and Visit Extension System: An Analysis of Operations and Effects

Report No.: ARU 26
The Role of Public Policy in the Diffusion of New Agricultural Technology
by Garshon Feder and Roger Slade, October 1984.

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Fertilizer Subsidies: A Review of Policy Issues with Special Emphasis on Western Africa

Report No.: ARU 28
From Land-Abundance to Land Scarcity: The Effects of Population Growth on Production Relations in Agrarian Economies

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The Impact of Rural Electrification and Infrastructure on Agricultural Changes in India, 1966-1980

Report No.: ARU 30
Public Tractor Hire and Equipment Hire Schemes in Developing Countries (with special emphasis on Africa). A study prepared by the Overseas Division, National Institute of Agricultural Engineering (OD/NIAE)

Report No.: ARU 31
Evaluating Research System Performance and Targeting Research in Land Abundant Areas of Sub-Saharan Africa
Report No.: ARU 32
On the Provision of Extension Services in Third World Agriculture

Report No.: ARU 33
An Economic Appraisal of Withdrawing Fertilizer Subsidies in India
by Jaime S. Quizon, April 1985 (Revised August 1985).

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The Impact of Agricultural Extension: A Case Study of the Training and
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Report No.: ARU 43
A Review of the Literature on Land Tenure Systems in Sub-Saharan Africa
Report No.: ARU 44
Policy Options for Food Security.

Report No.: ARU 45
Credit Markets in Rural South India: Theoretical Issues and Empirical Analysis.

Report No.: ARU 46
The Impact of Agricultural Extension: The Training and Visit System in India.
by Gershon Feder and Roger Slade, June 1985.

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Report No.: ARU 48
Estimation of Aggregate Agricultural Supply Response.
by Hans Binswanger, Yair Mundlak, Maw-Cheng Yang and Alan Bowers
August 1985 (Revised October 1985).

Report No.: ARU 49
Land Values and Land Title Security in Rural Thailand.
by Yongyuth Chalawong and Gershon Feder, June 1985 (Revised October 1985).

Report No.: ARU 50
Land Ownership Security and Capital Formation in Rural Thailand.
by Gershon Feder and Tongroj Onchan, December 1985 (Revised February 1986).

Report No.: ARU 51
Land Ownership Security and Farm Productivity in Rural Thailand.
by Gershon Feder, April 1986.

Report No.: ARU 52
Social and Cultural Aspects of Land Inheritance and Transactions in Rural Thailand.
by Charles B. Mell, June 1986.
Report No.: ARU 53
Land Ownership Security and Access to Credit in Rural Thailand.
by Gershon Feder, Tongroj Onchan and Tajaswi Rapaia, April 1986.

Report No.: ARU 54
The Management of Common Property Resources: Collective Action as an
Alternative to Privatization or State Regulation.

Report No.: ARU 55
Land Policies and Farm Productivity in Thailand's Forest Reserve Areas
by Gershon Feder, Tongroj Onchan and Yongyuth Chalamesong, August 1986.

Report No.: ARU 56
On the Determinants of Cross-Country Aggregate Agricultural Supply
by Hans Binswanger, Yair Landau, Hau-Cheng Yang and Alan Bowers,
September 1986.

Report No.: ARU 57
What Can Agriculture Do for the Poorest Rural Groups? by Hans P. Binswanger,
and Jaime B. Quizon, September 1986.

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Population Density, Market Access and Farmer-Generated Technical Change
in Sub-Saharan Africa by Prabhu L. Pingali and Hans P. Binswanger,
September 1986.

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Credit Markets, Wealth and Endowments in Rural South India by Hans P.
Binswanger and Mark R. Rosenzweig, December 1-5, 1986.

Report No.: ARU 60
Resource Endowments, Farming Systems and Technology Priorities for
Sub-Saharan Africa by Hans P. Binswanger and Prabhu Pingali, November
1986.

Report No.: ARU 61
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by Andrew Stone, March 1987.


