

Summary and Recommendations

Chapter 1 Introduction

1.1 Background of the Study

The Government of the Tocantins State, with the technical cooperation of JICA, elaborated the Integrated Development Master Plan of Agriculture and Livestock of the State between 1997 and 1998. Furthermore, the State Government, through the Federal Government of Brazil, has requested the elaboration of the Study of the Agriculture and Livestock Development in the Northern Region of the Tocantins State (Master Plan and Feasibility Study) to the Government of Japan in 1998. As a response for this request, the Government of Japan sent a JICA Preliminary Mission, in November of 1999, headed by Mr. Masahito Sato that culminated with the signature of the Scope of Works in December 6th of 1999.

JICA, in turn, based on this Scope of Works, started the studies in 2000, comprehending two fiscal years. The Study was divided into works carried out in Brazil and Japan. The work in Brazil was carried out in two phases: from April 16th, 2000 to September 12, 2000 and from October 31, 2000 to January 28, 2001. The results of these two phases culminated with the Master Plan and the Feasibility Study of Priority Areas which are detailed in this report.

1.2 Objectives of the Study

The Study objectives are presented as follows:

- To elaborate the Master Plan and the Feasibility Study regarding to the Integrated Development Plan of the Agriculture and Livestock Husbandry Sector, with the promotion of the agriculture and livestock taking into consideration the environmental conservation, the consolidation of the productive structure, and the improvement of life conditions at the Northern Region of the Tocantins State (approximately 37 thousand km²);
- To instruct and perform technology transfer about the study and planning methodologies to the Brazilian counterparts.

1.3 Study Area

The Study Area encompasses the Northern Region of the Tocantins State (37 thousand km², 38 municipal districts). However, other regions shall be considered regarding to the Study on Market and Commercialization of agricultural products.

1.4 Scope of the Study

The present Study is being carried out in 2 phases. The main contents of the 2 phases' works are presented as follows.

(1) Phase I (April 2000 to March 2001)

- 1st Study in Brazil (April 2000 to September 2000)
- 1st Work in Japan (October 2000)

(2) Phase II (November 2000 to March 2001)

- 2nd Study in Brazil (November 2000 to January 2001)
- 2nd Work in Japan (February 2001 to March 2001)
- Presentation of the Draft Final Report in Brazil (June 2001)

(3) Elaboration of the Draft Final Report (July 2001)

Chapter 2 Socio-Economic Background

2.1 General Conditions in Brazil

Country Area	8,547,404 km ²
Political Division	26 states and 1 federal district
Population	157,079,573 inhabitants (Census 1996)
Rural Population	22%
Social Conditions	Average Life Span: 67.6 years; Infant Mortality: 42 in 1000 children; Birth Rate: 2.2; Education Rate: 88%; Illiteracy Rate above 15 years: 19%; HDI: 0.74 (Brazilian Average).
Economic Conditions	GDP Growth in 94: 5.9%; GDP Growth in 98: 0.1% (Influence of measures on currency exchange rate policies, financial measures to restrain the inflation, and protection measures against the economic crisis in Asia and Russia)
External Debt	After the implementation of the Real Plan as a measure to stabilize the economy, the external debt has increased from 14.8 billions of Reais in 94 to 23.5 billions of Reais in 1998.
National Politics	For the stabilization of the inflation and of the currency, the market was opened to the foreign capital and the globalization was promoted, with the reduction of the Federal Government responsibilities, activation of private investment, organizational reform, etc.
Economic Policy	Improvement of infrastructure utilizing private resources based on the privatization and introduction of foreign resources (Strengthening of the economic basis to cope with the international competition).
PPA (Pluri-Annual Plan)	An economic growth with the alleviation of regional and social differences is intended, with a less unequal and more stable distribution of income based on the productive and competitiveness growth. Considerations about the environment are also an important target.
Federal Agricultural Policy	Increase of the food production, maintenance of the exportation strategy, promotion of the sustainable agriculture, conservation of natural resources and increase of job opportunities. The agricultural policy aims at re-evaluate the agricultural credit, re-define the federal responsibilities as for the commercialization and supply, reduction of interest rates, etc., in order to attain the aforementioned targets.
Agricultural Measures	Revision of debts, policy of minimum prices, reform of the storage policy, consolidation of the agricultural credit policy, promotion of the foreign capital introduction, strengthening and reconstruction of the research and technical extension policy, expansion of the transportation routes and port facilities, diversification and modernization, strengthening and reconstruction of the animal and vegetal control policy, increase of the private sector participation in the transportation sector.

2.2 General Conditions of Tocantins

Political Division and Population	Political Division: 139 municipal districts, Population in 96: 1,048,642 inhabitants
Economy Trends	Structure of the Productive Sector: Mainly Primary Sector (Agriculture, Livestock Husbandry, etc.);
State Politics Trends	PPA: To construct a State taking into consideration aspects of modernization, economy and social conditions.
Improvement of Transports and Energy Infrastructure	Consolidation of the multi-modal transportation system.
Production Plan of the	In parallel to the formation of a competitive agricultural sector, improving

Agricultural Sector	infrastructure and promoting the agricultural production, the agricultural products processing sector is expected to be formed, as well as incentive to eco-tourism is expected to be carried out, etc., thus forming a sustainable agricultural sector.
Plan of Economy Activation	Plan of the North-South Railway Improvement, Plan of Navigation of the Araguaia-Tocantins Rivers, Incentive to the productive sector with the Improvement Plan of State Roads, Plan of Rural Electrification, Construction of the Hydroelectric Plant of Lajeado, Poultry Husbandry Sector, etc.
State Environmental Measures	Environmental improvement with the implementation of measures to alleviate the environmental impacts, promoting conservationist enterprises, and respecting the environmental laws.
Agricultural Sector Trends	<ul style="list-style-type: none"> • Approximately 9% of the land owners possess 56% of the properties; • More than 52% of the producers get less than 1 minimum wage; • Reduction of the cultivated area as a whole.
Agricultural Credit	Most of the credit is related to livestock husbandry, experience of the State Government: 34 millions of Reais (0.4% of the Total).
Environment	Necessity of Preserving the Amazon Forest: 80% and Cerrado: 35% (50% each according to the State Law)

Chapter 3 Present Conditions of the Study Area

3.1 Natural Conditions

Climate	Humid Tropical Climate (B1wA'a') and Humid and Sub-humid Tropical Climate (C2rA'a').
Rainfall	Annual Rainfall: 1,400 to 1,800mm; Clearly Defined Rainy and Dry Seasons; 85% of the rainfall is concentrated during the Rainy Season.
Mean Annual Temperature	27 to 28 °C
Hydrology	Divided between the Araguaia and Tocantins rivers basins
Topography	Undulate
Soils	36% of soils are sandy; Lateritic soils as Yellow Latosol is the main one; 30% is composed of dark-red latosol, red-yellow podzolic and dark-yellow podzolic.
Vegetation	Forest Cerrado (Cerradão): approx. 30%, Open Rain Forest: 28%, Dense Rain Forest: 20%.

3.2 Rural Sociology

General	
Population	<ul style="list-style-type: none"> • Population: approx. 360,000 inhabitants (32.3% of the State); • Population Growth: 2.5% per year.
Social Conditions	<ul style="list-style-type: none"> • High rate of poverty; • Land owners without land registration and subsistence agriculture is an obstacle for most farmers to access to credit lines.
Land Reform	29 municipal districts have 77 of the INCRA settlements, where 7,937 families live.
Social Problems	Low life quality, lack of health and education facilities in the rural areas.
Technical Assistance	Lack of technical assistance in the agriculture and livestock husbandry sector.
Indigenous	1,230 resident indigenous.
Education	Graduation rate in the primary level (equivalent to the first 4 years of the middle high school) is 62% and 63% for the equivalent of the complete middle high school, considered low.
Health	Poverty, malnutrition, lack of hygiene, etc., causing large number of cases of tuberculosis, Hansen's diseases, pneumonia, etc.

Information on Rural Society through the Workshops	
Agricultural Diversification	The lack of information about grains cultivation and technical assistance was mainly pointed out.
Production Nucleus	There was a great interest. There is mainly a lack of banking credit and technical assistance.
Natural Resources Exploitation and Environmental Conservation	The low mechanization rate, low prices of products and lack of assistance activities among others were mainly pointed out.
General	The necessity of improving the basic productive activities with the introduction of new agricultural activities was pointed out.
Producers Willingness	The following aspects were pointed out: <ul style="list-style-type: none"> • Dissatisfaction with the assistance structure; • Intends to accept the fruits cultivation, fish farming and natural resources exploitation activities; • Settlements are in their initial organization stage, only producing for self-consumption at present; • Many of the machinery introduced by the government are not being used; • Cattle raisers are interested in the agricultural diversification, with special interest in bringing new producers with experience on grains cultivation; • Concern about the influence of the deforestation and Forest fires on the environment.

3.3 Infrastructure Conditions

Roads Network	Improvement being carried out. The transportation of products to the main regional markets is becoming possible.
Railways Network	<ul style="list-style-type: none"> • Fast progress in the railways network improvement; • With the possibility of transporting large amounts, the grains transportation shall be facilitated.
Storage Facilities	There is only capacity to store 13,500 t in the State though there are large-scale private storage facilities crossing the Tocantins river. Thus, the transportation of big loads would be possible.
Electrical Network	Improvement in fast progress.

3.4 Present Land Use

Land Use	Pasture: 53.3%, Cerrado: 25%, Forest: 19%, Others: 2.7%
Agriculture Land	Only 0.63% (37,000 ha) of the properties.
Livestock Husbandry Land	<ul style="list-style-type: none"> • There are 12,000 in total. • The average is 123 heads and 168 ha of pasture by producer.

3.5 Present Conditions of Agriculture

Agricultural Production	<ul style="list-style-type: none"> • Rice, maize, pineapple, sugar cane and cassava are the main crops; • Low production; • Cultivation is mostly for self-consumption, and only the surplus is commercialized.
Cultivation Conditions	<ul style="list-style-type: none"> • Large-scale Producer: the main activity is basically cattle fattening; • Medium-scale Producer: most of them carry out the production of calves and milking cattle raising; • Small-scale Producer: grains production together with a small livestock production for self-consumption.
Conditions of Rural	<ul style="list-style-type: none"> • INCRA settlers: production for self-consumption, not getting income from

Economy	agriculture; <ul style="list-style-type: none"> • Small-scale Farmer: the gross income increases proportionally with the introduction of livestock husbandry; • The gross income with milking cattle husbandry tends to be a little higher when compared to calves production; • Rice, maize: the producer is forced to produce for self-consumption since the production cost is higher than the Gross income.
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3.6 Present Conditions of Livestock Husbandry Sector

Number of Animals	25% of the State total bovine cattle, 27% of poultry, thus being the biggest producer of bovine cattle and poultry in the State.
Bovine Husbandry	Most of the meat bovine cattle husbandry is carried out by the large-scale producers through the extensive system.
Meat Production Manner	Most of the large-scale producers purchase calves in the market for fattening. The extensive system is used and the pastures degradation is observed.
Race	<ul style="list-style-type: none"> • Meat bovine: mostly Nelore • Milking bovine: crossbreds of Nelore female with males of the races Holandesa, Girolanda, Pardo-suíço, occurring low milk production. • Bubaline cattle: main races are Murrah and Jafarabadi (riverside type) with high milk production and productive life span. • Swine husbandry: most of the female for reproduction are of the Piau race.
Poultry	Large-scale poultry integration companies from outside of the State are arriving at the northern region.
Measures to make FMD free	The Tocantins state managed to become FMD free zone in January 2001 with vaccination.
Pastures Use Conditions	80% are artificial pastures, mostly degenerating and with a supporting capacity of less than 1 head/ha.

3.7 Present Conditions of Processing and Commercialization of Agricultural Products

Conditions of the Agricultural Processing Sector	There are poultry integration companies arriving at the region due to the progress of the transportation infrastructure improvement and privileged natural conditions of the region.
Cassava	Soon a factory with the processing capacity of 30 t/h shall be opened.
Tomato	Industry of tomato juice (12 t/h)
Meat Cattle	Most of the cattle is commercialized as alive cattle to the NE of Brazil, the remaining being processed and commercialized. The existing processing plants are the FRINORTE (750 heads/day) and the COOPERCARNE (300 heads/day).
Conditions of Transports Infrastructure	The Belém-Brasília highway (BR-153) is the main transportation highway. The grains producers are establishing along the north-south railway which was extended until Estreito in Maranhão State.

3.8 Present Conditions of the Environment

Vegetation	Few remaining native vegetation.
Green Area	11 municipal districts present less than 10% of their areas as green areas. The green area percentage is of 19.1%, where most present less than 20%.
Conservation Area	Indigenous reservations and water source protection areas are obligatorily conservation areas.
Present Conditions of Silviculture	Nothing more than Teca cultivation recently started.

3.9 Existing Development Plans

Agriculture	Integrated Development of the Bico do Papagaio region and Private Production of Banana.
Agricultural Products Processing Sector	Industries of tomato processing and cassava flour in operation.
Infrastructure Improvement	Improvement of State roads.
Energy	Hydroelectric energy, north-south transmission line, PERTINS
Transports	Multi-modal platform, Araguaia-Tocantins waterway, Paving/Improvement of state roads, Construction of the north-south railway, Railway in the stretch Xambioá-Estreito.
Social Sector	High illiteracy rate, low health and hygiene conditions quality.
Environmental Sector	PGAI, re-evaluation of the Tocantins State Policies, Plan of Eco-Tourism of the Tocantins State.

3.10 Relation with the Master Plan

M/P Conditions and Relation with the Present Study	<ul style="list-style-type: none"> • Program of Improvement of the Agricultural Productive Structure: the structural improvement of concerning agencies and the plan of animal and vegetal inspection are in progress. Necessary items related to the strengthening of agricultural research and development of human resources shall be included in this study. • Program of Promotion of Sustainable Agriculture: a plan is being elaborated for the smooth implementation of this program. • Program of Regional Development: technical transference shall take place in order the State can independently carry out this activity. • Sectorial Development: shall not be included. • Program related to the Private Sector: indirect assistance shall take place for that there private investment is carried out.
Themes of the M/P and Development Guidance from the View Point of the Study Area Conditions	<ul style="list-style-type: none"> • Conditions of Regional Economy: necessity of minimizing problems related to the lack of resources for production, low productivity, lack of market and low prices; • Livestock husbandry: necessity of converting the current extensive livestock husbandry into intensive one; • Agricultural Production: there are no conditions for an economic cultivation due to the lack of technology and experience; • Agricultural Credit: difficult access to the existing credit lines due to the lack of conditions for the elaboration of plans and capability to offer guarantees. The improvement of agricultural credit would be important also to raise the producers' lives quality. • Land Use and Environmental Conservation: it is necessary to reduce the pastures area considering that the area currently being utilized has already surpassed the levels required by the forestry laws; • Development Strategy: it is necessary to convert the extensive agriculture into intensive one.
Revision of the M/P taking into consideration the Producers' Willingness according to the Social Study	
Problems to be Solved and Items to be Evaluated	<ul style="list-style-type: none"> • Lack of resources and production technology; • Low productivity due to pasture degradation, low quality of products, high production cost, etc.; • Fragile organization and monoculture turn the production basis weak. • High awareness about environmental conservation due to the region being part of the Amazônia Legal region, besides the acknowledgement of the problems caused by the reduction of forests and uncontrollable forest fires.
Items to be Evaluated in the Elaboration of the Development	<p>The following 6 items shall be evaluated in the elaboration of the plan:</p> <ul style="list-style-type: none"> • Appropriate crops in compatible land

the Scenario	Development	<ul style="list-style-type: none"> • Promotion of agricultural diversification • Promotion of production nucleuses • Promotion of conservation • Strengthening of agricultural assistance • Improvement of agricultural assistance
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3.11 Potentials and Restrictions

Agricultural Diversification	A great economic improvement is expected, with a significant increase of livestock husbandry productivity and grains production, also increasing the effects of job opportunities promotion. However, since the producers do not have grains cultivation technology, it is highly necessary to bring outside grains producers at the initial stage. On the other hand, there shall be problems in supplying resources to these new participants.
Production Nucleus	The region's culture and animals can be advantageously utilized for the introduction of economically feasible models in order to transform these products in typical products of the region and organizing the producers. However, despite the great effect on the promotion of job opportunities, since this is a new cultivation method, some technical assistance problems may be faced by the producers. The lack of capacity in supplying guarantee creates financial problems to the mini-/small-scale producers.
Conservation Enterprises	The privileged natural condition makes the region appropriate for silviculture, specially considering the great possibility of wood demand increase in the future. However, the introduction of silviculture is hindered by the technological delay and by the long return period of the investment. Although the promotion of the natural resources exploitation industry is an efficient way to use the natural resources, even appropriate for the low income population, this sector presents low economic effect.

Chapter 4 Development Scenario of the Northern Region

4.1 Background of the Development Scenario

Problems and Possibilities in Conservation and in the Economy Activation	
Problems	<ul style="list-style-type: none"> • Environmental level: necessity of measures to convert pastures into green areas ($\pm 13,000 \text{ km}^2$); • Introduction of conservationist measures: difficult if an economic improvement do not take place considering the poverty conditions; • Large-scale Producer: heavy financial load of the conversion costs of pastures into conservation areas; • Most producers do not have financial basis, and cannot access to credit lines.
Possibilities	<ul style="list-style-type: none"> • The increase of the conservation area and of the producers' income shall be possible converting the extensive agricultural activity into intensive one; • There is great possibility of converting into intensive livestock husbandry through the crops rotation method (introduction of grains).
Residents Willingness	
Agricultural Production	Improve the low productivity due to the employed cultivation methods and lack of resources, as well as to the lack of technical assistance.
Livestock Husbandry	Reduce the financial problems, problems with facilities (fences, corral, etc.) in order to attain the intensive livestock husbandry. Deal with the increase of interest in introducing new species such as buffaloes and swine.
Commercialization	Improve the transportation means and the access to market information on the part of the mini-/small-scale producers.
Credit	The following problems are expected to be solved: <ul style="list-style-type: none"> • Large-scale Producer: problems with the high interest rates of credit and lack of

	<ul style="list-style-type: none"> guarantee capability; Mini-/Small-scale Producer: problems in accessing agricultural credit due to the lack of guarantee capability;
Infrastructure	Urgency in the improvement of the Study Area's roads.
Producers' Associations	Necessity of improving administration knowledge considering that their organization is still immature.
Conservation	Urgency in measures to solve the forest fires problems, improper conservationist measures, little activity of the natural resources exploitation groups, etc.
Federal Government Measures	
Policy	Reduce at the minimum the government participation, but still giving due attention to the basic infrastructure improvement.
Administration	The local governments shall bear more responsibilities.
Resources of Tocantins State	Carry out enterprises with private resources considering the difficulty in performing this only with public resources in the current political and financial context of the government.

4.2 Establishment of the Development Scenario Targets

Targets	
Targets	Activation of regional economy and Conservation of Natural Resources
Activation of Regional Economy	<ul style="list-style-type: none"> Improvement of pastures and establishment of the foundations for the intensive cattle husbandry through the introduction of grains cultivation in extensively utilized pastures; Intensification of livestock husbandry and increase of land production raising the livestock husbandry technical level. Mini-/Small-scale Producer: Promotion of integrated administration utilizing intensively the land.
Conservation of Natural Resources	<ul style="list-style-type: none"> Reduction of areas utilized for agriculture and cattle husbandry, increasing the conservation areas through the efficient use of land resources; Introduction of commercial silviculture, silviculture for conservation, silvi-pastoral activity and control of forest fires.

4.3 Strategies to Attain the Development Targets

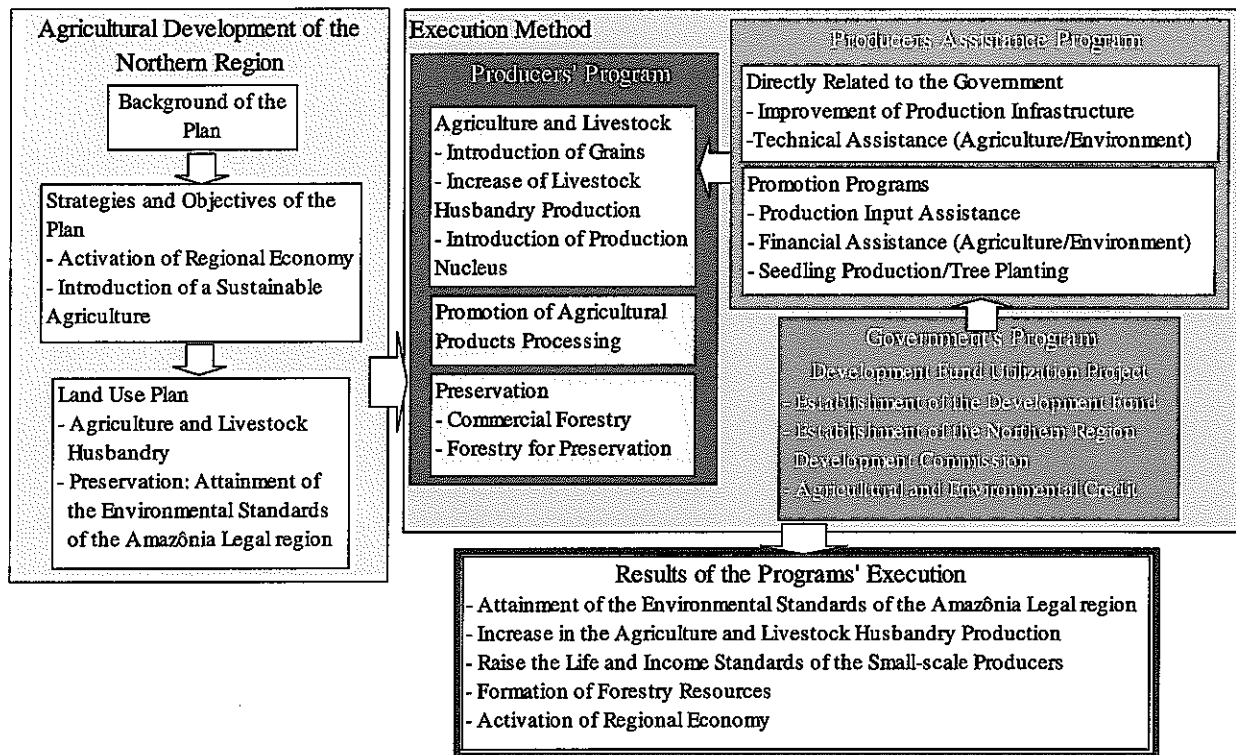
Development Scenario at Short, Medium and Long Terms	
Short Term (until 2005)	<ul style="list-style-type: none"> An integrated production shall be started together with the bubaline cattle husbandry, with the introduction of the intensive livestock husbandry, production of grains through the cultivation of appropriate crops in compatible land based on the land use plan;
Medium Term (until 2010)	<ul style="list-style-type: none"> With the pastures improvement through the grains cultivation, the production of grains and meat shall increase; The bubaline and swine cattle husbandries shall be in full progress, thus starting the construction of the foundation for the capital formation by the mini-/small-scale producers; The production of grains, fruits, greenery and livestock products shall increase with the start of the production nucleuses; The silviculture shall be expanded, significantly increasing the green area.
Long Term (until 2015)	<ul style="list-style-type: none"> Reduction of degraded pastures and increase of conservation areas. Thus, with the start of an intensive agricultural activity, the conversion into grains and meat production areas shall take place. As the result, the sustainable development shall be established.
Development Strategies	
Methodology to Attain the Scenario	Establishment at the political level of an environment where the conversion into intensive agriculture and the participation in conservation activities would be possible, attaining the agricultural development and permanent environmental conservation for the producers.
Targets at the	Converting areas with improper productive activities into conservation areas, thus improving

Targets at the Producer Level at Short Medium and Long Terms

Converting areas with improper productive activities into conservation areas, thus improving the production conditions of producers. Thus, the poverty and environmental problems could be solved with the economic improvement of the northern region.

4.4 Development Scenario of the Northern Region

The development scenario of the Northern Region encompasses the attainment of the required environmental standards, harmonizing the environment with the economic development at the long term through the efficient utilization of the land resources, introducing and intensive agricultural sector in 37,000 km² of the 38 municipal districts.



Basic Concepts in the Elaboration of Plans

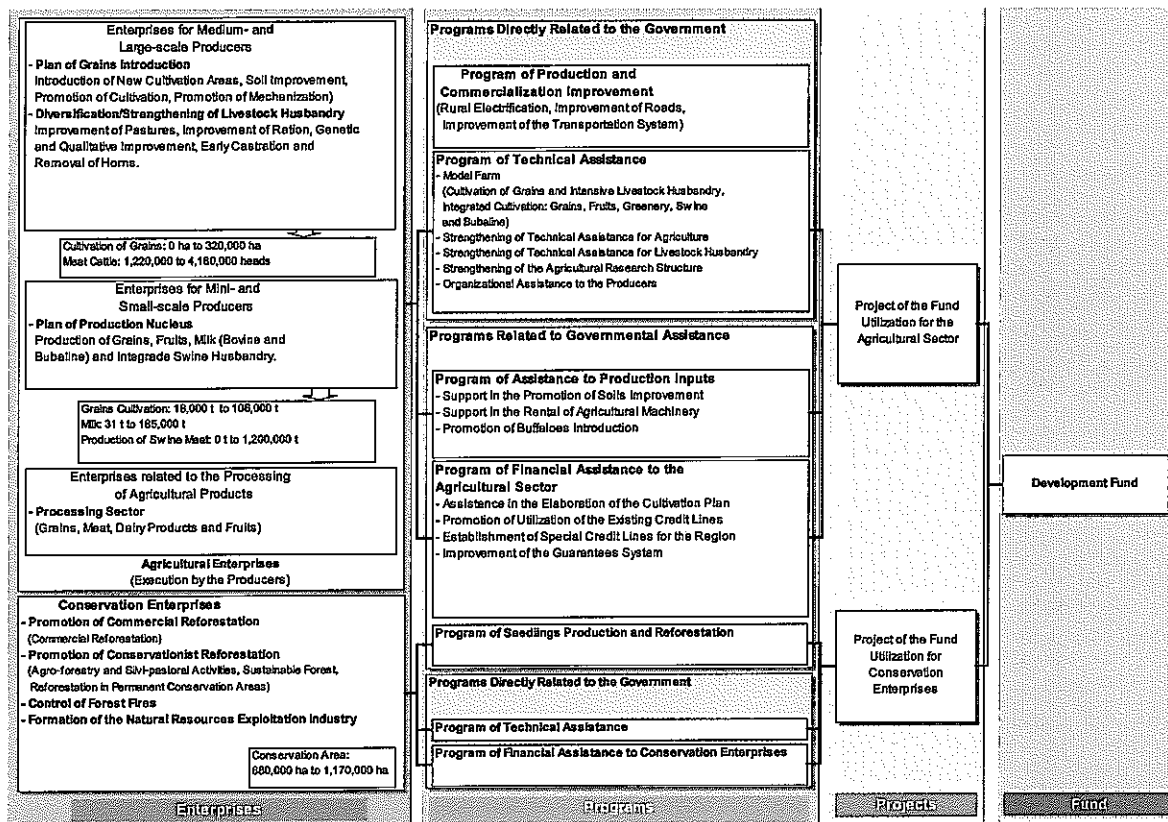
Land Use Concept	To elaborate a land use plan according to the GIS; Guidance to allow conservation enterprises up to 3,754 km ² up to 2015.
Concept of Development Enterprises carried out by the Producers	<ul style="list-style-type: none"> • Grains production, meat (bovine, bubaline and swine), dairy products and fruits; • Medium-/Large-scale Producers: promotion of the grains and meat production strengthening; • Mini-/Small-scale Producers: promotion of the integrated type cultivation.
Concept of Enterprises directly Related to the Government	<ul style="list-style-type: none"> • Strengthening of agricultural research and assistance in order to facilitate the development of each sector; • Improvement of the commercialization sector to assure market; • The conservation enterprises shall be carried out not only by the private sector but also partially by the government.
Concept of Governmental Assistance Enterprises	<ul style="list-style-type: none"> • To carry out the investment and financing plan based on the land use plan, utilizing the Development Fund to be established; • To establish the Development Committee in order to carry out the promotion of resources utilization, monitoring and elaboration of plans; • At short term, provide assistance to basic production inputs and consolidation of the agricultural credit policy. At medium/long terms, the agricultural sector shall be developed taking into consideration the gradual insertion of the private sector and the

- resources deriving from this sector;
- Mini-/Small-scale Producer: at short term, the economic and technical power of the producers shall be raised by expanding their associations besides promoting swine husbandry, distribution of buffaloes and assistance with production inputs. At medium/long terms, the intensive agriculture shall be strongly promoted by increasing the agricultural credit.
- The measures for environmental conservation promotion encompasses, at short term, the free distribution of seedlings, and at medium term the establishment of credit lines which shall be utilized not only by the conservation sector but also by the productive sector. Therefore, and indirect assistance would be carried out in order to activate the agricultural sector production promoting the participation of the private sector in the conservation measures.

Chapter 5 Plan of Agriculture and Livestock Husbandry Development of the Northern Region

Summary of the Plan

Contents	<p>The present plan is comprehended by 2 enterprises, one related to the agricultural sector and the other, to the environmental conservation, and 2 programs related to the government. These 2 governmental programs shall be promoted through projects which in turn shall receive the necessary resources through the creation of a development fund.</p> <p>Enterprises to be carried out by the Producers:</p> <ul style="list-style-type: none"> • Agricultural Enterprises (Introduction of grains, diversification / strengthening of the livestock husbandry, production nucleus, and the agricultural processing sector); • Conservation Enterprises (Commercial silviculture, Silviculture related to conservation, Control of forest fires and natural resources exploitation industry). <p>Enterprises of Assistance to the Producers:</p> <ul style="list-style-type: none"> • Directly Related to the Government (Improvement of production infrastructure, improvement of commercialization infrastructure and technical assistance program: program of governmental responsibility); • Related to Governmental Assistance (Assistance to production inputs, financial assistance, organizational assistance and program of production / distribution of seedlings: program that aims at assisting the supply of necessary resources to the producers for the enterprises implementation). <p>Enterprise to be carried out by the Government:</p> <ul style="list-style-type: none"> • Project of Utilization of the Development Fund for Agricultural Enterprises (Investment to assistance enterprises to producers involved in agricultural activities); • Project of Utilization of the Development Fund for Conservation Enterprises (Investment to assistance enterprises to producers involved in conservation activities). <p>Development Fund: transference and supply of necessary resources to the enterprises implementation.</p>
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Agricultural Enterprises

The administration manner for each level is presented as follows:
Administration Manner to be Carried out for each Production Level

Medium-/Large-scale Producers (1,972)	<ul style="list-style-type: none"> • Introduction of grains with new production areas, soil improvement and promotion of mechanization; • Introduction of intensive livestock husbandry with the improvement of pastures, silage, crops for the production of foodstuff during the dry season, pasture rotation and confinement, improvement of species and quality, early castration and dehorning, etc.
Mini-/Small-scale Producers (6,115)	<ul style="list-style-type: none"> • Conversion into the intensive cultivation; • Conversion from milking bovine husbandry into bubaline husbandry; • Introduction of intensive livestock husbandry through the introduction of cultivation techniques of foodstuff during the dry season, "zero-grazing" raising, improvement of quality, etc. • Introduction of swine husbandry.
Processing Industry	<ul style="list-style-type: none"> • Industry of grains, fruits, greenery processing and dairy products production.

Conservation Enterprises

In order to attain the required environmental standards, public and private sectors shall act together to recuperate the nature during the 35 years plan. Until 2015, the target year of the study, 37% of the deficit is expected to be recuperated carrying out the following 6 measures:

Commercial Silviculture, Agro-forestry and Silvi-pastoral Activities, Forest Management, Silviculture in Areas to be Preserved, Protection against Forest Fires.

Enterprises directly Related to the Government

The enterprises are as follows:

Enterprise	Characteristics and Contents
Improvement of the Productive Infrastructure	<ul style="list-style-type: none"> • Rural electrification (extend electricity to all the farmers until 2015): to be carried out with other resources. • Improvement of roads (paving of roads): to be carried out with the State's budget.

Improvement of Commercialization Infrastructure	Improvement of transportation facilities (silos for grains)
Technical Assistance (Agricultural)	<ul style="list-style-type: none"> • Establishment of model farms (direct execution in 48 locations). • Strengthening of technical extension for agriculture • Strengthening of technical extension for livestock husbandry. • Strengthening of the agricultural research structure.
Technical Assistance (Conservation)	<ul style="list-style-type: none"> • Construction of the System of Conservation Promotion. • Establishment of Model Farms (2 locations).

Governmental Assistance Enterprises are as follows:

Enterprise	Characteristics and Contents
Assistance to Production Inputs	<ul style="list-style-type: none"> • Support for soil improvement, rental of agricultural machinery and introduction of buffalos.
Consolidation of Financial Assistance	<ul style="list-style-type: none"> • Assistance in the elaboration of the cultivation plan, promotion of the utilization of existing credit lines, establishment of credit lines for the region and improvement of the guarantees system.
Assist. Organizational	<ul style="list-style-type: none"> • Formation of leaders, organizational assistance and technical training.
Consolidation of the Seedlings' Supply System	<ul style="list-style-type: none"> • Formation of seedlings producers and consolidation of the seedlings distribution system.
Consolidation of the Financial Assistance System to Silviculture	<ul style="list-style-type: none"> • Establishment of the financing system and the financial support with non reimbursable funds.

Project of Utilization of the Development Fund for Agricultural Enterprises Comprehends the following components:

Components	Characteristics and Contents
Agricultural Credit (Mini-/Small-scale Producer) (Medium-/Large-scale Producer)	<ul style="list-style-type: none"> • Financial of rotation capital and investment.
Directly Related to the Government	<ul style="list-style-type: none"> • Bear the cost with technical staff (administration of the Model Farm), acquisition of vehicles and training cost.
Governmental Assistance	<ul style="list-style-type: none"> • Support in soil improvement, cost of agricultural machinery acquisition, cost of buffaloes acquisition and cost of technical staff.
Guarantee	<ul style="list-style-type: none"> • Supply guarantee to the producers in need of.
Consulting Services	<ul style="list-style-type: none"> • Administration of the financing, management guidance in the model farms, land use plan and support in the elaboration of cultivation plans.

Project of Utilization of the Development Fund for Conservation Comprehends the following components:

Components	Characteristics and Contents
Environmental Financing	<ul style="list-style-type: none"> • Silviculture, agricultural machinery and improvement of pastures.
Governmental Investment to Environment	<ul style="list-style-type: none"> • Seedlings nursery, distribution of seedlings, silviculture in permanent protection areas, model farm, formation of the natural resources exploitation industry and strengthening of monitoring.
Consulting Services	<ul style="list-style-type: none"> • Establishment of the land use plan, administration of financing and improvement of the environmental monitoring.

Development Fund The resources demand for the execution of this plan is as follows:

(Unit: Thousand Reais)

	Short Term	Medium	Long Term	Total
Agricultural Enterprises	223.588	843.514	1.670.925	2.738.027

Agricultural Enterprises	223.588	843.514	1.670.925	2.738.027
Agricultural Enterprises (Government)	85.567	165.902	228.816	480.285
Producer Cost	138.021	677.612	1.442.109	2.257.742
Conservationist Enterprise	30.383	330.625	376.333	737.341
Governmental Assistance	21.248	99.469	166.646	287.363
Producers Resources	9.135	231.157	209.687	449.979

Remark: Necessary resources from the Fund in the Greyish line.

The following plan shall be utilized to administrate the fund regarding to the aforementioned demand.

(Unit: Thousand Reais)

	Short Term	Medium Term	Long Term	Total
Agricultural Sector	122.483	426.782	898.709	1.447.974
Government Cost	85.567	165.902	228.816	480.285
Resources for Credit	33.560	237.164	608.994	879.718
Resources for Fundo de Aval	3.356	23.716	60.899	87.971
Environmental Conservation	30.292	337.358	603.080	970.730
Government Cost	21.248	99.469	166.646	287.363
Resources for Credit	8.222	216.263	396.759	621.244
Resources for Fundo de Aval	822	21.626	39.675	62.123
Fund	152.774	764.140	1.501.789	2.418.703
Government Cost	106.814	265.371	395.462	767.647
Resources for Credit	41.782	453.427	1.005.753	1.500.962
Resources for Fundo de Aval	4.178	45.342	100.574	150.094

Remark: The difference with the Demand of Resources is due to the inclusion of the rotation capital resources.

5.2 Land Use Plan

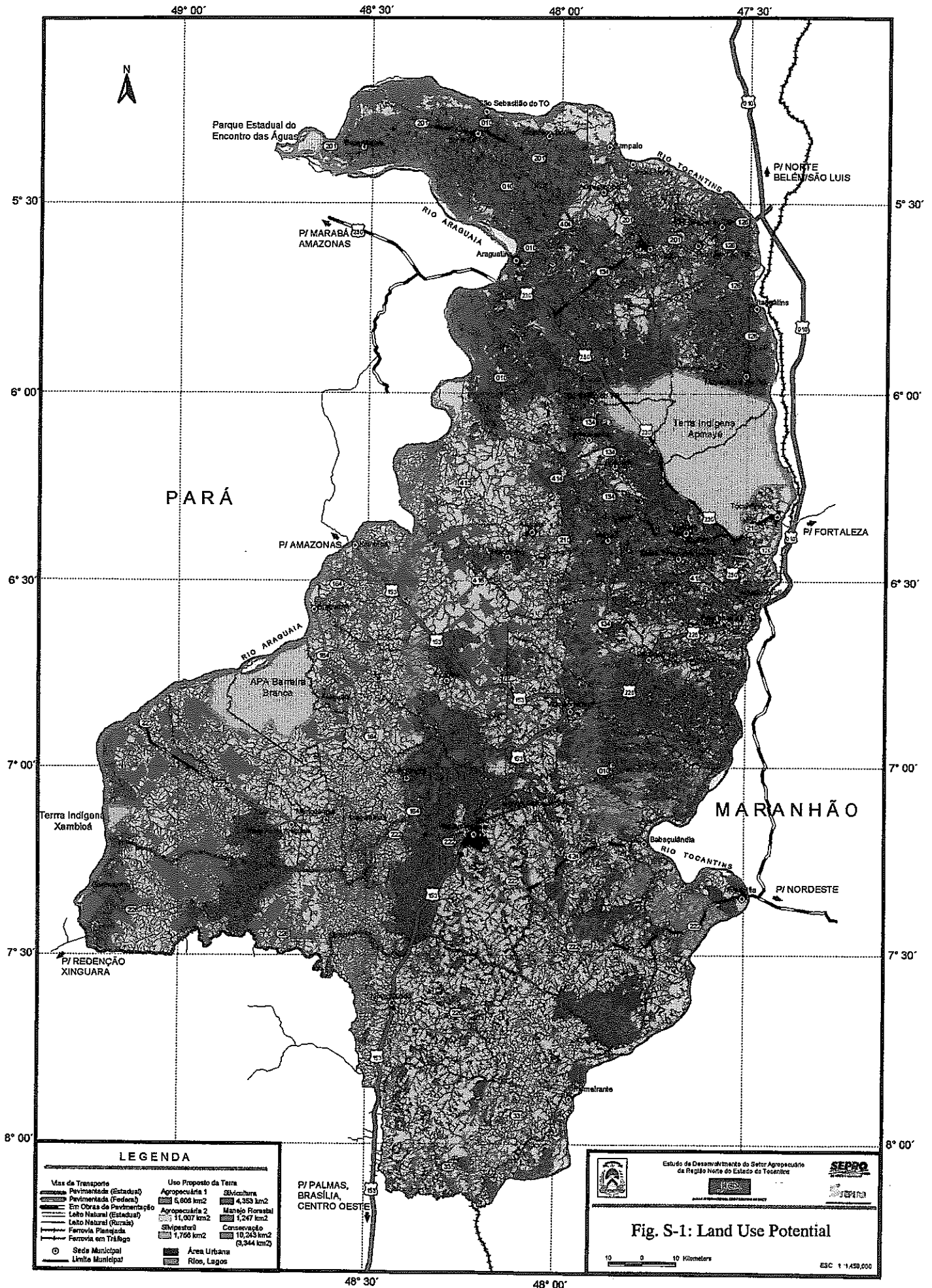
Land Use Plan

Current Land Use Plan Study Area: 37,050.5 km², Pastures (53.4%), Forests (18.5%), Cerrado (21.6%)

Land Use Potential Approximately 45% has Potential for Agriculture and Livestock Husbandry

General Land Use Plan Targets of the Land Use Plan by Period (ha)

	Current	Short Term	Medium Term	Long Term	Total
Agriculture and Livestock Husbandry	1,979,121.1	1,957,413.0	1,863,595.3	1,787,861.6	1,259,711.3
Traditional Pasture	1,979,010.8	1,899,094.1	1,459,330.1	852,825.3	0.0
Improved Pasture		5,031.6	202,157.6	546,294.4	870,969.5
Area of Grains Introduction	110.3	31,447.2	158,427.4	319,237.1	319,237.1
Properties of Mini-/Small-scale Producers		21,840.1	43,680.3	69,504.8	69,504.8
Conservation	686,670.0	730,583.7	950,152.0	1,169,720.3	2,161,548.7
Silviculture		14,511.7	87,070.0	159,628.3	435,350.0
Agro-forestry		8,138.7	48,832.0	89,525.3	401,628.7
Silvi-pastoral		5,851.7	35,110.0	64,368.3	175,550.0
Forest Management		4,156.3	24,938.0	45,719.7	124,690.0
Forest (Current)	686,670.0	686,670.0	686,670.0	686,670.0	686,670.0
Water Sources		11,146.7	66,880.0	122,613.3	334,400.0
Strong Declivity		108.7	652.0	1,195.3	3,260.0
Cerrado	798,787.7	776,471.8	650,721.2	506,886.6	0.0
Others	240,472.2	240,582.5	240,582.5	240,582.5	283,800.0
Total Area of the Region	3,705,050.9	3,705,050.9	3,705,050.9	3,705,050.9	3,705,060.0



5.3 Enterprises Related to the Agricultural Sector

Plan of Grains Introduction																																	
Introduction of New Production Areas	Grains production is expected to be introduced in 11,990,000 ha at the long term through the crops rotation in pastures.																																
Soil Improvement	Correction of soil acidity: Agricultural Potential I: 4 t/ha of lime Agricultural Potential II: 6 t/ha of lime and 500 kg/ha of super-phosphate.																																
Cost of the Soybean Production Plan	<ul style="list-style-type: none"> Average variety for soybean, with deep ploughing in the 1st year and sod seeding from the 2nd year on. The expected productivity is 2.5 t/ha (short term), 3.0 t/ha (medium term) and 3.5 t/ha (long term). 																																
Maize	<ul style="list-style-type: none"> Hybrid variety. Expected production: 5 t/ha (short term), 5.5 t/ha (medium term), and 6.0 t/ha (long term). 																																
Promotion of Mechanization	1 machinery set for each 400 to 450 ha grains production area.																																
Production Plan	Targets of Grains Cultivation																																
	<table border="1"> <thead> <tr> <th></th> <th>Short Term</th> <th>Medium Term</th> <th>Long Term</th> </tr> </thead> <tbody> <tr> <td>Soybean (ha)</td> <td>21,799</td> <td>108,398</td> <td>215,604</td> </tr> <tr> <td>Maize (ha)</td> <td>9,649</td> <td>50,030</td> <td>103,633</td> </tr> <tr> <td>Grains (ha)</td> <td>31,447</td> <td>158,427</td> <td>319,237</td> </tr> <tr> <td>Own Cultivation (ha)</td> <td>22,013</td> <td>126,742</td> <td>287,313</td> </tr> <tr> <td>Cultivation by Contract (ha)</td> <td>9,434</td> <td>31,685</td> <td>31,924</td> </tr> <tr> <td>Existing Pasture (ha)</td> <td>28,303</td> <td>142,585</td> <td>287,313</td> </tr> <tr> <td>Cerrado (ha)</td> <td>3,145</td> <td>15,843</td> <td>31,924</td> </tr> </tbody> </table>		Short Term	Medium Term	Long Term	Soybean (ha)	21,799	108,398	215,604	Maize (ha)	9,649	50,030	103,633	Grains (ha)	31,447	158,427	319,237	Own Cultivation (ha)	22,013	126,742	287,313	Cultivation by Contract (ha)	9,434	31,685	31,924	Existing Pasture (ha)	28,303	142,585	287,313	Cerrado (ha)	3,145	15,843	31,924
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Plan of Livestock Husbandry Diversification / Strengthening																																	
Targets of the Plan	The meat bovine cattle husbandry shall be promoted in medium- and large-scale properties' pastures, while the bubaline cattle husbandry, which can be fed with different plants, shall be promoted in areas with silvi-pastoral activities. In case of the small-scale producers, milk production shall be mainly promoted through the bovine and bubaline cattle husbandry.																																
Plan of raising conditions improvement	<ul style="list-style-type: none"> Assure foodstuff during the dry period utilizing silage; Utilize sugar cane as foodstuff during the dry season; Introduce pastures rotation and confinement for cattle fattening; Utilize the "zero-grazing" method in milk production at long term. 																																
Plan of Quality and Specie Improvement	<ul style="list-style-type: none"> Utilize the oestrus synchronization method for AI at the short term. 																																
Early Castration and Dehorning	<ul style="list-style-type: none"> Early castration and dehorning of calves for the improvement of fattening efficiency and increase of meat quality. 																																
Introduction of Bubaline Husbandry	<ul style="list-style-type: none"> Bubaline multiplication method: introduction of riverside bubaline cattle from outside the State (mainly the Murrah race), substituting gradually the milk bovine by bubaline cattle; Plan of multiplication and distribution of bubaline: initially 8 thousand heads shall be introduced and distributed to the producers. The animals multiplied by these producers shall be distributed to other producers. 																																
Promotion of Swine Husbandry	Females of the Piau race, currently raised, shall be crossed with males of the Yorkshire race. After the expansion of swine husbandry, an increase of grains production is expected. Thus, at this point, a third crossing shall be introduced with modern races (Landrace, Duroc, etc.).																																
Production Plan	The number of animals to be raised is presented as follows:																																

	Unit	Current	Short Term	Medium Term	Long Term
Meat Bovine Cattle	Head	1,226,000	1,730,332	2,878,549	4,178,087
Milk Bovine Cattle	Head	220,000	280,166	251,630	57,328
Bubaline Cattle	Head	900	51,996	221,471	327,795
Swine Cattle	Head	2,000	2,500	3,500	4,500

Plan of Production Nucleus

Species and Races to be Introduced The cultivation of the following crops shall be promoted for the mini- and small-scale producers:

- Grains (Rice, Feijão Bean, Maize and Soybean)
- Fruits (Pineapple, Banana, Passion Fruit, Cashew)
- Greenery (Industrial Tomato, Cassava)
- Dairy Products (Bovine and Bubaline Cow Milk)
- Swine husbandry

Target Producers and Area Out of the 8,087 producers of the region, 3,386 are mini-scale producers and 2,729 are small-scale producers. The properties area amounts to 590,000 ha.

Target The producers' income is expected to be raised as follows:

Expected Income Level (in Minimum Wages)

Period	Mini-scale Producer	Small-scale Producer
Short Term	1.0	1.5
Medium Term	2.0	3.0
Long Term	3.0	5.0

Land Use Manner by Type of Cultivation Cultivation shall be carried out according to the following combinations:

- Grains Type: Grains Cultivation + Milking Cattle (including Buffaloes) + Swine Husbandry
- Fruits Type: Fruits Cultivation + Milking Cattle (including Buffaloes) + Swine Husbandry (option)
- Greenery Type: Greenery + Milking Cattle (including Buffaloes) + Swine Husbandry (option)

Grains Type Aims at forming grains producers carrying out an efficient cultivation through the communitarian utilization of agricultural machinery and grains storehouses. The land use final objective for mini-scale producers is to utilize 30 ha in cultivation and 10 ha for conservation. For the small-scale producers, out of the total 160 ha, 50 ha shall be used with grains, 30 ha with pastures and 80 ha for conservation.

Fruits Type With the forecast of future demand, the production of pineapple and banana is mainly planned, followed by passion fruit and cashew. The land use combining fruits cultivation and pastures is expected.

Greenery Type The producers' income increase is expected with the cultivation of cassava, tomato, etc., carrying out the crops rotation to avoid damages caused by consecutive production. The final greenery area is expected to be 8 ha for small-scale producers, and the cultivation area shall be shifted annually, utilizing the other areas as improved pastures.

Measures for the Proposed Cultivation Promotion The regional agriculture shall be activated with the development of the following assistance enterprises.

- Supply of Resources
- Strengthening of the Associations' Activities
- Training of Producers
- Promotion of Production

Commercialization Plan

Expected Production The Production Plan is as follows:

Production Plan of the Agricultural Sector

	Current (2000)	Short Term (2005)	Medium Term (2010)	Long Term (2015)
Livestock Husbandry				
Annual Production of Meat (t/year)	73,379	103,564	172,287	250,067
Meat Production with Milking Animals (t/year)	14,246	18,142	16,294	3,712
Buffaloes Meat Production (t/year)	3	2,730	11,627	17,209
Swine Meat Production (heads/year)	0	121,077	605,385	1,210,770
Bovine Milk Production (m ³ /year)	62,260	79,287	142,422	32,448
Bubaline Milk Production (m ³ /year)	31	29,430	125,353	185,532
Agriculture				
Soybean (t/year)	0	65,396	325,193	646,812
Mayze (t/year)		53,067	275,163	569,981
Rice (t/year)	17,469	17,951	35,902	95,212
Feijão bean (t/year)	829	2,244	4,488	11,425
Pineapple (t/year)	5,167	8,078	16,156	25,707
Banana (t/year)	0	6,732	13,463	21,423
Passion fruit (t/year)	0	2,154	4,308	6,855
Cashew (t/year)	0	180	359	571
Industrial Tomato (t/year)	0	35,902	71,803	114,254
Cassava (t/year)	45,452	145,401	290,803	462,730

Remark: The grayish part refers to Medium-/Large-scale Producers

Commercialization Plan	<ul style="list-style-type: none"> • Soybean: exportation in the form of grains, pie or oil; • Maize: oriented to poultry producers and, at medium term, to cattle raisers; • Rice: oriented to the NE and the region's markets; • Fruits: a delivery center shall be established in the producing regions, being commercialized according to the necessity; • Greenery: tomato shall be produced for the tomato processing factory, and the cassava for the flour factory in the region; • Meat Bovine: NE market at medium term, and Southern and International markets at long term; • Milk: mainly the State domestic market; • Buffaloes products: national markets as São Paulo and exportation. • Swine husbandry: regional consumption at short and medium term, and NE market at long term.
Transportation Method and Routes	<ul style="list-style-type: none"> • Foreign Market: Itaqui port through the multi-modal platform of Franco Port and north-south railway; • Domestic Market: terrestrial transportation utilizing trucks.

Development Plan of Agricultural Products Processing

Grains	Attraction of soybean oil extraction industries.
Fruits	Attraction of fruits pulp production industries.
Greenery	Utilization of existing factories of tomato, palm heart (Babaçú) and dairy products.

Irrigation Plan

Irrigation Facilities	<ul style="list-style-type: none"> • Irrigation facilities shall not be introduced for grains cultivation for medium-/large-scale producers; • Grains for mini-/small-scale producers: introduction of irrigation, besides feijão bean, only at long term; • Feijão bean: introduction of irrigation facilities in 50% at medium term and 100% at long term; • Irrigation shall be introduced from the beginning in the case of banana, passion fruit and industrial tomato. The method to be employed shall be the ditch (furrow) method for all crops at short term, and micro-sprinkling at medium term for banana and passion fruit. Tomato shall continue to be irrigated by the ditch method.
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5.4 Enterprises Directly Related to the Government

Improvement of Production and Commercialization Infrastructure	
Rural Electrification	Rural electrification shall continue at medium and long terms, and in 2015 all the rural families shall have access to electricity.
Rural Roads	Paving all State roads at long term.
Improvement of Silos for Grains	At short term, as an assistance measure, grains silos shall be constructed with the double purpose of drying and storage. With the grains production increase, investment in this sector is expected from the private sector (multinational companies). Thus, these silos are planned to support only the initial production of grains.
Program of Technical Assistance	
Establishment of Model Farms	In the model farms, the following activities shall be carried out: <ul style="list-style-type: none"> • Grains cultivation and intensive livestock husbandry • Integration 1 (Grains, Bubaline and Swine Cattle Husbandry) • Integration 2 (Fruits, Bubaline and Swine Cattle Husbandry) • Integration 3 (Cassava, Bubaline and Swine Cattle Husbandry)
Strengthening of Agricultural Technical Assistance	Strengthening of RURALTINS technical staff qualification and improvement of the extension method.
Strengthening of Technical Assistance for Livestock Husbandry	The following activities shall be strengthened: <ul style="list-style-type: none"> • Execution of campaigns and technical instruction (6 animals, 38 municipal districts); • Formation of specialists, training in bubaline and swine cattle husbandry.
Strengthening of Agricultural Research	The Tocantins State and UNITINS staff shall participate as counterpart of UEP, transferring basic knowledge and technology to the producers, besides developing practical activities.
Assistance to the Producers' Organization	<ul style="list-style-type: none"> • Producers' training on organization with the formation of a technical team for this purpose; • Creation of organizations to facilitate technical and financial assistance. • Technical training about production, processing and commercialization for a sustainable rural development.

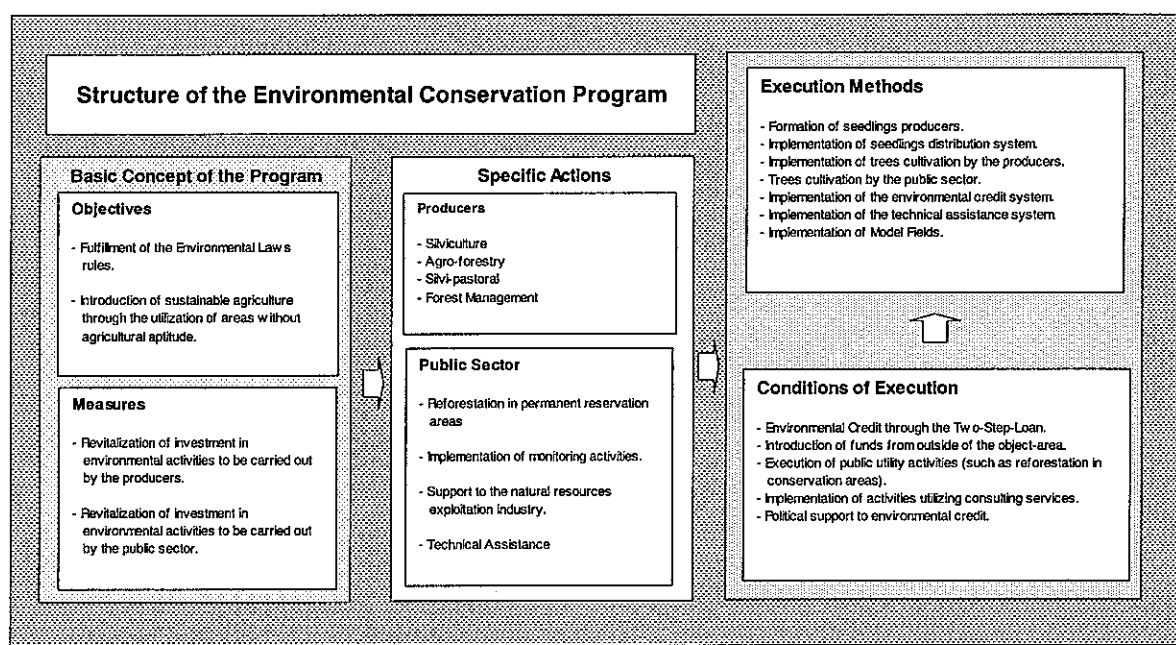
5.5 Enterprises Related to Governmental Assistance

Assistance to Production Inputs	
Assistance in the Promotion of Soils Improvement	As incentive, a defined amount of lime shall be supplied for those who start the cultivation immediately. This amount shall be around 4t/ha.
Assistance through the Rental of Agricultural Machinery	An agricultural machinery rental company shall be established with the objective of reducing mechanization costs, renting to the producers the machinery necessary for the introduction of grains in pastures as an incentive to the grains cultivation.
Incentive Measures for the Introduction of Buffaloes	The State government shall purchase 8,000 heads from outside of the State, distributing them to the producers. The supply shall be carried out through the exchange of a buffalo by one producer's bovine head plus a future buffalo calf.
Consolidation of Financial Assistance	
Assistance in the Elaboration of the Cultivation	Assistance shall be given in the elaboration of the producers' cultivation plans, utilizing RURALTINS and ADAPEC, so that the producers can gain access to credit.

Promotion of the Utilization of Existing Credit Lines	There are several federal government credit lines which shall be utilized as much as possible. For this purpose, a Fondo de Aval shall be established since the presentation of guarantees is required. This measure aims at supplying the necessary contract guarantees. The Northern Region Development Fund shall establish a fund in the bank from where the necessary guarantees shall be given to the producers.
Establishment of Special Credit Lines for the Region	Since the existing financing resources are limited and not sufficient for the execution of enterprises, a special system shall be established in the Development Fund for this demand.

5.6 Conservation Plan

The Conservation Plan targets shall be attained at long term. However, the enterprises shall be started at medium term while the formation of their execution foundation shall be carried out at short term. The contents of the Plan are presented as follows:



Conservation Plan

Objectives / The final objective of the Conservation Plan is to attain the required environmental Targets of the standards. Thus, the Plan targets are as follows:

Plan

Item	Targets
Commercial Silviculture	<ul style="list-style-type: none"> • Silviculture in areas inappropriate for agricultural activities; • Contribution for environmental conservation.
Agro-forestry Activity	<ul style="list-style-type: none"> • Promotion of cultivation utilizing silviculture areas; • Fulfillment of the required environmental standards as for preservation areas.
Silvi-pastoral Activity	<ul style="list-style-type: none"> • Promotion of livestock husbandry utilizing silviculture areas. • Protection against soil degradation; • Fulfillment of the required environmental standards as for preservation areas.
Forest Management	<ul style="list-style-type: none"> • Activation of the Legal Conservation Area; • Fulfillment of the required environmental standards as for preservation areas.
Silviculture in Areas to be Conserved	<ul style="list-style-type: none"> • Soils conservation; • Conservation of water quality; • Fulfillment of the required environmental standards as

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Silviculture in Areas to be Conserved	<ul style="list-style-type: none"> • Soils conservation; • Conservation of water quality; • Fulfillment of the required environmental standards as for preservation areas.
Establishment of Model Farms	<ul style="list-style-type: none"> • Assistance to producers carrying out silviculture;
Assistance to Natural Resources Exploitation Industry	<ul style="list-style-type: none"> • Indirect assistance from conservation and silviculture, besides utilization of the rural zone women labor force.
Control of Forest Fires	<ul style="list-style-type: none"> • Control and prevention of forest fires through “aceiros” as secondary results of the aforementioned items.
Strengthening of Environmental Monitoring	<ul style="list-style-type: none"> • Promotion of conservation and monitoring of the aforementioned enterprises progress conditions.

Targets of each Enterprise The targets of each enterprise are as follows:

Areas to be Environmentally Improved

	Short (km ²)	Medium (km ²)	Long (km ²)	After 35 years (km ²)
Study Area	294.0	1,764.1	3,234.2	11,349.3
Agro-forestry activity	81.4	488.3	895.3	4,970.3
Silvi-pastoral activity	58.5	351.1	643.7	1,755.5
Forest Management	41.6	249.4	457.2	1,246.9
Permanent Conservation				
Water Sources	111.5	668.8	1,226.1	3,344.0
Strongly Declivity	1.1	6.5	12.0	32.6
Sub-total	294.0	1,764.1	3,234.2	11,349.3
Silviculture	145.1	870.7	1,596.3	4,353.5
Total	439.1	2,634.8	4,830.5	15,702.8

Enterprises Promotion

Commercial Silviculture Besides supplying low cost seedlings to the producers, enterprise promotion shall be carried out through the establishment of credit lines at long term with low interest rates for the promotion of silviculture. The enterprise shall be divided into 3 phases as follows:

Phase	Contents of Main Enterprises
1 st (Short Term)	Formation of seedlings producers and free distribution of seedlings;
2 nd (Medium Term)	Distribution of seedlings at low cost and financing to silviculture enterprises;
3 rd (Long Term)	Commercialization of seedlings at market prices and activation of financing to silviculture enterprises.

Agro-forestry Activity To be introduced in difficult mechanization areas in order to raise the land productivity.

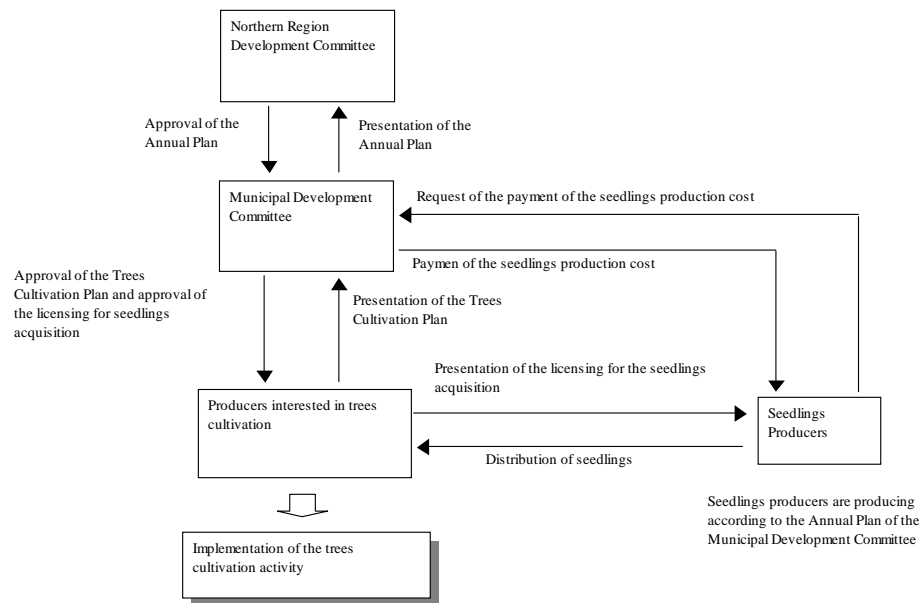
The promotion of the present enterprise shall also be divided into 3 phases.

Phase	Contents of Main Enterprises
1 st (Short Term)	Formation of seedlings producers, free distribution of seedlings and establishment of model farms.
2 nd (Medium Term)	Free distribution of seedlings and financing related to agro-forestry activities.
3 rd (Long Term)	Commercialization of seedlings at low price (50%), activation of financing to agro-forestry activities and establishment of a products commercialization network.

Silvi-pastoral activities	Pretende-se introduzir a produção de madeira através da silvicultura em áreas de paphasens que possuem condições de solo com fertilidade e declive não economicamente viável à paphasem, sendo utilizado atualmente para tal finalidade. Este também será dividido em 3 fases:								
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3 rd (Long Term)	Commercialization of seedlings at low price and activation of financing to silvi-pastoral activities.								
Forest Management	Measure to be introduced in future deforestation areas. The Forest Management would force the recuperation of these areas through silviculture. The cultivation of native trees shall be obligatory.								
Conservation of Areas in need of Conservation	Enterprises related to conservation areas regulated by the environmental laws, where most of the costs shall be those for seedlings distribution and trees cultivation management. The target areas are those for water source protection and those considered environmentally fragile. The trees to be planted are those established by the development committee, basically native species.								
Control of Forest Fires	The following activities shall be financed for the control of forest fires: <ul style="list-style-type: none"> • Implementation of “aceiros”; • Installation of fences; • Cost of machinery for the implementation of “aceiros”. 								
Formation of the Natural Resources Exploitation Industry	Strengthen the assistance to the improvement of facilities in order to activate the existing associations. The following exploitation activities shall be supported: <ul style="list-style-type: none"> • Babaçú exploitation • Honey industry 								
Strengthening of the Monitoring Activities	The present enterprises aims at strengthening the monitoring of the following items as government’s responsibility: <ul style="list-style-type: none"> • Monitoring of forest fires; • Monitoring of industrial activities; • Promotion for the establishment of Conservation Units. 								
Method of Enterprise Promotion	The following measures shall be introduced: <table border="1"> <thead> <tr> <th></th> <th>Plan</th> </tr> </thead> <tbody> <tr> <td>Establishment of the Seedlings Production and Distribution System</td> <td> <ul style="list-style-type: none"> • Formation of seedlings producers; • Establishment of the seedlings distribution system (for free and for commercialization). </td> </tr> <tr> <td>Establishment of the Technical Assistance System</td> <td> <ul style="list-style-type: none"> • Establishment of model farms and technical extension; • Assistance to the strengthening of commercialization; • Construction of an enterprise promotion system. </td> </tr> <tr> <td>Establishment of the Silviculture Financing System</td> <td> <ul style="list-style-type: none"> • Establishment of the financing system (necessary resources); • Establishment of the non reimbursable assistance system. </td> </tr> </tbody> </table>		Plan	Establishment of the Seedlings Production and Distribution System	<ul style="list-style-type: none"> • Formation of seedlings producers; • Establishment of the seedlings distribution system (for free and for commercialization). 	Establishment of the Technical Assistance System	<ul style="list-style-type: none"> • Establishment of model farms and technical extension; • Assistance to the strengthening of commercialization; • Construction of an enterprise promotion system. 	Establishment of the Silviculture Financing System	<ul style="list-style-type: none"> • Establishment of the financing system (necessary resources); • Establishment of the non reimbursable assistance system.
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Seedlings Production and Silviculture

Establishment of the Seedlings Distribution System	The seedlings distribution system shall supply these to the interested farmers at short term. At medium term, these seedlings shall be distributed according to the silviculture plan submitted to the Promotion Committee of Agricultural Development of the Municipal District. The free supply of seedlings is presented as follows:
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The commercial seedlings shall be purchased directly from the producers. However, the seedlings shall be commercialized at low cost to promote silviculture.

Seedlings Production Plan

The seedlings production plan is presented as follows:

Annual Plan of Seedlings Production

Species of Seedlings	Annual Planed Area for Cultivation (1,000 ha)	Necessary Seedlings (thousand units/year)	(%)
Commercial Species	20.36	18,327	88.6
Fruits	8.14	814	3.9
Existing Species	15.41	1,541	7.5
Total	43.91	20,682	100.0

Remark: The number of seedlings for commercial silviculture would be 900 units/ha. This number would be 100 units/ha in case of agro-forestry and silvi-pastoral activities, forest management e reforestation in areas in need of conservation.

Seedlings Distribution Plan

The seedlings distribution plan for silviculture enterprises is presented as follows:

Seedlings Distribution Plan	
Short Term	• Free distribution of seedlings for all enterprises at short term.
Medium Term	• Sale of seedlings (commercial silviculture); • Free distribution of seedlings (agro-forestry and silvi-pastoral activities, forest management and silviculture in conservation areas).
Long Term	• Sale of seedlings (commercial silviculture, agro-forestry and silvi-pastoral activities); • Free distribution of seedlings (forest managment and silviculture in conservation areas).

Silviculture

The following silviculture promotion measures shall be introduced in order to increase the conservation area:

Silviculture Plan	
Short Term	• Financial measures shall not be considered. However, the plan of
Medium / Long	• Enterprises promotion through the utilization of the credit system;

enterprises in necessary areas.

Financial Assistance to Conservation

Resources of the Enterprise The necessary resources for the enterprises based on their characteristics is presented as follows:

Resources by Enterprise

Source	Plan	Item
Financing	<ul style="list-style-type: none"> Enterprises related to Silviculture (commercial silviculture, agro-forestry and silvi-pastoral activities, and forest management). Control of forest fires. 	<ul style="list-style-type: none"> Cost of seedlings acquisition Cost of cultivation and maintenance Cost of machinery acquisition Cost of pastures improvement (fences, "aceiros", etc.)
Government Resources	<ul style="list-style-type: none"> Formation of seedlings producers; Establishment of model farms; Free distribution of seedlings at first; Silviculture enterprises (in areas to be preserved); Formation of the natural resources exploitation sector; Strengthening of monitoring activities. 	<ul style="list-style-type: none"> Compensation interests to financing; Cost of seedlings nurseries implementation; Cost of seedlings acquisition (free and with assistance); Cost of cultivation and maintenance (area to be preserved); Construction cost; Cost of the formation of the natural resources exploitation industry; Cost of monitoring.

General Plan of Resources Supply The plan shall be divided into short, medium and long terms. At short term, the existing credit lines and the state resources shall be utilized. The medium and long terms objectives can be hardly carried out only with these sources, thus new foreign sources shall be requested. The necessary documents for the request of foreign sources shall be elaborated at short term, requesting them to the concerning source at the best conditions possible.

Technical Assistance

Construction of the Proposed Systems This enterprise shall be carried out through the seedlings distribution center, model farm and concerning organisms, being coordinated at the Municipal Committee of Agricultural Development Promotion. The contents of the assistance is presented as follows:

Contents	
Municipal Development Committee	<ul style="list-style-type: none"> Support areas appropriate for silviculture (potential land use map); Support the elaboration of the land use map; Assistance for the acquisition of permission to perform silviculture and natural resources exploitation; Assistance for the acquisition of agricultural credit and guarantees; Instruction about measures against forest fires.
Seedlings Supply Company	<ul style="list-style-type: none"> Promotion of silviculture by the producers.
Model Farm	<ul style="list-style-type: none"> Promotion of silviculture by the producers. Silviculture method, trees cultivation method.

Establishment of Model Farms The following species shall be cultivated in the model farms:

- Species to be introduced (± 5 species);
- Existing species (± 5 species)
- Fruits (± 5 species: bacurí, mango, avocado, cashew, etc.)
- Palm trees (± 5 species)