

5.5 Incentive Program to the Producers

5.5.1 Incentive Program Summary

Due to the proposed activities are new in the producers area, there is the need of the incentive program promotions to make possible his appropriate development.

This incentive program concentrated mainly in the begin (short term) it will be fundamental, serving analogically as the necessary cares in the sowing and in the initial apprenticeship of a plant development. The accumulated experiences in this period should allow to the producers the entrance in the properly activity at medium term and at long term his enlargement, where with the installation of the private companies, it makes possible the necessary financial resources to the production. In this phase therefore, the incentives can be decreased or stopped.

This incentive has as base the following programs:

- Incentive program to the production necessary input.
- Incentive program for obtaining the necessary financial resources.
- Incentive program to the associations invigoration
- Incentive program to agroindustry activities.

5.5.2 Incentive program to the production necessary input

The development of the agricultural activities promotes the producers income increase, promoting the improvement of the regional economy consequently. The producer of the area however they are not capitalized, needing for so much at short term the incentive on necessary materials to the production as items discriminated below:

- Soil improvement acceleration motivation
- Agricultural mechanization motivation - Institution of Mechanization Services Company to the producers
- Introduction of Buffalos motivation

(1) Soils Improvement

The characteristic of the savannah is the need of the soil correction with the limestone. Than the incentive should be made to the producers that will start rproduction at the short term inside of pré-established quantity as a limit. RURALTINS should take care of this free distribution, being taken by base the request of the producers, making calculations of the limestone quantity need (soil analyzes) tends as limit the maximum of 4 tons per ha. Above this amount it will be paid by the own proprietor of the land.

This incentive cost is demonstrated as follows:

	Short Period	Medium Period	Long Period	Total
Total cost of the area	5,203	49,291	118,098	172,592
Incentive value	5,203	-	-	5,203

(2) Agricultural Mechanization

The largest difficulties to begin the agricultural activity for the producers of the area is the demand of capital for the investment on machineries (due to the cattle tradition of the area most of the producers do not possess machineries), wich is translated in the amortization need

and elevation of the production cost. The present incentive program has as objective softens this situation, being instituted a agricultural machineries company that it will render mechanization services to the farmers by the payment of the executed services tax.

With that, at the short term it is promoted the agricultural activity introduction more easily in the area, because it makes possible to the producers the expenditure of the investment after the stabilization of his production activity.

At short term, this services tax should include only the direct costs (fuel and dirvers cost). The medium and long period however, this tax should be compared to the effective taxes in the market practiced by the regional market.

a. Machinery Set necessary - Quantity and Cost

For the development of the production in agreement with the global plan, the need of production machineries (tractors, harvester, etc.) they are: 70, 352 and 709 sets at the short, medium and long periods, respectively.

The Service Company, it should possess inside of the total amount of sets mentioned above, defined in agreement with the expectation of acquisition of the own equipments from the producers: 60%, 30% and 15% in the short, medium and long periods, respectively.

Machinery Company necessary set and Cost

	Total of the North Area		Company			
	Production area - ha	Necessary set	investment glide	Number set	Investment in the period (R\$ 1000)	Accumulated value (R\$ 1000)
2005	36,865	70	60%	42	13,768	12,768
2010	185,722	352	30%	106	32,224	44,992
2015	374,237	709	15%	107	32,528	77,520

b. Machinery Company Details

Some detail items suggested for institution of this company are:

- Face the capital need for the head office/regional office installations and administrative expenses, the initial capital of this company will be R\$ 1.000.000,00 (One Million Reais), being 51% of this capital belonging to the State and the other part opened to be owned by public or private institutions (local City hall, Union of producers, producers, companies of agricultural equipments, fertilizer and defensive companies, etc.) finally, all those that will benefit in the future for the agricultural development of the area.
- The main office should be in Araguaína. The local City halls will have the incumbency of arranging places that will serve as garage for the machineries, besides insofar as possible, with the existent mechanics, to render the maintenance services. The cost of this area session and services can serve as form of the capital integralization in the Company.
- In the company operation, the producer in agreement with his planting intention will make the request for the mechanization services to the regional office. This, after the priority analysis it sends the request to the central office. This for his time, in function of the global priority of the area, plans the general service program.
- In agreement with the general programming, the services are executed, always taking into account the training need of the own producers for the agricultural equipments use.

(3) Introduction of Buffalos Creation

To make sure the race quality maintenance to be introduced, the State should acquire registered female (from out of the state) for the distribution to the interested cattle farmers. The number of animals to be acquired are 8.000 heads.

The distribution system to the producers, it should be the change base with a existing milk cow, plus the devolution of 01 buffalo female with 3/4 years old. The vaccination cost in the short term period (5 years) it should be free to the producers.

The need of incentive resources from the State will be as follows:

(R\$ 1000)

	Initial resource	1 year	2 year	3 year	4 year	5 year	6 year	7 year	8 year	9 year	10 year
Registered Female for distribution		8,000			3600	3600	800		1620	3240	1,980
Female			3600	3600	800		1620	3,240	1,980	360	730
Devolution from the producers - cow		8000			3600	3600	800		1620	3240	1,980
Cost of acquisition of buffalos females	8,000										
Entrance of resources		4,000			1,800	1,800	400		810	1,620	990
Balance	8,000	4,000			2,200	400	0		+810	+2,430	+3,420
Expense of the activity		4,000									
Devolution of the invested capital					2,200	400	0		810	2,430	3,420

Obs. Price of acquisition of buffalos female - R\$ 1000,00. Sell value of the cow received in change - R\$ 500,00.

The initial and total value of investment, therefore it will be R\$ 8 million to the State, but due to the devolution system from the producers, the amortization is estimated in the sixth year.

(4) Total Necessary Values of the Incentives

The total cost of the necessary Incentive Programs for the implementation of the Plan:

(R\$ 1000)

Program	Short Period	Medium Period	Long Period	Total
Improvement of the soil	5,203	-	-	5,203
Company of Agricultural Machineries	15,200	37,392	38,000	90,592
Introduction of Buffalos	4,000			4,000
Total	24,403	37,392	38,000	99,795

Obs. The cost of Buffalos production is considered the investment value in the females less the value of the cows received in the change system.

5.5.3 Incentive Program to the Obtaining of the Necessary Financial Resources

Due to the inexistence of available financial resources to the investment for the producers and on the other side the lack of warranties (micro and small producers mainly) there is the need of financial resources of the disponibilização to the plan development:

(R\$ 1000)

	Short Period	Medium Period	Long Period	Total
Introduction of Cereals	.	.	.	.
Opening of new areas	3,359	16,921	34,096	54,376
Improvement soil	2,518	13,025	26,918	42,461
Finance of the production	40,385	243,624	612,338	896,347
(Acceleration of the mechanization)	24,928	124,032	247,456	396,416
Sub total	46,262	273,570	673,352	993,184
Cattle diversification	.	.	.	.
Pasture improvement	840	33,737	91,167	125,744
Improvement of the System of Creation	6,262	125,398	278,556	410,216
Improvement of the Quality and Genetics	0	2,000	2,000	4,000
Castration and Descorna	20,000	30,000	40,000	90,000
Introduction of Buffalos	8,000	0	0	8,000
Introduction of Swine	14,918	9,285	9,652	33,855
Sub total	50,020	200,420	421,375	671,815
Nucleus of Production	.	.	.	.
Type Cereal	38,490	53,379	95,380	187,250
Type fruit	1,254	3,479	6,216	10,949
Type vegetable	14,423	20,001	35,737	70,161
subtotal	54,167	76,859	137,333	268,360
.
Total General	150,449	550,849	1,232,060	1,933,359

Institution of FUNDO DE AVAL, as main financial instrument for producers access to the necessary resource value from the financial institutions.

The items of the program below described being fundamental for the development of whole plan should be implemented:

- Support to the making financial investment project to the producers.
- Access and use of the current financings lines
- Institution of a special financing system
- Institution of FUNDO DE AVAL.

(1) Support to the Agricultural Development

Promotion of the invigoration of RURALTINS and ADAPEC, to make possible the planning and help to the necessary financing to the plan development. One of the important items is the institution of the experimental farm whose cost was demonstrated in the previous items.

(2) Support to the Access of the Financial Credit

Due to the existence of great variety of the federal government's financing system lines as described below, it is necessary to take the advantage to use for the financing the plan development. It is stood out however that due to the difficulty for the use of those lines because of real warranties necessary from the producers, it is fundamental the institution of Fundo de Aval.

Existent Financing Lines:

- CRC (Cost of Production Line)
- CRI (Investment Line)
- PRONAF(Agricultural Family Support National Program) ; CRC, CRI, AGREGAR, PROGER, RURAL
- CPR (Rural Products Warrant Line)
- PROSOLO (Soil Improvement Program)
- BNDES/FINAME AGRICOLA (Agricultural Mechanization Financing Line - BNDES)
- PROLEITE (Milk Production Support Program)
- PRODEX (Extrativism Support Program)
- PROSUMAN (Programa de Assistência à Conservação Ambiental Sustentável)

(3) Institution of the Special Financing Line

The most of financings line now existents, they possesses a limited value destined to each producer. The objective therefore it is through resource of Development Fund, the institution of the special line financing program to supplement the necessary values in relation to this limit, in agreement with the size and the financial situation of each producer:

a. Medium and Large Producer

For this producer category, whose plan is the cereals introduction and the practices of the intensive livestock, the priority will be to the producers which projects of financings define his use of the earth plan clearly according the stipulated Environmental Conservation proposal. This use of the earth glides should be approved necessarily by the Municipal Commission.

The items and forms financed will be accordingly:

	Type and financing form
Introduction of Cereals	<ul style="list-style-type: none"> ◆ Cost of preparation of the soil for new planting area (pasture and savannah) ◆ Cost of soil improvement ◆ Finance of the production cost - it limits of up to 50% of the need, conditioned to the total payment of the value financed in the previous year. ◆ Cost of the machineries acquisition - it Limits of up to 50% of the need.
Cattle diversification	<ul style="list-style-type: none"> ◆ Pasture Improvement - it limits of up to 50% of the need ◆ Improvement of the creation (silage, cost of the forage production, rotation of pastures, etc..) - limit of up to 50% of the need.

Condition of the Financing

	financing type	Condition
Variable investments	<ul style="list-style-type: none"> ◆ Production cost ◆ Pasture improvement and animal suplement 	<ul style="list-style-type: none"> ◆ Period of financing: Amortization in 12 months ◆ Fixed interest: 8%
fixed investments	<ul style="list-style-type: none"> ◆ New area opening cost and soil Improvement 	<ul style="list-style-type: none"> ◆ Period of financing: careancia 1 year and amortization in 4 years ◆ Interests: IGPM + 6%
	<ul style="list-style-type: none"> ◆ Agricultural machineries ◆ Silos and rotation of pastures equipments 	<ul style="list-style-type: none"> ◆ Period of financing: carencia 1 year and amortization in 8 years ◆ Interests: IGPM + 6%

The condition above mentioned will be reviewed and adjusted properly by Fund of Development in agreement with the course and of the macroeconomical situation of the country.

b. Micro and Small Producer

The financing for this category is made preferably through associations. As the conditions for the large and medium proprietors, the financings projects should consist the planning of the use of the earth obeying the stipulated and properly approved Environmental Conservation for the municipal commission. The basic requirement is the activity of agricultural diversification.

	Type and financing form
Agricultural producer	<ul style="list-style-type: none"> ◆ Cost of the opening of new area (Pasture and savannah): up to 80% of the need ◆ Production cost: up to 50% of the need ◆ Cost of machinaries acquisition: up to 80% of the need ◆ Cost of irrigation equipments (fruit/ tomato/ beans): up to 80% of the need
Cattle producer	<ul style="list-style-type: none"> ◆ Food supplement production cpost in the drought: up to 50% of the need ◆ Cutter acquisition and forage harvester: up to 80% of the need ◆ Cost of the corral construction and simple pigsty: up to 80% of the need ◆ Installation of processing structure of milk by-product: up to 80% of the need
Association	<ul style="list-style-type: none"> ◆ Institution of the community deposit: up to 80% of the need ◆ Acquisition of community agricultural equipment: up to 80% of the need ◆ Installation for standardization of the rut: up to 80% of the need ◆ Installation of packing house for fruits and vegetables: up to 80% of the need ◆ Standardization of the rut (80%)

Condition of the financing

	Item financing	Condition of I Credit
Variable investment	<ul style="list-style-type: none"> ◆ Production cost ◆ Food suplement production cost in the drought 	<ul style="list-style-type: none"> ◆ Period of financing: up to 12 months ◆ Fixed interest: 8% ◆ Discount of value: 50 %.
Fixed investment	<ul style="list-style-type: none"> ◆ Acquisition of production machinery ◆ Acquisition of the cutter and harvester ◆ Corral constriction and pigsty ◆ Installation for processing milk by-products 	<ul style="list-style-type: none"> ◆ Period of financing: 1 year carencia and amortization in 4 years ◆ Interest: IGPM + 6% ◆ Discount of value: 50%
	<ul style="list-style-type: none"> ◆ Opening of the new area of planting ◆ Acquisition of irrigation equipments ◆ Institution of the I deposit community ◆ Acquisition of the community machinery ◆ Installation for standardization of the rut ◆ Installation of packing house 	<ul style="list-style-type: none"> ◆ Period of financing: 1 year carencia and amortization in 8 years ◆ Interests: IGPM + 6% ◆ Discount of value: 50%

The financing access for this category is conditioned to the producers be in associations system. These producers should institute as warranty to the financial institutions, the solidary guarantee. The bottom for proposed financing discount value, it is done with base in the coming resources from the buffalos production.

c. Resources Need for Special Line

The need of resources for investments is demonstrated accordingly:

R\$ 1000

	Short Period	Medium Period	Long Period	Total
Medium and Big				
Total financing	23,211	177,758	401,991	602,960
Variable investment	12,143	52,579	145,907	210,630
Fixed investment (1)	1,509	32,250	74,372	108,132
Fixed Investment (2)	9,558	92,929	181,712	284,199
Micro and Small				0
Total financing	14,080	56,049	149,534	219,663
Variable investment	12,852	40,143	132,576	185,570
Fixed investment (1)	391	11,317	9,816	21,525
Fixed investment (2)	838	4,589	7,142	12,568
Total financing	37,291	233,807	551,525	822,623
Variable investment	24,995	92,722	278,483	396,200
Fixed investment (1)	1,901	43,567	84,189	129,657
Fixed investment (2)	10,395	97,518	188,853	296,767

Obs. The financings are classified according to the amortization periods in: variable - 12 months, fixed (1) - 4 years and fixed (2) - 8 years.

The resource need for special financing as the values above demonstrated is:

	Short Period	Medium Period	Long Period
Variable investment	8,332	18,544	55,697
Fixed investment (1)	1,901	43,567	84,189
Fixed investment (2)	10,395	102,715	237,612
Value need	20,628	164,827	377,497
Increase need	20,628	144,199	212,670

(4) Institution of FUNDO DE AVAL

To the micro and small producers, due to warranty supplement need to have access to the financial credit, the resource of Fund of Development is used to institute Fundo de Aval. This constituted Fund and properly deposited in the financial institutions will serve as warranty for the necessary values to the implementation of the established Development Plan.

The proposed purpose of this deposit is the financing from the financial institutions the equivalent value of 10 times the value of the constituted deposit, therefore the financing limit to each producer is limited on this condition. The financing conditions are in accordance with proposed previously.

a. Operation

The form of Fundo de Aval operation should be as it proceeds:

- Resource of Fund of Development is deposited to the bank being constituted Guarantee's Fund for the necessary financing.
- The financing is destined to the financing of the activities for the implementation of the Development Plan proposed to the micro, small and associations of producers. The warranty values to the financings eventually not covered by constituted Guarantee's Fund, they should be complemented by the producers.
- The financing bank sends monthly reports of the financing course to Fund of Development.
- The bank should take the legal providence gainst producer contract break (not payment of financed value).

- The balance of value no recovered for the providences above, it should be debited to the Fund resource.

The financing for the farmer, the association and cooperatives is limited.

For the great and medium producers, it should be priority the financing to the out of the area producers, agricultural production technology holders.

b Necessary Caution Value of Fundo de Aval

The forecast of the value of Fund of Guarantee to be constituted:

- Short Period: R\$ 2 million
- Medium Period: R\$ 16 million
- Long Period: R\$ 38 million.

The values above, they will be done gradually.

5.5.4 Associations of Producers Invigoration Program - Nuclei of Production Implementation.

The existent associations formed by micro and small producers need to be strengthened promoting the income increase of the productive activity and consequently the promotion of the regional economy as a whole.

(1) Program Content

The plan of acceleration of the invigoration of the Nucleus of Production through associations will be accomplished as it proceeds:

- Implantation of Demonstration Farm
- Implantation of Development Programs to the associativism activity
- Attendance to the planning and administration form
- Implantation in 5 municipal districts inside of the north extreme area the Training, technicians' Formation and producers Center for orientation to associations.
- Establishment of associations and administration forms.
- Establishment of agroindustrial units.
- Attendance to the access of the financial credit for the producers

(2) Program of Installation

a. Creation of Leaders

The Social Contract of the producers association formation should be properly registered to receive the recognition and the training programs above described by specialized technicians.

The training process is accomplished according to procedure:

- The specialized technical team analyzes this association, the several necessary activities as technical support, activity and appropriate production system, environment education, etc., to define the potential of each place through the accomplishment of several workshops.
- With base in the analyzes of the local reality therefore it settles down the training program that will be accomplished to the places leaders.
- These leaderships by his time define the best form of development of the necessary extension service. This training still has the objective of the invigoration and improvement of the quality of this leadership in the area.

- This leadership therefore has the power of the effort for the transformation of the will and production interest in real activity.
- The expectation of this program result is the elevation of the producers general knowledge in such a form that the dependence for assistance should be only for strictly technicians and specific subjects.

b. Organizational aspect

The training base for technical support is accomplished through association entities. Like this the producers will be trained accordingly:

- The definition of the choice and form of agricultural activity to be developed in the nucleus, as well as the best form of financial resources reception, tends as base to the appropriate technical orientation to be fundamentally defined by the own producers.
- Purchase promotion and sale in common, united use of machinery besides making possible the activity, increases the development to the associativism spirit.
- Choose of the leadership which in fact can benefit and to have representativeness of the nucleus.

c. Training

The training form will be developed:

- The short and medium period looking the promotion of the agricultural activity and maintainable agroindustry, organizational invigoration, invigoration of the commercial system, support to the creation of leadership and finally the institutional invigoration of that nucleus.
- Training and orientation tend as objective the members of the current existent associations.
- Invigoration of the production nuclei as objective - Workshops.
- Improvement of the standard of living as objective - training.
- Formation of leaders - training.
- Information and training with updated data to the associations - simulation.

d. Implantation of the Training Center

The Centers of Training will be implanted accordingly:

- Araguaína as Central Training Center.
- Araguatins, Augustinopolis, Tocantinopolis and Xambioa as Regional Training Center.
- For training, 2 consultants: one with specialty in associativism and cooperativism and other in family agriculture
- Installation of local inter institutions articulation poles with objectives of information change among members of the government institutions and no government, related to the family agriculture activities.
- Installation of experimental units of training: production, foods and derived products processing and commercialization.
- Identification of the qualified professionals' existence as specialists in the structure of the state public section
- Identification of human resources, materials and necessary financiers to the nucleus activity
- Training of leaderships.

e. Periods of Implantation and Content

1) Short Period

It aims at the training for the invigoration of the associativism activity, local technicians of the organs as SEPRO, ADAPEC, RURALTINS, NATURATINS and the producers.

To the producers, the production, commercialization, processing of products will be focused besides the aspects below described:

- Formation of leaderships or identification of the leaders born in the nucleus.
- Making of the training manual
- Training and popularization of themes of interest to the nucleus through workshops.
- Making of the activity plan
- Monitoration of the activity plan
- Execution and evaluation of the training plan

The qualified producers should serve as elements multipliers of the innovations and techniques presented during the trainings for the community's other members.

The proposal of the training is of 800 elements in the beginning, in such a way that each municipal district within 2 years have 42 trained.

2) Medium Period

Medium term it will be accordingly:

- Formation of bases for the constitution of organized regional instances being necessary to give technician-pedagogic sustentation to the process.
- It deepens the investment on technicians and other farmers that have if revealed along the process with potentiality for own activities of this phase.
- Activities of visits, participation in fairs and in activities of recycling of the initial contents.
- Phase of feedback of the process of training of the great team of regional and producing technicians, identifying in this phase with more easiness the possible problems in the organizational area and of the production.

3) Long Period

In this apprenticeship the scenery of the family agriculture will begin to signal with new perspectives and with a new drawing of the less unequal situation. The structure of associations specialization and cooperatives will be in some cases more consolidated in regional extent, being however necessary to maintain the forecast of contributions but specific of training in the form of technical training and condition of better life and this it forms, the production nucleus should be evaluated.

Situations that result in very residual modifications can happen given the state of the poor condition of the rural society in the current days. It will be necessary the interference of the State in these cases to avoid the development of a more critical situation.

The situation as that is verified the monitory system will have the function of signaling about the needs of the activities direction correction, development plans, etc.

(3) Development

With the institution of the training center in Araguaina, Araguatins and Tocantinópolis, the training programming will be accomplished about the specialized consultants' coordination seeking activities of cereals, vegetables, fruits, buffalos, extrativismo for each pole.

The producers capacity is evaluated besides promoting the training inside of the project development implementation need to the local leaderships responsible for the course of the project.

(4) Financial Resource need

R\$	I tan Period	Medium Period	Total
Regional Nucleus of Production Seminar	1,482,000	1,482,000	2,964,000
Costs of activities - Centers of Trainings	5,960,400	5,960,400	11,968,800
Total	7,466,400	7,466,400	14,932,800

The cost includes the creation and training of producers, seeking the global plan accordingly to the goal of increase of the family income, at least for 3 minimum wages. The medium and short period, cost of R\$ 1.500 thousand/year.

5.6 Environmental Conservation Enterprises

5.6.1 Profile of the Environmental Conservation Enterprises

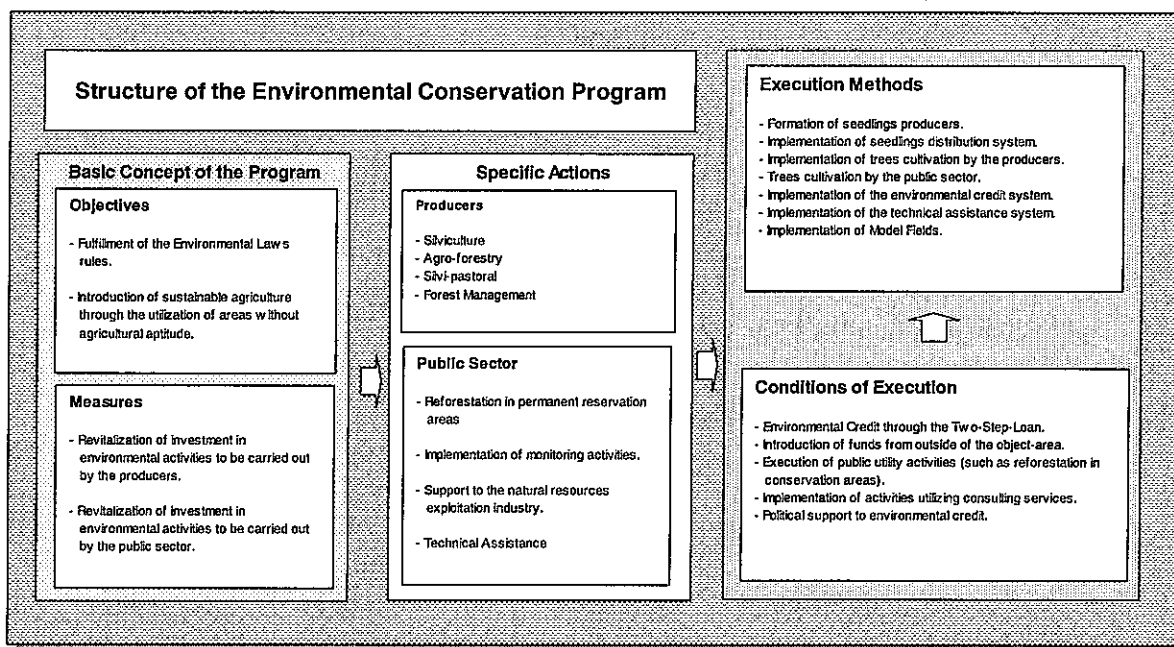
At long term, the Environmental Conservation Enterprises aim at fulfilling the environmental rules established by the Environmental Laws of the Amazônia Legal region, with investment both from the producers and the public sector. The recuperation of natural resources within the established rules shall be attained through the reforestation enterprises within 30 years.

The land use plan to attain the recuperation goals is presented in the following table, with the introduction of silviculture, agro-forestry, silvi-pastoral and forest management enterprises.

Goals of the Land Use Plan (ha)

	Current	Short Term (2005)	Medium Term (2010)	Long Term (2015)	Final (2035)
Northern Region	3,705,050.9	3,705,050.9	3,705,050.9	3,705,050.9	3,705,060.0
Agriculture and Livestock Husbandry	1,979,121.1	1,957,413.0	1,863,595.3	1,787,861.6	1,259,711.3
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
Woods	686,670.0	686,670.0	686,670.0	686,670.0	686,670.0
Riverside Forests		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

The environmental conservation enterprises shall be implemented at the long term, being started at the medium term. The basis for the actions shall be structured at the short term. The concepts of the environmental conservation actions are presented as follows.



(2) Objectives and Goals of the Actions

Aiming at improving the environmental conditions, the following enterprises shall be implemented.

- Silviculture
- Agro-forestry
- Silvi-pastoral
- Forest Management
- Reforestation in the Permanent Reservation Areas
- Prevention against forest fires
- Model Fields
- Support to the Natural Resources Exploitation Activity
- Strengthening of the Environmental Monitoring

Enterprise	Objectives
Silviculture	1. Revitalization of economy through the effective use land in the areas without aptitude for other productive activities.
	2. Contribution for the environmental preservation.
Agro-forestry	3. Utilization of forestry areas for the promotion of agriculture.
	4. Fulfilling of the environmental rules concerning to the legal reservation areas.
Silvi-pastoral	5. Efficient land use in pasture areas.
	6. Prevention against soil degradation.
	7. Fulfilling of the environmental rules concerning to the legal reservation areas.
Forest Management	8. Revitalization of legal reservation areas.
	9. Fulfilling of the environmental rules concerning to the legal reservation areas.
Reforestation in Permanent Reservation areas	10. Soil conservation and prevention against soil erosion.
	11. Protection of water sources.
	12. Fulfilling of the environmental rules concerning to the legal reservation areas.
Model Fields	13. Demonstration of trees cultivation method to the producers involved in this activity.
	14. Activity of direct extension.
Support to the Natural	15. Complementary support to the conservationist and reforestation activity.

Resources Exploitation Activity	
Prevention against Forest Fires	16. Prevention against forest fires concerning to the mentioned activities.
Strengthening of Environmental Monitoring	17. Promotion of conservationist activities and their management.

(3) Targets to be Attained by Activity

In this Program, the following targets are expected to be attained by each activity.

Targets

	Short Term	Medium Term	Long Term	Final Target	Area at the Final Target (km ²)
Silviculture	3.3%	20%	36.3%	100%	4,353.3
Recuperation of Legal Reservation					11,349.3
Agro-forestry	3.3%	20%	36.3%	100%	4,970.3
Silvi-pastoral	3.3%	20%	36.3%	100%	1,755.5
Forest Management	3.3%	20%	36.3%	100%	1,246.9
Reforestation of Permanent Reservation Areas					
Water Source Protection Areas (Riverside Forests)	3.3%	20%	36.3%	100%	3,344.0
Strong Declivity Areas (equal or over 30%)	3.3%	20%	36.3%	100%	32.6
Prevention against Forest Fires	3.3%	20%	36.3%	100%	
Implementation of Model Fields	100%				
Support to the Natural Resources Exploitation Activity	50%	100%			
Strengthening of Environmental Monitoring	50%	100%			

(4) Enterprises Guidelines

In these enterprises, the rules concerning to the compatibilization of crops in appropriate land are expected to be fulfilled, besides the creation of industries that develop sustainable activities. The object areas of these enterprises are presented as follows.

Activities	Object Areas
Silviculture	Area with potential for silviculture, excluding the environmental hazardous areas and the areas destined to legal reservation.
Agro-forestry	Areas to be recommended for the introduction of agro-forestry activity due to the declivity among other factors, although they have agricultural aptitude. Promotion of agro-forestry activity in areas which should be destined to legal reservation.
Silvi-pastoral	Areas that although currently are being utilized as pastures, do not present economic feasibility for such purpose due to strong declivity and soil degradation.
Promoção do Forest Management	Areas that should be destined to legal reservation in order to fulfill the environmental rules. Present forest areas.
Reforestation of the areas destined to environmental recuperation	Areas with strong declivity (30% or more). Water source protection areas.
Prevention against forest fires.	Areas destined to the aforementioned activities.
Support to the Natural Resources Exploitation Activity	Areas in which this activity is already being carried out.

In this legal reservation areas, the agro-forestry and silvi-pastoral activities, besides Forest Management and Reforestation activities shall be introduced. The following table presents the areas to be destined to each activity.

Recuperation Targets of Legal Reservation Areas

	Short Term (km ²)	Medium Term (km ²)	Long Term (km ²)	Target for 35 years (km ²)
Agro-forestry	81.4	488.3	895.3	4,970.3
Silvi-pastoral	58.5	351.1	643.7	1,755.5
Forest Management (Cerrado)	41.6	249.4	457.2	1,246.9
Permanent Reservation				
Water Source Protection Area	111.5	668.8	1,226.1	3,344.0
Strong Declivity Areas	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

In this Study, the Silviculture enterprises are not restrained to the legal reservation areas, and their implementation is recommended in areas with aptitude for this purpose.

5.6.2 Recommended Enterprises

(1) Silviculture

Silviculture shall be promoted aiming at the effective land use. Considering that this activity shall be carried out with direct investment from the producers, varieties with the higher possible commercial value and with high economic feasibility shall be selected, considering the implementation period. Thus, the seedlings shall be offered at a low cost to the producers, and at the same time an environmental credit line shall be created for the promotion of the reforestation activity. As for the type of reforestation, the mixed planting of different varieties shall be promoted. Within these Actions, credit lines with different financing conditions in order to stimulate the mixed cultivation of different varieties shall be created.

Alternative 1	Cultivation of the same variety (for the manufacture of furniture, construction materials, ships, for the wood processing industry, vegetal charcoal, cellulose, firewood).
Alternative 2	Mixed cultivation of different varieties (mix of varieties with different growth periods).

The silviculture activities, according to the aforementioned activities, present large differences as for the trees growth perspective depending on the combination of the selected varieties. Thus, a period revision shall be carried out taken into consideration the perspectives of demand for each product (furniture, construction materials, wood processing industry products, charcoal, etc.). Furthermore, the promotion of these activities shall be conducted in three stages as follows.

1 st stage (short term)	Formation of seedlings producers and free distribution of seedlings.
2 nd stage (medium term)	Distribution of seedlings at low cost and implementation of reforestation activities financing.
3 rd stage (long term)	Commercialization of seedlings at market prices and revitalization of the reforestation activities financing.

In the First Stage, the activities shall be promoted by means of the financial support to the seedlings' producers, allowing their free distribution. Independent of the Reforestation Program to be implemented, at least one seedling production unit shall be created in each municipal district. In this stage, the coordinated work between seedlings' producers and government (state and municipal) shall be promoted. In order to allow the continuity to the second stage, a credit line for the reforestation activities shall be defined.

In the Second Stage, the financing of the reforestation activities shall be promoted for the commercialization of the produced seedlings and for their buyers, in order to promote the autonomy of the seedlings' producers formed in the first stage. In this stage, different financing conditions shall be established in order to stimulate the mixed cultivation of different varieties, besides the recommendation, on the part of the government, for this type of cultivation. The financing for the reforestation activities shall be granted through the submission of a project, on the part of the producer, to the Municipal Committee of Agricultural Development Promotion; the bank shall release the funds after the Committee authorization. This financing shall be defined in order to cover the costs related to the reforestation activities, besides including the creation of a credit line to be used for the soil recuperation activities and to the construction of necessary facilities. As for the seedlings' producers, the financial support is to cover the production cost so that the seedlings can be offered at a low price.

In the Third Stage, the seedlings shall be offered at market prices, and only the financing to the reforestation activities shall be promoted.

(2) Reforestation for the Recuperation of Legal Reservation Areas

a. Agro-forestry Activities

The agro-forestry activities shall be introduced in areas presenting difficulties for mechanization due to their topography, and in order to increase the land sustainable productivity. With the introduction of agro-forestry activities, the stratified utilization of land and the sustainable agricultural management shall be promoted. This shall be basically achieved through the introduction of wooden varieties, fruit varieties, and diversified crops. However, these activities shall be gradually introduced considering that there are few researches related to this agricultural method management. Besides, a sound study about the appropriate system for the agro-forestry activity must be carried out. An adapted and appropriate method to the region shall be adopted, requesting the cooperation of EMBRAPA considering that this institution is already carrying out researches about the subject. The types of recommendable agro-forestry activities for the moment are as follows:

- Combination of bacuri with pupunha
- Combination of castanha-de-caju (cashew nuts) with cassava and feijão bean
- Combination of castanha-do-pará with cupuaçu, pupunha, etc.
- Combination of pepper with Mahogany
- Combination of feijó-louro with cupuaçu, peper
- Combination of cassava, cupuaçu, avocado, pupunha, castanha and passion fruit
- Combination of cassava, cupuaçu and orange
- Combination of cassava, castanha, avocado, feijão bean
- Other crops

The promotion of this activity shall be carried out in three stages similarly to the previous activity:

Stages	Main Items for the Development of the Activity
1 st stage (short term)	Formation of seedlings' producers, free distribution of seedlings and creation of a Model Farm.
2 nd stage (medium term)	Free distribution of seedlings and implementation of financing destined to the agro-forestry activities.
3 rd stage (long term)	Commercialization (50%) of low price seedlings, revitalization of financing for the agro-forestry activities and organization of the commercialization network for the agro-forestry products.

In the first stage, the seedlings' producers shall be formed, the free distribution of seedlings shall be carried out as well as the creation of Model Farms. The seedlings' producers herein mentioned are the same previously mentioned. The free distribution of seedlings shall also be restrained to the interested farmers. The Model Farms shall be created in the proportion of 1 (one) unit in each municipal district, in order to develop an appropriate agro-forestry model to the specific conditions of each municipal district. As for the necessary funds for their creation, a financial support system shall be implemented. The owners of farms to become Model Farms are obliged to receive the visit of neighboring farmers. These farmers shall be selected by means of the presentation of projects for this purpose.

The second stage represents the initial period of the activities' development when the financing for the agro-forestry activities shall be implemented to the interested farmers. As for the financing items, they cover the crop maintenance cost as well as the initial investment for the cultivation. As for the seedlings, they shall be purchased directly from the producers.

The third stage shall be the period for the activities' development that shall be supported by the agro-forestry financing, besides the implementation of infrastructure for the formation of the commercialization network for the agro-forestry products.

b. Silvi-pastoral Activities

The silvi-pastoral activities shall be developed in areas presently utilized as pastures. However, due to their declivity and soil fertility their utilization as pastures are not economically feasible. In these areas, with the introduction of trees' cultivation, the land productivity with the production of wood shall be increased.

The promotion of this activity shall be carried out in three stages similarly to the previous examples:

Stages	Main Activities to be Developed
1 st stage (short term)	Free distribution of seedlings, implementation of the Promotion System.
2 nd stage (medium term)	Free distribution of seedlings and implementation of the financing destined to the silvi-pastoral activities.
3 rd stage (long term)	Commercialization of seedlings at low prices, revitalization of financing to the silvi-pastoral activities.

In the first stage, the formation of seedlings' producers and the free distribution of seedlings shall be developed. The seedlings' producers are the same previously mentioned. The free distribution shall also be carried out only for the interested farmers. Besides, a promotion system for the silvi-pastoral activities shall be created in order to attract the cattle raisers interested in the reforestation activity.

The second stage corresponds to the initial period of the activity development when the financing to the silvi-pastoral activities for the interested producers shall be explored. The items of financing include from the installation of fence, for the improvement of the farms, to the acquisition costs for agricultural equipment. The seedlings shall be purchased from the low price seedlings' producers.

The third stage that represents the activity development period shall emphasize the financing for the silvi-pastoral activities.

c. Forest Management

The Forest Management shall be introduced in areas to be deforested in the future, based on the regulation that obliges the recuperation of deforested areas through reforestation. In this Program, the promotion of the environmental conservation activity shall be promoted as well as the effective use of land through the introduction of forest management in legal reservation areas imposed to the producers. However, from the conservationist point of view, the cultivation of native varieties shall be obligatory for reforestation.

Similarly to the other activities, this activity promotion shall be carried out in three stages as presented in the following table.

Stages	Main Activities to be Developed
1 st stage (short term)	Formation of seedlings' producers, free distribution of seedlings, and selection of the farmers interested in developing the activities.
2 nd stage: (medium /long terms)	Free distribution of seedlings and implementation of financing to the activities related to Forest Management.

In the First stage, the seedlings' producers formation as well as the free distribution of seedlings shall be carried out. The seedlings' producers are the same previously mentioned. As for the producers carrying out reforestation aiming at the forest management, these shall receive seedlings for free, and shall be subject to selection for the purpose of implementing some productive units, in each municipal district, where they shall receive financial support for the development of the activities. The producers whose farms are subject to the obligatory reforestation due to the requirement of a legal reservation shall be selected with priority.

The Second stage shall be the initial period for the development of activities, when the financing of forest management activities to the interested farmers shall be implemented. The financing items include not only the reforestation cost but also the costs for fence installation and acquisition of agricultural equipment. The seedlings to be utilized shall be obtained for free from the seedlings' producers, through the submission of the respective Project to NATURATINS.

d. Reforestation in Permanent Reservation Areas

This activity is understood as an enterprise destined to the environmental preservation areas, according to the environmental laws, and most of the funds shall be destined to the free distribution of seedlings as well as for the support of trees cultivation and their maintenance costs. The objects of this activity are the areas at the rivers and lakes margins, areas for the protection of water sources and those defined as environmental hazard areas. The varieties to be planted are those indicated by the Development Committee and shall be basically the existing ones.

This activity promotion shall be carried out in two stages as follows:

Stages	Main Activities to be Developed
1 st stage (short term)	Formation of seedlings' producers, free distribution of seedlings and definition of permanent reservation areas.
2 nd stage (medium / long terms)	Free distribution of seedlings and execution of reforestation activity in permanent reservation areas.

The First stage comprehends the formation of seedlings' producers and the free distribution of seedlings to the interested producers, as well as the definition of areas that shall be included as object of this activity. The seedlings' producers are the same mentioned in the silviculture activity. The definition of the permanent reservation area shall be carried out by the Development Committee.

The Second stage comprehends the initial period for the development of activities, when the reforestation activity shall be implemented in the permanent reservation areas within the properties of the interested producers. The necessary financial resources shall be borne by the government. A system shall be created in which the maintenance cost corresponding to the number of planted trees is borne by the resources of a Conservation Fund, destined to the producers involved in the trees' cultivation and during the period necessary for the trees consolidation.

(4) Prevention against Forest Fires

The main forests deterioration causes are the deforestation and the forest fires. Considering that a large area is lost during the dry season due to forest fires, financing lines shall be created for the implementation of the following corrective-preventive activities.

- Construction of "aceiros" (cleaning of a strip of land to stop fire spreading)
- Construction of fences
- Acquisition of agricultural machines and equipment for the construction of "aceiros"

These activities shall be basically developed through the creation of a credit line for the prevention from forest fires. The financing shall be basically destined to the responsible party for the reforesting activity, and a mechanism shall be created so that the financing is only released by means of the submission of a Conservation Project to the Committee of Municipal Development.

The targets for the implementation of the forest fires prevention activities shall be based on the reforestation activities as presented in the following table.

Targets for the Forest Fires Prevention

	Short Term	Medium Term	Long Term
Benefited areas (km ²)	439	2,635	4,831
Targets to be attained (km ²)	439	2,196	2,196
Construction of "aceiros" (lkm)	1,757	8,783	8,783
Construction of fences (lkm)	878	4,391	4,391
Acquisition of agricultural machines and facilities (unit)	54	274	274

Remarks: The targets of each activity shall be calculated according the following data (construction of "aceiros": 4kml/km²; construction of fences: 2kml/km²; acquisition of agricultural machines and facilities: 1unit/8km²)

The cost estimation of the necessary funds for the attainment of the established targets are presented in the following table.

Cost Estimate of Necessary Funds

Period	Quantification of Activities				Unit Price (R\$1,000)	Cost Estimate of Necessary Funds (R\$1,000)			
	Unit	Short term	Medium term	Long term		Short term	Medium term	Long term	Total
Construction of "aceiros"	(kml)	1,757	8,783	8,783	1	1,757	8,783	8,783	1
Construction of fences	(kml)	878	4,391	4,391	4	3,513	17,565	17,565	16
Acquisition of agricultural machines and facilities	unit	54	274	274	500	27,000	137,000	137,000	250,000
Total						32,270	163,348	163,348	250,017

(5) Natural Resources Exploitation Industry

The development of the region's traditional natural resources exploitation industry shall allow the effective utilization of its natural resources, and at the same time shall allow the environmental conservation. This plan objective consists, basically, of the revitalization of the existing associations and the strengthening of the assistance system for the improvement of the associations' equipment and facilities. This plan objective is constituted of the development of the following activities.

- Extraction of babaçu
- Revitalization of apiculture

The supporting measures shall be carried out based on the items concerning to the associations operation, existing facilities, commercialization network and improvement of products' quality.

SUPPORTING MEASURES	ACTIVITIES
Associations' Operation	Strengthening of the associations' operative method. Strengthening of the support to the application of funds.
Support to the effective use of the existing facilities	Strengthening of the support concerning to the equipment that can become necessary according to the revitalization of the natural resources exploitation industry. Support concerning to the necessary equipment to increase the aggregate value of the products.
Support to the commercialization network	Support to the strengthening of the commercialization network Support to the implementation of the commercialization concerned infrastructure
Support to the improvement of products	Support to the improvement of products Support to strengthen the development of new products

These supporting activities shall be developed by means of the utilization of low interest rates financial resources.

(6) Summary of Activities

The concrete measures to be recommended by the Conservationist Action are as follows.

Activities	Seedlings Production			Governmental Support		Technical Assistance		
	Formation of Producers	Free Distribution	Not Free Distribution	Financing	Non reimbursable	Creation of Model Farm	Strengthening of Commercial Network	Implementation of the Promotional System
Silviculture	necessary	necessary	necessary	necessary				
Agro-forestry	necessary	necessary	necessary	necessary		necessary	necessary	
Silvi-pastoral	necessary	necessary	necessary	necessary		necessary		necessary
Promotion of Forest Management	necessary	necessary		necessary	necessary			
Conservation of permanent reservation areas	necessary	necessary			necessary			
Development of natural resources exploitation industry	necessary			necessary			necessary	necessary
Preventive measures against forest fires				necessary				
Strengthening of monitoring activities					necessary			necessary

(7) Necessary Measures for the Promotion of Enterprises

This enterprise shall take into consideration the nature of each activity, simultaneously promoting the distribution of seedlings to the producers through the strengthening of the Seedlings Supply System, and the implementation of trees cultivation activities through the governmental support and the strengthening of technical assistance.

The seedlings supply system shall be conducted, at the short term, by the free distribution of seedlings, and, at the long term, by the commercialization of seedlings at the production cost in those sectors with economic feasibility. For so, measures aiming at the formation of seedlings producers as well as the institution of the seedlings supply system shall be implemented.

As for the reforestation activities to be carried out by the producers, the Program shall be promoted with the utilization of a credit line destined to these producers, as well as with the promotion of activities through the financial support from the government in the form of non reimbursable funds.

Besides, a technical assistance system shall be implemented in order to offer a complementary support, reinforcing the existing technical assistance together with the market information system, aiming at the improvement of cultivation methods and the licensing for deforestation.

The creation of a credit line for the promotion of reforesting activities shall be carefully studied in order to assure their economic feasibility. Care must be taken so that this financing does not become a hinder for the promotion of the aforementioned activities.

As concrete measures, the following plans shall be implemented.

Plans	
Implementation of the seedlings production and supply system	Formation of seedlings producers. Institution of a seedlings production and supply system that includes the free distribution as well as the selling of seedlings.
Implementation of the technical assistance system	Creation of Model Farms and diffusion of technology. Support to the commercialization network strengthening. Implementation of the Activities Promotion System.

Institution of the financial support system to the reforestation	Implementation of the Financing System (necessary funds) Implementation of a System for the supply of non reimbursable funds.
--	--

5.6.3 Programs of Seedlings Production and Cultivation of Trees

(1) Implementation of the Seedlings Production and Distribution System

As part of the objectives of the seedlings production and supply in the Study Area, the formation of at least one seedlings production unit in each municipal district is intended. The production of seedlings shall be carried out by the private sector. According to the program guidelines, the producers shall receive financial support for the construction of necessary facilities. However, as counterpart they will be responsible for the production of seedlings of varieties indicated by the Development Promotion Committee.

The facilities to be constructed with the financial support resources include the nursery (with shadow net), facilities for the soil preparation, irrigation facilities, and storage units. The area shall be provided by the producer him/herself. The seedlings producers shall be submitted to the supervision of the Development Promotion Committee.

The seedlings production shall be carried out aiming at the promotion of the following activities:

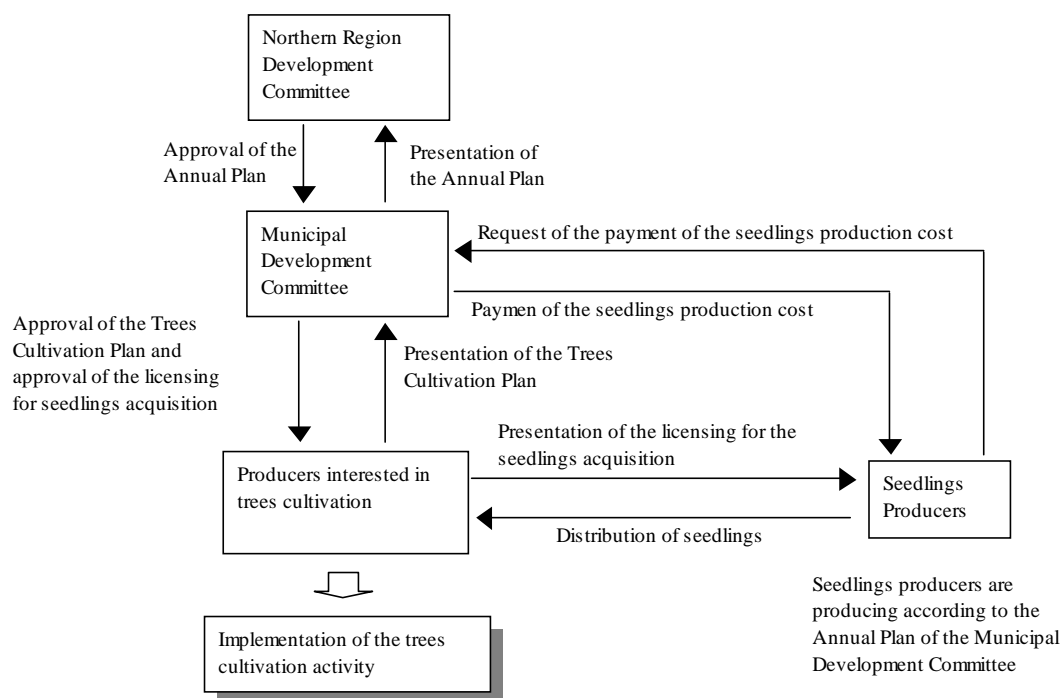
Target-Activities	Target-Varieties	Short Term	Medium Term	Long Term
Silviculture	Varieties with high commercial value: Mahogany, Ipê, Angelim, Cedar, Jatobá, Sucupira, Teca-Pino, Eucalyptus, etc.	Free Distribution	Paid Distribution	Paid Distribution
Agro-forestry	Fruit trees: cashew, avocado, cupuaçu, bacuri, açaí, banana, etc.	Free Distribution	Paid Distribution	Paid Distribution
Silvi-pastoral	Varieties with high commercial value and appropriate for uneven topography land	Free Distribution	Free Distribution	Paid Distribution
Promotion of Forest Management	Existing varieties	Free Distribution	Free Distribution	Free Distribution
Reforestation of permanent reservation areas	Existing varieties	Free Distribution	Free Distribution	Free Distribution

At medium and long terms, the seedlings shall be sold for the agro-forestry, silvi-pastoral and silviculture activities, while for the Forest Management activities and reforestation activities in permanent reservation areas they shall continue to be distributed for free. The seedlings production shall be predominantly of new varieties, existing varieties and fruit trees. The produced seedlings shall be distributed only after the phyto-sanitary control to be performed by ADAPEC.

The seedlings producers shall receive their payment according to the distributed quantity.

At medium term, the system foresees that the seedlings shall be acquired through the technical approval of the Reforestation Plan submitted to the Municipal Development Committee.

The short term Free Distribution System is presented as follows.



As for the sale of seedlings, the system shall be implemented in a way that the producers interested in trees cultivation can acquire them directly from the seedlings producers. However, in order to promote this activity, the seedlings shall be sold at the cheapest price possible.

(2) Seedlings Production

The following table presents the necessary volume of seedlings for the attainment of the established target.

Areas to be Attained in the Reforestation Activity

Object-Activity	Varietades	Long Term (km ²)	in 2005	in 2010	in 2015
Silviculture Activities	With commercial value	4,353.50	145.12	870.70	1,596.28
Sub-total					
Agro-forestry Activities	Fruit trees	4,970.34	81.39	488.32	895.25
Silvi-pastoral Activities	With commercial value	1,755.50	58.52	351.10	643.68
Promotion of Forest Management	Existing varieties	1,246.90	41.56	249.38	457.20
Reforestation in Permanent Reservation Areas	Existing varieties	3,376.60	112.55	675.32	1,238.09
Total of varieties with commercial value		6,109.00	203.63	1,221.80	2,239.97
Total of Fruit Trees		4,970.34	81.39	488.32	895.25
Total of existing varieties		4,623.50	154.12	924.70	1,695.28
Total		15,702.84	439.14	2,634.82	4,830.50

Based on the aforementioned targets, the Seedlings' Production shall be defined as follows.

Annual Production of Seedlings

Variety of Produced Seedling	Annual Area of Seedlings Cultivation (1,000 ha)	No. of necessary seedlings (1,000 seedlings/ano)	Rate (%)
Varieties for silviculture	20.36	18,327	88.6%
Fruits cultivation	8.14	814	3.9%
Existing varieties	15.41	1,541	7.5%
Total	43.91	20,682	100.0%

Remarks: As for Silviculture, the quantity of seedlings was calculated based on the production of 900 seedlings/ha; for the silvi-pastoral, Forest Management and Reforestation activities, this quantity was calculated based on the production of 100 seedlings/ha.

These seedlings shall be gradually produced following the formation of seedlings producers in each municipal district. If each producer produces 100 thousand seedlings per year, a total number of 165 producers shall be necessary. The seedlings producers shall be formed in the short-term plan, and the system implementation shall be promoted with the support of governmental subsidy for the construction of necessary units. As for the production cost, it shall be reimbursed to the producer according to the number of produced seedlings. The Activity of Seedlings Production shall be defined by the Annual Plan of the North Region Development Committee.

The facilities to be prepared with governmental subsidy are as follows:

- Seedlings nursery (with shadow net)
- Facilities for soil preparation
- Facilities for irrigation
- Facilities for packing and storage at the production site

The facilities shall be calculated with a production capacity for approximately 10 thousand seedlings per year. The cost estimation for the implementation of each unit is presented as follows.

Cost Estimate for the Installation of Each Unit

Facility	Quantity	Unit Price (R\$)	Cost Estimation (R\$)
Nursery for seedlings (with shadow net)	10,000 m ²	1.00	10,000.00
Facilities for soil preparation	1 unit	5,000.00	5,000.00
Facilities for irrigation	1 ha	5,000.00	5,000.00
Facilities for packing and storage at the production site	1 unit	10,000.00	10,000.00
Total			30,000.00

These seedlings production facilities shall be constructed within the short term Plan utilizing governmental subsidy. The construction schedule of the 165 units, calculated as necessary for the execution of the Program according to the short term Plan, is presented as follows.

Installation of Seedlings Production Units

	No. of installed units	Unit value for Implementation (R\$ 1,000)	Cost (R\$ 1,000)
1 st year	2 units	30	60
2 nd year	6 units	30	180
3 rd year	30 units	30	900
4 th year	50 units	30	1,500
5 th year	50 units	30	1,500
Total			4,140

The Seedlings Production Annual Plan according to the varieties to be produced and to the necessary production units is presented as follows.

Annual Plan of Seedlings Production

Variety	1 st year	2 nd year	3 rd year	4 th year	From the 5 th year on
No. of seedlings production units	2	8	38	88	138
Silviculture (1,000 seedlings)	265.8	1,063.4	5,050.9	11,696.9	18,342.9
Fruits cultivation (1,000 seedlings)	11.8	47.2	224.3	519.4	814.6
Existing (1,000 seedlings)	22.4	89.4	424.7	983.6	1,542.5
Total (1,000 seedlings)	300.0	1,200.0	5,700.0	13,200.0	20,700.0

Remark: The Seedling Production Activity shall be planed in a way to allow the attainment of the target from the year 2006 on.

(3) Distribution of Seedlings

The following Seedlings Distribtuion plan shall be established in order to promote the Reforestation activity in the Region

Seedlings Distribution	
Short term	Free distribution of seedlings for all the activities.
Medium term	Sale of seedlings (Silviculture) Free distribution of seedlings (Agro-forestry and Silvi-pastoral activities, Forest Management and Reforestation in permanent reservation areas)
Long Term	Sale of seedlings (Agro-forestry, Silvi-pastoral, and Silviculture activities) Free distribution of seedlings (Forest Management and Reforestation in permanent reservation areas)

The demand estimate and the necessary amount of funds for each stage are presented in the following tables.

Necessary Funds for Seedlings Distribution (R\$ 1,000)

Variety to be produced	Unit price of seedlings (R\$/seedling)	1 st year	2 nd year	3 rd year	4 th year	From the 5 th year on
Silviculture	0.20	53.2	212.7	1,010.2	2,339.4	3,668.6
Fruits cultivation	0.50	5.9	23.6	112.2	259.7	407.3
Existing variety	0.30	6.7	26.8	127.4	295.1	462.8
Total		65.8	263.1	1,249.8	2,894.2	4,538.6

The annual disbursement plan based on the Seedlings Distribution plan is presented as follows.

Annual Disbursement Plan (R\$ 1,000)

Year	FREE SEEDLINGS				PAID SEEDLINGS			
	Silviculture	Fruits Cultivation	Existing Variety	Total	Silviculture	Fruits Cultivation	Existing Variety	Total
2001								
2002	53.2	5.9	6.7	65.8				
2003	212.7	23.6	26.8	263.1				
2004	1,010.2	112.2	127.4	1,249.8				
2005	2,339.39	259.7	295.1	2,894.2				
2006~10			2,313.8	2,313.8	18,342.92	2,036.4		20,379.36
2011~15			2,313.8	2,313.8	18,342.92	2,036.4		20,379.36

Remark: The amounts for silviculture and for agro-forestry activities were calculated based on the distribution of seedlings to be sold from the year 2006 on. From this year on, the Reforestation Activity shall be implemented and shall cover an area of 543.6 km² per year.

(4) Cultivation of Trees

The following measures for the promotion of trees cultivation shall be introduced aiming at promoting the environmental conservation activities.

Activity of Trees Cultivation	
Short Term	There are no specific measures in the financial field. However, a Funds Procurement Plan shall be implemented for the execution of the Plan at the Medium and Long Terms. Creation of Model Fields.
Medium and Long Terms	Promotion of the activity utilizing the Financing System. Financial support to the Forest Management and to the environmental conservation activities to be carried out in the permanent reservation areas.

The necessary funds for the Activity of Trees Cultivation are presented in the following table.

Reforestation Cost

	Area of the Annual Plan (ha)	Cost of Trees Cultivation (R\$/ha)	Maintenance cost of trees cultivation (R\$/ha)	Necessary Funds (R\$1,000)	Source of Funds
Agro-forestry	8,139	200	200	3,255	
Silvi-pastoral	5,852	100	100	1,170	Financing
Forest Management (Cerrado)	4,156	100	100	831	Financing
Forest Management (Forest)	0	100	100	0	Financing
Permanent Reservation	11,255			0	Financing
Riverside Forest	11,147	100	100	2,229	
Strong declivity areas	109	100	100	21	Governmental subsidy
Sub-total	29,402				Governmental subsidy
Reforestation	14,511	270	200	6,820	
Total	43,913			14,326	Financing
Financing portion				12,076	
Governmental subsidy				2,250	

portion		
---------	--	--

Remarks: For each activity, the following values were estimated: Agro-forestry – 100 trees x R\$ 2.00/unit; Silviculture – 900 trees x R\$0.30/unit; other activities – 100 trees x R\$1.00/unit. The maintenance cost after the cultivation was estimated for an approximate period of 2 years.

(5) Demand of Resources

The resources demand estimate in order to attain the conservation target until 2015, which is this plan reference year, is presented in the following table.

Demand of Resources (un.: R\$ 1,000)

	Formation of seedlings producers		Distribution of seedlings		Cultivation of trees		Total of trees cultivation activities		
	Non Reimburs-able	Financing	Non Reimburs-able	Financing	Non Reimburs-able	Financing	Non Reimburs-able	Financing	Total
1 st year	60						60	0	60
2 nd year	180		66			208	246	208	453
3 rd year	900		263			623	1,163	623	1,786
4 th year	1,500		1,250			3,114	2,750	3,114	5,864
5 th year	1,500		2,894			5,191	4,394	5,191	9,585
Total at short term	4,140		4,473			9,135	8,613	9,135	17,748
Total at medium term			2,314	20,379	11,250	60,380	13,564	80,759	94,323
Total at long term			2,314	20,379	11,250	60,380	13,564	80,759	94,323
Total	4,140	0	9,100	40,759	22,500	129,895	35,740	170,654	206,394

Remark: The non reimbursable funds shall come from the state and federal governments budgets, while the funds for financing shall come from the producers themselves.

Funds of approximately 24 millions of Reais per year are considered necessary in order to attain the present activity target.

5.6.4 Program of Financial Support to Reforestation

This Program demands a long implementation period in order to assure a minimum revenue, and it is difficult to promote the concerning activities without governmental support. Therefore, a governmental support structure shall be created for its implementation.

The classification of the financial support type shall be carried out according to the type of activity to be developed: environmental credit or non reimbursable funds. The activities object of governmental support are basically those with good economic feasibility, while the activities with low economic feasibility shall be carried out with non reimbursable funds. The classification of funds for both environmental credit and governmental support is presented as follows.

	Programs
Resources for environmental credit	Silviculture (free distribution of seedlings only at short term) Agro-forestry (free distribution of seedlings up to the medium term) Silvi-pastoral (free distribution of seedlings up to the medium term) Forest Management (the free distribution of seedlings is carried out during the whole period) Prevention against forest fires
Governmental support	Formation of seedlings producers Free distribution of seedlings Environmental conservation activity in permanent reservation areas Strengthening of monitoring activities

The existence of a low interest rate financing for the promotion of investment in the

conservationist activity by the producers is vital.

The basic concept of this Program consists in the preparation of the foundation for the trees cultivation activity implementation, as well as the creation of a financing line with favorable conditions, thus promoting the revitalization of the environmental conservation activities. In order to stir up the trees cultivation activity, the introduction of economically feasible activities is necessary in coordination with the environmental conservation activities, of low economical feasibility. Thus, concerning to the environmental activities financing, the access shall be available not only for the trees cultivation activity but also for the activities that allow the revitalization of industrial activities.

(1) Project Cost

The activities are classified as follows.

- Reforestation activities (Silviculture, Agro-forestry, Silvi-pastoral, Forest Management and Reforestation for the permanent reservation area).
- Activities for the introduction of preventive measures against forest fires.
- Activities for formation and development of natural resources exploitation industry.
- Strengthening of monitoring activities.

The funds sources for the implementation of these activities, based on the nature of each activity, are classified as follows.

Funds Sources by Activity

Funds Sources	Activities	Discrimination of Expenses
Environmental Credit	Reforestation related activities	Cost of seedlings acquisition
	(Reforestation, Agro-forestry, Silvi-pastoral, Forest Management)	Cost of trees cultivation and their maintenance
	Prevention against forest fires	Cost of acquisition of agricultural machinery and facilities
		Cost of pastures preparation (fence and "aceiro")
Governmental Support	Formation of seedlings producers	Complementation of interests concerning to financing
	Implementation of Model Fields	Cost of seedlings nursery installation
	Free distribution of seedlings at the initial stage	Cost of seedlings acquisition (free and paid distribution of seedlings)
	Reforestation related activities (environmental conservation activities in permanent reservation areas)	Cost of trees cultivation and their maintenance (in permanent reservation areas)
	Development of the natural resources exploitation industry	Cost of facilities implementation
	Strengthening of the Monitoring activities	Cost of development and formation of natural resources exploitation industry Cost of monitoring activities execution

The Project cost was calculated based on the targets of each plan, divided into three stages, namely: short term (2005), medium term (2010), and long term (2015). The demand of resources for the execution of this Program is presented as follows.

Necessary Resources for the Environmental Conservation Enterprises

(Unit: \$1,000)

	Short Term		Medium Term		Long Term		TOTAL		Total
	Non Reimburs-able	Environ-mental Credit	Non Reimburs-able	Environ-mental Credit	Non Reimburs-able	Environ-mental Credit	Non Reimburs-able	Environ-mental Credit	

Reforestation Activities									
Seedlings supply system	4,140	0	0	0	0	0	4,140	0	4,140
Seedlings distribution system	4,473	0	2,314	20,379	2,314	20,379	9,100	40,759	49,859
Trees cultivation	8,613	9,135	13,564	80,759	13,564	80,759	35,740	170,654	206,394
Total	17,226	9,135	15,878	101,139	15,878	101,139	48,981	211,413	260,394
Prevention against forest fires				130,018		108,548	0	238,566	238,566
Implementation of Model Fields	40						40	0	40
Promotion of Nat. Resources Exploitation	10						10	0	10
Strengthening of Monitoring			1,000				1,000	0	1,000
Total	17,276	9,135	16,878	231,157	15,878	209,687	50,031	449,979	500,010
Stages	Fase I				Fase II				

As for the procurement of funds, the planning shall be carried out in two phases: Phase I, concerning to short and medium term phases; Phase II for the execution of long term activities.

(2) General Plan of Funds Procurement

The funds for the execution of this Program's activities shall come from several sources. Considering that the procurement of a large amount of funds can not be carried out at a short term, the existing financing lines shall be utilized as well as the state government funds in order to prepare the necessary foundation for the Environmental Conservation Program implementation. The existing agricultural credit system shall be utilized until a mechanism that allow the procurement of new funds is implemented. Among others, we can mention the following utilizable financing systems:

PROSUMAN (Program of Assistance to the Sustainable Environmental Conservation)

PROMICRO (Program of Assistance to Micro-enterprises)

AGREGAR (Financing System to the Aggregation of Income to the Rural Activity)

PRODEX (Program of Assistance to the Natural Resources Exploitation Industry)

At medium and long terms, it is difficult to attain the established targets only with the use of these funds. Therefore, foreign funds shall be searched besides the aforementioned funds. The procurement of foreign funds shall be carried out at the short term, with the elaboration of necessary documents for the application at the international financial institutions. At the initial stage, the procurement of new funds shall be carried out with priority, instead of utilizing the existing financing lines.

5.6.5 Program of Technical Assistance

This Program shall be implemented through a Promotion System, the implementation of Model Farms and the strengthening of the commercialization network.

(1) Implementation of the Promotion System

The technical assistance to the System of Reforestation Promotion shall be conducted through the Committee of Municipal Development, the Seedlings Supply Center, the Model Field, and the concerning institutions. The following table presents the discrimination of activities to be rendered by each institution.

Discrimination of the Assistance to be Rendered	
Municipal Development Committee	Guidance as for the appropriate land for trees cultivation (Forestry Potential Map); Assistance in the elaboration of the land use plan; Method for obtaining the licensing for trees cultivation and for deforestation; Assistance for the procurement of agricultural credit and emission of Aval; Measures for the control of forest fires.
Seedlings Suppliers	Recommendation to the producers about the trees varieties to be cultivated.
Model Field	Recommendation to the producers about the trees varieties to be cultivated; Diffusion about planting methods and trees maintenance methods.

(2) Implementation of Model Fields

With the purpose of promoting the environmental conservation activity in the Study Area, Model Fields shall be implemented in the Cerrado region as well as in the Amazon Forest region. In these Model Fields, existing varieties shall be cultivated as well as new varieties in order to observe the progress of their growth and adaptation. In the Model Field, the reforestation activity shall be carried out with varieties to be adopted in the region.

- Varieties of trees to be introduced (approx. 5 varieties)
- Existing varieties (approx. 5 varieties)
- Fruit trees (approx. 5 varieties: bacuri, mango, avocado, cashew, etc.)
- Palm trees (approx. 5 varieties)

The Model Field activities shall be conducted utilizing the farms of interested farmers living in the surroundings. The demonstration of the trees cultivation activity shall be developed in a Model Field with approximately 20 ha, with a cultivation area of approximately 1 ha for each variety.

Cost Estimate of Execution

	Volume	Unit	Unit Value	Others
Land preparation cost				
Installation of "aceiros"	2	lkm	1,000	2,000
Installation of fence	2	lkm	4,000	8,000
Land preparation for cultivation	20	ha	50	1,000
Trees cultivation cost				
Seedlings acquisition cost	18,000	tree	0,5	9,000
Trees cultivation cost	18,000	tree	0,5	9,000
Trees maintenance cost	4 years	Field / Year	1,800	7,200
Implementation of Facilities				
Administrative area	1	building	4,000	4,000
Total				40,200

Remark: The maintenance cost was calculated based on the minimum wage.

(3) Strengthening of Monitoring Activities

Monitoring is a vital measure in order to make possible the effective sustainable utilization of the natural resources. At present, the appropriate execution of environmental monitoring is been hindered by the precariousness of facilities, as well as lack of human and financial resources. The Tocantins State natural resources are almost depleted due to the lack of appropriate measures which should had been taken in the past. In order to take care of the State's natural resources, the implementation of an appropriate Environmental Monitoring System is necessary. This activity which is also a governmental task shall be developed through the strengthening and promotion of the monitoring activity in regard to the following items.

- Monitoring of forest fires
- Monitoring of industrial activities
- Promotion of UCs (Conservation Units) creation

Activities	Description of Activities
Forest fires monitoring	Research about forest fires Seminars about forest fires prevention Diffusion of the research results Implementation of laboratory equipment and facilities
Industrial activities monitoring	Monitoring of forestry resources Monitoring of land and water resources utilization Implementation of the Integrated Control System Monitoring of the environmental licensing
Promotion of UCs creation	Promotion of research for the development of UCs Seminars for the promotion of UCs in the regions

These activities shall be carried out by the Municipal Development Committee with the cooperation of concerned institutions.

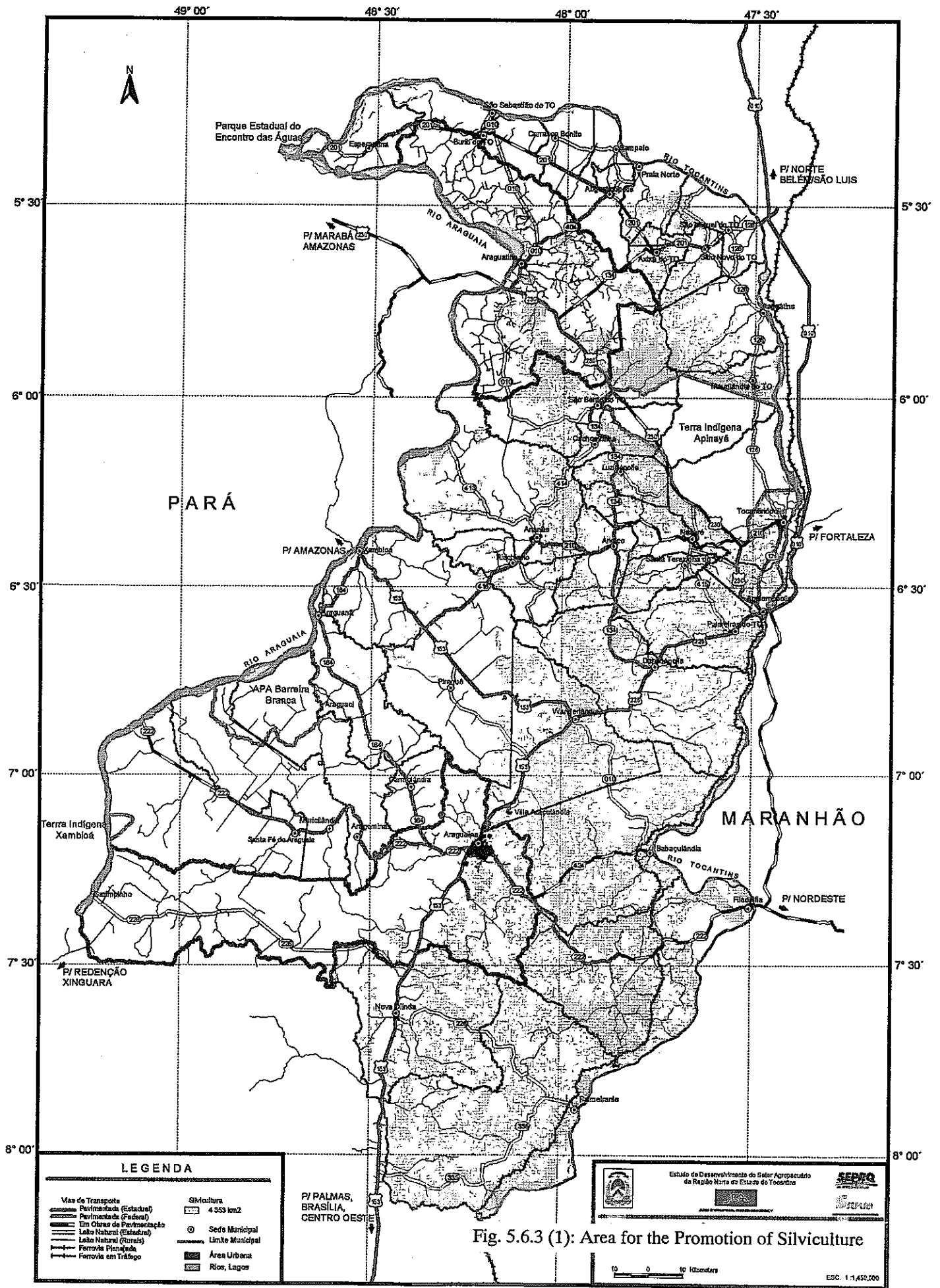
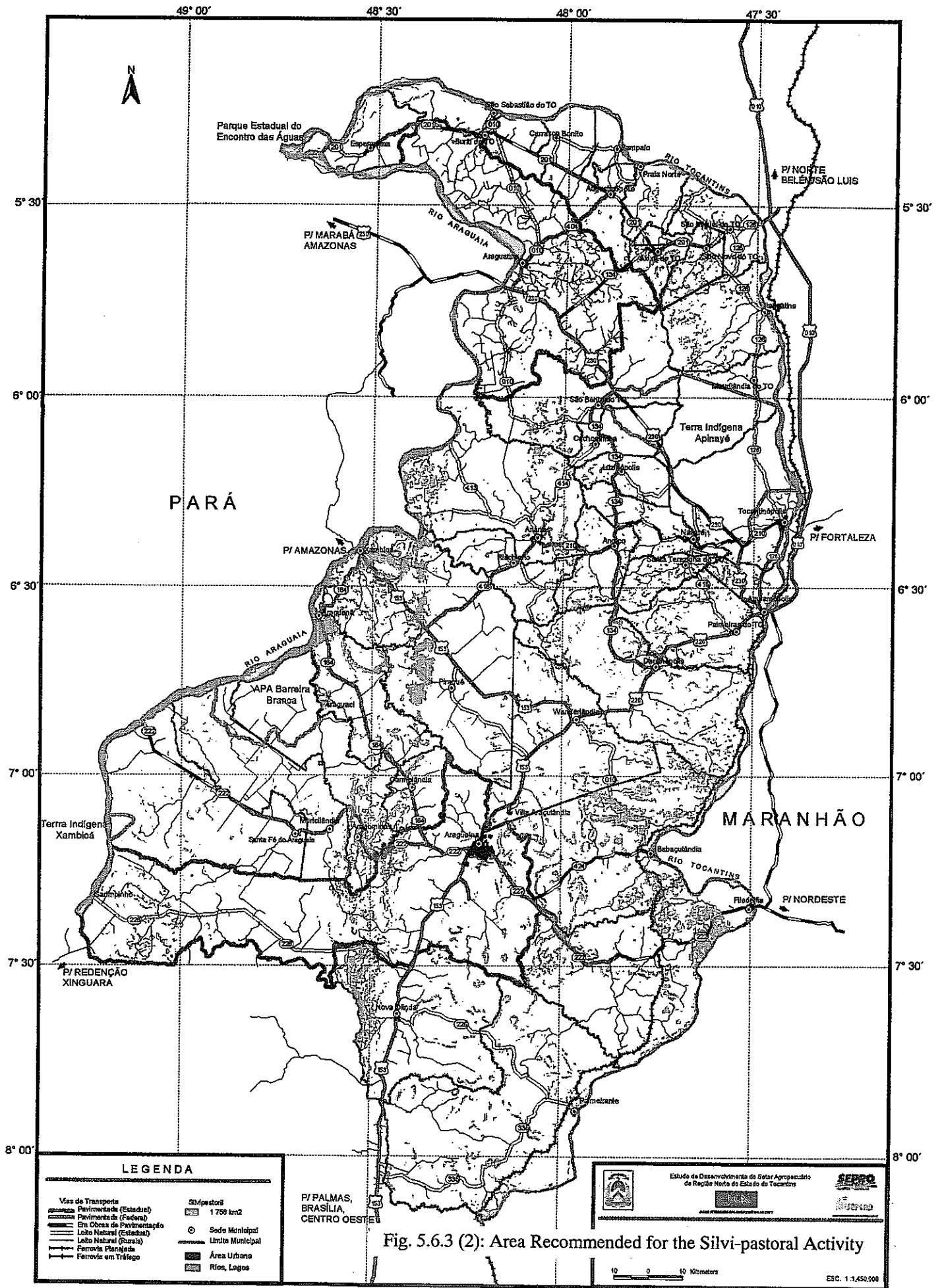


Fig. 5.6.3 (1): Area for the Promotion of Silviculture



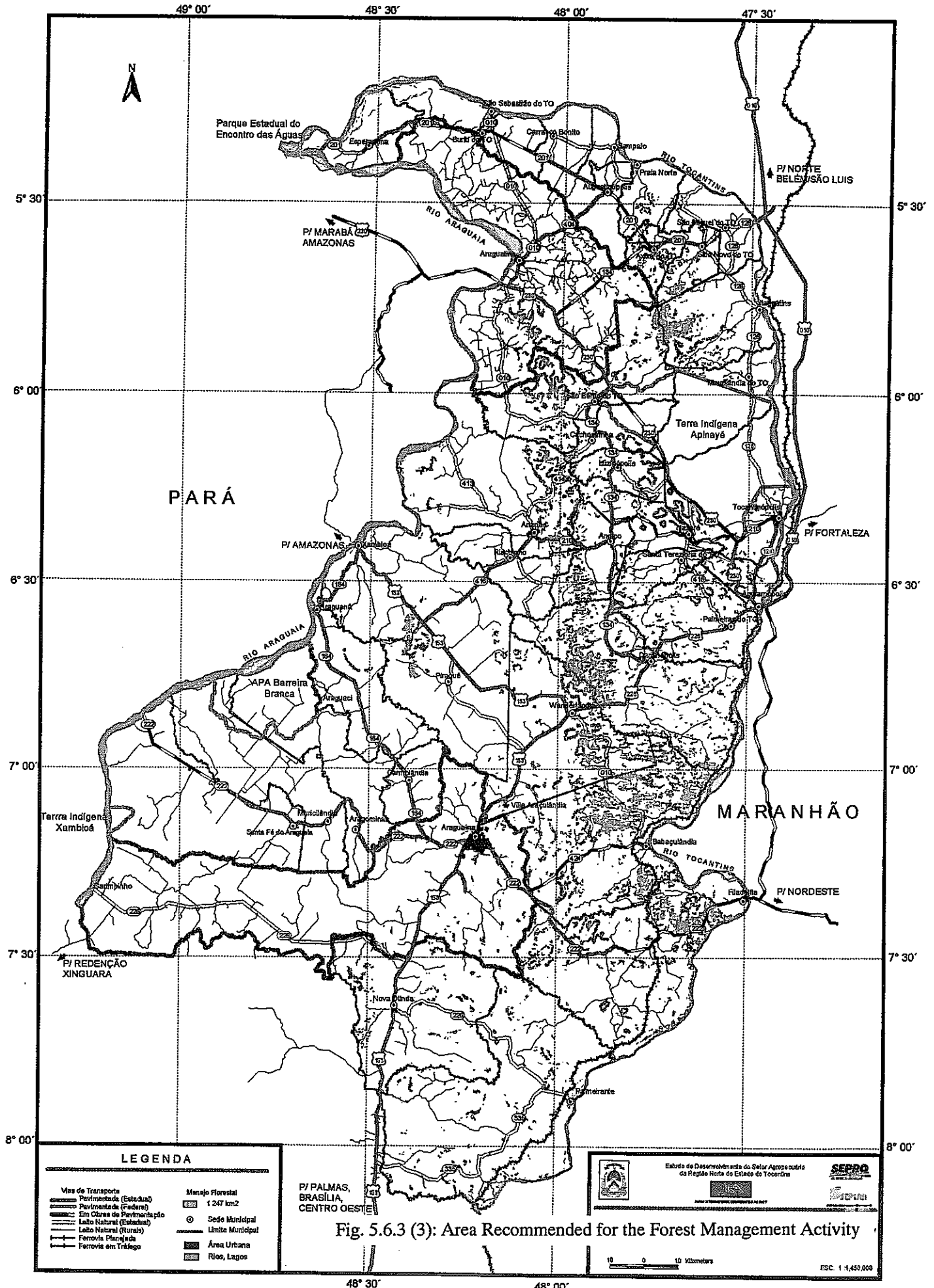


Fig. 5.6.3 (3): Area Recommended for the Forest Management Activity

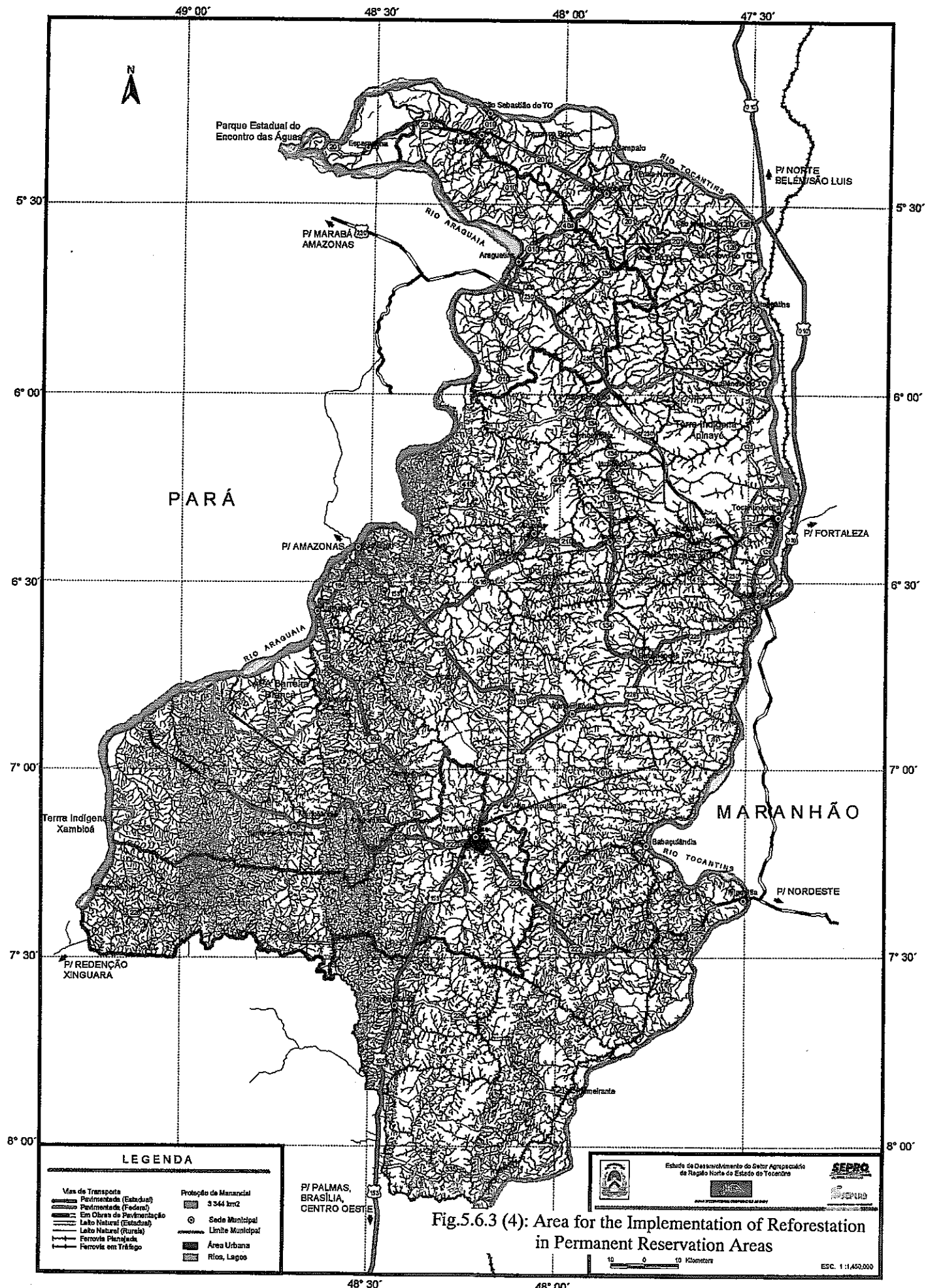


Fig.5.6.3 (4): Area for the Implementation of Reforestation in Permanent Reservation Areas

5.7 Implementation Plan and Cost

The activities included in the present plan, except those with high implementation possibility through federal and state resources such as production infrastructure and commercialization ways programs, shall be implemented through the Northern Region Development Fund, included in the Tocantins State Economic and Social Development Fund.

5.7.1 Implementation Cost

The demand of capital for the execution of enterprises and programs is presented as follows.

Budget of the Agricultural Development Plan in the Northern Region of the State (Unit.: thousand R\$)

	Short	Medium	Longo	Total
Enterprises of the Agricultural Sector				
Introduction of Grains Cultivation	65,802	363,034	807,665	1,236,501
Intensive Cattle Husbandry	44,609	173,810	363,120	581,539
Diversified Agriculture and Livestock Husbandry for Mini-/Small scale Producer	49,581	166,487	287,602	503,670
Sub-Total	159,992	703,330	1,458,388	2,321,710
Portion of Governmental Support	21,971	25,718	16,279	63,969
Agricultural Credit	68,784	322,085	652,453	1,043,322
Producers' Capital	69,236	355,527	789,656	1,214,419
Sub-Total	159,992	703,330	1,458,388	2,321,710
Producers Expenses	138,021	677,612	1,442,109	2,257,741
Program of Technical Assistance	37,823	46,936	26,624	111,383
Program of Subsidy to Agricultural Inputs	21,971	25,718	16,279	63,969
Program of Financial Assistance	14,588	78,237	160,796	253,621
Program of Producers Qualification	7,466	7,466	14,932	29,864
Program of Consulting Services Utilization	3,719	7,545	10,185	21,449
Governmental Expenses	85,567	165,902	228,816	480,285
Cost of Agricultural Sector Enterprises	223,588	843,514	1,670,925	2,738,026
Enterprises of the Environmental Sector				
Enterprises Cost	26,411	248,034	225,564	500,010
Portion of Governmental Support	17,276	16,878	15,878	50,031
Credit	8,222	208,041	188,718	404,981
Producers' Capital	914	23,116	20,969	44,998
Sub-total	26,411	248,034	225,564	500,010
Producers Expenses	9,135	231,157	209,687	449,979
Program of Technical Assistance	40	0	0	40
Program of Subsidies to Inputs	17,276	16,878	15,878	49,991
Program of Financial Assistance	2,960	77,855	142,833	223,648
Program of Consulting Services Utilization	1,012	4,737	7,936	13,684
Governmental Expenses	21,248	99,469	166,646	287,362
Environmental Sector Enterprises	30,383	330,625	376,333	737,341
Development Plan of the Agricultural Sector	253,970	1,174,139	2,047,258	3,475,367
Producers Expenses	147,156	908,768	1,651,796	2,707,720
Governmental Expenses	106,814	265,371	395,462	767,647

Remark: The values are those accumulated during a 5 years period, and the total refers to the necessary values for 15 years.

The demand of capital resources for the plan implementation is of 3,4 billion of Real, until 2015, with the producers participation of around 77.9% and the Government one of around 21.1%. At short term, 7.2% of the Plan shall be implemented.

The producers shall invest in agricultural and environmental sectors enterprises, according to the land use plan, and the Government shall implement the programs to stimulate and conduct

the producers' investment in a proper way aiming at the economy improvement and the environmental conservation.

The programs to be implemented through the Government are those of technical assistance, subsidies, credit and producers qualification. The governmental budget for each program is presented in the following table.

Governmental Budget (Unit: Thousand R\$)

Program	Short	Medium	Longo	Total
A Model Field	8,045	12,408	0	20,453
B Strengthening of Agricultural Technical Assistance	15,379	15,613	15,756	46,748
C Strengthening of Livestock Technical Assistance	14,399	18,915	10,868	44,182
D Strengthening of Agricultural Research				0
E Program of Technical Assistance (E=A+B+C+D)	37,823	46,936	26,624	111,383
F Subsidy to Soil Correction	5,203			5,203
G Agricultural Machinery Companies	12,768	25,718	16,279	54,766
H Acquisition of Buffaloes	4,000			4,000
I Program of Subsidies to Inputs (I=F+G+H)	21,971	25,718	16,279	63,969
Agricultural Credit	39,431	213,584	446,134	446,134
Fundo de Aval	3,943	17,415	23,254	23,254
J1 Cost of Agricultural Credit	13,800	74,754	156,146	244,700
J2 Cost of the Fundo de Aval	788	3,483	4,650	8,921
J Program of Financial Assistance (J=J1+J2)	14,588	78,237	160,796	253,621
K Program of Qualification	7,466	7,466	14,932	29,864
L Program of Consulting Services utilization	3,719	7,545	10,185	21,449
M Total of Enterprises (M=E+I+J+K+L)	85,567	165,902	228,816	480,285
N Trees Cultivation by the Government	17,226	15,878	15,878	48,981
O Model Fields	40			40
P Support to the Natural Resources Exploitation	10			10
Q Strengthening of Monitoring	0	1,000	0	1,000
R Governmental Expenses (R=N+O+P+Q)	17,276	16,878	15,878	50,031
S Capital for Agricultural Credit	8,222	216,263	396,759	
T Capital for the Fundo de Aval	822	21,626	39,675	
U Capital Necessary for Credit (U=T+S)	9,044	237,889	436,434	
V Government Cost for Financial Assistance	2,878	75,692	138,866	217,435
W Government Cost for the Fundo de Aval	82	2,163	3,968	6,212
X Program of Financial Assistance (R=V+W)	2,960	77,855	142,833	223,648
Y Program of Consulting Services utilization	1,012	4,737	7,936	13,684
Z Total Cost of Enterprises (Z=R+X+Y)	21,248	99,469	166,646	287,362
Total (X=V+W)	106,814	265,371	395,462	767,647

Remark: The values are those accumulated during 5 years, and the total corresponds to 15 years. The financial costs are those necessary for the implementation of the agricultural credit, namely subsidies for interest rates, bearing of exchange rate risks and subsidies for the guarantees costs, etc. The necessary values for credit are not included.

The details about the necessary capital for the agricultural sector enterprises are presented in the following table.

Necessary Capital for the Agricultural Sector Enterprises (Unit: thousand R\$)

	Short	Medium	Longo	Total
Introduction of Grains Cultivation				
Soil Preparation	3,019	15,209	30,647	48,875
Soil Correction	5,203	49,291	118,098	172,592
Production Cost	36,300	212,806	550,393	799,499
Machinery	21,280	85,728	108,528	215,536

Sub-Total	65,802	363,034	807,665	1,236,501
Strengthening and Diversification of Livestock Husbandry				
Improvement of Pastures	755	30,324	81,944	113,023
Improvement of Confinement	7,970	115,170	249,022	372,161
Genetic Improvement	4,700	6,694	5,449	16,844
Castration and Dehorning	4,326	7,196	10,445	21,967
Introduction of Buffaloes	8,000	0	0	8,000
Swine husbandry	18,859	14,425	16,260	49,544
Sub-Total	44,609	173,810	363,120	581,539
Production Nucleus				
Production of Grains	18,979	56,937	98,358	174,274
Production of Fruits	6,962	20,886	36,080	63,928
Production of Greenery	22,593	67,778	117,084	207,455
Irrigation System	1,047	20,886	36,080	58,013
Sub-Total	49,581	166,487	287,602	503,670
TOTAL	159,992	703,330	1,458,388	2,321,710

The costs of the environmental sector enterprises are presented as follows.

Enterprises of the Environmental Sector (Unit: thousand R\$)





	Short	Medium	Longo	Total
Reforestation related Activities				
Production and Supply of Seedlings	4,140	0	0	4,140
Distribution of Seedlings	4,473	22,693	22,693	49,859
Cultivation of Trees	17,748	94,323	94,323	206,394
Total	26,361	117,016	117,016	260,394
Prevention of Forest Fires	0	130,018	108,548	238,566
Model Fields	40	0	0	40
Assistance to Natural Resources Exploitation	10	0	0	10
Monitoring	0	1,000	0	1,000
Total	26,411	248,034	225,564	500,010
Governmental Portion	17,276	16,878	15,878	50,031
Agricultural Credit Portion	8,222	208,041	188,718	404,981
Producers' Capital Portion	914	23,116	20,969	44,998
Sub-Total	26,411	248,034	225,564	500,010

5.7.2 Schedule of Plan Implementation

The schedule of plan implementation is presented as follows.

Implementation Program of the Northern Region Agricultural Development Plan

	Short Term				Medium Term				Long Term				After								
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Administrative Plan																					
Constitution of the Northern Region Agricultural Development Committee																					
Constitution of the Agricultural Development Committee in each Municipal District																					
Formulation of the Land Use Plan in each Municipal District																					
Formulation of the Credit Procurement Plan																					
Acquisition of Credit																					
Utilization of Foreign Credit																					
Utilization of Domestic Credit																					
Implementation of the Activity (Northern Region Develop. Committee)																					
Agricultural Activities																					
Introduction of Grains																					
Development of Livestock Husbandry Diversification and Strengthening																					
Development of Production Nucleus																					
Activities of Industrial Processing																					
Preparation of Production Infrastructure																					
Irrigation																					
Roads																					
Rural Electricity																					
Technical Support																					
Model Farms																					
Strengthening of RURALTINS																					
Strengthening of ADAPEC																					
Strengthening of Agricultural Research																					
Program of Support for the Promotion of Producers Associations																					
Program of Support for the Agricultural Inputs																					
Soil Improvement																					
Rental of Agricultural Machinery																					
Introduction of Buffaloes																					
Program of Assistance to Credit																					
Fundo de Aval																					
Assistance for the Formulation of the Production Plan																					
Regional Special Credit																					
Promotion of Conservationist Activity																					
Promotion of Silviculture																					
Information about the Silviculture Promotion Plan in each Municipal District																					
Plan of Seedlings Production																					
Plan of Seedlings Distribution																					
Cultivation Plan																					
Program of Technical Assistance																					
Establishment of the Production System																					
Installation of Model Fields																					
Program of Support to Credit																					
Credit																					
Establishment of the Promotion System																					

-  Execution of Activities by the Producers
-  Preparation of the Assistance in the Plan
-  Application of the Plan
-  Activities beyond the State and Federal Plans

5.7.3 Implementation Methodologies

For the implementation of agricultural and conservation activities, the Government shall give its support through the Direct Programs and indirect expenses, promoting the utilization of the development fund through the following projects:

- Project of funds utilization for agricultural activities;
- Project of funds utilization for conservation activities.

(1) Project of funds utilization for agricultural activities

The project shall be implemented as follows:

- Direct Expenses of the Government; Program of Technical Assistance;
- Government Support; Subsidies to Inputs and Financial Assistance.

a. Implementation Methodologies of the Agricultural Project

The Project shall be subdivided into the following parts for its implementation.

- PART A – Financing to Rotation Capital (A1) and Investment (A2)
- PART B – Machinery (B1), Inputs (B2) and Services (B3)
- PART C – Utilization of Consulting Services
- PART D – Utilization of Government Technical Staff
- PART E – Financial Support (Subsidy to Interest Rates and Cost of the Fundo de Aval)

The subdivision of program is presented as follows:

Program	Implementation Methodology	PART
Program of Technical Assistance		
Model Field (Demonstration)	Assignment of RURALTINS and ADAPEC technical staff	D
	Assignment of Demonstration Committee technical staff	D
	Utilization of Consulting Services	C
	Acquisition of Vehicles	B1
Agricultural Technical Assistance	Habilitation of Offices	B1
	Assignment of RURALTINS technical staff	D
	Training of Producers	B3
	Structuring of Information	B1
Livestock Technical Assistance	Assignment of ADAPEC technical staff	D
	Implementation of Campaigns	B3
	Training of Technical Staff	B3
Strengthening of Research	Assignment of SEPRO technical staff	D
Qualification	Assignment of RURALTINS technical staff	D
	Training of Producers and technical staff	B3
	Seminars	B3
Program of Subsidies to Inputs		
Soil Correction	Lime	B2
Machinery Company	Acquisition of Agricultural Machinery	B1
	Assignment of Staff	D
Promotion of Bubaline Husbandry	Acquisition of buffaloes	B2
	Assignment of ADAPEC technical staff	D
Program of Financial Support		
Support to Projects	Assignment of RURALTINS technical staff	D

Preparation	Assignment of ADAPEC technical staff	D
Utilization of Existing Credit Lines	Assignment of RURALTINS technical staff	D
	Assignment of ADAPEC technical staff	D
Credit System (Medium-/Large-scale Producer)	Credit for Production, Improvement of Pastures and Forage	A1G
	Soil Correction and Land Preparation	A2G
	Acquisition of Machinery	A2G
	Silage and Rotation	A2G
(Small-/Mini-scale Producer)	Agricultural Production Cost	A1P
	Cost of Pastures Cultivation	A1P
	Agricultural Equipment and Transportation	A2P
	Installation of grinding machinery and Choppers	A2P
	Corral and Facilities	A2P
	Equipment for Dairy Products Plant	A2P
	Land preparation	A2P
	Irrigation Systems	A2P
	Communitarian Equipment	A2C
Fundo de Aval	Capital Cost	E
	Assignment of Technical Staff	D
	Assignment of Technical Staff	D

Remark: G; Large, P; Small, C; Communitarian

According to the classification, the project shall be subdivided into 3 parts presented as follows.

PART	Contents
PART A (Agricultural Credit)	Credit to Producers
A1 (Rotation Capital)	Producers
A2 (Investment Capital)	Producers
PART B (Investment by the Government)	
B1 (Acquisition of Equipment)	Acquisition of Vehicles and Equipment Acquisition of Buffaloes Habilitation of Offices Acquisition of Computing Equipment
B2 (Acquisition of Inputs)	Acquisition of Lime
B3 (Acquisition of Services Goods)	Qualification of Producers Qualification of Technical Staff Seminars Campaigns
PART C (Consulting Services)	
C1 (Support)	Support to Model Fields Elaboration of Land Use Plans
C2 (Support to Credit)	Support to Credit Implementation Recommendations of credits utilization to producers Efficient operation of project
PART D (Government Technical Staff)	Assignment of ADAPEC technical staff Assignment of RURALTINS technical staff Assignment of SEPRO technical staff Assignment of Development Committee technical staff
PART E (Financial Support)	Cost of the Fundo de Aval Cost of Financing

The Part A corresponds to the implementation of agricultural credit to stimulate investment in agricultural sector enterprises, and the loaners are the producers. In the credit implementation, the credit conditions shall be different for the medium-/large-scale beneficiaries and the mini-/small-scale ones. The eligible items for the agricultural credit are the rotation capital and investment.

The Part B corresponds to the implementation through government resources such as public

investment, such as the purchase of material, machinery and service goods through bidding process. In case of service goods acquisition, the participation of governmental and non-governmental organizations shall be recommended.

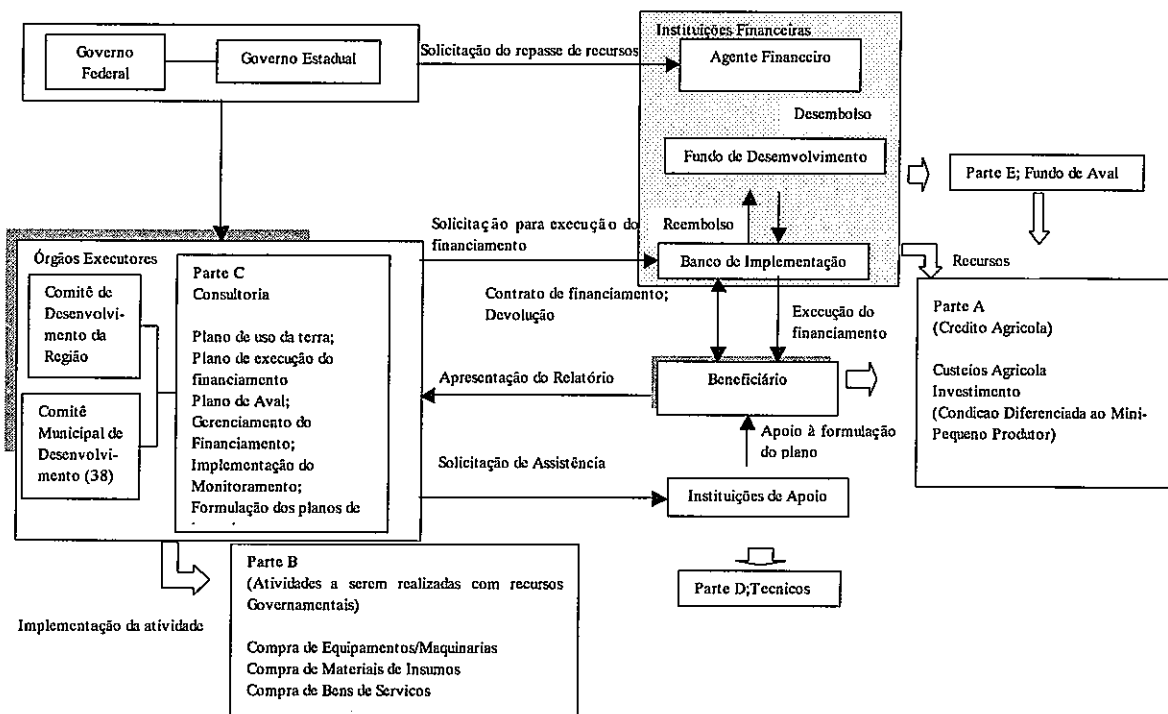
The Part C corresponds to the support to project coordination in order they are implemented in an efficient way, with support and operational activities in the model fields, elaboration of land use plans and implementation of agricultural credit.

The Part D corresponds to the activities to be carried out by the State technical staff such as from RURALTINS, ADAPEC and SEPRO.

The Part E corresponds to supporting actions to the agricultural credit activities, through the subsidy to interest rates, to exchange rate risks and to financial cost of the guarantees substitution.

b. Structure for Implementation

This Program shall be conducted according the following proposed structure.



c. Plan of Funds Procurement

The necessary funds for the Project implementation are as follows.

Demand of Funds for the Project Implementation (un.= R\$ 1,000)

Project	Short	Medium	Long	Total
Part A: Agricultural Credit	68,784	322,085	652,453	1,043,322
A1 (Production Costs)	44,031	137,092	288,498	469,621
A2 (Investment)	24,754	184,992	363,955	573,701
Part B: Public Investment	44,339	49,844	43,711	137,895
B1 (Machinery Acquisition)	13,748	26,098	16,659	56,506
B2 (Inputs Acquisition)	16,803	7,600	7,600	32,003

B3 (Service Goods Acquisition)	13,788	16,146	19,452	49,386
Part C: Consulting Services	3,719	7,545	10,185	21,449
Part D: Government Technical Staff	22,921	30,276	14,124	67,321
Part E: Financial Support	14,588	78,237	160,796	253,621
Total	154,351	487,987	881,269	1,523,607

(2) Environmental Conservation Project

This activity consists in the introduction of new projects, without no antecedent similar projects, for the environment recuperation. These activities present little financial return but are useful for the accomplishment of the environmental laws established by the Federal Government. These activities shall be executed not only with the Federal Government support but also with the support of environmental and research organizations. Through this activity, ways to procure public funds are searched.

As for the environmental credit, besides searching for low interest rates financing, the improvement of these investment utilization efficiency with the implementation of efficient technical assistance services is also expected. Also, a work to raise the awareness of producers about the importance of introduction of environmental conservation activities is also intended.

As for technical assistance, the increase of this activity efficiency is intended, searching for the participation of not only RURALTINS and SEPRO, but also of institutions such as EMBRAPA, UNITINS, and NGOs.

a. Measures for the Activities Implementation

In order to make possible the execution of plans, the activities to be carried out in Phase I are divided into 3 parts, namely: Agricultural Credit, Governmental Support, and Consulting Services.

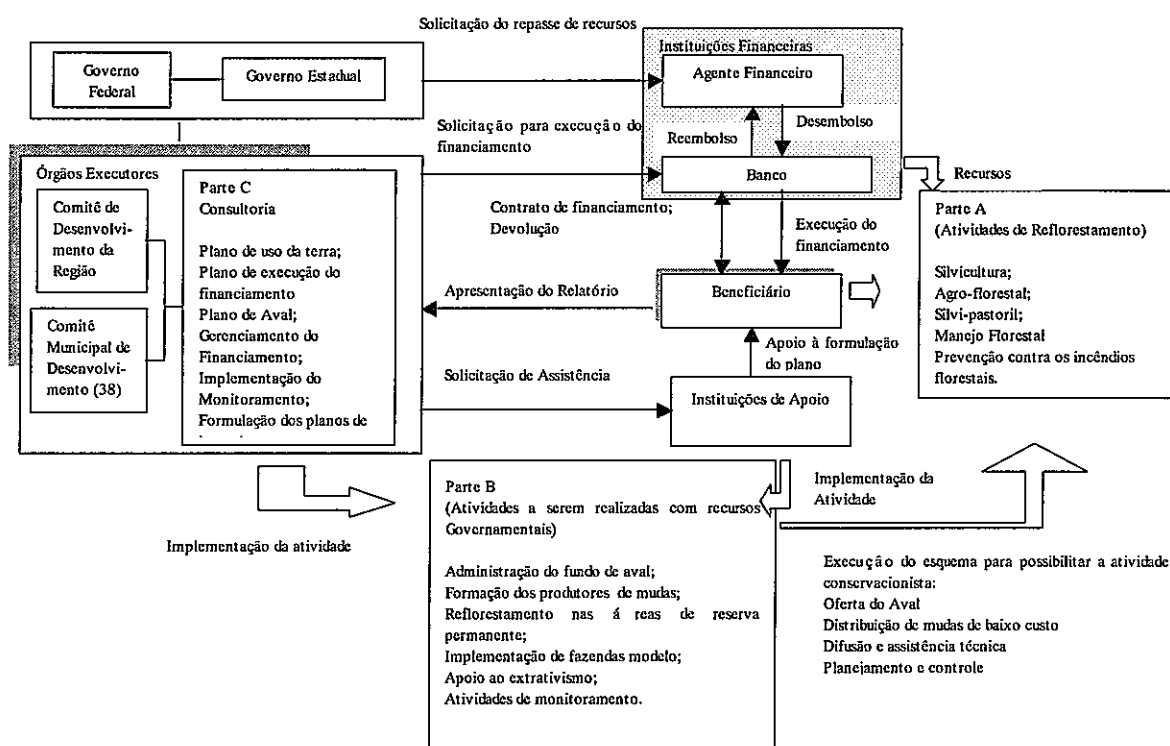
PART	CONTENTS
Part A (Environmental Credit)	Financing to Producers
A1 (Cultivation of Trees)	Cost of seedlings acquisition; Cost of cultivation (fertilizer, labor force, machinery, etc.); Maintenance growth until the trees growth.
A2 (Agricultural Machinery and Facilities)	Acquisition of agricultural machinery; Acquisition of facilities.
A3 (Fences and "Aceiros")	Installation of fences and "aceiros".
Part B (Governmental Support)	Necessary Facilities
B1 (Installation of Nurseries)	Distribution of seedlings at the short term;
B2 (Distribution of Seedlings)	Distribution of seedlings at the medium term (Silvi-Pastoral activity, Forest Management).
B3 (Reforestation in permanent reservation areas)	Costs related to seedlings and their cultivation.
B4 (Implementation of model farms)	Implementation cost of model farms (cultivation, installation of fences and "aceiros", construction of the administrative area, etc.).
B5 (Support to the Natural Resources Exploitation)	Support to the associations related to the natural resources exploitation industry and remodeling of existing facilities.
B6 (Strengthening of Monitoring)	Monitoring of forest fires and environment; Implementation of UCs.
Part C (Consulting Services)	
C1 (Formulation of the Land Use Plan)	Formulation of the most appropriate land use plan.
C2 (Financing Management)	Financing management; Presentation of proposals related to the utilization of funds destined to the producers; Implementation of activities in a smooth manner.

PART	CONTENTS
C3 (Implementation of Environmental Monitoring)	Implementation of the environmental monitoring execution scheme; Guidance as for environmental monitoring.

The Part A consists in the development of the financing scheme for the implementation of environmental conservation activities, which shall be carried out with the producers' own resources. The Part B corresponds to the activities to be implemented as public utility activities, and which shall be carried out with the state and federal governments resources. The Part C concerns to services which shall be carried out for the smooth progress of activities.

b. Structure for the Activities implementation

This Program shall be conducted according to the following proposed structure.



Part A shall be carried out adopting the two-step loan financing system. Considering that the financial return of investment in the environment sector is very low, means shall be searched in order to make viable a credit line with good financing conditions. The financing executing agency shall be a bank due to the fact that this is a two-step-loan. In this case, the Development Committee of the Northern Region shall act as the coordinating agency, managing the application of funds. Mechanisms shall be created in order to allow the transference of funds to the beneficiary in the best possible conditions, and at the same time efforts shall be made to strengthen the technical assistance structure in order to increase the investment efficiency. As for the aforementioned mechanisms, see the Funds Procurement Plan.

Considering that the Part B is concerned to the implementation of activities with

governmental funds, the activities shall be carried out by the government. The proportion of governmental funds in Part A is considerably high, thus efforts shall be made in order to procure foreign funds for the Part B, the same being true for part C.

c. **Plan of Funds Procurement in Phase I**

The funds demand in Phase I is presented in the following table. The Plan shall be formulated in order to fulfill the presented demand

Funds Demand for the Implementation of the Environmental Conservation Program in Phase I (unit = R\$ 1,000)

	Non reimbursable	Financing	Total
Activities of trees cultivation			
Seedlings supply system	4,140	0	4,140
Seedlings distribution system	6,787	20,379	27,166
Plan of trees cultivation	22,177	89,895	112,071
Total	33,103	110,274	143,377
Activity of prevention against forest fires	0	130,018	130,018
Implementation of model farms	40	0	40
Promotion of natural resources exploitation activity	10	0	10
Strengthening of monitoring	1,000	0	1,000
Total	34,153	240,292	274,445

Basically, the Phase I funds shall be composed as follows: 60% of Foreign funds and 40% of State Government funds. The measures to be taken are as follows:

Procurement of Foreign funds with low interest rates;

Implementation of low interest rates financing through a Credit Program with good financing conditions (FNO resources) through the compensation of interest rates over the agricultural credit (difference of values between the current interest rates and the interest rates of the present Program);

Implementation of mechanisms that aim at the reduction of capital cost, transferring the responsibility on exchange rate risks to the Foreign funds;

As for the capital costs, the current interest rates shall also be object of a study aiming at the reduction of banking costs, through the implementation of the financing activities in an efficient manner;

Promotion of the domestic resources (from Brazil) utilization as much as possible.

The composition of the financing program costs is presented as follows:

Financing to Producers (90% of the production cost);

Producer own resources (10% of the producer investment);

Compensation of interest rates related to agricultural credit (estimate: approximately 2.5% in the payment period);

Costs of exchange rates risks (equivalent to 5% of the Foreign funds);

Administrative costs (equivalent to 10% of the Financing value to the producers);

Cost related to technical assistance (equivalent to 15% of the Financing value to the producers);

Other capital costs (equivalent to 5% of the Foreign funds).

The necessary funds for the environmental credit are expected to be as follows:

Demand of Resources for the Implementation of the Environmental Conservation Program – Phase I (Unit: R\$ 1,000)

	Environmental Credit	Producer own Resources	Government Funds (A)	Government Funds (B)	Total
Demand of resources for environmental credit	216,263	24,029		240,292	216,263
Compensation of interest rates for the environmental credit			5,407	5,407	
Cost of exchange rates risks			10,813	10,813	
Administrative costs			21,626	21,626	
Technical assistance costs			32,439	32,439	
Other costs			10,813	10,813	
Total of Environmental Credit part	216,263	24,029	81,099	321,391	216,263
Cost of governmental support			26,298	26,298	
Sub-total	216,263	24,029	107,397	347,689	216,263
Cost of consulting services			13,908	13,908	
Total	216,263	24,029	121,304	361,596	216,263
	60%	7%			100%

From the aforementioned resources, those regarding to environmental credit and governmental funds (B) shall become available through the procurement of foreign funds, while the own resources shall be borne by the producers themselves. As for the government resources (A) which are part of its budget, this shall be included in the budget, in each fiscal year, and according to the Program progress.

d. Methodology of Environmental Credit Implementation

The environmental resources shall come from foreign funds with the utilization of the *two-step-loan* system.

e. Others

The other resources are as follows:

Incentive to the Silvi-pastoral activity: Introduction of buffaloes in pastures which are not edible by the bovine cattle. Exemption of ICMS, at long term, for meat bovine cattle.

Incentive to the Agro-forestry activity: Total support, at long term, to costs for the improvement of soil quality for agriculture in Forest areas.

Incentive for the Forest Management activity: This is an activity without investment return. Therefore, the producers that attain the permanent conservation area shall be permanently exempt from the ICMS

Incentive through long term financing with low interest rates: Considering that the conservation activity generally has a low return, a priority special system within the basic development resources shall be implemented.

5.7.4 Implementation Schedule

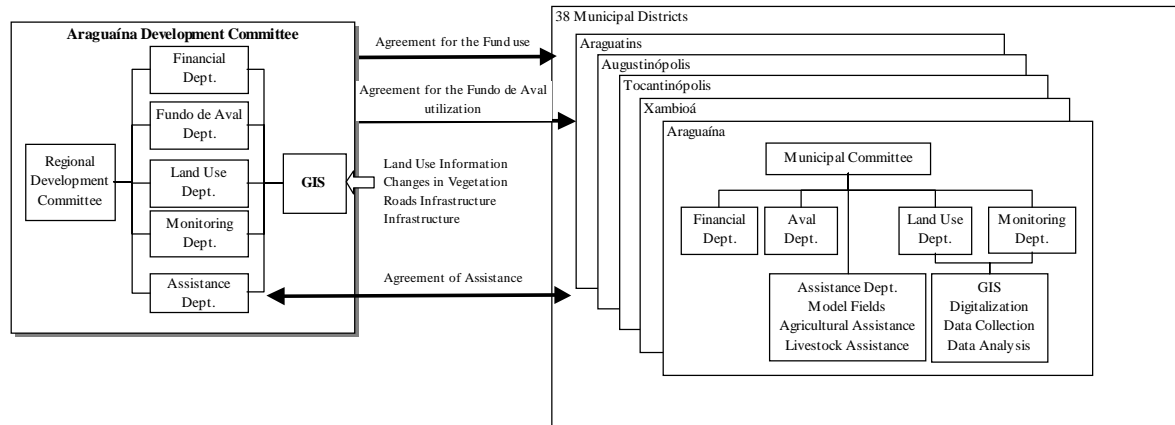
The Study Area has 37,000 km², being a large area with different natural conditions, land use

and future land use expectation. Therefore, it is necessary to establish a development and land use plan taking into consideration factors such as natural and social conditions, commercialization ways, market, applicable technologies and credit policies, in order to guide the project in an efficient and continuous way.

In this Plan, the organisms which shall control the information and formulate the investment plan detailed in this report shall be established, besides those to supply technical and financial support. At the same time, associations shall be created in each municipal district, a land use plan shall be formulated for each municipal district, as well as financial support shall be supplied according to the requirements of each association, thus propitiating the development.

The implementation of projects according to the land use plan shall be carried out by utilizing the Development Fund, and credit and financial support shall be carried out by means of the Fundo de Aval utilization.

A development Committee shall be established in two levels: the regional level and the municipal level.



(1) Development Committee

When taking the decisions about the guidelines on investment and appropriate methodologies for the region development, the following organization charts shall be established:

Agricultural Development Committee of Tocantins State Northern Region

Municipal Agricultural Development Committee

a. Agricultural Development Committee of Tocantins State Northern Region

In order to implement the project in an efficient manner, it is necessary to establish an organization chart capable of absorbing the strength of the relevant organizations. For this purpose, the “Agricultural Development Committee of Tocantins State Northern Region” formed by a representative of SEPRO, SEPLAN, ADAPEC, RURALTINS, NATURATINS, UEP and UNITINS, shall be established having as president the Secretary of SEPRO. The Committee’s attributions are as follows:

- Coordination of the development plans formulations;
- Elaboration of land use guidelines;

Training and Support to the Municipal Development Committee;
Procurement of Funds for development and elaboration of their utilization plans;
Administration of the Programs of Technical Assistance, Subsidy to Inputs and Support to Associations.

The Committee's headquarters shall be in the municipal district of Araguaína, having the same composition previously described and having as president the regional chief of SEPRO. The Committee's attributions are as follows:

Remittal of support institutions requests as for the projects implementation.
Suggestion to the Regional Committee as for the development plans;
Establishment of demonstration fields and the respective support structure;
Reception of consultations and recommendations as for the appropriate technology for the new participants;
Elaboration of technical assistance plans;
Suggestion in the structuring of infrastructure;
Meetings with the FUNDES for the implementation of credit to the producers;
Others.

b. Municipal Committee of Agricultural Development

The Municipal Development Committees shall be organized, formed by the chief of the agricultural department of the municipal government, local staff of RURALTINS, ADAPEC and by the producers' representative, having as president the mayor of each municipal district.

The committee headquarters shall be at the agricultural department, and it shall develop its activities together with the representatives of the Agricultural Development Commission of Tocantins State Northern Region.

The Municipal Committee shall carry out the following activities:

Development Promotion at the municipal level;
Formulation of land use plans;
Support in the utilization of financing;
Support as technical assistance and to the Associations;
Support to the Model Fields (Demonstration).

The development committees besides orienting shall be fully informed about the Fundo de Aval of FUNDES for its recommendation to the high potential producers and associations.

5.7.5 Development Fund

(1) Development Fund

Utilizing the FUNDES (Fund of Economic and Social Development) put in force through the State Decree no 1197, published in December 13 of 2000, the following activities shall be carried out:

Establishment of the Fundo de Aval and start of procedures for the utilization of federal resources and of the FNO;

Establishment of specific credit lines for the Tocantins Northern region in order to complement the resources that can not be covered with federal and FNO resources.

Implementation of subsidies for the purchase of lime for soils correction.

Establishment of the Agricultural Machinery Company.

Implementation of credit.

(2) Methodologies of Funds Procurement

The implementation of credit shall be carried out through a contract with the bank. The FUNDES resources come from the State budget and from foreign financing. The activities to be carried out are the establishment of the Fundo de Aval, establishment of specific credit lines for the region, and investment for necessary programs. The origin of the resources is presented as follows.

Foreign Financing and Donations;

ICMS: increased by the Project implementation;

Other resources;

Reimbursed resources;

Interest rates from the Fund.

(3) Necessary Resources

The necessary resources for the Project implementation are as follows.

Necessary Resources (Unit: Thousand R\$)

	Short	Medium	Long	Total
Agricultural Sector				
Government Cost	85,567	165,902	228,816	480,285
Resources for Credit	33,560	237,164	608,994	608,994
Resources for the Fundo de Aval	3,356	23,716	60,899	60,899
Total	122,483	426,783	898,710	1,150,178
Environmental Conservation				
Government Cost	21,248	99,469	166,646	287,362
Resources for Credit	8,222	216,263	396,759	396,759
Resources for the Fundo de Aval	822	21,626	39,675	39,675
Total	30,291	337,357	603,080	723,797
Fund				
Government Cost	106,814	265,371	395,462	767,647
Resources for Credit	41,782	453,427	1,005,753	1,005,753
Resources for the Fundo de Aval	4,178	45,342	100,574	100,574
Total	152,774	764,140	1,501,790	1,873,975

Remark: the reduction of costs at long term is expected by the arrival of the private sector with credit for inputs, machinery and facilities.

5.8 Project Evaluation

5.8.1 Evaluation Methodology

The present study proposes 3 enterprises: 1) Enterprises related to the Agriculture and Livestock Husbandry, 2) Processing of Agricultural Products, and 3) Environmental Conservation. It also proposes 3 programs which aim at the improvement of investment conditions: 1) Program related to Technical Assistance, 2) Program related to Production

Inputs, and 3) Program of Financial Assistance.

The 3 governmental programs for the improvement of producers' investment conditions aim at promoting the intensification of agriculture and conservationist enterprises. The present plan aims at transforming extensive pasture areas into intensive pasture, utilizing only appropriate land for agriculture, with the objective of attaining a land use in accordance with the environmental standards demanded by the Amazônia Legal region. The final goal is to attain an intensive agriculture, fulfilling the demanded environmental standards, promoting a sustainable development that supports the improvement of the locals' life conditions.

The plan is based on the improvement of the producers' cultivation method, without what the execution of conservation enterprises shall be difficult. Thus, from this point of view, the projects evaluation aims at verifying quantitatively and qualitatively the socio-economic impacts on the Tocantins State northern region caused by the execution of agricultural enterprises. In actual terms, the following procedures shall be carried out:

The quantitative evaluation shall be carried out in general and by enterprise. At this point, the general cost of the enterprises shall be taken into consideration. However, in regard to the production value, only the cost generated by the agricultural sector without considering the environmental portion shall be taken into consideration;

The economic effects in case all the enterprises are carried out at the same time shall be evaluated;

The economic possibility of execution, at the producer level, of each enterprise independently shall be evaluated;

In regard to the programs, what are the improvement points and what favorable factors should be generated by these points shall be qualitatively analyzed;

The indirect qualitative effects such as the environmental improvement and the alleviation of the social differences shall be evaluated when the goals are attained;

Conjointly analysis: the problems created in case the enterprises are carried out separately shall be qualitatively evaluated.

In the quantitative evaluation, the investment efficiency shall be evaluated in order to appraise their validity in relation to the enterprises.

If we take into consideration the environmental standards, these would only be attained in 2035. However, the analysis shall only be carried out considering that the enterprises would be executed according to the planning and that after 2015, which is this study target year, continuous investment would be carried out in order to attain the demanded environmental standards. The creation of benefits shall also be considered.

5.8.2 Quantitative Evaluation

(1) Evaluation Conditions

The present project shall be evaluated as a whole. The cost utilized in the evaluation shall be the sum of the producers' resources plus the government resources for the 3 enterprises and 3 programs. The benefits would be the increase of production after the execution of agricultural enterprises. The quantitative economic analysis shall be carried out through the evaluation of the costs/benefits generated by this production.

(2) General Evaluation of the Plan

The general cost/benefit relationship is presented as follows:

Enterprise Cost/Benefit (unit: thousand Reais)

	Current	Short Term	Medium Term	Long Term	Accumulated
Cost (1)		246,504	1,166,673	2,032,326	3,431,820
Producer Portion		147,156	908,768	1,651,796	2,707,720
Government Portion		99,348	257,905	380,530	737,783
Benefit (2)					
Production Value Estimate	875,142	1,483,193	2,752,558	4,715,818	8,951,569
Production Value through the Enterprise Execution		608,051	1,877,416	3,840,676	6,326,144
Production Increase during the Period		608,051	1,269,365	1,963,260	3,840,676
Accumulated Value of Production		608,051	2,485,468	6,326,144	9,419,663
Investment Efficiency ((2)/(1))		2.47	1.61	1.89	1.84

Remark: The current agricultural production value in the region was estimated through the number of cattle heads and the agricultural production in 2000.

As observed in the cost/benefit table, the benefit already surpasses the cost showing the high economic potential. This means that the improvement of cultivation conditions would be viable even with a land use regulated by the environmental laws of the Amazônia Legal region.

The effects of the agricultural production increase can properly refund the costs that include the conservationist enterprises. Great results are supposed to be possible if there is governmental financial and technological assistance.

(3) Results of the Economic Analysis of Each Cultivation Method

The cost/benefit comparison for each cultivation method is presented as follows. The higher investment efficiency is observed in the livestock husbandry sector, where a great improvement is expected through the transformation of the current extensive cattle husbandry into intensive cattle husbandry. However, this is possible only through the introduction of grains cultivation and investment in the property.

The same can be said in regard to the investment efficiency for the mini- and small-scale producers. The introduction of necessary technology and inputs for the production would allow a great improvement in the cultivation method. The investment efficiency for each enterprise is presented as follows.

	Short Term	Medium Term	Long Term	Accumulated
Introduction of Grains				
Increase of Production Value	71,006	414,526	1,081,320	1,566,852
Investment Cost	65,802	363,034	807,665	1,236,501
Investment Efficiency	1.08	1.14	1.34	1.27
Livestock Husbandry Diversification				
Increase of Production Value	285,978	798,918	906,116	1,991,013
Investment Cost	44,609	173,810	363,120	581,539
Investment Efficiency	6.41	4.60	2.50	3.42
Production Nucleus (Mini-/Small-scale Producer)				
Increase of Production Value	251,068	377,994	768,343	1,397,405
Investment Cost	49,581	166,487	287,602	503,670
Investment Efficiency	5.06	2.27	2.67	2.77

The reasons for the stagnation of the agricultural sector in the region are mainly related to the lack of financial resources and to market problems. However, with the transportation improvement, there is an improvement regarding to market. From now on, the improvement of financial resources and technology issues is necessary. Thus, the attainment of the previously presented investment efficiency is expected to be possible.

5.8.3 Qualitative Evaluation

At first, the governmental portion shall be executed so that there is assistance for the enterprises' execution. Although the programs are vital for the enterprises' execution, the effects of the possibility of the programs being partially not executed shall be analyzed. Besides, the socio-economic results of the enterprises' execution shall also be analyzed.

(1) Results of the Programs Execution

a. Program Related to Technical Assistance

The results in case the program related to technical assistance is not executed are as follows;

Item	Direct Results	Indirect Results
Establishment of Model Farms (Demonstration)	Delay in the introduction of intensive agriculture; Insufficiency of proper technology; Impossibility of demonstrating a proper cultivation method to the local producers.	Difficulty in introducing a sustainable agriculture; Difficulty in diffusing the intensive agriculture in the region; Lack of investment.
Strengthening of Agricultural Extension	The producers will not have technical assistance; Difficulty in forming specialists in regional agriculture; Technical information will not reach the producers.	Difficulty in the execution of banking credit; Stagnation of the regional agricultural technology; Difficulty in transferring information.
Strengthening of Livestock Husbandry Extension	Difficulty in introducing bubaline husbandry; The upgrade of production quality and quantity will not be possible.	Difficulty in creating a typical agriculture; Stagnation of the economy without the improvement of livestock husbandry.
Strengthening of Agricultural Research	Impossibility of developing an appropriate agricultural technology; Impossibility in developing a sustainable agriculture.	The region's agricultural sector won't be activated.

b. Program of Assistance to Production Inputs

The results in case the program related to assistance to production inputs is not executed are as follows;

Item	Direct Results	Indirect Results
Support to soils improvement	Delay in the introduction of grains production; Reduction in the number of participants; Changes in the current condition of agriculture and livestock husbandry.	The grains production would not be introduced, thus the intensive livestock husbandry would also not be introduced, at last hindering the attainment of the required environmental standards; Delay in the activation of the regional economy.
Support in the agricultural mechanization	Delay in the introduction of grains production; Reduction of the participants number.	Delay in the introduction of grains hindering the attainment of the required environmental standards.
Promotion of bubaline husbandry	Not introduction of bubaline husbandry; Difficulty in the formation of the region's typical products; Difficulty in the economic improvement of mini- and small-scale producers; The livestock husbandry conditions would not change.	Difficulty in the reduction of income differences; Delay in the regional economy activation; Reduction of the regional employment level; Difficulty in introducing the integrated swine husbandry.

c. Program Related to Financial Assistance

The results in case the program related to financial assistance is not executed are as follows;

Item	Direct Results	Indirect Results
Assistance in the elaboration of cultivation plans for the producers	Difficulty in the procurement of credit by the producer.	Impossibility of executing the planed enterprise.
Promotion of the existing credit lines utilization	The governmental credit lines would not be utilized.	Impossibility of supplying financial resources at the short term.
Establishment of special credit lines for the region	Difficulty in supplying necessary resources to the producers; Reduction in the number of enterprises' participants due to the necessity of executing such enterprises with ordinary resources.	Conservationist enterprises would not be carried out; Maintenance of the current condition.
Establishment of a system of guarantees	Difficulty of the producers in procuring funds.	Increase of the number of producers without necessary resources for the enterprise, becoming unable to carry it out.

The establishment of a special credit system for the region and a system of guarantees for the credit would be essential for the enterprises' execution.

(2) Results of the Enterprises Execution

The execution of the aforementioned programs shall result in the following.

Enterprise	Economic Benefits Estimate	
	Contents	Quantitative Benefits (2015)
Agricultural Sector Enterprises	Activation of the regional economy with the acquisition of production inputs.	Production inputs such as machinery, material for soil improvement, fertilizer, agro-chemicals, etc. (approximately 300,000 ha of grains' production).
	Activation of economy through the production commercialization.	Grains and livestock products.
	Increase of employment opportunities in the commercialization sector.	Transportation of grains and meat processing.
	Activation of the financial sector.	Execution of agricultural and environmental credit (estimate: R\$ 5,500,000,000); Commercialization of products.
Introduction of	Increase of grains production.	Grains (1,100,000 t)

grains in extensive pastures	Improvement of pastures for the introduction of intensive cattle husbandry.	Improved pasture (200,000 ha)
	Arrival of poultry and swine integration firms.	
	Increase in the commerce of agricultural machinery and inputs.	Acquisition of approximately 350 sets of agricultural machinery.
Introduction of Intensive Agriculture	Increase of livestock husbandry production.	Meat (approx. 270,000 t) Milk (approx. 200,000 m ³)
	Typical products of the region.	Buffaloes products (mozzarella, etc.)
	Construction of the foundation for the agricultural products processing sector.	Processing of milk, meat, fruits, etc.
Production Nucleus	Increase of the grains, fruits and greenery production.	Production of pineapple, banana, passion fruit and cashew.
	Improvement of commercialization.	Fruits for exportation.
	Increase of employment posts.	Production of Grains: 47,000 ha Production of Fruits: 6,000 ha Production of Cassava: 19,000 ha
	Raising the life standards of the less privileged producers.	Increase of the minimum income level from 0.5 minimum wages to 3.0 minimum wages.
	Activation of commercialization through the acquisition of inputs.	Approx. R\$ 300,000,000
		Increase of participants' income and expansion of grains market.
Processing of Agricultural Products	Increase of employment opportunities.	Dairy products, tomato processing factory, meat processing factory.
	Typical Products of the Region.	Buffalo milk deriving products.
Conservation Enterprises	Production of wood.	Possibility of timbering 6,000 ha/year.
	Increase of the conservation area.	Attainment of 40% of the standards demanded by the environmental laws of the Amazônia Legal region.

5.9 Environmental Impact Assessment

This Program aims at fulfilling the environmental rules established about the land use in the Amazônia Legal region, and at the same time searches for the economy revitalization and the correction of regional differences. With this Program execution, the intensive land use is expected through the introduction of intensive agricultural management methods, fulfilling the environmental rules regarding to the land use in the Amazônia Legal region, also promoting improvements in the agricultural management system of the producers.

In order to identify the possible existence of a negative impact on the Environment, the Preliminary Environmental Assessment shall be carried out. Currently in Brazil there are only rules for the Environmental Impact Assessment (EIA). However, due to the inexistence of rules for the Initial/Preliminary Environmental Assessment, the rules for the Environmental Impact Assessment (EIA) were taken into consideration. The Initial/Preliminary Environmental Evaluation (IEE) was then carried out based on the JICA's "Guide for the environmental consideration in regard to Research for the Agricultural Development".

5.9.1 Methods for the Preliminary Environmental Evaluation (IEE)

The items to be evaluated by the Method of Initial/Preliminary Environmental Evaluation (IEE) are 58 in total, as presented in the following table. Besides, the evaluation as for the Project implementation is carried out in 4 categories, namely: A) exerts a great impact; B) exerts impact; C) does not exert impact; D) indefinite at present.

1. Social life	4. Areas with important biological and ecological value
<ul style="list-style-type: none"> (1) Life of the community's inhabitants <ul style="list-style-type: none"> a. planned transference of houses b. involuntary transference of houses c. changes in the life style d. conflict between residents e. indigenous, racial minorities g. others (2) Demographic issue <ul style="list-style-type: none"> a. demographic increase b. sudden change in the demographic composition c. others (3) Community's economic activity <ul style="list-style-type: none"> a. transference of the basis economic activities b. unemployment, change of the economic activity c. increase of income differences d. others (4) Systems, habits <ul style="list-style-type: none"> a. readjustments in the water use and fishing rights b. change in the social structure, such as the organization in associations c. revolutionary change in the existing systems and habits d. others 	<ul style="list-style-type: none"> f. disappearance of Amazon forest and virgin areas g. destruction of swamps h. destruction of coral i. others
2. Health	5. Land, soil
<ul style="list-style-type: none"> a. quantitative increase in the use of agro-chemicals b. occurrence of endemic diseases c. transmission of contagious diseases d. accumulation of residual toxicity (such as agro-chemicals) e. increase of industrial and animal wastes f. others 	<ul style="list-style-type: none"> (1) Soil <ul style="list-style-type: none"> a. soil erosion b. soil salinization c. reduction of soil fertility rate d. soil pollution e. others (2) Land <ul style="list-style-type: none"> a. land degradation b. degradation of coastal areas c. deepening of the terrestrial basis d. others
3. Lost and destruction of archeological sites and cultural patrimony	6. Hydrology, water quality, etc.
<ul style="list-style-type: none"> a. lost and destruction of archeological sites and cultural patrimony b. disappearance of high value landscapes c. others 	<ul style="list-style-type: none"> (1) Hydrology <ul style="list-style-type: none"> a. alteration in the course and volume of superficial water b. alteration in the course and volume of groundwater c. occurrence of floods d. accumulation of earth and sand e. lowering of the rivers beds f. impact over the navigability g. others (2) Water quality and temperature <ul style="list-style-type: none"> a. pollution and degradation of water quality b. eutrophication c. entrance/invasion of salty water d. changes in water temperature (3) Atmospheric pollution <ul style="list-style-type: none"> a. atmospheric pollution b. others
4. Areas with high biological and ecological value	
<ul style="list-style-type: none"> a. changes in vegetation b. impact over rare species and over typical varieties of flora and fauna c. biodiversity of varieties d. invasion and propagation of harmful organisms e. disappearance of swampy areas 	

5.9.2 Initial Environmental Evaluation of the Programs by Sector

(1) Introduction of Grains Cultivation

This Program has the goal of introducing grains cultivation in fertile areas used for extensive

cattle husbandry until 2015, increasing the productivity and the land fertility rate, and as a result recuperating 550 thousand ha of pastures. This method has to be promoted due to its importance, not only from the view point of the Study Area economy revitalization, but also with the aim of fulfilling the environmental rules requirements.

This Project aims at the cultivation of grains in the current extensive pasture areas, changing the conventional agricultural management system, with the introduction of agricultural methods that make use of fertilizers, agro-chemicals and agricultural machinery. Therefore, the following systems shall be implemented in order to avoid the generation of negative impacts from the environmental conservation point of view.

Introduction of agricultural methods that do not generate soil erosion (in this project, sod seeding).

Appropriate control of agro-chemicals and herbicides utilization.

Measures to hinder the total deforestation possible to occur when the mechanization is promoted.

From the point of view of the natural resources utilization, a strict control on the land use shall be implemented in order to avoid a disordered development in the future. In this program, a constant monitoring on the land use situation is vital, since the reduction of the agricultural area is expected as the result of the program. The items to be considered in the elaboration of the Land Use Plan are presented as follows:

Elaboration of a Land Use Plan, at the long term, that allows the fulfillment of the environmental rules in regard to the legal reservation areas.

Preservation of the existing forests.

Guarantee and preservation of areas destined to legal reservation (water source protection areas and strong declivity areas).

This Plan includes the control of the land use, connecting it to the monitoring and to the financing activities. Furthermore, the GIS data shall be organized, searching for ways to make viable the efficient land use, respecting the environmental rules as for the preservation of legal reservation areas, also on the part of the producers. The agricultural credit shall be offered only to the projects that respect the foreseen environmental rules.

(2) Implementation of Intensive Livestock Husbandry

This program aims at the improvement of the utilization of the existing extensive pasture areas which shall exert little or almost no negative impact over the environment. However, considering the increase of the herd to be raised, a large difference of income among farmers is possible to arise depending on their implementation conditions. The items to be taken into consideration in the intensive livestock husbandry promotion, from the environmental point of view, are as follows:

Items to be considered in the promotion of the intensive livestock husbandry, from the environmental point of view

Items to be studied	Items to be considered from the environmental point of view
Improvement of animal feeding	Promotion of pastures rotation and the use of silage in the current extensive husbandry areas, where environmental problems are not expected to occur. Promotion of financial and technical assistance in such a way to serve the producers with impartiality. Constant control through the technical guidance and the utilization of financial assistance, in a way that the implementation of the intensive system generates, at the same time, the reduction of the area destined to extensive husbandry and the increase of the reservation area.
Genetic and qualitative improvement	Without problems from the environmental point of view.
Early castration and removal of horns	Without problems from the environmental point of view.
Introduction of bubaline cattle	Maintenance of an appropriate number of animal units, since this cattle husbandry will take place in unfavorable conditions areas, destined to the silvi-pastoral activity and to the extensive husbandry. Considering that the distribution to producers uses to based on political criteria, a more homogeneous distribution shall be tried in order to avoid conflicts among the community members.
Promotion of swine husbandry	Measures shall be taken to avoid the downstream contamination, through the proper treatment of contaminated water probably polluted with animal waste. Technical guidance about the utilization of animal waste in the cultivated areas shall be carried out, aiming at the promotion of organic agricultural systems. Valid technical guidance for the producers shall be carried out, considering that this program aims at the utilization of wastes generated with the agricultural activities. Search for impartial measures, from the view point of the technical and financial assistance, considering that the industrial activities generate a high financial return depending of the method to be implemented.

(3) Agricultural Administration through the Agricultural Diversification on the part of the Mini- and Small-scale producers

The implementation of agricultural administration through the agricultural diversification on the part of the mini- and small-scale producers foresees the promotion of diversified agricultural management, combining the cultivation of grains/ fruits / greenery with the raising of bubaline and swine cattle. The agricultural administration system aims at the substitution of the current extensive raising system by the intensive agricultural management, with the use of fertilizers and agro-chemicals, implementing a cattle raising system (bubaline and swine) that allows the utilization of homemade products and their waste.

On the other hand, considering that this is a measure oriented to the improvement of agricultural administration to be implemented by mini- and small-scale producers, considered destitute producers, it is expected that depending on the success or failure of their enterprises income differences among the participant producers is expected to be generated. Therefore, precautions shall be taken so that the more destitute class does not face obstacles in the search for its life quality improvement, starting from the stage of associations' formation. Furthermore, considering that the agricultural management through the intensive system is a new method for most of the produces, an intense technology diffusion work is necessary, and for that the efficient support from institutions such as RURALTINS is necessary. This support is specially necessary in the organization of associations and for the strengthening of the technological guidance system. The items to be considered in the promotion of the agricultural administration through the agricultural diversification, from the environmental point of view, on the part of the mini- and small-scale producers, are presented as follows:

Items to be considered in the agricultural diversification promotion, from the environmental point of view

Items to be considered	Items to be considered from the environmental point of view
General	<p>Considering that this is a transition period of the conventional agricultural management, without the use of fertilizers or agro-chemicals, to an agriculture that make use of fertilizers and agro-chemicals, an efficient technical guidance shall be carried out (as for the utilization method, pos-use treatment, etc.) due to the possibility of occurring problems caused by the use of such agro-chemicals.</p> <p>Ways shall be searched to allow that all the producers have access to the technical and financial assistance in order to avoid that, in the future, economic differences among them come to appear.</p> <p>In the producers' associations activity, guides shall be formed in order to avoid segregation among the associations.</p>
Cultivation of grains	<p>Introduction of measures in order to increase the reservation areas as much as possible, emphasizing the guidance on the system of compatible crops in proper land.</p> <p>Implementation of the treatment method after the use of agro-chemicals.</p>
Cultivation of fruits	<p>Guidance in order to avoid the excessive use of agro-chemicals.</p> <p>Technical guidance oriented for the use of wastes in the production as swine roughage, as much as possible.</p>
Greenery	<p>Guidance in order to avoid the excessive use of agro-chemicals.</p> <p>In order to avoid the land degradation caused by the cassava cultivation, a technical guidance system about the mixed cultivation of organic matter shall be implemented.</p>

(4) Conservationist Activities

The conservationist activities proposed in this program are: silviculture, agro-forestry and silvi-pastoral activities, forest management, reforestation in permanent reservation areas and prevention against forest fires. These activities, except silviculture, correspond to measures oriented to fulfill the environmental rules in what concerns to the legal reservation areas in the Amazônia Legal region, aiming at implementing environmental improvements in the Study Area.

Items to be considered in the promotion of conservationist activities, from the environmental point of view

Items to be studied	Items to be considered from the environmental point of view
General	Search for the development of activities in such a way that economic conflicts among the producers are not created. Search for a higher emphasis to the existing varieties rather than to the exotic ones in the process of the reforestation activity development. Guidance in order to fulfill the environmental rules established for the Amazônia Legal region (area for legal reservation). Search for the community residents' participation.
Silviculture	Technical assistance for that a mixed reforestation is carried out, as much as possible. Search for ways to avoid the impact over the flora and fauna of surrounding areas. The land use shall be conducted in such a way to avoid the occurrence of forest fires.
Agro-forestry	The agricultural management system shall be conducted in such a way to make the maximum use of the existing varieties. Elaboration of the production plan for the introduced varieties in order to avoid problems in their commercialization. Search for ways to avoid an impact over the flora and fauna with the utilization of agro-chemicals in surrounding areas.
Silvi-pastoral	Control shall be carried out in order to avoid the excessive use of the extensive system. Reforestation shall be conducted in such a way to utilize the existing varieties as much as possible.
Forest Management	Although the reforestation aims the utilization of the reservation areas, it shall be conducted in such a way to avoid ecological impacts over the existing trees.
Conservation of areas destined to legal reservation	Search for the utilization of the existing varieties.
Formation of seedlings producers	Financial assistance shall be carried out with impartiality.
Seedlings distribution system	The distribution of seedlings shall be conducted in such a way to be fair among the region's residents. The distribution of seedlings shall avoid the concentration on high commercial value varieties. A seedlings production plan based on the Reforestation Plan shall be elaborated in order to avoid the super production of seedlings.
Reforestation	The labor force for reforestation shall be the local one, as much as possible.
Technical assistance	The technical assistance shall be conducted in an equitable way, in order to avoid conflicts among residents.
Financial assistance	The financial assistance shall be controlled and conducted impartially in order to avoid conflicts among residents.

		Introduction of grains production	Improvement of roughage	Genetic and quality improvement	Early castration and removal of horns	Introduction of bubaline husbandry	Promotion of swine husbandry	Cultivation of fruits	Greenery	Production of grains	Agricultural products processing industry	Silviculture	Agro-forestry	Silvi-pastoral	Forest Management	Conservationist reforestation in legal reservation areas
1.a.planned transference of houses		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.b.involuntary transference of houses		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.c.changes in the life style		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.d.conflict among residents		B	C	C	C	B	B	B	B	B	C	C	C	C	C	C
1.e.indigenous, racial minority		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2.a.demographic increase		C	C	C	C	C	C	C	C	C	B	C	C	C	C	C
2.b.sudden change in the demographic composition		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3.a.transference of basis economic activities		B	C	C	C	B	B	B	B	B	B	C	C	C	C	C
3.b. unemployment and/or change in the economic activity		C	C	C	C	C	C	C	C	C	B	C	C	C	C	C
3.c.increase of income differences		B	C	C	C	B	B	B	B	B	B	C	C	C	C	C
4.a.readjustment of water use and fishing rights		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4.b.changes in the social structures such as the creation of associations		C	C	C	C	B	B	B	B	B	B	C	C	C	C	C
4.c.revolutionary changes in the existing systems and habits		C	C	C	C	B	B	B	B	B	B	C	C	C	C	C
a.quantitative increase in the use of agro-chemicals		A	C	C	C	C	C	A	A	A	A	C	C	B	C	C
b.occurrence of endemic diseases		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
c.transmission of contagious diseases		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
d.accumulation of residual toxicity (such as agro-chemicals, etc.)		B	C	C	C	C	C	A	A	A	C	C	B	C	C	C
e.increase of industrial and animal wastes		B	C	C	C	C	B	A	C	C	B	C	C	C	C	C
3.lost and destruction of archeological sites and cultural patrimony		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
a. lost and destruction of archeological sites and cultural patrimony		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
b.disappearance of high value landscapes		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
a.changes in vegetation		B	C	C	C	C	C	C	C	C	C	A	B	B	C	C
b.impact over rare species and typical varieties of flora and fauna		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
c.biodiversity of varieties		C	C	C	C	C	C	C	C	C	C	A	B	C	C	C
d.invasion and propagation of harmful organisms		B	C	C	C	C	C	B	C	C	C	C	C	C	C	C
e.disappearance of swampy areas		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
f.disappearance of Amazon forest and virgin areas		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
g.destruction of swamps		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
h.destruction of corals		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.a.soil erosion		B	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.b.soil salinization		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.c.reduction of the soil fertility rate		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.d.soil pollution		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2.a.earth degradation		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2.b.degradation of coastal areas		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2.c.deepening of the terrestrial basis		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.a.alteration in the course and volume of superficial water		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.b. alteration in the course and volume of groundwater		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.c.occurrence of floods		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.d.accumulation of earth and sand		B	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.e.lowering of rivers beds		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1.f.impact over navigability		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2.a. pollution and degradation of water quality		B	C	C	C	C	B	B	B	B	C	C	C	C	C	C
2.b.eutrophication		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2.c.entrance of salty water		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2.d.alteration of water temperature		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3.a.atmospheric pollution		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3.b.others		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

5.10 Environmental Monitoring

The environmental monitoring in the Study Area shall be conducted through the Northern Region Development Promotion Commission and the Municipal Development Commission. The environmental monitoring shall be conducted through the actions presented as follows.

Implementation of the environmental monitoring system.

Definition of items to be implemented in the environmental monitoring.

Implementation of the geographic information system (GIS) for the implementation of the environmental monitoring.

The environmental monitoring shall be carried out based on the GIS.

5.10.1 Implementation of the Environmental Monitoring System

The environmental monitoring shall be conducted by SEPLAN and SEPRO, both organisms of the state government, in the Northern Region Development Promotion Commission, and shall be implemented through the organization of information occasionally changed by the Municipal Development Commission. The collection of detailed information shall be carried out by the responsible agent for technical extension and by the NATURATINS responsible in each municipal district. This information shall be organized and processed into GIS data, and shall be presented to the data control department of the Northern Region Development Commission each six months, thus conducting the processing of information through the GIS method to all the Study Area. This data shall serve as basis for the Northern Region Development Commission when determining the volume of funds to be supplied by the Fundo de Aval and the Agricultural Credit System, in order to promote the environmental monitoring.

5.10.2 Definition of Items to be Implemented in the Environmental Monitoring

The environmental monitoring aims at identifying what are the impacts of this program implementation on the environment and what are the necessary measures for their correction. The items object of environmental monitoring, based on the initial environmental evaluation results, are as follows:

Evolution/alteration in the land use (agricultural area, extensive pasture, silvi-pastoral activity, reforestation, wood/forest, cerrado, etc.).

Evolution/alteration in vegetation (by vegetation density classification; by vegetal stratification classification such as wood, babaçu forest, virgin forest, etc.).

Land use by property classification (agricultural area, cultivated pasture, existing pasture, legal reservation, etc.).

Conditions of regional roads implementation (classification by roads conditions).

Classification by the cultivation system of areas destined to grains cultivation (information such as: sod seeding, traditional cultivation, contour levels, etc.).

Progress of the conservationist activities in the area destined to legal reservation.

Progress of the recuperation of legal reservation areas and of the existing forests.

Location of the swine husbandry units and agricultural products processing plants, which are generating sources of water pollution.

Residential areas and number of residents.

Location of the occurrence of forest fires and conditions of the “aceiros” installation for their prevention.

Reforestation area per year and per objectives classification.

Rivers water quality.

Location of sanctuaries for rare animals.

5.10.3 Information Processing for the Implementation of the Environmental Monitoring

For an integrated appraisal of the several information regarding to the Study Area, this information processing is vital. Furthermore, for the implementation of an efficient environmental monitoring, in the future, the implementation of a Geographic Information System (GIS) is necessary. Considering that the available information about the Study Area is still insufficient for the implementation of the environmental monitoring, additional information shall be collected in each municipal district, based on the GIS data implemented in the Study Area.

The Municipal Development Commission in each municipal district shall conduct the following activities:

Implementation of GIS for each municipal district based on the available information in the Study Area GIS.

Processing of GIS data and centralized integration of existing information in each municipal district.

The available GIS data in the present stage correspond to generalized / integrated information of the Northern Region, containing a large volume of information, improper to be treated at the municipal level. The information organization shall be promoted at the municipal level. The implementation of GIS information at the municipal level shall be carried out by the Northern Region Development Commission, and shall be transferred to the Municipal Commission for the Development Promotion. Before that, a training shall be carried out about the information generated by the GIS method. The GIS data processing about the existing information in each municipal district shall be carried out in relation to the items presented as follows.

Items	Information to be organized
Land Use	Altitude (contour lines); Soil; Situation of properties borders and land use by each land owner; Conditions of the areas destined to legal reservation (areas for water source protection and strong declivity areas).
Agricultural areas	Conditions of cultivation, production volume; Cropping conditions (sod seeding, conventional cropping, etc.).
Pastures	Location of farms' fences, location of corrals for bovine cattle; Conditions of the extensive husbandry use and figures of the raised herd.
Vegetation	Conditions of vegetation (classification into: woods, babaçu forest, virgin forest); Progress of reforestation.
Dwelling conditions	Location of houses, family composition, conditions of houses construction.
Infrastructure	Production infrastructure (silos, milk processing facilities, etc.); Roads, electric energy distribution network, water supply system; Schools, hospitals, meeting rooms, churches, etc.
Industry	Location and dimensions of the swine husbandry unit; Location and dimensions of the agricultural products processing industry.
Water quality	Data on water quality on the main foreseen points for pollution; Data on earth and sand in suspension.
Others	Points / locations of forest fires and slash-and-burn cultivation occurrences; Locations for rare animals refuge; Problems caused by the agro-chemicals utilization.

The information collection shall be promoted through the processing of data included in the Project for the execution of agricultural credit, besides that information collected by workers from institutions such as RURALTINS, ADAPEC, NATURATINS, among others.

5.10.4 Environmental Monitoring based on GIS data

The environmental monitoring shall be carried out in relation to the following items, at the municipal level, being submitted once a year to the technical evaluation of the Northern Region Development Promotion Commission. The measures concerning to the investment to be carried out in the following fiscal year shall be defined based on this technical evaluation.

Recuperation level of the areas destined to legal reservation (in northern region, around 30 thousand ha shall be recuperated per year);

Progress of the reforestation activities (in northern region, around 14.5 thousand ha shall be reforested per year);

Number of occurrences of forest fires and conditions of slash-and-burn occurrences;

Alteration in water quality.

The environmental monitoring in the Study Area shall be promoted through the mortgage guarantees to be carried out in this Program and through the capacity of control on the agricultural credit.