

4.3.2 Agricultural Production Supporting System Strengthening Program

State public institutions rendering supporting services to farmers confront structural frailty due to short term of organization after establishment; due to insufficient provision of equipment and installations, these institutions are not in a position to perform their functions satisfactorily. Under the circumstances, the present program seeks to strengthen structure of public institutions in such manner as are responsive to significant growth of agricultural and livestock activities. The completion of the program calls for long-term and provision of necessary equipment and installation is envisaged during the earlier phase of the program's implementation period; meanwhile, during the medium and latter phase of the program implementation of projects leading to realization of sustainable farming shall be proceeded. Outline of the program is as explained hereinafter.

Sub-programs	Contents (Projects)
Structural Reform	<p>In order to support agricultural production activities, the following projects are to be carried out.</p> <ul style="list-style-type: none"> - Land titling and registration system improvement - Structural reform of SAG - Structural reform of RURALTINS - Plants inspection structure establishment - Agro-product quarantine system improvement
Modernization Of Livestock	<p>Aiming at improving quality of product, this sub-program contains the following two projects.</p> <ul style="list-style-type: none"> - Establishment of animal disease-free zone - Strengthening of animal health laboratory
Research	<p>Agricultural technologies research system is anticipated to be enhanced with implementation of the following projects.</p> <ul style="list-style-type: none"> - Strengthening of UNITINS agricultural division at Gurupi - Promotion of school of veterinary medicine of UNITINS
Human Resources Development	<p>Bearing in mind that insufficient supporting services of public institutions are traced to shortage of qualified manpower engaged in said services, the program is forged comprising the project listed below.</p> <ul style="list-style-type: none"> - Agricultural vocational training - Educational institutions training - Farmers' organization training

4.3.3 Environmental Conservation Program

The great majority of arable lands in Tocantins are used for extensive livestock farming with depressed intensity rate of use. Livestock farmers often burn up their lands to maintain pasture, which has made it difficult to recover vegetation in these lands. Although considerably variable year by year, the number of outbreak of mountain fire caused by human deeds ranges between 10,000 to 80,000 and the State of Tocantins is one of the states in which this phenomenon takes place frequently. Thus, an active participation of local population apart from actions of the public institution is essential if the state government intends to ameliorate its environmental conditions. The program consists of the sub-programs and projects shown below.

Sub-programs	Contents (Projects)
Environmental Conservation	The sub-program shall be into implementation with combination of public investment and provision of rural credit to beneficiaries. Rural credit projects: Promotion for sustainable forestation, control for burning off of natural vegetation, Mitigation of water contamination Public investment projects: Environmental enlightenment and education, Establishment of environmental monitoring system
Green Village	This sub-program aims to incorporate model farm matching local agro-ecological and socio-economic conditions and to disseminate fruits of this model farm to adjacent farms with similar conditions. With this aim, the following projects are contemplated. <ul style="list-style-type: none"> - Improvement of rural environment - Distribution of seeds and seedlings - Sustainable farming model
Demonstration Farm	With establishment of demonstration farm, research on development of technologies suited to local soil, climate and other relevant conditions shall be conducted together with training of extension workers to be engaged in dissemination of technologies to be developed in this demonstration farm.

4.3.4 Program for Sustainable Agriculture and Livestock Promotion

Sub-program	Contents
Promotion of Sustainable Agriculture	This program proposes to establish a demonstration center on development of technologies in which research and development on environmental monitoring for agriculture and livestock activities as well as sustainable farming system. The program comprises the following three actions. <ul style="list-style-type: none"> - Technological development on environmental monitoring and environmental impact assessment - Technologies development on sustainable agriculture and livestock farming - Technologies development for new livestock farming

4.3.5 Specific Sectors Development Program

This program seeks to carry out studies which are deemed to be important for attaining further development of the State.

Sub-programs	Contents (Projects)
Water Resources Development	In view of making assessment on potential of water resources for development, the following actions are proposed <ul style="list-style-type: none"> - Collection of basic hydrological data - Compilation of data on discharge by independent river system - Establishment of climatological and hydrological stations
Aquaculture	In order to investigate and analyze consumption and marketing conditions of fresh-water fish, a feasibility study involving components listed below shall be carried out. <ul style="list-style-type: none"> - Diagnosis of actual situation, geographical analysis of proposed development region, technical level of engineers to - Marketing of exotic and native fish, producers and their organization - Infrastructure required for encouragement of aquaculture

4.3.6 Private Sector Program

Private sector shall take the initiative of this program, subject to acquisition of supports from the part of public sector. The implementation opportunity of this program shall fall on such phase of the Master Plan as an expansion of agricultural production will have been attained owing to implementation of other development programs. In view of expansion of value-added of agricultural commodities and facilitating supply of more economical inputs for farming activities, the public sector shall be concerned with arrangement of special credit

line to invite investment in the program. This program comprises sub-programs and projects as follows.

Sub-programs	Contents (Projects)
Incentive for Exports Processing Zone	This sub-program, which is vital for promotion of industrial activities of the State, comprises: <ul style="list-style-type: none"> - Exports Processing Zone - Installation of Dry Port
Modernization for Marketing of Agro-products	To elevate competitiveness of local products as well as to accelerate trade of commodities, the following projects are contemplated. <ul style="list-style-type: none"> - Incentive to Creation of Commodities Stock Market - Modernization for marketing agricultural produce
Encouragement Of Agro-industry	To respond expansion in output of grains, vegetables, fruits and livestock products establishment of agro-industry to process these products is anticipated. Focus shall be laid on rice processing, manufacturing of concentrated feed and tanning industry.
Effective Utilization Of Inputs	An increase of demand on agricultural inputs is inevitable keeping pace with enlargement of farming activities. This sub-program seeks for consolidation of marketing system of inputs, improvement of traffic system for imported materials and coordination of supply system of concentrated feed within the State. The effective utilization of lime should also be considered.
Improvement Of Livestock Products	In line with diversification plan of livestock activities, encouragement of swine farming is proposed. For fostering swine farming industry it is indispensable to establish slaughterhouse exclusively used for producing port equipped with modern and healthy equipment and installations. Location of these slaughterhouses is proposed in the suburb of urban area.

4.4 Programs Implementation Method of the Master Plan

This Master Plan is composed of the programs listed below. In implementing these programs harmonious development with environment shall be taken into account and an excessive investment to worsen financial status of the state government shall be evaded. Implementation of the Regional Development Program shall contribute to expansion of agricultural output; likewise, the Agricultural Production Supporting System Strengthening to enhancement of agricultural research and extension system to support production activities, the Technologies Development for Sustainable Agriculture and Livestock to realization of sustainable farm production, and the Environmental Conservation Program to improvement of natural and social environmental conditions. Besides, it should be noted that with introduction of environmental monitoring system disordered development shall be put aside.

Programs	Implementation Method
Regional Development	The present program shall involve such components as: land use plan, grains production plan, farming system diversification plan, livestock sector modernization plan and agro-industry promotion plan. Because this program calls for detailed information relevant to target regions an elaboration of master plan followed by preparation of feasibility study is essential. The target regions cover 10 regions divided by the state government. An implementation of this program shall be made region by region in compliance with prioritization for development. The North Region is identified as the highest priority region for development supported by its comparative advantage in geographical position, consolidation of infrastructure and capital formation among local farmers. Next to the North Region, setting priority among remaining regions is to be made taking account of their social and economic conditions, and development of these regions are to be made referring to budgetary arrangement for implementation of development projects.
Agricultural Production Supporting System Strengthening	Implementation of this program is of urgency, so immediate actions in preparation of project implementation program and procurement of financial resources are strongly requested. Construction of installations and procurement of materials and equipment are envisaged during short-term period of the Master Plan.

Environmental Conservation	<p>The formulation of environmental conservation program shall fall basically on the responsibility of governmental agencies, but part of the finance for the program shall be covered by beneficiaries of the program. It is recommended that the portion of finance by beneficiaries should be procured as far as possible through the rural credit lines.</p> <p>In hastening private investment in environmental conservation program which is suffered from less economic impact of investment, it is recommended that the government sector would take some measures to support farmers who are willing to embark on environmental friendly farming practice. Besides, it is proposed to establish an environmental monitoring system through institutional strengthening of NATURALTINS in an attempt to elevate economic effect of investment.</p> <p>The present program has high priority in the realm of mitigating environmental deterioration of natural resources, so earlier implementation of the same is highly anticipated. The fund earmarked for implementation of the program may be procured from sources of foreign governments with an eye to providing farmers with rural credit of lower interest to be used exclusively for launching environment-oriented farming practice. Advised in effective implementation of the program is to encourage participation of various public institutions like SAG, RURALTINS, SEPLAN and NATURALTINS.</p>
Technologies Development for Sustainable Agriculture and Livestock	<p>The program is proposed to comprise three actions: investigation, research and execution and these three shall be carried out in parallel. The participation of farmers is a vital factor of this program and it is intended that the fruits of the program to be demonstrated at farms of the program would be extended directly to farmers.</p> <p>Because of importance in promoting sustainable farming, cooperation from EMBRAPA and its superior organization – Ministry of Agriculture and Supply – is expected in implementation of the program.</p>
Specific Sectors Development	<p>Having lower priority in implementation among programs of the Master Plan, this program is proposed to be implemented in such opportunity as budgetary situation of the state government permits.</p>
Private Sector	<p>This program shall be put into implementation with exclusive finance of the private sector from planning phase and the role expected by the public sector shall be development of infrastructure and elaboration of incentives, both of which are indispensable factor to attain expected outcome of the program.</p> <p>Promotion for private sector is significant in absorbing excessive labor force at rural area as well as fostering enterprises to contribute to invigoration of regional economic activities. The implementation of the program need to put at medium- and long-term of the Master Plan when raw materials to be used for development of agro-industry will have been supplied sufficiently as an outcome of expansion of agricultural production.</p>

4.5 Priority Programs and Projects

As for the Regional Development Program, an assessment for the priority region for earlier development was made among ten regions of the State on the basis of such criterions as physical conditions, grade of development of traffic infrastructure, maturity of socio-economic conditions, etc. As a result of this assessment, the North Region has been selected as the priority region in which study on formulation of model development plan is to be proceeded. Evaluation for selection of priority programs & projects and for the selection of priority region(s) are given in Table 1 and 2 respectively.

All of projects contemplated in the Environmental Conservation Program, Agricultural Production Supporting System Strengthening Program and Technologies Development Program for Sustainable Agriculture and Livestock have been considered to have high priority in their implementation taking situations of the State into account.

On the other hand, implementation of the Specific Sectors Program has been put to medium- and long-term period of the Master Plan because of rudimentary status of their components. Similarly, the Private Sector Program is scheduled to be implemented during medium- and long term period so as to await for sufficient supply of raw materials for its development.

PROGRAM	SUB-PROGRAM	ITEM	HIGH PUBLIC INTEREST	RESPONSE TO URGENT ALLEVIATION OF CONSTRAINTS	FINANCIAL VIABILITY	TECHNICAL VIABILITY	ENVIRONMENTAL SUSTAINABILITY	SOLUTION OF REGIONAL REGIONAL DISPARITY	DEMONSTRATION EFFECT	IMPROVEMENT OF INVESTMENT CONDITION	FARMS CAPITALIZATION EFFECT	SYNERGY EFFECTS	
AGRICULTURAL STRUCTURE REFORM	AGRICULTURE STRUCTURE REFORM	Land Tiding System	⊙	⊙	⊙	△				⊙	⊙		
		Reform of SAG	⊙	⊙	⊙	⊙	⊙	△		⊙	△	⊙	
		Reform of RURAL TINS	⊙	⊙	⊙	⊙	⊙	△		⊙	△	⊙	
		Agro-products Inspection	⊙	○	⊙	○		△		○	△	⊙	
		Plant Quarantine	⊙	○	⊙	○		△		○	△	⊙	
	MODERNIZATION OF LIVESTOCK	Animal Disease Control Free Zone	○	○	○	○		△		○	△	⊙	
		Animal Health Inspection	⊙	⊙	⊙	⊙		△		○	△	⊙	
	AGRI-SUPPORTING SERVICES AND RESEARCH STRENGTHENING	Reconstruction of Institutions	⊙	⊙	⊙	○	⊙	○		○	△	⊙	
		Extension Service	⊙	⊙	⊙	⊙	⊙	○		○	△	⊙	
	MANPOWER DEVELOPMENT	Vocational Training	⊙	○	⊙	⊙	○	○		○	△	⊙	
		Rural Organization	○	○	⊙	⊙	○	○		○	△	⊙	
	ENVIRONMENTAL CONSERVATION	ENVIRONMENTAL CONSERVATION	Formulation of Land Use Plan	⊙	⊙	⊙	⊙	⊙		○		○	
Sustainable Forest			○	○	△	○	⊙	△	⊙			○	
Burning Control			⊙	⊙	⊙	⊙	⊙	△	○			○	
Environmental Education			⊙	○	⊙	⊙	⊙		○	△		○	
Environmental Monitoring System			⊙	○	⊙	○	⊙		○	△		○	
GREEN VILLAGE		Environmentally Inferior District	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙	○	
		Distribution of Seedling and Seeds	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙	○	
		Sustainable Agriculture	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙	○	
DEMONSTRATION PROGRAM													
SPECIFIC SECTORS DEVELOPMENT	Water Resources		○		△	○	△					○	
		Aquaculture	△		△	○		△	△	○	△		

- ⊙ High Positive
- Positive
- △ Moderate Positive

PROGRAM	SUB-PROGRAM	ITEM	HIGH PUBLIC INTEREST	RESPONSE TO URGENT ALLEVIATION OF CONSTRAINTS	FINANCIAL VIABILITY	TECHNICAL VIABILITY	ENVIRONMENTAL SUSTAINABILITY	SOLUTION OF REGIONAL DISPARITY	DEMONSTRATION EFFECT	IMPROVEMENT OF INVESTMENT CONDITION	FARMS CAPITALIZATION EFFECT	SYNERGY EFFECTS
AGRICULTURAL STRUCTURE REFORM	AGRICULTURE STRUCTURE REFORM	Land Tiling System	⊙	⊙	⊙	△				⊙	⊙	
		Reform of SAG	⊙	⊙	⊙	⊙	⊙	△		○	△	⊙
		Reform of RURAL TINS	⊙	⊙	⊙	⊙	⊙	△		○	△	⊙
		Agro-products Inspection	⊙	○	⊙	○		△		○	△	⊙
		Plant Quarantine	⊙	○	⊙	○		△		○	△	⊙
AGRICULTURAL STRUCTURE REFORM	MODERNIZATION OF LIVESTOCK	Animal Disease Control Free Zone	○	○	○	○		△		○	△	⊙
		Animal Health Inspection	⊙	⊙	⊙	⊙		△		○	△	⊙
AGRICULTURAL STRUCTURE REFORM	AGRI-SUPPORTING SERVICES AND RESEARCH STRENGTHENING	Reconstruction of Institutions	⊙	⊙	⊙	○	⊙	○		○	△	⊙
		Extension Service	⊙	⊙	⊙	⊙	⊙	○		○	△	⊙
AGRICULTURAL STRUCTURE REFORM	MANPOWER DEVELOPMENT	Vocational Training	⊙	○	⊙	⊙	○	○		○	△	⊙
		Rural Organization	○	○	⊙	⊙	○	○		○	△	⊙
ENVIRONMENTAL CONSERVATION	ENVIRONMENTAL CONSERVATION	Formulation of Land Use Plan	⊙	⊙	⊙	⊙	⊙			○		○
		Sustainable Forest	○	○	△	○	⊙	△	⊙			○
		Burning Control	⊙	⊙	⊙	⊙	⊙	△	○			○
		Environmental Education	⊙	○	⊙	⊙	⊙		○	△		○
		Environmental Monitoring System	⊙	○	⊙	○		○	△		○	
ENVIRONMENTAL CONSERVATION	GREEN VILLAGE	Environmentally Inferior District	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙	○
		Distribution of Seedling and Seeds	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙	○
		Sustainable Agriculture	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙	○
DEMONSTRATION PROGRAM			⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
SPECIFIC SECTORS DEVELOPMENT	Water Resources		○		△	○	△					○
		Aquaculture	△		△	○		△	△	○	△	

- ⊙ High Positive
- Positive
- △ Moderate Positive

PROGRAM	REGION	Distribution of Agriculturally Suitable Land	Condition of Infrastructure	Existence of Agriculture-related Institution	Consolidation of Land Tenure	Population	Expectation of Development Benefit
REGIONAL DEVELOPMENT PROGRAM	Extreme North Region	⊙	△	△	×	⊙	△
	North Region	⊙	⊙	⊙	⊙	⊙	⊙
	Northeast Region	×	×	△	○	△	△
	Northwest Region	○	○	○	○	○	○
	Central West Region	×	×	×	○	×	×
	East Region	△	△	△	○	△	△
	Central Region	○	△	⊙	○	○	○
	Southeast Region	△	△	△	○	△	△
	Southwest Region	○	○	○	○	○	○
	South Region	○	○	⊙	○	○	⊙

- ⊙ High Positive
- Positive
- △ Moderate Positive
- × Negative

5. THE MASTER PLAN

5.1 Region Development Program of the North Region

The Regional Development Program aims to invigorate economic activities of the region through formulating and implementing an integrated agricultural and livestock plan. On the basis of the land use plan to cover the whole region, the program proposes to forge agricultural diversification plan including grains production and modernization of livestock sector, both of which have objective to serve for making farming activities sustainable. Apart from these plans, the program also contains marketing plan for products envisaged.

The issues and strategies in motivating development of the agricultural and livestock sector are as briefly stated below.

Issues and Strategies of the Agricultural Sector

The small and medium scale farmers of the North Region produce in, approximately, 30% of their farms, the rest being fallow or not productive land. The main reasons for this condition are the lack of resources, soil conditions, lack of information about products, lack of

researches and appropriate technology and agricultural machinery. Inadequate commercialization system is also a reason for the before mentioned conditions, causing indifference among farmers. Therefore, the themes and strategies for the development of the agricultural sector are presented in the following manner.

Issues to be Tackled	Strategies
Development of new cultivation areas (better use of fallow and improductive lands).	<ul style="list-style-type: none"> • Cereals production (through crops rotation); • Production of vegetables and legumes; • Establishment of development organisms.
Stimulation of the farmers to invest in production.	<ul style="list-style-type: none"> • Establishment of public markets (CEASA); • Improvement of the road system structure; • Supply of favorable credit lines; • Collection and diffusion about internal (state and national) and external markets.

Issues and Strategies of the Livestock Sector

The main reason for the reduction of productivity in the livestock sector is the high maintenance cost and low support capacity of pastures due to the reduction in soils fertility. It leads to commercialization problems related to the quality of products and animal diseases together with the high transportation cost. Therefore, the themes and strategies for the livestock sector development are presented in the following table.

Issued to be Tackled	Strategies
Improvement of soils and pastures.	<ul style="list-style-type: none"> • Diffusion of the crops rotation system.
Strengthening of marketing competitiveness.	<ul style="list-style-type: none"> • Strengthening of the exportation structure. • Products quality improvement aiming at exportation. • Improvement of transportation means.
Diversification of the livestock sector.	<ul style="list-style-type: none"> • Expansion of the dairy production sector and the swine production. • Establishment of a Diseases Free Zone.

Follow-up Studies

The basic ideas of the Regional Development Plan, having as model the North region, were herein presented. However, due to limitation in time and data, a deeper detailed study was not possible, being necessary to carry out this task through additional studies. Therefore, these studies shall be carried out for the North region, detailing technical and socioeconomic data, materializing the programs contents and defining an implementation schedule. According to this schedule, the economic evaluation of priority programs shall be carried out.

5.2 Agricultural Production Supporting System Strengthening Program

Structural Reform of Public Institutions

This Sub-program aims at structuring three institutions previously mentioned, through the construction and improvement of their facilities, and acquisition of necessary equipment. Considering the importance of vegetal sanitation control and vegetal classification activities, these activities were excluded from the SAG Restructuring Project. The contents of these sub-program are composed of the following projects:

Projects	Objectives of the Project	Contents of the Project
Land Titling and Registration System Improvement	<ul style="list-style-type: none"> The creation of a Technical Assistance System to mini and small farmers, and the development suitable to water resources; Fully implementation of the land titling and registration system. 	<ul style="list-style-type: none"> Deepen the knowledge about the land registration level and contents of future activities; Elaboration of plans for the future utilization of lands; Establishment of a data bank; Materialization of registration system; Acquisition of necessary equipment to the research and elaboration of maps.
Structural Reform of SAG	<ul style="list-style-type: none"> Establishment of regional offices capable to fulfill SAG tasks; Restructuring of SAG; Strengthening of agricultural researches suitable to the State condition; Increase in number and in qualification of SAG staff. 	<ul style="list-style-type: none"> Strengthening of the central office; acquisition of equipment, establishment of an information center, installation of a central laboratory; Increase in the staff number; agronomists, veterinarian doctors, administrative staff, etc. Expansion of the regional offices; establishment of regional offices, necessary facilities, acquisition of equipment.
Structural Reform of RURALTINS	<ul style="list-style-type: none"> Increase in productivity, efficient utilization of natural resources and introduction of technology aiming at their conservation; and Technological strengthening of producers aiming at rendering possible the acquisition of credit. 	<ul style="list-style-type: none"> Integration of regional offices; establishment of new regional offices, structuring the existing ones, expansion of extension equipment, acquisition of vehicles; Training center; construction of the center, installation of extension equipment, installation of computerized information system equipment.
Strengthening of the Laboratorial Structure	<ul style="list-style-type: none"> Structuring of the agricultural products inspection system; Qualitative improvement, guaranteeing the agricultural products as for toxic residues and qualitative uniformity. 	<ul style="list-style-type: none"> Structuring of the laboratory and necessary facilities and equipment; Strengthening of the organization, increase in the number of staff and technical training.
Plants Inspection and Agro-products Quarantine System Improvement	Aiming at rendering possible the importation and exportation of agricultural products, the vegetal protection system shall be structured, improving the technological level of protection and sterilization, making it efficient and safe. Through these measures, it is aimed at avoiding the arrival of diseases and plagues, stabilizing and increasing the agricultural production, diversifying and expanding the exportation.	<ul style="list-style-type: none"> Installation and equipping of a laboratory of tests; Increase in the number of inspection offices and improvement of their staff qualification; At long term, the inspection and protection of imported and exported vegetables are aimed at, besides the computerizing of inspection processes and facilitation of ICMS processes.

Modernization of Livestock Sector

Projects	Objectives of the Project	Contents of the Project
Establishment of Animal Disease- Free Zone	Aiming at the commercialization of livestock products to other states and countries, the Swine Fever and FMD shall be reduced. Therefore, diseases free zones shall be established.	<ul style="list-style-type: none"> To divulge the results of vaccination programs to the farmers, increasing their efficiency, making the state a swine fever and FMD free zone.
Strengthening of Laboratorial Structure	Structuring the animal inspection system for the future establishment of the free zone, increasing the exportation of livestock products. These measures aim at avoid the arrival of diseases, stabilization and increase of livestock production, diversification and expansion of exportation.	<ul style="list-style-type: none"> Installation of inspection units of virus, microbes, plagues and products toxicity. Improvement of the Araguaína and Gurupí units. Installation of local units. Equipping the mobile analysis units.

Intensification of Agricultural Technologies Research

The agricultural research strengthening project main objective is to structure the faculties of Agronomy and Veterinary of UNITINS, qualifying their staff, creating basic conditions for research.

Projects	Objectives of the Project	Contents of the Project
Strengthening of UNITINS Agricultural Division at Gurupi	The faculty facilities are insufficient for a high level education. The main objective is to transform the faculty into a technicians qualification center in the State, fully utilizing the teachers potential and improving the education program, structuring the school facilities. Furthermore, it will become possible the realization of substantial researches.	<ul style="list-style-type: none"> • Expansion of the Gurupi agronomy faculty facilities; • Structuring of the Gurupi experimental field; • Structuring of the Formoso experimental field; • Creation of the meteorological observation network; • Promotion of the training center for vegetables and fruits cultivation.
Promotion of School of Veterinary Medicine of UNITINS	The main objective is to improve the education and research carried out by the Faculty of Veterinarian Medicine, equipping and structuring its facilities.	<ul style="list-style-type: none"> • Equipment for the faculty of veterinarian medicine and veterinarian hospital; • Construction of the experimental field.

Human Resources Development

Projects	Objectives of the Project	Contents of the Project
Agricultural Vocational Training	To upgrade RURALTINS, qualifying its staff and the producers. Furthermore, it is foreseen the upgrade of women status in the rural environment.	<ul style="list-style-type: none"> • Strengthening of RURALTINS staff training program; • Strengthening of producers and rural areas women training program aiming at the improvement of life conditions in the rural environment.
Educational Institutions Training	To strengthen the agrotechnical schools education level, propitiating the modernization of agriculture and increasing production.	<ul style="list-style-type: none"> • The following agrotechnical schools shall be structured; Natividade and Pedro Alfonso; • The following agrotechnical school shall be newly created; Araguaína.
Farmers' Organization Training	To activate the existing farmers organization activities and to promote the creation of new ones, besides the creation of a central organization coordinating all of them.	<ul style="list-style-type: none"> • Strengthening of social assistance activities by RURALTINS staff; • To activate and to stimulate the rural producers organizations; • To stimulate the women organization in the rural areas.

5.3 Environmental Conservation Program

5.3.1 Outline of the Program

Considering the Program characteristics, it was divided into three categories;

PART	CONTENTS
PART A: Agricultural Credit PART A1: Credit for the Environment Conservation Program PART A2: Credit for the Green Village Program	This PART A represents a credit line for the activities which contribute with the environment quality improvement. Simultaneously, the efficient utilization of production forces (rural producers) will be promoted, in order to reactivate the State economy.
PART B: Acquisition of Goods PART B1: Construction of Facilities PART B2: Acquisition of Equipment and Machinery PART B3: Third Party Services	This PART B represents a government action aiming at introducing new technologies of cultivation, monitoring, including some basic investment which can bring benefits to the population.
PART C: Program Management	This PART C represents the Program Control component, aiming at the best conduction of the program implementation.

In the Program implementation, the Government shall play the role dynamization agent of activities, providing the guidelines for the sustainable development, which includes some subsidies and technical assistance for the introduction of new agricultural and cattle raising techniques.

PART	Private	Public
PART A	To invest in productive activities, respecting the Environment; To increase the Production in a sustainable manner; To conserve the Environment, reducing the Environment deterioration reasons.	To facilitate credit lines with favorable conditions; To promote activities through credit subsidy systems; To orient the utilization of credit towards Environment conservation activities.
PART B	To make a good use of productive activities; To learn the importance of the Environment; To preserve the Natural Resources.	To equip and provide infrastructure destined to the diffusion of adequate technologies; To control activities which cause Environmental deterioration.
PART C	To make good use of credit lines.	To utilize the resources in the most efficient way.

Implementation Strategy

The Program aims at the strengthening of environmental control actions and improvement of production conditions for the rural producers. The expected results through the implementation of the activities are as follows;

Investment Sector	Financing Results
General	Procurement of Cheap External Resources and Saving of Governmental Resources.
Public Investment	Improvement of Infrastructure for the Activities of Environmental Education, Monitoring System and Demonstrative Fields.
Credit Lines	Improvement of Environmental Conditions (reduction of burning and deforestation areas, and reduction of the problems caused by agrochemicals, etc.); Increase of the forest areas; Capitalization of Rural Producers through favorable credit lines; Increase of the Agriculture and Livestock Production; Increase of the possibility to introduce innovative sustainable agriculture technology.

The basic strategy of the Program is to make good use of the private sector energy, promoting investments by the rural producers in order to minimize the State expenses, complementing the necessary actions to reach a sustainable development through investments from the public

sector. Considering this basic strategy, favorable credit lines shall be provided to the producers, through the following strategies. The capital resources (60% of the Required Capital) shall be procured in foreign countries, as an Environment Project, with favorable conditions, searching for the best way to utilize the resources both in economic and environmental terms, and not creating one more burden to the State.

- Procurement of a Credit with favorable conditions;
- Subsidy to the part of the cost related to the taxes differences, transforming it in Government cost;
- The exchange factor risk shall be assumed by the State, in order to lower the interest rates to be applied, reducing the banking cost, allowing the negotiation of this item. (the exchange factor risk occurs after the end of the grace period, meaning 7 years of delay, if there is valorization of Money in the Source during the repayment period).
- Formulation of an efficient credit system to avoid the elevation of financial cost.

Procedures for the General Program Implementation

In order to implement a credit system which demands the introduction of a new technology, considering the lack of experience by the existing rural producers, the collaboration of institutions such as RURALTINS, SAG, research institutes such as EMBRAPA, UNITINS, and NGOs will be necessary. Furthermore, to obtain a higher effect from the Program implementation, the enterprise models shall be implemented in collaboration with concerning institutions and the results shall be divulged for the obtainment of posterior financing. In special, due attention shall be given to the activities concerning to the Improvement of Life Conditions of rural producers. The public sector enterprises shall be implemented through public bidding, including the environmental education activities.

Enterprise Execution Method

Considering the characteristics of each project, they shall be executed according to the following methods;

Type of Investment	Program
Public Investment	<ul style="list-style-type: none"> - Environmental Education - Establishment of Environmental Monitoring System - Demonstrative Farm
Private Investment	<ul style="list-style-type: none"> - Promotion for Sustainable Forestry - Control for Burning off of Natural Vegetation - Mitigation of Water Contamination - Improvement of Rural Environment - Sustainable Farming Model - Distribution of Seeds and Seedlings

Private Investment

The incentive for private investment will be given through the provision of favorable credit lines with low interest rates. It is expected that these credit lines will be more favorable than the existing ones, attracting new investors, giving an impulse to the development and to the environmental conservation.

The financing will be basically provided to fixed and semi-fixed investments, and the financing value (90% of the amount needed by the producer) will be totally composed of external resources. The producers own resources will correspond to, approximately, 10%. This resource shall include the labor force costs and works carried out with own machinery, facilitating the procurement of financing by small farmers. Furthermore, once the enterprise aims at the environmental conservation, the producers shall have access to the amortization of the debt, even if the IRR is considered low.

Method of Resources Utilization

In order to make the resources sustainable, a rotational fund shall be established.

Agricultural Credit Resources Portion

The Government shall provide the supplementation of the interest, assuming the exchange factor risk, offering technical assistance to the producers and supporting administrative costs, while the producers shall prepare the equivalent to 10% of the financed value with own resources.

5.3.2 Contents of the Program

Environmental Conservation Sub-program

The present project aims at making a good use of the private sector energy in order to conserve the environment, control the practice of burning off to preserve the forest resources and impede the soils degradation in the State.

Projects	Objectives of the Project	Contents of the Project
Promotion for Sustainable Forestation	<ul style="list-style-type: none"> - To increase the forest areas - To conserve and increase the fauna and flora - To utilize the land efficiently - To impede the degradation of pastures and soil erosion - To incentive the diversification of agriculture. 	<ul style="list-style-type: none"> - To supply agricultural credits for projects of incentive to forestry and re-forestry - .Promotion of Enterprises aiming at the Maintenance of Forest in the farms (50%) - Promotion of Forestry for the Improvement of Pastures in Degraded Areas - Promotion of Agro-forestry.
Control for Burning off of Natural Vegetation	Through the control for practice of burning off, it is expected to reduce the causes of fires, reducing the occurrence area.	Supply financing to the producers. <ul style="list-style-type: none"> - Enterprises of Incentive to the Control of burning off - Incentive to the Extraction Activity (Apiculture, Extraction of Babaçu, etc.).
Mitigation of Water Contamination	To finance prevention works against the water pollution, avoiding the degradation of its quality.	To finance prevention works against the water pollution.
Environmental Enlightenment & Education	To increase the population knowledge about the Environment, through education, teaching about the importance of its conservation.	To structure facilities for the environmental education <ul style="list-style-type: none"> - State program of environmental education - Creation of the environmental education center - Creation of the agroecological center - Creation and implementation of the Agenda 21.

Establishment of Environmental Monitoring System	To create conditions for that the government assumes the environmental monitoring aiming at the conservation of natural resources.	To structure the facilities to carry out the monitoring. <ul style="list-style-type: none"> - Monitoring of "queimadas" and industrial activities, incentive to the Environmental Conservation Units - Construction of the Central Laboratory, Installation of the Agrometeorological Observation System - Improvement of the Regional Nucleuses of NATURATINS.
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Green Village Sub-program

The sub-program aims at the incentive to the sustainable agriculture through the introduction of crops rotation (grains and pasture, vegetables and animal ration ingredients), raising the socio-economic level of producers and preserving the environment. The sub-program is composed of 3 projects: Improvement of rural environment, Distribution of seeds and seedlings, and Sustainable farming model and these projects are expected to contribute to the increase in production and also to the environment preservation.

Projects	Objectives of the Project	Contents of the Project
Improvement of Rural Environment	Through the introduction of sustainable agriculture to mini and small farmers, it is expected to stimulate the environmental conservation.	The following items will be financed; <ul style="list-style-type: none"> - Plan of formation of mini and small farmers in the extreme-north region - Integrated production of buffaloes and fruits in the Jalapão region.
Distribution of Seeds, Seedlings and Semen	It is expected to stimulate the agricultural sector through the production of seeds and seedlings, once, at present, the State depends on other states for their supply. The improvement and maintenance of quality of seeds and seedlings are expected to be carried out, besides the reduction of distribution costs.	The following items will be financed; <ul style="list-style-type: none"> - Incentives for the research on seeds and seedlings carried out by the producers themselves - Production of seedlings (fruits, trees, vegetables, etc.), production of reproduction matrixes of small animals. - Commercialization of seeds, seedlings and semen.
Sustainable Farming Model	To finance the farmers who adopt the sustainable agriculture in order to stimulate this type of agriculture in the State.	The following pilot farms will be financed; <ul style="list-style-type: none"> - Integrated Production of Vegetables and Beef Cattle oriented to Small Farmers in Urban Centers Suburbs - Integrated Production of Grains and Beef Cattle oriented to Small Farmers - Integrated Production of Grains and Beef Cattle and Fruits oriented to Medium and Large scale Farmers.
Demonstration Farm	To carry out training in technological extension together with technological development, stimulating the introduction of a sustainable agriculture adapted to the State conditions, through the installation of demonstrative fields.	The following facilities shall be structured; <ul style="list-style-type: none"> - Research and demonstration field (800 ha in total, only 50% farmable) - Irrigation system - Construction of facilities - Acquisition of machinery.

O presente Maste Plan tem como meta o ano de 2015, assim, a curto prazo pretende-se realizar programas prioritários como estruturação da produção agrícola e conservação do meio ambiente, e a médio prazo o programa de desenvolvimento regional visando o aumento espacial. Além disso, para elevar os preços dos produtos a fim de contribuir para o aumento da produção, pretende-se realizar os programas do setor privado relacionados ao setor de processamento de produtos agrícolas, a longo prazo, elevando a competitividade do estado. Com relação aos recursos necessários, pretende-se, a curto prazo, depender de fontes externas, e a longo prazo, recursos possíveis de serem gerados dentro do estado.

5.4 Technologies Development Program for Sustainable Agriculture and Livestock

Project	Objectives of the Project	Contents of the Project
Sustainable agricultural promotion	By utilizing the results obtained by the CPAC and the Japanese Technical Cooperation Mission, and taking into consideration of environmental aspects, it is expected to develop technologies of sustainable agriculture projects for all the state.	<ul style="list-style-type: none"> a) Development of environmental monitoring technologies <ul style="list-style-type: none"> ◆ Evaluation and measurements of effects provided by agricultural / livestock activities on environment ◆ Evaluation and researches of foreign protection measures ◆ Evaluation and researches of soil protection, etc. b) Technological development related to the sustainable agriculture activities <ul style="list-style-type: none"> ◆ Rotation method of grains and pastures ◆ Variety selection of grains, pastures and fruits ◆ Pasture selection and its seed production ◆ Farm planning and administration development c) Technical support development to livestock activity aiming at the sustainable agriculture <ul style="list-style-type: none"> ◆ Technical development of intensive production and pasture in large scale irrigation systems ◆ Technological improvement of cow and pork production by introduction of European specimens ◆ Improvement of animal health

6. COMPREHENSIVE IMPLEMENTATION PLAN OF THE MASTER PLAN

6.1 Implementation Schedule

The present Master Plan has as objective the year of 2015. So, in short terms, is pretended to realize the priority programs as structuration of the agricultural production and environmental conservation, and in medium term the regional development program having as objective the spatial increase. Further more, to elevate the products price to contribute for the production increase, it is pretended to realize the private sector program, related to the processing sector of the agriculture products, in a long term, elevating the competitiveness of the state. Related to the necessary resources, it is pretended to, in short terms, depend on the foreign sources, and in long terms, in resources possible to be generated inside the state.

Programs	Implementation Proposal
Regional Development	<p>Once the regional development requires a great amount of resources, it must be carried out gradually, taking into account the state financial capacity. The development methods are; concentrated regional development according to priority (regional development program) and generalized development utilizing rural credits. The following items will be necessary for the realization of this program;</p> <ol style="list-style-type: none"> 1. To assure resources for the agricultural credit in a short term (at least up to 2001); 2. Researches for the realization of the Regional Development Program (concentrated regional development); 3. To assure resources for the execution of the Regional Development Program; 4. To assure resources for medium and long terms agricultural credits.
Agricultural Production Supporting System Strengthening	<p>The contents of this program is essential for the sustainable development of the state, thus being necessary to carry out the present program in parallel to the Sustainable Agriculture Program. The present program will be carried out as follows;</p> <ol style="list-style-type: none"> 1. Evaluation of resources supply; 2. Detailed project for its execution; 3. Construction of facilities and provision of equipment; 4. Execution of each enterprise. <p>Once all the enterprises have high priority, it is necessary to elaborate a detailed planning for the structuring of facilities, making it possible to immediately execute the works and provide the equipment.</p>
Environmental Conservation	<p>Each enterprise is essential for the state environmental conservation, all with a large reach, thus being necessary to elaborate an execution program. The following items are necessary for the program:</p> <ol style="list-style-type: none"> 1. Supply of necessary resources for the execution of the enterprises; 2. Definition of enterprises details (financing flow, execution method, government responsibilities in financing, etc.); 3. Execution of the enterprises (agricultural credit and public investment); 4. Execution of enterprises with public investments (environmental education, monitoring).
Technological Development for the Sustainable Agriculture and Livestock	<p>Through the state efforts, the research about sustainable agriculture will be developed, obtaining technical cooperation from other states and countries. Besides allowing the sustainable development of the state, it will be possible to stabilize the agricultural production conditions. The urgent themes are as follows;</p> <ol style="list-style-type: none"> 1. Definition of execution structure for the research about sustainable agriculture (location, staff, etc.); 2. To assure resources for the maintenance of researches; 3. Materialization of researches contents.
Specific Sectors Development	<p>The present program aims at the development of water resources and aquaculture. There is still the need of deeper studies about the theme, thus it is necessary to assure resources for them, investing in this sector at long term.</p>
Private Sector	<p>The present program depends on private investment. Therefore, it is initially necessary to assure the agricultural production for then elaborating investment plans. The program shall be implemented at a long term.</p>

The comprehensive implementation schedule is given in Table 3.

Cost of the Programs

The cost required for implementation of the Master Plan are estimated as shown in the table below.

Programs/Year	96/97	98/99	00/01	02/03	04/05	06/07	08/09	10/11	12/13	14/15	Total
Regional Development	0	107,300	170,000	531,800	525,500	836,100	860,700	744,300	502,000	411,400	4,689,100
Private (Production)	0	57,472	91,008	284,608	281,216	447,488	460,608	398,336	268,672	220,160	2,509,568
Private (Environment)	0	14,368	22,752	71,152	70,304	111,872	115,152	99,584	67,168	55,040	627,392
Infrastructure		13,400	21,300	66,700	65,900	104,800	107,900	93,300	62,900	51,600	587,800
Study		4,100	6,500	20,400	20,200	32,100	33,100	28,600	19,300	15,800	180,100
Recurrent cost	0	17,960	28,440	88,940	87,880	139,840	143,940	124,480	83,960	68,800	784,240
Agricultural Production Supporting System Strengthening											
Capital cost	0	12,200	24,390	10,850	2,690	1,240	1,240	1,000	1,000	1,000	55,610
Recurrent cost	0	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	76,500
Total cost	0	20,700	32,890	19,350	11,190	9,740	9,740	9,500	9,500	9,500	132,110
Environmental Conservation											
Public investment											
Capital cost	0	16,500	0	0	0	0	0	0	0	0	16,500
Recurrent cost	0	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	16,800
Total cost	0	21,600	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	62,400
Agricultural Organizations	16,000	21,400	25,300	36,800	48,200	66,400	85,100	101,400	112,200	121,300	634,100
Total	16,000	171,000	233,290	593,050	589,990	917,340	960,540	860,300	628,800	547,200	5,517,710

6.2 Financing Plan

The cost of the programs is broken down by source of finance in the following manner.

Categories/Year	98/99	00/01	02/03	04/05	06/07	08/09	10/11	12/13	14/15	Total
Private investment (Production)	57,472	91,008	284,608	281,216	447,488	460,608	398,336	268,672	220,160	2,509,568
Private investment (Environment)	14,368	22,752	71,152	70,304	111,872	115,152	99,584	67,168	55,040	627,392
Public investment	77,760	94,230	200,490	190,270	291,580	299,780	260,980	180,760	150,800	1,746,650
- Capital cost	42,100	45,690	75,550	68,590	106,040	109,140	94,300	63,900	52,600	659,910
- Studies	4,100	6,500	20,400	20,200	32,100	33,100	28,600	19,300	15,800	180,100
- Recurrent cost	31,560	42,040	102,540	101,480	153,440	157,540	138,080	97,560	82,300	906,540
Agriculture-related organizations	21,400	25,300	36,800	48,200	66,400	85,100	101,400	112,200	121,300	634,100
Total	171,000	233,290	593,050	589,990	917,340	960,640	860,300	628,800	547,500	5,517,710

O presente Maste Plan tem como meta o ano de 2015, assim, a curto prazo pretende-se realizar programas prioritários como estruturação da produção agrícola e conservação do meio ambiente, e a médio prazo o programa de desenvolvimento regional visando o aumento espacial. Além disso, para elevar os preços dos produtos a fim de contribuir para o aumento da produção, pretende-se realizar os programas do setor privado relacionados ao setor de processamento de produtos agrícolas, a longo prazo, elevando a competitividade do estado. Com relação aos recursos necessários, pretende-se, a curto prazo, depender de fontes externas, e a longo prazo, recursos possíveis de serem gerados dentro do estado.

Table 3 Implementation Schedule of the Master Plan

Programs/Projects	Short-term						Medium-term						Long-term						2015 onward
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Multimodal Central-North Transportation Corridor																			
a Start of Operation: South-North Railroad from Exyale																			
b Start of Operation: Tocantins River Waterway																			
1 ENVIRONMENTAL CONSERVATION																			
- Formulation of implementation plan and financing																			
- Rural credit for the Green Village Plan																			
- Rural credit for environmental conservation plan																			
- Implementation of environmental conservation program																			
2 AGRICULTURAL STRUCTURE REFORM																			
Manpower Development sub-program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Implementation of manpower development																			
Agricultural research strengthening sub-program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Implementation of the program																			
Modernization of Livestock sub-program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Development of national disease free zone																			
Agriculture-related organizations reconstruction Sub-Program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Implementation of development projects																			
3 TECHNOLOGICAL DEVELOPMENT FOR SUSTAINABLE AGRICULTURE																			
- Infrastructure development																			
- Technological development																			
4 REGIONAL DEVELOPMENT PROGRAM																			
North Region																			
- Implementation of MP and FIS																			
- Infrastructure development and start of production																			
- Rendering extension services																			
- Provision of rural credit																			
- Encouragement of agro-industry																			
Extreme North Region (Zone I)																			
- Implementation of MP and FIS																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
South & Central Regions (Zone II)																			
- Implementation of MP and FIS																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
Southwest & Northwest Regions (Zone III)																			
- Implementation of MP and FIS																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
Northeast & East Regions (Zone V)																			
- Implementation of MP and FIS																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
Southeast Region (Zone IV)																			
- Implementation of MP and FIS																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
5 SPECIFIC SECTORS DEVELOPMENT PROGRAM																			
- Implementation of MP and FIS																			
- Infrastructure Development																			

State Government External Cooperation Private Sector

Table 3 Implementation Schedule of the Master Plan

Programs/Projects	Short-term						Medium-term						Long-term						2015 Approved
	1995	1997	2001	2003	2005	2007	2009	2011	2013	2015	2017	2019	2021	2023	2025				
Midland-Central-North Transportation Corridor																			
a Start of Operation: South-North Railroad from Estreito																			
b Start of Operation: Tocantins River Waterway																			
1 ENVIRONMENTAL CONSERVATION																			
- Formulation of implementation plan and financing																			
- Rural credit for the Green Village Plan																			
- Rural credit for environmental conservation plan																			
- Implementation of environmental conservation program																			
2 AGRICULTURAL STRUCTURE REFORM																			
Manpower development sub program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Implementation of manpower development																			
Agricultural research strengthening sub-program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Implementation of the program																			
Modernization of livestock sub program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Establishment of animal disease free zone																			
Agriculture-related organizations reconstruction Sub-Program																			
- Formulation of implementation plan and financing																			
- Infrastructure development																			
- Implementation of development projects																			
3 TECHNOLOGICAL DEVELOPMENT FOR SUSTAINABLE AGRICULTURE																			
- Infrastructure development																			
- Technological development																			
4 REGIONAL DEVELOPMENT PROGRAM																			
North Region																			
- Implementation of M/P and F/N																			
- Infrastructure development and start of production																			
- Rending extension services																			
- Provision of rural credit																			
- Encouragement of agro-industry																			
Extreme North Region (Zone I)																			
- Implementation of M/P and F/N																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
South & Central Regions (Zone II)																			
- Implementation of M/P and F/N																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
Southwest & Northwest Regions (Zone III)																			
- Implementation of M/P and F/N																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
Northeast & East Regions (Zone V)																			
- Implementation of M/P and F/N																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
Southeast Region (Zone IV)																			
- Implementation of M/P and F/N																			
- Infrastructure development and start of operation																			
- Operation of development projects																			
5 SPECIFIC SECTORS DEVELOPMENT PROGRAM																			
- Implementation of M/P and F/N																			
- Infrastructure Development																			
6 PRIVATE SECTOR PROGRAM																			
Promotion of the ZPE																			
Modernization of Logistics of Agro-products																			
Encouragement of agro-industry																			
Effective use of mineral resources																			
Promotion of livestock																			

State Government External Cooperation Private Sector

At a short term (98/99), it will be necessary to utilize State resources, and after 2000, it will be necessary to procure resources from other countries and the federal government. However, the procedures for the obtainment of these resources shall be initiated immediately. As for financing to the producers, in the future, financing from other countries companies or in the form of green soybean will be necessary. Nevertheless, in order to bring such investment, the attention of the companies must be called, in which the environmental conservation program will contribute. Specially, the investment and resources at low interest rates will call the attention of other countries.

As for the resources for public enterprises, supplying the initial resources, the private enterprises will be activated, thus activating the state economy with the consequent increase in the collection of taxes. As a result, the public resources will be incremented in a ascending feedback process.

6.3 Environmental Evaluation

In the elaboration of development plans, although the plan is in harmony with the economic development and the environment, the following aspects shall be taken into consideration in the execution detailing.

Regional Development Program	
(During Execution of F/S)	<ul style="list-style-type: none"> - Management method of environmental conservation areas and indigenous reservation areas. - Reach of the environmental laws, influence of big development projects in the ecosystem. - Preservation method of environmental conservation areas (50% of each farm). - Management method of agricultural production in the APAs. - Problems related to the water quality, management method of important species, measures concerning to the social issue. - Land use plan through cultivation in appropriate areas (management of areas inappropriate to agriculture).
(Before the Execution)	<ul style="list-style-type: none"> - Elaboration of the projects EIA - Elaboration of RIMA and obtainment of authorization for the execution of projects.
(During the Execution)	<ul style="list-style-type: none"> - Execution of monitoring of each project (according to the authorization). - Execution of monitoring in the whole State (forest area, "queimadas", water pollution, etc.).
Agricultural Production Supporting System Strengthening Program	Once the majority of enterprises aims at punctual developments and acquisition of equipment, it is considered that there are not items against the environmental laws.
Environmental Conservation Program	It is important that the contents of the requirement (project) and the actual execution are identical. For such monitoring, SAG and RURALTINS shall inspect the execution of the project, while NATURATINS shall monitor the environment. Therefore, once again, the strengthening of these institutions is stressed.

6.4 Monitoring System for Implementation of the Master Plan

With identification of problems and suggestions for their solution, revision on contents of the programs shall be made so as to judge whether modification of the programs is needed or not. Bearing in mind that the delay in implementation of a (some) program(s) may affect substantially the global implementation schedule of the Master Plan, periodical revision on

the contents and progress of the programs is essential in order to complete the Master Plan which seeks for coordination and harmony between production and environment as well as between private investment and public investment.

In revising and modifying the Master Plan, attention shall be paid to the following targets for which the Master Plan pursue.

- ① Invigoration of regional economic activities
- ② Accomplishment of sustainable farming
- ③ Consistent farm production
- ④ Rectification of inter-regional disparities
- ⑤ Enhancement of social services

6.5 Project Evaluation

Albeit having high potentials for agricultural development endowed with fertile soil condition, abundant water resources, favorable climatological conditions, etc., the State of Tocantins has not attained anticipated agricultural development up to date. Major constraints which have braked the development of the agriculture sector are geographical disadvantageous position of the State located far away from leading marketing entrepots for agricultural commodities and inputs of the country and deficient provision of institutional supporting services to producers; the former constraint is expected to be mitigated with progress of the Multimodal Central-Northern Transportation Corridor which is highly benefitable to the agricultural sector of the State in hastening export of agricultural products of the State not only to other states of the country but also to the international market. Meanwhile, in so far as the latter constraint is concerned, despite both federal and state governments have proposed policies to invigorate agricultural and livestock productive activities of the State, no outstanding outcome has been shown up to date.

Under the circumstances, the present master plan has forged a number of programs and projects in relation with strengthening of institutional capacity including manpower development of public organizations in charge of supporting services to producers. These programs and projects have been designed to contribute to improvement of agricultural production, both in quality and quantity, and they are proposed to benefit directly unspecified number of farmers in Tocantins. Therefore, they shall bring about immeasurable direct benefits to the economy of the State of Tocantins.

Besides said institutional strengthening programs and projects, the Master Plan also comprises programs and projects which have been formulated aiming at ameliorating environmental condition and introduction of unconventional farming practice that leads to realize sustainable agricultural production in harmony with conservation of natural resources. Farming system proposed in these programs and projects does not seek for intensive use of land with excessive application of fertilizers and agro-chemicals, but is designed to make it viable for farmers to use land resources as sustainable as possible with introduction of crop-pasture rotation, agro-forestry, etc. so that future generations can also gain considerable livelihood depending on them. Apart from these environmental implication, the programs and projects envisages innovated farming system for the State of Tocantins such as mixed

farming of crops and cattle or minor animals like buffalo and hog, fruit cultivation and export-oriented grains production. Furthermore, the integrated agricultural and livestock plan shall have significant impact on alleviation of rural poverty, because one of the objectives of some projects is to enhance living standard of marginal peasants who are actually conducting nothing but subsistence farming.

It is accordingly judged that the integrated agricultural and livestock development plan is justified from institutional, environmental and socio-economic points of view. In addition, some projects which have definitely quantifiable benefits have been proved to be economically and financially feasible. Nevertheless, it is advisable that the government should propose some exceptional policy applied to producers who embark environmentally sustainable farming practice sacrificing economic profitability of farm operation.

Apart from above direct benefits, it is anticipated that the following indirect benefits are to be accrued through implementation of the integrated agricultural and livestock plan.

- Generation of job opportunity owing to expansion of agricultural activities
- Development of agriculture-related industry (processing of agro-products, manufacturing of fertilizers, rural small-scale industry, etc.) attributable to increase of agricultural output.
- Earning of foreign exchange as an outcome of growth in production of export-oriented grains and livestock products.
- Alleviation of exodus of rural population toward urban area
- Mitigation of socio-economic disparity between the State of Tocantins and other states of the country.
- Relaxation of social conflict owing to elevation of income among marginal peasants and generation of job opportunity among landless farmers.
- Dissemination of farming system suited to the "Cerrado" area to other states.
- Contribution to constrain global warming as a consequence of curbing in emission of carbon dioxide gas.

Due to above-mentioned direct and indirect benefits, it is expected that the fiscal income of the state government of Tocantins would be grown substantially, which, in turn, contributes to ameliorate living circumstances of local population, as a result of switching state government's policy for earmarking budget to development of social infrastructure for education, public health, water supply and sewerage from prevailing major allocation of finance to economic infrastructure represented by highways and roads, electric generation works and communication network. The State of Tocantins thereby may manage to get rid of the situation of socio-economic under-development in economic term (the second lowest GRP per capita in Brazil) and in social term (22nd position in HDI value among the country's 27 states and federal district).

7. CONCLUSIONS AND RECOMMENDATIONS

The Integrated Development Master Plan for Agriculture and Livestock in the State of Tocantins has been forged in an attempt to putting into force development of unexploited far-reaching land resources in harmony with appropriate management and conservation of

natural resources by the year 2015, in view that an agricultural and livestock production stemmed from these land resources should be made sustainable to future generations .

The Master Plan is composed of six (6) programs pertaining to agricultural and livestock development as well as management and conservation of natural resources. The implementation of these programs is expected to put spurs to invigoration of the agriculture and livestock sector, which has been depressed up to date despite being played an important role within economic activities of the State of Tocantins. Similarly, it shall promise to realize proper management and conservation of natural resources and give a conspicuous impact over the regional society attributable to their direct and indirect benefits of these programs. It is thus concluded that the Master Plan would serve as an impetus for the State of Tocantins to get rid of the status of under-development.

In order to implement the Master Plan as opportune as possible, it is advised that the state government of Tocantins undertakes the following actions.

1. Earlier implementation of priority programs/projects

The projects involved in three programs (Agricultural Production Supporting System Strengthening, Environmental conservation and Technologies Development for Sustainable Agriculture and Livestock Farming) are anticipated to be put into implementation taking speedy action for materialization of their contents.

2. Phasing for implementation of programs

The projects other than those identified as priority project should be implemented by phasing; this is especially the case when it comes to the Regional Development Program because its implementation calls for extremely large amount of investment and distorted implementation scheduling may accelerate socio-economic disparity among regions of the State. In this context, formulation of detailed programs to enable elaboration of adequate implementation schedule is essential.

3. Executing agency

SAG shall play as core agency responsible for implementation of the Master Plan, subject to active collaboration form such other public institutions as SEPLAN, RURALTINS, INTERTINS, UNIFINS and NATURALTINS which are concerned with implementation of programs envisaged in the present Master Plan. In this sense, structural reform of SAG is a pressing issue so that its managerial capacity of programs/projects should be upgraded.

4. Budgetary allocation arrangement

Institutional strengthening of SAG and other public institutions responsible for implementation of programs and projects involved in the Master Plan would not be attained if the state government is reluctant to make necessary financial arrangement for this purpose. It is thus recommended that the state government should earmark more annual budget to these institutions than the actual level.

5. Financing agency

The Environmental Conservation Program is proposed to be implemented with provision of rural credit to farmers by using funds originated from external loans. The recipient agency of these funds shall be Brazilian credit banks established in Tocantins and these banks need to be administratively reinforced in such manner as are capable of performing proper managerial functions as recipient agency of external loans.

6. Rural credit system

In order to motivate farmers to embark on sustainable development of natural resources as well as on farming practice paying attention to environmental conservation, it is prerequisite to grant these farmers privilege of getting rural credit of exceptionally favored conditions such as lower interest. In this regard, it is strongly suggested that the state government of Tocantins should review prevailing rural credit system so that an unconventional credit lines to benefit said farmers would be forged, on condition that the state government undertake subsidies and other relevant measures.

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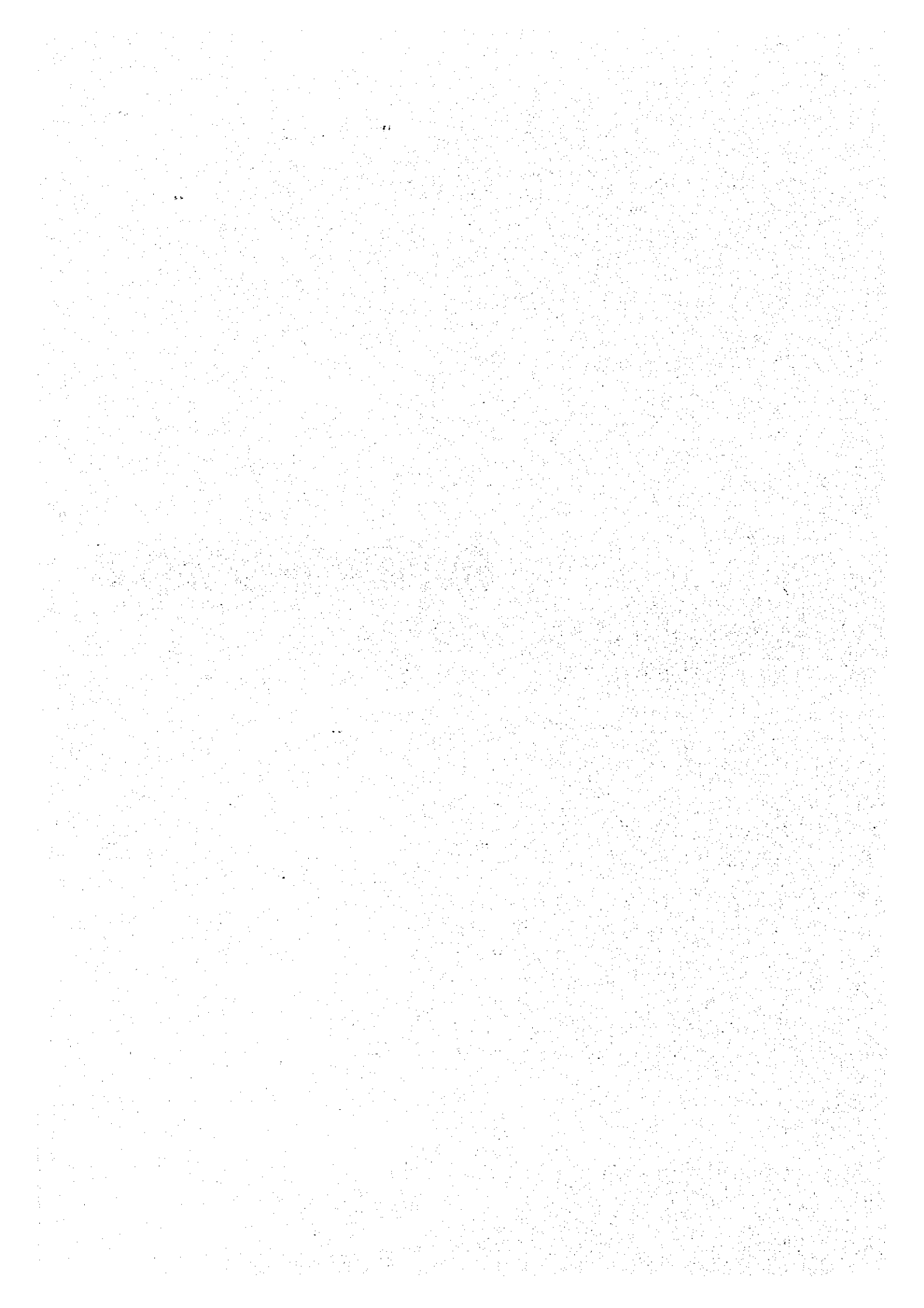


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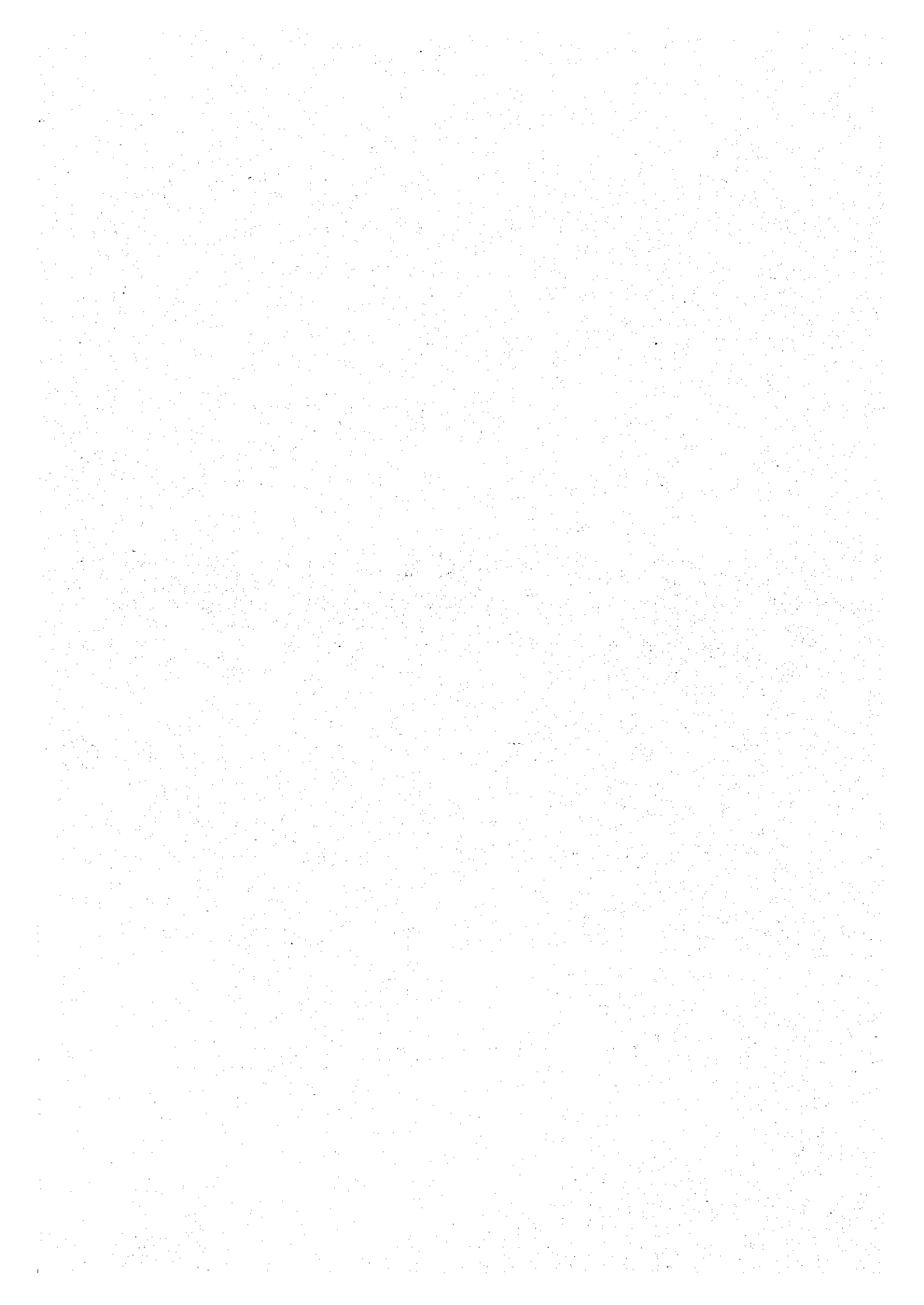
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***ABBREVIATIONS
AND ACRONYMS***



ABBREVIATIONS AND ACRONYMS

	Portugues	English
ABCAR:	Associação Brasileira de Crédito e Assistência Rural	Brazilian Association for Credit and Rural Assistance
APA-TO:	Alternativas para a Pequena Agricultura no Estado do Tocantins	Alternatives for Small Farming in the State of Tocantins
AI	Inseminação Artificial	Artificial Insemination
AIHTAR	Administração da Hidrovia Tocantins Araguaia	Tocantins – Araguaia Hydroway Administration
BASA:	Banco da Amazônia	Bank of Amazon
B.B.	Banco do Brasil	Bank of Brazil
BIRD	Banco Internacional de Reconstrução e Desenvolvimento	International Bank for Reconstruction and Development
BID	Banco Interamericano de Desenvolvimento	Inter-American Development Bank
BNDES:	Banco Nacional de Desenvolvimento	National Bank for development
BOT		Build, Operate, Transfer
CAMPO:	Companhia de Promoção Agrícola	Agricultural Promotion Company
CASETINS:	Companhia de Armazéns Gerais e Silos do Estado do Tocantins	Tocantins State General Wholesale and Silo Company
CEASA	Centro Estadual de Abastecimento S.A.	State Supply Center Co., Ltd.
CIMI	Conselho Missionário Indigenista	Indigenous Mission Commission
CMDR:	Conselho Municipal de Desenvolvimento Rural	Municipal Commission for Rural Development
CODETINS:	Companhia de Desenvolvimento do Estado do Tocantins	Tocantins State Development Company
COEMA-TO	Conselho Estadual de Meio Ambiente-TO	State Commission for Environment
CONAB:	Companhia Nacional de Abastecimento	National Supply Company
CONTAG:	Confederação Nacional dos Trabalhadores na Agricultura	National Confederation for Agricultural Workers
CAN	Confederação Nacional de Agricultura	National Agricultural Confederation
CELTINS	Companhia de Energia Elétrica do Tocantins	Electric Energy Company of Tocantins
CPA	Cedula de Produto Rural	Rural Product Bill
CPT:	Comissão Pastoral da Terra	Land Pastoral Commission
CVDR	Companhia Vale do Rio Doce	Vale do Rio Doce Company
DATER:	Departamento de Assistência Técnica e Extensão Rural	Department for Technical Assistance and Rural Extension
DNER	Departamento Nacional de Estrada Rodagem	National Department for Highways
EAFA:	Escola Agrotecnica Federal de Araguatins	Araguatins Federal Agrotechnical School
EMATER:	Empresa de Assistência Técnica e Extensão Rural	Technical Assistance and Rural Extension Agency
EMBRAPA:	Empresa Brasileira de Pesquisa	Brazilian Agricultural Research Agency

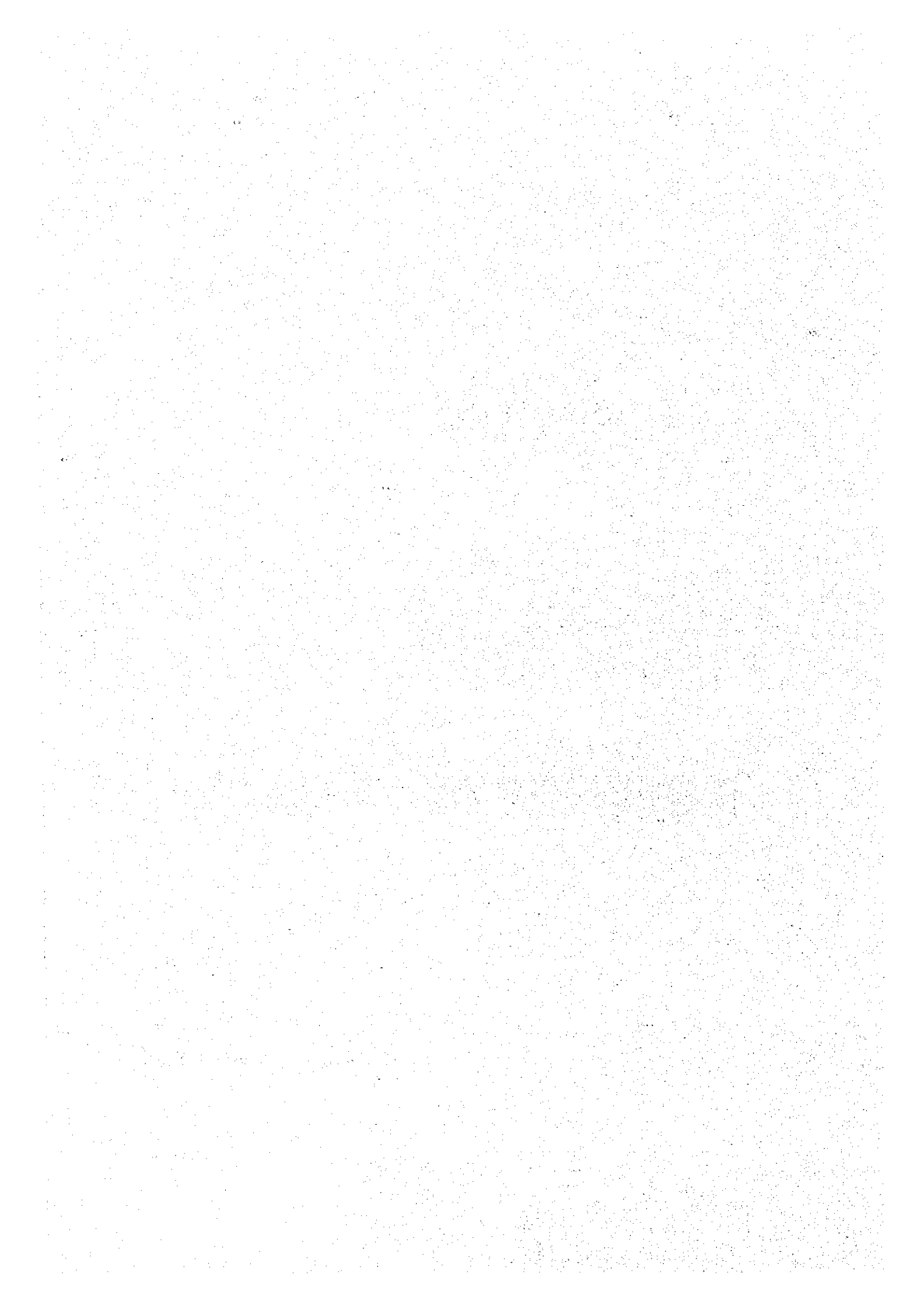
	Agropecuária	
EMBRATER:	Empresa Brasileira de Assistência Técnica e Extensão Rural	Brazilian Technical Assistance and Rural Extension Agency
EIA/RIMA	Evaluación de Impactos Ambientais/Relatório de Impactos de Meio Ambiente	Environmental Impact Assessment/ Environmental Impact Report
EXIMBANK		The Export -Import Bank of Japan
FAO		Food and Agriculture Organization
FAET:	Federação da Agricultura do Estado do Tocantins	Tocantins State Agricultural Federation
FAT:	Fundo de Apoio ao Trabalhador	Workers Support Fund
FECOMERCIO	Federação da Indústria do Estado de Tocantins	Tocantins State Industry Federation
FETAET:	Federação dos Trabalhadores na Agricultura do Estado do Tocantins	Tocantins State Agricultural Workers Federation
FGTS:	Fundo de Garantia por Tempo de Serviço	Working Period Guarantee Fund
FGV:	Fundação Getulio Vargas	Getulio Vargas Foundation
FNO:	Fundo Constitucional de Financiamento do Norte	Financing Constitutional Fund of North
FIETO	Federação Industrial do Estado do Tocantins	Tocantins State Industrial Federation
FINAM	Fundo de Investimento Amazônica	Amazonian Investment Fund
FUNAI:	Fundação Nacional do Índio	National Indian Foundation
GDP		Gross Domestic Product
GRP		Gross Regional Product
HDI		Human Development Index
IBAMA:	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis	National Institute for the Environment
IBGE:	Instituto Brasileiro de Geografia e Estatística	Brazilian Institute of Geography and Statistics
ICMS:	Imposto sobre Circulação de Mercadorias e Serviços	Merchandise and Services Circulation Tax
INCRA:	Instituto Nacional de Colonização e Reforma Agraria	National Institute for Resettlement and Agrarian Reform
INSS	Instituto Nacional de Serviços Sociais	National Institute for Social Services
IPEA	Instituto de Pesquisa Economica Aplicada	Applied Economics Research Institute
ITERTINS:	Instituto de Terras do Estado do Tocantins	Tocantins State Land Institute
JICA		Japan International Cooperation Agency
MAA:	Ministério da Agricultura e do Abastecimento	Ministry of Agriculture and Supply
MST:	Movimento dos Sem Terra	Landless Movement
MT	Ministério de Transporte	Ministry of Transport
NATURATINS	Instituto Natureza do Tocantins	Tocantins Institute of Nature

NGOs		Non-Governmental Organizations
NPO	Núcleo de Produção Agrícola	Agricultural Production Nucleus
ODA		Official Development Assistance
OECE		Overseas Economic Cooperation Fund
PCS	Programa de Comunidade Solidaria	Solidified Community Program
PEDA-TO	Programa de Desenvolvimento Agrícola do Estado de Tocantins	Tocantins State Agricultural Development Program
PESMITO	Pesquisa de Sanidade Materno Infantil de Tocantins	Maternal and Infant Health Research in Tocantins
PGPM	Política de Garantia de Preço Mínimo	Minimum Price Guarantee Policy
PMDR:	Plano Municipal de Desenvolvimento Rural	Municipal Plan of Rural Development
PROCERA:	Programa Especial de Crédito para a Reforma Agrária	Special Credit Program for Agrarian Reform
PRODECER	Programa de Desenvolvimento de Cerrado	Cerrado (Savanna) Development Program
PRODEPEC	Programa de Desenvolvimento Pecuário	Livestock Development Program
PRODIAT	Programa de Desenvolvimento Integral de Araguaia Tocantins	Araguaia-Tocantins Development Program
PRONAF:	Programa Nacional de Apoio a Agricultura Familiar	National Program for Supporting Family Agriculture
RURALTINS:	Instituto de Desenvolvimento Rural do Estado do Tocantins	Tocantins State Rural Development Institute
SAG:	Secretaria de Estado da Agricultura	State Secretary of Agriculture
SDR:	Secretaria de Desenvolvimento Rural	Secretary of Rural Development
SEBRAE:	Serviço Brasileiro de Assistência a Micro e Pequena Empresa	Brazilian Service for Assistance of Micro and Small Enterprises
SEDUC	Secretaria de Educação	Secretary of Education
SEFAZ	Secretaria de Fazenda	Secretary of Finance
SEI	Sistema Estadual de Informática	State Information System
SEPLAN	Sistema Estadual de Planejamento e Meio Ambiente	State System for Planning and Environment
SENAR:	Serviço Nacional de Aprendizagem Rural	National Service for Rural Apprenticeship
SESAU	Secretaria de Saúde	Secretary of Health
SESC:	Serviço Social do Comércio	Commerce Social Service
SESI:	Serviço Social da Indústria	Industry Social Service
SETAS	Secretaria de Trabalho Ação Social	Secretary of Labor and Social Action
SETO	Secretaria de Transporte e Obras	Secretary of Transport and Works
SNCR	Sistema Nacional de Crédito Rural	National System for Rural Credit
SINCTUR	Secretaria de Indústria Comércio e Turismo	Secretary of Industry, Commerce, Tourism
STR:	Sindicato de Trabalhadores Rurais	Rural Workers Syndicate
SUDAM	Superintendência de Desenvolvimento da	Supervision for Development of Amazon

	Amazônia	
SUS:	Sistema Único de Saúde	Health Unique System
TR	Taxa Referencial	Referential Tax
TJLP	Taxa de Juro de Longo Plazço	Long-term Interest Rate
UFG:	Universidade Federal de Goiás	Federal University of Goiás
ULBRA	Universidade Luterano Brasileira	Brazilian Lutheran University
UNDP		United Nations Development Program
UNITINS:	Universidade do Tocantins	University of Tocantins
USP:	Universidade de São Paulo	University of Sao Paulo
ZEE	Zoneamento Económico Ecológico	Economic Ecological Zoning
ZPE	Zona de Processamento de Exportação	Export-oriented Processing Zone

CHAPTER 1

PREAMBLE



CHAPTER 1

PREAMBLE

1.1 Background of the Master Plan Study

The state of Tocantins, which belongs to the Northern Region of the country, is the most recently established state in Brazil, being attained independence from the state of Goiás in 1989. Since independence, efforts have been made to invigorate economic activities of the state, but affected badly by the federal government's economic reform policy entailing austerity budget and higher interest rate, which took place just after an independence, the state government's program to develop infrastructure has been postponed because of cutback of federal government's budget earmarked for public works. Partly attributable to this situation, the state of Tocantins is featured by the second lowest Gross Regional Product (GRP) per capita of the country among 27 states of the country, with a value of R\$ 993 in 1994.

The agriculture together with its related sub-sectors absorbs a major portion of the economically active population in Tocantins, and thus the sector is reckoned as a mainstay of the socio-economic activity of the state. Despite this important role, the production performance of the agricultural sector is now at an impasse without provision of transport infrastructure and institutional supporting services which are the critical factors to encourage farmers to produce more agricultural output. As a consequence, only 7% of the potentially arable land of the state (approx. 154,000 km²) is actually put into production and the remainder is used extensively as grazing land or left unused.

Boosting the gross regional income in under-developed regions is one of the principal agendas which the central government of Brazil has to tackle. This agenda is explicitly expressed in the federal government's "Multi-annual Plan (Plano Plurianual) (1996-99)", elaborated in September 1995, as one of three development strategies: "Reduction of spatial and social disparities" In this context, the federal government, in an attempt to alleviate the prevailing unfavorable conditions, has collaborated with the state government of Tocantins in studying agricultural development potentials in Tocantins, which has contributed to formulating various projects related to the agricultural sector. Meanwhile, the state government, with an objective to realize sustainable development of the agricultural sector, has forged the Agricultural Development Strategies Plan (PEDA-TO) in 1994, which envisages fostering human resources, affiliation of public and private sectors in investment of infrastructure, improvement of life style and, as a fruit of these efforts, to convert traditional farming system into advanced one and to coordinate basic policies of the PEDA-TO with ecolo-economic zoning prepared by the Federal Government.

To this end, various programs and projects have been formulated in relation with the development of the state, but they are immature, without proper coordination with general development strategies of the state. In view of this situation, it is necessary to prepare a project list which contains medium and long term development projects / programs as well as prioritization and integration among these projects / programs. The implementation of

these development projects shall be carried out with optimum use of potential resources through an introduction of technology and finance from multilateral financing institutions, donor countries and private sectors (domestic and international).

Under these circumstances, the State Government requested the Government of Japan for the implementation of the Integrated Development Master Plan Study of Agriculture and Livestock in the state of Tocantins, through the Government of the Federative Republic of Brazil, in August 1995. Upon this request, the Government of Japan decided to dispatch a preliminary study mission to Brazil through the Japan International Cooperation Agency (JICA), in September 1996. As a result of the discussions between the Japanese mission and the Brazilian side, the Scope of Works (S/W) for this Master Plan Study was signed on September 13, 1996.

Based on this S/W, JICA dispatched the Study Team to Brazil to carry out the field work in Brazil for three times from March, 1997 to February, 1998 for the purpose of carrying out the field survey, accumulating data and information which are necessary to formulate the Master Plan. After each of the field work, work was carried out in Japan and the master plan was formulated.

1.2 Objectives of the Study

The objectives of the Study are as follows;

- (1) To prepare an Integrated Development Master Plan of Agriculture and Livestock with the target year of 2015 taking into account of the following aspects;
 - (a) Improvement of small scale farming;
 - (b) Environmental conservation;
 - (c) Diversification of agriculture;
 - (d) Coordination with other development plan sectors.
- (2) To carry out technology transfer to the Brazilian counterpart personnel through on-the-job training in the course of the Study.

1.3 The Study Area

The Study Area covers the entire area of the state of Tocantins (278.4 thousand km²), including the proposed routes for future marketing of agro-products.

1.4 Scope of the Study

The scope of the Study is summarized as follows;

(1) Phase I Study (March, 1997 - July, 1997)

1) Work in Brazil (March, 1997 - June 1997)

- To explain the Inception Report
- To analyze physical and socio-economic conditions in the state of Tocantins together with a study on agricultural development policies and supporting system both in national and regional context, to identify development potentials and constraints, and to propose development scenario;
- To hold 1st. Technology Transfer Seminar;
- To prepare and explain the Progress Report (I);

2) Home Office Work in Japan (July 1997)

- To prepare Integrated Development Master Plan of Agriculture and Livestock (Long listing of Projects/Programs including their profiles, preparation of implementation program with the target year of 2015, selection of high priority projects/programs);
- To prepare the Interim Report;
- To prepare materials for the 2nd. Technology Transfer Seminar.

(2) Phase II Study (September 1997 - February 1998)

1) Work in Brazil (September 1997 - November 1997)

- To explain the Interim Report;
- To hold the 2nd. Technology Transfer Seminar;
- To formulate preliminarily high priority projects;
- To prepare and explain the Progress Report (II).

2) Home Office Work in Japan (November 1997 - December 1997)

- To formulate definitely high priority projects and to conduct technical, economic and environmental evaluation
- To preparation the Draft Final Report.
- To prepare materials for the 3rd. Technology Transfer Seminar.

3) Explanation and Discussion on the Draft Final Report (March 1998)

- To explain the Draft Final Report;
- To hold the 3rd. Technology Transfer Seminar.

(3) Preparation of the Final Report (February 1998)

To prepare the Final Report, based on the comments from the Government of Tocantins State on the Draft Final Report.

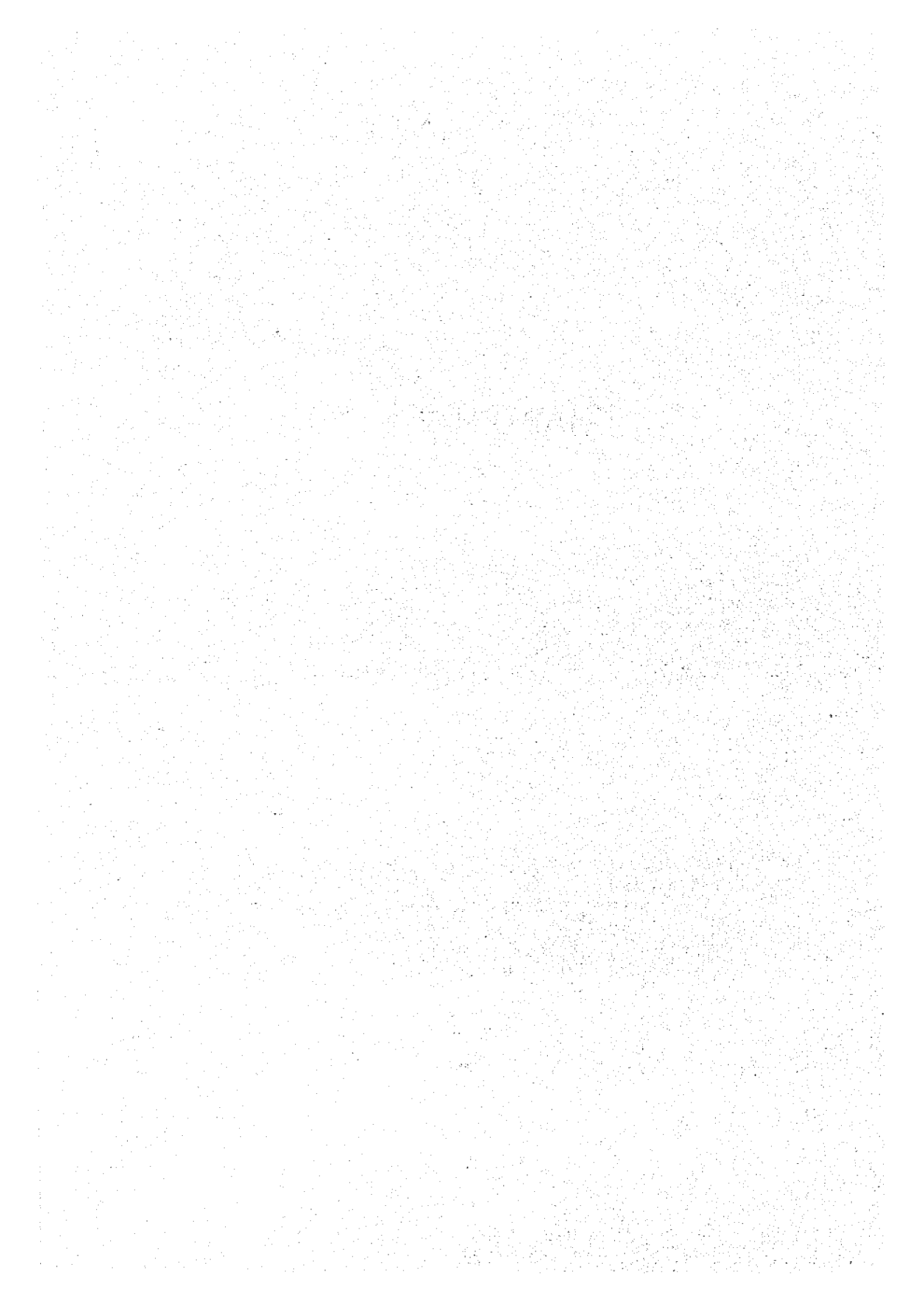
1.5 Members of the Study Team and Counterpart Personnel

The present Master Plan Study has been carried out by the following experts of the JICA's Study Team with different discipline in collaboration with Brazilian counterpart personnel assigned to respective expert.

JICA STUDY TEAM		BRAZILIAN COUNTERPART	
Name	Discipline	Name	Organization
Satoru Kido	Team Leader	Lúcia Leiko T. Muraishi	SAG
Masayuki Honjo	Environment	Ricardo Ribeiro Dias Ana Celis Arnaut de Souza Rosal	SEPLAN NATURATINS
Shousuke Suenaga	Agro-economy	Décio Fetti Alivinio Almeida Nivaldo M. Paixão	RURALTINS UNITINS SAG
Motoyoshi Yamada	Land Use	Cleon Batista do Nascimento Gonzalo A. Vasquez Fernandez Paulo Massi	ITERTINS SEPLAN SEPLAN
Isamu Yamazaki	Agro-industry/ Marketing	João Aparecido da Cruz	SEINC
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Toshikazu Nagamitsu	Livestock	Érika Jardim da Fonseca	SAG
Lyllo Massaru Nakase	Agro-infrastructure/ Meteorology/Hydrology	Denise Coelho Gomes	SAG
Hiroshi Ikeda	Institutional Supporting Services	João Gomes Barbosa	RURALTINS
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Tamio Ota	Project Evaluation	Denise Raposa Franca	SEPLAN
Ione Koseki	Coordination		

CHAPTER 2

SOCIO-ECONOMIC BACKGROUND IN THE NATIONAL AND INTERNATIONAL PERSPECTIVE



CHAPTER 2

SOCIO-ECONOMIC BACKGROUND IN THE NATIONAL AND INTERNATIONAL PERSPECTIVE

2.1 General Profile of Brazil

The Federative Republic of Brazil, which is the largest country among Latin American countries (ranked in the 5th at the world level), covers an area of 8,512 thousand square kilometers. The territory is located between 5°16' latitude North and 33°45' latitude South and between 34°47' and 73°59' longitude West. The country's climate is classified as tropical forest zone (northern part), semi-arid zone (northeast part), and temperate zone (southern part).

The country had a population of 146.8 million (National Population Census 1991), of which the urban population represented 76%; this population is distributed by group of ages in the following manner: below 14 years (34.7%), 15 - 29 years (19.5%), 30 - 59 years (38.5%), and over 60 years (7.3%). According to the Brazilian Institute of Geography and Statistics (IBGE), Brazil's population has been growing at a rate of 1.4% per annum and is estimated to reach 159.9 million in 1997. IBGE projects that the pace of the population growth in the country would decline to an average of 1.0%/year from now on and on present trends, Brazilian population would be expanded over 200 million by 2020. Another demographic data of the country are life expectancy at birth: 67.6 years, infant mortality rate: 42 per 1000 live births, and total fertility rate: 2.2. In addition, basic social indicators such as primary school enrollment and adult literacy rate aged 15 and above are 88% and 81% respectively. The HDI value for Brazil is estimated to be 0.796 (in 1993), ranked in the 58th. among 174 countries of the world. With this HDI value, Brazil is classified as a medium human development country (HDI value: 0.5000 - 0.799).

The Federative Republic of Brazil is divided administratively into the federal district of Brasilia and 26 states and these federal district and states are integrated into five regions (North, Northeast, Southeast, South and Central-West). Economic predominance of the country is concentrated in the South and Southeast regions where there is a higher level of development in industrial, service and agricultural sectors. By contrast, the North and Northeast regions are under-developed in every socio-economic aspect, and hence imbalance between the south and north has been made up as a major agenda to be tackled by the central government over decades.

The president of Brazil is elected directly for a four-year term. Re-election of president had been prohibited up to the present term, but a bill to allow the re-election of the presidency has been just passed is at the d to the Congress for discussion and ratification. The actual president, Mr. Fernando Henrique Cardoso, took office in January 1995 and is implementing various policies under the Multiannual Plan 1996-99.

2.2 Macro-economic Performance

2.2.1 Macro-economic Policy

While Brazilian economy was admired once with an achievement of a miraculous development in the 1970s, the country had suffered from burden of external debt during subsequent decade as an outcome of enormous amount of public investment in infrastructure realized relying on international financing combined with soaring of imported goods affected by oil shock, and confronted with the dark economic period of the 80s called as "Lost decade". At that period, almost unlimited government bonds and repayment of international debt had caused chronic inflation.

After democratization in 1986, the administration had made every effort to restructure domestic economy, with focus laid on depression of inflation and cutback of government expenditure, but these efforts resulted in dismal economic performance represented by hyper-inflation associated with indexization and debilitated competitiveness of Brazilian products at international market.

Under the circumstances, the federal government had launched an economic reform plan called as "Real Plan" consisting of denomination of the national currency (July 1994), high interest rate aimed to subdue chronic inflation, privatization policy to contribute reduction of physical budget, etc. The most conspicuous effect of the Real Plan is success in control of inflation, but some discomforts were brought about in terms of the economic performance of the country: slow down of GDP growth and expansion of trade deficit attributable to debilitation of competitiveness for Brazilian exports.

So as to ease unfavorable economic performance mentioned above, the federal government is at present working for encouragement of exports by means of abolishment of the merchandize and services circulation tax (ICMC) on exportable goods and major participation of private and external sectors in investment of infrastructure.

2.2.2 Recent accomplishments

(I) GDP

As the table below indicates, the leading sector which covers the major share of contribution to the Gross Domestic Product (GDP) in Brazil is the tertiary sector followed by the secondary and the primary sectors. The secondary sector, which is closely related to the government policy, tends to decline for the period.

Share of Contribution to the GDP by Sector (%)

Sectors/Year	1990	1991	1992	1993	1994
Primary	11.6	11.5	12.1	12.5	14.3
Secondary	42.2	38.9	38.1	38.2	37.3
Tertiary	46.3	49.6	49.7	49.3	48.5

The country appears to be heading in the direction of stable growth after the Real Plan was implemented in 1994. However, the fact that hardly any growth in real term has been achieved during the 15-year period is an indicative of the process followed by the Brazilian economy during this period.

(2) Balance of Payment

For the last six years (1991-96) Brazil's current balance has been in deficit except for the year of 1992, due to constant deficit of the service balance caused mainly by repayment of interest. Meanwhile, the trade balance had been in the black up to 1994, but as an effect of implementation of the Real Plan, it had turned out to be in the red in 1995 and the amount in deficit has expanded in 1996 (See Table 2.1).

2.3 Federal Government's Policies

2.3.1 Multi-annual Plan

Stipulated by constitution, the Brazilian president is obliged to elaborate the multi-annual plan within the first year of the presidential term which contains the national development program covering four years from the secondary year of his term to the subsequent first year of the expiration of the term. The present president, President Cardoso, formed his administration's Multi-annual plan 1996 - 99 (hereinafter referred to as "PPA") in September 1995.

The principal targets of the PPA are as follows :

1. Fiscal equilibrium target, as a part of the anti-inflation policy and coverage of social debt
2. Growth target, as necessary condition for incorporation of vast segment of population who are at present excluded from formal labor and consumption markets
3. External target; to take account of the necessity to maintain financing of the economy on sustainable basis and to drive the country into the world market.

The above three targets contemplate an accomplishment of balanced national economy and re-construction of economic structure of the country with an eye laid on the external economic circumstances.

Apart from the above mentioned targets, the PPA comprises of the following three strategies for development, to which action programs are established.

I. Construction of modern and efficient nation

For attaining budgetary equilibrium of the nation, it is a prerequisite to put administrative reform into force and to reduce government expenditure by means of modernization and

rationalization to cover all of the government sectors. Promotion of privatization and reform of social security system is also necessary.

II. Alleviation of spatial and social disparities

Socio-economic conditions of Brazil is featured by regional disparity between the Regions of Southeast and South represented by the states of Rio de Janeiro and Sao Paulo and the Regions of North and Northeast in terms of per capita income and development of infrastructures, and this regional disparity, in turn, brings about a social conflict which is the major social problem of the country. Bearing that the regional disparity is attributable in its greater portion to the degree of infrastructures development, the Government proposes to accelerate development of infrastructures in less developed regions on the basis of the consolidation of national axis for development (for improvement of inter-regional transport network) and inter-continental axis (for opening new route to connect neighboring countries). The present strategy conceives rational utilization of resources, creation of more job opportunities and activation of productive sectors. In addition social issues such as fostering basic education system and improvement of public health conditions is involved in the strategy in an attempt to redressing social and regional disparities.

III. Introduction of competitiveness and productive modernization

Dynamic economic growth is closely associated with an expansion of domestic market and an increase of exportation. Necessary actions for this strategy are: modernization and development of infrastructures, acceleration of participation of private sector in development investment and rationalization of domestic productive structure.

A total sum of R\$ 45.9 million shall be invested to implement programs and project contemplated in the PPA and this sum will be financed from federal government's fiscal expenditure, foreign aid, private sector, local governments' fiscal expenditure and other sources. The federal government's fiscal arrangement will amount to R\$ 31.8 billion and will be earmarked to such social sectors which are not viable to induce an investment from the private sector. By contrast, close to 35% of the required fund for economic infrastructures development will be procured from the private sector and the federal government will share only 6.7% of the total investment. This financing proposal reflects federal government's policy to realize healthy budgetary system subletting investment in economic infrastructures to the private sector in lieu of the public sector.

A total of R\$ 15.3 billion is estimated as direct cost for investment of the public works, of which the federal government's fiscal expenditure covers 69.4%. The share of remaining sources are: foreign aid (5.3%), private sector (8.6%), local governments' fiscal expenditure (3.8%) and others (12.9%). Among the development projects, priority is given to structural projects (energy, communication, science and technology, agriculture), regional disparity alleviation projects (transport), and poverty reduction projects (education, public health, housing, security) and sectors with higher proportion of a budget allocation are: energy (24.9%), communication (22.0%), transport (8.7%), public health (6.3%) and housing (5.3%).

The direct investment proposed for the agricultural sector will be R\$ 7, 289 million, equivalent to 4.8% of the total amount of the direct investment for the public works; in addition to this amount, R\$ 3,165 million will be earmarked to irrigation system development projects. It is of worth to indicate that 34% of the direct investment for the agriculture sector is deemed to be covered by the federal government's fiscal expenditure; Meanwhile, close to 90% of the same for the irrigation projects is anticipated to be procured by the foreign aid together with the private sector. As objectives relevant to the agricultural sector, the PPA contemplates a modernization of the irrigation and transportation systems, an expansion of crops cultivated area, an enlightenment for producers by strengthening their education and training, and environmental conservation.

The projects related with consolidation of the transportation system of agro-products, which is a critical factor for acceleration of the agricultural development of the Tocantins, is included in the PPA; these projects are 1) Extension of the South-North Railroad, 2) Improvement of the National Highway R. 153 and 3) Construction of a Hydroway Araguaina - Tocantins, and an investment of R\$ 279 million is proposed for these three projects.

2.3.2 Agricultural Policies

(1) Historical Review on Agricultural Policies

The core part of the agricultural policy in Brazil consists of rural credit, agricultural insurance and minimum price program.

The rural credit was started in 1965 in the name of Sistema Nacional de Credito Rural (SNCR) and had supported farmers with an extremely low interest rate of 2.3%/year up to 1973. This low interest rate means an intervention of the government in the form of subsidy and the rural credit system contributed greatly to encouragement of the agricultural production at that time. Nonetheless, under the circumstances of the higher rate of inflation of the country, the rural credit system benefited by lower and fixed real interest rate had contradicted with other economic sectors from 1974 on and financing institutions of the rural credit had changed their policy in such manner as to raise the real interest rate per year as high as 38.8% in 1980.

The expansion of money supply for the rural credit had caused partially to accelerate inflation, thus the federal government had decided to reduce total amount for the rural credit in 1980 and repealed the rural credit program. By contrast, various programs had introduced to support small and marginal farmers.

Nevertheless, with an enforcement of a higher interest rate in the realm of the basic economic policy of the federal government aiming to depress inflation which was considered as the principal factor of instability of the Brazilian economy for long period, the agricultural sector began to show stagnating tendency being associated with various negative factors. The interest rate for rural credit had been fixed higher than the rate of the

consumers price index resulting in a number of producers who became default of repayment.

The government, in due consideration of extremely grave situation, has launched new line of rural credit introducing once again a fixed interest rate. This new credit line was applied for the crop year of 95/96 and for such staple crops as paddy, feijão beans, maize and wheat. Furthermore, in an attempt to support defaulted producers a relief program which enables defaulted producers to postpone repayment off their debts was put into force.

In general, the federal government's basic policy is to slim functions of the central government and thus to reduce governmental intervention in the field of rural credit.

(2) Agricultural Policies under Present Administration

The federal government is well aware that an encouragement of import substitution industrialization with higher tariffs and customs together with government intervention on economic activities, which had been a central policy for decades, had enforced negative impacts on development and strengthening of dynamic economic activity, in particular, in the field of modernization and diversification of traffic and port infrastructure. This disadvantageous situation had charged transporting agencies extremely elevated transportation cost which is notoriously called as "Brazilian cost" and had debilitated the competitiveness of Brazilian products at international market.

On the other hand, the agricultural output has not shown a downward slide even though subsidies on rural credit had been removed since 1985, the federal government is assured that the Brazilian agricultural sector might be survived without depending on subsidies and, even more, some sub-sectors might have competitiveness at international market. Under such positive perspective, the federal government, in an attempt to getting international predominance of the Brazilian products intends to prioritize modernization and rationalization of infrastructure and, by contrast, would make light of unnecessary intervention on the spheres like rural credit which entails heavy fiscal burden of the federal government. As for modernization and rationalization of infrastructure, particular attention will be paid to promotion of privatization of railways and ports operation, realization of fluvial transportation system as measures to market farm products under joint operation system taken initiative by the private sector, reduction of taxation on exports and capitals, etc.

(3) Agricultural Policy Reform Proposals

As for agricultural policy, the federal government has conceived two proposals: transitional one and long-term one. The former proposal intends to adjust prevailing agricultural policy to the actual macro-economic performance attained as a consequence of stabilized economic situation and shall lay focus on alleviation of governmental intervention to economic activities and on encouragement of market-oriented agricultural production. Meanwhile, the latter proposal shall have target of reconstructing agricultural sector for free

competition of the 21st century from the viewpoint that the agricultural sector plays strategic role in expanding the share of Brazilian products at the international market.

(Transitional proposal)

This proposal is composed of reforms regarding 1) Minimum price program (PGPM), 2) Rural credit, 3) Crops storage system presided by government, and 4) Rural Insurance System.

1) PGPM

This program, started to be effective in the 1930, had contributed in the past to stabilization of farm income as well as strengthening producers' capacity in determining their farm products. The program, on the other side, has a function to store farm products purchased by the public sector and the same function which entails troublesome jobs on the public sector. In this connection and in view of attaining open economy, the PGPM is faced with an opportunity for reform. With an objective to alleviate public sector's role, the federal government established the Option Sales Contract system in April 1997 and intends to diffuse this system in lieu of the PGPM. Nowadays, the PGPM is only utilized for the PRONAF and for Securitized debts.

2) Rural Credit

With an exception for measures to support financially and socially handicapped marginal peasants such as PRONAF, the federal government bears in mind phasing out of their intervention into rural credit in the long run. Nonetheless, in response to immediate request for encouragement of debilitated farming sector together with promotion of agricultural exports, the government declared in June 1997 to expand rural credit with more gentle financing conditions for the crop year of 1997/98.

3) Crops Storage System

Public-oriented crops storage system is out of fashion under open economic circumstances. With progress of economic liberalization and improvement of access to external market, there is no doubt that the importance of crops storage system would diminish. This reform, nonetheless, does not imply that the public sector would cease all of their functions related with crops storage, but would continue it for such crops which are deficient at international market and are mainly supplied to the domestic market.

4) Rural Insurance

Since the farm output is affected greatly by natural conditions, rural insurance system is indispensable for realization of stable farm operation. It is worthy to review on prevailing rural insurance system in respect to an elevated rate of premium, which is closely associated with higher production cost. At present, EMBRAPA is in charge of zoning of productive regions for the purpose of encouraging crop cultivation according to edaphic-

climatic conditions of each region. This zoning task will serve lowering insurance premium if crop cultivation is carried out according to land capability assessment. In addition, small farmers benefited by PRONAF and PROCERA are expected to be applied exclusively discounted premium.

(Long-term proposal)

This proposal shall aim at improvement of agriculture-related activities, reduction of public intervention on marketing activities, etc. Special attention shall be paid to the following four fields.

1) Reconstruction of Research and Technology Extension System

Despite private sector's participation in the field of crops and livestock, research is conspicuous in these days, and public organizations still play an important role in development of advanced technology. The proposal in this field falls on sliming and streamlining of administration department of the research systems which is in charge of EMBRAPA so that specialization and crops for research may be fruitful. Actually, it is delineated to orient the Brazilian agricultural sector toward internationally efficient and competitive sector through rationalization of nation-wide land use according to specific characteristics of respective region of the country. In this context, it is a prerequisite to conduct an agronomical survey on the national land so as to elaborate land classification map to be used for crop eligibility.

2) Expansion, Modernization and Diversification of Port Facilities and Transportation Network

The critical issue on development of port and land infrastructure is to identify the most economically viable route in marketing agriculture-based products under the initiative of the private sector and to find out the most promising financing source. The federal government has proposed two transportation systems composed of railroads and hydroway.

3) Renovation and Intensification of Animal and Plant Disease Control System

The standardization to control animal and plant diseases is at present of much concern at the international market. As for the plant disease control, an immediate action is required and more sophisticated tasks are essential in this field of research. It is a worldwide fashion to take up frequently an issue of disease control in an attempt to protect domestic products and the Brazilian government is well comprehended that it is a matter of public concern to tackle with the issue of disease control so as to lay foundation stone for facilitating public sector's participation in the international market with improved efficiency and quality. Priority in disease control shall be given to solving any items relevant to agricultural production which may cause to impede national products' access to the international market.

4) Institutional Arrangement for Promotion and Expansion of Private Sector's Participation in Marketing Field

CONAB, which is a governmental agency responsible for marketing of agro-products, shall centralize their intervention in supporting small farmers and in taking necessary measures in case of extraordinary circumstances. Besides, CONAB shall take charge in improvement of market information provision system on farm-gate and export prices of agro-products and shall take efforts in opening market and price formation process to public.

(4) Agricultural Policies for Fiscal Years 96/97 and 97/98

Agricultural reform programs conceived for the fiscal years 96/97 and 97/98 are summarized in the Table 2.2

2.4 Agricultural Sector

Although the agricultural sector contributed only 14% (1994) of the GDP, it plays an important role within the context of the national economy; about one-quarter of the national population live in rural area, 27% of the economically active population are employed by the agricultural sector, and close to 25% of the country's exports earning are represented by agriculture-related commodities.

The performance of the agricultural sector nowadays is stagnated, being highly affected by the government policy in pursuit of the Real Plan and, consequently, not a few small and marginal farmers have given up agricultural activity leaving from their lands. This phenomenon associated with the movement of landless peasants is reckoned as one of the social conflicts of the country, and thus the solution of the problem has become a major agenda of the central government.

2.4.1 Land Use and Land Tenure

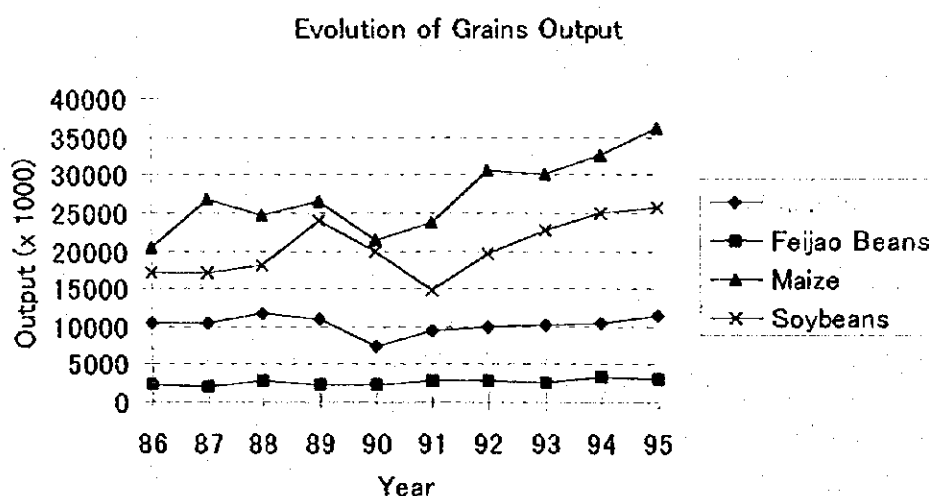
Brazil has a national territory of approx. 846 million ha, of which it is predicted that only 76.8 million ha (11%) is used for crop farming purpose. Land used for crop farming purpose is further divided into that for perennial crops (85%) and for permanent crops (15%). Of lands used for crop farming, irrigation land accounts for 2.8 million ha in total. Meanwhile, land used for grazing represents about 167 million ha and three quarters of which is covered by natural pasture. Land occupied by forests is estimated roughly to be 569 million ha.

The latest available figure (the agricultural census in 1985) indicates the status of land ownership in Brazil as follows: owners (61%), renters (9.4%), sharecroppers (7.3%) and squatters (17%); squatters are concentrated in the Northeast Region with a share of more than 60%. The average farm sizes by type of producers are: owners (90 ha), renters (20 ha), sharecroppers (11 ha) and squatters (17 ha). It is worth while to point out that the farm size of squatters is larger than that of sharecroppers. Like most of the South American countries,

a highly skewed farmland distribution is conspicuous phenomenon in Brazil; 15% of the total extension of farmland is occupied by "fazenda" owners with a land size larger than 10,000 ha, while the total land area of small and micro farmers with a holding smaller than 10 ha represents as small as less than 3% even though their number accounts for more than half (53%) of the total number of farmers in Brazil.

2.4.2 Agricultural Output

The chart shown below indicates an evolution of output (in tons) for major crops in Brazil during 1984-1995.



As for changes in production by crop, staple crops such as rice and feijão beans increased slightly (increased by 25% for the former and by 10% for the latter), while crops such as maize and soybeans have shown significant increase (increased by 70% for maize and by 65% for soybeans). So far as the change in cultivated area is concerned, there is a slight decrease for rice and feijão beans and small increase for maize and soybeans. This evolution implies that an increase of output is attributable to an improvement of productivity rather than to expansion of cultivated area.

2.4.3 Prices and Production Cost of Farm Products

After the implementation of the Real Plan, however, prices of farm produce relative to general price index have been declining and this trend is most noticeable in livestock products.

In the "Cerrado" regions, the main farm produce prices had been remaining nearly stable from 1990 to 1993, but they have declined for all items except coffee since the Real Plan was put into force in 1994. The decline in staple crops represented by rice and feijão beans is significant.

The behavior of agricultural production cost in recent years is resumed as follows: although the cost had been increasing at a lower rate in comparison with the average commodity

prices and farm produce prices until July 1994, following the implementation of the Real Plan, it has increased over farm produce prices mainly due to jack-up in labor cost.

2.4.4 Trade of Agro-products

Coffee had been the leading agricultural export for a long time, but has been substituted by soybeans recently; in the year of 1996, soybean accounts for about 35% of the total amount of the agricultural exports, followed by coffee, tobacco, sugar, concentrated orange juice, beef and fruits. Among them, tobacco, concentrated orange juice and sugar are on the increase while coffee and beef suffers from stagnation. It is worthy while to remind that the amount of exports for soybean, coffee and sugar fluctuates largely year by year according to the behavior of price at international market.

Importation of agriculture-related commodities for the period 1993-96 is shown in the table below. For the last two years, an importation of foodstuffs for human direct consumption has been remarkably increased, and reflecting diversified diet among Brazilian people wheat has been imported on increased trend. Hiked amount of importation for fertilizers has served greatly in improvement of crop productivity

Products	1993	1994	1995	1996	Growth Rate (%)		
					93/94	94/95	95/96
Foodstuffs	1,089	2,014	3,514	3,278	85.9	74.5	-6.7
Grains and products for processing	1,229	1,408	1,665	1,599	14.6	18.3	-4.0
Wheat	726	749	914	1,077	3.2	22.0	17.8
Fertilizer	511	634	661	860	24.1	4.3	30.3
Total	3,555	4,895	6,754	6,814	35.2	40.6	0.9

2.5 Socio-economic Positioning of the State of Tocantins in Brazil

The State of Tocantins is the most recently established state in Brazil, having been accomplished from the Goias State in 1989. The extension of the state is 277,322 km², which represents 3.3% of the national territory, but its population (920,116 in 1991) accounts for only 0.6% of the country's population. As a consequence, the state is featured by scare population with the population density equivalent to one fifth of the national average. Although the population growth of state had been relatively dull (close to 2.0% per annum, which was almost the same as the national average) for the period 1980-91, it has become burgeoning recently with an annual rate of 3.3% since 1992, which is far higher than the national average of 1.4% of the same period.

The mainstay of the State of Tocantins is an agricultural sector represented by cattle raising and the sector contribute to the formation of the Gross Regional Products (GRP) with an approximate share of 60% in 1994. Considering the agricultural sector's participation in the Gross Domestic Products (GDP) is around 14%, it is clear that the industrial structure of the State of Tocantins is heavily specialized in the agricultural sector leaving the remaining sectors in under-developed (in particular, the manufacturing sector of the state conspicuously less developed with its contribution to the GRP formation as small as 4%).

The socio-economic development of the Tocantins State has been behind in arrears of the most of the states in Brazil. The GRP per capita is an indicator which highlights the economic capacity of each state and the IPEA estimated the GRP per capita in Tocantins to be R\$ 993, which is the lowest among 27 states of the country except for the Piauí State and is equal to 13% of that of the São Paulo State and 30% of the national average, respectively.

The Human Development Index (HDI) is an indicator which is invented by the UNDP and is commonly used to capture some aspects of socio economic development and the HDI value for Brazil is calculated to be 0.796 in 1993, ranked in the 58th. position among 174 countries of the world and classified as medium human development countries (HDI values in the range of 0.5000 - 0.799). Pursuant to the UNDP's methodology IBGE had calculated HDI value for every state of the country in 1991 and according to this calculation the HDI value in Tocantins was 0.540, in the 22nd. among 27 states of the country and in the 121st. if reference is made to the countries' ranking of the world (incidentally, the state which recorded the highest HDI value was Rio Grande do Sul with 0.871 being ranked in the 39th in the countries' ranking of the world).

In so far as other two components use in calculating HDI value, the State of Tocantins, although its GRP per capita is the lowest next to the state of Piauí, is ranked in the 14th. for a life expectancy at birth and 17th. for the adult literacy . All this implies that the state of Tocantins is situated on the least developed state in terms of economic development, but is a medium or a slightly inferior to the medium state in social term.

Another indicator to be used for assess economic capability of each state is revenue stemmed from the merchandises and services circulation tax (ICMC). The State of Tocantins collected in 1996 as the ICMC-related revenue the amount of R\$ 138,757 thousand, which accounted for only 0.25% of the country's total sum to be ranked in the 24th., while per capita revenue was R\$ 140 boosting the state position to 21st. This per capita revenue from ICMC was approximately 20% of the state of São Paulo, the highest revenue earning state of the country, reflecting dull performance of the economic activity of the State.

The federal government of Brazil, with an eye to easing negative impact of economic imbalance among states on implementation of development programs/projects, has been realizing the transfer of funds from the National Treasury to each state of the country in such manner as more fund is transferred to the states with less per capita income. The State of Tocantins received in 1996 a transfer amount for the sum of R\$ 521,042 thousand covering about 2.5% of the national treasury's expenditure in the realm. The said amount is converted into R\$ 526 per capita, which is ranked in the 4th largest amount among the whole states of the country. Furthermore, the said per capita transfer was ten times as much as that of the state of São Paulo (R\$ 49). From this factor it may concluded that different to financially rich states of the Southeast and the South Regions, budgetary operation in the State of Tocantins is heavily dependent on transfer of the funds from the National Treasury.