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Meeting on Co-operation in the
Field of Agro-Industry between Brazil
and Selected African Countries

Sao Paulo, Brazil
6-10 November 1989

REPORT*

* This document has not been edited.

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Explanatory notes

ABC	-	Associação Brasileira da Co-operação (Brazilian Association for Co-operation)
ABIMAQ	-	Associação Brasileira da Indústria de Máquinas e Equipamentos (Brazilian Association for Machinery and Equipment Industry)
ECDC	-	Economic Co-operation among Developing Countries
FAO	-	Food and Agriculture Organization of the United Nations
GDP	-	Gross Domestic Product
IDF	-	Industrial Development Fund
IPF	-	Indicative Planning Figure
ITAL	-	Instituto de Tecnologia de Alimentos (Food Technology Institute)
RP	-	Regular Programme
SIS	-	Special Industrial Services
TCDC	-	Technical Co-operation among Developing Countries
UNDP	-	United Nations Development Programme
UNICAMP	-	Universidade Estadual de Campinas (Campinas State University)

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INTRODUCTION

1. The Lima Declaration and Plan of Action on Industrial Development and Co-operation adopted by the Second General Conference of UNIDO stressed the importance of economic and technical co-operation among developing countries and the need of the developing countries to develop agro-industries to foster the integration between agriculture and industry.

2. Within the framework of UNIDO IDDA and ECDC/TCDC programmes the Meeting on Co-operation between Brazil and selected African countries in the field of Agro-Industries was organized by UNIDO in co-operation with the Government of the Federative Republic of Brazil and hosted by the Brazilian Association of Machinery and Equipment Industry (ABIMAQ) in Sao Paulo from 6 to 10 November 1989. The meeting aimed at promoting co-operation between Brazil and African countries in this sub-sector.

I. ORGANIZATION OF THE MEETING Date and venue of the meeting

3. The meeting was held at Sao Paulo, Brazil from 6 to 10 November 1989.

Attendance

4. The meeting was attended by participants from the following countries: Angola, Benin, Botswana, Cameroon, Cape Verde, Gabon, Guinea Bissau, Lesotho, Mozambique, Niger, Nigeria, Sao Tomé and Príncipe, Swaziland, Tanzania, Zambia and Zimbabwe. The Meeting was also attended by the representatives of the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Programme (UNDP).

5. The list of participants is attached as Annex I.

Opening of the Meeting

6. The participants were welcomed by Mr. Mario Mugnaini, Jr., 2nd Vice-President of ABIMAQ, the host institution. In his address, he recalled the close cultural, economic and historical ties existing between Brazil and African countries. He stressed the importance of South-South co-operation and appreciated UNIDO endeavours in promoting co-operation between Brazil and African countries. Although it was the first meeting of this kind hosted by ABIMAQ, he assured the readiness of the member companies to co-operate with their African counterparts in the supply of equipment, technology and expert services. He was sure that the meeting would produce good results. The meeting, he further stated, was also an opportunity for ABIMAQ to gather experience in this field.

7. The TCDC Co-ordinator of the Brazilian Co-operation Agency (ABC) welcomed the participants in the name of the Brazilian Government and elaborated on the nature of co-operation between Brazil and the African countries. She said Brazil had a strong ECDC/TCDC commitment and flexible mechanisms for this type of co-operation which could be either bilateral or multilateral through the UN agencies. The experience of co-operation with African countries had been varied and fruitful. She hoped that this meeting, which was of an exploratory nature, would serve to identify areas of co-operation in the field

of agro-industry with the participating countries. She added that the follow-up of this meeting would be co-ordinated by ABC in close co-operation with UN agencies, most particularly with UNIDO who had organized the meeting. She stated that any type of co-operation would have to be on the basis of requests from the countries. She emphasized the importance of the follow-up action.

8. The representative of UNIDO, Chief of the Section for Economic Co-operation among Developing Countries, thanked the Government of Brazil and the host institution (ABIMAQ) for agreeing to host the meeting and for their substantive financial contribution, hospitality and excellent arrangements. He gave an overview of the present UNIDO IDDA and ECDC/TCDC programmes. He said Brazil was one of the countries strongly supporting the endeavours of the United Nations development system, including UNIDO, in promoting ECDC/TCDC activities. In view of the advanced development of its agro-industries, Brazil had been in a position to offer technical assistance to African countries in most areas of agro-industries. He assured that within the limit of its financial resources, UNIDO would provide the necessary support in the follow-up of this meeting.

9. The representative of FAO emphasized the principle underlying South-South co-operation and recalled FAO's experience in this field. He considered this meeting to be a useful opportunity for FAO to gather experience which would serve for a similar meeting which FAO intended to organize in 1990. He would be following with great interest the conclusions and recommendations emanating from the meeting.

10. The representative of UNDP recalled the long and varied experience of his Organization in economic co-operation among developing countries and particularly its longstanding association with ITAL and UNICAMP in joint programmes in the field of training. UNDP would be very interested in the results of this meeting and in any follow-up activities which would emanate from it.

Election of Officers

11. The meeting unanimously elected the following officers:

Chairman:	Ms. Maria Lucia de Oliveira TCDC Co-ordinator of Brazilian Co-operation Agency (ABC)
Vice-Chairman:	Mr. Flavio Alves Ereio Delgado Director General, Empresa Agro-Industrial Justino Lopes, E.P. of Cape Verde
Rapporteur:	Mr. Luke C. Mbewe General Manager of Industrial Development Corporation, Ltd. of Zambia

Adoption of the Agenda

12. The meeting adopted the following agenda:

- Opening of the meeting
- Presentation of the Brazilian Paper
- Presentation of the UNIDO paper
- Presentations by African participants
- Sectorial meetings between African participants and Brazilian industrialists

Statements

13. The representatives of each African country presented statements giving an overview about the situation and the role of the agricultural and agro-industrial sector emphasizing the actual problems and giving proposals for possible co-operation with Brazil (see details information in Chapter II).

14. The representatives of Brazilian financing agencies explained the different types of support to be given by the Brazilian banks for commercial activities between Brazil and African countries.

15. The Area Programme Officer of Latin America and Caribbean Programme of UNIDO gave an overview of UNIDO's role as a technical assistance organization which was characteristically different from a development financing institution. The projects executed by UNIDO were either financed by the UNDP Indicative Planning Figures (IPF) or UNIDO administered resources, such as Industrial Development Fund (IDF), Special Industrial Services (SIS) and Regular Programme (RP). He explained the difference between these non-refundable UNIDO funds and the World Bank credits and emphasized UNIDO's access to the technical assistance component of World Bank credits.

16. The representative of the African participants thanked the Brazilian Government, the host institution and UNIDO. He hoped that the meeting would lead to future fruitful co-operation between Brazil and African countries.

17. The Chairman of the meeting stressed that considerable results and the main objective of the meeting had been achieved, namely to define mechanisms which could facilitate technical co-operation between Brazil and African countries in the area of agro-industry. She said that ABC would offer its service and co-operation for all kind of consultancy and expertise in this specific area.

18. The representative of the Secretariat for Science, Technology and Economic Development of Sao Paulo emphasized that any follow-up activities for co-operation would be supported by the Secretariat.

19. Both the UNIDO representative and SIDFA stressed that the meeting had fully achieved its objectives. Based on the results and the industrial capabilities of Brazil, co-operation in agro-industries between Brazil and Africa could be further developed.

20. The ABIMAQ representative stated the willingness of ABIMAQ and its associated 1,300 national companies to strengthen South-South co-operation within Latin America and with African countries. The meeting has, for the first time, offered an opportunity to reflect views of African countries and to open ways for co-operation with them. In view of the difficulties to combine marketing aspects with the co-operation aspects, it has been decided to centralize within ABC exclusively the aspects of co-operation. The technical and scientific co-operation should have co-ordinators, either UNDP and ABC or the Secretariat for Science and Technology.

Adoption of Conclusions and Recommendations

21. The meeting adopted the draft conclusions and recommendations at its last plenary session on 10 November 1989 (see paragraph VII).

Closure of the Meeting

22. The meeting was closed after the adoption of the conclusions and recommendations on Friday 10 November 1989.

II. EXCERPTS OF PAPERS PRESENTED AT PLENARY SESSION

23. A UNIDO paper entitled "The Food Agro-Industrial Sub-Sector: Perspectives and Needs for Technical Co-operation Projects" was presented at the meeting. Its objective was to provide useful reference to guide bilateral discussions. It recommended that when establishing technical co-operation projects the technical elements within the food agro-industry sector be taken into account.

24. It mentioned that UNIDO's member states of developing countries have, in general, different status regarding technical infrastructure and availability of human resources. Based on their capacity of absorbing technology, the countries were grouped in three categories and reflected as follows:

25. Groups of Countries	1 Advanced technology level	2 * Intermediary technology level	3 Reduced technology level
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lines of technical co-operation

1.	Programmes incorporating microelectronics to achieve rapid increase of productivity	Adjustment/ establishment of institutional infrastructure	Human resources
2.	Adjustment of infrastructure in order to incorporate the high standards	Rehabilitation of agro-industrial plants considering sectoral trends	Minimal infrastructure for productive sector
3.		Human resources	

*Most of the participating countries were classified among the Group 2.

Brazilian Presentation

26. In spite of interest on both sides in the exercise on TCDC, the present stage of co-operation between African countries and Brazil was considered insufficient regarding the great potential to be expanded and strengthened.

27. The paper identified nine main areas of action for TCDC between African countries and Brazil such as: human resources, research and development,

provision of equipment, rehabilitation of agro-industries, pre-investment, technical assistance, studies/implementation of integrated agro-food industry system, food products quality promotion, information system.

28. With its advanced establishments in technology, consulting engineering, private industries, R & D facilities and advanced human research development, Brazil is able to provide suitable technological capacities for co-operation with African countries in agro-industry.

III. SUMMARY OF STATEMENTS DELIVERED AT PLENARY SESSION BY DELEGATES OF AFRICAN COUNTRIES

ANGOLA

A. Situation and Problems

29. The agriculture shares 14% (1986) of total Gross Domestic Product (GDP) value and 71,8% (1985) of labour force. Agro-industry is a branch which could benefit from the natural development verified in agriculture: meat and fruits conserve, vegetable oils (ground-nut, palm oil, coconut, cotton and sunflower), sugar, molasses and alcohol, natural juices and wine of fruits (with the exception of grape), maize-flour, wheat and cassava (bombo/crueira), milk derivatives (pasteurized, butter and cheese), margarine, cereals, flour derivatives (bread, biscuits). Angola has established beer and softdrink industries, but the main raw materials must be imported (malt, hop and extracts).

30. The hard disappearing and the fall of agriculture production up to the subsistence level do not allow to furnish raw material to the food enterprises. In order to get the foreign financial support to import raw material and to maintain the low level of activities, priorities have to be established. Because of the difficulties in agriculture, it is necessary to get external financing, specially for rehabilitation of factories where the equipment is considerably obsolete. The rehabilitation difficulties are connected not only with the age of the equipment but also with its maintenance. Maintenance workers are not sufficiently qualified, there are insufficient resources to import spare parts and other materials; the technological obsolescence of equipment indicates that no more spare parts are available. Sometimes, the company producing the equipment does not exist anymore.

B. Potential areas of co-operation with Brazil

31. In view of the above mentioned problems, Angola is interested in: Creation of conditions to restart agricultural production to support the non-integrated agro-industries; rehabilitation of existing agro-industrial complexes; recuperation and expansion of agro-industrial production; upgrading of technical skill-level of the workers; to get necessary know-how in all levels of management and production; creation of legal and economic mechanisms which facilitate the possible intervention of foreign operators and the country's political and economic interest.

32. Angola would be interested to co-operate with Brazil and other developing countries in the following fields:

Training:

enterprise management; stocks management in agro-industries;
equipment maintenance; production technicians; laboratory

* If not provided by the participating countries, the figures on the shares of agriculture sector in the GDP and the labour force were taken from the 1989 Britannica Book of the Year Encyclopaedia Britannica, Inc.

technicians; quality control technicians; and market analysts (internal and external); specialized workers.

Transfer of Technology:

Tropical fruits extracts; natural fruit juices; tropical fruits conserves; meat conserves; milk derivatives and biscuits.

BENIN

A. Situation and Problems

33. Benin is an essentially rural country with considerable potential for the development of agriculture which shares 35,9% (1985) of GDP value and 70,2% of labour value. Its climatic and hydrographic conditions are suitable for the development of agriculture. The geographic location within the subregion provides natural outlets for some of its products for neighbouring countries. The main crops are maize, sorghum, beans, ground-nuts, cassava, sweet potatoes, oil palm and cotton.

34. The areas covered by agro-industry are: food industries, such as oil mills (palm, cotton, karite, cabbage palm), a maize mill, a sugar refinery, fruit processing plants (citrus fruit, mango, tomato, cashew nuts), a bakery, etc.; beverage industries, namely, a brewery, a carbonated beverage bottling plant and an ice cream production plant and textile industries.

35. Technical and financial difficulties are encountered by the enterprises, such as lack of prime material due to obsolete plantations, low prices for the prime material for the producer and dependancy of international prices for the final product. Lack of technical improvement, low productivity of the rural sector and lack of spare parts for the technical equipment.

B. Potential areas of co-operation with Brazil

36. Despite the mentioned problems, agro-industry, as one of Benin's priorities, can be expected to grow in the future. Co-operation with Brazil in this area will therefore be very useful. Benin is proposing that its agro-industrial co-operation with Brazil should focus on the following areas:

37. The development of partnerships and establishment of joint ventures between the economic agents in Benin and Brazil with a view to setting up small and medium-sized agricultural and agro-industrial enterprises. Specifically, the economic agents in Benin have expressed interest in the following areas: production of "gari", molasses distillery, production of karite butter, production of soya milk, cashew nut plantations and processing, and cattle feed;

38. Participation of Brazilian investors in the privatization of certain enterprises launched by the Government of Benin. In the agro-industrial field these include a maize mill, a national beverage company, a plant producing tomato paste and mango juice, a cashew nut processing plant and a complex producing citrus-fruit juice;

39. The establishment of exchanges between the Chamber of Commerce and Industry of Benin and the corresponding institution in Brazil;

40. Brazilian assistance in strengthening the technical capability of the Directorate of Industry of Benin through the organization of study tours and training of further training courses for the managerial personnel of the Directorate;

41. The establishment of relations between the research and training institutes operating in the agricultural and agro-food sectors in Benin and Brazil.

BOTSWANA

A. Situation and Problems

42. Botswana has mainly two types of agro-industries. The food agro-industries which comprise meat, grain, milk, beer and fruit processing constitute the largest. The meat processing industry, the largest in the food agro-industry group, is mainly for export. The second type of agro-industries cover the non-food activities like leather, raw timber production, wood, textile, livestock feed, and service sectors like farm machinery, etc. Agriculture shares 3,2% (1987) of GDP value and 43,2% (1985) of labour value.

43. The rationale and justification for the development of agro-industries in Botswana is multifold. The major reasons for the development of agro-related enterprises are to generate productive employment for the fast growing labour force; increase value added in the respective commodities so that Botswana can sell finished products and thereby save foreign exchange particularly in the commodities, and to help diversify the economy away from its heavy dependence on beef and minerals.

44. Like many African countries, Botswana faces an acute shortage of qualified professional/technical personnel. The development of human resources in the agricultural sector was neglected. The agriculture is currently constrained by the availability of locally trained personnel despite efforts made by the Government to step up manpower in the economy.

B. Potential areas of co-operation with Brazil

45. Brazil could assist Botswana to develop human capital through scholarships, technical co-operation between the two sides which could include collaborative research between universities and exchange of teaching staff.

46. Botswana believes in both private and joint investments in areas such as agro-industry, manufacturing, etc. Brazil could enter into joint investments in areas such as the leather and timber industries. With highly developed Brazilian technology in these sectors, Botswana could benefit.

CAMEROON

A. Situation and Problems

47. Agriculture shares 20,6% (1985) of total GDP value and 73,2% (1982) of labour force.

48. The lack of skilled workers in specific areas and of adapted equipment are the main difficulties faced by Cameroon.

49. A programme for "medium-sized farms" (EAMI) has been set up in Cameroon to assist all economic agents wishing to invest in agriculture.

50. As regards mechanization, an agreement has already been reached between Cameroon and the Cotta group (Brazil). The programme will be aimed at manufacturing machinery suited to Cameroon's ecology and other specific conditions.

51. Furthermore, Cameroon has embarked upon sweeping privatization of its parastatal and State enterprises, most of them in the food sector. Initially, co-operation should therefore focus on the establishment of an institutional framework to assist the private sector. As for the future, the aim will be to support new projects in two specific areas, namely, know-how (manpower training) and hardware (equipment).

B. Potential areas of co-operation with Brazil

52. Training technicians and skilled workers for slaughterhouses, industrial meat-processing plants, cold storage plants; transferring technology to tanneries and other agro-food enterprises; developing other industrial sectors through the use of by-products; conducting research and development in the agro-food sector; carrying out feasibility studies in the agro-food and beverage sectors and marketing agricultural produce.

CAPE VERDE

A. Situations and Problems

53. Cape Verde has no agro-industrial tradition, apart from the small-scale production of brandy (aguardente), goat's milk cheese and confectionery. The agriculture shares 17,6% (1981) of total GDP value and 33,1% (1980) of labour force.

54. In the capital there is a small confectionery and candy-making industry using imported pulp, a plant producing beer and soft drinks, a small soft drinks factory and a milk reconstitution unit and yoghurt plant. Sao Vicente has a wheat mill and factories producing food pastes and biscuits.

55. The agro-industrial enterprise Justino Lopes could serve as the basis for the development of the farming and livestock industry. The enterprise administers 65 hectares, as follows: 30 hectares of bananas; 15 hectares of market gardens; 4 hectares of sugar-cane; 16 hectares of miscellaneous fruit (guava, papaya, oranges, etc.); pig-raising, with 300 breeding pigs, a slaughter-house and sausage factory, a small distillery and cattle-raising.

B. Potential areas of co-operation with Brazil

56. The enterprise requires co-operation in funding for: installation of gravity-feed and sprinkler irrigation; cattle to provide milk (20 head); system for sorting and conserving milk, pasteurization and bottling; training of a person to take charge of a small product processing unit; equipment for the production of banana paste, juices, nectars, confectionery and maize processing, as well as packaging systems and materials; small-scale equipment for laboratory control.

GABON

A. Situation and Problems

57. In Gabon the agriculture shares 7,0% (1986) to total GDP value and 10,2% (1983) of labour force and the main agro-industries could be classified into two sub-sectors, namely:

- Agro-industries processing crops, including agro-industrial units enhancing the value of local produce (coffee, sugar cane, palm kernels) and those processing imported raw materials (baking flour, milk, hops, tobacco);

- Agro-industries processing animal products, namely, a plant producing processed meat, a shrimp-processing plant and an integrated broiler house complex; and other agro-industries comprising the wood-processing and mineral water bottling industries.

B. Potential areas of co-operation with Brazil

58. As regards prospects for co-operation with Brazil, Gabon identified three possible areas in the short term, namely:

- The transfer of appropriate Brazilian technology to small and medium-sized enterprises in Gabon, with special emphasis on equipment for the food and agro-industries, farm machinery and tools, gardening implements and equipment used in livestock husbandry;
- The supply of small-and medium-sized enterprises with agricultural inputs produced in Brazil, such as tropical seeds, fertilizers, pesticides, herbicides and other products to improve agricultural yields; and
- Brazilian participation in the implementation of projects in Gabon on the basis of partnership with Gabonese sponsors; in this connection, four projects were brought to the attention of the Brazilian businessmen, namely, the production of footwear, margarine, biscuits and salted and smoked fish.

GUINEA-BISSAU

A. Situation and Problems

59. The agriculture shares 57.8% (1985) of GDP value and 71.9% (1979) of labour force. The agro-industrial sector in Guinea-Bissau, as in other countries, plays an important role not only in the national economy but also in enriching and diversifying the diet of the community. The development of this type of industries can be promoted only after the establishment of basic infrastructure in the agricultural sector, permitting a gradual development.

60. The difficulties faced in starting up the economy after independence resulted in a serious situation, with an industry highly dependent on imports of raw materials, subsidiary materials, fuels and spare parts and technical assistance, weak administrative and managerial structures, inadequate vocational training and deficient plant maintenance and communications. These basic characteristics of the sector resulted in the majority of the food processing industries being paralysed and requiring urgent rehabilitation.

B. Potential areas of co-operation with Brazil

61. Co-operation with Brazilian centres of excellence is desired in the area of agro-industry, particularly with the Applied Technology and Research Centre (CITA) and the Directorate-General of Industry (DGI).

With CITA:

- Preparation of a master plan;
- Training of national staff for all activities covered by the Centre;
- Laboratory assistance (equipment and materials for the master plan);
- Assistance for the project for food product standards;
- Expert missions and exchanges of experience between the departments of agro-industrial undertakings and Brazilian institutions.

With DGI

- Training of cadres for food processing industries (agro-industry);
- Preparation of a master plan for the development of agro-industry in Guinea-Bissau;
- Rehabilitation and a joint venture for the plant processing milk and dairy products;
- Rehabilitation and a joint venture for the Titina Sila plant for juices and fruit preserves;
- Technical assistance for industrial units.

LESOTHO

A. Situation and Problems

62. Agro-industries in Lesotho are still at an infant stage with some being successful agriculture shares 16,8% (1986) of GDP value and others not so successful. The Lesotho National Development Corporation (LNDC) is the Government agency charged with the responsibility for the industrialization of the economy. Agro-industries are accorded high priority in terms of capital resource allocation. The establishment of agro-industries is aimed at contributing to the twin strategy of export promotion and import substitution so as to improve the chronic visible balance of trade deficit. Agro-industries already established include, inter alia, a brewery, bakeries, maize and flower mills and an abattoir. Some of these, namely the flower mill, abattoir and a small dairy are government-owned and/or managed. The Government of Lesotho is currently considering the privatization and commercialization of all agro-industries that are directly government-owned and managed.

63. The strategy for the establishment of agro-industries is through joint ventures between the Lesotho National Development Corporation (LNDC), the indigenous private entrepreneurs and foreign private enterprises. Foreign private enterprises are required to provide technical know-how and expertise and to contribute capital investment. The LNDC and its sister organization, the Lesotho Agricultural Development which is primarily responsible for providing credit to farmers, work closely in the co-financing of agro-industries.

B. Potential areas of co-operation with Brazil

64. The Government of Lesotho, through LNDC, invites Brazilian enterprises in the field of agro-industries to join hands with LNDC in the establishment and development of agro-industries for the mutual and sustained benefit of all parties involved. Lesotho invites Brazilian enterprises to co-operate in leather tanneries, meat processing and canning, integrated piggeries, poultry and related products, production of vegetables in green houses, fisheries development, irrigation equipment and any other agro-industries.

MOZAMBIQUE

A. Situation and Problems

65. In Mozambique, agriculture is the foundation for the country's development, sharing 44,5% (1986) of GDP value and 83,8% (1980) of labour value. The principal export crops are cashew nuts, cotton, tea, copra and citrus fruits, and the food crops maize, rice beans, peanuts, cassava, vegetables and fruit. Agricultural production rose by 6.9 per cent in 1987 and 5.7 per cent in 1988.

66. The agro-industry sector was established in the 1950's, 1960's and 1970's and developed in three directions: industry for the processing of farming produce for export; small and large-scale industry for the production of consumer goods; small-scale industry located primarily in rural areas.

67. The main features of agro-industry are the following: tendency to be located in areas of substantial raw material production, use of obsolete machines, with varying levels of capacity and of varying origins.

68. The main problems facing agro-industry relate to the low levels of agricultural production, the paralysis of some plants totally or partially destroyed, shortage of funds in foreign exchange and in national currency

aging or obsolescence of some items of machinery and high packaging costs which make the end product substantially more expensive. This sector was covered by the Economic Rehabilitation Programme drawn up in 1986 which led to global economic growth of 3.6 per cent in 1987 and 4.5 per cent in 1988.

69. The prospects for the development of agro-industry include improved co-ordination between the agricultural and industrial sectors, plant rehabilitation, improved processing conditions and improved end-product quality, vocational training and better business management.

B. Potential areas of co-operation with Brazil

70. The priority short and medium-term needs for co-operation with Brazil are as follows: vocational training by means of courses organized in Mozambique in business management, agro-industry projects and quality control; courses and periods of training in Brazil dealing with engineering, technology, quality control, maintenance and management; assistance of an expert for the enterprise processing citrus fruits and other tropical fruits in order to train the personnel in improving the quality and diversification of products; exchanges with research and technology institutes, training schools and plants; studies for a packaging plant using material available locally to serve small-scale fruit and vegetable enterprises, with special reference to tomatoes.

NIGER

A. Situation and Problems

71. Niger is an agricultural country by tradition. Indeed, agriculture, which accounts for 26% of GDP and employs 70% of the economically active population, is the country's top priority. Accordingly, under the five-year Programme for Economic and Social Development (1987-1991), over 30% of investment will be channelled into agriculture; moreover, the strategy adopted is geared to the development of specific subsectors, including those of farming and livestock husbandry.

72. Under the structural adjustment programme Niger is carrying out with the International Monetary Fund and the World Bank, the country has embarked upon a process of economic liberalization, restructuring and privatizing its state and parastatal sector accordingly. Furthermore, Niger is endeavouring to provide incentives to industry by bringing investment into line with the objectives of development strategies, promoting exports, etc.

B. Potential areas of co-operation with Brazil

73. Attention should be drawn to the implementation of programmes for the rehabilitation of enterprises and training in industrial maintenance, in co-operation with UNIDO.

74. Accordingly, Niger is seeking to establish co-operation with Brazil in the areas of technical assistance (management, maintenance, etc.) and the redeployment of agricultural mechanization. Such co-operation could be extended to other sectors as well.

NIGERIA

A. Situation and Problems

75. Nigeria is blessed with vast agricultural resources as well as human resources. In Nigeria, about 80% of the population is still engaged in

agriculture and since processing of raw materials is tied to the source of raw material, it plays an important role in agricultural development. A programme of integrated agro-industrial development is very crucial for the technological and economic growth of every developing country such as Nigeria. Such a programme, based on planned development of agriculture, animal husbandry, forestry and fishery, coupled with the co-ordinated development of agro-related industries, has been a key factor in stimulating self-sustained growth of any economy. This sector of the economy has achieved about 60% local content and has the potential to achieve 100% local content. The main constraints facing the sector are acquisition of technology and equipment and lack of experience for the conversion of agricultural produce into industrial input and products.

76. The commonly grown grains in Nigeria are maize, millet, sorghum, rice and wheat. The primary root and tuber crops are yams, cassava, cocoyams, sweet potatoes and Irish potatoes. A large variety of oilseeds like groundnuts, oil palm nuts, cotton seed, soybean, benni seed and melon, etc. is available in Nigeria for processing oil cakes.

B. Potential areas of co-operation with Brazil

77. Although a wide spectrum of technologies is now available locally and from abroad, the possibility of choice for appropriate technology, in order to match capacity and quality will dictate the level of achievable efficiency. There is need for experience and workshop facilities to handle bigger-sized and more robust designs involved which are not available.

78. Priority areas for development of processing technology in Nigeria: From the description of the available technologies for the conversion of some agricultural raw materials into industrial input, it can be seen that there are some technological gaps that need to be bridged. The technologies required can be acquired through the execution of the following projects:

- Design and fabrication of small to medium-scale versatile mills to handle the milling of all grains at a moderate price;
- Design and fabrication of starch production plant, with a view to producing modified starches from cassava;
- Production of fruit juice/drink concentrates;
- Design and fabrication of small-scale sugar processing plant;
- Design and fabrication of soy-milk extraction plant;
- Dry egg production machine for small-scale or cottage industry;
- Essential oil extraction plant to process the rich oil seed available for use in the cosmetics and toiletries industries;
- Production of equipment for canning technology such as boilers and high pressure retorts;
- Development of small-scale plant for processing cotton into yarns and the development of spinning technology;
- Development of machinery for leather fibre production;
- Development of machinery for processing of kenaf plants into fibre and processing technology for paper production from pulping kenaf;
- Establishment of a plant for dyestuff production for textile and leather industry.

SAO TOME AND PRINCIPE

A. Situation and Problems

79. Sao Tomé and Príncipe is a small country composed essentially of two islands, Sao Tomé and Príncipe. After independence, the country inherited a purely agricultural production system focused on export and based almost

exclusively on cocoa, without including the production of goods to satisfy local food requirements. Agriculture shares 26,1% (1981) of GDP value and 53.9% (1981) of labour force.

80. The production of cocoa, supplemented to a small extent by copra and coffee, was and continues to be the main economic activity and practically the only source of foreign exchange.

81. Since 1985, the Government has modified its development strategy in an attempt to combine the efforts of the State with the dynamism of the private sector. Alongside this, a structural adjustment programme was drawn up with the support of the World Bank, the International Monetary Fund (IMF) and the African Development Bank (ADB) in June 1987. This structural adjustment had two medium-term objectives:

- Firstly, to reorganize the country's finances and to balance internal accounts;

- Secondly, to give a new impetus to growth in the production sector with a view to rebalancing external accounts and increasing public revenue.

82. To achieve these objectives, the Government is relying primarily on a coherent set of economic and financial policies, with particular reference to foreign exchange, budgetary and monetary policy.

83. The above-mentioned programme also covers the development of food products (agriculture, fisheries and industry).

B. Potential areas of co-operation with Brazil

84. In this context, the assistance is required from the Brazilian and international agencies in order to permit:

- Support for the initiatives aimed at achieving agro-industrial development, by helping to formulate and implement projects in the areas of the programme mentioned above;

- Training of senior staff, particularly in the areas of:

- (1) Management of agro-industrial projects and units;
- (2) Quality control of food products, both at the raw material stage and at the processing, finished product and packaging stage;
- (3) Appropriate technology for the processing of fruit and market garden produce;
- (4) Marketing of food products; and

- Familiarization with the technology for the processing of cocoa, fish and sea and meat products, with particular reference to small and medium-scale enterprises.

SWAZILAND

A. Situation and Problems

85. Swaziland faces an accelerated rate of industrial expansion especially in the area of agro-industry. Agriculture, which shares 20% (1984) of GDP value and 30.2% (1986) of labour force, continues to play a significant role in the economy and the Government's agricultural strategy aiming at attaining self-sufficiency in food production and transforming the agricultural sector from subsistence to commercial farming. The growth both in terms of domestic market and export potential is seen as a source of income and employment for an increasing population.

86. The agro-industrial sector in Swaziland comprises of the following industries: sugar, dairy, meat, poultry, canned fruits, cotton spinning, maize milling and feed milling. The major forest products are wood pulp, sawn timber, chipboard, furniture and various other products.

B. Potential areas of co-operation with Brazil

87. There is a current need for specific training in business and management and also in technology, especially in demonstration. Also needed is the linkage of the production chain to the industrial sector. Some important technologies could be appropriate to the development of integrated and balanced projects for animal feeds, hides and skins tanning, dehydration of spices and vegetables, extraction of essential oils, ethanol plant, furniture manufacture and flower-handling for export.

TANZANIA

A. Situation and Problems

88. In Tanzania agriculture shares 58.5% (1985) of GDP value and 83.3% (1985) of labour force. The lack of qualified workers and technical staff is the main problem encountered by this sector in Tanzania.

B. Potential areas of co-operation with Brazil

89. Tanzania's economy requires enhanced efforts to support agro-industrial activities. When compared with the potential of Brazil, a lot can be achieved in performance. About 80% of the agro-products are similar for Tanzania and Brazil.

90. Tanzania requires support in training and transfer of technology for existing technologies to be adapted to Tanzanian conditions. It is therefore expected that the sponsors of the meeting will address the possibilities to enable this process to be realized and confirmed.

91. A number of entrepreneurs and consultants will be involved in the initial process and support in organizing this operation and financing is a prerequisite. There is a necessity to structure present technologies to suit the small economies.

ZAMBIA

A. Situation and Problems

92. In Zambia agriculture shares 14.5% (1986) of GDP value and 71.5% (1985) of labour force. The Industrial Development Corporation Ltd. (INDECO Ltd.) is a parastatal company in charge of the industrial development of the country which is very active in the field of food and agro-based industries.

93. Despite the constraints which hindered balanced development significant success has been achieved. There are possibilities in Zambia for joint ventures with INDECO either as majority or minority shareholders. Zambia now has an attractive investment code for those wishing to invest in the country and negotiations with the IMF/World Bank are in progress, as the Government has carried out its own structural adjustment programme.

B. Potential areas of co-operation with Brazil

94. Co-operation with Brazilian organizations/enterprises could be training in the field of food technology, rehabilitation and improvement of capability

in fruit and vegetable canning. Particularly processing and canning of pineapples, expansion of arabica coffee-growing and processing for export markets, transfer of know-how and technology. Brazilian companies are invited to discuss other areas of interest in the food and agro-based industries, as the list of requirements was neither exhaustive nor complete.

ZIMBABWE

A. Situation and Problems

95. Zimbabwe has a relatively sophisticated manufacturing industry. It is self-sufficient in food because of a concerted effort by the Government to ensure integration between the agricultural sector and industry to a large extent. Manufacturing is mainly on a large-scale and heavily automated. The thrust is therefore to promote small to medium-scale industries in order to involve the great majority of the people in manufacturing.

96. The manufacturing industry is unfortunately not operating optimally, because the majority of the equipment is well beyond its normal life expectancy. A lot of equipment replacement is now taking place throughout the whole spectrum of industry. Brazil could thus get involved in supplying much of the machinery that is being imported into Zimbabwe.

97. No vegetable oil machinery is being produced in Zimbabwe. There is tremendous interest in machinery that will handle up to 120 tons of seed per week. The four large producers of cooking oil have a combined weekly production capacity of 1.6 m litres of refined oil per week. These producers are presently in the process of replacing most of their old equipment. Agriculture shares 11.4% (1986) of GDP and 26.1% (1985) of labour force.

B. Potential areas of co-operation with Brazil

98. In the equipment for agro-industry in particular, Zimbabwe would be interested in fruit processing technology. Emphasis should be placed on small to medium-scale plants, even though large-scale equipment will be needed now and then. The trend of late is towards beneficiating products to their ultimate in order to achieve greater earnings. The required machinery should therefore be for concentrates.

99. Brazil seems to have the technological capacity to supply most of Zimbabwe's industrial machinery requirements. Due to shortage of foreign currency, Zimbabwe encourages more counter trade deals between Zimbabwe and Brazil.

100. Zimbabwe could further take advantage of the extensive training opportunities available in Brazil, primarily at post-graduate level. The possibility of designing an appropriate course for Zimbabwe will be discussed with the Brazilian authorities.

IV. MAJOR AREAS OF CO-OPERATION OPPORTUNITIES
BETWEEN BRAZIL AND AFRICAN COUNTRIES

101. After careful evaluation of the individual country contributions, co-operation opportunities are identified in the following areas: transfer of technology, human resource development, joint venture, institution building, small-scale industries, as follows:

	<u>Transfer of</u> <u>Technology</u>	<u>Human</u> <u>Resource</u> <u>Development</u>	<u>Joint</u> <u>Venture</u>	<u>Institution</u> <u>Building</u>	<u>Small-scale</u> <u>Industry Dev.</u>
ANGOLA	X	X			
BENIN	X	X	X	X	X
BOTSWANA	X	X	X		
CAMEROON	X	X		X	
CAPE VERDE	X				X
GABON	X	X	X		X
GUINEA- BISSAU	X	X	X	X	
LESOTHO	X		X		
MOZAMBIQUE	X	X		X	X
NIGER	X	X			
NIGERIA	X	X	X	X	X
SAO TOME AND PRINCIPE	X	X			X
SWAZILAND	X	X	X		X
TANZANIA	X	X			X
ZAMBIA	X	X		X	
ZIMBABWE	X	X	X		

V. FIELD VISIT TO ITAL (FOOD TECHNOLOGY INSTITUTE)
AND UNICAMP (STATE UNIVERSITY OF CAMPINAS)

A. Visit to ITAL

102. In the morning of 7 November 1989, the African delegations visited the main Brazilian Food Technology Research and Development Centre, ITAL, situated in Campinas, 90 km north of Sao Paulo. This 20 year old institute has been supported by UNDP, FAO and UNIDO projects.

The objectives of ITAL are:

- (i) Research and development in the field of technologies for the transport of raw materials, stocking, packaging, conservation, distribution and use of food product equipment;
- (ii) technology transfer through training, technical assistance and feasibility studies of techno-economic projects;
- (iii) technical and institutional support to governmental programmes; and
- (iv) development of special products for low-income groups.

103. The visit began with a general presentation of ITAL by its General Director, Dr. Rogerio P. Tocchini, followed by a guided visit to the following laboratories: milk and derivatives process, packaging, vegetable oils pilot plant, stocking, microbiology, quality control, chemicals, biochemicals and laboratory-scale processes.

104. This visit was of high interest to the African delegations, especially to the Portuguese-speaking countries (Mozambique, Sao Tome and Principe, Cape Verde, Angola, Guinea-Bissau) and Tanzania. These countries are especially interested in training and transfer of technology, small-scale processes and equipment. (The delegations participated in an in-depth second visit to ITAL on 9 November 1989).

B. Visit to UNICAMP

105. During the afternoon of the same day the African delegations visited the State University of Campinas (UNICAMP) and D'Andrea. Besides a large variety of scientific medical and human science faculties, this very important campus includes an Agronomic Engineering and a Food Engineering Faculty.

106. UNICAMP was presented by the Head of its International Relations offices, Mr. Inacio Dal Fabbro, the Directors of the Agronomic Faculty, Prof. Archimedes Perez Filho and Prof. Cesar Francesco Ciacco of the Food Engineering Faculty. During the visit successive discussions with the African delegations took place. The training capacities of UNICAMP for African undergraduate and graduate students in the framework of bilateral agreements were explained. The rate of post-graduate students in the university is 50%, 15% of which come from other countries (mainly Latin America, Mozambique and Angola). UNICAMP representatives pointed out the possibility of sending UNICAMP experts and professors to Africa in the framework of UNIDO/TCDC projects and emphasized their experience in the field of technology transfer and co-operation with private companies within the framework of the UNICAMP Foundation.

107. After the discussion, the African delegations visited the Agronomic Engineering Faculty, and the Department of Agricultural Machinery. The delegates were most impressed by special tools designed for UNICAMP consultants for developing countries, and by methods developed by UNICAMP to rationalize the use of tools and save energy.

108. The delegations also visited D'Andrea, private agricultural machinery producers and discussed with the managers matters related to prices and technical aspects of the machines.

VI. MEETING WITH BRAZILIAN INSTITUTIONS AND INDUSTRIAL MANUFACTURERS

109. During the meeting, the African delegates met with the representatives of the Secretariat for Science, Technology and Economic Development of Sao Paulo. They were briefed on the capabilities of Brazil for co-operation with the African countries in the field of science, technology and trade and the procedures needed for such co-operation.

110. The African delegates also met a number of industrial machinery manufacturers, most of them are members of the Association of Machinery and Equipment Industry (ABIMAQ). On this occasion, a video on the manufacturers' business activities, production lines, and products was shown. Various catalogues of machinery and equipment were distributed to the participants.

111. The list of the representatives of the Secretariat and the industrial manufacturers is attached as Annex I.

VII. CONCLUSIONS AND RECOMMENDATIONS

112. In view of the capabilities of Brazil for co-operating with African countries in the field of agro-industries, it is recommended that further activities in this regard be undertaken by UNIDO and other UN agencies in co-operation with the relevant Brazilian authorities and institutions. Such activities should, *inter alia*, include the organization of workshops, seminars and the exchange of technical missions between Brazil and African countries. In order to make use of relevant technical co-operation structures already available in some African countries, it is recommended that UNIDO projects in the field of agro-industries be taken into account before establishing any additional bilateral programme. It is recommended that UNIDO and the Brazilian Co-operation Agency (ABC) act as the co-ordinators for the follow-up activities emanating from this working meeting.

113. As a starting point to identify further areas of co-operation between Brazil and African countries, it is recommended that all relevant and required information regarding the technological capabilities of Brazil in the field of agro-industries be provided to the co-operating African countries. This information should include a list of Brazilian institutions offering training programmes related to agro-industries, and an indication of costs, timing and duration of relevant training courses.

114. The Brazilian experience in acquisition and adaptation of technology to its own characteristics was noted by the participants. It is recommended that UNIDO and other UN agencies, in co-operation with relevant Brazilian institutions investigate the possibilities of transfer of small, medium and large-scale technology to African countries. It was emphasized that this transfer of technology would have to follow a step-by-step approach and be

associated with training elements in order to facilitate the absorption of such technology by African countries. In this connection, it is recommended that bilateral technical programmes be complemented and supported by UNIDO ECDC/TDCG programmes. Such co-operation with Brazil in the field of transfer of technology would include the preparation of sectoral and sub-sectoral diagnostics, proposals for agro-industrial rehabilitation, and at a later stage, the preparation of national/sectoral planning programmes.

115. Taking into consideration the availability of training and research institutions in Brazil in the field of agro-industries, it is recommended that courses for Portuguese-speaking African countries be organized in Brazil with institutions willing to offer such courses. It is further recommended that such courses be provided for English and French-speaking African countries. The Brazilian authorities and international organizations are requested to provide the necessary financial support for such training courses. Such training programmes should include under-graduate and post-graduate training, in-plant group training, management training, fellowships, study tours, and training of trainers. It is further recommended that the Brazilian Co-operation Agency (ABC), jointly with the Secretariat of Science, Technology and Economic Development of the State of Sao Paulo, explore the possibility of establishing in Campinas, Sao Paulo State, a training programme in the field of food agro-industries in African countries, with possible assistance from UNIDO and UNDP. This programme would emphasize the areas where Brazil is able to offer suitable and competitive technology in the field of food agro-industries. The national executing agencies would be the Institute of Food Technology (Instituto de Tecnologia Alimentaria - ITAL) and the University of Campinas (UNICAMP).

116. In view of the interest expressed by a number of participants in having Brazilian companies/institutions invest in their respective countries, it is recommended that the Government and industrial entrepreneurs of those countries approach the relevant Brazilian authorities and companies/institutions to come to the appropriate agreements. It is further recommended that the relevant Brazilian agencies facilitate industrial investments in the African countries represented in the meeting. In order to promote the establishment of bilateral small and medium-scale joint ventures in industry, it is recommended to explore the possibility of creating a Brazilo-African investment promotion mechanism, utilizing the UNIDO Industrial Investment Promotion Services towards this end.

117. It is recommended that Brazilian support in institution building be provided in the following areas: (a) establishing links between existing African institutions and the relevant Brazilian counterparts; (b) strengthening and upgrading existing African institutions; and (c) establishing new institutions in the countries participating in this meeting. Emphasis should be placed on the research component of such institutions.

118. It is recommended that Brazilian co-operation be made available in the UNIDO programmes for the small and medium-scale industry sector and entrepreneurship development in African countries. These programmes include the establishment of small and medium-scale support institutions, their strengthening and upgrading and the creation of extension service networks, especially for rural industries. The Brazilian co-operation would particularly consist of providing technical expertise through appropriate agencies. Such co-operation could lead in selected cases to joint-venture agreements between Brazilian and African industrial entrepreneurs and to the transfer of technologies particularly addressing the characteristics of small and medium-scale industries.

119. It is recommended that Brazilian expertise be made available to some of the African countries represented in this meeting in designing agro-industrial development programmes and strategies (master plans).

120. A number of participants have shown interest in procuring equipment/machinery made in Brazil. It is recommended that such goods and related services offered by the Brazilian manufacturers be provided within South-South co-operation.

ANNEX I

LIST OF PARTICIPANTS

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ANNEX II

LIST OF DOCUMENTS

The following documents were distributed during the meeting:

1. UNIDO Paper prepared by Agro-based Industrial Branch: The Food Agro-Industrial Sub-Sector: Perspectives and Needs for Technical Co-operation Projects
2. Brazilian Presentation: Technical Co-operation between Brazil and African Countries in the Agro-Food Industry prepared by Carlos R. N. de Aquino, Director-Presidente Aquino Consultores Associados
3. The following country papers (presented by the relevant countries)
 - The Food Industry in Angola
 - Situation and Perspectives of the Food Industry in Angola
 - The Potentialities of Development in the Agro-Industry in Benin. Benin's Experience in the Area of Agro-Industry
 - The Agro-Industrial Situation in Cape Verde
 - The Situation and Perspectives of the Agro-Industries in Gabon
 - The Agro-Industries in Mozambique
 - Status of Agro-Industries in Nigeria
 - Agro-Industries Development in Tanzania
 - Paper presented by Mr. Luke Mbewe, General Manager INDECO Limited, Lusaka, Zambia
4. UNIDO document titled: Financing for Industry