# GLOSSÀRIO

CURRENCY
Date September 2001 : 1 USD = 22.000 MTS – 1 EURO = 0.92 USD
1 Kilogramme = 2.20462 Lbs
Bale Weights : USA 480 lbs- Tanzania = 400 lbs – Egypt = 720 Lbs - South Africa = 200 kilos

| | |
|---|---|
| AAM | Associação Algodeira doe Moçambique |
| AFCOT | Association Française de l'Industrie Cotonnière |
| AFD | Agence Française de Développement |
| CIMSAN | Centro de Investigação de Algodão de Namialo |
| CLUSA | |
| CNA | Compania national de Algodão |
| DAGRIS | Formerly CFDT |
| FRF | French Franc = 0.152 EURO |
| GTA | Grupo de trabalho do Algodão |
| HVI | High Volume Instrument |
| IAM | Instituto do Algodão de Moçambique |
| ICAC | International Cotton Advisory Committee |
| ICCSC | International Calibration Cotton Standard Committee |
| IDC | INDUSTRIAL DEVELOPMENT CORPORATION (South African para-statal company) |
| INIA | Instituto Nacional de Investigação Agronomica |
| ITMF | International textile Manufacturer Federation |
| IVA | VAT or TVA |
| JVC | Joint Venture Company |
| MADER | Ministério Da Agricultura e Desenvolvimento Rural |
| MT | Metical – Mozmambican currency |
| US$ o USD | US Dollar |

# MOZAMBIQUE

## BASIC DATA

**Land area** 799.380 sq km

**Population** Population 1997

| | |
|---|---|
| Maputo (capital) | 1,393,000 |
| Beira | 488,000 |
| Nampula | 240,000 |
| Nacala | 161,000 |
| Quelimane | 160,000 |

**Climate** Tropical and subtropical

**Weather in Maputo (altitude 59 metres)** Hottest month, February, 22-310C (average daily maximum and minimum), coldest month July, 13-24°C; driest months, July, August, 13mm average rainfall, wettest month, January, 130 mmm average rainfall.

**Language** Portuguese (official); and three main African languages groups; Makua-Lomwe, Tsonga and Sena-Nyanja

**Measure** Metric System

**Mode of driving** Left driving

**Currency** Metical (MT) Average exchange rate in 2000; MT 15,164 US$1. Exchange rate on October 2001; MT 22,000:US$1.

**Time** 2 hours ahead of GMT

**Public holidays** January 1°, February 3rd (Heroes' day), April 7th (women's Day), May 1st (Labour Day), June 25th (Independance day), September 7th (Victory Day), September 25th (Armed Forces Day), November 10th (Maputo City Day), December 25th (Family Day)

**Politic system** Democracy with a new constitution adopted in 1990 which separate the functions of executive, legislature and justice. The last election was held in 1999.

MAP OF MOZAMBIQUE

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# 1. Executive summary

1. The Government of Mozambique, conscious of the advantage of cotton cultivation with respect to the development of the rural zones and the poverty alleviation of the farmers have mandated the realization of a study for the diagnosis of the cotton sub-sector in Mozambique.

2. This study intervene after the **completion of two cotton project financed by AFD** (Lomaco and CNA), a **situation particularly uncertain and unsettled in the Nampula** province (the main producing province) and very **low international prices**.

3. The study was implemented in September / October 2001.

4. The objectives of this study were:

   - Actualization of the whole cotton sub-sector diagnosis : quick evaluation of the companies involved in the sub-sector, detailed diagnosis of the two companies which have been funded by AFD in the scope of a cotton development project.
   - Diagnosis of the organization of the sub-sector: operators, associations, IAM, fixing of the seedcotton price, comparison with other African countries.
   - According the result of this diagnosis, some measures will be proposed to improve the functioning of the sector.
   - To propose news strategic program to be financed by AFD.

## 1.1. Cotton in the world

5. The world production of cotton has fluctuated between **17 and 21 million of tons** in the last 10 years.

Table 1. Cotton world production (million tons)

| | 1997/98 | 1998/99 | 1999/00 | 2000/01 | 2001/02 |
|---|---|---|---|---|---|
| **China** | 4.6 | 4.5 | 3.83 | 3.9 | 3.8 |
| **US** | 4.1 | 3.03 | 3.69 | 3.8 | 4.05 |
| **India** | 2.70 | 2.78 | 2.65 | 2.55 | 2.70 |
| **Pakistan** | 1.45 | 1.35 | 1.65 | 1.70 | 1.75 |
| **Uzbekistan** | 1.14 | 1.00 | 1.12 | 0.95 | 1.00 |
| **Brazil** | 0.37 | 0.45 | 0.63 | 0.75 | 0.80 |
| **Others** | 5.54 | 5.29 | 5.18 | 8.00 | 5.10 |
| **Total** | **19.9** | **18.4** | **18.75** | **18.65** | **19.20** |

Source ICAC; BU

6. The four main producers are also the main consumers:

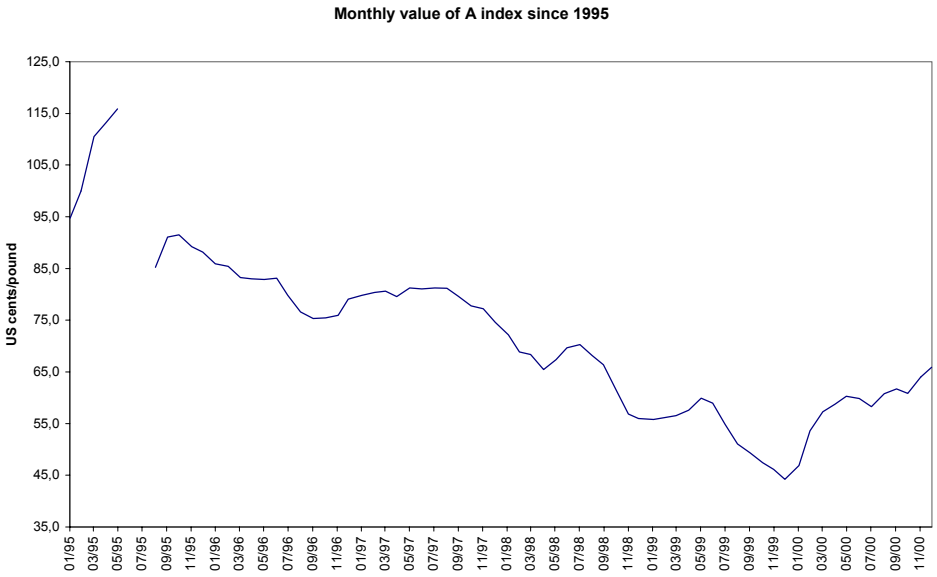
Table 2. Cotton world consumption (million tons)

| | 1997/98 | 1998/99 | 1999/00 | 2000/01 | 2001/02 |
|---|---|---|---|---|---|
| **China** | 4.60 | 4.30 | 4.85 | 4.90 | 4.95 |
| **India** | 2.68 | 2.73 | 2.85 | 2.95 | 3.00 |
| **US** | 2.47 | 2.28 | 2.20 | 2.17 | 2.20 |
| **Pakistan** | 1.55 | 1.53 | 1.63 | 1.68 | 1.70 |
| **EU & Turkey** | 2.16 | 2.06 | 2.20 | 2.28 | 2.30 |
| **Eastern Europe** | 0.77 | 0.73 | 0.75 | 0.80 | 0.85 |
| **Others** | 4.72 | 4.82 | 5.02 | 5.07 | 5.10 |
| **Total** | **18.95** | **18.45** | **19.5** | **19.85** | **20.10** |

Source ICAC; BU

7. Mozambique does not have a textile sector well developed, and most of its production is exported.

8. Since 1995 the cotton prices have fluctuated as follow (in US cents / pound):




9. For the firs time since 30 years **the cotton prices have fallen above 30 cents /lbs at the NY market**. Due to the recent economic crisis and continued good progress of the production, the maintenance of the subsidies for the US cotton farmers, the short and medium term prices forecasted are not optimistic.

10. **The cotton world market is forcing any country wanting to stay to be more price competitive, to accept unfair competition, to match with higher qualitative demands and to deal with non-price competitiveness factors. As a matter of paradox, economically developing countries with limited means will not be necessarily the losers in this game**

## 1.2. Current situation in Mozambique

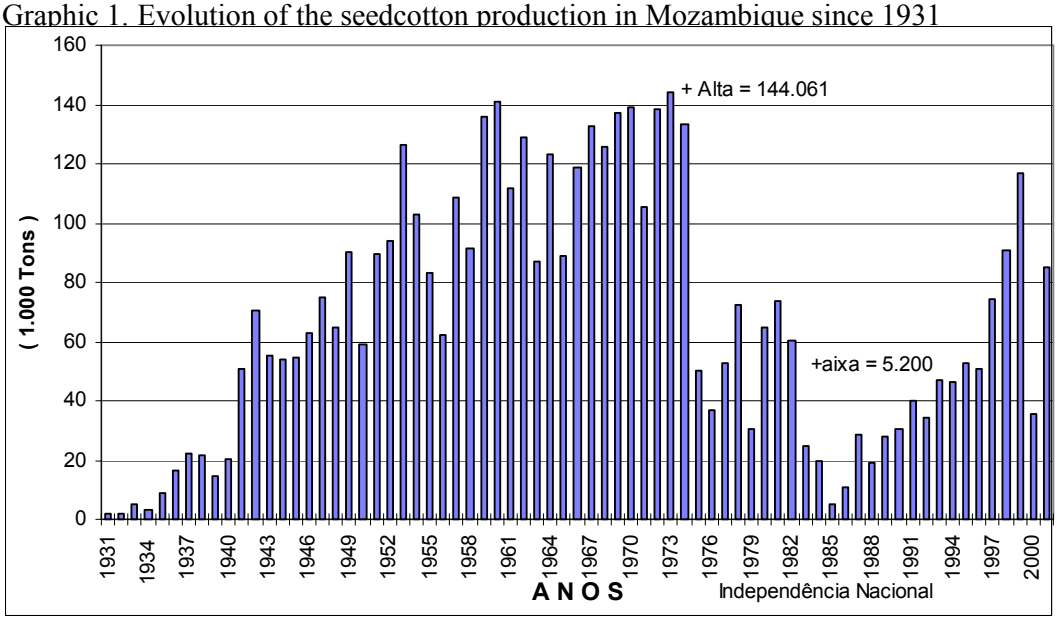
### *1.2.1. Production*

11. The cotton is mainly produced in the north (Nampula & Cabo Delgado) and the centre (Zambesia-Sofala):

Table 3. The provinces shares in seedcotton production in %

| Provinces | Average 90/91-99/2000 | 1999/00 Crop Season |
|---|---|---|
| Cabo Delgado | 25.% | 13.2% |
| Gaza | 6.3% | 0.0% |
| Inhabane | 1.4% | 0.3% |
| Manica | 0.8% | 0.5% |
| Maputo | 0.2% | 0.0% |
| NiassaNampula | 51.2% | 57.4% |
| Niassa | 4.6% | 3.4% |
| Sofala | 8.6% | 20.3% |
| Tete | 0.4% | 1.4% |
| Zambezia | 1.6% | 3.4% |

Graphic 1. Evolution of the seedcotton production in Mozambique since 1931




Source: IAM

12. **Currently the Mozambican cotton appear in the column of the most contaminated cotton growths** preceded only by cotton from India, Pakistan, Turkey, Uganda, Tanzania and Uzbekistan**.**

### *1.2.2. The Operators*

13. Operators are classified into 6 class: family sector, non autonomous producers, Autonomous producers, Concessionaires, Ginners, Lint Traders (cf Annex 1). In addition there are association of farmers and ginners and the Instituto de Algodão de Moçambique (IAM) -cf-.Annex 2.

14. The farmers association are mainly located in Cabo Delgado and Nampula regions, IAM has its head office in Maputo and 8 delegations in the producing provinces. The current actives concessionaires and ginners are:

Table 4. Active Concessionaire Companies in 2000/2001

| OPERATOR With Ginnery | PROVINCE | OPERATOR With Ginnery | PROVINCE |
|---|---|---|---|
| LOMACO | Cabo Delgado | MOCOTEX | Cabo Delgado |
| LOMACO | Nampula | MOCOTEX | Zambézia |
| SAMO | Nampula | IVERAGRO | Inhambane |
| SODAN | Nampula | CNA | Sofala |
| SODAN | Nampula | CNA | Manica |
| CANAM | Nampula | SAN - JFS | Niassa |
| IBRAMUGI | Zambezia | SAN - JFS | Nampula |
| AGRIMO | Zambezia | AGRIBUZI | Sofala |
| AGRIMO | Tete | SANAM (a) | Nampula |

(a) Sanam is not a concessionaire company, its run a ginnery.

15. The current ginning capacities are between 150.000 and 230.000 Tons /year (according the numbers of shifts: 2 or 3 during 100 ginning days). This capacity is widely over the current production. In the province of Nampula, the capacity is 85.000 / 130.000 Tons/year and in Zambesia 38.000 / 57.000 according the same criteria.

16. There is then at least an **over-capacity of 50%, inducing then a high fix unit cost at the ginning stage :** the cotton companies with ginning facilities would be more cost efficient with a higher production and they must have rationale in promoting the seedcotton production. It is a pity to observe that this is not actually the case as it will be analyzed.

#### *1.2.3. The Associative sector*

17. Compare to other African countries producing cotton, there had been a **lately commitment in developing the associative sector in the cotton business**. The movement start its development under the impulse of ONG like CLUSA, programs financed by AFD (Lomaco) and after the publication of a memorandum established by IAM in 1998. This memorandum advocated the establishment of pre-associations. This movement start in the region of Nampula under the impulse of operators of class III and IV to capture a part of the seed cotton production from farmers localized on a concession.

18. Generally speaking the establishment of a legalized Association is **expensive, long and intricate.** To our opinion this procedure should be modified and subsidized in terms of training and support for creation procedures.

#### *1.2.4. Situation in Nampula*

19. The current situation in Nampula is very confused. Indeed due to the over capacity, the lack of production and new regulations issued by IAM and MADER there is a **high competition between the operators** to buy the cottonseed from the farmers. **This situation is detrimental to the quality, the productivity** of the cotton growers and the profitability of the operators.

20. **As a result of this situation the stakeholders act in short term run instead of long term partnership. This situation is very detrimental to the whole cotton sector in Nampula.**

#### *1.2.5. Conclusion*

21. Although a production decreasing, ,a poor cotton lint quality, low international prices, non profitability of the ginning plants **there is a persisting attraction for cotton business by all the stakeholders of the sub-sector**: farmers and ginners notably**.**

22. **This fact should be noted and be an asset for a re-launching a cotton program**.

### 1.3. The projects funded by AFD

#### *1.3.1. Lomaco*

23. Lomaco is a company running various activities: cotton in 3 sites, ranching, lemon growing, concentrated tomato. The project was located in the site of Lomaco-Montepuez (North of the country).

24. The project was located in the Province of Cabo Delgado and implemented by LOMACO, a JVC between the State and Lonrho Plc. In this province, Lomaco enjoyed a 30.000 Km² concession. The ginning plant and head office are in Montepuez. The total amount of the project was 4.9 USD million of which 4 million were funded by AFD. Lomaco signed two agreements, one with INDER and the other with CIRAD for technical assistance.

25. The main objectives of the project were: development of the cotton production through a smallholder scheme, supporting the food crops production, programs of training for farmers associations and trainers, applied research on cotton varieties, food crops, standards of cultivation.

26. Except in 99/00 **the project reached all and more of its objectives with less expenses than forecasted. In 98/99 (year 3 of the project) 42.000 farmers were concerned (24.000 forecasted) and the seedcotton production reach 28.000 tons (20.500 forecasted). The yield per ha remain poor due the lack of treatments and poor agricultural standards:** around 600 kg/ha instead of 800 forecasted.

27. In 99/2000 due the lack of visibility and the disinvestment of Lonrho from Lomaco , problems of pest (Psylles), the farmers involvement was weak. The consequences were dramatic with the production which fall to 2.500 T and the yield which fell to 250 Kg/ha.

28. **The promotion of associate sector was very active from 1997 to day** with 60 association established. Among them only one was legalized. (see above and Annex 3).

29. The applied research reach some interesting results: selection of the Cotton variety CA 324 well adapted to the local condition, purification of the local variety REMU 40, selection of seeds for food crops and results in post harvest treatment. **Despite the good results, the problem is the lack of coordinated with the CNA applied research program and an a lack of divulging.**

30. The financial ratio costs of the project were:

- Cost / farmer / year = 67 USD
- Cost / Kg seed cotton = 4.8 US cents / Kg
- Cost per kg of lint = 13 US cents/ kg or 6 cents/pound

31. Currently the financial standing of Lomaco is very poor: treasury is very negative, the own capital asset is negative. The company is sold by activity by the government, Lomaco-Montepuez has found a new taker: Dunavant which is one of the largest cotton trader in the world.

### *1.3.2. CNA*

32. The project was located in the 2 Provinces of Sofala and Manica which were particularly hurt by the civil war . The population migrate to the boudary countries (Malawi mainly) and Beira corridor. One of the objectives of the project was the resettlement of the population after the signature of the peace agreement. The other objectives were: promotion of intensive farming and development of cotton and food crops; to ensure the provisioning of agricultural inputs and extension services. These objectives were implying the implementation of an applied research component.

33. The **general objectives were reached** with less expenses than forecasted. In 99/00 (the last year of the project), the number of farmers involved in cotton growing was 14.200 compared to 11.200 forecasted, the production in term of tons of seedcotton was lower than forecasted due to a lower area per farmer (0.7 ha instead of 1.44), the yield increase significantly from 211 kg/ha to 720 Kg. Due to the particular context of the resettlement of the population no significant action to promote association was successful.

34. The applied research part reach to interesting result with the selection of the variety STAM 42 for cotton and confirmation or selection of new variety for food crops. No co-ordination was intended with the Lomaco Project (cf above).

35. The financial results were :

- Cost / farmer / year = 180 USD
- Cost / Kg seed cotton : 10.3 US cents / Kg
- Cost / kg lint = 28.6 USD / kg or 13 US cents / pound
- These costs are higher than Lomaco's one but would be higher without a significant increase of the yield/ha.

36. Currently the **financial standing of CNA is very poor**: treasury is negative, the own capital asset is negative. The needs in funds for a financial restructuring are estimated to 2.5 USD million.

### *1.3.3. Conclusion*

37. These two programs allowed to develop cotton production at a relative low cost compared to the subsidies granted by developed countries to their cotton farmer (more than 52 US cents/kg for the US).

38. The applied research permit the development of new varieties with higher outturn (42% instead of 36%).

39. The farmers have increased their monetary income.

40. **That proves that, the International and bilateral Financial Backers can and must support and fund this kind of project implying private agro-industrial operators in their field of competence, to promote the rural development. Many examples in Africa and in various fields had proven this fact: rubber (Ivory Coast, Cameroon and Ghana), Oil Palm (Ivory Coast, Ghana, Cameroon) notably.**

## 1.4. Constraints and assets of the cotton production in Mozambique

### *1.4.1. Under exploitation of large areas suitable for cotton production*

41. Today, the country is split into zones of high potential (northern provinces of Nampula, Zambezia and Nampula), of medium potential (central provinces of Tete, Sofala and Manica) and of low potential (southern provinces of Inhambane, Gaza). It is worthwhile to remind that what is nowadays considered as low potential areas have demonstrated earlier significant production (Inhambane) while some high potential zones (like Zambezia) have not yet resume their rank as compared to other high potential areas.

42. There is an open question about the strategy of reaching an harmonious cotton development in the country : **should the development efforts be concentrated on the supposed high potential areas and abandon the low potential ones where the farmers may not have any cash crop opportunity**.

43. The current low world market price is not favorable in attracting new comer in this low potential with erratic rainfalls.

### *1.4.2. The low productivity with room for improvement*

44. **The cotton production in Mozambique is a low-input production mode.** There is no use of fertilizer.

45. Yield potential is constrained by a small number of insecticide applications targeted at various caterpillars which attack the bolls. On average, we think that the number of insecticide application is small, around 3 to 3,5 for the farmers. **The CNA yield results are an indication that chemical control more intensive could be cost effective and increase farmer's productivity**.

46. Yield potential is particularly limited by the specificity of occasional severe and early outbreaks of Jassids. **Better control of the Jassides is therefore linked to the issue of the production and distribution of "technological seeds" which are delinted and properly treated by adapted chemicals**.

47. **Yield potential is also seriously limited by the mal-practice of some cultural operations :** insufficient plant density, late thinning and late weeding are reported while they impact negatively on the yield that farmers may expect in the end.

48. **Outdated variety in use :**The quality of the seeds being distributed is a very ancient variety (Remu 40- resistant to jassides with an ginning outturn of 36% ). Variety experiments conducted in CNA and Lomaco Montepuez zones have provided evidence that some introduced varieties could combine better yield at the farm level, better ginning outturn and better lint quality. In CNA, the variety **Stam 42** is assumed to require more care in its growing, while in Lomaco Montepuez, the variety **CA 324** has remained superior to a purified strain of Remu 40 even under the cultural practices the farmers are implementing.

49. **Low productivi*t*y:** the profitability of the cotton production, indicated by the added value, is low as compared to some francophone African countries like Mali. In this country, with an average yield which is 2.5 times the one of Lomaco Montepuez, an average cotton acreage of 2.5 ha, the added value per cotton grower (which is a good proxy of the farmers net income before the remuneration of the family labor in the case of non-capitalistic agriculture) is around nineteen times higher. **These results confirm that a higher yield obtained from higher level of input use could lead to far better economic efficiency without reaching exceptional yield level**.

50. **A bad road network: penalizes the diffusion of technical message** is commonly based upon training and meeting farmers in their fields, at the various stages of the growing season or before the cropping season. The bad state of the road and track network in many areas just makes impossible to visit the farmers during the growing season. It **penalizes also the cotton transportation** from the market to the ginner plant particularly in the region of Sofala.

51. **The current situation of extension service provision is not satisfactory,** specially in the area of technical assistance, of dissemination of technical knowledge that could lead farmers reaching a better command of cultural practices and of input use.

### *1.4.3. The state in the regulation scheme*

52. **IAM does not really implement major "fomento"** except its commitment in the experience of producing organic cotton in Inhambane. However, IAM **has not ever committed itself in promoting or implementing the research activities.**

53. **Establishing new regulations to clarify the rules.** The other stakeholders, namely the seedcotton purchasing companies are more open in this regard and have express their sympathy to a flexible solution which would help to adapting to specificity of local conditions

54. **A favourable taxing policy**: the current taxing sounds sustain the development of the cotton sub-sector.

### *1.4.4. IAM role*

55. IAM carry out the crucial role of **statistics management** with room for improvement and a role of classifying the cotton lint exported IAM is not doing badly, such tasks should remain under its responsibilities. Actually**, IAM is not doing so much in the areas of promoting research nor in the co-ordination of the seed policy which belongs to its competence at its creation.** It could be relevant to revise the roles IAM could keep owing to its status and the competence of its staff.

56. **Supervision of the cotton sub-sector is a task** to be fulfilled. It could make sense to move towards a more autonomous management of the cotton sub-sector by all the stakeholders, IAM could be the sector organism which could take charge of this management.

57. **Issues related to research** must be addressed by INIA, through a contractual process that will ensure INIA with the needed funds and which commits in return this organism in providing results that the contractor may expect in a reasonable term.

58. IAM may contribute, the implementation of a **collective policy of seed production and distribution** is to be mentioned. Since the production of technological seeds must be decentralized, the decentralization of IAM structures in several provinces is a favorable factor.

59. The **promotion of a specific radio broadcasting programs** destined to cotton zones is also an other task which has a public good feature and which should be devoted to a cotton sector organism like IAM.

60. **The IAM Financial dependence to the levy:** the IAM is composed of a staff of 112. Nearly half of the staff is concentrated in Maputo. The main financial source derives from the levy applied at the exportation of the cotton lint. The reduction of the levy rate from 3,5% 2,5% impacts directly on the IAM means. **This is why the mechanism of the financing should be revised in order to enable IAM to carry out these new tasks**.

### *1.4.5. Pricing mechanism*

61. In Mozambique, the Government has been attached to its role in fixing and guaranteeing the seedcotton purchase price to farmers. The principle retained by the Government of Mozambique is to **ensure a "minimum price" to which all the seedcotton purchasers have to comply with.** This means that they cannot buy at a lower price but they can offer more. Currently in the province of Nampula the cotton pricing mechanism is very confused.

62. The farmers do not have a clear idea of the government role in fixing the minimum price. They do not know the connection with the world price in the price fixing mechanism. This is why radio broadcasting on the pricing mechanism would surely help the farmers to have more faith on the prices they hear.

63. Higher prices could be offered to farmers whose production is close to the ginnery while lower prices should be paid to farmers who are in more remote areas since the costs to go, buy and pick their cotton is higher.

64. The **best way in facing world price fluctuation is to target at productivity gain**. The running of a stabilization fund is rather a passive approach as it has no actual direct impact on productivity gain.

65. The world prices fluctuation make difficult and risky a policy of minimum price. The erratic price fluctuation is making anticipation risky. All the more reason that forecasting prices are often uncertain. **In an other hand the farmers need to know a minimum price before growing cotton to anticipate the expected income. Since the world price cannot be anticipated properly, an alternative way has consisted in implementing a 2-steps payment or 2-price components**: one being announced and guaranteed before sowing and the second being added after the cotton lint has been sold.

### *1.4.6. Associative process*

66. Most of the process of creating associations took place in Nampula and Cabo Delgado provinces. **This process is currently endangered** by the deviation of the role of the associations which became an instrument created by the operators to capture the seedcotton from the legal purchaser. This situation is questioning the sanctity of a contract and lead to a loss of revenue for the associations and lack of confidence between the associations, farmers and operators.

67. **The rules should be clear for all the stakeholders and lead to long term partnership instead of short term and opportunist relations.**

68. With relationship based on a long term run, associations should become a valid interlocutor for the operators and the Government. In addition associations should become one of the decision-maker for the pricing mechanism.

### *1.4.7. Better valuation of the cotton products*

69. There is a challenge of updating the lint classifying scheme to meet the market demand. Indeed the **current classifying method is outdated and should be modernized in term of technologic standards and classifying facilities**. Modernization would not necessarily lead to a premium from the market in the long run (while it could be expected in the short run), but not modernizing would probably lead to discount when most of the countries have implemented it.

70. The Mozambican cotton should move from a passive to an **active mode of promoting** a positive label/image for the Mozambican cotton lint promoting an image through international cotton organization like ICAC and/or affiliation to international campaign to defend the cotton share in the textile fiber market will help cotton users better aware of the Mozambican cotton.

71. Certainly, cotton lint traders have their place in the cotton sub-sector, the issue is to wonder if Mozambique **could rely exclusively on traders, being totally disconnected from the end-users of its product**. We believe that there may be some room in diversifying the types of customers of the Mozambican cotton lint.

72. **To re-launch the textile industry**. The collapse of the textile industry in Mozambique pertains to reasons similar to what has happened in Africa except South Africa and Nigeria : illegal and unfair competition from import of second-hand garments and lack of protection from the government. The current fate of the textile industry is really very disappointing since a historical analysis of the economic development along with cotton development has demonstrated that the promotion of cotton textile industry was crucial. **We have heard cotton companies sharing their concern about a re-launch of the local cotton textile industry, may be it is not yet too late to move from declaration of intention to concrete actions.**

# 2. Economy, agriculture and place of cotton

## 2.1. Generalities

### *2.1.1. Population*

73. The final results from the national census in 1997 indicate a population of 16.1 million. The population is growing at an average annual rate of 2.3% (Instituto Nacional de Estatística- INE-1999). The distribution of the population per province is:

Table 5. Population by provinces in (000)

| Province | Population (000) |
|---|---|
| *Zambesia* | *3,107* |
| *Nampula* | *3,075* |
| *Cabo Delgado* | *1,385* |
| *Sofala* | *1,369* |
| Tete | 1,224 |
| Inhabame | 1,159 |
| Gaza | 1,111 |
| *Manica* | *1,047* |
| Maputo City | 982 |
| Maputo | 837 |
| Niassa | 805 |

*In Italic provinces involved in Cotton Cultivation – Source INE*

### *2.1.2. Economic policy*

74. Mozambique policy has gone trough a number of changes since the independence in 1975. From central economy command 1975-1986, to structural adjustment policies involving market liberalisation and policy institutional reforms started in 1987. The results have produced rapid growth and macroeconomic stability. **Gross Domestic Product (GDP) per head in 2000 was estimated at USD $219.** Real GDP growth was in double digits in 1997 and averaged 9.4 % over a period of 1996-99.

Table 6. Comparative economic Indicators

| | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|
| GDP (MT bn) | 32,719 | 40,554.00 | 46,427.40 | 50,827.40 | NA |
| Government Domestic financing (MT bn) | -434 | -1,298 | -1,067 | -117 | NA |
| GDP (% annual change) | | 11.1 | 11.9 | 7.3 | 2.2% |
| Exchange rate (Average) Mt/$US | 11,295 | 11,430 | 11,853 | 12,446 | 15164 |
| Consumer price inflation(av %) | 46.9% | 6.4% | 0.5% | 2.0% | 11% |
| Export earnings ( M US $) | 218,6 | 230,6 | 249,9 | 268,9 | NA |
| Imports (M US $) | 782,6 | 760,0 | 817,3 | 1,199,8 | NA |
| Population (m) | 15.7 | 16.1 | 16.5 | 16.8 | 17.2 |

Source: IMF, International Financial Statistics (IFS)

75. Mozambique economy is relatively diversified being agriculture, industry, services and investment the main contributors.

Table 7. Table Composition of GDP by sector (Mt bn)

| | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|
| Agriculture | 9,969 | 12,001 | 12,670 | 13,779 |
| Fishing | 1,311 | 1,549 | 1,595 | 1,557 |
| Construction | 2,060 | 2,597 | 4,118 | 4,360 |
| Transport and Communication | 2,826 | 4,381 | 4,552 | 4,816 |
| Business | 7,915 | 9,253 | 9,738 | 9,903 |
| Restaurants and hotels | 278 | 491 | 563 | 605 |
| Education services | 461 | 608 | 852 | 1,009 |
| Health services | 131 | 179 | 246 | 375 |
| Other Services | 3,929 | 4,460 | 4,957 | 5,676 |
| **GDP incl. others** | **32,719** | **40,554** | **46,427** | **50,827** |

Source Ministerio do Plano e Finanças:

76. Mozambique government has implemented market based economic policies, including far reaching structural reforms under which the state, through privatisation and liberalisation, has retreated from being a direct economic agent to a role as a facilitator of private activity. Macroeconomic policy objectives are to maintain low inflation and exchange rate stability, while promoting exports and raising fiscal receipts in order to overcome domestic and external imbalances.

### *2.1.3. Main trading partners*

77. Mozambique's principal trading partners are South Africa and OECD countries.

| Exports to: | % of the total | Import from | % of the total |
|---|---|---|---|
| South Africa | 26.2 | South Africa | 57.2 |
| Zimbabwe | 14.9 | US | 6.7 |
| Spain | 12.7 | Portugal | 5.6 |
| Portugal | 9.0 | Japan | 3.9 |

Source :Instituto Nacional de Estatistica (INE)

## 2.2. Evolution of some major macro-economic indicators

78. As the government's economic reform program began to tackle the financial sector, foreign banks were allowed to invest in Mozambique. Interest rates were deregulated; and the regulatory and commercial activities of central bank were separated.

79. The severe flooding in 2000 caused the GDP to collapse to 2.2%, inflation to rise to 11 % and the currency to weaken by almost 20 % against US dollar after years of stability. In July 2001, Maputo inflation went up by 2.4% resulting in an accumulated inflation of 7.7% after 5.1% in June 2001, (Banco de Moçambique – July 2001). From January to April 2001, Mozambique currency 'metical' depreciated 15.8% against US dollar, compared to 12.7% last year, (Instituto Nacional de Estatística June 2001).

80. There is an increase trend in credit to the economy. From the total amount of credit attributed to the economy until 2001, 22% had been allocated to the industrial sector, 20% to agricultural sector and 19% to commercial sector. Construction and transportation had received 4 a 5 percent, respectively.

Table 8. Table Average Nominal Interest Rate

| Maturity | Up to 180 days | 181 - 365 days | 1 - 2 years | more than 2 years |
|---|---|---|---|---|
| | Minimum rate | Max. rate | Prime rate | Special line of credit |
| Period | Bank lending | | | |
| 1995 | 42.5 | 43.7 | 43.7 | 45.6 |
| 1996 | 42.3 | 44.3 | 45.1 | 41.7 |
| 1998 | 24.1 | 29.9 | 24.7 | 22.9 |
| 1999 | 22.1 | 29.1 | 19.2 | 22.6 |
| Period | On Deposit | | | |
| 1995 | 37.3 | 34 | 36.1 | 32.5 |
| 1996 | 20.3 | 35.6 | 28.2 | 32.5 |
| 1998 | 7.86 | 8.91 | 9.55 | 8.77 |
| 1999 | 7.86 | 8.91 | 9.55 | 8.77 |

## 2.3. The share of the agriculture in the GDP and Agricultural policy

81. As it had been noticed agriculture represented 27% of the GDP in 1999. The main production are (see table 3):

Table 9. Agricultural production in (000) Tons

| | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|
| **Exports crops** | | | | |
| Cashew nuts | 66,5 | 43,3 | 51,7 | 58,7 |
| Cotton | 50,5 | 74,0 | 91,0 | 106,7 |
| Sugarcane | 315,9 | 278,9 | 368,7 | 469,5 |
| Copra | 22,3 | 35,6 | 36,0 | 44,4 |
| Tea | 1,7 | 1,7 | 1,5 | 1,5 |
| Citrus | 8,0 | 10,2 | 10,2 | 10,2 |
| **Industrial inputs crops** | | | | |
| Sisal | 24,0 | 24,0 | 24,0 | 24,0 |
| Tobacco | 0,7 | 0,7 | 0,7 | 0,7 |
| Sunflower | 0,5 | 0,5 | 0,5 | 0,5 |
| **Internal market crops** | | | | |
| Maize | 252,7 | 256,3 | 270,2 | 304,1 |
| Rice | 21,2 | 24,9 | 26,7 | 28,9 |
| Cassava | 31,4 | 76,1 | 74,8 | 83,8 |
| Sorghum | 3,9 | 4,4 | 4,1 | 5,7 |
| Beans | 39,0 | 45,0 | 45,7 | 68,1 |
| Vegetables | 33,3 | 50,0 | 50,3 | 51,0 |

Crop yera runs from july to june
Source : Ministerie do Plano e Finanças

82. The current policy of the Government focuses its action on market incentives and primacy of the smallholder agriculture. A development programme for the agricultural sector involving donors is now becoming operational efforts have been made to promote agricultural and raise small farm incomes through out-grower schemes, farmer's associations and innovations to raise productivity and rural processing.

83. The agricultural performance is still well below the African and regional average. Some larger crops farms have been revived through foreign investment and joint-venture companies, particularly in the cotton sector (although many companies are promoting out-grower schemes involving smallholder farmers. Several of the larger

foreign companies, including JFS,Agrimo, Lomaco and Entreposto among others, are trying to revive export crop production in cotton, copra and tea.

84. Domestic production and marketing in the agricultural sector are constrained by infrastructural impediments , particularly the poor condition of the road network (see below)

85. **The minimum prices set administratively for food and cash crops have been replaced by "reference prices", which are not strictly enforced.**

## 2.4. Financial services

86. In 1978 all private banks operating in Mozambique were nationalised and merged into 2 institutions, the Banco Comercial de Moçambique (BCM) and the Banco Popular de Desenvolvimento (BPD). After 1992, the government's economic reform programme began to liberalise this sector and to privatise the state own banks. BCM was divested in 1996 and BPD in 1997. Liberalisation has attracted new comers into the banking sector.Currently there are 10 banks mainly own by foreign interest (Portugal, South Africa, France, Malaysia, Rwanda).

87. Currently borrowing rate remain high, but they have decreased to fell around 10%. in 2000.

88. A stockmarket, the Bolsa de Valores de Moçambique (BVM), opened in Maputo in 1999, with the technical assistance of the World Bank and Lisbon Stock Exchange Activity is presently confined to secondary trading in T-bills and several corporate bonds mostly from commercial banks.

89. **As in many African countries commercial banks are not interested in financing the agriculture activity (except the trading of commodities) which is considered as risky and unprofitable. In Mozambique there is no banking institution devoted to the agriculture activity. Currently the credit is granted to the farmers by private companies mainly for export crops.**

## 2.5. State of the roads

90. Cotton production is interested in the state of the roads and their density. Historically, transport has ever been crucial to the Mozambican economy, and is now identified as an important future source of growth and foreign exchange earnings. During the war the routes in the Beira and Nacala corridors linking Zimbabwe and Malawi to the coast absorbed the bulk of investment. North-South transport links within Mozambique have traditionally been weak, a situation exacerbated by the decline in road infrastructure over the past 15 years. Nevertheless this is now being addressed.

Table 10. State of the roads % of the total

| | 1994 | 1997 | 2001 |
|---|---|---|---|
| Good | 3 | 20 | 33 |
| Reasoneable | 21 | 38 | 37 |
| Poor | 48 | 32 | 28 |
| Impassable | 28 | 10 | 2 |

91. **The state of the roads have serious implications, particularly for the agricultural sector and especially for the cotton transportation from the field of the ginneries.**

## 2.6. Geographical location of the Mozambican cotton sector

### *2.6.1. The arable land classification*

92. Mozambique has a land area of 799,380 square Km. Approximately 36 million ha are arable land from which about 5 million are being cultivated; the remaining area represents gazing land and forest.

93. Agriculture is being a mainstay of Mozambique economy. The climate and the ecology of Mozambique are diverse, favouring the growing of a set of crops.

94. In the last three-decade, war and drought drastically affected agricultural production in Mozambique, causing disruption to agricultural infrastructure and exodus to rural population. In the last six years, however, agricultural production has been improving. Rapid growth in output is due to the improved economic environment, the restoration of rural marketing networks, good rains in recent years and the large-scale return of refugees to the countryside since mid 90s.

95. Some larger export crop farmers have been revived through foreign investment and joint venture companies, particularly in the cotton sector were companies are promoting out grower schemes involving smallholder farmers.

96. Agriculture is predominantly smallholder, which comprises 95.2 percent of the cultivated land. It is has been cultivated 0.5 to 1.0 ha per household, on average. Most of southern Mozambique (Maputo, Gaza and Inhambane Provinces) are suited to extensive and semi-extensive agriculture. The best areas for intensive and diversified agriculture are in central and northern Mozambique (Niassa, Nampula, Manica, and Zambézia provinces) with good soils and adequate rainfall.

97. According to the Instituto Nacional de Investigação Agronómica (INIA) the country is divided into 10 Agroecological Regions. These Regions were based on the climate (temperature, altitude and rainfall), vegetation, soil and farming systems. Description of the main characteristics of the 10 agroecological zones are presented in the Table 7.

Table 11. Agroecological Characteristics

| | Region 1 | Region 2 | Region 3 | Region 4 | Region 5 | Region 6 | Region 7 | Region 8 | Region 9 | Region 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Location | Maputo and Southern of Gaza Province | Coastal areas of Maputo, Gaza and Inhambane Provinces | Central of Gaza and Inhambane Provinces | Areas of medium altitude of interior of Manica and Zambézia Provinces | Areas of low altitude of Sofala and Zambézia Provinces | Zambeze valley and southern of Tete Provinces | Areas of medium altitude of northern of Zambézia, Tete, Nampula, Niassa and Cabo Delgado Provinces | Coastal area of Zambézia, Nampula and Cabo Delgado Provinces | Interior area of Cabo Delgado Province (Mueda plateau) | Areas of high Altitude of Zambézia, Niassa, Angónia, Manica. |
| Altitude | 200- 500 meters | Coastal | 0-200 meters | 200-1,000 meters | 0-200 meters | 600- 1,000 meters | 200- 1,000 meters | Coastal | >200 meters | > 1,000 meters |
| Avg rainfall | < 600 mm | 600 – 800 mm | 400- 600 mm | 1,000-1,200 mm | 1,000-1,400 mm | 1,200-1,400 mm | 1,000-1,400 mm | 800-1,200 mm | 1,000- 1,200 mm | >1,200 mm |
| Avg temperature | 20- 25 | | 20-25 | 18-23 | | | 20-25 | >25 | | 15-22.5 |
| Soils | Sandy to Sandy loan | Sandy | Heavy | Heavy | Heavy | Heavy | Sandy to Heavy | Sandy, heavy in low lying areas | Loam to Sandy, heavy in low lying areas | Heavy |
| Dominant crops | Maize, cowpea, cassava, sweet potato | Intercrop maize, cowpea, ground nut, cassava | Irrigated rice, sorghum, maize | Maize, sorghum, cassava, there is **potential for cotton** | Maize, sorghum, millet, cassava, cowpea, cashew and **cotton** | Maize, rice, cassava, sugar cane, coconut, **cotton** | Maize, Sorghum, cassava, cowpea, groundnut, **cotton** | Cassava, maize, **cotton**, cashew | Maize, cowpea, cassava, sesame, cashew | Maize, **cotton** |

Source: Zonas Agro-Ecológicas e Sistemas de Produção (INIA) 1996

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98. Cotton production in Mozambique has historically been concentrate in the central and the northern Mozambique where rainfall and soil fertility allows rain fed farming.

99. Maize, cassava, groundnuts are the most important crops in terms of cultivated area in smallholding farming. Cotton and cashew nuts are cash crops and major source of export revenue. Maize, cassava, and cowpea represent major staple food. Tables 8, 9 show the distribution of cultivated area by crop and province.

Table 12. Distribution of Food Crops by Province

| Province | Area cult. (000 ha) | Maize | Cassava | Groundnuts | Sorghum | Cowpea | Rice |
|---|---|---|---|---|---|---|---|
| | | Percent of total cultivated area by smallholders | | | | | |
| C. Delgado | 322.6 | 33.2 | 26.8 | 9.9 | 13,4 | 3.4 | 8.8 |
| Nampula | 621.4 | 17.3 | 38.5 | 15.0 | 7.7 | 7.4 | 5.4 |
| Niassa | 202.8 | 55.7 | 11.4 | 2.9 | 7.8 | 3.9 | 2,6 |
| Zambézia | 505.8 | 36.8 | 23.5 | 4.0 | 4,9 | 3.5 | 14.1 |
| Tete | 297.4 | 65.8 | 2.4 | 6.5 | 4.0 | 6.6 | 0.3 |
| Manica | 246.0 | 64.6 | 3.0 | 4.4 | 12.4 | 5.0 | 2.8 |
| Sofala | 223.4 | 49.9 | 3.2 | 2.2 | 20.0 | 3.7 | 14.1 |
| Inhambane | 336.5 | 31.9 | 23.0 | 25.3 | 2.8 | 10.8 | 1.7 |
| Gaza | 340.5 | 45.9 | 18.1 | 12.2 | 1.2 | 11.8 | 1.1 |
| Maputo | 55.6 | 45.6 | 17.7 | 12.5 | 0.2 | 14.2 | 0.0 |
| **Total** | **3,152.0** | **40,2** | **20.2** | **10.1** | **7.37** | **6.6** | **5.9** |

Source: Apresentação Sumária dos Resultados – (Censo Agro-pecuário 1999-2000)

Table 13. Distribution of Cash Crops by Province

| Province | Area cult. (000 ha) | Cotton | Tobacco | Sugar Cane | Sunflower |
|---|---|---|---|---|---|
| | | Percent of total cultivated area | | | |
| Cabo Delgado | 33.1 | 98.4 | - | 1.2 | 0,4 |
| Nampula | 82.3 | 85.7 | 5.5 | 6.7 | 2.0 |
| Niassa | 10.5 | 24.2 | 57,5 | 10.73 | 7.2 |
| Zambézia | 11.9 | 46.7 | 9.4 | 32.4 | 11.4 |
| Tete | 19.5 | 20.0 | 65.6 | 5.0 | 1.6 |
| Manica | 7.6 | 24.9 | 24.5 | 11.4 | 39.1 |
| Sofala | 26.4 | 51.7 | 0.5 | 47.1 | 0.6 |
| Inhambane | 0.9 | 56.4 | 3.7 | 36.4 | 2.6 |
| Gaza | 0.9 | 20.2 | 11,9 | 49.1 | 18.9 |
| Maputo | 9.3 | 0.1 | 0.2 | 98.9 | 0.1 |
| **Total** | **202.4** | **64.9** | **13.16** | **17.4** | **3.7** |

Source: Apresentação Sumária dos Resultados – (Censo Agro-pecuário 1999-2000)

### *2.6.2. Natural conditions of the cotton belts*

100. Country assessment for eight crops shows the extents of land suitable for the production and the lengths of growing periods, as well as yield range (FAO/AGOA). Thus, cotton production is grown in all provinces of Mozambique. But its production is concentrated in the central and northern of the country where agro climatic conditions (temperature, altitude, rainfall and soil fertility) are more suitable (Map. 1)

Table 14. Total Area Suited to Rain fed Cotton Production In Mozambique

| | High level of input | | | | |
|---|---|---|---|---|---|
| | Very suitable | Suitable | Moderately suitable | Marginal suitable | Not suitable |
| Extent (**ha**) | 13,592 | 28,063 | 78,494 | 57,870 | 595,523 |
| Yield range **(t/ha of lint)** | 1.1-0.9 | 0.9-0.7 | 0.7-0.4 | 0.4-0.2 | 0.2-0.0 |

| | Low level of input | | | | |
|---|---|---|---|---|---|
| | Very suitable | Suitable | Moderately suitable | Marginal suitable | Not suitable |
| Extent (**ha**) | 0 | 6,774 | 31,192 | 17,725 | 717,851 |
| Yield range **(t/ha of lint)** | 0.28-0.22 | 0.22-0.17 | 0.17-0.11 | 0.11-0.06 | 0.06-0.0 |

Source: Land Suitability Assessment: Volume I (FAO/Project Moz/75/011 – 1982)

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## 2.7. The stakeholders being involved

101. The main stakeholders are classified in 6 categories from family sector to traders and concessionaire companies:

**102. The Mozambican cotton system in caracterized by a concessionaire system which entrust private companies the rural development of large areas.**

### *2.7.1. Origin of the concessions*

103. The origin of the concessions dates back from the colonial time. The colonial State, entrusted the exploitation and the development of extended areas to private companies. Thus they had the monopoly of harvest and purchase of cashew nut and cotton in the producing areas. These concessions were abolished with independence.

104. In the early 90s at the end of the civil war, as part of Mozambique Government strategy to improve agricultural performance in the central and northern region of the country, it was established concession zones, and developed a system of legal monopoly rights on areas where the population have undergo the effect of civil war (exodus, destruction of infrastructure, insecurity)

105. The legal monopoly rights was granted to large Joint Venture Companies (formed between government and foreign investment). In exchange for monopoly cotton buying rights in a specific geographic area – concession zones, the JVC agreed to supply participating farmers in their concession areas with input and extension services for cotton and food crops, and to purchase seed cotton from farmers at official price level. The overall investment by cotton concessionaires (JVC) was expected to reverse the downward trend on cotton production.

106. The current dealers are often formerly Portuguese companies which had been nationalized and which are held now by private interests and the State. Rather than speaking about concession it would be necessary to speak about " zoning ".

#### *2.7.1.1. Principal conditions of the dealers*

107. The concession is in general has a counterpart in the form of an agro-industrial and rural development project: investments to be realized, development of self cropping and smallholders. It is also envisaged the development of food crops.

108. The applicable laws are those relating to the foreign investments.

109. The duration of the authorization can be long : 20 years for the LOMACO for instance, for CNA an amendment has modified the duration of the concession from 20 year to 5 years renewable for 2 years by tacit agreement.

110. The concession gives a purchasing monopoly of the seedcotton on the whole of the concession. In the other hand the concessionaire must provide technical advises and inputs to the smallholders.

111. Control of the concessionaires: it is envisaged a regular control of the State on the achievements of the concessionaires. In practice there is no really control of the State although this one often holds 49% of the capital of the concessionaire companies.

112. Resolution of the conflicts: the last resort is the International Court of Arbitration.

#### *2.7.1.2. Current problems with the concessionaire device*

113. In the province of Nampula, the concessions are no longer respected: purchasers of seedcotton (Sanam, Privados, dealers) buy seedcotton on the concessions of other companies (see above the reasons).

114. There is no objective control of the State: although some concessionaire respect their agreement, no objective data comes to support their assertions.

115. The cancellation of the concessions is likely to generate requests for compensations from the concessionaire companies.

#### *2.7.1.3. As they should be considered*

116. The current concessions correspond to a "zoning". Device towards which some countries direct them because their cotton sector has undergoes the devastator effects of a total liberalization.

### *2.7.2. Classification of the operators*

117. The operators engaged in cotton sector fall into six groups (cf Art 2 « regulamento para a cultura do Agodão »- IAM)

- ***Class1 – Family sector***

118. Comprise operators being member of a cotton grower family, growing cotton on the land of a concessionaire company under its and IAM responsibilities.

- ***Class 2- Non Autonomous Producers***

119. Comprise operators having a lack of finance and technical knowledge. They grow cotton inside or outside of a concession but are assisted by a concessionaire or IAM.

- ***Class III – Autonomous Producers***

120. Comprise operators with satisfactory capital resources. They are supposed to farm a minimum of 20 ha. They are allowed to trade their seed cotton or lint.

- ***Class IV – Concessionaires***

121. These operators posses ginning plant, have signed a contract with the government to provide extension services to smallholders and other farmers interested in cotton production. The concessionaires are entitled to purchase all seed cotton as well as trade cotton lint.

- ***Class V – The Ginners***

122. These operators own a ginning plant. They don't have signed a development agreement with the government and do not benefit a concession.

- ***Class VI – Lint Traders***

123. This group of operators is engaged mainly in lint transaction. They need the IAM agreement to proceed their activity.

- ***Farmer Associations***

124. This class of operator was not mentioned in the "Regulamento" of 1991 because there were no associations existing in these time.

125. In the last three years smallholder farmers have been organised by NGO and operators of class 3 to 6 in farmer associations as a mean to better access inputs credit for agricultural production as well better purchasing prices. In the region of Nampula These Association have been settled by operators 3, 5 and 6 to in accordance with the new strategy of October 2000 (see annex xx) to divert the seed cotton from the concessionaire. The association groups are treated as Class II.

Table 15. Active Concessionaire Companies in 2000/2001

| CONCESSION | DISTRICT | PROVINCE | CONCESSION | DISTRICT | PROVINCE |
|---|---|---|---|---|---|
| LOMACO | Balama, Namuno, Montepuez, Ancuabe | Cabo Delgado | MOCOTEX | Muidumbe, Mecufi, Nangade, Mueda, Macomia, Meluco, Metuge and Quissanga | Cabo Delgado |
| LOMACO | Mogovolas-Nametil | Nampula | MOCOTEX | Mocuba | Zambézia |
| SAMO | Monapo | Nampula | IVERAGRO | Homoíne, Jangamo, Inharime and Panda | Inhambane |
| SODAN | Monapo,Meconta, Namapa, Nacaroa, Muecate. | Nampula | CNA | Buzi, Caia, Chemba, Nhamatanda, Chibabava, cheringoma, Gorongoza and Maríngue | Sofala |
| SODAN | Chiure | Nampula | CNA | Gondola, Machaze, Manica and Mussorize | Manica |
| CANAM | Nampula, Mecuburi, Ribaue, Lalaua and Murrupula | Nampula | SAN - JFS | Cuamba, Maúa, Marrupa, Metarica, Mecanhelas, Mecula and Nipepe | Niassa |
| IBRAMUGI | Alto Molocué | Zambezia | SAN - JFS | Malema | Nampula |
| AGRIMO | Nicuadala, Mopeia, Murrumbala | Zambezia | AGRIBUZI | Buzi | Sofala |
| AGRIMO | Mutarra | Tete | | | |

### *2.7.3. The operators of Class IV and V*

126. This sector includes the JVCs and some operators owning a ginning plant (cf § 171). The mission met most of the operator from Zambezi, Sofala-Manica, Nampula, and Cabo Delgado Provinces in Maputo or on the spot. Due to the current and the conflicting situation in Nampula province (see § xxx) most of the companies gave us some information that could'nt be used by their competitors ( some startegic figures and cost prices) except for the companies which had been financed by AFD (Lomaco and CNA). Lomaco and CNA will be treated more deeply ahead in the scope of the paragraph "Lesson learned from the implementation of the AFD projects".

#### *2.7.3.1. LOMACO*

127. Lomaco is currently a state own company which is currently in the process of privatization.

128. As Lomaco has implemented a project financed by AFD, the details are developed in part of this study

#### *2.7.3.2. Compania Nacional Algodeira (CNA)*

129. CNA is currently a joint venture between Entreposto Group and DAGRIS (French state owned company and Ex CFDT).

130. As CNA has implemented a project financed by AFD, the details are developed in part of this study

#### *2.7.3.3. AGRIMO*

131. Agrimo is a new agro-industry private company owned by Portuguese private interest (96 %) which start its operation in Mozambique by the end of 1995. The business design was based on a new investment of 10 millions USD made from 1996 to 1999. Agrimo is involved in cotton, Caju nuts, coconuts. It has also agri-businesses activities in Brazil, Sao Tome & Principe islands.

132. In Mozambique the activities are located in a rural region integrated in Zambesia river valley, districts of Morrumbala, Mutarara and Mopeia in an area of about 20.000 Km². The region has a population of 120,000 rural families of which 50% were recently resettled after the civil war. In this region there are not many villages and most of the population is scattered Due to this fact it had been very difficult to develop associations which need a context with farmers gathered in villages.

133. A ginning factory was built in Morrumbala in 1998/99 for a total cost of USD 5.5 Millions. It's a Continental Eagle brand process (cf SANAM) with 4 stands of 120 saws each. The theoretic capacity is about 60.000 t per year of seedcotton.

134. Of the total area only 12-13% have been cultivated, mainly with maize, sorghum, beans and cassava. The restarting of cotton production doesn't represent more than 10.000 ha in 2000/2001 crop season (2.5-3% of the total area cultivated).

135. There is no competition for the seedcotton purchase in its area of influence unlike the region of Nampula.

136. Their actual intervention on cotton farming is made of agricultural inputs and extension services:

- The 3 regions are under the responsibility of a region manager. The regions are divided into 11 areas under the responsibility of unit chief. Each area is divided into zone supervised by extensionists.
- The cotton agricultural credit is made of inputs (mainly insecticides with 4 to 5 treatments based on EC system). The costs of the products are subsidies at a 25% level. The cotton seeds are free. According AGRIMO, the repayment rate was 85% for the 99/00 crop season. AGRIMO with the support of a finance company (GAPI) is starting a pilot-project of agricultural credit for some activities (mechanical plough, pesticides, labour costs for weeding control and harvesting). In 98/99 they supported 246 farmers (800 ha of cotton) with 50.000 USD in credit funds. They said that they grant credit for other type of services as grains mills, animal traction etc..
- Cotton variety : they have planted REMU 40 and they presently start CA 324 which has been experimented in the LOMACO project.

137. The main figures given by AGRIMO are the following :

Table 16. Number of farmers – Area under cotton – production – seedcotton prices

| | **95/96** | **96/97** | **97/98** | **98/99** | **99/00** | **00/01** | **04/05 Forecast** |
|---|---|---|---|---|---|---|---|
| Numbers of farmers | 850 | 5220 | 7300 | 13813 | 7705 | 10710 | 23500 |
| Area under cotton (ha) | 320 | 2000 | 3000 | 6890 | 3000 | 6700 | 17600 |
| Seed Cotton production (T) | 105 | 665 | 1686 | 3670 | 1445 | 3537 | 16500 |
| lint production (t) | 34 | 213 | 586 | 1312 | 490 | 1350 | 6600 |
| Cotton seed (t) | 65 | 405 | 1050 | 2103 | 810 | 2050 | 9350 |
| Rendimento seed Cotton/ha | 328 | 333 | 562 | 533 | 482 | 528 | 938 |
| Preço a productor | 3,900 | 3,300 | 2,950 | 2,300 | 2,550 | 2,900 | |
| Taxa extr. fibra | 32.4% | 32.0% | 34.8% | 35.7% | 33.9% | 38.2% | 40.0% |

138. It could be noted that in 99/00 as in other provinces the total area has dramatically decreased due to the low cotton prices and the floods.

Table 17. Estructura dos custos directos de 1 Ton-fibra /2001

| | 1 USD | 22000 MTS | |
|---|---|---|---|
| | **%** | **Cents/ton** | **MTS /Kg** |
| Aquisição algodão-caroço e pesticidas | 57.60 | 279.36 | 6,146 |
| Combustiveis mercados compra | 2.00 | 9.70 | 213 |
| Descaroçamento fabril | 8.70 | 42.20 | 928 |
| FSE's fornecimento servicios externos | 10.90 | 52.87 | 1,163 |
| Pessoal | 12.10 | 58.69 | 1,291 |
| Tax IAM | 3.70 | 17.95 | 395 |
| Encargos exportação (custos portuarios etc.) | 5.00 | 24.25 | 534 |
| **Total custo por ton-fibra** | **100.00** | **485.00** | **10,670** |
| Total custo por ton-fibra | **485** | | |
| Margen sem encargos financieros | 40% | 667.00 | 14,674 |
| Receita bruta-fibra/média | | 1080 | 23,760 |
| Receita bruta-semente/média | | 72 | 1,584 |

139. AGRIMO have started an applied research programme with the co-operation of the Faculty of Agronomy on cotton and food crops activities in order to plant the adapted variety for food crops : pigeonpeas-130 days, sunflower-record, maize-Manica.

140. According AGRIMO, the main issues to be settled by the Government and the cotton operators are:

- The restrictive factors to develop cotton and other crops are the lack of infrastructures (roads) and Banks devoted to agriculture.
- Presently most of the cotton companies are deeply indebted and unable to develop more their production.
- The device of cotton lint classification has to be improved to match with the international cotton lint market requirements.
- The companies have to be more involved in the applied research, notably for the development of new variety of cotton.

### *2.7.3.4. MOCOTEX (Pemba)*

141. Mocotex is company based in Pemba (Cabo Delgado) whose shareholder are South African and English private interest a(25%) and IDC a South African State owned company (75%). It was established in 97/98 and has a concessionaire contract with the Government. It operates in the provinces of Cabo Delgado ( districts of Meluco, Mueda, Moconia, Mecuffi and Quissanga) and Zambezia (Macubo district). The company bought an old ginnery plant located in Mahate which have been rehabilitated. The plant is tool up with 3 stands of Murray Mitchell (cf CNA Plant) totalling a capacity of 7.500 tons of seedcotton.

142. In the Province of Cabo Delgado only a few part of the concession is favourable for cotton farming because of the climate (coastal district) and the lack of feeder roads As a result they have promoted associations in the district controlled by other operators to capture their production. They are involved in cashew nuts in this province.

143. In the province of Zambesia (Mocuba district) the company has a large scale project of cotton self farming if they are authorised to grow transgenic cotton (resistant to herbicide).

Table 18. MOCOTEX – Produção e Areas

| | Produção (T) Familiar sector | Area (ha) Familiar sector | Produção Empressa | Area (Ha) Empressa |
|---|---|---|---|---|
| 1995/96 | 0 | | 0 | 0 |
| 1996/97 | 0 | | 0 | 0 |
| 1997/98 | 0 | | 0 | 0 |
| 1998/99 | 229 | 1807 | 0 | 0 |
| 1999/2000 | 70 | 786 | 0 | 0 |
| 2000/01 | NA | NA | 0 | 0 |

### *2.7.3.5. SODAN*

144. Sodan was established in 1992. It is a JVC which is own by the JFS[1] group (51%) and the State (49%). It has a concessionaire contract in the Provinces de Nampula (Districts of Meconta, 50% of Monapo, Muecate, Nacarba, Memba and Erate) and Cabo Delgado (Distict of Chiure) totalling around 16.000 Km².

145. The company run two ginning plant in Namialo and Namapa (Chiure district). In Namialo and Namapa the plants are tooled up with Continental Moss Gordin brand built in 1950/52 and rehabilitated in early 90. In Namialo there are 4 stands of 120 saws (maximum capacity 16,000 tons of seedcotton) and in Namapa 4 stand of 80 saws (maximum capacity 8,000 tons of seedcotton).

146. There are 3 other operators working in its concession: SANAM (Class VI which run a new factory in Namialo, Nova Algodira and Adelino Privados Class III).

147. In the area of SODAN there are 7 "productores autonomos", 40.000 from the family sector and 30.000 from the association sector.

148. According their figures the extension services is compose with : 3 technical managers, 11 heads of zone and 121 extensionists.

149. The agricultural credit is made up with insecticides (3 treatments) for the family sector, logistic means and cash advances for the associations. The seeds are free. They plant mainly REMU 40 variety and they started with STAM 42 on small scale.

[1] Groupo João Ferreira dos Santos

150. SODAN also has developed associations to retain the production of its concession. They have developed 31 association with the support of CLUSA in 99/00.

151. The production of lint marketed by SODAN are the following:

Table 19. SODAN Produção e Areas

| | Produção (T) Familiar sector | Area (ha) Familiar sector | Produção Empressa | Area (Ha) Empressa |
|---|---|---|---|---|
| 1995/96 | 8100 | 43.000 | 1634 | 700 |
| 1996/97 | 16.000 | 45.000 | 873 | 612 |
| 1997/98 | 27.000 | 53.000 | 567 | 400 |
| 1998/99 | 25.000 | 52.000 | 192 | 208 |
| 1999/2000 | 6.000 | 26.000 | 71 | NA |
| 2000/01 | 19.000 | NA | NA | NA |

152. During the former crop season SODAN had lost several thousand tons of seedcotton captured by other operators (see upward). It seem that this year SODAN coped with this phenomenon: the production collected has considerably increased due to a better climatic situation and a better adaptation to the competition with other operators.

153. Presently their strategy to cope with the very competitive market for the seedcotton in their concession is to compete with the other operators using the same methods: competition with the purchase price, set up new associations etc…… It is probably the best method to resist against the competitors. The more resistant will remain alone on the spot.

### *2.7.3.6. SAMO*

154. SAMO was established in 1991 and start to operate in 1992. It is a JVC company owned by Entreposto (51%) and the State (49%). The concession is made up with a part of the Monapo district shared with SODAN. Its cotton area is about 20,000 ha located between Namialo, Netia and Itoculo. There is a ginning plant in Monapo built in the years 1974 and tooled up with 3 stands of 128 saws each of Lumnus brand. The maximum capacity is 21.000 tons of seedcotton.

155. The agricultural credit is made up with insecticides (3 treatments) for the family sector and insecticides, logistic means and cash advances for the associations. The seeds are free. They plant mainly the REMU 40 variety and they started with STAM 42 on small scale. They say that are not informed of the applied research implemented by Lomaco. Currently they have to cope with the low recovery rate of the agricultural credit (78 % in 99/00). The problem is the recovery rate e of the associations which is low (60%) compared with the familiar sector (97%).

156. The provision of extension service is made up by 71 people: 7 zone managers (with motorbike), 9 branch managers (with motorbike) and 55 monitors (with bicycles).

157. The seedcotton transportation is subcontracted at a price of 200/230 MT par kg (0.9 –1 US Cts / Kg). The cotton lint is exported from the port of Nacala with a transportation cost of 180 Mt par kg (0.8 US cts par kg).

158. For SAMO as other concessionaires the problem is the region of Nampula where several seedcotton purchasers operate in the same area (5 at all). **To settle this issue the Government must control the operators and enforce the existing laws. IAM has no means to control.**

Table 20. SAMO Produção e Areas

| | Produção (T) Familiar sector | Area (ha) Familiar sector | Produção Empressa | Area (Ha) Empressa |
|---|---|---|---|---|
| 1995/96 | 1779 | 6500 | 171 | 617 |
| 1996/97 | 4198 | 9369 | 46 | 90 |
| 1997/98 | 5469 | 12234 | 136 | 280 |
| 1998/99 | 5694 | 12837 | 131 | 200 |
| 1999/2000 | 1730 | 8420 | 35 | 50 |
| 2000/01 | 4304 | 11019 | 25 | 19 |

159. It could be noted that the First associations appear in 97/98 representing 886 growers, in 2000/2001 there were association representing 4874 growers.

### *2.7.3.7. CANAN*

160. CANAN was established in 1995, it a JVC between private Portuguese shareholders (75%) and the State (25%) The company is concessionaire of 5 districts in Nampula Province (Nampula, Mecuburi, Ribaue, Lalaua and Murrupula). The company operate 2 ginnery plants in Nampula city and Ribuae. The two plants were built in 1950 and tooled up with Continental Moss Gardin brand. They have been rehabilitated in the year 90. Nampula plant is composed with 3 stands of 120 saws each with a maximum capacity of 12,000 tons per year, the other plant has 2 stands of 90 saws each with a maximum capacity of 5,500 tons per year.

161. The agricultural credit is made up with insecticides for the family sector and insecticides and cash advances for the associations for weeding and harvesting. The seeds are free. The repayment rate was 95% in 99/2000. They use mainly REMU 40 variety and they started with STAM 42 on small scale.

162. The provision of extension services is made up of 45 people.

163. With the assistance of CLUSA in 98/99 CANAN has developed associations for two crop season.

164. The average costs for the transportation of the seedcotton to the ginning plants was 450MT/Kg this crop season (2 US cts per Kg). This year due to its financial difficulties CANAN could not afford to maintain its feeder roads (in 99/2000 they have spent 1.3 B MT – 70,000 USD).

Table 21. CANAN Produção e Areas

| | Produção (T) Familiar sector | Area (ha) Familiar sector | Produção Empressa | Area (Ha) Empressa |
|---|---|---|---|---|
| 1995/96 | 2870 | 8600 | 0 | 0 |
| 1996/97 | 5907 | 11300 | 0 | 0 |
| 1997/98 | 5738 | 22300 | 0 | 0 |
| 1998/99 | 10631 | 25500 | 0 | 0 |
| 1999/2000 | 2610 | 13700 | 0 | 0 |
| 2000/01 | 8600 (est) | NA | 0 | 0 |

165. They think that the present situation in Nampula cannot be settle in the short term because the transitory rules (cf above) are too intricate.

### *2.7.3.8. IBRAMUGI*

166. Grupo Ibramugi is a family company involved in the cash and carry activity in Portugal and in trade of goods and agricultural and fishing products in Mozambique.. Ibramugi start to operate without a concessionaire contract in the years 90 by buying the seedcotton from the farmers. Then it got a concession in the Province of Zambezia (district of Alto Molocue, Ile and Gilé). They rehabilitated a ginning plant in Molocue tooled up with 2 operational stands of 90 saws each of Continental /Moss/Gardin brand from the year 1950.

167. Its production reach a peak in 98/99 to decrease very sharply in 99/00. It seemed that IBRAMUGI had not exported lint in 99/00.

168. The company seem very disappointed with the cotton activity: prices are not good (purchase price too high), Associations are not reliable and the company have lost money. We have not noticed a very clear strategy for the continuation of their cotton activity in cotton business.

Table 22. IBRAMUGI Produção e Areas

| | Produção (T) Familiar sector | Area (ha) Familiar sector | Produção Empressa | Area (Ha) Empressa |
|---|---|---|---|---|
| 1995/96 | 257 | 6320 | 0 | 0 |
| 1996/97 | 108 | 1000 | 0 | 0 |
| 1997/98 | 500 | 1100 | 0 | 0 |
| 1998/99 | 1253 | 6066 | 0 | 0 |
| 1999/2000 | 281 | 1600 | 0 | 0 |
| 2000/01 | NA | NA | 0 | 0 |

### *2.7.3.9. SANAM*

169. SANAM is a new company established in 2000. The company is owned by MM Issufu Nurmamade and his sons. The company built in 2001 a new ginning plant tooled up with Continental Eagle brand (2 stands of 160 saws each) , with a annual capacity of 60.000 tons of seed cotton.

170. M Issufu start 7 years ago in the cotton business with self production and capturing the production from concessionaire companies. The cotton was ginned in the form of service ginning by other companies. During the crop season 98/99 the factories of Nampula province refused to gin his production and he was obliged to transport it in Zambesia. **As most of the cotton operators M Issufu lost a lot of money in this business.**

171. The 2000/2001 production forecasted is 11.000 tons of seedcotton.

172. Its strategy for the future is to built his own crush cotton seed plant, a soap plant, to expand its production in order to make profitable its ginnery plant. As it has not concession, this will be done by the capture of the seedcotton from concessionaire companies.

Page : carte des operateurs

### *2.7.4. From sector administration to sector co-ordination*

173. The prevailing institutional arrangement of concessionaire zones was used to try and develop sustainable supplies of pre-harvest services to smallholder cotton farmers and to provide an output market for cotton.

174. The overall investment by cotton concessionaires was expected to reverse the downward trend on cotton production. Vertical co-ordination of input supply and cotton marketing through the concession system offered an attractive way to boost cotton production and smallholder incomes, with little investment required from the financially strapped government. JVCs were often the sole provider of agricultural inputs, credit, and marketing services to financially constrained smallholders.

175. Cotton production takes place either on smallholder farmers' owns dispersed fields or on larger contiguous areas "blocks" divided up into parcels and cultivated by individual farmers. It appears much cheaper to provide services and monitor production on block fields compared to the smaller and dispersed fields. Block farmers may also have access to additional services from JVCs, i.e., land preparation by tractor.

176. The JVCs differ markedly in the quality of extension services, chemicals and the support to non-cotton crops they provide to farmers in the concession areas. The majority of farmers under contract to JCVs continue to use low input cotton technology, hand tillage, planting and application of insecticide. Recently LOMACO and CNA have experimented with more intensive techniques, herbicide, fertiliser and tractors for use in both cotton and food production, targeted to a selected group of farmers. In contrast other JVCs in Nampula have focused their production and extension efforts exclusively on cotton, providing neither inputs, except insecticide nor extension advice for food or other crops.

### *2.7.5. Instituto do Algodão de Moçambique (IAM)*

177. The IAM was established in 1991 (decreto n°7/91 de 23 de Abril 1991). It is an incorporate body endowed with a financial and administrative autonomy. The IAM is subordinate to the Ministry of Agriculture. The Diploma Ministerial n° 77/2001 had clarify its role and organisation.

178. Its general main objects are :

- ***To develop, direct, control the activities in relation with the production, processing, marketing and exportation of cotton.***
- ***To co-operate with the research institute involved in cotton research***
- ***To watch the observance of the technical standards of cotton cultivation.***
- ***Co-ordinate the development of the cotton in term of production, marketing and quality***
- ***Create new variety of cotton in co-operation with others Institutes***

- ***Classify the quality of the cotton lint***
- ***Collect data an figures in relation with the cotton production***
- ***Propose a seed cotton purchase price***
- ***Elaborate and divulge the marketing standards for the seed cotton and cotton lint***
- ***Promote the establishment of farmers organisation***
- ***The IAM will establish a "Conselho Geral" Constituted with the General Manager of IAM and other members that represent the Ministry of Agriculture and the whole cotton sector : producers, ginners, traders, authorities***

179. To carry out its objects the IAM have a central and local organisation. Central in Maputo and local in the area of production.

180. Its resources come from a levy paid by the ginning factories on the cotton from the familiar and Associative sector.

## 2.8. Few efforts to promote diversification crops

### *2.8.1. The recent promotion by various NGO*

181. The initiatives of promoting diversification crops is mainly due to NGOs projects. In the Province of Nampula, World Vision, Care and Clusa have assisted the farmers associations in finding outlets for existing products or new products. Among the new products, sesame is often mentioned to be the most promising one, while traditional crops like maize, peanut, various types of beans, rice are gaining some cash earning status in addition to the well known food crop status. Among the various beans, pigeon pea is attracted special attention for its regional outlet in Malawi and South Africa or in India : Agrimo, located in Zambezia, is one of the cotton companies which is already involved in the exportation of this product.

182. It is noteworthy that in Western Africa, some countries involved in diversifying crops are considering installing them as live fences to combine the positive effects of the fences with some cash earning through the selling of the products the trees give : this is the case for pigeon pea, cashew nut tree and also Jatropha curcas[2]. This alternative modality of producing diversified products with limited financial risk and requiring little labour investment deserves to be examined in the case of Mozambique.

183. Installing diversification crops as live fences has the advantage of not inducing land competition with the other crops. Beyond the positive agronomic effects of a well installed live fence (protection against the wind, reduction of water run-off, of soil erosion, increase of the water retention in ferralitic soil and therefore better resistance to seasonal drought) this fence represents a physical delimitation of the cultivated

[2] Jatroph curcas, or purghere in Cabo Verde, Mali or Burkina Faso is an Euphorbiacae which gives grains whose oil is a raw material for producing soap by rural women. Many experiments have demonstrated that this oil could be used for running diesel motors without any modification.

plots which is also positive for estimating the acreage of the various crops, in particular cotton. In Mali, a new project to be financed by AFD is considering promoting the installation of live fences specially in areas where land pressure has become high and where land conflict could justify the delimitation of the cultivated plots.

184. In absolute terms, the trading of diversified agricultural products (maize, sunflower, cashew nut, sesame…) is generating significant income to the associations being involved. During the period of 1997 up to 2001, World Vision reports a total value of Billion MT 12,5 which correspond to US $ 570 000, at the current exchange rate, for the associations of 6 districts of Nampula.

185. Existing information points out that, in Nampula which is the location where the diversification process has a longer background, the diversification crops are only providing a complementary monetary earning not sufficient to substitute to the earning from cotton. Besides, it is observed that the actual outlet for maize as well as its price have been sensitive[3] to the maize production in the neighbouring countries, Malawi and South Africa. This is consistent with a former study on the prospects of the maize production[4]. It appears that some food crops would only have a limited impact in ensuring secured and high level of cash earnings. Diversification of crops should then address productions of high commercial value, while it is advocated that intensified input use should remain cautious for the financial risk being associated[5].

186. In spite of the doubt we heard about the profitability of the cotton production by the people who are promoting diversification crops, cotton production is still ensuring the major part of the cash earning of the farmers. In other words, in the short run, any significant reduction in the cotton production would impact negatively and dramatically on the farmers income and well being.

Table 23. Relative monetary earning of cotton and diversification crops

| | Campaign 1998/99 | | | | Campaign 1999/2000 | | | |
|---|---|---|---|---|---|---|---|---|
| | Average price | Amount sold | Product Value /participant | Product kg /participant | Average price | Amount sold | Product Value /participant | Product kg /participant |
| | MT/kg | Ton | MT | Kg | MT/kg | Ton | MT | Kg |
| Maize | 1192 | 1222,0 | 224 329 | 188 | 754 | 934,1 | 173 614 | 230 |
| Cotton | 2484 | 3673,7 | 1 469 119 | 591 | 2808 | 1638,9 | 1 240 889 | 442 |
| Cashew | 5586 | 197,0 | 501 889 | 90 | 8137 | 150,1 | 367 286 | 45 |
| Peanut | 4429 | 162,7 | 387 929 | 88 | 5039 | 189,9 | 139 499 | 28 |
| Sesame | 4703 | 15,8 | 226 647 | 48 | 4368 | 155,7 | 246 723 | 56 |

Source : Clusa Moçambique

187. The AFD supported projects (implemented by Lomaco and CNA) have also coped with the promotion of diversification crops, but mainly from the technical stand point of improving the productivity in the field by testing new varieties, producing and distributing relevant seeds or by adapting the cultural practices (increasing the plant density for instance), or even by reducing the losses at the post-harvest stage. The actions have mainly concerned maize in the Provinces of Sofala and Manica, while in Montepuez, in addition to maize, rice in particular, but also in some extent peanut and pigeon pea, have been items of several years of Research/Development. The conduct of these actions was in compliance with the AFD projects which were targeted at more

[3] CLUSA Moçambique, 2000. Resumo do ponto de situaçao das actividades 99/2000. 5 p.
[4] Coulter, J. P., 1995. Maize marketing and pricing study, Mozambique. NRI, May 20, 1995, 69 p.
[5] Tickner, V., et al., 2001. Viable options for smallholder crop improvement and diversification in Northern Mozambique. Resal Southern Africa and Food Security Unit, European Union Delegation of Maputo, July 2001, 140 p.

general rural development in cotton zones, far beyond the concern of developing the cotton production alone.

188. The recent European Union call of bid for the implementation of crop diversification by cotton companies in the North provides the opportunity for these latter to integrate crop diversification in their general assistance to the smallholders, combining technical actions through research development and marketing assistance through the associative approach. The fact that 8 cotton companies have submitted project proposals is a positive sign regarding the cotton companies' strategy of no longer concentrating themselves on cotton and of acknowledging the synergy of cotton with other crops as it has been pointed out several years ago in Mozambique[6], in line with what has been observed in Francophone African countries[7].

189. It is stated that the new European Union projects could be operational from the beginning of the year 2002, they will therefore address part of the items being financed by the completed AFD Projects. At least for fund limitation reason, one can anticipate that the European Union will only help implement diversification crops in a limited number of cotton companies. These are matters for co-ordination in case of a new AFD support to the cotton sector in Mozambique.

## 2.9. An lately commitment in promoting an associative process

### *2.9.1. Background of the association development*

190. Until the end of 1990 the cotton sector of Mozambique counted very little Association of small producers unlike in many African cotton producing countries (Mali, Burkina Faso, Côte d' Ivoire, Bénin etc...). In these countries the evolution was initiated 2 decades ago; now these associations mature and inescapable.

191. In Mozambique, because of the existence of concession and the administrative management of the seedcotton purchase price, the concessionaire having the purchase monopoly on their concession did not see the interest to develop this type of organization.

192. The movement start its development under the impulse of ONG like CLUSA, programs financed by AFD (LOMACO and CNA) and after the publication of a memorandum established by the IAM in 1998:"Estrategia para O Desenvolvimento C Algodão " of September 98. This memorandum advocated the establishment of pre-associations (Normas para a criação e funcionamento de pre-assciações de algodão), it was then confirmed by The Ministry of Agriculture of Nampula in October 2000 (cf appendix xx)

193. In fact this movement developed mainly in the area of Nampula under the impulse of operators of class III and IV (cf 1.7.2) to capture a part of the seedcotton production of the farmers located in concessionaire areas. Indeed the operators of class II are able to choose their purchaser of seedcotton and supplier of services and inputs.

[6] Strasberg, P. (1997). Smaller cash-cropping , food-cropping and food security in Northern Mozambique. phD, Michigan State University. 279 p.

[7] Raymond, G. and Fok, M., 1994. Relations entre coton et vivriers en Afrique de l'Ouest et du Centre : Le coton affame les populations ? une fausse affirmation. Economies et sociétés Série Développement agro-alimentaire 22, 3-4/1995, pp. 221-234.

194. In the area of Cabo Delgado, this movement was developed under the impulse of a concessionaire, the LOMACO. In the area of Zambezia this movement has not yet started.

#### *2.9.2. "Laws" guiding the creation of association*

195. The law 8/91 of July 18, 1991 legalizes the creation of non profitable associations. In its principle, the creation of Associations is relatively simple: the statutes must be established by a notary and published in the " Boletin da Repùblica ". A rectifying decree of October 3, 1991 authorizes the Governors of Provinces to legalize associations instead of Ministry of Justice.

196. In theory pre-association do not have any legal existence because the majority of them are not legalized.

#### *2.9.3. long and costly procedures in establishing association*

197. According to the LOMACO and CLUSA the creation and the legalization of a non profit Association are a very long and expensive process.

198. **According to a report of CLUSA carried out in September 1998 it would take an average of 420 days to carry out the formalities, including approximately 160 lawful days at a total cost of 450 USD by counting the ancillary costs.**

199. These difficulties were also encountered by the LOMACO, which since 1997 created 59 associations of which only one is currently legalized.

#### *2.9.4. Support from NGOs to help associations to go through legalisation*

200. The NGO specialized in creation and supporting the farmer's organizations is CLUSA. CLUSA is a NGO originating from the USA founded in 1916. It intervenes in Mozambique, in the Province of Nampula since the end of 1995 and since 1999 in the province of Zambesia. It also intervenes in many countries of Africa in the same field. Currently according to a memorandum of August 2001 CLUSA assisted a total of 18,000 peasants organized in 600 basic associations and 37 forum of associations gathering several associations.

201. The know-how of CLUSA in this field is recognized by all the operators who often call upon his specialized services.

# 3. The cotton production in Mozambique

## 3.1. Historical background and the re-launch of the cotton production

202. The cotton production in Mozambique has a long history background which has been analysed by various academic works[8] we would not elaborate in this study as this

[8] Isaacman, A. and Chilundo, A., 1995. Peasants at work : forced cotton cultivation in Northern Mozambique. in Cotton, colonialism, and social history in Sub-Saharan Africa, ed. A. Isaacman and R. Roberts, Heineman & James Currey Ltd, Portsmouth & London. pp. 147-179
Isaacman, A. and Roberts, R., eds. (1995). "Cotton, colonialism, and social history in sub-saharan Africa,", pp. 1-314. Heineman, Portsmouth.
Isaacman, A. e. a. (1996). "Cotton is the mother of poverty : Peasants, Work, and rural struggle in colonial Mozambique, 1938-1961," Heinemann - James Curry Ltd - David Philip Publishers (Pty) Ltd, Portsmouth-London-Cape Town. 272 p
Pitcher, A. (1993). "Politics in the Portuguese Empire," Clarendon Press, Oxford. 322 p

background has also been somewhat recalled in a former study of the cotton sector[9]. We only emphasize the fact that cotton production has been experienced in most of the provinces of the country, which the feature of "forced crop" has helped.

203. The direction and the condition of the re-launch of the cotton production since the end of the 1980s have been examined in addition in a review article[10] and more specifically in a report analysing the issue of cash cropping in Mozambique[11].

204. Cotton in Mozambique was insignificant until the 1920s. It was after the Portuguese Government got inspiration from the Belgian experience of "zoning system" ensuring an exclusive right in purchasing the seedcotton that the production grew up, assisted along by the implementation of a law that literally forced the farmers in growing cotton.

205. There were many institutional adjustment during the period up the independence. Mozambique has tested various schemes in allocating exclusive zones to the cotton operators. One of these was the auction system by which cotton companies had to submit yearly offers in the competition in getting an exclusive zone. There was a combination of a regulation spirit along with the desire of having the private operators competing.

206. The historical high of the cotton production was achieved shortly before Independence, when the production of 133 200 tons was obtained in 1974. After Independence, the new government recognised the strategic importance of cotton in supplying foreign exchange, it tried to revert the downsizing trend of the production and took over the facilities left behind by the cotton companies. The new strategy consisted in setting up large state farms and communal villages, but for many reasons, this strategy failed at the point that the production has plunged to 5200 tonnes in 1985.

207. By the end of the 1980s, in an attempt to reverse the crisis in the cotton sector, the government decided to open up the cotton sector to private operators. Several JVCs companies where then formed between private investors and the state (Lomaco, Sodan, Samo). The former brought fresh investment funds and rehabilitated the existing ginning mills and some rural infrastructure. In addition, a number of private companies have been later on authorised to undertake cotton activities. As in the past, the JVCs and most of the cotton companies operate as concessionaries being allocated of specific areas of influence and having exclusive right in purchasing seedcotton from the farmers of their areas.

208. The picture of the cotton sub-sector has evolve during one decade, the first JVCs are still in operation, while there was some turn over with the other cotton companies. In 2001, the geographic distribution of the cotton companies is represented in the attached map.

209. Further details about the functioning of the cotton sector will be elaborated, in particular in analysing the constraints and the assets of the current sector. During one

Pitcher, A., 1995. From coercition to incentives : the Portuguese colonial cotton regime in Angola and Mozambique, 1946-1974. in Cotton, colonialism, and social history in Sub-Saharan Africa, ed. A. Isaacman and R. Roberts, Heineman & James Currey Ltd, Portsmouth & London. pp. 119-143

[9] Fok, A. C. M., 1995. The cotton sub-sector in Mozambique : institutional diversity, performance and prospects for improvement. CIRAD, World Bank Expertise report for the Ministry of Agriculture and Fishing, Republic of Mozambique Montpellier, 05/1995, 127 p.

[10] Evangelista, R., 1997. Le coton au Mozambique. Coton et Développement, No. 24, pp. 12-18

[11] Wandschneider, T. S. and Garrido Mirapeix, J., 1999. Cash cropping in Mozambique : evolution and prospects. Food Security Unit Mozambique, European Union, Maputo, August, 1999, 112 p.

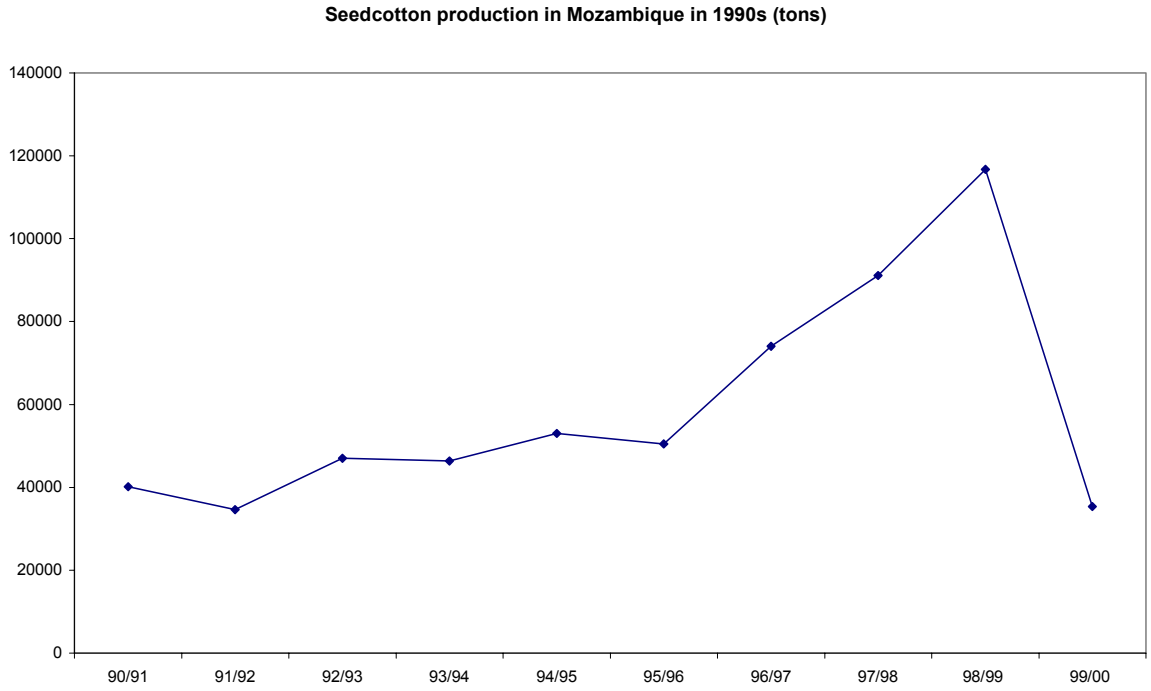
decade, the production progression was rather positive although it is showing signs of new decline which must be analysed in finding out ways for a new dynamics.

## 3.2. Analysis of the recent cotton production

### *3.2.1. Production re-launch located in the North with a worrisome trend*

210. Short after the Mozambican economy has come back to a more normal tracks, the cotton production has dramatically increased. This increase has been a steady one till the 1998/99 campaign (more than 116 000 of seedcotton or a bit more than 35 000 tons of cotton lint) before it experienced again, till today, serious signs of a new fall down (Graphic 1 and annexe Evolution of the seedcotton production).

Graphic 2. Evolution of the seedcotton production in Mozambique in the 1990s




211. While the seedcotton production seemed to be in a position to become close to the historical high of 1973/74 with more than 144 000 tons), the sharp decline being observed recently, although with great variation, introduces doubt upon the cotton future in the country. The production dropped to 35000 tons of seedcotton in 1999/2000, and the estimation of a 100 000 tons for the finishing campaign (2000/2001) sounds to be too much optimistic. Reasons for the production drop pertained to climatic, technical and economical factors which will be more elaborated later on.

212. The production is unequally distributed between the three zones, with a prevailing part of the northern zone which is considered to be the highest potential one. The southern zone is disappearing from the picture, in absolute or relative terms, its cotton production is becoming very marginal.

Table 24. Distribution of the seedcotton production in three geographic zones

| | Zones | | |
|---|---|---|---|
| | North | Centre | South |
| 1991/92 | 69% | 6% | 25% |
| 1992/93 | 73% | 13% | 14% |
| 1993/94 | 74% | 12% | 14% |
| 1994/95 | 83% | 13% | 4% |
| 1995/96 | 80% | 12% | 8% |
| 1996/97 | 87% | 9% | 4% |
| 1997/98 | 85% | 10% | 5% |
| 1998/99 | 86% | 11% | 3% |
| 1999/00 | 74% | 26% | 0% |

213. Within the northern zone, the province of Nampula remains the leading cotton producing province with a national production share of around 50% during the last decade. During this decade, Cabo Delgado, through a more limited producing area, has proved to be able to challenge seriously, reaching a production share of over 30% in the 1998/99 campaign. The uncertainty regarding the fate of the Lomaco company (after the withdrawal of the Lonrho from the cotton business) has implied, among other reasons, a sharp decline in this share.

214. In the central zone, the province of Sofala, one of the 2 provinces of intervention of the CNA, has gained in the campaign 1999/00 a dramatic increase of its production share as its producing kept on increasing while Nampula and Cabo Delgado experienced sharp drops. The other 7 provinces account for less than 10% of the production share.

215. The important relative share of Nampula is the reason why the current confusion that is prevailing is catching the attention of the Mozambican Government, leading to the feeling that cotton in Mozambique is restrained to Nampula Province which some stakeholders disagree. Owing to what Cabo Delgado has shown two years ago and to the new initiatives in Zambezia Province, the current tendency to adapt new rules to the only Nampula case may actually sound unfair to the stakeholders in the other provinces. Besides, it is reported that land pressure has become real in Nampula Province while a long term land use with limited nutrient return to the soil has reduced fertility, these are factors which could limit further cotton production development in the next future.

Table 25. The provinces shares in seedcotton production

| | Provinces shares in seedcotton production | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | C. DELGADO | GAZA | INHAMBANE | MANICA | MAPUTO | NAMPULA | NIASSA | SOFALA | TETE | ZAMBEZIA |
| 1990/91 | 24,3% | 12,6% | 4,0% | 0,4% | 2,1% | 48,8% | 0,3% | 7,4% | 0,0% | 0,3% |
| 1991/92 | 14,3% | 21,1% | 3,4% | 0,4% | 0,1% | 53,1% | 1,8% | 5,1% | 0,0% | 0,7% |
| 1992/93 | 21,3% | 11,5% | 2,0% | 2,1% | 0,0% | 50,4% | 2,1% | 10,3% | 0,0% | 0,3% |
| 1993/94 | 21,1% | 11,7% | 1,6% | 1,6% | 0,0% | 49,6% | 3,6% | 10,6% | 0,0% | 0,1% |
| 1994/95 | 19,6% | 3,6% | 0,8% | 1,0% | 0,0% | 55,9% | 7,1% | 11,3% | 0,0% | 0,6% |
| 1995/96 | 25,1% | 5,6% | 2,2% | 1,1% | 0,0% | 48,0% | 6,6% | 10,6% | 0,0% | 0,7% |
| 1996/97 | 30,4% | 2,9% | 1,0% | 0,7% | 0,0% | 51,5% | 5,4% | 7,1% | 0,1% | 1,0% |
| 1997/98 | 29,4% | 4,1% | 1,2% | 0,6% | 0,0% | 51,6% | 4,4% | 6,0% | 0,5% | 2,2% |
| 1998/99 | 30,3% | 2,9% | 0,1% | 0,5% | 0,0% | 49,5% | 6,1% | 6,0% | 0,9% | 3,6% |
| 1999/00 | 13,2% | 0,0% | 0,3% | 0,5% | 0,0% | 57,4% | 3,4% | 20,3% | 1,4% | 3,4% |
| Total | 25,0% | 6,3% | 1,4% | 0,8% | 0,2% | 51,2% | 4,6% | 8,6% | 0,4% | 1,6% |

### *3.2.2. A reducing diversity of the production type*

#### *3.2.2.1. Disappearing direct production*

216. The cotton output derives from various types of production. The direct production by the state has disappeared for long. The direct production by the cotton companies has followed also a dramatic decreasing trend, the remaining areas being conducted by the cotton JVCs are essentially devoted to seed production. This trend has induced consequently an increasing share of the production from the smallholders called the family sector. The associative type has been recently distinguished to take into account the production being marketed by the farmers associations, but basically the production is an output from individual smallholder. Globally, smallholder production is representing close to 90% of the national production. The "privados" represent a category of producers having tens or hundreds of hectares of land on which they may grow cotton with a seedcotton production being processed by ginneries at a service basis. What is the real origin of the production brought by the "privados" is a debate that deserves further analysis.

Table 26. Evolution of the shares of various types of production

| | Production types | | | | |
|---|---|---|---|---|---|
| | Statal | Associative | Privados | Sector familiar | Cie. Direct farming |
| 91/92 | 0,4% | 0,0% | 18,2% | 43,8% | 37,6% |
| 92/93 | 0,0% | 0,0% | 18,7% | 51,3% | 30,0% |
| 93/94 | 0,0% | 0,0% | 13,2% | 63,1% | 23,6% |
| 94/95 | 0,0% | 0,0% | 17,9% | 67,5% | 14,6% |
| 95/96 | 0,0% | 0,0% | 13,4% | 64,7% | 21,9% |
| 96/97 | 0,0% | 0,0% | 10,5% | 78,9% | 10,6% |
| 97/98 | 0,0% | 0,0% | 8,7% | 87,3% | 4,1% |
| 98/99 | 0,0% | 7,7% | 10,3% | 80,2% | 1,8% |
| 99/00 | 0,0% | 25,7% | 5,1% | 66,5% | 2,6% |

217. Most of the cotton companies are enjoying, for a period of 20 to 25 years (see above), a right of land use on significant areas (up to tens of thousands of hectares for the most important ones like Sodan or even Lomaco) and they are benefiting an exclusive right of buying the seedcotton from the smallholders located in their zones of influence. This scheme is called commonly the "concessionaire system" or the "monopoly system" which is under debate since the second half of the 1990s. This debate has moved to a direct contestation of the "concessionaire system" by new operators. This is causing very tough open conflicts in the Nampula province which will be analysed furthermore below. We have heard various cotton stakeholders dealing with the issue through very strong words like "war" or "criminal" which show the passionate feature that it is generating. It is worth noting that the concessionaire feature is distinct to what is commonly called the "zoning system" which encompasses only the exclusive right of purchasing seedcotton within a delimited zone without allocation of any right in using a specified area of land. It is this allocation of land which gives the concession feature that recalls the colonial times as some authors have underlined[12].

[12] Pitcher, A., 1996. Recreating colonialism or reconstructing the State ? Privatisation and politics in Mozambique. Journal of Southern African Studies, 22, pp. 49-74.

218. Reduction if not disappearance of the direct farming by the concessionaire cotton companies poses the issue of the non-usage of the land being allocated to them at their creation. This non-usage is often criticised specially where pressure on land is felt to be high like in Nampula province. In a summary of the discussions the Former Minister of Agriculture had with various stakeholders, the promotion of the exploitation of the land being abandoned by the JVCs is set as a fundamental aspect to be considered in the reform of the concessionaire system[13]. The issue of the abandon of conceded lands is one of the elements leading to the negative perception of the concessionaire cotton companies that the mass media reported or transmitted and against which the AAM has tried to react through a recent note clarifying the economic impact of the cotton production for the country and its view on the real challenges to address[14] (research, extension, input delivery, input credit, quality).

#### *3.2.2.2. Diversity of the cotton companies*

219. During the first half of the 1990s, the cotton companies were all JVC concessionaire companies involving the participation of the Mozambican State and national or international private funds (Sodan, Samo, Lomaco…). During the second half, there were allocation of concessionaire zones to which only private funds are involved (Agrimo, SAAM in Zambeiza for instance or Mocotex which started in Cabo Delgado and which is extending itself to Zambezia). As far as we know, these companies do not enjoy allocation of land but only the right of exclusive purchase in their zone of influence. There is therefore no longer any uniform picture of the concessionaire system and this evolution is not actually sufficiently underlined.

220. Meanwhile, there were also totally private companies which operate without any concessionaire right (no land allocation nor exclusive purchase right) as it is the case for Sanam in Monapo of Nampula province or Nova Algodoeira in Namialo. The map reproduced in annex shows the distribution of the various cotton companies.

### *3.2.3. Lack of knowledge about the number of cotton growers*

221. The statistics being recorded by the IAM no longer inform about the number of the cotton growers. This is pitiful as there is no way to know more or less exactly how many people are actually benefiting from cotton production. Some documents issued from the AAM deal with a total number of 300 000 cotton growers, or a total rural population of 1 500 000 with an average family size of 5. In case that cotton production contributes actually to poverty alleviation, it is of major importance to inform how many people benefit from it.

222. We believe that this information is available at all cotton companies which actually provide input on credit basis. We have been provided with this information by Lomaco, CNA Agrimo and Samo. Besides, Lomaco has disclosed this information in several documents it has issued, in particular the special report issued for the workshop in June 2001.

### *3.2.4. Great fluctuation of the cotton acreage*

223. In terms of cotton acreage, there is a big issue of the liability of the figures being recorded. This is an issue which is common to most of the cotton producing countries

[13] IAM, 1999. Resumo do trabalho realizado por S. Excellencia o Ministro da Agric. e pescas para a soluçao do conflito algodoeiro em Nampula. IAM, Maputo, September 20, 1999, 6 p.
[14] Associaçao algodoeira de Moçambique Nota conceptual sobre o actual sector algodoeiro. pp. 10.

in Africa. Even in French speaking countries in western and central Africa where a limited number of cotton companies (generally only one) is charging its extension staff to estimate the cotton acreage along with farmers organisation, some imprecision remains. In Mali, a sample of plots are actually measured every year in order to correct the acreages being announced by the farmers or their organisation. An over-estimation of around 10% is commonly found, which is not necessarily intentional from the farmers owing to the fact that they can only visually estimate the size of their plots[15]. A similar result has been obtained by the AFD funded project in Lomaco Montepuez.

224. Some circumstances may push cotton stakeholders in false declaration of their cotton acreage. A policy of national restriction of cotton acreage, like in Mali in mid-1980s or in Benin in mid-1990s, gives rationale for the farmers to under-declare their acreage. They may also over-declare in order to get more inputs and divert them to other crops. Cotton companies may also over-declare cotton acreage under their influence in order to claim a more important role in the cotton sub-sector than they have actually. As long as there is no procedure to check acreage declaration and no sanction, this situation should last. We have the feeling that this is what is happening in Nampula Province. We do not know whether the concerned players know the real figures of cotton acreage they just do not want to disclose or whether they even do not know themselves by lack of organisation to obtain this information. The fact is, uncertain information on cotton acreage provides an indistinct picture of the cotton relative place in the cropping system. This is not at all helpful in formalizing long term strategy. This lack of information is also favourable in feeding the feeling of the land competition of the cotton at the expense of the food crops, while this feeling does not seem to be founded.

225. We did not heard the stakeholders deal with this issue, likely because of an exclusive emphasis on the price issue. It is of major importance to get organised in copping with a better precision in estimating cotton acreage. Any information collection induces costs, higher is the precision sought, higher is the cost, there is then a matter of trade-off. Organisation can help reduced this cost. In Mali, where more than 95% of the cotton production (500 000 tons in 1997/98) are commercialised by farmers associations, these associations have accepted to cope with the recording of the crop acreages. This commitment has in return given them an increase of the premium allocated by the cotton company[16]. Physical delimitation of the plots is a way of decreasing the cost in measuring or estimating the plot sizes from one year to another.

226. Under the reservation of the questionable liability of the acreage data being available, the province of Nampula is the leading one before Cabo Delgado. The diminution of the cotton acreage which occurred in the campaign 1999/00 appeared to be less important in Cabo Delgado. In this latter province, there was a very sharp decline in the 1999/2000 campaign owing to the uncertainty regarding the Lomaco future. Although this future was not clearer the following campaign, the new cotton acreage augmentation is both a sign of some attachment to cotton production and of the lack

[15] Fok, A. C. M., et al., 1999. Diversité des pratiques paysannes en zones cotonnières du Mali : portée et limites des gestions d'itinéraires techniques observées. Communication presented to Conference 'Rôle et place de la recherche pour le développement des filières cotonnières en évolution en Afrique', Montpellier, Sept. 1-2, 1999, 137-159 p.

[16] In the 1999/2000 campaign, the marketing premium allocated to the farmers was FCFA 5000 per ton of seedcotton where the associations took charge of the acreage control, in stead of FCFA 3000 per ton. It is worth noting that, with regard to a seedcotton price of FCFA 165/kg at that time, the premium for marketing was only 2 to 3%, far lower than the 12% in Mozambique.

of alternative cash crops. We suspect that the historical high in cotton acreage declared for Nampula during the 2000/01 campaign is an illustration of intentional over-estimation by some if not most of the cotton companies.

Table 27. Cotton acreage in Mozambique

| | Province | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | C. DELGADO | GAZA | INHAMBANE | MANICA | MAPUTO | NAMPULA | NIASSA | SOFALA | TETE | ZAMBEZIA | Total |
| 1990/91 | 11 050 | 2 750 | 1 650 | 375 | 500 | 54 799 | 620 | 2 600 | 0 | 455 | 74 799 |
| 1991/92 | 8 936 | 2 962 | 1 653 | 1 250 | 20 | 45 941 | 2 150 | 2 800 | 0 | 2 600 | 68 312 |
| 1992/93 | 11 136 | 2 598 | 939 | 1 200 | 0 | 51 406 | 4 776 | 4 200 | 0 | 300 | 76 555 |
| 1993/94 | 19 523 | 2 422 | 610 | 1 100 | 0 | 74 876 | 5 762 | 4 122 | 0 | 414 | 108 829 |
| 1994/95 | 22 605 | 1 743 | 858 | 615 | 0 | 93 421 | 9 000 | 4 802 | 0 | 4 000 | 137 044 |
| 1995/96 | 22 267 | 1 615 | 5 684 | 2 830 | 0 | 81 650 | 10 500 | 9 127 | 0 | 9 320 | 142 993 |
| 1996/97 | 39 371 | 2 025 | 2 283 | 1 865 | 16 | 80 469 | 14 468 | 8 578 | 540 | 4 077 | 153 692 |
| 1997/98 | 53 472 | 1 779 | 2 483 | 1 542 | 30 | 108 011 | 16 426 | 7 809 | 821 | 5 523 | 197 896 |
| 1998/99 | 64 122 | 1 727 | 1 250 | 2 399 | 84 | 99 276 | 14 261 | 9 394 | 3 200 | 5 891 | 201 604 |
| 1999/00 | 15 948 | | 578 | 430 | | 67 918 | 6 925 | 8 890 | 1 160 | 3 807 | 105 656 |
| 2000/01 | 44 834 | 251 | 835 | 302 | | 156 999 | 6 752 | 12 185 | 3 500 | 6 775 | 232 433 |

227. Lack of information on the number of cotton growers do not allow to deduce the average cotton acreage per grower, except in Lomaco Montepuez and CNA zones where surveys have been conducted to reach a better understanding of the farming systems. In Lomaco, the average cotton area per cotton farmer was 0,6 ha in the 1999/2000 campaign.

### *3.2.5. A yield low and variable*

228. Owing to the combination of various types of production (direct production, production by "privados", production by smallholders of the family sector), the general average of the seedcotton yield is an over-estimation of the actual land productivity by the family production which is the dominant one. In spite of this, the average level is low and quite variable between the provinces and the years. With reference to a suspected tendency of over-estimation of the cotton acreage, the yield should not be as low as it appears.

Table 28. General Average seedcotton yield (kg/ha)

| | Province | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | C. DELGADO | GAZA | INHAMBANE | MANICA | MAPUTO | NAMPULA | NIASSA | SOFALA | TETE | ZAMBEZIA | Total |
| 1990/91 | 881 | 1838 | 961 | 427 | 1700 | 357 | 166 | 1138 | | 224 | 855 |
| 1991/92 | 556 | 2471 | 713 | 106 | 2250 | 400 | 288 | 630 | | 88 | 834 |
| 1992/93 | 899 | 2087 | 983 | 823 | | 461 | 211 | 1148 | | 500 | 889 |
| 1993/94 | 502 | 2243 | 1213 | 663 | | 307 | 292 | 1190 | | 152 | 820 |
| 1994/95 | 460 | 1108 | 490 | 862 | | 317 | 420 | 1252 | | 73 | 623 |
| 1995/96 | 570 | 1759 | 195 | 205 | | 297 | 316 | 586 | | 39 | 496 |
| 1996/97 | 571 | 1061 | 308 | 276 | 188 | 473 | 277 | 612 | 156 | 183 | 410 |
| 1997/98 | 501 | 2120 | 430 | 356 | 333 | 435 | 244 | 697 | 585 | 361 | 606 |
| 1998/99 | 552 | 1984 | 139 | 227 | 226 | 581 | 502 | 743 | 323 | 722 | 600 |
| 1999/00 | 292 | | 164 | 407 | | 299 | 176 | 808 | 437 | 319 | 363 |
| 2000/01* | 489 | | | 874 | | 291 | 404 | 696 | 714 | 511 | 569 |

* Estimation

229. Figures are more reliable in the case of the family sector and the direct production implemented by the cotton companies. The yield gap between these two production types we observed pertains to a higher intensification in direct production whose yield level is however low with regard to the costs involved. The average yield in the family sector has fluctuated between 300 to 450 kg/ha, this is low as compared to the general yield obtained in francophone African countries, which has however decreased from around 1200 to 1000 kg/ha the last years, where all the production comes from the family sector.

230. Figures provided by CNA and Lomaco which implemented two AFD projects show better yields than the national average in the family sector. CNA has reached an average yield of 600-700 kg/ha the last two years following a steady increase, thanks likely to a higher number of insecticide applications which have been subsidised in the framework of the project. This performance is better than the one achieved by Lomaco where the number of cotton farmers has been far greater and where there was no subsidy in promoting the insecticide use and where yield has fluctuated more for reasons to be elaborated below.

Table 29. Comparative yield between the family sector and direct production (kg/ha)

| | Family sector | Direct production |
|---|---|---|
| 90/91 | 321 | 1576 |
| 91/92 | 315 | 1157 |
| 92/93 | 397 | 1589 |
| 93/94 | 310 | 1405 |
| 94/95 | 289 | 1192 |
| 95/96 | 253 | 1572 |
| 96/97 | 415 | 1374 |
| 97/98 | 443 | 1325 |
| 98/99 | 511 | 1311 |
| 99/00 | 282 | 1982 |

231. The implementation of the two AFD funded projects have the merit in showing that there is no fatality in stagnating at a low yield level. Actual commitment in extension work, in providing inputs or in promoting their use have been actions that have proved themselves somewhat effective. Of course, there are costs associated to these actions and it remains the issue of analyzing the efficiency of the costs involved and of identifying complementary actions at reasonable costs.

232. Another observation of major importance is that, owing to the current low level of yield, there is a big room for improving it at a far lower cost and a far better probability than countries which are already at the top of the yield potential. This is a positive factor for the Mozambican cotton future provided that actual efforts are engaged and co-ordinated to cope with productivity gain.

### *3.2.6. Profitability still weak for farmers*

233. Low land productivity is a limiting factor for sufficient profitability. For the whole family sector of Mozambique, the gross income before deduction of the insecticide cost (the only cash expense input in Mozambique) has fluctuated during the recent years around a value of US $ 45.

234. In lack of the information about the average cost of the insecticides being actually used, it is not possible to calculate the added value obtained in cotton production for the whole country. In the framework of a survey implemented in the Lomaco Montepuez zone during the 1999/2000 campaign, it came out that the average cotton acreage was 0,6 ha per cotton grower. The data available from 112 cotton farms provide a mean gross income of US $ 47 and a mean added value of US $ 33 per cotton farm, with however wide ranges of distribution. The gross income and the added value per hectare are low, although their value are more specific to a campaign which suffered from late sowing and psyllose outbreak. Since the cotton production by the family sector is not at all capitalistic, that there is no taxation nor financial costs to

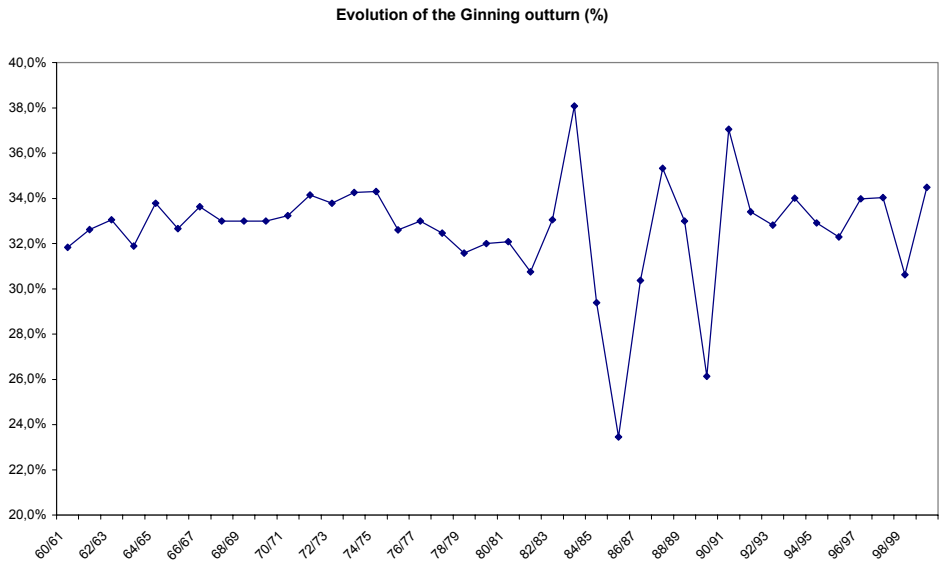
be covered, the added value is then a good estimation of the net income before remuneration of the family labour.

235. In manual farming with a seedcotton yield of around 400 kg/ha, the labour involved could be estimated at 75 mandays/ha, which gives an average[17] daily wage of MT 13,200. We cannot conclude through this comparison that the remuneration of the family labour is unfair since lack of off-farm activities implies a low opportunity cost of the labour. More important is to notice that half of the cotton farms have obtained a remuneration 40% lower than the average value being analysed.

### *3.2.7. Low ginning outturn*

236. The ginning outturn remains at a low level of 32-35% during the last decade. Examination of the evolution of the ginning outturn shows that this latter has not evolved during a period of 35 years. Since this is the ratio between the seedcotton production being bought and the cotton lint obtained after ginning, the precision of this indicator is influenced by the precision of each of the production values. The long term evolution reported in the Graphic 2 shows low and unrealistic values of this indicator for the period of the civil war which questions the precision of the value of the production figures involved in its calculation. Owing to the disturbance linked to a civil war situation, such lack of precision could be understandable. It is noteworthy to emphasize that a low and un-realistic value of the ginning outturn has been observed recently which poses the issue of the quality of the control of the production figures : is the "war" in purchasing seedcotton inducing the same effect than the former civil war ? Was there lint production which were not declared ?

Graphic 3. Evolution of the ginning outturn in Mozambique




237. The current ginning outturn in Mozambique, as a national average, ranks among the lowest ones within the cotton producing countries in the world while other African countries are showing the highest ones (the average ginning outturn in francophone African countries is close to 42% nowadays). The relevance of transferring this

[17] 33 $ at an exchange rate of MT 18000 obtained on 0,6 ha with a labour of 75 man.days per ha.

outcome to Mozambique has been one the basis of the projects that the AFD financed since 1996/1997 and which has been achieved successfully.

### *3.2.8. An increasing over-capacity of ginning*

238. It is not easy to determine the actual ginning capacities in Mozambique, the basic reason is that the number of ginning stands must be updated. The IAM has recorded the number of ginneries and the number of stands for each ginnery, a theoretical capacity could be calculated through assumption on the number of working hours. But the number of stands appears to be over-estimated in most of the ginneries since that these ginneries are old or very old ones (except the ginneries in Morrumbala runned by Agrimo, and in Namialo run by Sanam) dismantling of existing machines is the only remaining option to face the impossibility of obtaining spare parts in order to have a reduced number of machines kept on running. In CNA, out of the 10 recorded ginning stands, only 5 are still running. We can assume that this phenomenon should occur for some other cotton companies where there was no rehabilitation.

239. Taking only into account the ginneries which are operational, we have updated the ginning capacities according to assumptions of actual operational ginning stand which, of course, we cannot claim to be real but only be probable. It is up to the IAM to correct our assumptions. We have retained two hypothesis regarding the number of working hours for a ginning period of 100 working days. We obtain then an operational ginning capacities of 152 to 230 000 tons of seedcotton, of which 60% are located in Nampula Province while Zambezia is showing a significant share (25%).

Table 30. Updated ginning capacities in Mozambique (tons of seedcotton/year)

| | 100 days of ginning | |
|---|---|---|
| | 16 hours per day | 24 hours per day |
| C. Delgado | 13 737 | 20 605 |
| Inhambane | 2 560 | 3 840 |
| Nampula | 85 495 | 128 242 |
| Niassa | 3 703 | 5 554 |
| Sofala | 9 143 | 13 714 |
| Zambezia | 37 714 | 56 571 |
| Total | 152 352 | 228 527 |

240. In general, the ginning capacities are far beyond the current production level. At best, the production of the 2000/01 campaign would not exceed 100 000 tons de seedcotton according to the IAM estimation, our discussions with the various cotton companies lead us to expect a notably lower figure.

241. **There is then at least an over-capacity of 50%, inducing then a high fix unit cost at the ginning stage : the cotton companies with ginning facilities would be more cost efficient with a higher production and they must have rationale in promoting the seedcotton production. It is a pity to observe that this is not actually the case as it will be analysed.**

242. Here is the paradox of having to talk about the need for new ginning facilities while dealing with the over-capacity situation. New investment cannot be overlooked in the mid-run. In the short run, it makes sense to have a clear view of the compatibility of the existing ginneries, including the ones which are not operational, so that the exchange of spare parts could be co-ordinated at the national level.

243. The level of under-use of the ginning capacities is unequal between the provinces. Most stakeholders are conscious of this under-use in Nampula, but the case of Zambezia province must be emphasized : there is a new ginnery which is running far below its capacity. As this is a zone of recent re-launch of the cotton production, the stake of a successful promotion of the production is of even greater importance than in other provinces, this is a matter of not having an industrial initiative disappear again.

### *3.2.9. Cotton lint mainly exported*

244. In Mozambique, all cotton lint obtained at the ginneries must be classified by the IAM classifying rooms[18] so that the quantity classified must be equal to the total amount of cotton lint. This has not been always the case through the data provided by IAM we have processed. Reasons of the differential we observed for the 1995/96, 1996/97 and 1997/98 campaigns are unclear.

Table 31. Differential between reported lint production and classified lint

| | Weight of lint (kg) | | Ratio of |
|---|---|---|---|
| | Reported | Classified | lint classified |
| 1995/96 | 16 311 | 14 786 | 90,7% |
| 1996/97 | 25 147 | 23 789 | 94,6% |
| 1997/98 | 31 007 | 29 644 | 95,6% |
| 1998/99 | 35 746 | 35 746 | 100,0% |
| 1999/00 | 12 194 | 12 194 | 100,0% |

245. The Mozambican cotton lint is essentially exported, since there is no longer any operational spinning industry in the country, this feature should last for a while. Mozambique is therefore similar to most of the Francophone African countries, the big difference is that this country had a textile industry far more developed and far more diversified but which has failed to preserve.

Table 32. Cotton lint mainly destined to exportation

| | Weight of lint (kg) | | |
|---|---|---|---|
| | Exported | Classified | Export share |
| 1995/96 | 14 488 071 | 14 786 331 | 98,0% |
| 1996/97 | 22 263 376 | 23 789 099 | 93,6% |
| 1997/98 | 26 949 623 | 29 644 234 | 90,9% |
| 1998/99 | 35 193 737 | 35 746 185 | 98,5% |
| 1999/00 | 11 328 473 | 12 193 649 | 92,9% |

246. While the Mozambican cotton has been mainly destined to South Africa and Portugal till 1995/96, this is no longer the case. South Africa has become a marginal market during the last three years. Portugal remains the main outlet, but several Asian countries have become significant customers (India, Malaysia, Thailand). The aggregated data we have been provided with do not allow us to clarify the possible relationship between the destinations countries and the lint quality.

[18] There are 4 classifying rooms located at Maputo, Beira, Nampula and Montepuez.

Table 33. Evolution of the destination countries of the Mozambican cotton lint

| | 1994/95 | 1995/96 | 1996/97 | 1997/98 | 1998/99 | 1999/00 |
|---|---|---|---|---|---|---|
| Brazil | 0,0% | 0,0% | 0,0% | 0,0% | 8,2% | 0,0% |
| England | 0,0% | 0,0% | 1,4% | 0,0% | 0,0% | 0,0% |
| France | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 2,6% |
| Hungary | 0,0% | 0,0% | 9,5% | 12,0% | 3,3% | 0,0% |
| India | 0,0% | 0,0% | 0,0% | 0,0% | 6,4% | 20,4% |
| Indonesia | 0,0% | 0,0% | 0,0% | 0,0% | 0,6% | 0,0% |
| Malaysia | 0,0% | 0,0% | 0,0% | 0,0% | 8,9% | 0,0% |
| Mauritius | 0,0% | 0,0% | 3,0% | 0,0% | 0,0% | 0,0% |
| Philippines | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 3,8% |
| Portugal | 30,4% | 2,6% | 66,7% | 68,9% | 35,6% | 59,7% |
| RFA | 0,0% | 0,0% | 4,5% | 0,0% | 0,0% | 2,3% |
| RSA | 69,6% | 97,4% | 10,4% | 5,9% | 8,9% | 0,3% |
| Singapour | 0,0% | 0,0% | 0,0% | 0,0% | 2,2% | 0,8% |
| Taiwan | 0,0% | 0,0% | 0,0% | 0,0% | 1,6% | 1,6% |
| Thailand | 0,0% | 0,0% | 4,5% | 13,1% | 8,1% | 4,4% |
| Various dest. | 0,0% | 0,0% | 0,0% | 0,0% | 16,2% | 0,0% |
| Vietnam | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 4,2% |
| Total | 100,0% | 100,0% | 100,0% | 100,0% | 100,0% | 100,0% |

247. We have processed the data provided by IAM in order to determine the average price at exportation. As the world price fluctuates, this average price fluctuates as well. We have referred this average export price to the average A index modified to the FOB basis to determine what we call the export price ratio. There are several reasons leading to a ratio less than one. The first is that a great part of the cotton lint is of a quality inferior to the one corresponding to the A index (Middling grade and a lint length of 1" 3/32). The second is that not necessarily all the exported cotton was paid at the FOB basis : in case that part of the cotton lint is sold at ex-ginnery position, the price being obtained is therefore inferior to the FOB price. For a more accurate assessment of this export price ratio, calculation should have distinguished the selling position and lint quality (grade and lint length), which we could not do with the aggregated data provided. We must then be cautious in interpreting the absolute value of the export price ratio.

248. However the decreasing trend of this ratio deserves more insight. We do not think that there is so much export selling other than at FOB position, therefore the trend being observed may refer to a decreasing quality.

Table 34. Evolution of the export price ratio

| | Average export price | Index A, FOB ref. | Export Price ratio |
|---|---|---|---|
| | US $/kg | May-Oct., US $/kg | % |
| 1994/95 | 1,59 | 1,89 | 83,8% |
| 1995/96 | 1,47 | 1,52 | 97,1% |
| 1996/97 | 1,50 | 1,55 | 96,5% |
| 1997/98 | 1,13 | 1,26 | 89,2% |
| 1998/99 | 0,79 | 0,96 | 82,1% |
| 1999/00 | 1,03 | 1,11 | 92,9% |

249. There is actually a trend of decreasing grade of the cotton lint : the cumulative percentage of Extra, I and II grades has become less than 10% while it was close to

28%. This is an indication of less care at the harvest stage or at the marketing stage. It is quite symptomatic that IAM is no longer distinguishing the total seedcotton production into the two grades being retained and for which differentiated prices should be applied at purchase. Lomaco is still applying this seedcotton grade distinction, we do not know whether this is also the case in CNA but, for sure, nobody talked about this in Nampula where the stakeholders are focussing only quantity and no longer on quality.

Table 35. A trend of decreasing lint grade

| | EXTRA | I | II | III | IV | V | VI | INFER. |
|---|---|---|---|---|---|---|---|---|
| 1995/96 | 0,4% | 8,9% | 18,5% | 42,2% | 27,4% | 2,2% | 0,4% | 0,0% |
| 1996/97 | 0,1% | 4,3% | 10,6% | 48,3% | 30,9% | 4,9% | 0,9% | 0,1% |
| 1997/98 | 0,0% | 2,2% | 18,3% | 49,1% | 24,1% | 4,9% | 1,4% | 0,0% |
| 1998/99 | 0,0% | 1,0% | 5,7% | 62,4% | 23,5% | 4,3% | 1,5% | 1,5% |
| 1999/00 | 0,0% | 0,0% | 9,1% | 49,3% | 29,9% | 7,0% | 4,1% | 0,6% |
| Total | 0,1% | 2,9% | 11,9% | 52,2% | 26,3% | 4,6% | 1,5% | 0,6% |

250. The trend of decreasing grade is not an homogenous one between the production locations. It is observed that Nampula has always shown a low percentage of superior grades of cotton lint, may be in connection with the ginning facilities there. This negative specificity is making worse during the last campaigns. The Cabo Delgado Province is showing the highest percentage in spite of having got decreased as well.

Table 36. Percentage of superior grades of cotton lint

| % Grade Sup | Lint grading room | | | |
|---|---|---|---|---|
| Extra + I + II | Beira | Maputo | Montepuez | Nampula |
| 1995/96 | 82,9% | 0,7% | 37,7% | 9,5% |
| 1996/97 | 65,6% | 57,1% | 12,2% | 4,6% |
| 1997/98 | 20,3% | 64,5% | 40,0% | 5,9% |
| 1998/99 | 9,2% | 37,7% | 18,4% | 1,4% |
| 1999/00 | 8,2% | 13,0% | 22,1% | 6,9% |

251. We observe an opposite trend with the evolution of the lint length. The share of the lint equal or superior to 1" 3/32 is close to 65% during the last campaign while it was only 40% 4 years ago. This result could be connected to a first stage of dissemination of new varieties like CA 324 in Lomaco Montepuez.

Table 37. Trend of longer lint

| | 1"5/32 | 1"1/8 | 1"3/32 | 1"1/16 | 1"1/32 | 1" | 31/32" | 15/16" |
|---|---|---|---|---|---|---|---|---|
| | 29,4 mm | 28,6 mm | 27,8 mm | 27 mm | 26,2 mm | 25,4 mm | 24,6 mm | 23,8 mm |
| 1995/96 | 0,0% | 11,4% | 28,3% | 55,0% | 5,0% | 0,3% | 0,0% | 0,0% |
| 1996/97 | 0,1% | 6,7% | 42,2% | 47,5% | 2,2% | 1,2% | 0,0% | 0,0% |
| 1997/98 | 0,0% | 20,3% | 31,8% | 44,9% | 2,1% | 0,9% | 0,0% | 0,0% |
| 1998/99 | 0,7% | 29,1% | 12,7% | 51,3% | 4,5% | 1,7% | 0,0% | 0,1% |
| 1999/00 | 3,4% | 28,5% | 31,6% | 27,9% | 5,4% | 3,1% | 0,0% | 0,0% |
| Total | 0,6% | 19,9% | 27,6% | 46,9% | 3,6% | 1,4% | 0,0% | 0,0% |

252. Owing to the running of two new ginneries well equipped with lint cleaner, the general grade should be improve if these ginneries can process a significant share of the national production in the future. We will debate more about this approach of lint cleaning, if not excessive lint cleaning.

253. The statistics recorded by the IAM enable to calculate the averages prices obtained at the exportation according to the lint selling companies or the destination countries. These averages should be taken with care since there is no differentiation of the grades and lint length as we have been provided with aggregated figures. The calculations have been made to demonstrate that the existing statistics could be useful in analysing some competitiveness factors related to the destination countries and the lint quality. In the following tables, we can observe that there should be a high variation unexplainable with the exportation made by Mocotex in the 1999/2000 campaign.

Table 38. Average export price according to lint sellers

| Average Price ($/kg) per lint seller | Campaign | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | 1994/95 | 1995/96 | 1996/97 | 1997/98 | 1998/99 | 1999/00 | |
| Agri-Buzi | | | 1,51 | 0,95 | | | 1,32 |
| Agrimo | | | | | 0,53 | 0,95 | 0,74 |
| Canam | | | | | 0,67 | 1,03 | 0,74 |
| CNA | | | | 0,97 | 0,80 | 0,97 | 0,91 |
| Issufo Nurm. | | | | | 1,01 | 0,95 | 0,99 |
| JFS | 1,34 | 1,44 | 1,43 | 1,07 | 0,88 | 0,95 | 1,08 |
| Lomaco | | 1,51 | 1,52 | 1,20 | 0,80 | 1,01 | 1,19 |
| Moç. Ind. | 1,83 | | | | | | 1,83 |
| Mocotex | | | | | 0,87 | 1,92 | 1,40 |
| Nova Algo.. | | | | | 0,88 | 1,02 | 0,95 |
| Samo | | | 1,48 | 1,27 | 0,76 | 0,96 | 1,12 |
| Olam Moç. | | | | | 0,84 | 1,10 | 0,97 |
| Total | 1,59 | 1,47 | 1,50 | 1,13 | 0,79 | 1,03 | 1,06 |

Table 39. Average export price according to destination countries

| Average Price ($/kg) Destination | Campaign | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | 1994/95 | 1995/96 | 1996/97 | 1997/98 | 1998/99 | 1999/00 | |
| Brazil | | | | | 0,75 | | 0,75 |
| England | | | 1,54 | | | | 1,54 |
| France | | | | | | 1,05 | 1,05 |
| Hungary | | | 1,49 | 1,10 | 0,78 | | 1,12 |
| India | | | | | 0,73 | 0,98 | 0,87 |
| Indonesia | | | | | 0,58 | | 0,58 |
| Malaysia | | | | | 0,87 | | 0,87 |
| Mauritius | | | 1,55 | | | | 1,55 |
| Philippines | | | | | | 0,73 | 0,73 |
| Portugal | 1,34 | 1,44 | 1,51 | 1,13 | 0,79 | 1,00 | 1,08 |
| RFA | | | 1,47 | | | 1,02 | 1,24 |
| RSA | 1,83 | 1,51 | 1,46 | 1,15 | 0,68 | 1,92 | 1,29 |
| Singapour | | | | | 1,07 | 1,10 | 1,09 |
| Taiwan | | | | | 0,74 | 0,94 | 0,81 |
| Thailand | | | 1,49 | 1,12 | 0,85 | 0,94 | 1,05 |
| Various dest. | | | | | 0,98 | | 0,98 |
| Vietnam | | | | | | 1,00 | 1,00 |
| Total | 1,59 | 1,47 | 1,50 | 1,13 | 0,79 | 1,03 | 1,06 |

254. Finally, it is worth noting that the Mozambican cotton is mainly if not exclusively exported via traders. The running of the Olam Ltda in Nampula is a strong sign of this feature. This means that cotton companies in Mozambique have no direct relationship

with spinners in order to promote more efficiently their product beside their final customers.

### *3.2.10. Some negative image of the Mozambican cotton lint*

255. Beyond the traditional features of the quality of cotton lint related to the trash content (grade), the lint length, micronaire, strength or colour, the spinners in the world have become very concerned with the contamination of the cotton lint by organic and non-organic matters which could cause very serious damages at the spinning stage. The ITMF (International Textile Manufacturer Federation) is conducting for several years a survey to catch with the spinners' perception of the contamination degree of the various cotton growths they are using. Although debatable in terms of the method being used, this survey has gained some kind of reference in judging the quality of a cotton origin in terms of non-contamination. In the last survey whose results have been recently released[19].

256. **The Mozambican cotton appears in the column of the most contaminated cotton growths, preceded only by cotton from India, Pakistan, Turkey Uganda, Tanzania and Usbekistan.**

257. This bad ranking is due to contamination by plastic or jute fabrics or string debris, but also by some inorganic matter (sand/dust, rust, metal/wire). All these features are related to the harvest, collection and ginning stages. In addition, the Mozambican cotton suffers from a high level of seedcoat fragment content which is genetically controlled and favoured by inappropriate ginning process, for instance an excessive ginning speed.

### *3.2.11. No actual record of the cottonseed use and destination*

258. Although the IAM is recording and disseminating steadily the cotton production in terms of seedcotton and cotton lint, collection and information related to the cottonseed production seem to be overlooked. As the ginning process induces some percentage of wastes which could vary between the ginneries, the cottonseed production estimated from the ginning outturn is not sufficiently precise. The IAM has no precise idea of the quantity of cottonseeds being locally crushed, exported or just wasted. In compliance with a strategy of promoting the cotton sector with some emphasis on the optimal use of the cottonseeds, it makes sense to record statistics on cottonseeds, with distinction of the quantity being put aside for seeds to be distributed to farmers.

259. There are only 2 crushing factories in the cotton zones, in Monapo and in Beira, both belonging to Entreposto. There is a third crushing factory close to Maputo which could process cottonseeds and other oilseeds, it is however too far from the cotton producing areas. We have not succeeded in getting information on the quantities of cottonseeds being processed locally. Several cotton companies we met complain about the low prices proposed by the crushing factory located in Monapo and they seem to be happier by exporting their cottonseeds. This situation gives some rationale to the idea of Sanam in investing in a new crushing unit.

[19] ITMF, 2001. Cotton contamination survey 2001. ITMF, Zurich, 60 p.

## 3.3. A cotton production at a cross-road

### *3.3.1. The pressure of a world market more and more demanding*

#### *3.3.1.1. An increasing world production with wide fluctuations*

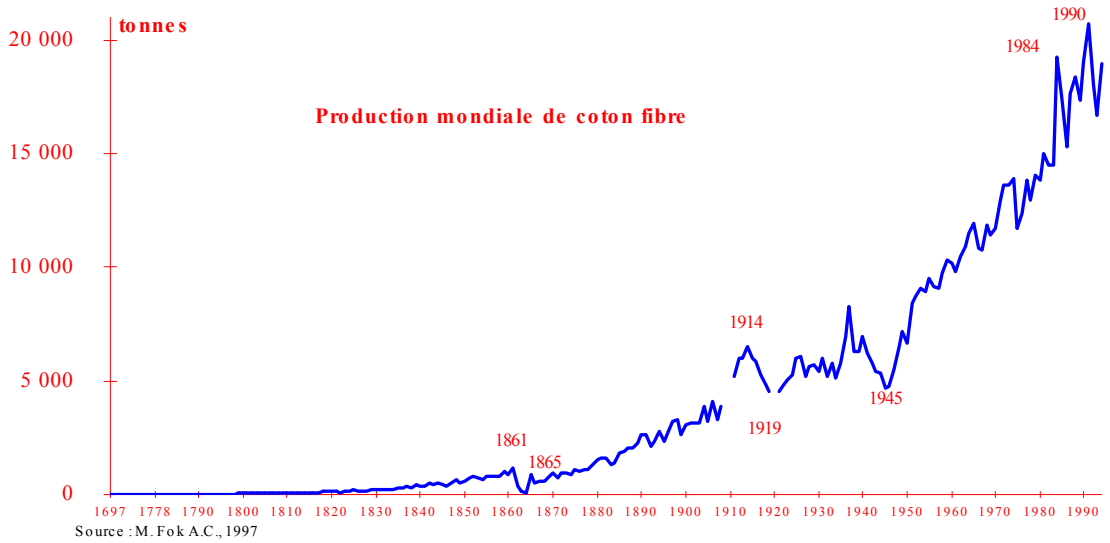
260. World production of cotton lint has fluctuated a lot during the 1990s. Historic production record has been reached in the 1991/92 season but it was followed by sharp decline before been approached again twice.

Table 40. Evolution of the world production and exportation

| | Lint Production | Lint Export. | Export. Share |
|---|---|---|---|
| | 1000 Tons | 1000 Tons | % |
| 1990/91 | 19 004 | 5 081 | 26,7% |
| 1991/92 | 20 712 | 6 092 | 29,4% |
| 1992/93 | 17 939 | 5 525 | 30,8% |
| 1993/94 | 16 863 | 5 911 | 35,1% |
| 1994/95 | 18 781 | 6 309 | 33,6% |
| 1995/96 | 20 357 | 5 998 | 29,5% |
| 1996/97 | 19 613 | 6 045 | 30,8% |
| 1997/98 | 20 044 | 5 969 | 29,8% |
| 1998/99 | 18 707 | 5 457 | 29,2% |
| 1999/00 | 18 869 | 6 136 | 32,5% |

261. An historic perspective of the evolution of the cotton production as it is shown in the Graphic 3 demonstrates that the extent of the production fluctuation during the 1990s has been as wide as what was experienced during the major wars which impacted negatively. This is a sign that the world production has entered a period of structural change which has not yet settled down and for which the future remains hard to anticipate. Cotton producing countries are involved in a period of uncertainty and they have to adapt themselves to it.

Graphic 4. Long term evolution of the world production



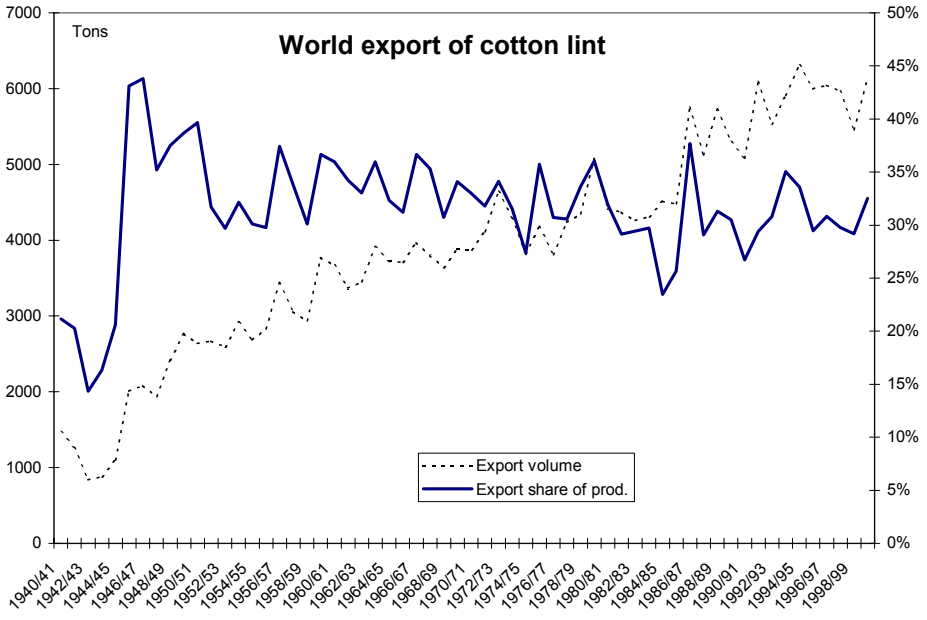
Source : M. Fok A.C., 1997

### *3.3.1.2. An erratic trend of the exchanged volumes*

262. The extent of the fluctuations regarding the volumes of the cotton lint being exported is less dramatic, but it appears that these exportations have entered a period of stagnation. In other words, the cotton exporting countries are competing for a global demand which has become constant. Any gain in the exportation market by one country will be achieved at the expense of other countries. This is the sign of an international competition becoming harsher then before.

263. The relative share of the production being exported has followed a decreasing trend since several decades although the decreasing rate is rather smooth, at the point that it may be overlooked. This trend is related to the cotton-textile integration that many cotton producing countries have achieved so that significant cotton producing countries (China, Turkey, Brazil, India, Pakistan…) have little surplus for exportation, when they have. These countries may face insufficient production and become importers. The current world market is then featured by the fact that several countries may be importer or exporter in a way that it is difficult to anticipate. There are still structurally big cotton importing countries (Indonesia, Malaysia…), most of them located in Asia, but it could be assumed that these countries with uncertain importing or exporting features are somewhat making the world price. For a cotton exporting country, it makes sense to achieve a better insight of the cotton market of these countries and to promote its cotton in these countries. Succeeding in a harsher competition implies to identify market segments where one's cotton may have more chance to pass through.

Graphic 5. Smooth decreasing share of the cotton lint exportation

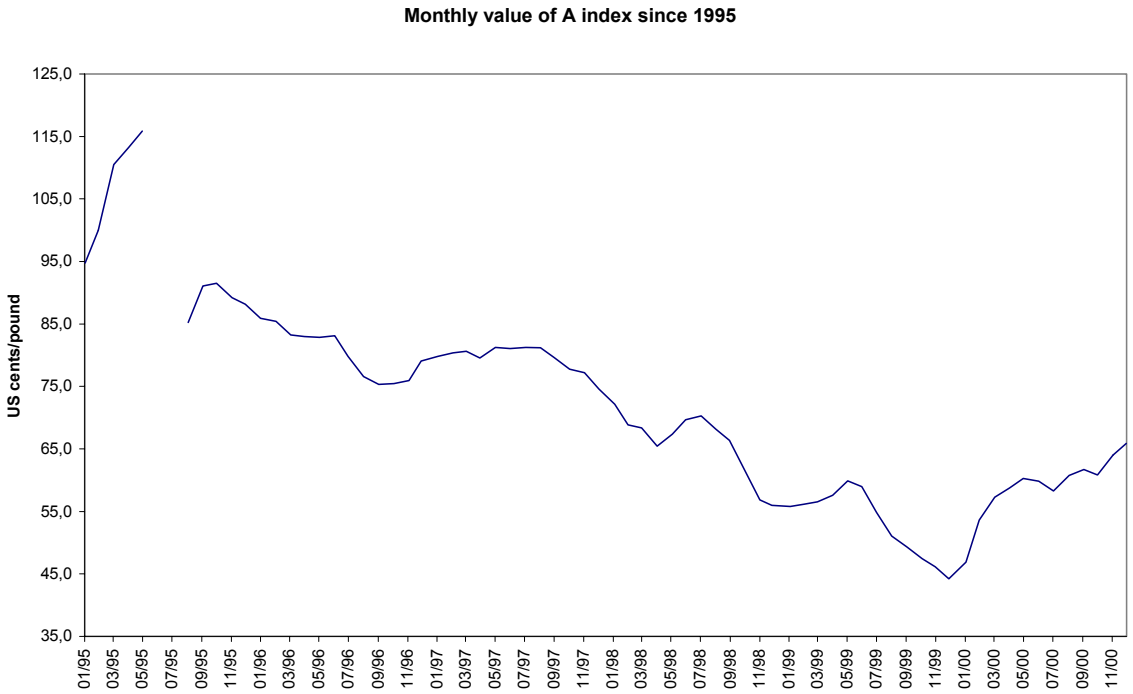


### *3.3.1.3. A strong trend of low price*

264. The world price of cotton has plunged to its historical low during the last weeks. The conventional reasons being pointed out at this case (high production in Brazil…) are not so much convincing owing to the threat of general economic recession linked to the war against terrorism.

265. The fact is, even before the recent international events, the world price of cotton, like other commodities, have entered a worrisome decreasing trend. After reaching the historical high level in May 1995, the A index, common reference of the world price, has been engaged into a steady decline since 1997 in conjunction with the Asian financial crisis.

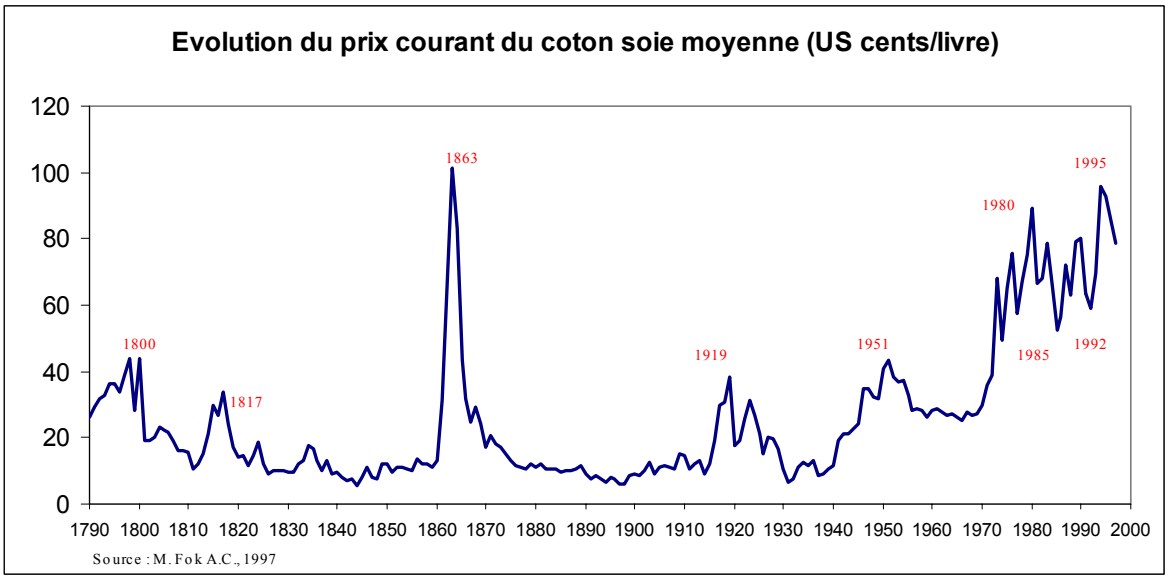
Graphic 6. Evolution of the A Index since 1995




266. Again, a historic perspective is useful in assessing properly the current trend of the world price. It is clear that during the two centuries for which we have records of the cotton prices, price fluctuations have become more frequent during the last two decades. Furthermore, the fluctuation magnitudes have been also, at least, as wide as the ones experienced during the major armed conflicts that impacted strongly on the cotton production and exchanges. These fluctuations are certainly connected to the variations we have pointed out at the production and exportation levels, to a period of structural change of the world market. In practical terms, for the short run, cotton producing countries have to live with these fluctuations : A index may grow up again, but it seems unrealistic to expect that it would not be followed shortly by new decline. This is a fact that must be taken into account by countries which are still administering

the purchase price to farmers : anticipation of the world price must be very cautious in order to prevent fixing a guaranteed price which exceeds too much the world price.

Graphic 7. Long term evolution of the cotton world price




- ***Market distorted by national cotton policies***

267. The negative trend of the world market price is fed by the implementation of national supporting cotton policies in major producing countries[20]. Although the number of countries maintaining their support to cotton production has decreased significantly, the impact on the production volume is still very high : it is estimated that more than 50% of the world production is obtained thanks to subsidy. In the 1998/99 campaign, China has spent billion US$ 2.7 and the European Union Million € 770 to sustain directly the production by modalities which are very variable between countries. In 1999/2000, the USA provided a total amount of Billion US $ 2,34 to sustain the income of its cotton farmers. In addition, exportation is subsidised specifically by China and the USA at an amount estimated at Million US $ 261 in 1999/00.

Table 41. Financial support to the cotton production in the world

| | No. Countries | Share of supported production % of total production | Total subsidy value Billion US $ |
|---|---|---|---|
| 1986/87 | 25 | 69% | |
| 1998/99 | 7 | 53% | 5,4 |
| 1999/00 | | 52% | 4,8 |

Source : Valderrama, 2000

[20] Valderrama Beccera, C. A., 2000. The World cotton market : prices and distorsions. Communication presented to Conference '110th Australian Cotton Conference', Brisbane, Australia, 7 p.

Table 42. Production of countries with public support

| Production assisted (1000 T) | Year | | Total |
|---|---|---|---|
| | 1998 | 1999 | |
| All countries | 9 877 | 9 860 | 19 737 |
| Brazil | 521 | 622 | 1 143 |
| China | 4 501 | 3 830 | 8 331 |
| Egypt | 230 | 229 | 459 |
| Greece | 390 | 428 | 818 |
| Mexico | 219 | 137 | 356 |
| Spain | 104 | 125 | 229 |
| Turkey | 882 | 795 | 1 677 |
| USA | 3 030 | 3 964 | 6 994 |
| Total | 19 754 | 19 990 | 39 744 |

268. Dismantling of the subsidies would impact positively in improving the world price. There are few attempts in evaluating this impact. Valderrama (2000) has achieved a price increase of 3% which seems to be small owing to the share of the cotton production being concerned. This price increase results mainly from the shift of the production from subsidising countries to non-subsidising ones which are also the poorest in the world. In terms of poverty alleviation and of a better equitability in the income distribution in the world, the subsidy removal does make sense.

269. However, it would not be realistic to expect an actual subsidy removal, at a large scale and in the short term. Economically developing countries have to find alternative ways to pass through an unfair competition in the cotton world market. The issue is to achieve gain in competitiveness through acceptable and sustainable ways in increasing productivity by better use of intensification inputs.

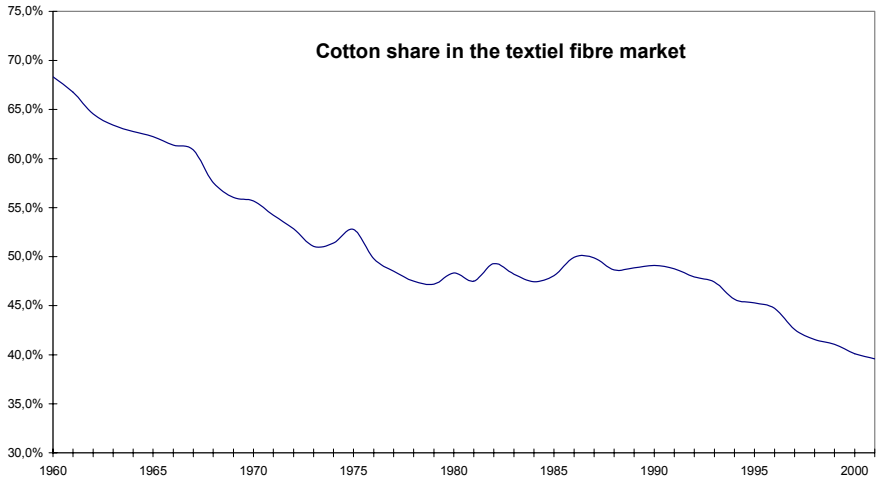
270. Without developing at this stage what could be these alternative ways, it is worthwhile to underline that in many countries, the questionable subsidy process, in terms of injection of extra fund into the cotton sub-sector (at the expense of the tax players), went along with complementary supporting process which were more internal to the sector. Although there are few academic works engaged in analysing these internal support processes, we think that they have contributed in promoting a more intensified input use in Francophone African countries or a shift from manual towards mechanised agriculture. The pricing mechanisms which were running there contained actually a sub-mechanism of participation to the extension and input provision to which farmers and cotton companies were contributing. What was wrong is the non-transparent feature of the mechanism at the point that many people just did not have conscious of it. The dismantling of the subsidy processes in many countries has led in the same time to the one of the internal support process, so that the intensification move has been stopped. It could made sense in revisiting internal and sectoral process of supporting intensification for productiviy gain, but through more transparent and concerted modalities.

- ***Competition from man-made fibres***

271. The picture is furthermore pessimistic since the competition from the man-made fibres has proved to be more serious than ever before. Since the industrial manufacturing of man-made fibre after the WW2, cotton has lost share in the textile fibre market till the mid-1970 when cotton and man-made fibre eventually shared equally the market. This equilibrium has lasted till the end of the 1980s. During the last decade, cotton has

again lost ground in a continuous way. Today, cotton is only representing 40% of the market.

Graphic 8. Cotton is loosing ground in the textile fibre market




272. This trend of market share loss is connected to the man-made fibres price and non-price competitiveness. Many countries have got into the man-made fibre production as a consequence of their economic development (China, India…) so that there is a chronic over-capacity in this industry which leads to decrease price in favour of higher use of the man-made fibres. This situation is acknowledged to last for a while.

#### *3.3.1.4. Increased demand for a better image of the cotton production*

273. By the same time, man-made fibres are gaining non-price competitiveness. The advantages of the man-made fibres, as compared to cotton, are yet well known : quality regularity at the manufacturing stage, brighter colours and easy care at the users' level. In addition to these conventional advantages, there is a new generation of man-made fibres that provides new functions which fit better to outdoor activities. Man-made fibres are therefore enjoying more positive image at the time when the image of cotton is suffering from the debate about the excessive chemical use in cotton production and use for its impacts on the environment.

274. More and more people are convinced of the need to implement actions in defending the cotton market share, and it should start by defending the image of this fibre. ICAC has tried to launch an international action in this prospect in 1997, and it is trying again in the framework of its plenary session in Zimbabwe this year. Cotton producing countries which are not having excessive chemical use, as this is the case of Mozambique, should join such an international initiative in order to inform better about the economic and social impacts of its cotton production. An active information should pay back, and the sooner would be the better. In other words, beyond targeting at a better price competitiveness, it makes sense to get involved in any action that could help improving one's non-price competitiveness.

#### *3.3.1.5. Increased demand for quality*

275. The current situation of the cotton world market has induced a higher demand for quality. The first reason derives more from the globalisation of the textile production exchanges. The issue of competitiveness has led the industry to become more and more capitalistic, relying on economies of scale in order to reduce unit cost. At the beginning of the 1990s, one hour is sufficient to manufacture 100 kg of yarn while the output was only of 10 kg ten years before[21], and the productivity gain has kept on. The financial impact of any break down is also far higher than before. This is the reason why spinners have shown them more and more demanding in terms of cotton lint quality, uniformity and homogeneity. Emphasis that the ITMF is putting on contamination by organic or inorganic matter as well as stickiness of the lint results from the fact they cause break down at the manufacturing stage.

276. The second reason for the increasing demand in quality comes from the technological progress that allows producing better quality of yarn with medium staple of cotton. It comes out that the uniformity of the lint length has become as important as the level of the length itself. The spinners are therefore struggling against any process that could shorten the lint length or reduce the length uniformity. This is the rationale for the ITMF in requesting to have lint cleaner be banned in the ginneries. The spinners are claiming that they no longer ask for best grade of lint (in terms of low trash content) since such grade is obtained through excessive cleaning that they can implement in a better way than ginners. This position has led to develop a notion of "customer ginning" through which it is the spinner who dictates to what extent the lint should be cleaned at the ginning stage.

277. The conventional lint grading, based on the former American standard, is not taking into account the current change in the spinners demand. This is the case in Mozambique whose classifying system is a rough application of the former American system (we say former since all the US cotton bales are now classified by HVI with other standards). To what extent Mozambique should comply with the current spinners request is an issue which is furthermore difficult as nearly the totality of the Mozambican is sold via traders so that Mozambican ginners are not actually connected to spinners.

278. **In a nutshell, the cotton world market is forcing any country wanting to stay to be more price competitive, to accept unfair competition, to match with higher qualitative demands and to deal with non-price competitiveness factors. As a matter of paradox, economically developing countries with limited means will not be necessarily the losers in this game.**

### *3.3.2. A cotton sub-sector under institutional instability*

279. The cotton sub-sector in Mozambique is facing a serious institutional instability which has reached its paramount. The first germs of this instability was introduced since the 1994/95 campaigns when it was reported that at least a stakeholder was not complying with the rules being set and clarified in the regulation document called "regulamento" : he was purchasing seedcotton in areas where existing cotton JVCs were enjoying the exclusive right of buying. The phenomenon of contestation of the "regulamento" has continued since then, with at least another major significant stakeholder. Under the pressure of the new-comers who got later on the title of "novo operador", there is more

[21] Jacomet, D. (1992). "Les textiles," Economica-Cyclope, Paris. 102 p

or less consensus that the rules being set in 1994 must evolved, but direction and modalities of the change are still matters of great and passionate debate which are also politicised.

280. A first change has been introduced through the adoption in 1998, by the Council of Ministers, of a strategic document called "Strategy for the cotton development". This document fixed objectives, that some stakeholders have spoken ironically by calling them "declaration of good intentions", but actually it did not have the same operational characteristics than the former "regulamento" whose status is no longer clear and whose update is needed. A major change pertains to the possibility for farmers within cotton associations to get more autonomy and independence[22] in producing and selling their cotton.

281. In 2000, the MADER nominated a Cotton Working Group (Grupo de Trabalho do Algodao or GTA) to study specifically the issue of liberalizing the seedcotton purchase price and to review the strategy for cotton development. This group, or members belonging to it, has carried out a report titled "A crise do algodao em Moçambique : que passos para frente ?" in which it is underlined the danger of an abrupt shift to a total liberalisation of the cotton sub-sector and it advocated a gradual move leading to a new system called "Opened concessionaire system". This proposal was debated during a 2 day seminar in Nampula in October 2000. The new system was adopted and transitional measures were determined and then officially edited immediatly.

**282. In short, the new measures, although underlining that the concessionaire cotton companies maintain their right in their areas of influence, in particular in buying seedcotton being produced there, but without enjoying exclusivity :**

> "1. As actuais empresas concessionarias mantem os direitos que actualmente tem, isso é, o directo principal, mas nao exclusivo, de compra do algodao produzido na sua area concessionaria"

283. Six new operators, all located and operating in Nampula, are namely allowed to provide service to and to buy seedcotton from groups of farmers living in the same "aldeia", "povoado" or "regulado" who express their desire in working with them, provided that 2/3 of the farmers committed themselves in doing so (article 4). These groups do not need to belong to an association.

284. It seems that the implementation of the transitional measures has led to great confusion. There were harsh disputes about the output deviation phenomenon, several cotton companies or new operators complained about the fact that the seedcotton being produced which they must purchased has been deviated by another operator.

285. We have heard people dealing the issue with very strong words like "crime", "war" or "motim popular" (popular rebellion). We have read official documents in which these words were reported, and in which we have got details on how the different seedcotton purchasers are trying to obstruct their competitors, for instance by blocking roads with trees or caterpillars. There is at least one cotton company which has lodged a complaint against a cotton JVC and who has appealed directly to the Prime Minister.

**286. The mission does not have to analyse the current situation and to recommend solutions to help alleviate the current confusion. Besides, as a new meeting is to be organised by mid-October 2001 under the auspices of the Minister of MADER**

[22] "Autorizar e enquadrar como autonomos os produtores que, dentro das concessoes algodoeiras, queiram produzir e vender o seu algodao de forma independente". page 9

**with the purpose of clarifying the measures to be followed for the next campaign, our analysis will anyway come too late for immediate use. We have therefore adopted the position of analysing marginally the transitional measures of the 2000/01 campaign through a more general assessment of the constraints and assets of the Mozambican cotton sector.**

# 4. Constraints and assets of the cotton production in Mozambique

## 4.1. Under exploitation of large areas suitable for cotton production

### *4.1.1. Large area suitable for cotton production*

287. Today, the country is split into zones of high potential (northern provinces of Nampula, Zambezia and Nampula), of medium potential (central provinces of Tete, Sofala and Manica) and of low potential (southern provinces of Inhambane, Gaza). It is worthwhile to remind that what is nowadays considered as low potential areas have demonstrated earlier significant production (Inhambane) while some high potential zones (like Zambezia) have not yet resume their rank as compared to other high potential areas.

288. There is an open question about the strategy of reaching an harmonious cotton development in the country : should the development efforts be concentrated on the supposed high potential areas and abandon the low potential ones where the farmers may not have any cash crop opportunity. It seems that it is the current implicit choice which could lead to question the relevance of the policy of poverty alleviation at the national scale. This strategy encompasses the risk of widening the economic development gap between the provinces.

### *4.1.2. The issue of coping with the so-called low potential cotton areas*

289. Inhassune (Inhambane Province) belongs to the so-called low potential cotton areas, it is a vast plain with clay soil (vertisoil) that seems to be sensitive to seasonal drought. In the past, before the Independence, specially when cotton was a forced crop, some production was recorded in this area, but rather insignificant as compared to the Northern provinces. From the mid-1980s, a project funded by the African Bank for Development has attempted to re-launch the cotton growing for more than ten years with production figures rather significant. The project assisted the farmers in mechanical ploughing of their cotton and food crop plots and provided input on credit basis. The farmers we met, male and female, seem to regret this period when they had no food security problem and when the cash earning from cotton allowed to better take care of the children as the women[23] claimed.

290. After the end of the project, Inveragro, a company with Spanish capital has resumed the assets with the proposal of continuing the cotton production. This company has quickly decided to stop its commitment in the cotton production, owing to the last two seasons which were harmed by erratic rainfalls with flooding and seasonal drought. This decision gave the farmers the feeling of being abandoned again, as they do not see alternative cash crop to replace cotton.

[23] Women have achieved in catching a major role in this area where men went to the mines of South Africa and where the women were in charge of everything. They took actively part to the discussion we had during our visit there, they out-passed the men in number, they sat in the front, and we had observed that a significant percentage of them have command in Portuguese speaking.

**291. This Inveragro case confirms that commitment in the cotton business must be a long term one, and as a consequence, entrance of new comers in this business has be examined with regard to this criteria, otherwise great is the risk of disappointment and despair.**

292. In general, as it is analysed below, there is no real selection of potential candidates for entering the cotton sub-sector, there is no determined criteria to assess their real commitment in the long run. It seems that in a context of gradual liberalisation, there is an implicit assumption that the more players, the best. This is an illusion which is commonly shared but which usually leads to disappointment.

293. We have kept a positive memory of our visit and of our discussion with the farmers of Inhassune. We have found very dignified people who were not in the position of begging for an external support[24]. They are in the process of setting up an association in order to commit themselves in economic activities, and they keep on growing cotton on small plots whose production is bought by the IAM according to its mandate. With reference to the human factor, the area does not seem to be a so low potential one.

294. The farmers we met are concentrated mainly in 4 villages and they are growing exclusively in the plain. The strong will the farmers show in resuming cotton production is a positive factor. There is an existing ginnery in Jangamo which is said to be capable of running again following minimal repair. A new attempt of resuming the cotton production in the area should then require only an investment of limited amount.

295. Although the farmers have been accustomed to conventional farming by tractors, they are realistic enough to realise that this is a capital intensive agriculture mode they cannot afford. They are suggesting animal-drawn agriculture they claim to be somewhat familiar (there were positive experiences of promotion of this type of agriculture in the past) as husbandry is also more developed than elsewhere in Mozambique.

296. The current low world market price is not favourable in attracting new comer in this low potential with erratic rainfalls. Operator involved in the textile industry may however accept such an attempt in order to secure his provision in raw material, we have heard that the Palmar Group of Mauritius, already involved in the garment factory of Belita (Beira) is still examining its up-stream integration in spite of the failure of his proposal to take over Textafrica. Likely, owing to the perception of the risk associated to adverse natural conditions, a combination of private and public involvement is needed to share the perceived risk. Another process involving NGOs providing support to help the farmers association to get control of their cotton business is also a solution to examine.

### *4.1.3. The interaction between production techniques and perceived potential*

297. The potential of a production area depends for sure on the natural conditions, but also in some extent to how adapted the cultural practices are. It does not seem that there were any real efforts to adapt production techniques to the specific conditions of the area like Inhassune which should not be unique in Mozambique. This is a challenge for cotton scientists which is already addressed in other cotton countries.

[24] This is opposite to the feeling we have got in some areas in the Northern part of the country.

298. In the prospects of reducing production costs associated to conventional farming, along with the observation of its negative impacts on the soil (soil erosion), no-tillage techniques have been developed in many countries[25]. Brazil is particularly successful in adapting these techniques to manual, animal-drawn and motorised agriculture. Many other countries are taking advantage of the positive outputs obtained through projects funded by AFD, in order to disseminate the technique of direct sowing under vegetative cover that Cirad has carried out. Soil compaction, as a result for instance of mechanical ploughing by big tractors, is so far an impediment to achieve positive results by no-tillage. This could be the case of Inhassune. Mechanical de-compaction has been recommended, but there is now prospect for implementing biological de-compaction through the strong root system of some species.

### *4.1.4. The advantage of combining various cash crops*

299. Finally, it is astonishing that rice production is not more developed in Inhassune. There are varieties of far shorter cycle than the traditional ones which should fit to the rainfall pattern. In many west African countries, the farmers have taken over the re-sizing of the plots in order to achieve smaller ones for which they can achieve more easily water control. Usually women are most involved in these countries. Beside, as it is experimented in Montepuez zone in the framework of the AFD project implemented by Lomaco, alternative techniques are proving to be very promising in terms of better productivity, of adaptation to labour constraint and to rainfall cycle. These techniques are based upon nursery management then re-planting. There is actual prospect in shifting the rice growing into a cash crop status.

300. The prospect of having a second cash crop along with cotton is a positive point in terms of diluting the intervention costs in promoting both productions. Although cotton is better known for its social and economic impacts in Mali, rice is becoming another success story in this country. Farmers have achieved there a good command in the production and the marketing stages, thanks to an increasing national outlet since in Mali, like in many other African countries, probably like in Mozambique as well, people are consuming more and more rice at the expense of traditional cereals like millet or sorghum.

### *4.1.5. The crucial role of research/development in low potential zones*

301. The analysis of the specific case of Inhassune leads us to the conclusion that the current view on the potential differentials of the various zones in Mozambique is linked to the assumption of application of un-differentiated technical practices. Identification of alternative techniques more suited to the natural specificities of every zone should modify this view.

302. The current view is also favouring the criteria of soil quality and rainfall pattern. However, if one refers to the pest pressure, there is some evidence that the sucking pest pressure is higher in the northern zones while the control of this type of pest pressure is more troublesome. This is a feature which is in favour of the southern zone.

303. Of course, modifying the production potential could only result from coordinated and significant scale of Research/development. This is a factor which appears to be as important as attracting new investors willing to have a try. The maturity of the farmers

[25] Fok, A. C. M., et al., 1999. Increasing cotton oil production in developing countries. Prospects from new technical practices in cotton growing. Communication presented to Conference 'Symposium on Sunflower and the other oilseed crops in developing countries', Maputo, Mozambique, 127-142 p.

we have met pushes to be optimistic about an efficient approach of participative research.

## 4.2. Favourable adhesion of stakeholders

### *4.2.1. Persisting attraction for the ginning business*

**304. If the farmers are willing to keep on growing cotton in one side, in the other side we observe that there are still stakeholders willing to get involved in the ginning business.**

305. During the last 3 years, 2 new and modern ginneries have been erected with large capacities (Morrumbala in Zambezia Province by Agrimo and Namialo in Nampula Province by Sanam). This is a sign of some optimism regarding the future of the cotton business in the country.

306. There were also, in the same time, several cases of stakeholders who withdrew themselves from the cotton business after few campaigns. This was the case of Sable Transport in Tete Province, of Clark Cotton and Iveragro in Inhambane Province who just took over existing ginneries without great level of investment in areas which are considered of limited potential. A lack of knowledge about the concerned zones and the lack of adapted cultivation techniques for these zones may have been factors of these short experiences, in addition to the excessive and abnormal floods of the last seasons.

307. The current over-capacity we have analysed is a positive factor to absorb production increase without additional investment. As the ginneries are old ones, except the two mentioned above, they are yet more or less amortized so that we can assume the ginning cost to be rather competitive. This is however a point which require more elaboration as old ginneries must break down more frequently and induce higher cost at maintenance.

308. We have observed that in the old ginning factories, the weight of the bales could be very variable, from 180 kg to 250 kg, in stead of the standard weight around 220 kg. This is not a positive point. It seems also that the lint cleaning is not operating very well in some ginneries, with a direct impact in downgrading. The control of the hygrometry of the seedcotton or cotton lint during the ginning process is not operational everywhere. Likely, even in the short term, some equipment replacement would be necessary. This is what some cotton JVCs are already considering in Nampula, something like being stimulated by the running of a modern ginnery.

309. In short, the current ginning situation is rather favourable for the persistence of the cotton production and for the promotion of a higher production. Within few years, reclaim of the existing ginneries will become necessary, this could only happen if the whole sector gains in productivity and profitability which both lies upon an actual increase of the cotton production.

### *4.2.2. Food security generally achieved with positive effects from cotton*

310. In Africa where farmers rely mainly on their own production to obtain their food, cotton production can hardly grow up dramatically if the smallholders do not have ensured their own food security. Conversely, when food security is ensured, farmers become more open to cash crop production.

311. It is worthwhile to underline that no people talk about the issue of food insufficiency except in Inhassune where cotton production has stopped. In Nampula Province and Cabo Delgado which are the main cotton zones, food shortages seem to belong to the pass. This is a positive fact that deserves to be pointed out. Even representatives of the NGO which are promoting production diversification, the rationale is basically to find out and to help produce crops that pay better than cotton and not because cotton growing is leading to starve the farmers being involved.

312. **This is an evidence that cotton does not necessarily compete against food production, but unfortunately the negative image of competition seems to remain in the mind of some external observers.**

313. In the framework of the AFD supported projects, the surveys[26] implemented in the Lomaco Montepuez zone inform that 95% of the farms (sample of 900 farms) claim to have reached self-sufficiency in food during the last three years. Similar indication is also obtained in a survey implemented in the CNA zone.

314. Furthermore, there are additional evidence that cotton growing impacts positively on food security : the non-cotton growers have suffered relatively a bit more from the risk of no security.

Table 43. Food security and cotton growing in Lomaco-Montepuez

| NB Número exploração | Auto-suficiência alimentar nos 3 últimos anos ? | | |
|---|---|---|---|
| Fez algodão nos três últimos anos | Não | Sim | Total |
| Não | 15% | 85% | 100% |
| Sim | 4% | 96% | 100% |
| Total | 5% | 95% | 100% |

315. It is worthwhile to indicate that beyond an improvement of the food situation, similar improvement is observable with some indicators of well being. The surveys mentioned above have let to know that more than half of the farmers possess bicycles and radio sets, and that the cotton growers are a little bit better off in this sense. It is common to encounter farmers on their bikes with a radio set round their neck. For those who have crossed around the region at the beginning of the 1990s which were short of everything, this is a dramatic change that it was hard to anticipate at that time.

316. Although there is no similar information regarding other cotton zones, as far as we know, we think that farmers have become equally equipped in radio sets there. During the mission stay in Namialo, a radio and TV broadcasting station has just been inaugurated. This means that radio broadcasting could become a complementary tool to reach efficiently farmers in disseminating technical information or any information useful to help them get more involved in the dynamics of the cotton sub-sector. This is a means that the AAM has already considered when it expected to get an external financial support to implement it[27].

[26] Fok, A. C. M., et al., 2000. Système de production dans la zone d'intervention de la Lomaco : structure, performance, contraintes et défis. Rapport provisoire. Cirad, 21/12/2000, 46 p.
[27] Associaçao Algodoeira de Moçambique (1999). Matriz do programa radio "Hora do algodao". pp. 3.

Table 44. Percentage of the farms having bicycles

| NB Número exploração | Tem quantas bicicletas | | | | |
|---|---|---|---|---|---|
| Fez algodão nos 3 últimos anos | 0 | 1 | 2 | 3 | Total |
| Não | 67% | 29% | 5% | 0% | 100% |
| Sim | 41% | 54% | 5% | 0% | 100% |
| Total | 43% | 52% | 5% | 0% | 100% |

Table 45. Percentage of the farms having radio sets

| NB Número exploração | Tem quantos radios | | | | | |
|---|---|---|---|---|---|---|
| Fez algodão nos 3 últimos anos | 0 | 1 | 2 | 3 | 4 | Total |
| Não | 67% | 29% | 3% | 2% | 0% | 100% |
| Sim | 45% | 49% | 5% | 1% | 0% | 100% |
| Total | 47% | 47% | 5% | 1% | 0% | 100% |

### *4.2.3. Good adhesion from growers with limited means*

#### *4.2.3.1. Significant number of cotton growers*

317. As we mentioned above, there is no official record of the number of families involved in growing cotton, although this figure should exist in most of the operators who provide services to farmers. The AAM indicates a figure of 300 000 rural families, which corresponds to around 1 500 000 people (with an average family size of 5).

318. In the cotton zones for which we have got the figures (Lomaco-Montepuez and CAN), the evolution of the number of cotton farmers is a better indicator of the farmers' adhesion to cotton growing. Before the decision of Lonrho of quitting the cotton business, decision which introduced uncertainty about the implementation of the seedcotton marketing, the number of farmers who joined the cotton growing has increased very quickly, at the point that the objective of the AFD project was reached far ahead the schedule.

319. Just after having neglected the cotton production for one campaign (1999/2000), either in Lomaco-Montepuez zone or elsewhere in the North part of the country, it has been observed some come back to the cotton growing for lack of significant alternative cash crop.

320. For sure, farmers adhere to cotton production : this is a positive factor for the continuation of the production which is constrained by the structure of the farmers' limited means.

#### *4.2.3.2. Limited factor of labour in farm holdings*

321. Labour is the first limiting factor within the farm holdings. In the Lomaco-Montepuez, the surveys being implemented point out that the average family size is composed of a bit less than 4 persons, two parents and 2 young kids who cannot contribute so much to the field works. As a consequence, there are at best 2 adult persons (but it should more often 1) to cultivate an average of 2 hectares. Although there is room for clearing more land for cultivation, farmers tend to reduce the fallow period of the existing lands as the land clearing is very labour intensive, beyond the farmers capabilities.

322. It would be difficult to extrapolate the findings in the Lomaco-Montepuez zone to the other cotton areas of the Northern part of Mozambique, but we think that the limited

size of the rural families which tend to the nuclear feature is valid in many locations : this feature has a lot to do with the recent pass of the civil war which broke the traditional form of the rural families. In Mozambique, farmers are really smallholders.

#### *4.2.3.3. Limiting factor of agricultural equipment*

323. Farmers are also essentially producing without any mechanical equipment. There were experiences of animal-drawn agriculture in the South, which no longer exists. Similar experiences could not be considered in the North because of the endemic trypanosomiasis. Farmers have benefited from motorised ploughing, some still do : this is part of the assistance some of them obtain from cotton companies and which is charged to them at 500 000 MT/ha, which is relatively a high cost. Generalisation of this capital intensive mechanical intervention could however hardly be considered. In the prospect of assisting the farmers in gaining productivity, alternative ways have to be imagined.

324. In the central or southern parts of the country, re-launch of the animal-drawn agriculture could be contemplated. In the North, the issue is to turn the back to the conventional farming based on soil preparation with mechanical tools. A possible way is the implementation of no-tillage which has become common in several cotton producing countries. The challenge is to adapt existing no-tillage technique, in particular the technique of direct-sowing under vegetative cover, to manual farming. Succeeding in facing this challenge could only derived from adaptative research whose outputs could also be beneficial to the centre or the south of the country.

### *4.2.4. Need to re-adjust the role of the "privados" in accordance to their limited direct contribution to cotton production*

325. It would not be correct to overlook the case of the category of the farmers who are called "privados" or autonomous farmers. They possess tens or hundreds of hectares and they are assumed to have good technical capabilities and sufficient means to obtain the inputs they need. According to the "regulamento" which distinguish 6 classes of cotton operators, these "privados" belong to the Class 3 of operators.

326. IAM has partial records about this class of operators. For the whole country, 172 "autonomous farmers" are recorded and they are located mainly in Sofala (67), Nampula (52), Manica (27) and Gaza (26). There are only few of these farmers in the Provinces of Cabo Delgado, Niassa, Zambezia. IAM does not seem to have information about the cultivable acreage and the production means of this category of farmers. There is neither information about the acreage actually cultivated.

327. The only information about the cotton activity of the autonomous farmers pertain to the seedcotton production they have obtained. The absence of indication about the cotton acreage they have grown does not allow to estimate the yield they have reached. There is neither possibility to estimate what would be the share of the production they may have bought from the smallholders.

328. In many provinces, the production from "privados" is engaged into a decreasing trend while the trend is more erratic in Nampula. According to the discussion we had with some of the biggest autonomous farmers in this province, the ones who have reached the status of "novo operador" which entitles them to purchasing seedcotton, they are no longer producing cotton (except one of them, on an acreage we do not know).

329. Along with the discussion we had with the autonomous farmers of the Buzi area (Sofala), we realised that hiring labour has become an issue. Seasonal workers are needed to help implement weeding and harvest, they are smallholders who are not always available for working off-farm at any period and transportation must be organised to pick them up at tens of kilometres. Salary should also be attractive enough to compensate a high opportunity cost of the farmers who have also to implement the same cultural operations on their own plots.

Table 46. Seedcotton production by the "privados" (tons)

| | Campaigns | | | | |
|---|---|---|---|---|---|
| | 1995/96 | 1996/97 | 1997/98 | 1998/99 | 1999/00 |
| Cabo Delgado | | 498 | 617 | 561 | 38 |
| Niassa | | 97 | | 14 | |
| Nampula | 5 139 | 5 756 | 3 884 | 8 038 | 1 779 |
| Zambezia | | | | | |
| Tete | | | | | |
| Sofala | | | | | |
| Sofala | 1 058 | 815 | 239 | 52 | |
| Manica | | 102 | 85 | | |
| Inhambane | | | | | |
| Gaza | | | 1 685 | 2 446 | |
| Maputo | | | | | |
| Total | 6 197 | 7 268 | 6 510 | 11 111 | 1 817 |

330. We assume that the constraint that makes the direct farming by the cotton JVCs non-profitable applies also to the autonomous farmers even if their production scale is smaller. The dependence of crucial cultivation operations on labor and the scarcity of this labor just make non-family production not profitable. Unless introduction of new cultivation methods which could help overcome the labor constraint, we believe that it would be a mere illusion to expect real contribution from the autonomous farmers in producing cotton. In this prospect, the autonomous farmers could be good partners in the implementation of adaptive research for carrying out new technique.

331. Alternative techniques exist to help control the weeding issue. A rational use of herbicides, and/or along with techniques of direct sowing under vegetative cover could help control the competition from weeds. Alleviating the labor constraint at this stage would not be sufficient as long as there remains the constraint at the harvest stage which could only be overcome through mechanical intervention. Otherwise, profitability will remain low and the autonomous farmers will not commit themselves in producing. It is not cost effective to have an individual Mechanical harvesting machine for several hundreds hectares of cotton. Only a collective investment between several autonomous farmers would make sense, but it is hard to contemplate having such machines moving on bad tracks from one location to another.

332. In the short run, there is little prospect for a real contribution of the autonomous farmers in producing cotton. They are not doing so and we think that they are mainly competing with the cotton companies in buying seedcotton from the smallholders. It is this competition, which started from 1994/95, that leads to the current situation of confusion where the exclusive right of seedcotton purchase previously allocated to the concessionaire cotton companies has vanished. In Zimbabwe, this is an outcome that the cotton companies possessing ginning facilities have anticipated and this has been

the rationale for them to refuse ginning seedcotton they have not bought themselves[28]. Such decision has actually prevented the appearance of new comers in the cotton sectors so that years after liberalisation, the cotton sector has remained very concentrated : today, there is no more than 2 cotton companies, the first one having a market share of around 80%.

333. The concentrated feature of the Zimbabwean cotton sector may sound as a failure of the liberalisation. However, this sector is not doing bad. This country is still benefiting from a positive quality image for its cotton. For the success of a liberalisation, the best is not necessarily to have the more operators, while this used to be an implicit assumption for advocators of liberalisation. This is the reason why we observe that in many countries where liberalisation has been implemented, there is a first move of not fixing rigorous criteria to retain the right operators. The lack of explicit criteria by IAM in allowing new comers get into the cotton sector is an indication of this attitude.

334. **The issue is to have the right operators, really willing in investing and in getting into the sector to stay for a long time.**

335. We doubt that the autonomous farmers are actually contributing in producing cotton. We think that the competition some of them have engaged against the cotton companies enjoying exclusive purchase right has been detrimental for the whole sector. Allowing the continuation of this competition will lead the whole cotton sub-sector to a collapse as it will be analysed furthermore below. This is not to deny any role to this category of farmers. This role must be coordinated and these farmers must find their own interest in fulfilling this role. One idea is to contract them in playing a role of technical assistance to the smallholders in the areas where they are located. From the cotton companies perspective, this will be a kind of externalisation of the extension service provision which enables them to increase this service provision without dramatic increase of their fix costs in this area. Practical modalities for this contractual partnership have to be elaborated through discussion. We have heard that in the Lomaco-Nametil zone, such scheme has been implemented.

## 4.3. Low productivity with room for improvement

### *4.3.1. Productivity constrained by limited input use and specific pest pressure*

#### *4.3.1.1. Limited chemical use*

- ***No fertilizer use***

336. **The cotton production in Mozambique is a low-input production mode. There is no use of fertilizer.**

337. Yield potential is not limited everywhere by lack of soil fertility or lack of nutrient return through fertiliser use. In the Montepuez zone, a large enough experience of promoting fertilizer use has led to the conclusion that the response to fertilizers is still small owing to the natural soil fertility which remains satisfactory. Where the land use has been more continuous like in Nampula province, but also in the southern provinces like Inhambane, fertilizer use would make more economic sense.

[28] Larsen, M. N., 2001. Zimbabwean cotton sector liberalization : a case of successful private liberalization ?

338. Even in the zones where the soil is still fertile enough, the approach of overlooking the issue of the fate of the soil fertility is questionable. Instead of letting farmers engaged into a soil mining process before considering to compensating the loss of soil nutrients by chemical fertilizing, it makes sense to imagining new technical practices that would not deplete the soil in terms of nutrient balance and soil structure, in particular the soil organic status. In this prospect, conservation tillage that prevents from water run-off if not soil erosion and that favours the organic matter re-cycling deserves to be considered.

- ***Reduced number of insecticide sprays***

339. Yield potential is constrained by a small number of insecticide applications targeted at various caterpillars which attack the bolls, in particular *H. armigera*. The IAM is not recording the information about the average numbers of insecticide applications which should be available at the level of the various cotton companies. On average, we think that the number of insecticide application is small, around 3 to 3,5 for the farmers who are lucky in getting the products at the right time and at the right quantity.

340. In the Lomaco Montepuez zone, the average number has reached 4 before a significant decrease the last 2 campaigns : for the 2000/01, this average has fallen to 3,2. In this zone, the farmers decide on the amount insecticide they want at the period they want. The recent tendency being observed there may be related to a strategy of reducing input cost when the marketing appears less secured than before, or to stop insecticide spray on the cotton plots too much attacked by jassids or phyllose on which the chemicals in use would have little effect.

341. In CNA, the more directive approach has consisted in delivering insecticides for 5 applications at a subsidized cost. With reference to higher yield obtained there, although the growing conditions and the pest complex are not similar to the prevailing conditions in the North.

**342. This is an indication that a chemical control a little bit more intensive could be cost effective and increase farmers' productivity.**

343. There is some evidence that the average number of chemical application is getting smaller where there is competition in the purchase of seedcotton. Owing to the risk of not buying the seedcotton from the farmers to whom insecticides have been provided, cotton companies may react by delivering less and/or selecting the farmers to whom deliver.

344. We have heard also that farmers are becoming less sensitive to the technical recommendations in controlling pest. Samo claimed to have integrated in its contracts with farmers groups the condition of destruction of cotton crop residues, this is a condition motivated by some concern about the management of the pest pressure at the following season. Since the same condition has not been imposed by the other companies, and since the farmers felt this condition as a constraint and may turn themselves to less demanding cotton companies, Samo is going to suppress this condition. There is a serious threat that pest control will be restrained to the use of chemical at the growing season, far beyond the needed approach of a more integrated scheme, which should harm the yield potential and profitability. This is not exactly the output of competition, but rather of the lack of any coordination between the competitors.

- ***Relevance of adapting varieties and cultural practices to a low-input approach***

345. In case that the conditions are not going to evolve positively in favor of a more generalized use, it could be relevant to consider carrying out varieties and cultural techniques more adapted to a low input use, with little or no fertilizer use and with a reduced chemical control of the cotton pests.

346. In practice, alternative morphologies of cotton plants, at modified densities, occasional adapted to the local habit of inter-cropping with various types of beans, could be contemplated, while the research experiments should no longer be implemented at an intensification level beyond what the farmers could afford.

347. In the area of fertilizer use, which is financially risky, the fertilizing level as well as the partitioning must be adapted to the well known risk aversion of the smallholders. Anyway, this risk aversion must be taken into account in the identification of new techniques to be experimented and which may require use of cash-expense inputs. The smallholders do not have a unique reaction towards any type of cash-expense input. It is related to the perception of the financial risk and to the impact on the yield expectation. There are inputs which are more adapted to a specific limiting factor and whose use helps to make the yield expectation becomes real[29]. There is evidence that herbicides are quite adapted to farmers with labour constraint, as it is the case in Mozambique. There has been some experience in diffusing herbicide use in Cabo Delgado and Nampula as well, but this is an input which has not been delivered in a sustainable way. The cost of herbicides is a limiting factor, but nowadays there are so many generic formulas of herbicides that their use must have become far more cost effective.

#### *4.3.1.2. Endemic threat of early and severe jassid attacks*

348. Yield potential is particularly limited by the specificity of occasional severe and early outbreaks of jassids, in particular in the northern part of the country (Nampula and Cabo Delgado). This is a feature well known in the history of the cotton production in Mozambique, but so far there is still no sufficiently relevant solution being applied.

349. Control of this specific issue could derive from prevention and control. High early jassid pressure is likely connected to various factors among which we suspect that insufficient or un-adapted control at the former season should play a major role. We can contemplate the hypothesis of a limited number of chemical applications with active ingredients not efficient against sucking pest or the early stop of the chemical sprays. There is however little knowledge about the jassid population dynamics during the dry season to foresee the solutions in controlling this dynamics.

350. In terms of control of the effects associated to an early outbreak of Jassids, recent research/development outputs are providing evidence of the efficiency of new chemical for seed treatment (Gaucho, Cruiser…) in giving plantlets of better vigor. These chemical are still costly, their use in treating fuzzed seeds is even more costly as higher dosage would be required. Better control of the negative effects from sucking pest is therefore linked to the issue of the production and distribution of "technological seeds" which are delinted and properly treated by adapted chemicals. This issue will be analysed furthermore.

[29] Fok, A. C. M., 2001. Technical and institutional innovations in the prospects of a new cotton sector functioning in Western and Central Africa. Communication presented to Conference 'The World Bank explorary workshop : The road to a regional cotton superpower in West and Central Africa', Washington, DC. USA, p.

#### *4.3.1.3. Cotton production endangered by a new chronic pest*

351. The yield potential is under the threat of a new physiological disorder which is so far considered as associated[30] to another sucking pest, psyllus, so that the disorder is commonly called psyllosis. The Lomaco Montepuez is the only cotton company having paid attention to this pest. However, there is no reason to admit that the pest has been respectful to the frontiers of the intervention zones of the various concessionaire companies…

352. The disorder observed corresponds to morphological modifications of the cotton plant and leaves and lead to total sterility with great impact in diminishing the final yield if the number of suffering plants is high. The attack of psyllus has been severe in the 1999/2000 campaign in the Lomaco Montepuez zone, this is one of the major factor of the yield decrease.

353. High prevalence of physiological disorder has occurred too in the 2000/01 campaign, resulting more from jassids than psyllus. There is few, if any, research works on psyllosis, therefore there is no existing solution that could help overcome it in the short run.

354. It is now necessary to consider that psyllose has reached an endemic status, hence technical solution must be carried out which requires specific research works for at best medium term outputs. In spite of this, it would not be correct to point out that the threat of psyllose is condemning cotton production in the short run because pest outbreak is very erratic from one year to another. Achieving a better pest control in a context of more diversified pest complex with early outbreaks is an un-escapable challenge to address in order to reach a higher and more profitable cotton production in the future.

#### *4.3.1.4. Hard to give up chemical control*

355. The experience gained in the implementation of an organic cotton project demonstrates that it is hard to consider giving up any chemical control in producing cotton, at least in the short run.

356. IAM has been directly involved from 1995/96 to 1997/98 in supervising an organic cotton production in Inhambane province. The experience is considered to be rather positive because the yield, although low, was close to the one obtained in Nampula where farmers do not necessarily have access to the insecticide they need. However, IAM has never succeeded in marketing the output obtained as an organic cotton because the production has never reached the level required for a shipment[31]. Besides, it seems that the price premium would have been lower than what was expected. In economic terms, a staff member of IAM still thinks that the organic cotton could make sense.

357. Owing to experiences elsewhere, in particular in Senegal and in Benin, or more generally to experiences dealing with organic production of any agricultural product, the reality is even more complex. A factor of complexity pertains to the certification of the product to enjoy the organic label. The certification process is costly because so far

[30] There is a strong assumption that the disorder is due to mycoplasm being transmitted by the psyllus, but scientific evidence is still lacking, since the mycoplasm have not yet being observed through electronic microscope on the samples of vegetative organs which have been collected.

[31] The production obtained was 159, 107 and 423 tons of seedcotton respectively for the 1995/96, 1996/97 and 1997/98 campaigns, on acreages which are not reported.

it is necessary to call for experts who come from the North (Europe or North America). The criteria to fit to the certification process are numerous and not always easy to follow in the context of small scale agriculture.

358. Another constraint pertains to the preservation of the lint quality. It has been reported that lint quality depreciation due to the absence of insecticide sprays could make the product un-marketable. This is a serious risk that should lead to think twice before deciding moving to an organic production at large scale.

359. The lesson we can drawn from the experiences on organic cotton is not the condemnation of this type of production, but rather the way by which this type of production has been implemented. Basically, organic cotton production has been engaged just the same way than conventional cotton with only elimination of any chemical use. There are now scientists who believe that the total cultural sequences in growing organic cotton should be re-visited totally and not only marginally. In practical terms, such re-visit could lead to have another morphology of the cotton plants making them less susceptible to pest attacks, to have another plant density…etc.

#### *4.3.1.5. Room for more adapted chemical control*

- ***Adaptation of the chemical control***

360. The adaptation of the insecticides being used to the specific pest complex is a debate to which we cannot contribute so much by lack of information.

361. Most of the cotton companies are using single ingredient insecticide although we are not fully informed about the pest control program. In Lomaco-Montepuez zone, the spray program is based on using endosulfan for the first two applications in order to control the jassid attacks which are followed by sprays with a pyrethroid targeting at bollworms. As we have not obtained the information about the amounts of the chemicals being actually delivered to the farmers, it is not possible to point out whether this spray program is properly followed. Anyway, it is worthwhile to underline that the jassid population is not addressed by using pyrethroid-based chemical for the sprays at the fruiting period. In what extent this technical choice is impacting negatively on the population dynamics of the jassids is an open question.

362. CNA is using systematically double ingredient formula (combination of a pyrethroid and of an organophosphate) as it is the case in most of the francophone African countries. The organophosphate could be selected to address particularly sucking pest or spiders. This approach has the potential advantage of being more fitted to the pest complex, but it has the disadvantage of being more costly.

363. Combination of active ingredients is proved to be efficient in controlling a wider range of pest. There are also positive experiences in reducing the pest control cost. In some countries, like Mali and in some extent Benin, the farmers have been trained in scouting and they have been able in combining the right active ingredients at the right dosages to adapt to the pest pressure of the spraying period : the method has helped to cut down seriously the cost of the chemical control with unchanged efficiency[32].

[32] Michel, B., 2000. La lutte contre les ravageurs du cotonnier au Mali : problématique et évolution récente. Cahier d'agriculture.
Silvie, P., et al., 1998. Procedures, advantages and constraints of Staggered Targeted Control programmes on cotton in West Africa. Communication presented to Conference '2nd World Cotton Research Conference', Athens, 4 p.

- ***The challenge of an actual integrated pest management***

364. An actual integrated pest management demands firstly coordination. This coordination is so far lacking, while it is not contrary to the spirit of competition between the seedcotton buyers.

365. Sucking pest pressure (at least for jassids) is an unfavourable factor which is seriously detrimental to the cotton production, at least in the northern part of the country. Although the outbreak of jassid is erratic, this pressure should be considered as chronic and measures must be taken to control it. Seed treatment by relevant chemicals should be efficient in limiting the negative effects from jassids, but it only works if there is a policy of producing and distributing technological seeds which are delinted and easily recognised. Prevention would be more efficient, proper disposal of the crop residues from the former season should help and must be organised and co-ordinated. Likely, an adjusted pest chemical control program which takes into account the sucking pest would be necessary. This will not be easy as the matter is rather complex even in case of an actual re-launch of research program.

366. Basically, the issue of controlling pest in growing cotton is to achieve new combination of control means. Chemical control remains necessary, but it must no longer be exclusive. It must also be more rationalised, in terms of dosage and toxicity of the active ingredient.

367. Pest do not respect limits of plots or limits of area of influence of one cotton company. Pest management limited at the plot scale would be of reduced efficiency. Pest management should be co-ordinated in the framework of a region or sub-region. The basic condition to achieve such a co-ordination is to have stakeholders accepting to co-operate. Unfortunately, it seems that a climate of competition is prevailing over the one of co-operation. Besides, the current situation of competition between the seedcotton purchasers at the benefit of the farmers seems to push these farmers to overlook recommendation in this regard. Of course there is no absolute antinomy between competition and co-operation between stakeholders, it is just less natural for competitors to co-operate.

368. An efficient pest management lies on the diffusion of accurate information about the dynamics of the various pests. In many countries, radio broadcasting programs play a significant role by warning and helping farmers to be vigilant in the follow-up of the pest outbreaks.

### *4.3.2. Productivity limited by poor application of basic cultural practices*

**369. Yield potential is also seriously limited by the mal-practice of some cultural operations**

370. and whose correction require more information dissemination and training, without additional cash-expense, to which the farmers should be more sensitive. In most of the cotton producing countries in Africa, insufficient plant density, late thinning and late weeding are reported while they impact negatively on the yield that farmers may expect in the end. Even in Mali which is acknowledged to be a performing cotton producing country, there is evidence that incorrect implementation of basic cultural operations is impacting negatively on the yield potential[33].

[33] Fok, A. C. M., et al., 1999. Diversité des pratiques paysannes en zones cotonnières du Mali : portée et limites des gestions d'itinéraires techniques observées. Communication presented to Conference 'Rôle et place de la

371. People can understand easily the negative impact of an in-sufficient density on yield, this is less the case for late thinning and delayed weeding because the competition for water and nutrient assimilation is effective even if the weeds do not seem so much developed. Research works implemented in Chad and Benin have shown a yield loss of 30-40 kg/ha for each day of delay with regard to the optimal period for implementing the weeding[34]. The same figure could be at least extrapolated to the delayed thinning where the cotton plants are competing against themselves. In Mali, farmers used to implement the first weeding and thinning at around 40-45 days after sowing, while the recommended period is at around 25 days : the yield loss resulting from this delay in therefore very important. Owing to the labour constraint of most of the cotton growers in Mozambique, we can assume that there is similar delay.

372. The negative impact of a delayed thinning should be higher where farmers lack confidence in the quality of the seeds they obtained. We have heard people expressing their doubt about the quality of the seeds they received. We have been told that it happens that seeds are just delivered under trees and while farmers do not necessarily know when to go and pick them up. Having doubt upon the germination power of the seeds they put into soil, farmers have rationale in sowing higher number of seeds that needed. Competition within the hole is hence higher if the seeds germinate well and the reduction of the yield potential would be stronger when thinning is delayed.

373. Information and training in better implementation of the basic techniques analysed above should be integrated in the extension work. This is not fully the case in every cotton company in Mozambique.

374. Farmers' strategies in adapting themselves to non-guaranteed seeds have direct and negative impact on the yield they may expect from their cotton plots. This points out the crucial feature of moving towards an appropriate seed policy which will be analysed furthermore below.

### *4.3.3. Productivity constrained by outdated varieties and lack of adapted seeds*

#### *4.3.3.1. Outdated variety in use*

375. The quality of the seeds being distributed is debatable, while the variety being grown pertains to a very ancient variety (Remu 40) at the point that many cotton companies doubt about the genetic origin of the variety they are growing.

376. The variety being used for sure is limiting the yield expectation. Variety experiments conducted in CNA and Lomaco Montepuez zones have provided evidence that some introduced varieties could combine better yield at the farm level, better ginning outturn and better lint quality. In CNA, the variety Stam 42 is assumed to require more care in its growing, while in Lomaco Montepuez, the variety CA 324 has remained superior to a purified strain of Remu 40 even under the cultural practices the farmers are implementing.

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recherche pour le développement des filières cotonnières en évolution en Afrique', Montpellier, Sept. 1-2, 1999, 137-159 p.

[34] Fadoegnon, B. and Gaborel, C., 1995. Le désherbage chimique du cotonnier et du maïs au Bénin. Communication presented to Conference 'ANPP-Seizième conférence du Columa. Journées internationales sur la lutte contre les mauvaises herbes', Reims, 1333-1340 p.

Altona, M., 1995. Amélioration de l'entretien de la culture cotonnière au Tchad. Communication presented to Conference 'XVIème conférence du Columa. Journées internationales sur la lutte contre les mauvaises herbes', Reims, 1317-1324 p.

377. The Lomaco-Montepuez has implemented a seed production program that will enable it to obtain an estimated amount of 1200 tons of CA 324 seeds which would be enough to cover 40 000 ha next campaign, likely more than the intention of the cotton farmers. Even though it has eliminated the zones where Mocotex has unfairly intervened in providing inputs and in buying seedcotton, there is a threat that the CA 324 genetic purity will not last for long if the competition between Lomaco and Mocotex is going to last. In other words, 5 years of research/development work in carrying out a new variety could disappear very quickly as a consequence of lack of coordination in seed production and distribution emphasised by unfair competition.

378. The other cotton companies the mission met claimed also having their own seed production. In large scale, they are mainly producing seeds of the Remu 40. Agrimo is paying attention to CA 324 as well. CNA does not intent considering a generalised diffusion of the variety Stam 42 which seems to require more care in its cultivation. Samo is having the same position. In spite of the organisation of a seminar to inform about the outputs of the AFD project implemented by Lomaco-Montepuez, most of the high-ranking officers of the cotton companies we met are still unaware that there is a new variety which is going to replace Remu 40 in the Montepuez area.

379. The fact is that there will be no unique variety being grown in Mozambique. Within a same province, or between neighbouring provinces, 2 to 3 varieties will co-exist. There is then a matter of co-ordination to preserve the genetic purity of each one.

#### *4.3.3.2. Productivity constrained by lack of adapted seeds*

380. All the stakeholders we met are emphasizing the issue of a performing seed policy. The debate has been launched for several years and it seems that this debate has been stuck for at least one year. We have heard people complaining about IAM which is in charge of this file. Other people point out that the debate about the concessionaire scheme has led to totally overlook issues which could impact more positively on the productivity gain.

381. The fact that all stakeholders are sharing the same concern about the implementation of an adapted seed policy is yet a positive point. What remains is to determine what should be the ambition of such a seed policy, the modalities of its implementation and how to finance it and how to share the cost of such a policy.

382. A general tendency which is being observed in Africa is to move towards the production of "technological seeds", i.e. delinted and calibrated seeds whose germination power has been tested and which are properly treated by a chemical product adapted to the pest pressure of the early stage of the cotton plantlets. Such move corresponds to the production of a well-differentiated product as compared to the current fuzzed seeds that are not visibly different from any "grain" obtained after ginning. Senegal is yet running a chemical delinting unit for several years. Burkina Faso has done the same in the mid-1990s. Benin has yet imported the required equipment for 2-3 years but not yet installed as there is a debate about the monopolistic rent that the seed producer may benefit afterwards and the re-organisation of the whole seed production program. Mali was considering moving towards the production of delinted seeds just before the financial scandal that hurt the cotton sub-sector.

383. The move towards the production of technological seeds will imply re-organisation of the seed production and distribution. The delinting equipment being proposed currently, often made in the USA, are of great capacity. The use of such kind of

equipment would imply centralisation of the seed production which will mean many transportations of the seeds before and after processing. Owing to the long distances in Mozambique, this is a constraint that would be costs prohibitive at the current scale of the cotton production in the different provinces. Moving towards the production of technological seeds demands equipment of adapted size. In addition to countries like the USA and Australia, provision by China, India, Pakistan and Brazil should be explored.

384. The seed production could be dealt as a profit earning activity. Owing to the feature of economies of scale, the first company which committed itself will enjoy natural monopoly and may have a pricing policy discouraging a generalised use of the technological seeds. What is happening in Benin where a delinting unit has been imported but not yet installed is an illustration of the debate about the risk of such a monopoly.

385. The seed production could also be considered as a provision of a public good that could be implemented according to rules collectively determined, without the objective of profit earning although the production must be financially sustainable. This is a way of having cooperation and coordination prevailing above competition.

386. In practical terms, there are many ways of implementing a national program of production and distribution of seeds. It is not yet relevant of analysing the various alternative ways. One would be having a sectoral organisation like IAM monitoring the seed production and distribution in various localities, just the way it is doing for the lint classifying.

387. The implementation of a justified albeit ambitious seed policy implies investment and recurrent cost for functioning. At least for the annual running cost, the cotton sub-sector stakeholders must contribute. We have understood that most of the cotton companies would agree with using part of the levy they are contributing to IAM for such a purpose.

388. Farmers as users should contribute as well, although it would not be realistic to have them paying the real cost for that. Having people paying is the best way to have them being conscious of the value of the product they are using and not to waste it. Since technological seeds will be well differentiated from the seeds farmers are using so far and through which they can observe that value has been added, we can expect farmers accepting paying a price for using them. Of course, it remains to determine how this price should be, at an acceptable level and in accordance with the farmers financial capabilities. As the real cost of the technological seeds will be shared at least by the cotton companies and the farmers, transparency through communication on this cost sharing is essential to the sustainability of such a collective action for productivity gain.

### *4.3.4. Low profitability : rather an issue of low productivity than unfavourable price paid to farmers*

#### *4.3.4.1. Low productivity but still somewhat competitive*

389. The profitability of the cotton production, as indicated by the added value, is low as compared to some francophone African countries like Mali. In this country, with an average yield which is 2.5 times the one of Lomaco Montepuez, an average cotton acreage of 2.5 ha, the added value per cotton grower (which is a good proxy of the

farmers net income before the remuneration of the family labour in the case of non-capitalistic agriculture) is around nineteen times higher.

390. **These results confirm that a higher yield obtained from higher level of input use could lead to far better economic efficiency without reaching exceptional yield level** :

391. the yield obtained in Mali, converted into cotton lint/ha is just at the level of the world average.

Table 47. Evolution of the cotton gross income per hectare in Mozambique

| | Family sector yield | Exchange rate | First grade seedcotton price | Gross income/ha | |
|---|---|---|---|---|---|
| | kg/ha | MT | MT | MT | US $ |
| 90/91 | 321 | 1 900 | 320 | 102 843 | 54 |
| 91/92 | 315 | 2 591 | 478 | 150 417 | 58 |
| 92/93 | 397 | 3 495 | 700 | 277 723 | 79 |
| 93/94 | 310 | 5 888 | 1100 | 340 854 | 58 |
| 94/95 | 289 | 9 069 | 1500 | 433 600 | 48 |
| 95/96 | 253 | 11 175 | 3900 | 988 403 | 88 |
| 96/97 | 415 | 11 500 | 3300 | 1 367 949 | 119 |
| 97/98 | 443 | 15 000 | 2950 | 1 305 520 | 87 |
| 98/99 | 511 | 17 000 | 2300 | 1 174 763 | 69 |
| 99/00 | 282 | 19 000 | 2500 | 705 932 | 37 |

Table 48. Distribution of the cotton farms according to their economic indicators in the Lomaco Montepuez zone, 1999/2000

| | Production value | | Value of insecticide | | Added value | |
|---|---|---|---|---|---|---|
| | MT | US $ | MT | US $ | MT | US $ |
| Minimum | 17 500 | 1 | 37 000 | 2 | -107 500 | -7 |
| 1st quartile | 226 250 | 14 | 150 000 | 9 | 71 450 | 4 |
| Médiane | 510 250 | 32 | 187 500 | 12 | 313 750 | 20 |
| 3rd quartile | 963 350 | 60 | 300 000 | 19 | 657 100 | 41 |
| Maximum | 4 447 500 | 278 | 1 125 000 | 70 | 3 421 800 | 214 |
| Mean | 756 212 | 47 | 223 757 | 14 | 532 455 | 33 |
| Standard deviation | 805 999 | 50 | 149 253 | 9 | 719 917 | 45 |

Table 49. Evolution of the cotton gross income per hectare in Mali

| | Yield | Price | Exchange rate | Gross income |
|---|---|---|---|---|
| | Kg/ha | CFA/kg | CFA/US cent | US $/ha |
| 1992 | 1286 | 85 | 2,82 | 387 |
| 1996 | 1076 | 155 | 5,82 | 287 |
| 1997 | 1052 | 170 | 5,90 | 303 |
| 1998 | 1051 | 185 | 6,13 | 317 |
| 1999 | 970 | 160 | 7,11 | 205 |

Table 50. Evolution of the added value in Mali

| | Added value (US $) | |
|---|---|---|
| | per ha | per cotton farm |
| 1990 | 237 | 454 |
| 1991 | 269 | 488 |
| 1992 | 266 | 540 |
| 1993 | 269 | 594 |
| 1994 | 138 | 260 |
| 1995 | 189 | 437 |
| 1996 | 282 | 722 |
| 1997 | 231 | 664 |
| 1998 | 204 | 637 |
| 1999 | 218 | 648 |

392. Acceptable profitability does not demand yield maximizing as it is shown through a comparison with the USA. In terms of added value through the production of seedcotton, this country is showing a figure significantly higher than Mali. However, as the production mode is far more capitalistic, this added value cannot be an indicator of the farmers net income. It is necessary to deduct payment of the services, taxes and interest, leaving an average of US $ 156 and 11 respectively for the 1998 and 1999 campaigns to ensure capital replacement before paying the family labour. On average, if the US farmers did not benefit from federal financial support, most of them would not have been able to fund for capital replacement nor to get a salary. The US case is a good example of the fragility of a capitalistic mode of production, certainly high performing in terms of yield level, but not necessarily cost effective nor strong enough to sustain a downward world market. In other words, if the current market is bad for all cotton producing countries, it seems to be even worst for the capitalistic producing ones.

Table 51. Added value ($/ha) in producing seedcotton in the USA

| | Cotton regions | | | | | | |
|---|---|---|---|---|---|---|---|
| | Fruitful Rim | Heartland | Mississipi Portal | National | Prairie Gateway | Southern Seaboard | Total |
| 1997 | 1284 | 895 | 854 | 761 | 445 | 789 | 838 |
| 1998 | 168 | 406 | 583 | 360 | 167 | 663 | 391 |
| 1999 | 759 | 332 | 295 | 284 | 158 | 234 | 344 |

Table 52. Gross and net income from cotton production in the USA (US $/ha)

| Region | | Year | | |
|---|---|---|---|---|
| | | 1997 | 1998 | 1999 |
| Fruitful Rim | Gross income minus input and services | 903 | -94 | 302 |
| | Net income beforecapital payment/replacement | 749 | -230 | 153 |
| Heartland | Gross income minus input and services | 828 | 346 | 238 |
| | Net income beforecapital payment/replacement | 780 | 302 | 192 |
| Mississipi Portal | Gross income minus input and services | 737 | 471 | 145 |
| | Net income beforecapital payment/replacement | 647 | 386 | 55 |
| Prairie Gateway | Gross income minus input and services | 346 | 99 | 38 |
| | Net income beforecapital payment/replacement | 274 | 32 | -34 |
| Southern Seaboard | Gross income minus input and services | 677 | 562 | 103 |
| | Net income beforecapital payment/replacement | 587 | 476 | 13 |
| National | Gross income minus input and services | 611 | 239 | 101 |
| | Net income beforecapital payment/replacement | 519 | 156 | 11 |

393. In short, although the current productivity level is low in Mozambique, it is not so much un-competitive with regard to high yield producing countries. Furthermore, it is possible to improve the Mozambican cotton competitiveness in a sustainable way without high capital investment as it has been achieved in Francophone African countries.

394. **Lack of alternative cash crops should make most cotton growers sensitive to messages of yield and profitability improvement, a support for a real dissemination of technical information should then be cost effective**.

395. Farmers should also be sensitive to promotion of greater use of chemicals destined to increase yield. Evidence is provided by the steady increase of the yield obtained by CNA thanks to a policy of subsidizing the insecticide use. Agrimo is following the same approach by subsidising through its own fund. Generally speaking, making the input less costly leads to a higher level of its use and could impact positively on yield and cost effectiveness. How to achieve in promoting intensification of the input use in a sustainable way, at least in financial terms, is the issue. Relying only on external funding could not be regarded as sustainable, alternative ways must be explored. One of these will be proposed below.

#### *4.3.4.2. Competitiveness not so much at the expense of equitability*

- ***A rather equitable share of the world price***

396. It has become common to assess the equitability of the income share within a cotton sub-sector through the ratio of the price being paid to farmers over the world price (to which we will refer to as the ρ ratio), although using this single indicator is debatable. The reference for the world price is usually the A index which refers to a specific grade of cotton lint (Middling) at the CIF North Europe basis, in US cents per pound. The calculation of the ρ ratio demands the conversion of the purchase price of seedcotton in local currency into an equivalent price for cotton lint in US $ in one hand and the identification of the value of the A index. This conversion requires determination of the ginning outturn and of an average exchange rate.

397. The use of this ratio is however somewhat confusing in practice. Purchase price to farmers is frequently paid at the farm gate (this is the case of all Francophone African countries and Mozambique) but not necessarily : the purchase price to farmers could be operated at the ginnery gate (case of Zimbabwe), so that the transaction cost from farm to ginnery is charged to farmers. Owing to the high level of this transaction cost, great could be the error resulting from non-distinction of the exact feature of the purchase price paid to farmers : we suspect that this error was committed in some analysis[35] from the World Bank which has led the authors to emphasize the high level of the ratio observed in Zimbabwe as compared to Francophone African countries.

398. The integration of the value of the cotton seeds in the calculation of the ratio is also an issue. In absolute terms, this value should be integrated, but in practice this integration in the calculation leads to make additional assumption about the selling price of the cotton seeds which are locally processed or exported or both, therefore at very variable selling position. Although most countries are trying to integrate this value in the calculation of the ρ ratio, and this is the case in Mozambique, we advocate not to

[35] Pursell, G. and Diop, M., 1998. Cotton policies in Francophone Africa. Why and how the "filières" should be liberalized. World Bank, Washington, Feb. 23, 1998, 43 (+annexes) p.

integrate this value in the calculation of the ρ ratio. Of course the level of this ρ ratio should be upgraded in accordance. In other words, if the stakeholders accept to target at a ρ ratio of 55% according to the calculation including the cotton seed value, this value should be somewhat increased when the cotton seed value is no longer included.

399. What should be the level of the ρ ratio is a matter that objective external observers could hardly determine : this is basically a matter of negotiation between the sector stakeholders to reach a level that seems acceptable to all.

400. Another factor of confusion pertains to the reference of the world price : should it be A index, which refers to a CIF basis, North Europe, should it be an equivalent index at the FOB basis, or finally should it be an equivalent index at the ex-ginnery basis ? Most analysis dealing with this ratio are unclear about the choice of the reference. We favour using the equivalent index at the FOB basis as a national cotton sector has no control on the costs from the FOB to CIF stages. According to the discussion we had with various stakeholders in Mozambique, this is the reference which is retained, but in practice there is some confusion in using this reference.

401. According to the calculation sheets to simulate the right purchase prices for the last two campaigns (1999/00 and 2000/01), we observed that US cents 13.11 and 14.12 per pound was deduced to the A index to make up the FOB reference price while we have been told that the acknowledged CIF and FOB differential is US cents 10/pound.

**402. We suspect that the ratio indicating the share of the world price is not actually referring to the FOB basis but to the ex-ginnery basis. As a consequence, the ratio being calculated is higher that what it should be.**

403. We think that it is worthwhile clarifying the issue, otherwise it would lead to mis-understanding as we have observed during the discussion we had with the president of a Forum of farmers associations from the Lomaco Nametil zone.

404. We have decomposed the calculation of the ρ ratio for the last ten years in Mozambique. We have retained a CIF-FOB differential of US cents 10/pound, and we have not integrated the value of the cotton seeds. We have retained a ginning outturn of 35%, which is lower that the 36% we have observed in the IAM calculation but which seems to be more connected to the reality. We have also referred ourselves to an average value of the A index determined for the May to October period which should correspond more to the one when the Mozambican cotton is sold. We achieved then to figures of ρ ratio which are smaller to what is pointed sometimes : some authors[36] have recalled that a document from the IAM has pointed out values of 69, 63 and 63% respectively for the 1995/96, 1996/97 and 1997/98 campaigns.

[36] Wandschneider, T. S. and Garrido Mirapeix, J., 1999. Cash cropping in Mozambique : evolution and prospects. Food Security Unit Mozambique, European Union, Maputo, August, 1999, 112 p.

Table 53. Evolution of the ρ ratio in Mozambique

| | First grade price | A index US cent/lb | FOB price reference | Ginning outturn | Exchange rate | Share World price |
|---|---|---|---|---|---|---|
| | MT | Average May-Oct. | Average May-Oct. | % | MT/$ | % |
| 1990/91 | 320 | 75,21 | 65,21 | 34,0% | 3000 | 21,8% |
| 1991/92 | 479 | 59,90 | 49,90 | 34,0% | 5000 | 21,3% |
| 1992/93 | 700 | 57,08 | 47,08 | 35,0% | 7000 | 27,5% |
| 1993/94 | 1100 | 79,93 | 69,93 | 35,0% | 9000 | 22,6% |
| 1994/95 | 1500 | 95,93 | 85,93 | 35,0% | 11000 | 20,6% |
| 1995/96 | 3900 | 78,87 | 68,87 | 35,0% | 12000 | 61,1% |
| 1996/97 | 3300 | 80,36 | 70,36 | 35,0% | 13000 | 46,7% |
| 1997/98 | 2950 | 67,22 | 57,22 | 35,0% | 14000 | 47,7% |
| 1998/99 | 2300 | 53,58 | 43,58 | 35,0% | 15000 | 45,6% |
| 1999/00 | 2500 | 60,27 | 50,27 | 35,0% | 16000 | 40,3% |

405. We observe that the ρ ratio has been very variable during the last decade, the level achieved during the second half has been far higher : it is worthwhile to point out this dramatic change which is little reported as far as we know. In spite of this positive evolution, the claim target of a ρ ratio of 55% has not been achieved the last four campaigns, although, once again , we cannot interfere in a normative judgement about the equitable level of this ratio.

406. To help analysing the Mozambican case, we have implemented the same calculations for Mali for which we have retained the same CIF-FOB differential of US cent 10/pound. Being in the Northern hemisphere for which the selling period of the cotton lint could vary, we have retained the average value of the A index for the November-April period. It is worth noting that the average value of the A index is significantly different from the values we have used for Mozambique : this is an illustration of how delicate it is to deal with the ρ ratio.

Table 54. Evolution of the ρ ratio in Mali

| | First grade price | A index US cent/lb | FOB price reference | Ginning outturn | Exchange rate | Share World price |
|---|---|---|---|---|---|---|
| | CFA | Average Nov.-April | Average Nov.-April | % | CFA/$ | % |
| 1990/91 | 93 | 79,87 | 69,87 | 40,5% | 271 | 55,1% |
| 1991/92 | 95 | 76,02 | 66,02 | 40,5% | 283 | 57,0% |
| 1992/93 | 85 | 56,03 | 46,03 | 41,5% | 264 | 76,6% |
| 1993/94 | 98 | 58,95 | 48,95 | 41,8% | 282 | 76,9% |
| 1994/95 | 130 | 79,28 | 69,28 | 43,8% | 537 | 36,2% |
| 1995/96 | 155 | 99,30 | 89,30 | 41,9% | 499 | 37,7% |
| 1996/97 | 155 | 82,11 | 72,11 | 41,9% | 511 | 45,5% |
| 1997/98 | 170 | 78,71 | 68,71 | 41,6% | 582 | 46,3% |
| 1998/99 | 185 | 64,60 | 54,60 | 42,0% | 590 | 61,9% |
| 1999/00 | 160 | 52,75 | 42,75 | 42,1% | 613 | 65,8% |

407. We obtain values which are higher than what it has been stated by Pursell et al. (1998). This is normal as the calculation methods probably differ. Following the same calculation method, the figures between Mali and Mozambique have been close till the last two campaigns, in spite of very different values for the ginning outturn. An increase in ginning outturn would lead the ρ ratio to diminish if it is not compensated by an increase of the purchase price of the seedcotton. If Mozambique is to move to a new variety with a high ginning outturn, an adjustment of the purchase price to farmers should be considered.

408. It is important to underline that the ρ ratio varies a lot even in a short period : the basic reasons lie on the great fluctuation of the A index and the exchange rate. The management of the ρ ratio fluctuation is particularly delicate in a country whose currency in engaged in a continuous depreciation towards the US dollar as this is the

case of Mozambique. This phenomenon poses the issue of to what extent the ρ ratio should be more or less constant. Although there are diverging views within the mission team, the direct and total transfer of the effect of the currency depreciation to the purchase price to farmers is a debate since the production mode in Mozambique is little capitalistic and little dependent on imported input : some trade-off could be imagined in this transfer of the currency depreciation effect which would not penalize the farmers in their purchase power and which would favour the competitiveness at the exportation stage.

- ***Lack of information leading to contested positive social-economic impacts***

409. The analysis we have made are not sufficient to assess correctly the socio-economic impacts of the cotton production for the growers. Average impacts may be very misguiding about the reality in case there is an uneven distribution of the impacts between farmers.

410. Relying upon indicators of the farmers income is not sufficient to have a complete view about the income distribution between the stakeholders directly involved in the cotton sub-sector. The indirect impacts on the players who are also benefiting from the cotton income deserves also to be examined in order to have a more comprehensive view of the economic importance of the cotton production in its zone. We have understood from the discussion with the deputy-director of the Provincial Department of Agriculture in Nampula that this is an information that makes sense for the local government. There is a method (méthode des effets) which has been used to analyse how the total added value is distributed directly and indirectly to the various players (the State, the cotton companies, the workers, the farmers, input providers, …). AFD has financed such type of analysis in Francophone African countries till the beginning of the 1990s.

411. There are few academic research works that help catch the picture of the rural societies in the cotton zones. They have been implemented in the framework of the former Food security Project or the current Food Security Unit within the Department of Policy Analysis which are financially supported by USAID. They lead to very commendable and useful results but they imply heavy research that cannot be replicated easily in other cotton zones. The implementation of surveys by CNA and Lomaco-Montepuez demonstrates that the extension staff within cotton companies can be involved in more specific surveys to complement or update information on determined issues. Likely there is also room for co-ordination of more academic works and specific surveys. Anyway, better information on the impacts of the cotton production is needed to let the whole sector having a clear view of its economic importance and to settle down false debates which are not based on objective information.

#### *4.3.4.3. Issue of productivity gain being generally overlooked in practice*

412. We come then to the limitations of the ρ ratio in assessing the equitability of the income left to the cotton growers. This is an indicator based only on price, while the issue is income. There is evidence that a higher purchase price and a higher ρ ratio in Zimbabwe have led to lower added value and income than Côte d'Ivoire[37]. What made basically the difference was the yield gap between the two countries. Focussing

[37] Freud, C., 1999. Politiques des prix et performances des filières cotonnières en Afrique. Revue Tiers Monde XL, 160, pp. 929-941.

exclusively on the price issue is not necessarily the best way in defending the smallholders income if it leads to neglect the challenge of achieving better productivity.

Table 55. Added value Comparison, in French Francs (Freud, 1999)

| | Côte d'ivoire | | Zimbabwe | |
|---|---|---|---|---|
| | 1993 | 1996 | 1993 | 1996 |
| Gross purchase price, seedcotton (FF/kg) | 1,80 | 1,85 | 2,70 | 2,75 |
| Cost of chemicals per kg of seedcotton | 1,05 | 0,72 | 0,78 | 0,78 |
| Gross margin per kg seedcotton | 0,75 | 1,13 | 1,92 | 1,97 |
| seed cost | | | 0,09 | 0,09 |
| Transportation cost to buying centres | | | 0,03 | 0,03 |
| Net margin per kg seedcotton | 0,75 | 1,13 | 1,80 | 1,85 |
| Subsidy to chemicals | 0,30 | | | |
| Net purchase price, seedcotton | 2,10 | 1,85 | 2,58 | 2,63 |
| seedcotton yield, kg/ha | 1168 | 1200 | 600 | 600 |
| Gross income | 2453 | 2220 | 1548 | 1578 |
| Added value | 876 | 1356 | 1080 | 1110 |

413. Land productivity and price are both contributing to the income farmers obtain from cotton production.

414. **In our discussions, we have heard people mainly dealing with the price issue and not very talkative about the actions they implement in promoting productivity gain. In other words, they seems to be more concerned by the share they would get from the existing "cotton cake" instead of contemplating solutions to have this cake becoming bigger. Worse than all that, the struggle around an existing cake could make it smaller, while what Mozambique should seek for is a bigger one.**

### *4.3.5. Productivity constrained by questionable extension service provision*

#### *4.3.5.1. Damageable lack of record of data regarding extension service provision*

415. Although the agreements setting up the cotton JVCs specified the engagement for the concerned companies in providing extension service devoted to rural development, there were no clarification about what this service should be and how to assess it.

416. This lack of clarification has been likely one of the reasons that make there is no record of any indicator that could help assess the actions being implemented in the framework of the extension service and to evaluate the actual investment achieved to comply with the commitment mentioned above.

417. So far, IAM is only recording data related to the output side (cotton acreage, seedcotton production, lint production split down into various grades, value of the product transaction), even so, this statistics keeping remains incomplete as we emphasised above (no information about the number of cotton growers, no record regarding cottonseeds…). There is not any information regarding the input delivery, input credit, number of beneficiaries of ploughing service…

418. It is of paramount importance to adjust the statistics keeping that provides more comprehensive view on the investment made in favour of productivity gain and on the output obtained. This should not be an impossible task as we suspect that most of the

cotton companies are already keeping the needed data in the framework of the input provision to the farmers of their zones of influence. The issue pertains mainly to a matter of coordination that should start through a collective identification of the relevant indicators.

419. Many cotton companies seem to remain attached to the "cartao" which is a hand size individual paperboard, with one single copy, on which the deliveries of inputs (mainly seeds and insecticides) are recorded for each farmer as well as the seedcotton production. The only copy of the "cartao" is usually kept and managed by the cotton company. Since the contents of this "cartao" is determining the final income the farmers will get, it could be item of conflict (and this is what we heard from some farmers in Nampula) and penalised the mutual confidence between cotton company and farmers.

420. **We think that the "cartao" system must be updated and many cotton companies could inspire from what the CNA has achieved.**

#### *4.3.5.2. Rather complete content of extension provided in theory*

421. Assistance provided in the framework of extension service corresponds mainly to the mechanical ploughing service and credit provision. Mechanical ploughing is charged at around 500 000 MT/ha , which is high, but which could be lower than the real price. We suspect that the ploughing service is not open to every farmers whatever distant they are from the cotton companies headquarters.

422. Input is provided on credit basis, we have no information about application of interest rate and the level of this interest rate. We cannot say if the credit conditions vary or not significantly between the cotton companies. There is no rule that determines the conditions of this credit.

423. Mozambique is however particular in the fact that cotton companies are accepting to provide credit on cash to help farmers hiring additional workers to implement weeding and harvest. Other countries in Austral Africa are following the same approach (Zimbabwe for instance). This is however a credit provision which does not exist in Francophone African countries. This specificity is a sign of the liquidity constraint of the smallholders that the cotton companies are trying to help address. Basically, as seasonal workers are farmers themselves, the cash credit is enabling to transform the traditional mutual aid into a labour market that all farmers may benefit. The functioning of this labour market provides real off-frame work opportunities during the growing season that contributes to increase farmers cash income.

424. In spite of this specificity which is positive, there is still large room for improvement. Technical message deals mainly with insecticide application, exclusively addressing the cotton growing.

#### *4.3.5.3. Extension provision penalised by the bad road network*

425. Diffusion of technical message is commonly based upon training and meeting farmers in their fields, at the various stages of the growing season or before the cropping season. The transmission of some technical messages is more relevant when extensionists and farmers can dialogue in front of the cotton fields. Even if the messages have been transmitted before the growing season, it could make sense repeating them during the growing season. The bad state of the road and track network

in many areas just makes impossible to visit the farmers during the growing season. This is particularly true in many areas of the Sofala Province.

426. Increasing the number of the extension staff, having them to be closer to the villages they have to visit has been the conventional way of overcoming the constraint. Improving the road and track network is a complementary way to enable a continuous relationship between extensionists and farmers. This is the way by which the cotton production has been promoted in the Francophone African countries, it took some time and it induced costs that external funders have helped to take charge of, the way AFD has tried to do in the Project implemented by Lomaco-Montepuez. Should this conventional way be just repeated to ensure similar success or should this conventional way be complemented by alternative way ?

427. We believe that direct contact should be complemented by message diffusion through mass media like radio broadcasting. This is a diffusion mode which is not impeded by bad road network. Beyond diffusion of technical messages, the radio broadcasting program is a vector for continuous diffusion of any relevant information regarding the cotton sector in a multilateral way : not only to have the cotton companies reaching the farmers but also conversely, and having farmers hearing from themselves in a spirit of exchanging experiences. In Mali, there are several local radio broadcasting running in the cotton zone. This is an experience that FAO has firstly promoted and which is working independently in a sustainable way, through a joint financing from cotton companies and villages. A major contribution from the radio broadcasting is the possibility of reaching the totality of the cotton farmers very quickly to provide additional information and to prevent unfounded rumours undermining the confidence between the cotton sub-sector stakeholders.

#### *4.3.5.4. Unequal provision between cotton zones*

428. Since there is no diffusion of the information regarding the extension service being actually provided, we cannot assume that all the farmers are benefiting from this service. Worse of all that, there is some evidence that in some areas, where there is a harsh competition in buying seedcotton from the farmers, extension service is only benefiting to few farmers.

- ***Exclusivity of purchase favourable to actual extension service provision***

429. The exclusive right of purchasing seedcotton within the limit of one zone is a favourable factor for credit recovery and therefore to sustain the credit provision. Where this exclusive right is still in force in practice, the cotton companies do not complain about repayment by farmers since the credit repayment is implemented at the time of the seedcotton marketing. This is the case of CNA till now. This was also the case of the Lomaco-Montepuez.

430. This characteristic is quite similar to the case of many Francophone African countries where there is only one cotton company enjoying the exclusive right of purchasing seedcotton to farmers. Unless climatic disaster that reduces dramatically the yield being achieved, the credit repayment rate has been commonly up to 97-98%. The reason of the success of a credit provision through an integration process that links the

input provision with the output marketing is quite in accordance with economic theory of uncertainty[38].

431. Exclusive right of seedcotton purchase does not only favour the credit provision, but any service that could increase the seedcotton production, since the investment engaged in promoting the seedcotton production is paid back by the production increase which comes to the cotton company which had promoted it.

- ***Competition is endangering the sustainability of the extension service provision***

432. All the seedcotton purchasers are complaining about the phenomenon of the output deviation that induces a reduction on the credit repayment. Some of them are mentioning openly that they would have to revisit their policy of credit provision, if not to withdraw from this service if the same situation is to prevail again next campaign.

433. The concessionaire cotton companies are not the only ones to complain. The "novo operators" are complaining as well if not even more as they seem to have taken more risk in trying to attract farmers, providing relatively more cash credit[39]. The output deviation do not only oppose new operators to the concessionaire companies, they may compete unconsciously between themselves since they cannot have a full control of the origin of the seedcotton which is sold to them by a farmers group[40].

434. What is happening in Nampula as a consequence of the opening of the concessions is experienced commonly in countries where the seedcotton purchase has been liberalised. Uncertainty about credit repayment has lead many cotton operators not to provide input credit : this is what Cargill International has decided in Zimbabwe or other operators in Zambia. In Ghana, the cotton operators have decided not to manage the input credit separately but to integrate the input cost in the purchase price of the seedcotton they commonly decide on. This is a case of liberalisation which does not lead at all to price competition, but a cartelising of the price. In addition, through the integration of the input cost in the price fixing mechanism, the cotton operators are transferring totally the effects of price increase and currency depreciation to the farmers.

435. **Analysis of the liberalisation in the purchase of the seedcotton according to the imperfect competition theory leads to the conclusion that the operators are competing through the purchase price without any investment in promoting the production[41].**

436. Worse of all that, reduction of the credit provision which is observed in reality pushes to consider that this competition may lead quickly to a reduced production which is detrimental to everyone.

437. In terms of the dissemination of the technical messages, competition is not leading to improve the service farmers are obtaining as it is demonstrated by the survey

[38] Fontaine, J.-M. and Sindzingre, A., 1991. Macro-micro linkages : structural adjustment and fertilizer policy in sub-saharan Africa. OECD Development Centre, Technical Papers Paris, 75 p.
[39] Pitoro, R., et al., 2001. Produtividade do algodao ao nivel da machamba em Nampula : situaçao actual e perspectivas para o seu melhoramento. Departamento de Analise de Politicas, Direcçao de economia, MADER, Relatorios de Pesquisa Maputo, September, 2001, 35 p.
[40] A farmers group may have obtained seedcotton from some farmers of another group which is linked to another new operator.
[41] Fraval, P., 1999. Concurrence imparfaite dans les filières cotonnières d'Afrique francophone.

implemented in the Nampula Province by the Department of Policy analysis. This survey has dealt with the campaign 1999/2000 and has distinguished farmers located in areas where cotton purchasing operators are competing (areas with "conflict") and areas where the concessionaire company is intervening alone. The difference between indicators in zones with and without conflict could serve as the impact from competition, although some reservation remains : the concessionaire companies may have also modified their behaviour in providing a better service, even in areas where they are not facing competition, in order to prevent competition from disseminating into these areas. If so, the competition effect is made smaller. Except this reservation, the survey is valuable for providing quantitative indicators to assess the quality of extension provision.

438. Competition does not prevent totally farmers from having to pick up their seeds deposited under trees. However only 6% of the farmers have had this experience, far from being the majority, while this negative feature used to be pointed out to demonstrate the bad service provision by the concessionaire companies.

439. Farmers are equally un-satisfied with the germination problem they had with the seeds they obtained and which was close to 50% of the interviewees. This is an indication of the issue of seed policy which has been elaborated above.

440. Nearly all the cotton growers obtained the insecticides for their spray and the competition has induced only very slight improvement which is not significant. The amounts being provided were similar allowing the same average number of sprays. However, some concessionaire companies (Samo) have reduced the input provision on credit basis.

441. Competition has introduced actually differentiated prices of the insecticides being provided. Farmers are attracted by a lower price but it remains to check whether the insecticides being provided were of equal effectiveness.

442. The provision of credit on cash is rather marginal, less than 10% of the farmers benefit from it, and farmers located in areas under competition are benefiting more, just like if this credit performs as an incentive to convince farmers in committing themselves with the operator who provides this credit.

443. Only 35% of the farmers are claiming obtaining any technical assistance and the competition is not having any impact in this area, while technical assistance is acknowledged to be helpful in assimilating cultivation techniques, specially by farmers located in areas without competition. These outcomes are indication that there is room to improve the extension performance. The technical assistance pertains so far to sowing, insecticide sprays, weeding and harvest. It is noteworthy that thinning on time is not considered as a specific technical theme. When the technical assistance actually reaches the farmers, it does not necessarily occurs on time, specially in areas under competition. It seems that the quality of the provision of the technical assistance is more disregarded in areas under competition where concern is focalised on input delivery.

444. In short, the extension service provision is actually far from being optimal and there is room for improvement. However competition is not leading to this improvement, it is the opposite outcome which is observed.

#### *4.3.5.5. Lack of coordination in the provision of the extension service*

445. Lack of coordination is particularly obvious in the area of pest management with negative impacts that can be easily anticipated. We have already pointed out that the destruction of the cotton crop residues is being overlooked because of lack of coordination between the cotton purchasing operators. This situation should favour maintaining a high pest pressure early at the growing season and reduce the yield expectation.

446. The recent survey implemented in Nampula points out there were 32 types of insecticides in use in the Province, being provided by the different cotton operators. The risk of misuse from confusion is high, for instance in terms of inefficiency in controlling pest, in terms of danger for the farmers health. No one seems concerned by recording the origin of the chemical being provided, nor by quality control. This kind of situation usually leads to appearance of insect resistance and/or farmers losing confidence in using chemicals.

447. Coordination appears to be difficult to achieve in the area of input provision since this is the major element by which each cotton operator is trying to differentiate himself from the others and to convince the farmers group in doing business with him at the expense of the competing competitors. If the cotton operators agree not to compete on the input (insecticide) provision but to compete on other services they provide (for instance cash credit, more favourable conditions of seedcotton marketing…) coordination in insecticide provision could be considered through various ways, for instance by a centralisation of the insecticide import which benefit equally to all cotton operators. We doubt however that this kind of cooperation could be achieved in the short run. Distribution of the insecticides to each cotton operator will be also delicate to manage.

#### *4.3.5.6. Seedcotton marketing and payment service penalised by high transaction costs*

448. Farmers do not only expect obtaining input from the cotton companies, they want to have their output be marketed, as quickly as possible, and to get their money in a short delay. During the last campaigns, marketing operations lasted a long time and payment has been also very much delayed in some areas. The perception of this situation has led to the feeling that the cotton operators, particularly the concessionaire cotton companies, were not doing their best in being more efficient in this area.

449. The fact that marketing operations have been completed far quicker at the current 2000/01 campaign, within 3 months or even less, is demonstrating that competition has pushed to invest in the needed efforts, confirming therefore that the exclusive right of purchasing seedcotton was penalising the cotton growers.

450. For sure, the cotton companies have actually invested to be in the position of buying on time in order to reduce the risk of seeing the seedcotton be deviated in favour of competitors. In what extent this investment, kind of struggle for life, is sustainable for the financial viability of the cotton operators is another issue.

451. There are however structural factors that make marketing and payment long and costly. Long distances, bad road network, lack of decentralized banking representations, difficulty in transferring cash… are objective factors in Mozambique that could lead to delay the inception of marketing operations and to postpone payment. The issue is to determine what is the reasonable delay implied by the reasons being mentioned, to inform farmers about these constraints, and to clarify the

marketing and the payment conditions in the contracts (in the case of farmers groups or associations).

452. If the quicker completion of the marketing is a positive effect of the competition between the cotton operators, there are other negative effects from non-regulated competition which could lead the cotton production to a full collapse. There is evidence that some cotton operators are cheating on the weighing machines. During a discussion with administrators of districts, one of them reported that he has confiscated a balance which systematically under-weights at around 16% ( 4 kg missing for a supposed weight of 25 kg). Several stakeholders have reported marketing being implemented by night, which is contrary to the existing rules, this organisation is making the cheating on weights even easier and even more abusive.

453. What is reported refers to marketing at the level of farmers groups which are not independent for the weighing machines.

**454. This is a major difference with the cotton farmers group in Francophone African countries where the first investment they had to comply with was the weighing machine.**

455. In case that nothing is done to overcome the current cheating trend, one can be pessimistic about the continuation of the cotton production. Experiences show that there cannot be any continuation of transaction if confidence is lost in the weighing machines.

456. According to the "regulamento", IAM must be involved in the marketing operations. It must be informed about the planning of the marketing operations by every cotton operator so that it could be represented in assisting and supervising the marketing operations. In what extent IAM can actually comply with this role is to be checked in accordance with the staff it has in the field. There is also some confusion about the IAM role in supervising marketing operations when farmers groups are involved. A representative from IAM claimed that this institute has lost this supervising role in the case of marketing by farmers groups. This does not appear to be so clear in the transitional measures decided in October 2000. In the article 21 of the "Regras concretas para o ano agricola 2000/01", it is stipulated that either the concessionaire cotton companies or the "novos operadores" have to submit their marketing agenda for approval by local administration and IAM. Anyway, according to the cheating being observed, weighing machines must be controlled and marketing operations must be supervised, either by IAM or another entity.

#### *4.3.5.7. A bad solution to a right question ?*

**457. The current situation of extension service provision is not satisfactory, specially in the area of technical assistance, of dissemination of technical knowledge that could lead farmers reaching a better command of cultural practices and of input use.**

458. The observation of this situation has led to the debate of the real investment the concessionaire companies are engaging. This debate has conducted to question the relevance of the concessionaire scheme in two directions.

459. One is to contest the exclusive right the concessionaire companies are enjoying in the zones, this direction corresponds to favouring a liberalised system. This is the direction followed by the first "intruders" who started competing in the seedcotton

purchase from the 1994/95 campaign, even though these operators have changed their mind then : one having got a concessionaire zone in Zambezia and the other one seems to ask for his own zone in Nampula.

460. The second direction is to question the adequacy of the size of some concessionaire zones which appears to be too large with regard to the investment needed for the implementation of the extension service if the whole zones are to be covered properly. This second one remains in line with the exclusive right of purchasing seedcotton in a determined zone.

461. The adjustment of the rules within the cotton sub-sector during the last 3 campaigns have been more influenced by the liberalisation direction, although it is considered through a gradual way. The first outcomes demonstrate that this is not improving the quality of the extension service provision. This improvement demands investment, but uncertainty associated to competition conducts to reluctance in investing.

462. Reaching numerous smallholders scattered in locations which are not always accessible at any time is an action that requires significant investment. Conventional method of extension work has to be complemented by message diffusion through mass media means which could reach easily all the farmers in the same time. This complementary means has then a feature of public good to which the private companies may occasionally contribute financially, but not alones. The running of such a complementary extension service vector deserves to gain from public funding.

### *4.3.6. Prospects of productivity gain ballasted by a poor-resource cotton research*

463. In many countries, research is emphasised in order to face an international competition becoming more and more severe. In the USA, the Cotton Incorporated which is a cotton sector organisation, was managing a budget of Million US $ 18,6 in 1986 for the promotion campaign in favour of cotton and for research. The figure has reached Million US $ 63 in 1998.

#### *4.3.6.1. A stakeholder being overlooked*

464. The cotton research in Mozambique is very resource poor. This research is implemented by the Cotton program of INIA which concentrates its cotton research works in its centre located at Namialo (Centro de investigaçao de Algodao de Namialo, or CIMSAN). This centre is a large one, having 340 ha of which only a small part is being exploited. In 1997, there were only two research scientists on cotton who were assisted by 3 superior technicians[42]. In terms of infrastructures, there were some rehabilitation works at the CIMSAN, but the staff has been reduced to only one scientist after the departure of the breeder for a PhD degree in the USA. The remaining scientist is still young, who has not benefited so much from interaction with foreign research teams. We have not been informed of the exact content of the research program being currently implemented, but lack of fund seems to limit the activities to some seed production.

465. Cotton research has been obviously overlooked during the last decade with little funding from the Government or from the cotton sub-sector itself. It has benefited from some assistance in the framework of the Project for agricultural services rehabilitation and development (PRDSA) which has been funded by the World Bank

[42] INIA, 1997. Pesquisas em curso, como financiar futuros programos. Communication presented to Conference 'Encontro nacional das empresas algodoeiras', Maputo, Mozambique, 6 pages p.

till 1996/97. In theory, the cotton research may expect some assistance in the framework of the Proagri project but which does not seem to be in full operation till now.

466. INIA complains that it is neither member of the Conselho Geral do Algodao nor of the Cotton working group. This is actually a sign that little attention is paid to the potential contribution from the national research while our analysis has pointed out many technical challenges to overcome and which are addressed to research.

#### *4.3.6.2. Sufficient evidence of the positive contribution from research*

467. The mission has not been in the position of catching the research/development activities implemented by the various cotton operators. For sure, the new operators are not coping with these activities. We also suspect that most of the concessionaire cotton companies are not addressing these activities except the companies which implemented the AFD supported projects.

468. These projects have integrated research/development activities within Lomaco-Montepuez and CNA, the first one has even erected a specific R/D service which dealt with cotton growing and various food crops. Positive outputs in terms of new cotton variety and prospects for improvement of some food crop cultivation have been underlined above. It is worth indicating also the implementation of a rational seed production program and exploration of new cultivation techniques which could be more adapted to the farmers constraints in growing cotton or food crops[43] (rice in particular).

**469. The results being obtained confirm that the implementation of R/D within cotton companies is efficient, as long as the activities is limited to adaptive research devoted to confirming the adaptation of existing outputs.**

470. However the mere continuation of R/D within cotton companies would not be sufficient in exploring new techniques that require more complex experimental design and follow-up.

471. Although continuation of R/D within cotton companies makes sense, co-ordination of the activities implemented separately in distinct companies should improve the diffusion and the impacts of the results being obtained. The keyword appears then to be co-ordinated R/D implemented by cotton companies.

472. This co-ordination should take note that most of the cotton companies do not have enough background in the area of R/D implementation. Even where such implementation has been promoted thanks to the AFD projects, likely consolidation remains needed. One should think twice before considering that R/D activities should be totally funded by private funds in the current context of Mozambique.

#### *4.3.6.3. Positive signs and conditions for some take-off of the national cotton research*

473. Some observers of bilateral or multilateral funding organisations are taking the strengthening of the national research into consideration. As pointed out above, the delegation of the European Union is going to support R/D on diversification crops in cotton areas of the Northern part of the country. We know that the French Cooperation

[43] Lomaco, 2001. Apresentaçao dos resultados e perspectivas. Investigaçao e desenvolvimento, apoio as organisaçoes de produtores. Lomaco, Maputo, 92 p.

has a project to reinforce INIA in a selected number of production sectors, including cotton.

474. INIA will be in the position of playing a greater role in cotton research. Owing to its status, it is sound to allocate to it the role of co-ordination of all the research activities in the country. The limited human resources of INIA on cotton research could not be multiplied overnight.

475. **This means that INIA role in research implementation should be limited to the CIMSAN at Namialo, whose program should be articulated with the R/D activities implemented by the cotton companies.**

476. The co-ordination role will have to deal in practice with training, technical information diffusion, harmonisation of the experimental designs, organisation of steady meetings to have people exchanging on technical issues…

477. In case that the cotton sub-sector contributes financially to the INIA activities along with external financial support, a contractual process could be contemplated to commit INIA with an entity which represents the whole cotton sub-sector.

478. The lack of human resources on cotton research in an issue. It is necessary to train people in getting them familiar with cotton research. Identifying students close to the end of their academic degrees and providing them with the opportunity of following a career on research is now demonstrating to be more efficient than selecting and converting scientists already in operation. As the career of research does not pay so much, it would be realistic to accept that around 50% of the people being trained will deviate themselves from the research career later on. Consequently, the training program must be ambitious enough to help more young academics discover the excitement of the research work.

479. Training of young scientists will not make them so much available and operational in the implementation of research works. Connection with foreign research institutions will be necessary through assignment of foreign scientists for a limited period (2-3 years) as it is suggested by the Director of INIA .

## 4.4. The challenge of adjusting the role of the state in the regulation scheme

### *4.4.1. A positive point of a government attached to its regulation role*

#### *4.4.1.1. Privatisation without liberalisation but a regulation body*

480. By the end of the 1980s, in its move towards re-launching the cotton production, the Government of Mozambique has opted for a privatisation scheme without immediate liberalisation. This policy was translated into a partial albeit significant withdrawal of the Government from the main cotton producing estates. This option gave rise to the JVC cotton companies within which the Government has maintained a minority share so that the management has been totally passed to the private shareholders.

481. The Government has very quickly affirmed its attachment to its regulation role by setting up the IAM in 1991 which was charged of the objectives :

- orientating and supervising any activity in connection with the production, marketing, processing and exportation of cotton products,
- cooperating with research institutions to promote research implementation,

- monitoring the compliance to technical norms in order to ensure soil preservation, a proper use of chemicals and the preservation of the environment.

482. To reach the objectives being assigned, the IAM has been endowed with the competences of :

- coordinating the activities of the cotton sub-sector stakeholders,
- creating types of cotton in connection with other players involved in the economy of cotton in Mozambique,
- classifying the cotton lint,
- finding national and foreign markets for the mozambican cotton lint,
- obtaining information pertaining to the production and the conditions of production,
- proposing purchasing prices of seedcotton,
- providing reports to inform governmental services,
- establishing and informing about the modalities of the seedcotton marketing
- promoting the establishment of organisations that would help improve the well being of the smallholders.

483. In practice, IAM is actually ensuring the statistics keeping that enables it to issue regular reports (quarterly reports, annual reports). It is implementing the cotton lint classifying in 4 rooms located in Maputo, Nampula, Montepuez and Beira. It delivers administrative authorisation to lint sale contracts by checking the compliance of the price with a pre-determined grid of price premium or discount according to the lint quality variation. It is performing as the seedcotton buyer of the last resort where there is no alternative players. The role of IAM has evolved in the pricing mechanism, as well as in the area of seedcotton marketing.

**484. It does not really implement major "fomento" except its commitment in the experience of producing organic cotton in Inhambane. However, IAM has not ever committed itself in promoting or implementing the research activities.**

485. In the area of seedcotton marketing, it was stipulated that it was up to the IAM to define the market locations, and IAM is to perform as the president of the marketing operations.

486. With regard to the ginning of seedcotton not being bought by the owners of the ginneries, the article 12 of the Decreto N° 8/91 points out that the ginning fee must be correct in the remuneration of the service being provided but does not really imply obligation of ginning.

487. The management organ of the IAM is the Direction which is assisted by a "Conselho Geral" which has a consultative power in advising in particular on :

- the internal functioning of the IAM,
- the application of fines in case of violation of the rules,
- the financial management of the institute,
- the regulation connected to activities which fall into the responsibility of the institute.

488. The "Conselho Geral" is now composed of the Director of IAM, assisted by the deputy director, a representative from the AAM, and a representative of non-concessionaire cotton operator. We have not been informed about the functioning of the "Conselho Geral", we do not know whether there are actually monthly meeting. It is noteworthy that a Cotton Working Group was created to deal with the price liberalisation and on the update of the rules, since these activities fall into the scope of the "Conselho geral". We do not know how is the connection between these two bodies.

489. The financing of the IAM was contemplated through the application of a levy on the price being paid at the purchase of the seedcotton and by a levy at the exportation of the cotton lint. This second one should not be lower than 5% of the FOB value. The first levy has never been applied as far as we know. The second is still applied, but only on the cotton originating from the family sector, and the levy has been reduced to 3,5% then to 2,5% nowadays.

#### *4.4.1.2. Establishing a "regulamento" to clarify the rules*

490. We have been told that the "regulamento" was issued in 1994 on request from the cotton JVCs who wanted clear rules to protect their exclusive right in purchasing seedcotton. This "regulamento" :

- defines 6 classes of cotton operators (3 for the seedcotton producers, 2 for the ginners and 1 for the lint buyers cf § xxx).
- determines the conditions of registrations of the cotton operators above the class 3 and of the setting of concessions
- indicates the obligation of the concessionaire cotton companies in providing yearly the list of the farmers (class 1 and 2) they are assisting. This obligation is not actually applied.
- indicates the obligation for the cotton companies to inform about the production planning (areas, expected production…) but without information on the input and credit provision.
- ensures the exclusivity right of the concessionaire cotton companies in buying the seedcotton to the farmers of the classes 1 and 2,
- points out the conditions of lint classifying and supervision of the lint transactions.

491. It is worth underlining that there is no mention of the cottonseeds except in connection with the seed renewal.

492. The "regulamento" is to be enforced nationwide. During the discussion we had with various stakeholders in the cotton sub-sector, we observed that IAM is still attached to a nationwide "regulamento" although it recognised that conditions have become different in the various provinces. Since the "regulmento" has force of law, it seemed to it that there could not be distinct laws within the same country.

**493. The other stakeholders, namely the seedcotton purchasing companies are more open in this regard and have express their sympathy to a flexible solution which would help to adapting to specificity of local conditions.**

494. Unique law within a country could comply with some differentiation in modalities of application provided that the principles of the law are followed. The fact that Nampula Province is the only of having a Provincial Cotton committee being running is an illustration of the existence of some room for adaptation to local specifities. It seems to us that this is somewhat in line with the policy of decentralisation although this policy has not so much come into implementation.

### *4.4.2. A favourable taxing policy*

495. While in many cotton producing countries, the cotton sector is a main tax providing source, at the point that the various taxes are constraining seriously the competitiveness of the sector, this does seem be the case in Mozambique, although this assumption is to be taken under the reservation of a deeper insight.

496. Till the beginning of our stay in Mozambique, there were rather favourable taxe levels to sustain the input use. Import tax rate was 2,5% on the CIF basis, to which the IVA (Added value tax) of 17% may be applied at the distribution stage. This is to be

compared to the 30% of import tax rate for the manufactured goods in general. Exportation rates were determined according to the level of the exportation volume, since a regressive tax rate principle has being followed. For instance, the exportation rate was 0,5% up to 16 000 tons and 0,35% for 16 000 to 110 000 tons.

497. Owing to the implementation of new rules in the framework of the South African Development Community, the taxing policy is going to be modify in the direction of a tax rate reduction.

498. **In short, the current taxing sounds sustain the development of the cotton sub-sector.**

### *4.4.3. The constraint of settling down the current confused situation resulting from non-optimal adjustment of rules*

#### *4.4.3.1. A situation of confusion with political interference*

499. The cotton sub-sector has entered into a confused situation since that some cotton operators contested the exclusivity right of the concessionaire companies within their concessions, phenomenon which was initiated during the 1994/95 campaign, at a period when the World Price was very high. The exclusivity right is more officially questioned in the "estrategia para o desenvolvimento do algodao" being approved by the Council of Ministers in September 1998 which considered "the gradual introduction of reforms within the concessionaire scheme, allowing alternative entity in implementing extension service" and "the authorisation of producers, within cotton concessionaries, to perform as autonomous ones in producing and in selling independently their cotton".

500. The decision of October 2000 in moving towards an "opened concessionaire scheme" has confirmed the gradual liberalisation by conferring to the farmers groups the possibility of performing like autonomous producers provided that at least 2/3 of the farmers within the same "aldeia", "povoado" or "Regulado" have agreed to commit themselves with one seedcotton purchaser who could be distinct from the company enjoying a concessionaire right in the location which includes the "aldeia", "povoado" or "Regulado". This decision has been translated into rules in October 13, 2001 to be immediately applied (called transitional rules). The first article acknowledge the end of the exclusivity right in purchasing seedcotton.

501. The application of the transitional rules has led to various outcomes, some being yet analysed above, others will be elaborated below like the saga regarding the price competition and the confusion in the associative process. The most conspicuous outcome was the phenomenon of output deviation between the various seedcotton purchasers, leading to actions at law, resulting in bad recovery of input credit and to the point of pushing some operators in reconsidering their involvement in service provision.

502. The decisions being taken during the last campaigns has led to a confused situation, in particular in Nampula Province, in which some cotton companies are expressing their pessimism in the short run.

503. The debate about the organisation of the cotton sub-sector has invaded frequently the political ground. In provincial level, in particular in Nampula, several stakeholders of the cotton sub-sector have appealed directly the Governor of the Province, bypassing then the Provincial Cotton Committee. There are several disputes about unfair practice

from one cotton company in deviating the cotton production of some associations at the expense of another cotton company to whom the production was supposed to be promised. We have been informed about some of these disputes that a Provincial Cotton Committee has judged and which are submitted again by the unsatisfied parties to the Provincial Governor if not to the Prime Ministry.

504. The continuation of the confusion in Nampula Province or the diffusion of the same confusion in other provinces (as it is starting in Cabo Delgado) will block the increase of the cotton production and productivity for a while. It is up to the Government to settle down the confusion through realistic rules, taking into account what other cotton countries are experiencing.

505. There are not really so many positive experiences of liberalisation of cotton sector in Africa.

506. **In Zimbabwe, liberalisation has finally led to an oligopole of two cotton companies, one of which has got the lion's share of more than 80% of the seedcotton market.**

507. **In Ghana, after around 15 years of liberalisation, has decided to move to the "zoning system" which is basically the return to an exclusive purchase right allocated to a specific company.**

508. **Côte d'Ivoire has moved from a national monopolistic cotton company to three new ones which are enjoying local monopoly right.**

509. **Mali has struggled for many years by contesting the liberalisation scheme that was suggested with great insistence by some international funding organisation. This country has recently committed itself in moving towards a "zoning system" by splitting the current major cotton company (CMDT) into 3 to 5 smaller units to enjoy local exclusive right of purchasing seedcotton. An officious document from the World Bank indicates that this commitment is positively appreciated by this organism.**

510. **Other countries in Francophone Africa are still running a national monopolistic structure, by integrating the farmers organisation into the shareholding (Burkina Faso, Senegal).**

511. In short, for many countries, the exclusive right of purchasing seedcotton seems to be the crucial point to preserve in the institutional evolution of the cotton sectors. For some stakeholders we have met, this appears also to be important to preserve in Mozambique but this is not the direction that has been taken during the last campaigns.

#### *4.4.3.2. Some remarks on the issue of updating the regulation rules*

512. The mission is not charged of making recommendations in helping clarify the current confused situation. Being external observers, some remarks could however help in re-visiting the current situation.

513. As it is pointed out, liberalisation has not been so much successful in many countries. Beyond the principles of liberalisation, more attention must be paid to the modalities of its implementation. Besides, there are countries which are moving back from a liberalised scheme, and even earlier promoters of liberalisation are more open to scheme based on exclusive right in the seedcotton purchase. The fact is that the outcomes are often disappointing and do not comply with the previous expectations, likely because the hypothesis underneath the liberalisation prescription are questionable in the countries where it was engaged.

514. It is essential to make clear distinction between concession system and zoning system.

515. **Zoning system is only based upon exclusive right of purchase, while the concession system is combining exclusive right and allocation of land use right.**

516. The protestation against the concessionaire system has addressed indistinctly the exclusive right and allocation of land use right on very large area. There is evidence that exclusive right in purchasing seedcotton could lead to dramatic success while allocation of land use right seems to belong to another time.

517. **It seems that many stakeholders are open-minded in reconsidering the concessionaire system in moving towards a zoning system**

518. in order to preserve the exclusive right, and occasionally in revisiting the size of the zones to adapt them to the financial and technical capabilities of the cotton companies. This could be a position that deserves to be analysed even if it is opposed to the direction being selected recently in letting down the exclusivity right.

519. Whatever the system will be, a zoning one, a liberalised one or a concessionaire one, the Government has to be selective in authorizing new comers in the cotton sub-sector. Free-entrance and free-exit is detrimental to the sector sustainability. It is of the interest of Mozambique to have operators moved by long term investment. Candidacies from new comers must be analysed according to criteria of long term commitment.

520. Politicisation of the debate is an impediment to solving cotton sector specific issues. The risk of politicisation is greater when the Government, through its organs seem to appear at the first row in dealing with the cotton business. In this sense, there is rationale in targeting at an autonomous sectoral management, which, of course, cannot be obtained overnight. In many developed countries, the tendency is to have government letting the sectors find out solutions by themselves, and to occasionally play a facilitating role. This is what we call having the Government at the second row.

521. Since the Government is still involved in the major cotton companies, the approach of leaving the first row would not be credible as long as the Government remains in the shareholding of the companies. The Government in Mozambique has already claimed its intention of withdrawing from these companies, it is then just a matter of transforming an intention into reality.

522. Deciding on new measures while the new campaign is yet so close cannot be very efficient. People must be informed about change, such information needs time, in particular when mass media means are missing.

523. It is important to make clear distinction between new principles and new modalities. Having agreed upon new principles is not enough if modalities in implementing them are not specified. A government can decide on principles, the cotton sector stakeholder must be fully involved in deciding on modalities. This is a matter of having an institutional change being really operational.

524. Follow-up of the outcomes of an institutional change is necessary to be able of fine tuning it later on. Information must be organised to allow this follow-up. In this organisation, cross-checking of information is essential to ensure the information liability. In practical terms, identification of indicators in assessing the outcomes is a pre-requisite and people must agree on the indicators. A condition to reach this agreement is to have the stakeholders associated in the identification. The specific follow-up may require additional means whose financing should be clarified.

## 4.5. Adjusting tools for an effective and efficient regulation

### *4.5.1. Crucial role of statistics management with room for improvement*

525. We have already pointed out that IAM is issuing many data which are useful to have a clear view on the cotton sector. Owing to the limited means, this outcome is quite commendable.

526. The lack of collection and processing of data that could help having an insight on the efforts implemented in the area of "fomento" is detrimental for a right monitoring of the cotton sector through objective and quantified information. This shortfall must be corrected and it should be feasible since the cotton companies must have these data and that the "regulamento" has specified the provision of these data to IAM.

527. The role assigned to IAM in issuing kind of administrative authorisation for the lint transaction endows this institute with plenty of data which are not fully processed to analyse for instance the destination countries of the cotton lint in connection with the lint grade or lint length and with the price being obtained. In other words, the existing data may help examining the factors of competitiveness of the Mozambican cotton lint and identifying measures to improve them.

528. Likely, the statistics recording should involve more players than now. The agro-chemical firms are not requested in providing data while they are involved in supplying inputs. More generally, involving more players in providing data will enlarge the possibilities of implementing cross-checking in order to ensure the liability of the data being collected and disseminated.

529. Technically speaking, the challenge of moving towards a more performing data processing will require a more adapted software, a real data base software and not only a data sheet software like Excel. The transfer of the existing data in Excel Format to an Access data base would however be very easy.

### *4.5.2. Improve the regulation by adapting roles and means of a sectoral organisation*

#### *4.5.2.1. The IAM Financial dependence to the levy*

530. The IAM is composed of a staff of 112 members with a small share of medium and high level of education. Nearly half of the staff is concentrated in Maputo, ahead before Nampula. There is still some staff in the southern provinces where cotton production is disappearing by lack of industrial partners.

531. The total financial resource of the IAM is estimated at around 500 000 $ in the 1999/00 campaign. The main financial source derives from the levy applied at the exportation of the cotton lint. Although variable, the contribution from the levy is accounting for more than 80%, only a sharp decline in the cotton production in 1998/99 has led to a diminution of this share. The cotton companies are therefore the main funders of the IAM. The reduction of the levy rate from 3,5% to 3% then 2,5% impacts directly on the IAM means.

532. Around 40 to 50% of the budget are allocated to the overheads and salaries, the remaining half of the budget is grouped in the "others" which deserves to be detailed in order to have a better idea of the expenses linked to the IAM mission. Besides, one may expect to find the financial resources and the budget consumption in the annual report and specific reports, this does not seem to be the case. This is pitiful and is not favourable to the transparency the fund contributors, i.e. cotton companies, would expect.

533. This is the reason why we have heard some cotton companies complaining about the use of the levy they contribute, arguing that no action in favour of productivity gain is actually implemented. This is also the reason why the cotton companies have protested against the level of the levy rate and have obtained its reduction[44]. It is also recalled the historical background of the levy which was set up in the 1960s at a period when the former Institute of Algodao was in charge of the extension work and of the seed production and distribution. Since the extension work is now implemented by the cotton companies which cope also with seed production, some cotton companies disagree with the levy payment. Actually most cotton companies seem to be willing in contributing financially provided that the fund is employed to implement actions which promote the production or the product quality. This does not seem to be the case from the view of several of these companies.

534. This statement seems to be somewhat severe owing to the IAM role in classifying cotton lint and in the statistics keeping, albeit not perfectly. Actually, IAM is not doing so much in the areas of promoting research nor in the co-ordination of the seed policy which belongs to its competence at its creation.

[44] This levy has been set up with a rate that should not become lower than 5%. It is now down to 2,5% and is only applicable to the cotton lint coming from the family sector, which is nowadays nearly the exclusive origin of the cotton lint of Mozambique.

Table 56. IAM Staff according to the education level

| Nivel de formaçao | Maputo | Maxixe | Beira | Qualimane | Nampula | Montepuez | Total |
|---|---|---|---|---|---|---|---|
| Superior | 9 | | 1 | 1 | 1 | | 12 |
| Médio | 6 | | | 1 | 1 | 2 | 10 |
| Bàsico | 8 | 5 | 1 | | 4 | 4 | 22 |
| Elementar | 26 | 2 | 3 | | 8 | 2 | 41 |
| Outros | 5 | 3 | 1 | | 12 | 6 | 27 |
| Total | 54 | 10 | 6 | 2 | 26 | 14 | 112 |

Table 57. IAM financial sources

| | 1995/96 | | 1996/97 | | 1997/98 | | 1998/99 | | 1999/00 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1000 MT | % | 1000 MT | % | 1000 MT | % | 1000 MT | % | 1000 MT | % |
| Levy | 5 324 758 | 88,7% | 4 614 098 | 41,0% | 9 993 474 | 88,3% | 5 546 490 | 63,6% | 7 291 535 | 82,5% |
| Ginning | | | 836 320 | 7,4% | 236 394 | 2,1% | 189 082 | 2,2% | | |
| Lint Classifying | 97 838 | 1,6% | 53 380 | 0,5% | 83 133 | 0,7% | 43 175 | 0,5% | 55 590 | 0,6% |
| Insecticide spraying | 238 360 | 4,0% | 267 968 | 2,4% | | | | | | |
| "multas" | 10 100 | 0,2% | | | 13 000 | 0,1% | | | | |
| Lint selling | 43 792 | 0,7% | 558 938 | 5,0% | 141 334 | 1,2% | 626 527 | 7,2% | 201 055 | 2,3% |
| Inscription | | | 9 200 | 0,1% | 8 350 | 0,1% | 4 350 | | 6 350 | 0,1% |
| Selling of chemicals | | | 3 028 580 | 26,9% | 52 380 | 0,5% | | | | |
| Miscellaneous | | | 1 493 468 | 13,3% | 209 511 | 1,9% | 1 474 779 | 16,9% | 278 306 | 3,1% |
| Financial | 290 000 | 4,8% | 379 500 | 3,4% | 585 000 | 5,2% | 838 800 | 9,6% | 1 003 000 | 11,4% |
| Total | 6 004 848 | | 11 241 452 | | 11 322 576 | | 8 723 203 | | 8 835 836 | |

Table 58. IAM budgets

| | 1995/96 | | 1996/97 | | 1997/98 | | 1998/99 | | 1999/00 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1000 MT | % | 1000 MT | % | 1000 MT | % | 1000 MT | % | 1000 MT | % |
| Salarios/Finanças | 282 494 | 6,8% | 388 130 | 3,8% | 512 058 | 5,0% | 706 721 | 9,4% | 1 003 687 | 12,4% |
| Ssalarios/IAM | 149 869 | 3,6% | 1 497 104 | 14,6% | 1 516 943 | 14,7% | 1 044 159 | 13,9% | 1 856 902 | 22,9% |
| Ajudas de custo | 115 576 | 2,8% | 396 552 | 3,9% | 302 210 | 2,9% | 257 282 | 3,4% | 154 273 | 1,9% |
| Material expediente | 55 750 | 1,3% | 88 120 | 0,9% | 112 457 | 1,1% | 93 810 | 1,2% | 103 536 | 1,3% |
| Combustivel | 79 733 | 1,9% | 376 811 | 3,7% | 391 780 | 3,8% | 354 377 | 4,7% | 365 565 | 4,5% |
| Manut. Rep. Viaturas | 187 135 | 4,5% | 385 577 | 3,8% | | 0,0% | | 0,0% | | 0,0% |
| Reparaçao edificios | 8 221 | 0,2% | 15 569 | 0,2% | 160 155 | 1,6% | 229 152 | 3,1% | 48 738 | 0,6% |
| Manut. Rep. Equip. Mobil. | 71 768 | 1,7% | 180 064 | 1,8% | 475 617 | 4,6% | 474 793 | 6,3% | 342 121 | 4,2% |
| Comunicaçoes | 46 898 | 1,1% | 106 793 | 1,0% | 125 947 | 1,2% | 172 147 | 2,3% | 222 602 | 2,7% |
| Agua e energia | 41 052 | 1,0% | 84 643 | 0,8% | 114 585 | 1,1% | 102 859 | 1,4% | 90 693 | 1,1% |
| Outras | 2 065 471 | 49,7% | 6 727 613 | 65,7% | 5 902 690 | 57,2% | 4 076 291 | 54,3% | 3 792 278 | 46,8% |
| Bens de inventario | 1 053 589 | 25,3% | | | 706 791 | 6,8% | | | 121 595 | 1,5% |
| Total | 4 157 556 | | 10 246 976 | | 10 321 233 | | 7 511 591 | | 8 101 990 | |

#### *4.5.2.2. The challenge of adjusting the IAM roles*

535. It could be relevant to revise the roles IAM could keep owing to its status and the competence of its staff. Among the tasks being implemented, the statistics keeping and information diffusion is an essential task that should be devoted to a public entity, provided that the quality of the data processing and of the information diffusion is enhanced.

536. This is a critical task since it could prevent from un-founded rumors polluting the serenity of the cotton sub-sector. In this sense, such task pertains to a public good whose impact goes beyond the cotton sub-sector. Turbulences within the cotton sub-sector could induce reduction in the production and impact negatively on the rural economy in its whole.

537. **A centralised system of lint classifying** is recommendable, all the more in the prospect of a more active approach in promoting the image of the Mozambican cotton.

Although limited by outdated facilities, IAM is not doing badly, such task should remain under its responsibilities.

538. **Supervision of the cotton sub-sector is a task** to be fulfilled. It could make sense to move towards a more autonomous management of the cotton sub-sector by all the stakeholders, IAM could be the sectoral organism which could take charge of this management. It is however possible that its public status fully dependent on the MADER may impede its autonomy, in such case, another institution would have to be erected, like the Cotton Trust which is running in Zimbabwe or in prospect in Zambia. Since the transfer to a more autonomous management would not be achieved overnight, a realistic way would be to have IAM starting taking over the sectoral management for a short and predetermined period, 2-3 years, during which a new sectoral institution could be promoted. This sectoral institution must integrate farmers institutional representation within a reasonable term, since this representation is still weak as compared to Mali or Benin for instance.

539. **Issues related to research** must be addressed by INIA, through a contractual process that will ensure INIA with the needed funds and which commits in return this organism in providing results that the contractor may expect in a reasonable term. Owing to the limited staff of the INIA, a partnership with IAM could be envisaged in implementing studies that could help analysed the socio-economic impacts of the cotton production, since IAM is in charge of keeping the statistics.

540. Among the new tasks IAM may contribute, the implementation of a **collective policy of seed production and distribution** is to be mentioned. Since the production of technological seeds must be decentralised as we have pointed out above, the decentralisation of IAM structures in several provinces is a favourable factor.

541. The **promotion of a specific radio broadcasting programs** destined to cotton zones is also an other task which has a public good feature and which should be devoted to a cotton sectoral organism like IAM.

#### *4.5.2.3. Revising the financing mechanism of a sectoral organism*

542. It is common to consider that the effects of the cotton production impact only on the cotton sub-sector stakeholders. From this view-point, it is also common to admit that the actions dealing with the cotton sub-sector must be financed only by its stakeholders.

543. What is happening in the Mozambican cotton sub-sector demonstrates that this is not exactly true. Lack of provision of public good in terms of information diffusion or quality seeds impacts negatively far beyond the circle of the cotton sector stakeholders. When the functioning of the cotton sub-sector becomes confuse, at the point that it leads to dramatic production reduction or to social turmoil, the effects impact negatively on the rural trade and on the political serenity in the concerned provinces. And conversely when the cotton sub-sector could be set back on the right tracks of a sustainable production increase.

544. It comes out that through the proper regulation of a production sector, the stake is also the strengthening of institution, the promotion of an efficient synergy between public actions and private initiatives, the preparation in favour of more autonomy to the sector stakeholders. All these critical changes cannot be achieved overnight. They can only result from patient actions and from investment in making the stakeholders reacting more through cooperation than from competition.

545. The objective of a performing regulation of a cotton sub-sector demands investment, it is not realistic to rely only on the direct stakeholders to take charge of this investment. There is room for pubic intervention with the financial help of bilateral or multilateral funding organisms. We have understood that this idea is already shared by some of these organisms we have met.

546. The government should have to contribute financially as well, for instance through the fund it could extract from its involvement in the cotton sector. A possible way which has been suggested is to make use of the income resulting from the privatisation of its shares in the cotton JVCs. This is to assume that the claim policy of the total privatisation of these JVCs could finally become real. Few newcomers investors would be prepared in joining a company where their decision power remains limited if not nil. There is a risk that no investors actually respond positively to the total privatisation of the cotton JVCs since the existing private partner will remain the leading shareholder. A possible solution is to promote cross-shareholding between the existing private companies yet involved in the JVCs.

## 4.6. Going beyond the process induced by the polarization on the pricing mechanism

### *4.6.1. Confusion fed by lacking information about the price fixing mechanism*

547. **In Mozambique, the Government has been attached to its role in fixing and guaranteeing the seedcotton purchase price to farmers since it decided the re-launch of the cotton production in the late 1980s.**

548. It is still the Government who decides and announces officially the purchase price for seedcotton cotton. Till 1997/98, the "Conselho geral do algodao" within IAM proposed prices (for the two grades of seedcotton) after consultation of the cotton companies. This proposal was amended by the Service of prices and salaries within the Ministry of Agriculture before submission for approval by the Minister. As the Service of prices and salaries over-estimated a lot the world price after the 1994/95 campaign, the Conselho Geral do Algodao is now directly submitting the price proposal to the MADER.

549. The principle retained by the Government of Mozambique is to ensure a "minimum price" to which all the seedcotton purchasers have to comply with. This means that they cannot buy at a lower price but they can offer more.

550. Since the price is determined from the anticipation of the world price that will be in effect by the time of selling the cotton lint, there was a tendency in delaying the price announcement at the point that it only happened after the farmers have sown their cotton plots. Some cotton companies, conscious that the farmers want to know the price before deciding to grow cotton or not and to what extent, have got the habit of committing themselves with a price before the official announcement. By doing so, they commit themselves in buying at the price they have announced even if the official price being announced later is lower. Conversely, they commit to pay the official price if it is higher than the one they have announced. As far as we know, this is what Lomaco-Montepuez is doing for several campaigns.

551. During its interaction with the farmers, the mission has realised that all the farmers do not have a clear idea of the government role in fixing the minimum price. They do not know the connection with the world price in the price fixing mechanism. They do not

really understand the notion of minimum price since they complain that farmers in some areas are getting a higher price than they do (case of the farmers met in Montepuez).

552. This lack of understanding is not the case of the farmers coming from associations which have got strong assistance from NGO. They even have information about the daily variation of the A Index, since this is an information which is provided by the NGO (specific case of a President of a forum of farmers associations from Lomaco-Nametil and backed by Clusa-Moçambique).

553. Even though the farmers have got the information about the connection between the world price and the price they get, even if they are informed by the seedcotton purchasing agents that the world price is low, they are still doubting about this information since they cannot understand why the cotton purchasing companies are price-competing so hardly if the world market is actually so un-favourable…

554. Hence, the issue is not only a matter of non-diffusion of the information about the price mechanism, it is also a matter of liability of the information source. Farmers have learnt not to rely blindly upon what the purchasers may say, they are more confident on information they can check and on public information that reaches everybody.

555. **Radio broadcasting on the pricing mechanism would surely help the farmers to have more faith on the prices they hear**.

### *4.6.2. The open issue of nationwide common price*

556. Through the option of minimum price, the Government of Mozambique is not having a clear position regarding the issue of defending a common price nationwide. We can even assume that the approach of minimum price is an attempt to administer price without totally blocking competition, so that even within one province, price could vary from one purchaser to another, at least on theory. Hence, price could also vary from one province to another.

557. According to some economic theory taking into account the transaction costs, differentiated prices make more sense, so that higher prices could be offered to farmers whose production is close to the ginnery while lower prices should be paid to farmers who are in more remote areas since the costs to go, buy and pick their cotton is higher. This is a position which is however debated by people who are concerned by the consequence that such a differentiated pricing policy will induce. In fact, higher price in locations close to ginning factories will enhance excessively cotton production in these locations that may disturb the desired equilibrium with food crops or that may attract external people to augment the land pressure in these new demographic concentration points. Conversely, lower price in remote areas may lead to abandon the cotton growing there and pushing the farmers back to a subsistence agriculture. The concern of a policy of the national and regional development advocates for a unique price system.

558. The analysis above is connected to a price being paid at the farmer's gate. It could be reversed if the price is to be paid at the ginnery gate by which the transportation is charged to the farmers. In this case, the ginner may pay a lower price to the farmers who had lower transportation costs. In some countries, prices are worked out farm gate and the transportation is charges to the farmers: oil palm & rubber in Côte d'Ivoire and Ghana and cotton in Zimbabwe.

559. So far, the cotton companies have accepted the *de facto* scheme of unique price in the country. The farmers seem also to be attached to it since they reacted negatively when they observe that the price paid in Nampula was higher than in Montepuez.

### *4.6.3. Targeting at a more comprehensive approach in promoting quality through price incentives*

560. As it was pointed out above, few seedcotton purchasers are keeping on paying attention to the price differential according to the grades of the seedcotton. Anyone trying to remain demanding on the seedcotton quality will face a serious risk of having the seedcotton deviated in favour of a less demanding competitor. In other words, competition enhances quantity at the expense of quality. This is the observation in many countries where the cotton sub-sector has been liberalised : Tanzania, Ghana, Nigeria…Of course, this is not an un-escapable consequence, since Zimbabwe has achieved to maintain the good quality of its cotton lint. Private co-ordination is possible to preserve some positive outcome, and the less the private operators are, the more similar are their strategies, the easiest is this co-ordination : this is the case of Zimbabwe with no more than 2 seedcotton purchasers both animated by strategies of long term investment in the cotton sub-sector.

561. **If the current non-coordinated competition between the seedcotton purchasers is to remain, the price differentials set for 2 grades of seedcotton will totally lose its pertinence. This will be detrimental for the quality reputation of the Mozambican cotton.**

562. If better co-ordination will be achieved, the approach of price differential according to the seedcotton grades should be maintained but there is room for its improvement. This approach is being followed in all the Francophone African countries, retaining generally 3 grades of seedcotton. Even though, there is still some contestation from the farmers about the economic justification of the price differentials being applied. The farmers do not see the correspondence between the differentiated grades of seedcotton and the differentiated grades of the cotton lint being exported. Under such a situation, they are doubting that a lower grade of seedcotton is leading actually to a lower grade of cotton lint which would justify the lower price of the seedcotton being paid earlier. They claim having observed that first grade of seedcotton is mixed to second grade one during transportation, this tends to confirm their suspicion.

563. As far as no effort is being made to clarify this correspondence and to let it know, the suspicion will keep on prevailing and farmers will remain doubtful about the rationale of sorting the seedcotton. The same doubt will remain if no effort is made to show rigour in transporting and ginning the seedcotton according to its grade. In short, the policy of quality promotion does not depend only upon differentiated prices. It has to be sustained by adapted organisation in transportation and ginning, and above all, by information about the correspondence between the grades of seedcotton and the grades of cotton lint being obtained. So far, to our knowledge, there is no country achieving to set up this correspondence and to diffuse it. Owing to the scheme of statistics management in Mozambique, such a target appears to be quite feasible.

### *4.6.4. World price fluctuation making difficult and risky a policy of minimum price*

#### *4.6.4.1. Erratic price fluctuation is making anticipation risky*

564. We have already deal with the fluctuation of the world market price which has become more frequent and of higher magnitude. By the time of writing the report, the A index has plunged to US cents 34/pound, which is a new historic low and hard to anticipate.

565. Even the use of complex model does not make the anticipation easier. ICAC is running a model which takes into account offer and demand for cotton, the demand is related to demographic growth and general economic growth, as well as the competition from the man-made fibres. The offer is taking into account various factors, in particular the level of stocks (by distinguishing the stocks in Mainland China and the rest of the World) and price expectation based on quotations of the New York Exchange future contracts. For each cropping season, ICAC is issuing price forecasts which starts 27 months before the end of the projected crop year and which ends at one month before the end of the same crop year, making up to 14 forecasts.

566. In spite of using such a model, in spite that parameters are re-adjusted when one comes closer to the end of the forecasted crop year, the average percentage error of the 14 forecasts could be very high, from -14,4% to +21,0%, as a consultant for the World Bank has pointed out recently[45]. The basic reason lies on the erratic fluctuation we have underlined, related to some structural change in the world market which has not yet settled down, while models are based on the hypothesis of continuation of the recent pass, not at all adapted to cases of disruption.

Table 59. Errors in forecasting world cotton price (L. Goreux, 2001)

| | Actual price | Average of 14 forecasted prices | Error |
|---|---|---|---|
| Crop year | US cents/pound | US cents/pound | % |
| 1990/91 | 82,9 | 84,7 | 2,2% |
| 1991/92 | 63,1 | 78,3 | 24,1% |
| 1992/93 | 57,7 | 71,1 | 23,3% |
| 1993/94 | 70,6 | 75,1 | 6,4% |
| 1994/95 | 94,2 | 80,6 | -14,4% |
| 1995/96 | 85,9 | 85,5 | -0,5% |
| 1996/97 | 78,6 | 78,1 | -0,6% |
| 1997/98 | 72,2 | 78,0 | 8,1% |
| 1998/99 | 58,9 | 72,2 | 22,5% |
| 1999/00 | 52,8 | 63,9 | 21,0% |
| 2000/01 | 57,0 | 60,5 | 6,2% |

567. It comes out that the issue of forecasting the world price is a very difficult task and consequently, the task of fixing national price through assumption of the future world price is somewhat perilous.

568. The difficulty in forecasting world price was the rationale for some cotton companies in Mozambique in requesting for a total price liberalisation in last May-June, so that they would be in the position of adopting purchase prices at the time of marketing seedcotton and with little uncertainty about the world price. Exchanges with farmers were initiated and the farmers rejected the idea arguing that they are not convinced by price liberalisation owing to the negative experiences they have had with food crops

[45] Goreux, L., 2001. Liberalizing the cotton sector in Mali : some key issues. Consultant report p.

and cashew nut[46]. Farmers remain therefore attached to an administration of the purchase price, this is a structural fact that must be taken into account.

569. Another disadvantage of fixing the internal price in connection to the international price come from the total transfer of the world price fluctuation to the farmers. This is a matter of philosophy that has evolved during the last decades. Till the 1980s, it was accepted that a buffer mechanism should protect the farmers from the world price fluctuation in order not to discourage them by this fluctuation. From the end of the 1980s, the thinking has evolved to the idea that it would be more efficient to connect farmers to the world market so that they would benefit from the price increase and they would re-plan their cotton acreage according to the world price variation. This is the approach being followed in the Francophone African countries from 1990 onwards.

570. **From our view point, some level of stability of the price paid to the farmers is more adapted to their anticipation of the income expected from cotton.**

#### *4.6.4.2. price stabilisation is delicate*

571. Price stabilisation funds have been implemented in order to face the world price fluctuation issue. These funds were either commodity specific or global ones to cover all the agricultural products being exported. The principle of these funds were to feed it when the world price is high and to use the accumulated fund to compensate the decrease of the world price. There are few, if any, stabilisation funds that operate in a sustainable way. Bad management has been a common factor that made the needed fund non available and to lead people losing faith in the scheme. Even if the fund was managed properly and in a transparent way, the fund accumulated was not sufficient to cover the price decline which show themselves to last longer that price growth. For these reasons, there are less and less people advocating for stabilisation fund.

572. We have been told that the AAM has yet thought about launching a mechanism of price stabilisation, we suggest that more information be collected on the experiences of many other countries and to pay special attention to the various modalities of the fund management to ensure conditions of its sustainability.

573. **From our view point, the best way in facing world price fluctuation is to target at productivity gain. The running of a stabilisation fund is rather a passive approach as it has no actual direct impact on productivity gain.**

### *4.6.5. Pricing mechanism becoming confuse*

574. What happened during the 2000/01 campaign is a good illustration of the limitations of a minimum price mechanism.

575. Late in the season, the cotton stakeholders finally agreed upon a price proposal that the MADER amended and the price of MT 2700/kg were officially announced for the first grade of seedcotton, short before the harvest. As usual, this was a minimum price, so that the seedcotton purchasers could apply a higher price.

576. In order to prevent fighting through the price, the cotton companies, concessionaire or not, have decided to agree upon a common price of MT 2850/kg. This agreement was made official in a document signed by all the cotton companies which took part to the

[46] IAM, C. G. d., 2001. Proposta de preço minimo do algodao-caroçao do sector familiar para a presente campanha agricola de 2000/2001. 13/06/2001, 4 pages p.

meeting. This phenomenon shows that the minimum price mechanism is not actually leading the cotton companies into a price competition but to a co-ordination which results in a fixed price.

577. Short after this agreement, one of the cotton companies decided to purchase at a higher price of MT 3100/kg, to which the other companies had to comply with after great dispute and turmoil. This is an illustration of the limitations of the private co-ordination when some players decide not to respect fully their commitments. The change to this new price corresponds to an increase of around 15% relatively to the minimum price. This increase must have led the cotton companies to become more aggressive in obtaining seedcotton and to achieve a higher use ratio of their ginneries capacities. Likely this aggressive approach is expressed through the phenomenon of output deviation that every cotton company complained of, and leading to the climate of confusion and of "war" as we mentioned above.

578. Another effect of the vicissitudes of the private price co-ordination is to disturb the functioning of the farmers groups or associations. There is a principle of remuneration of the service provided by the farmers groups or associations in dealing with the input credit of its members and the marketing of seedcotton. This remuneration could be called, to be short, a payment for marketing. This payment is determined as a price premium to each Kg being marketed by the farmers groups. For the 2000/01 campaign, this premium was fixed to 12% with reference to the actual purchase price. With a minimum price of MT 2700/kg, if this price is actually paid to any farmer of the family sector, the price premium to be paid to farmers in association would have been MT 324/kg and the total payment would have been 2700 + 324 = 3024, while this total payment would be MT 3192 if the purchase price was MT 2850/kg. As finally, the cotton companies have decided to pay MT 3100/kg, most of them (in particular in Nampula province) have considered that the price they were paying was including yet the price premium for the marketing operations.

579. This decision questioned then the principle of the remuneration of the services externalised to the farmers groups. In this sense, it seems that the cotton companies have not been fair. In the other side, since many farmers groups were established in an opportunistic way (see below) and they were not taking charge really of the marketing and credit recovery operations, operations that the cotton companies implemented themselves, it was not so much unfair not paying a service which has not been provided.

580. In short, regulation in the price mechanism through the only announcement of a minimum price appears not to be sufficient. Adjustment by the private operators could conduct to effects out of control and which question processes which were engaged before with positive impacts (like the associative process).

### *4.6.6. Imagining alternatives in price fixing*

581. Emphasis on the price issue is leading people to ignore that the main challenge is productivity gain. Pricing mechanism review should take this objective into account. Owing to the low level of the land productivity in Mozambique, while having in view the increase of the farmers income, one can actually be optimistic in doubling the yield level, while doubling the price appears impossible in the current market situation. Besides, people must accept that "cotton companies and cotton farmers are inter-dependant in their success or their failure, it is essential to achieve an equitable division of proceeds between the two. Over paying the farmers by unrealistic high

minimum price has imposed consecutively excessive losses to the cotton companies which is detrimental for the sector sustainability"[47].

#### *4.6.6.1. Try to improve the price fixing mechanism*

582. There are observers who are advocating possibilities of improving the price fixing mechanism through a better accuracy of the prediction of the world price.

583. An improvement that some observers are contemplating is to use future prices in stead of a spot price like the A index in the pricing mechanism being recalled. This has been considered recently[48] and the Department of Policy Analysis has started examining this possibility and seems to be rather optimist about this solution.

584. Cotton was actually the first commodity to be traded by future contracts, and there were at least 10 cotton future exchanges at the beginning of the 20th century. Today, there is only one major cotton futures contract traded at the New York Board of Trade and which is only appropriate to US cotton and not open to any other origin. The Cotton exchange of Sao Paulo had some ambition by the end of the 1990s but which did not come real. The lack of future exchanges for non-US cotton is well acknowledged, new initiatives could come out to compensate this shortfall, it is pointed out that the World Bank is contemplating the possibility to have cotton be integrated to the commodities addressed by Euronext (the European Trading Alliance), but this would not be expected in the short run.

585. Owing to the fact that the New York Future exchange deals specifically with the US cotton, its relevance to anticipate the future price of the non-US cotton, and in particular the Mozambican cotton, is questionable. Some academic works have pointed out that, although that there was a strong co-movement among Central Asia, West Africa and even Greek cotton prices, US prices moved relatively independently of other prices. This result is assumed to confirm the inadequacy of the New York Cotton Exchange contract for the non-US types of cotton[49].

#### *4.6.6.2. Moving to a two steps payment of the cotton farmers ?*

586. Since the world price cannot be anticipated properly, an alternative way has consisted in implementing a 2-steps payment or 2-price components : one being announced and guaranteed before sowing and the second being added after the cotton lint has been sold. In most of the Francophone African countries, this scheme was launched at the beginning of the 1990s where there was a minimum price being announced (and determined according to a cautious prediction of the A index) to which was integrated an additional price (called "ristourne") in accordance to the benefit obtained when the exportation price was higher than the A index being predicted earlier. In these countries, it was decided to combine the minimum price for the year Y with the additional price obtained by selling the cotton lint obtained during the year Y-1. The advantage of doing so in to implement only one payment and therefore not to take charge of the high transactions costs associated to the payment of the smallholders as we have yet pointed out earlier.

[47] Wandschneider, T. S. and Garrido Mirapeix, J., 1999. Cash cropping in Mozambique : evolution and prospects. Food Security Unit Mozambique, European Union, Maputo, August, 1999, 112 p.
[48] Wandschneider, T. S. and Garrido Mirapeix, J., 1999.
[49] Baffes, J., 2001. Current and future trends in the global cotton market. Communication presented to Conference 'The World Bank Workshop : The road to a regional super power in West and Central Africa', Washington, DC, USA., 14 p.

587. The same philosophy of tackling the world price fluctuation by a 2-steps payment is also followed in Zimbabwe, where 2 cotton companies (Cotco and Cotpro, now merged into only one) have implemented the scheme of paying an interim price at the time of marketing farmers seedcotton, and to proceed an additional payment after the cotton lint selling has been completed. Owing to the fact that farmers are paid by cheque, the transaction costs for the payment operation remains low.

588. The conditions of Mozambique are not suitable for implementing twice the payment to farmers. What was in operation in Francophone African countries could be considered. However, it is noteworthy that during the last campaigns, these countries are moving away from the mechanism being described. The minimum price has been set so high (in other words, the anticipation of the A index was so much optimistic) that the probability of getting an extra benefit to return to the farmers has become lower and the level of such extra-benefit was smaller too. Furthermore, not only that the distribution of an additional payment was no longer real, worse of all that was the endangered financial situation of the cotton companies (although this situation is not to be attributed only to the pricing mechanism since there were also serious mistakes in management). The basic reason of this trend, which we think pitiful, was that farmers, likely advised by some external observers, demanded to be guaranteed of the highest price possible. This attitude opposed itself to the rule of a prudential determination of the minimum which was the basis of the 2-steps price mechanism we have introduced.

589. In short, the alternative mechanism based on 2-steps payment lies on the principle of a prudential anticipation of the A index, which should not be considered as an approach of squeezing again farmers. For being sustainable, the condition is a transparent information about the prices being obtained at the exportation and a clear calculation of the differential with the previously anticipated world price so that every one has an exact view of the existence and of the level of the additional payment.

#### *4.6.6.3. Connecting pricing policy to a productivity promotion process*

590. The 2-step payment mechanism does not impact on productivity gain by itself. The additional price fluctuates from year to year, it could be considered as a kind of windfall gain and therefore it may not be integrated in the way farmers would decide in investing in theirs cotton plots.

591. Through our analysis of the 2-price mechanism in Mali, we have suggested an alternative solution[50] to manage the additional price (after completion of the selling of the cotton lint). The idea was to use part or the totality of the money related to the additional price to feed a fund for intensification promotion. In practical terms, this fund could be targeted at diminishing the costs of the input the farmers buy, so that they get incentive in using more, augmenting then their productivity and production, leading to lower unit costs when there is excess of ginning capacities (the exact case of Mozambique). The calculations being made took into account the yield gain resulting from higher level of input use (fertilizer and insecticides) determined from previous research work[51].

[50] Fok, A. C. M. and Raymond, G., 1995. Organisation locale d'adaptation au maché mondial du coton : le cas du Mali. in Matières premières, marchés mondiaux, déséquilibres, organisation, ed. S. Calabre, Ministère de la Coopération, Economica, Paris. pp. 203-214

[51] Crétenet M., V. M., 1986. Modèle de décision appliqué à l'interaction entre fertilisation minérale et protection phytosanitaire en culture cotonnière. Cot. Fib. Trop. XLI, 2, pp. 89-94.

592. Willingly, we are not using the term of subsidy of input use, since the term of subsidy refers to the idea that public fund is diverted for the cotton sector. The mechanism we have imagined is based on a collective approach from the cotton sector stakeholders, a kind of collective investment that pays back shortly and that helps to move into a virtuous cycle of productivity gain.

593. While dealing with such a intensification fund in connection with the additional price, one should not understand that we are contemplating that farmers should be the only stakeholder to contribute financially. Cotton companies, the State must also contribute, or any other player sharing the objective of reaching a higher productivity or to moving out of the current vicious circle of low productivity getting lower and lower.

594. The management of the intensification promotion fund would not be necessarily easy. Transparency will be the key word for its sustainability. Which input use to promote and how to do exactly needs to be clarified through a collective learning way. One can imagine that such fund will take charge of the policy of production and distribution of technological seeds. Modalities would be simple enough. It will be more complex in the case of insecticides or fertilizers. One can argue also that the promotion principle conducts to have farmers who are producing more to contribute more to the fund. Since these farmers get more money by producing more through higher input use, they are also benefiting more from the fund, so that the economic efficiency and the social equitability are not so much questionable.

595. Could this scheme work in Mozambique is debatable since it lies upon an uncommon philosophy and on a minimum mutual confidence between the cotton sector stakeholders.

## 4.7. Promising associative process hurt by current worrisome outcomes

### *4.7.1. A solid and progressive association creation by CLUSA and other NGOs*

596. A solid and progressive process of creation of the farmers associations has been promoted in Mozambique by Clusa, a federation of agricultural cooperatives in the USA. Clusa started first in the Province of Nampula by the end of 1995, while the extension were operated towards the Zambezia Province in 1999.

597. The associative development promoted by Clusa is based on the following principles :

- free adhesion and open door
- democratic management by members
- autonomy and independence of the associations
- equitable distribution of the benefit by the members
- permanent and functional education, training and information
- cooperation between the associations
- involvement of the associations in the community development

598. In compliance with these principles, services provided by Clusa to associations are as follow :

- training in the area of institutional development
- training in the management of the small businesses
- market information through specific periodic bulletins
- marketing intermediation to help connect producers to merchants and conversely, as well as cotton companies

- functional literacy program
- intermediation to help get access to credit for input provision and product marketing

599. At the date of June 2001, a total of 287 associations has been created, emcompassing around 12 000 members of whom less than 15% are female. Beyond the associations Clusa has been directly involved in their creation, Clusa has assisted several cotton companies in getting involved in the associative process, in particular in Nampula, but also in Cabo Delgado. It is reported that a fruitful connection has been established with the Lomaco-Montepuez in the framework of the implementation of the AFD project.

### *4.7.2. The phenomenon of opportunistic creation of cotton farmers association*

600. As indicated earlier, the transitional measures, and even before that, the strategy for the cotton development which emphasised the role to be played by farmers organisations, have led to accelerate the creation of new farmers associations or groups, bypassing the respect of the basic criteria that should guide such a creation. It is not exaggerated to say that there was a process of creation of opportunistic farmers associations, what the cotton companies called themselves "pirate associations".

601. The phenomenon of bypassing basic criteria in setting up associations is not the only fault of the cotton operators which promoted them. We observe that either in the "strategy for the cotton development" or in the transitional measures, there was no indication of the minimum background that the farmers associations should comply with before being in the position of claiming themselves "autonomous". Most of the people considered that 3-5 years are needed to have an association commanding correctly its internal functioning and the service it is asked to cope with. It is amazing that this minimum condition was no where mentioned in any document. It is not yet too late in classifying the existing associations according to criteria of their background, such as the year of their creation, the tasks being executed…

### *4.7.3. The endangered contractual relationship between associations and cotton purchasers*

**602. We have already dealt with the issue of output deviation, so that a farmer association could sell its output to a cotton company different from the one its has committed it. This situation is questioning the sanctity of the contract and may endanger the principle of contractual relationship between farmers organisations and the other economic operators.**

603. Another behaviour is endangering also this relationship. It pertains to the output deviation from the family sector to the association sector. The consequence is that farmers from the family sector could obtain a better price they have to share with the associations which intermediate. It is hard to assess the extent of this phenomenon, owing to the transportation constraint. There are at least two consequences. One is the input credit recovery with the farmers from the family sector who have deviated their output. The second pertains to the liability of the statistics at the associative level and the family level if the phenomenon is wide spread.

### *4.7.4. Endangered Stability and internal functioning of the associations*

604. The internal functioning and the stability of the associations is endangered by the phenomenon of suspension in the payment of what we call the premium for marketing since this is the only collective financial resource for the associations. Part of this

premium as pointed out above correspond to the remuneration of a service been externalized. When this premium was allocated everywhere, as it is still the case in the Lomaco-Montepuez zone, the premium is split into two parts, one is used to pay a higher price than in the family sector, the other one is to remain as a collective resource which should enable the associations in getting involved in other economic activities or in investing in social welfare. Where the premium for marketing was not actually been paid during the 2000/01 campaign, the associations were out of collective income and their sustainability could be questioned.

605. It is worthwhile to underline that the farmers associations in several Francophone African countries have carried out another source of collective income in the framework of the seedcotton marketing operation. As they are fully in charge of the marketing operations, above all the weighing operations, they willingly allow for the tare a higher value than what is real. By doing so, they are sure that the weight they will obtain at the village level will be smaller than the one obtained at the weighing bridge at the ginnery factory. As they are paid according to this latter weight, there is then a positive differential after the payment of each individual farmer which is then a source of collective fund. In Mali, this source represented a collective income which was as high as the premium for marketing. This is a collective financing mechanism which is rather equitable since the more a farmer produces, the more his production has to be weighed and the more he has to contribute. The increase of collective is essential to allow collective investment, as we said, the first one being a weighing machine…

### *4.7.5. Questioning the philosophy behind the current association process*

606. The process of farmers associations dates back to more than a quarter of century in the Francophone African countries, it started in Mali as a response to a threat to the mutual confidence between the cotton company and the farmers[52]. The process was a marginal one firstly before Mali retained it as a corner stone of its cotton development strategy and before the experience spread over the other francophone countries.

607. Now, these countries have achieved variable degree of the associative process following specific rhythms and specific procedures. In Mali, the farmers national organisation is having its say in the price fixing for many years. It was this organisation which opposed itself to the international pressure for liberalisation, while the Malian government was not strong enough to defend against the liberalisation proposal… In Benin, the national farmers organisation is participating, if not leading, the process of an autonomous management of the cotton sector after the decision of withdrawing the State from direct involvement in the cotton sub-sector. In this country, there has been a process of districtal, provincial and national representations of the farmers associations which is very commendable for it allows a better control of the risk having the national representatives being cut off of their basis, losing ground with the realities of the bush.

608. The associations in this part of Africa were established between an unique cotton company and the cotton villages. This could be regarded as paternalism, a try to keep the villages under the cotton company's dependence. The fact is that this has not prevented the associative process in gaining more and more autonomy and independence. It would be naïve in thinking that the road from the inception of the

[52] Fok, A. C. M. (1993). "Le développement du coton au Mali par analyse des contradictions : Les acteurs et les crises de 1895 à 1993," CIRAD, Montpellier. 237 p

farmers associations to the current level of their responsibilities was a quiet and smooth one. There were crisis, misunderstandings, re-adjustments. A book which has just been published has analysed the complex relationship between the farmers associations in Mali with the cotton company (CMDT) which had contributed in promoting them[53]. In some extent, that was a kind of Freudian relationship with villages willing to becoming more independent but not being sure that this independence would be allocated actually. Villages were conscious of the risk to remain under a dependence link with the cotton company, but in the same time they knew that this company has always complied with its commitment. In other words, they knew that there may be an optimal solution which was not feasible and they accepted to get into a second best one. We believe that in many areas, the optimal solution is misguiding when it cannot be implemented in the right conditions, which the common sense has translated into proverbs[54].

609. Basically the construction of the economic link between the farmers associations and the unique cotton company in Mali was contemplated in a long term perspective in order to consolidate the mutual understanding between the stakeholders. This is a specific feature of philosophy that few people have ever emphasised. To our knowledge, this philosophy has help in achieving outcomes that few other cotton countries have reached.

610. We observe that the philosophy underlying the establishment of the farmers associations is significantly different in Mozambique. Associations are promoted and are trained in dealing economic relationship on an yearly basis, through the prospect of annual contract negotiation. Such a philosophy pushes then the farmers associations in moving from one economic operator to another one, and these operators are not ensured of having long term relationship with a specific association. We think that this process could be detrimental to building long run economic links and to consolidating mutual confidence. This could also work and lead to very successful achievements. So far, the successful achievements has been obtained following a very different philosophy.

### *4.7.6. Associations and partnership*

611. During its stay, the mission has heard many people using words like partners and partnership (parceiria, parceiros). It was the case of some presidents of associations or outside of associations we met in Namialo. Although they complained about some behaviours of the seed cotton purchasing companies (in not paying the 12% of price premium) they insisted in the same time that they were not against these companies. For them, the issue was to be recognised as fully-qualified partners of the cotton sub-sector and as such they must be involved in decision-making.

612. We have heard also people from the cotton companies side using the same word of partnership and expressing how they felt hurt when they are introduced, some newspapers articles, as entities only moved by the idea of exploiting farmers. We have already quoted an external observer who emphasised the inter-dependence of the cotton companies and the farmers.

[53] de France, H. (2001). "Précis d'économie agricole pour le développement. Le primat des logiques paysannes," Karthala, Paris. 321 p

[54] In French : "le mieux est l'ennemi du bien".

613. The issue is now to go beyond the words and to give concrete substance to the target that seems to be common to many stakeholders, because partnership is not just a fact of being decreed. Time has come to comply behaviours with the claim of partnership, behaviours of mutual respect motivated basically by mutual understanding.

614. **Partnership means the joint agreement of the stakeholders to follow the same road for some period, targeting at the same point that all want to reach. Partnership refers to relationship that lasts, with activities which are replicated several times and whose modalities of implementation are open to adjustments for the mutual interest of the stakeholders.**

615. In this sense, the approach of dealing with annual contractual relationship is weak compare to the dealing with a long term partnership. Because basically partnership is the output of collective learning in adjusting modalities of joint activities, partnership is time demanding and the common road to follow is not a straight one. The setback being observed in the associative process does not mean that this process is condemned for ever. The issue is to be able to analysing what was wrong and to adjusting the move.

## 4.8. Prospects for a better valuation of the cotton products

### *4.8.1. The challenge of updating the lint classifying scheme to meet the market demands*

#### *4.8.1.1. An outdated classifying system which benefits to traders ?*

616. The lint quality is measured by various characteristics which deals with the trash content (trash grade), with the colour grade and with more intrinsic features of the cotton lint (the lint length, its resistance, its maturity and fineness measured jointly by the "micronaire"). Nowadays, features which were considered as secondary before have reached crucial importance like lint length uniformity, small content of short fibres…In addition, contamination by organic or inorganic matters has become a criteria that could induce severe price discount. Stickiness by honeydew deposit by sucking pests like aphids have become a great concern since the mid-1980s. This is a feature which is measurable and whose measure has been standardised and there are machineries, manual or automatic ones that are in use to implement this measure.

617. In short, there are now 3 types of lint classifying : the manual and visual one, a conventional one based on stand-alone testing instruments, and a modern one which is based upon the use of an automatic machine called HVI (High Volume Instrument).

Table 60. Technological characteristics and types of lint classifying

| Technological characteristic | Classer | Stand-alone testing instruments | | HVI | Note |
|---|---|---|---|---|---|
| | | Type | Measurement | | |
| Length | staple (+/- SL 2.5 % et UHML) | Fibrograph | SL 2.5 %, SL 50 %, Upper Half Mean Length (UHML), Mean Lenth (ML) | Upper Half Mean Length (UHML), Mean Lenth (ML) | ICC / HVICC Standard |
| Short Fiber Content | - | AFIS | Short Fiber Content (SFC) | Short Fiber Content (SFC) | No international standard |
| Uniformity | - | Fibrograph | Uniformity Ratio (UR), Uniformity Index (UI) | Uniformity Index (UI) | ICC / HVICC Standard |
| Strength | - | Stelometer | T1 | Strength | ICC / HVICC Standard |
| Elongation | - | Stelometer | E1 | Elongation | No international standard |
| Micronaire | - | Fibronaire | Mike | Mike | ICC Standard only |
| Maturity | - | Fineness and maturity tester, AFIS | Mature fibers (PM%), Maturity Ratio (MR) | Maturity Ratio (MR) | No international standard |
| Fineness | - | Fineness and maturity tester, AFIS | Linear (H), Standard (Hs) | - | No international standard |
| Neps | - | AFIS, FCT/FQT | fiber neps, Seed Coat Neps (SCN) | - | No international standard |
| | | Trashcam | Seed Coat Fragments (SCF) | - | No international standard |
| Grade | color, leaf, preparation and extraneous matter | Colorimeter and trashmeter | color (reflectance Rd, yellowness +b, UV), trash (Area, Count) | color (reflectance Rd, yellowness +b, UV), trash (Area, Count) | Universal standard |
| Stickiness | - | Minicard, SCT, H2SD, FCT/FQT | stickiness potential | - | No international standard |

NB : the reliability of the results has still to be checked for the characteristics measured without any standard

618. There is a lint technology laboratory in Maputo that would have enabled a conventional classifying but it is no longer running for a long time. The lint classification in Mozambique is still based on manual and visual methods (the classer method). Only grades differentiated by the trash content and lint length as measured by the manual "pulling" method are considered in this classifying. There is connection with the US standard but not exactly.

619. The American standard is considering 8 grades according to the trash content which are crossed with 5 colour grades[55]. The 8 grades are Good middling, Strict middling, Middling, Strict low middling, Low middling, Strict good ordinary, Good ordinary, Below grade. The 5 colour grades are White, light spotted, spotted, tinged, Yellow stained.

620. In Mozambique, there are only 7 grades with identified correspondence with the American standard (the "inferior" grade deals with lint lower than VI) :

Extra ……Good middling
I ……Strict Good middling
II ……Middling Plus
III ……Middling very light spotted
IV ……Strict low middling light spotted
V ……Strict low middling spotted
VI ……Low middling light tinged

[55] USDA (1993). "The classification of cotton,". 23 p

621. Colour is not fully taken into account while this is a feature that could lead to price differentials. Micronaire is important in assessing jointly the fibre maturity and fineness, it influences in particular the dying process of the yarns or fabrics and it is an information usually requested. The current classifying is therefore incomplete and we can suspect that the lint traders must implement another classifying before re-selling to spinners and obtain premium associated to a better qualified lint to fit to the spinner's expectation. We have heard that this is what is being done by some operators who are trading the Mozambican lint. This is the reason why traders do not favour so much the promotion of the upgrading of local classifying scheme everywhere they are involved.

622. The current situation could explain also that some cotton companies are requesting to classify the cotton lint by themselves, while other companies have split down more grades of their cotton lint which takes into account the colour grades (we have been told that Lomaco is doing so).

623. The current classifying and the associated grid of price premium/discount are also emphasizing a lot the trash content feature which is disregarded by the spinners since clean lint is obtained through cleaning that could be excessive and which leads to violate more the lint. As a consequence, a discounted lint for its trash feature at the stage of the selling to a lint trader could be followed by a price premium when this lint is re-sold by the trader to spinners.

#### *4.8.1.2. An outdated reference to decide on price premium and discount according to grade*

624. The IAM is still referring to the lint length of 1" 1/16 for the correspondence to A index type of cotton lint while this index is referring for more than 20 years to the lint length of 1" 3/32. It is possible that the reference will become 1" 1/8 in a next future. This situation is conducing to artificially over-value the Mozambican lint with reference to the A index for there is actually a price differential between 1" 3/32 and 1" 1/16 cotton lints.

625. This situation of over-valuing is not questionable by itself, as in the same time the emphasis in the trash content is leading to the opposite effect. The issue is that the current non-total full compliance with the A index criteria is introducing some confusion when one claims to refer totally to the A index.

626. Another feature which is currently overlooked is the bale weight. The international standard bale weight is around 220 kg. We have observed that this weight could vary a lot, from around 180 kg to 245 kg. Likely, this variation could be linked to the bad functioning of the pressing machine, even though other reasons could be imagined. With regard to the international transaction, this bale variation is not positive. Complying better with the bale weight standard would help in promoting a favourable image of the Mozambican cotton sector.

#### *4.8.1.3. Challenging issue of modernising the classifying facilities*

627. It seems hard to imagine that Mozambique could remain at the stage of manual and visual classifying while the world is more and more demanding on the lint quality which has become more and more measurable by machineries. Upgrading of the lint classifying system makes sense, the issue is to decide to what extent Mozambique should modernise.

628. A realistic move in terms of investment requirements is to move only to the stage of conventional classifying with stand-alone instruments, but it is also justified to imagine catching up with a more modernised system which is going to become the new international norms.

629. While the international standard of classifying cotton lint (by the International Calibration Cotton Standard Committee) is still largely based on manual machineries dating back to more than half a century ago, new standard rules are being set up taking into account modern and automatic machineries like High Volume Instrument (HVI). These machineries could measure more fibre characteristics that spinners are emphasizing nowadays : for instance, the fibre length uniformity or the content in short lint. Many big cotton producing countries have shifted totally to the modern classifying method : the shift is completed in the USA, Australia, Brazil has got the needed machineries during the mid-1990s, Uzbekistan is moving to this shift in the framework of a World Bank supported project.

630. It seems so obvious that the new classifying standard will soon impose itself seems that UNIDO (United Nations Industry Development Organization) has contemplated , in 1997, setting up a specific web site to help meet demand and offer of cotton lint based on HVI classifying. It decided later on to firstly help some developing countries catching up with the modernisation of their cotton lint classifying. Such a project is being under examination in Burkina Faso to which a Cirad scientist has contributed. We have also warned about the danger of lagging behind in this process of classifying modernisation[56],

631. **modernisation would not necessarily lead to a premium from the market in the long run (while it could be expected in the short run), but not modernising would probably lead to discount when most of the countries have implemented it.**

632. It seems that this concern is being shared by the AAM who has submitted a proposal[57] destined to get external financial support to catch up this process.

633. The process of modernizing the cotton lint classifying is a costly one, in various terms. The automatic machineries, like HVI. are costly. A liable functioning of these machines require drastic environment conditions (temperature, hygrometry,….) which imply civil works in adapting the existing classifying rooms. Specific training is also a pre-requisite to have a proper use of the costly machines. Finally, the shift towards modern and automatic classifying must be gradual, along with maintaining partially the manual classifying, in order to adjust the machine settings and to have the stakeholders be totally convinced of the economic interest of having moved to the modernisation. In short, this is a process that is costly, time consuming and which demands personnel upgrading.

634. In practice, the modernisation of the cotton lint classifying will imply adjustment in the organisation of the transfer of the lint samples to the classifying rooms and in the return of the data. Today, there are 4 classifying rooms located in Nampula, Montepuez, Beira and Maputo which are generally close to the ginning factories. As a consequence, transmission of the lint samples is somewhat local and the classifying results could be returned back to the factory in the same day so that the delay in

[56] Fok, A. C. M., 1999. Coton : il faut se remuer. Marchés Tropicaux et Méditerranéens, No. M6886, juin 1999, pp. 56-62

[57] Associaçao algodoeira de Moçambique Nota conceptual sobre a standardizaçao de classificaçao da fibra de algodao em Moçambique. pp. 4.

labelling properly the cotton bales is very short. Owing to the high cost of the automatic machines, their high debit and their sensitiveness to energy breakdown, a modern classifying scheme will be more centralized which implies new procedures of transmitting the samples and the communication of the results.

#### *4.8.1.4. From a passive to an active mode of promoting a positive label/image for the Mozambican cotton lint*

635. So far, Mozambican cotton lint is having an image that the national stakeholders are not controlling in order to obtain the best possible price. This is a passive attitude to which most of the African countries seem to accept. The fact is that a promotion campaign could be very costly with uncertain effects. This is no longer true with the Internet tool : the cost of the promotion has become very small while the impact could be worldwide.

636. There is rationale to set up a web site to promote the specificities of the Mozambican cotton, for instance in terms of poverty alleviation, of environment friendship, of the lint intrinsic qualities…Beyond setting a web site, the active move will consist of detecting cotton trade connected web sites and to achieve establishing linkages.

637. In addition, affiliation to international cotton organisations like ICAC and/or affiliation to international campaign to defend the cotton share in the textile fibre market will help cotton users better aware of the Mozambican cotton.

638. Construction of an international reputation of one cotton lint pertains to a public good to which every stakeholder would benefit from and should be willing to contribute, not only financially (since the cost will be limited anyway), but by complying to the image a country wants to set up.

639. Finally, there is now an initiative being launched consisting in setting up specific rules of arbitration for the transaction of the African cotton lint, in order not to remain dependent on rules being set in Europe or the USA and which are not totally suited to the African context. This initiative has being launched by the President of the AFCOT (Association Française de l'Industrie cotonnière) who is also President of DAGRIS (the former CFDT).

### *4.8.2. A fatality of exporting only through traders ?*

640. Traders are stakeholders who help meet an offer with a demand. It is their competence to know where the demands are and what kind of products they are seeking for. They can be very useful in enlarging the outlets for a producing country. We assume that the diversification of the destination countries being achieved the last campaigns, in particular Asian countries, has some connection with the installation of the trading company Olam Ltda.

641. Certainly, cotton lint traders have their place in the cotton sub-sector, the issue is to wonder if Mozambique could rely exclusively on traders, being totally disconnected from the end-users of its product. We believe that there may be some room in diversifying the types of customers of the Mozambican cotton lint.

642. By playing an intermediation role, it is quite normal that traders are capturing part of the added value in the exportation of the cotton lint. How equitable is this share is a matter that we cannot analyse. The disadvantage of the intermediation by traders is the risk that any improvement in the quality of the product may be captured as well while the producers are the main authors of such an achievement. This could question the

economic interest of committing oneself in the quality improvement if this improvement is not properly acknowledged, financially, by the traders.

643. Two Cotton companies in Zimbabwe have selected the option of selling exclusively to spinners without passing through traders. How have they manage deserves more attention. This fact is all the more amazing since Zimbabwe is a landlocked country. Indeed, the constraint in dealing with the selling to spinners is that cotton lint should often be sold at CIF basis, because the spinners do not want to have dealing with shipment business in the lint exporting countries. Would Mozambican cotton companies in a position of dealing this specific business correctly is to be analysed.

### *4.8.3. Too late in re-launching the textile industry ?*

644. As it has been recalled in a recent report, Mozambique had a significant network of textile factories pertaining to a wide range of activities[58]. Most of these factories have closed down. During our stay, we have heard about the Texlom close down which is the last spinning industry that disappears. The only light in this dark picture is the running of the Belita garment firm in Beira which has rehabilitated the existing facilities and which is setting up an additional factory in the same town. This firm belong to the Palmar Group from Mauritius island which is willing to get involved in a vertical integration in processing the Mozambican cotton lint in order to take advantage of the Africa Growth Opportunity Act. This Group has submitted a proposal in taking over Textafrica located in Chimoio (Manica) but which did not go through.

645. The collapse of the textile industry in Mozambique pertains to reasons similar to what has happened in Africa except South Africa and Nigeria : illegal and unfair competition from import of second-hand garments and lack of protection from the government[59]. For the special case of Mozambique, a former analysis has pointed out the negative protection the textile industry was suffering and has advocated measures to correct it[60].

646. The current fate of the textile industry is really very disappointing since a historical analysis of the economic development along with cotton development has demonstrated that the promotion of cotton textile industry was crucial[61].

647. **We have heard cotton companies sharing their concern about a re-launch of the local cotton textile industry, may be it is not yet too late to move from declaration of intention to concrete actions.**

### *4.8.4. Some room in promoting the local crushing industry*

648. Lack of information does not allow us to assess in what extent the existing crushing capacities are in compliance with the local cottonseed production. We think however that there is room for augmenting crushing capacities so that more value-added could be obtained from the cotton sub-sector.

[58] "Analisis estrategico da industria textil". 32 p.
[59] Kloboukoff, P., et al. (1995). "La compétitivité de la filière textile en Afrique subsaharienne," Ministère de la Coopération, Paris. 217 p
[60] Anonym, 1995. Mozambique : impediments to industrial sector recovery. p.
[61] Fok, A. C. M. (1997). Etat, production et exportation cotonnières, industrie textile et développement économique. Une histoire économique du coton/Textile dans le monde. Doctorat en Economie, Univ. Montpellier I, Montpellier, France. 827 p.

649. There is some debate about the economic rationality of processing cottonseeds in stead of exporting them to the world market. A recent article has demonstrated that the world market is still a narrow one so that the price will be rather elastic to any significant increase of the offer[62]. Besides, the world market opportunity is mainly opened to producing countries suffering low transportation costs to the ports. From this view point, the development of a local crushing industry makes sense.

650. Arbitration of the price of the cottonseed price is still an issue. Let the market regulate is not necessarily satisfactory as Mozambique is experiencing, since abuse in monopsony power may push to the exportation of the cottonseeds. In the other side, excessive administration of the cottonseed price could penalise the ginners (who usually are the owners of the cottonseeds) or the crushers. This is an issue which will have to be coped with in case of extension of the crushing industry.

# 5. Lessons learned from the implementation of the AFD projects

## 5.1. Lomaco Project

### *5.1.1. Initial objectives of the project (ref. Provisional Evaluation report AFD of June 1993)*

#### *5.1.1.1. General objectives*

651. The objectives were, to contribute to the restarting of the agricultural production thanks to the revival of the cotton growing, and to increase the production of the food crops in the 4 districts of the province of CABO DELGADO controlled by the LOMACO. These areas were strongly touched by the civil war which prevails until 1992.

652. To support desenclosement of the area for a better marketing of the agricultural productions.

653. To develop applied research on cotton growing but also cultivation system in rotation with cotton, and the issues relating to the soil mining and erosion.

654. To contribute to increase the capacity of organizing the producers of the family sector, in order to improve their capacity of defense for their interests.

655. To contribute to the emergence of partnerships between LOMACO and farmer associations.

656. The duration of the project was fixed at 4 years.

#### *5.1.1.2. Detailed objectives of the project*

- ***Extension of the production of cotton***

657. Targeted on the family sector whose growing area would pass from 6800 ha in 1993 to 18000 ha in year 4 of the project. Operated areas in PUPI [63] currently 1217 ha (1993) would pass to 3500 ha and those of the private sector from 150 to 1000 ha.

[62] Fok, A. C. M., 2001. Portée et limites du marché mondial pour les sous-produits du coton en Afrique francophone. OCL 8, 3, pp. 239-245.

[63] PUPI: Pequena Unidade de Produção Intensiva – block in general of 50 ha cleared on which soont gathered approximately 20 to 25 producers.

658. The area exploited in self farming would be lowered and be maintained to 3000 ha

- ***Supporting the food crops production***

659. Diffusion of varieties improved for the essential food crops (sorghum and corn)

660. Introduction and development on farmer's blocks of the inter-row farming system

661. Improvement of the marketing outside of the province for the food crops productions

662. Improvement of the conditions of storage

663. Popularization of the technical topics resulting from research

- ***Prevention against soil mining and erosion in the PUPI***

- ***Rehabilitation and maintenance of 150 km rural feeder roads.***

- ***Training***

664. Intended for two public target : Agents of the LOMACO in charge of the project, farmers and Associations organized around the productive activities.

- ***Applied research which was abandoned since the Eighties***

665. The program must meet the needs for the LOMACO and will be implemented on 5 sites in the zone of the project. The priority topics will be:

- Varieties of cotton,
- Corn: variety and growing standard
- Groundnuts: development of exportable varieties
- Sorghum: development of variety with better outputs and adapted to the taste of the populations
- Knowledge of the cultivation methods, systems and techniques of production of the farmers.

### *5.1.2. Realisations*

#### *5.1.2.1. Localization of the project*

666. The project is located in the province of Cabo Delgado which covers an area of 75.867 Km² and includes approximately 1,3 Million inhabitants (1993). In this province, LOMACO (JVC between the State and the LONRHO Plc) enjoy for a 25 years duration of a zone of influence totaling 30.000 Km², including the districts of Balama, Namunoi, Montepuez and Ancuabe. It also has several thousand of ha which can be exploited in self farming.

#### *5.1.2.2. Population involved*

667. The project was to concern more than 25.000 farmers who will grow cotton. The seedcotton production will be bought by the LOMACO to ensure a monetary income the producers.

#### *5.1.2.3. Institutional package*

668. For the realisation of the project, the LOMACO signed an agreement with INDER (Institute of Rural Development) and a research contract with the CIRAD (French Research Institute)

669. According the LOMACO there was not particular difficulties related to the fulfilment of these contracts.

### *5.1.2.4. The physical realizations*

670. The relisations are shown in the following table:

Table 61. Lomaco project : physical realisations

| | PREVIÇÃO (a) | | | | | REALIZAÇÃO | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Ano Ref 1995/96** | **Ano 1 1996/97** | **Ano 2 1997/98** | **Ano 3 1998/99** | **Ano 4 1999/00** | **Ano Ref 1995/96** | **Ano 1 1996/97** | **Ano 2 1997/98** | **Ano 3 1998/99** | **Ano 4 1999/00** |
| **ALGODÃO** | | | | | | | | | | |
| Producao Directa (ha) | 1 250 | 1 350 | 1 500 | 1 500 | 1 500 | 2 109 | 1 400 | 693 | 721 | 450 |
| PUPI (Ha) | 633 | 650 | 650 | 650 | 650 | 783 | 761 | 813 | 350 | |
| Associaçoes | | | | | | 0 | 0 | 783 | 2 403 | 1 015 |
| Sector familiar | 13 000 | 15 500 | 18 500 | 21 500 | 24 500 | 13 324 | 26 567 | 39 034 | 41 946 | 9 772 |
| TOTAL | 14 883 | 17 500 | 20 650 | 23 650 | 26 650 | 16 216 | 28 728 | 41 323 | 45 420 | 11 237 |
| Area suplementar | | 2 617 | 3 150 | 3 000 | 3 000 | | 12 512 | 12 595 | 4 097 | -34 183 |
| Nr Camponeses | | | | | | | | | | |
| Nr Camponeses PUPI | 422 | 433 | 433 | 433 | 433 | 439 | 297 | 276 | 242 | |
| Associaçoes | | | | | | 0 | 0 | 935 | 1 640 | 1 487 |
| Nr Camponeses Tradicional | 18 571 | 22 143 | 26 429 | 30 714 | 35 433 | 19 996 | 43 758 | 62 212 | 66 765 | 19 066 |
| Nr Camponeses envolvidos | 18 993 | 22 576 | 26 862 | 31 147 | 35 866 | 20 435 | 44 055 | 62 488 | 68 647 | 19 066 |
| Nr Camponeses suplementar | | 3 583 | 4 286 | 4 285 | 4 719 | | 23 620 | 18 433 | 6 159 | -49 581 |
| Rendimento/ha | | | | | | | | | | |
| Producao Directa (Kg/ha) | 1 600 | 1 600 | 1 600 | 1 600 | 1 600 | 1 414 | 1 440 | 1 645 | 1 628 | |
| PUPI (Kg/ha) | 1 400 | 1 500 | 1 500 | 1 500 | 1 500 | 1 147 | 1 269 | 647 | 646 | |
| Associaçoes | | | | | | 0 | 0 | 916 | 842 | |
| Sector familiar (Kg/ha) | 473 | 550 | 650 | 795 | 866 | 578 | 610 | 502 | 585 | 252 |
| **Estrada rehabilitada** | | | | | | 0 | 75 | 235 | 150 | 139 |
| **Tratmentos insecticidas** | | | | | | 2,4 | 2,7 | 3,5 | 3,9 | 3,0 |
| **Produção alg/caroço** | | | | | | | | | | |
| Producao Directa ( T) | 2 000 | 2 160 | 2 400 | 2 400 | 2 400 | 2 983 | 2 016 | 1 140 | 1 174 | 1 087 |
| PUPI (T) | 886 | 975 | 975 | 975 | 975 | 898 | 966 | 526 | 226 | 0 |
| Associaçoes | | | | | | 0 | 0 | 717 | 2 024 | |
| Sector familiar (T) | 6 149 | 8 525 | 12 025 | 17 093 | 21 217 | 7 699 | 16 214 | 19 610 | 24 551 | 2 455 |
| TOTAL (T) | 9 035 | 11 660 | 15 400 | 20 468 | 24 592 | 11 580 | 19 196 | 21 993 | 27 975 | 3 542 |
| prod annual suplementar | | 2 625 | 3 740 | 5 068 | 4 125 | | 7 616 | 2 797 | 5 982 | -24 433 |
| Preço 1° qualidade (MTS corrente) | | | | | | 1500 | 3900 | 33000 | 2 950 | 2 300 |
| Premio | | | | | | | | 295 | 100 | 300 |
| **Taxa de descaroçamento** | | **36,0%** | **36,5%** | **37,0%** | **40,0%** | **34.1** | **37,0%** | **36,5%** | **38,4%** | **37,7%** |
| **PRODUCTION DE FIBRA** | | **4 198** | **5 621** | **7 573** | **9 837** | **3 974** | **7 095** | **8 030** | **7 227** | **1 320** |

(a) CONTRATO INDER/LOMACO

671. One thus notes a reduction in the self farming production and a significant increase in the farmers production: from 1995/96 to 1998/99 the production of seedcotton is multiplied by 2,4.

672. During crop season 98/99, the LOMACO suffered a lack of treasury and delayed the purchase of seedcotton[64]. The seedcotton bought tardily was wasted by the rains and approximately 9000 T were destroyed. This situation durably has affected the farmers confidence for the LOMACO.

673. In 1999/2000 the production broke down because of uncertainties influencing the future of the LOMACO (cf supra), late sowings and attacks of Psylles. Marketing year 2000/2001 should result in a production of 8000 tons seedcotton.

674. During this four years period, the outputs did not increase significantly. That is probably related with the insufficient number of insecticides treatments (3 to 4 instead of 5 recommended) and poor farming standards.

675. The ginning output increased because of the use of more productive news variety (CA 234 in particular)

### *5.1.2.5. Agricultural credit*

676. The agricultural credit was initially consisted of the supply of EC atomizers and insecticide products for the treatments. Currently the tendency is to give also cash advances intended to pay the expenses of labor. The recovering rates of insecticide treatments are as follows:

Table 62. Agricultural credit: Repayment rates

| | 95/96 | 96/97 | 97/98 | 98/99 | 99/00 |
|---|---|---|---|---|---|
| TAXAS DE REEMBOLSADOS | 88,0% | (a) | 94,1% | 99,5% | 77,7% |

(a) não disponivél

### *5.1.2.6. Provison of Extension Service*

Table 63. Extension services : Some figures an ratio

| | 95/96 | 96/97 | 97/98 | 98/99 | 99/00 |
|---|---|---|---|---|---|
| Chefes de area | 7 | 7 | 9 | 10 | 10 |
| Chefes de zona | 21 | 19 | 26 | 28 | 28 |
| Enquadradores | 68 | 96 | 125 | 140 | 96 |
| N° Aldeia | 231 | 303 | 388 | 409 | 381 |
| Productores da rede de extensão da LOMACO | 20 435 | 44 055 | 62 488 | 68 647 | 19 066 |
| Area Sector familiar+PUPI+ Associaçoes | 14 107 | 27 328 | 40 630 | 44 699 | 10 787 |
| Productores/Extensionistas | 301 | 459 | 500 | 490 | 199 |
| Ha/ extensionistas | 207 | 285 | 325 | 319 | 112 |
| N° Aldeia/Extensionista | 3,4 | 3,2 | 3,1 | 2,9 | 4,0 |

677. It is thus noted that the number of extensionist increases by 95/96 to 98/99. The farmer ratio / extensionist increases to reach approximately 500 in 97/98. In 99/00 this ratio decreases because of the events evoked above. The CNA ratio is lower with 206 in 98/99.

678. According estimates of LOMACO (the cost accountancy does not make possible to separate these costs) the direct cost of the extension services arises at 409.000 USD / year.

[64] The disengagement of Lonrho of the LOMACO was decided in 1998. This disengagement was not isolated because Lonrho had decided to be withdrawn from all the agro-industrial companies.

### *5.1.2.7. Promotion of the Associative sector*

679. The Associative development of the cotton producers aimed mainly to put right the weak accesses of the farmers: to the cotton inputs, to the technical advises, to the marketing information on the cotton prices. Another aspect was the deficiency of the basic services like health and education.

680. The creation of association was to make possible to increase the income of its members, to facilitate the technical innovation and the conditions of marketing of the seedcotton and other products.

681. The first associations were created in 1997 in a particularly favorable context of rise of the cotton prices and fall in the insecticides prices. In 1999 the situation becoming less favorable (drop of cotton prices, problems of Psyllose and lack of treasury of the LOMACO) the movement slowed down.

Table 64. Creation of Association

| Campanhas | N° de associaçoes | N° de productores Associados |
|---|---|---|
| 97-98 | 17 | 935 |
| 98-99 | 40 | 1640 |
| 99-2000 | 43 | 1487 |
| 2000-01 | 59 | 2163 |

682. At the origin there did not exist any association formally established in the zone of the LOMACO. The procedure of creation were: first meeting of contact with the future members, drawing up of the statutes, training session on associative operation for the futures members and the leaders. Special training were organized on the financial and social management of an association. Finally the result is the legalization of the Association (which can last several years – cf paragraph xx) and the opening of a bank account.

Table 65. Association characteristics

| AS ASSOCIACÕES DISPONDO DE | | | | |
|---|---|---|---|---|
| | **Sede** | **Estatutos** | **Conta** | **Legalização** |
| **Sim** | 52 | 38 | 25 | 1 |
| **Não** | 7 | 21 | 34 | 58 |

683. This table point out the difficulties to legalize an Association: only 1 association out of 59 is currently legalized.

Table 66. Association: Characteristic of the members

| TIPOS DE ASSOCIACÕES | | | | |
|---|---|---|---|---|
| **TIPOS** | **A** | **B** | **C** | **D** |
| **1** | 0 | 0 | 0 | 1 |
| **2** | 0 | 1 | 0 | 4 |
| **3** | 2 | 4 | 13 | 5 |
| **4** | 4 | 5 | 3 | 0 |
| **5** | 8 | 3 | 3 | 0 |
| **6** | 2 | 1 | 0 | 0 |
| **TOTAL** | **16** | **14** | **19** | **10** |

684. Ability of the members :

- Type A : only the leaders are literate

- Type D : leaders and many members are literate

685. Capacity in management

- Type 1: Association managed as a company with salaried employee
- Type 6 : Association with low competence, the members do not perceive clearly the finality of the association and the internal dialog is low.

686. Role of association: currently the role of an association is to be the interface and facilitator between the LOMACO and the farmers. The association carries out several tasks: inputs redistribution, seedcotton collection and repayments for its members. For this work the association is compensated by a premium of 12% of the basic price of the seedcotton. This premium is then distributed between a collective assignment and a premium paid to its members. Thus a farmer may find it very beneficial to adhere to an association.

687. Some associations brought together members within one piece of land, which allow mechanization and a more elaborate technical standard with the use of herbicides and fertilizers. In fact associations in some cases replaced the PUPI. As one can note in the table hereafter the outputs obtained by the associative sector is better than for the family sector.

Table 67. Comparison between familiar and associative sector cotton yields

**RENDIMENTOS MEDIOS (Kg/ha)**

| | 1998 | 1999 | 2000 |
|---|---|---|---|
| Sector Associativo | 1057 | 809 | 450 |
| Sector Familiar | 502 | 584 | 252 |

688. These associations made it possible to promote complementary economic activity to agriculture through micro projects (23 in 2000). The principal activities are related to the marketing of foodstuffs (millet, sesame, beans and dried manioc), of firewood, fish, drinks, bread etc....

### *5.1.2.8. Formation*

689. The formation concerned the extension service staff, the farmers and the members of associations. The training managed by the LOMACO relates in particular to:

- Technical training: technical standard of cultivating the food crops, cotton, the post harvest conservation, the organization of the cotton markets.
- Formation of associations: associative organization and functioning, production control and marketing, management of the economic activities, functional elimination of illiteracy.

Table 68. Training courses implemented

**FORMAÇÃO : CURSOS REALIZADOS**

| | Ano 1 1996/97 | Ano 2 1997/98 | Ano 3 1998/99 | Ano 4 1999/00 |
|---|---|---|---|---|
| **CURSOS DE FORMAçÃO** | | | | |
| Cursos sobre a extensãos e communicação | 2 | | | |
| Cursos de agrotecnia do algodão | 5 | 5 | 6 | 3 |
| Curso de agrotecnia de culturas alimentares | 1 | | 2 | |
| Curso sobre condução de demonstraçéoes | 1 | | | |
| Formação de inquiridores | | 1 | | |

**FORMAÇÃO : CURSOS REALIZADOS**

| | Ano 1 1996/97 | Ano 2 1997/98 | Ano 3 1998/99 | Ano 4 1999/00 |
|---|---|---|---|---|
| Curso sobre a conservação pos-colheita | 1 | 1 | 1 | 1 |
| Curso de formação de formadores | 1 | 3 | 1 | 5 |
| Curso de formação de productores | 4 | 4 | 6 | 3 |
| Curso de gestão de insumos | | 1 | 1 | 1 |
| Curso sobre identificaçéao de projectos | | 2 | 1 | 1 |
| Formação de animadores de alfabetização | | 1 | 2 | 1 |
| Formação de promotores de grupos/associações | | | 5 | 1 |
| Gestão nas associações - conta de exploração | | 1 | 1 | 1 |
| **TOTAL** | **15** | **19** | **26** | **17** |
| Beneficiarios | | | | |
| Chefes de aréa | | 47 | 1167 | |
| Chefes de zona | | 147 | | |
| Enquadradores | | 606 | | 197 |
| Extensionistas | | 57 | | |
| Rep Associaçoes | | 108 | 442 | 120 |
| Chefes de produção | | 46 | | |
| Promotores de groupos /associaçoes | | 280 | 15 | 49 |
| Animadores de alfabetização | | 11 | 23 | 19 |
| Lider/grupos de mujeres das Associçéoes | | 25 | 162 | |
| Productores | | 1771 | 1840 | 1351 |
| **TOTAL** | **979** | **3098** | **3649** | **1736** |

690. Didactic materials were realized:

- Handbooks on cotton, fights against pests, on marketing and management procedures for the trainers.
- Charts on technical standards for the majority of the food crops in the area,
- Posters and leaflet.

### *5.1.2.9. Research on cotton*

691. Varietal improvement: until now the variety planted in Mozambique is exclusively REMU 40 well adapted to the local conditions but with a lint outturn to low (33% to 36% instead of 40% or more for other varieties). The objective was thus to select a variety resistant to the Jassides, adapted to the local climatic conditions with an higher output in lint and good quality standards. This research followed two ways:

- Purification of the lineage REMU 40 which ended in the creation of pure variety REMU 99
- Testing CIRAD varieties: CA 324 appears well adapted to the local conditions although it has a less pilosity than the REMU 40 (characteristic for a good resistance to the jassides)

692. The LOMACO already started to produce seeds of CA 234 in the self farming area: 400 ha in 1999/2000.

### *5.1.2.10. Research on pests protection*

693. The parasitic pressure in Mozambique is characterized by a chronic infestation of jassides from the very start of the plantation of cotton. Without effective pest protection the outputs can be lower than 300 Kg/ha.

694. The results of the tests undertaken made possible to develop a protocol treatments containing organic-phosphorus against the jassides and of pyrhetroides (piretroide).

The recommended treatments are 4 including one or 2 based on organic-phosphorus according to the pressure of the jassides.

695. The treatment of the seeds also showed that the seedlings had a better resistance during their youth to the jassides.

#### *5.1.2.11. Technical standards (técnicas agricolas)*

696. Some trial had been carried out on the effect of fertilizer on the outputs, effect of the density of plantation on the outputs and practice of non conventional agricultural techniques with sowing on green plant cover. These trials are ongoing.

#### *5.1.2.12. Applied research on food crops*

697. Beforehand investigations were realized with farmers to study the technical practices in force, the farming systems, to collect the local varieties used and the post collection treatments.

698. These tests were:

- Millet: confirmation that the local variety had an identical potential compared to introduced varieties. Tests of improvement made possible to select 2 varieties, early SEMOC and SEMOC 1 enable the farmers to widen to range of varieties.
- Rice: identification of the difficulties of production of rice. Introduction of new varieties IRAT 216, for which the LOMACO started a program of seed multiplication.
- Groundnut (amendoim): the tests really started during the crop season 1999/2000. Tests shown the good potential of the local variety.
- Bean (feijão-boer): this bean belongs to the traditional food crops in Mozambique and in the bordering countries, a regional market is existing. The tests started into 200/2001.
- Post harvest treatments: tests were carried out in order to compare the traditional modes of conservation (pepper and ashes) with chemical treatments. A product was selected (Atellic).

699. **Conclusion on the applied research: at the time of the meetings with the other operators, the interlocutors did not appear to be well informed of what was carried out by the LOMACO. The LOMACO itself was not informed by the results obtained by the CNA**

### *5.1.3. Industrial facilities*

700. These installations include the ginning factory, the power supply installations and the warehouse. The whole as well as the offices and residences of the staff appeared well maintained.

701. Ginning Installation: 4 stands of mark MOSS GORDIN of 120 saws each one, the capacity of the press is of 13 balls per hour (the press is the elements limiting of the capacity). The annual ginning capacity is estimated at 7.500 T of lint, 20.500 tons of seedcotton. The annual average production worked out on 3 years was 5.500 T/Year of lint.

702. Production of electricity: the factory produces its own energy with diesel power generating units: 1 power generator of 750 kVa rather old and sufficient to provide the factory, and a more recent emergency power unit of 300 kVa. This fact is a serious handicap for the ginning cost price. Indeed the self electricity production is much more expensive than the electricity produced by a national supplier.

703. Storage: the warehouse are localized around the factory and have an estimated capacity of 5000 T of seedcotton.

### *5.1.4. Expenditure of project LOMACO Montepuez*

704. The expenditure of the project compared to the forecasts is detailed in the following table. It is noted that there is a remainder of financing which was not mobilized yet:

Table 69. Expenditure of the Lomaco Project

| | TOTAL USD | TOTAL FRF | CUSTOS REALES |
|---|---|---|---|
| **PRODUÇÃO** | | | **USD (a)** |
| Iinvestimento | 392 500 | | 270 520 |
| Despensas de funcionamento | 1 214 240 | | 922 247 |
| TOTAL PRODUCAO | 1 606 740 | 8 837 070 | |
| **LUTTA CONTRA EROSAO** | | | |
| Despensas de funcionamento | 22 275 | 122 513 | |
| **REPARAçAO DE ESTRADAS** | 427 200 | 2 349 600 | 324 672 |
| **Custo de Formação** | | | |
| Formação monitores | | | |
| Investimento | 61 500 | | 169 226 |
| Funciamento | 103 600 | | 448 800 |
| Formação productores | | | |
| Investimento | 112 000 | | |
| Funciamento | 228 100 | | |
| TOTAL FORMAçAO | 505 200 | 2 778 600 | |
| **Custo Investigação aplicada** | | | |
| Investimento | 986 400 | | 108 540 |
| Funciamento | 305 900 | | 1 005 748 |
| TPOTAL INVESTGAçAO | 1 292 300 | 7 107 650 | |
| TOTAL | 3 853 715 | 21 195 433 | 3 249 753 |
| Contengencias fisicas e monetarias | 552 727 | 3 040 000 | |
| Outros aquipamentos | 516 591 | 2 841 250 | |
| TOTAL GERAL | 4 923 033 | 27 076 683 | |
| **PLANO DE FINANCIAMENTO** | | | |
| AFD | 4 000 000 | 22 000 000 | |
| LOMACO | 909 091 | 5 000 000 | |

It would be interesting to work out the subsidy received per farmer or per ton of cotton :
The subsidy per family involved and per ton of seedcotton and cotton lint are the following :

Table 70. LOMACO: Subsidy – Numbers of farmers – Production during the project

| | Ano 1 1996/97 | Ano 2 1997/98 | Ano 3 1998/99 | Ano 4 1999/00 | TOTAL 4 anos |
|---|---|---|---|---|---|
| Total Subsidy in USD | | | | | 3.,249,753 |
| Numero de familias | 44,055 | 62,488 | 68,647 | 19,066 | 48,564/Ano |
| Produção Algodão carroço Projecto (T) | 17,180 | 20,853 | 26,801 | 2,455 | 67,289 T |
| Fibra (T) | | | | | 25,000 T |

Subsidy per family / year : 67 USD
Subsidy per kg seedcotton : 4.8 US cents

Subsidy per kg cotton lint : 13.0 US cents or 6 US cts per pound

Compared to CNA, the Lomaco's farmers received less subsidies per family and per kg of cotton, which were respectively 45 USD / family /year and 28.6 US Cts /kg of seedcotton.

705. That is very little compared to the subsidies received by the US cotton farmers which was 52 US cents / Lbs in 2001[65] ! (1.144 USD/kg).

706. Indeed, the farmers didn't received this amount directly, indeed the subsidy was suppose to fund technical assistance, extension services and applied research.

### *5.1.5. Cost prices of the LOMACO*

707. The calculation of the cost price of the LOMACO Montepuez is a difficult exercise because of the events which marked the crop seasons 98/99 and 2000/2001:

- 1998/99: loss of seedcotton production which was bought, transported then destroyed
- 2000/2001: production of seedcotton too low to make the figures significant.

708. This exercise would have implied to recalculate the whole of the two exercises in order to target the exact contents of some accounts (insecticides, roads maintenance, ginning costs, AFD subsidies) and to identify others items (marketing costs). This is why we retained the costs which were budgeted for 2000/2001 after be sure of the accuracy of the calculation.

Table 71. LOMACO C&F cost price of a kg of lint

| | **MT** | **Fibra US Cents/kg** | **Fibra US cents/.Lb** |
|---|---|---|---|
| Exchange Rate USD / MT | 20 000 | | |
| Seedcotton purchase in MT/kg | 3 100 | 41,9 | 19,0 |
| Cost price in position FOB | | 53,0 | 24,0 |
| Differential of quality according schedule | | 9,1 | 4,1 |
| Freight according schedule | | 22,0 | 10,0 |
| **TOTAL** | | **126,0** | **57,1** |
| Lint output | 37,0% | | |

709. Today the index Cotlook Index A is less than 35 US Cts/Lb!

### *5.1.6. Financial standing of the LOMACO*

710. The LOMACO Montepuez has its own balance-sheet independently of the consolidated activities of LOMACO. The two situations were examined.

711. Accounts LOMACO Montepuez: are consisted with the balance-sheets 98/99 and 99/2000

[65] According "La Tribune des Marchés" 24/10/2001- Commodities rubrique

Table 72. Balance sheet LOMACO Montepuez as at 30/6

In (000) MT

| | 1998/99 | 1999/2000 |
|---|---|---|
| **ASSETS** | | |
| Clear fixed assets | 15 899 457 | 13 493 029 |
| Current assets | 83 278 932 | 64 946 092 |
| Clear treasury | 443 383 | 1 922 985 |
| **ACTIVE TOTAL** | **99 621 772** | **80 362 106** |
| **LIABILITIES** | | |
| Own capital stocks and reserves | 119 997 325 | 98 497 319 |
| Losses of the exercise | -21 848 038 | -21 042 910 |
| Circulating liabilities | 1 472 485 | 2 907 697 |
| **ACTIVE TOTAL** | **99 621 772** | **80 362 106** |
| | | |
| Debt ratio | 0 | 0 |
| Working capital Net | 82 249 830 | 63 961 380 |

712. Though the activity lost money during these 2 exercises, it is noted that the financial standing is quite healthy: no debts, net working capital positive and positive treasury. The current assets are high and made up to 50% of inventories and amounts receivable.

713. LOMACO Balance-sheets: these balance-sheet gathers the whole activities of the LOMACO, cotton (Montepuez, Nametil, Metuchira, Chokwe), concentrated tomato (Chilembene – currently stopped), production of lemon (Umdeluzi), ranching (Meat and milk with Changalane)

714. It is thus not representative of the sector cotton of the LOMACO.

Table 73. Balance sheet LOMACO all activities as at 30/6

Millions MT

| | 1996/97 | 1997/98 | 1998/99 | 1999/00 |
|---|---|---|---|---|
| **ASSETS** | | | | |
| Clear fixed assets | 32 751 | 32 760 | 25 483 | 21 152 |
| Current assets | 144 867 | 166 118 | 86 920 | 96 981 |
| Clear treasury | 0 | | | |
| **ACTIVE TOTAL** | **177 618** | **198 878** | **112 403** | **118 133** |
| **LIABILITIES** | | | | |
| Own capital stocks and reserves | -179 602 | -235 389 | -262 969 | -436 572 |
| Pertes/gain of the exercise | -55 787 | -27 580 | -134 661 | 204 618 |
| Loans long term | 98 600 | 112 524 | 147 610 | 3 776 |
| Circulating liabilities | 246 571 | 294 124 | 302 423 | 286 311 |
| Negative treasury | 67 836 | 55 199 | 60 000 | 60 000 |
| **ACTIVE TOTAL** | **177 618** | **198 878** | **112 403** | **118 133** |
| | | | | |
| Debt ratio | negative | negative | negative | Negative |
| Working capital Net | -169 540 | -183 205 | -275 503 | -249 330 |

715. The situation is very different and very alarming: the net worth is negative, the working capital is negative as well as the treasury. The profit of 1999/2000 corresponds to the written out of debts from Lonrho, DEG and the EIB.

### *5.1.7. Current situation of the LOMACO*

716. In 1998 Lonrho decided to give up its activities in agricultural processing industry and thus in the LOMACO. In September 2001 it resold its shares (51%) with the State.

Currently the LOMACO is sold by " apartment ". Considering its financial standing (cf supra) and its diversified activities that makes sense. 8 operations of divestments of assets are thus in hand:

Table 74. LOMACO sectors divested

| NAME | ACTIVITY | PROVINCE | REPRENEUR PROV. | SITUATION |
|---|---|---|---|---|
| Montepuez | Cotton | Montepuez | DUNAVANT (1) | In activity |
| Namatil | Cotton | Nampula | CANAN | In activity |
| Metuchira | Cotton cotton in control | Sofala | | Arreté |
| Chokwe(2) | Irrigated cotton and machines | Gaza | | Arreté |
| Chilembene | Concentrated tomato | Gaza | | Arreté |
| Umdeluzi | Lemon-yellow plantation | Maputo | MOCIT | In activity |
| Changalane | Ranch milk and meat | | X | In activity |

(1) one of largest the cotton trader in the world – (2) This factory was flooded during the large floods of 1999 and the activity did not start again.

### *5.1.8. Conclusion on the project*

717. This project made it possible to increase the cotton production as well as the number of farmers growing cotton. Teams of technical advisors were trained, 59 associations were created of which some are particularly active. The Applied research carried out by the CIRAD made it possible to select more productive varieties and adapted to the local context. The production and conservation of the food products were stimulated.

718. On the other hand one can note the lack of coordination and exchange of information between the various agro-industrial operators of cotton at the level of the applied research.

719. **For the future it will depend upon the strategy of new taker of Lomaco Montepuez.**

## 5.2. CNA Project

### *5.2.1. Initial objectives of the project*

720. The project implemented by CNA is located in the provinces of Manica and Sofala. These two provinces were particularly marked by the civil war and the rural populations localized in the provinces were strongly destabilized. They migrated to took refuge in the boundaries countries, in particular in Malawi, or the corridor of Beira under the protection of the Zimbabwean army. After the peace agreements, the return of the refugees initially took place timidly, then flow became extensive as peace became reality.

721. The realization of project was entrusted to Compania National Algodoeira (CNA) subsidiary of the Entreposto Group and DAGRIS (Ex CFDT).

#### *5.2.1.1. Area of Intervention*

722. This project proposes the implementation of a resettlement program of the populations, on the cotton zones of Manica and Sofala. The objectives were to ensure thanks to the cotton growing an additional monetary income and to support the development of food crops.

723. This zone is characterized by a dispersion of the rural settlement because of the return of the farmers on their land, and there are very few villages.

724. The zone of intervention includes the provinces of Manica (districts of Manica, Gondola, Sussudengua, Machaze) and Sofala (districts of Chemba, Caia, Maringué, Gorongosa, Bùzi and Chibabava) which covers 16% of the Mozambican territory, is 130.000 Km² (see map). This zone corresponds to the concession of the CNA.

725. The initial contract of concession between the government and CNA was amended on May 18, 1995. According to these amendments the concessions on the provinces of Manica and Sofala are limited to 5 years and renewable by tacit agreement for some 2 years duration. In addition, the CNA has intervened for 2 years in the district of Macossa at the request of the Provincial Direction of Agriculture. The intervention of the CNA was suspended with the agreement of the Mozambican authorities in the districts of Mossurize and Machaze because of the leakage of cotton in Zimbabwe and hostility of NGO.

### *5.2.1.2. The general physical Objectives of the Project [66] were*

- To organize and settle cotton farms
- To promote the intensive farming and the development of cereal cultivation in rotation with cotton.
- To promote and develop the cultivation of cotton
- To guarantee the technical assistance and the methodological support with the project
- To ensure the provisioning of the agricultural inputs for the production of cotton.
- To support the small groups of cotton producers
- To guarantee the supplies of inputs of the smallholders and seedcotton for the ginning factory
- To bring a logistic support to the Directions of Agriculture of the 2 Provinces.

726. The duration of this project was 3 years from 97/98 to 99/2000. The physical objectives were as follows:

Table 75. Physical objectives

| | **Ano 1 1996/97** | **Ano 2 1997/98** | **Ano 3 1998/99** | **Ano 4 1999/00** | **Ano 5 2000/01** |
|---|---|---|---|---|---|
| ALGODÃO | | | | | |
| Numero de familias | 6 200 | 7 800 | 9 300 | 11 200 | 13 200 |
| Areas (ha) | 7 250 | 9 730 | 12 550 | 16 090 | 20 300 |
| Areas / familia (ha) | 1,17 | 1,25 | 1,35 | 1,44 | 1,54 |
| Rendimento (Kg / Ha) | 529 | 628 | 730 | 831 | 933 |
| Produção Agodão carroço (t) | 3 835 | 6 110 | 9 162 | 13 371 | 18 940 |
| | | | | | |
| CULTURAS ALIMENTARES | | | | | |
| Numero de familias | 6 200 | 7 800 | 9 300 | 11 200 | 13 200 |
| Areas / familia (ha) | 2,3 | 2,4 | 2,5 | 2,6 | 2,7 |
| Areas (ha) | 14 260 | 18 720 | 23 250 | 29 120 | 35 640 |
| Milho | 5 720 | 9 350 | 11 650 | 14 550 | 17 800 |
| Mapira | 7 150 | 7 480 | 9 320 | 11 640 | 14 240 |
| Outras culturas | 1 430 | 1 870 | 2 330 | 2 910 | 3 560 |
| | | | | | |
| Rendimentos medios | | | | | |
| Milho | 900 | 1 000 | 1 100 | 1 200 | 1 300 |
| Mapira | 500 | 600 | 700 | 800 | 900 |

[66] cf Contract ETAT/CNA

| | Ano 1 1996/97 | Ano 2 1997/98 | Ano 3 1998/99 | Ano 4 1999/00 | Ano 5 2000/01 |
|---|---|---|---|---|---|
| Produçéao prevista | | | | | |
| Milho | 5 148 | 9 350 | 12 815 | 17 460 | 23 140 |
| Mapira | 3 575 | 4 488 | 6 524 | 9 312 | 12 816 |

727. The total amount of the project was 34 Millions of FRF (5.2 millions EUROS) was financed by AFD, CNA and the farmers (self financing):

AFD 3.6 Million EUROS
CNA 0.7 Million EUROS
Farmers 0.9 Million EUROS

Table 76. Costs and funding of the project

(000) EUROS

| | Custos totais do Projecto | Camponeses | Empresa Alogodeira | AFD |
|---|---|---|---|---|
| Investimentos | 596 | | 120 | 476 |
| Funcionamento | 808 | | 133 | 675 |
| Pessoal permanente | 335 | | 47 | 288 |
| Lavoura | 183 | | | 183 |
| factores de produção | 1 563 | 825 | | 738 |
| Assistencian tecnica | 1 235 | | 387 | 848 |
| Apoio aos Servicios da Agricultura | 183 | | | 183 |
| TOTAL sem os imprevistos | 4 902 | 825 | 688 | 3 390 |
| Imprevistos (5%) | 245 | | | 245 |
| TOTAL sem os imprevistos | 5 148 | 825 | 688 | 3 636 |

Note : The funding breakdown was modified in 1999

### *5.2.2. The realizations*

#### *5.2.2.1. Institutional package*

728. The CNA signed an operator agreement with the Governors of the provinces of Sofala and Manica on June 27, 1997, and DAGRIS signed with the CNA a management contract for technical assistance.

729. The implementation of this agreement had been very difficult to manage due to the implication of two provinces. Theoretically, because of the decentralization each province was supposed to manage by its own the decision concerning its Province;. Indeed all decisions are centralized in Maputo which is the decision –maker. The result was a slowdown of each decision and delays in the funding.

#### *5.2.2.2. Evolution of the main parameters of the project :*

Table 77. Various parameters from 96/97 to 99/00 :

| | Ano 1 1996/97 | Ano 2 1997/98 | Ano 3 1998/99 | Ano 4 1999/00 |
|---|---|---|---|---|
| ALGODÃO | | | | |
| Numero de familias | 7 245 | 9 169 | 13 815 | 14 221 |
| Areas (ha) | 6 461 | 8 416 | 9 972 | 10 273 |
| Areas / familia (ha) | 0,89 | 0,92 | 0,72 | 0,72 |
| Rendimento (Kg / Ha) | 211 | 503 | 677 | 717 |
| Produção Algodão carroço (t) Projecto | 1 365 | 4 234 | 6 426 | 7 364 |
| Produção Algodão carroço (t) Outros | 1 055 | 900 | 930 | 0 |
| Total Produção Algodão caroço (T) | 2 420 | 5 134 | 7 356 | 7 364 |
| Fibra (T) | 924 | 1 860 | 2 672 | 2 506 |
| Rendimento fibra | 38,2% | 36,2% | 36,3% | 34,0% |

730. One notes an increase: in the number of families involved in the project (+195 % in 3 years), in the production, which is multiplied by 5.4 (+540%) in 3 years, in the yields which reach more than 700 Kg/ha in 99/2000; These yields are higher than those met in the Lomaco project under similar conditions.

731. The ginning output of 96/97 (38.5%) corresponds to the Sicala variety which was replaced by the local variety (REMU 40) because of its least resistance to Jassides. This last variety has a lower ginning output than other varieties.

#### *5.2.2.3. Zones of production and collection of cotton*

732. Due to the particular situation of CNA, tt appears useful to indicate the zones of productions. Indeed more than 90% of cotton comes from the districts of Caia (19%), Chemba (19%) and Maringue (52%) localized in the North of the province of Sofala.

Table 78. Distribution of the production of the seedcotton by districts

| Province | District | Production (T) | % |
|---|---|---|---|
| **MANICA** | Gondola | 28 | 0.38% |
| | Macossa | 76 | 1.03% |
| | Manica | 8 | 0.11% |
| | Sussundenga | 72 | 0.98% |
| | **TOTAL** | **184** | **2.50%** |
| **SOFALA** | Buzi | 87 | 1.18% |
| | Caia | 1429 | 19.40% |
| | Chemba | 1404 | 19.06% |
| | Cheringoma | 52 | 0.71% |
| | Chibabava | 17 | 0.23% |
| | Gorongosa | 346 | 4.70% |
| | Maringue | 3828 | 51.97% |
| | Nhamatanda | 19 | 0.26% |
| | **TOTAL** | **7182** | **97.50%** |
| | **SOFALA + MANICA** | **7366** | |

733. The ginning factory being localized in BEIRA, one can estimate that for the marketing years 2000 and 2001 the average mileage of a truck loaded with seedcotton was

respectively 450 km [67] and 300 km. The cost price of transport is currently 14 US cts per kilo of cotton lint (6.4 cts/Lb). This cost is a major element of the cost price of the CNA. Compared to the other ginning factories this price is very high and its an real handicap.

734. It is quite obvious that the problem of the distance of the factory from the areas of production was mentioned by the CNA, but the arguments for a displacement of the factory towards a more central point are financially not convincing:

- In any event it will be necessary to transport in Beira the lint and the seeds (which are sold at the crush mill of Beira). The gain in weight is thus tiny (bags and impurities ).
- New industrial infrastructures will have to be created : buildings, warehouse, housing for the qualified staff.

735. Indeed at the first sight it seem sensible to keep the plant in Beira as far as the production is more balanced in term of distance to the plant.

736. **In the future it would be necessary to plan to rebalance the production in districts closer to Beira.**

### *5.2.2.4. The agricultural credit*

737. The agricultural credit consists of insecticides treatments which are charged by service treatment ( use of the EC atomizer + products) and ploughing services. The credit was subsidized partially. It is necessary to note the diminishing and disappearance in 2000/2001 of the credit ploughings due to the disappearance of the "privados" discouraged by the low cotton prices and their lack of manpower during the harvesting season.

Table 79. CNA Agricultural credit

| | Ano 1 | Ano 2 | Ano 3 | Ano 4 |
|---|---|---|---|---|
| | 1996/97 | 1997/98 | 1998/99 | 1999/00 |
| Taxa de Subvenção | 60% | 50% | 40% | 40% |
| Valor do credito (000) MT | 449 456 | 746 239 | 1 478 343 | 2 035 955 |
| Grau de do reembolso | 80% | 88% | 87% | 96% |

738. It is noted that the refunding rate is better for the LOMACO from 96/97 to 98/99 (higher than 94%) whereas in 99/00 the rate of the CNA is much better (96% against 77.7% for the LOMACO).

739. The management of the agricultural credit is well individualized by farmers and each service is subjected to a debit note. The credit is managed on a data-processing software.

740. It can be noted that CNA recommend 5 insecticide treatments with an phosphor-organic and pyrethoide insecticides mixed. There are no differentiate treatment and, according CNA each farmer growing cotton treat 5 times.

741. For the crop season 2000/2001 CNA maintained a rate of subsidy of 40% for insecticides treatments.

[67] Mileage very high due to the very bad condition of the roads.

### *5.2.2.5. Extension services*

742. The extension service are in charge of the cotton and food crops. If cotton farming in mainly the men's activity food crops are more female activity. This fact must be noted because female should be less receptive than men for technical advice made by men. One solution should be to hire female extensionists for food crops technical advice.

Table 80. Provision of extension service

| | **Ano 1** | **Ano 2** | **Ano 3** | **Ano 4** |
|---|---|---|---|---|
| | **1997/98** | **1998/99** | **1999/00** | **2000/01** |
| Chefe de Zona | 3 | 3 | 3 | 3 |
| Agente | 14 | 16 | 16 | 15 |
| Monitor | 57 | 67 | 67 | 67 |
| **TOTAL PROJECTO** | **74** | **86** | **86** | **85** |
| Numero de productores | 9 169 | 13 815 | 14 221 | 17 124 |
| Area semada | 8 416 | 9 972 | 10 273 | 12 289 |
| Productores/Monitor | 161 | 206 | 212 | 256 |
| Ha/Monitor | 148 | 149 | 153 | 183 |

743. Compared with LOMACO ratio in 98/99 (year more representative than 99/00 for LOMACO) extension service ratio were :

- Farmers / Monitor : 490
- Ha/Monitor : 319

744. Thus the extension services network is tighter than the LOMACO's one: there are more monitors by Ha and farmers at CNA.

### *5.2.2.6. Promotion of the associative sector*

745. Because of the dispersion of the farmers, the CNA did not carry its effort on the creation of associations. Indeed an association need relationship between its members and generally associations are created into the community of a village. In the CNA area the cotton markets - which are not located in villages - are the opportunity to gather farmers coming from a limited area.

### *5.2.2.7. Promotion of cereals in rotating crops with cotton*

746. Since 97/98 the extension and training services work out technical charts intended for the monitors on the main recommendations concerning the farming of millet and sorghum ( mapira).

747. Demonstration fields for these two cultures are set up at a rate of one field per monitor; these fields are localized near a feeder road in order to be easily accessible to the farmers. In 99/00, 66 fields of millet and 47 of sorghum were set up. Tests of chemical weed control on demonstration fields of millet were also set up.

748. Varieties improved of seeds of millet and sorghum were diffused to the farmers. This diffusion was carried out on a credit basis.

749. Protection of the products after harvest: in 1998/99 the project initiated the sale of a product selected for the conservation of harvests (Atellic). This product was sold with a subsidy of 70%.

#### *5.2.2.8. Formation*

750. The various training schemes implemented concerned the farmers, the extensionists and the trainers. The general program was:

- Training the agro-trainers as regards farming techniques for cotton, millet and sorghum
- Publishing a guide for the monitor
- Training the monitors and the farmers on technical standards
- Training the farmers on the dimensioning of their field in order to optimize the distributions of seeds and insecticides products.
- Training the farmers on the recognition of the diseases and pests of the cotton plant.
- Training the farmers on the techniques of insecticides treatment.
- Training the monitors for the individual monitoring of the farmers
- Training for planning the insecticides treatments and the purchases of seedcotton.
- Training the marketing teams, which are composed with a head of brigade, a classifier for the quality of the seedcotton, a weighing agent and a secretary in charge of the data records.

#### *5.2.2.9. Trials on cotton varieties*

751. Currently the variety of cotton popularized in the zones of intervention of the CNA is the REMU 40. This variety well adapted to the local conditions is resistant to the attacks of the Jassides. This variety has a low ginning output however: 33 to 36% compared with the 40% and more for the other varieties.

752. Tests were carried out to compare the REMU 40 to 5 Zimbabweans varieties and Stam 42 variety popularized in Wets Africa by CFDT. The results have concluded that the REMU 40 was technically outmoded, but well adapted to the local conditions. The Zimbabweans varieties get good ginning outputs and produce a lint of good quality with good resistance properties to the jassides (hairs). Stam 42 well known for its good ginning outputs could be possibly diffused on the zones of the CNA, provided that 6 insecticide treatments should be made. These tests currently continue.

753. **It should be noted that** there **is no coordination between the projects implemented by LOMACO and CNA with regard to the applied research. Each project carries out its tests independently of the results of the other project. There is a loss of time, money and competence which will have to be corrected in the future.**

### *5.2.3. Industrial facilities*

754. The ginning factory is installed to 15 km of BEIRA beside an crush cottonseed mill which also belongs to Entreposto Group. The cottonseeds are totally sold to this factory.

755. The unit was built in the Fifties. The ginning is tooled up with 5 operating stands (80 saws each) of MURRAY brand dating from the Fifties. The 5 other stands are not in operation because they have been cannibalized for the maintenance of the 5 stands in operation. The ginning capacity is approximately 3500 T of lint per annum. The limiting factor is the press. The factory is supplied by the electricity of Beira and the storage capacities are higher than 5.000 tons of seedcotton.

### *5.2.4. Actual cost of the projects*

756. It have not be possible to analyze the project costs in their whole because most of the costs are mixed with operation costs and other did not appear in the operating costs as

agricultural credit, because they are repaid by the farmers. Nevertheless they can be analyzed by the AFD funding. The figures are mentioned in the following table :

Table 81. Remaining of funding as at 2000 (000) EUROS

| | AFD Previção | CNA Realisão | Saldo Disponivel |
|---|---|---|---|
| | (a) | | |
| Investimentos | 482 | 265 | 216 |
| Funcionamento | 870 | 470 | 401 |
| Pessoal permanente | 246 | 197 | 49 |
| Lavoura | 85 | 14 | 71 |
| Factores de produção | 427 | 212 | 215 |
| Assistencian tecnica | 847 | 958 | -112 |
| Apoio aos Servicios da Agricultura | 201 | 109 | 92 |
| TOTAL | 3 159 | 2 226 | 932 |
| | 232 | 0 | 232 |
| Diferencia de cambio | 0 | 58 | 58 |
| TOTAL | 3 390 | 2 226 | 1 106 |

(a) the repartition of the funding was modified in 1999

757. One can note that 1,106,000 EUROS are available for 2001 and the following years.

758. It would be interesting to work out the subsidy per farmer or per ton of cotton which are the following :

Table 82. CNA: Subsidy – Numbers of farmers – Production during the project

| | Ano 1 1996/97 | Ano 2 1997/98 | Ano 3 1998/99 | Ano 4 1999/00 | TOTAL 4 anos |
|---|---|---|---|---|---|
| Total Subsidy in USD (estimação) | | | | | 2.000.000 |
| Numero de familias | 7 245 | 9 169 | 13 815 | 14 221 | 11.113 /Ano |
| Produção Algodão carroço Projecto (T) | 1 365 | 4 234 | 6 426 | 7 364 | 19.389 T |
| Fibra (T) | | | | | 7.000 T |

Subsidy per family / year : 180 USD
Subsidy per kg seedcotton : 10.3 US cents
Subsidy per kg cotton lint : 28.6 US cts/kg or 13 US cts per Lb

759. That is very little compared to the subsidies received by the US cotton farmers which was 52 US cents / Lbs in 2001[68] !. Indeed the farmers didn't received this amount directly, the subsidy was allocated to the technical assistance, extension services and to subsidy some agricultural inputs.

[68] According "La Tribune des Marchés" 24/10/2001- Commodities rubrique

### *5.2.5. The CNA price costs (cf details annex xx )*

760. The price costs was worked out by CNA on the basis of the 1999/2000 accounts.

Table 83. CNA C&F cost price of a kg of lint

| | | US Cents/kg | US cents/.Lb |
|---|---|---|---|
| Exchange rate USD / MTS (2001) | 20 000 | | |
| Seedcotton purchase in MTS/kg (2001) | 2 950 | 39.9 | 18.1 |
| FOB Price costs | | 43.8 | 20.0 |
| Quality gap according schedule | | 9.1 | 4.1 |
| Freight according schedule | | 22.0 | 10.0 |
| **TOTAL in US cents** | | **114.8** | **52.2** |
| Lint outturn | 37,0% | | |

761. One of the most important item of the direct price cost is the transport which was 14 US cents/kg of cotton lint in 99/00. It is obvious that CNA must reduce its transportation costs to survive. The maintenance item is particularly low, probably as a consequence of the cannibalization of the 5 idle stands. If CNA decide to modernize its ginning plant, the costs of maintenance and amortization will consequently increase the cost price.

762. In addition, the cost price is probably largely underestimated due to the AFD subsidies. The price cost do not include the technical assistance of DAGRIS which was subsidized by AFD. That means that most of the executive staffs are not included in the price costs.

### *5.2.6. Financial standing of the CNA*

763. The financial statements of the 5 last years are as follows:

Table 84. CNA Balance Sheet as at 31/12

| | 1 996 | 1 997 | 1 998 | 1 999 | 2 000 |
|---|---|---|---|---|---|
| **CREDIT** | | | | | |
| Clear fixed assets | 3 795 | 4 779 | 4 598 | 4 649 | 4 666 |
| Current Financial assets | 8 431 | 12 960 | 7 762 | 19 850 | 23 340 |
| Current matters assets | 11 785 | 5 843 | 15 995 | 22 674 | 24 295 |
| Clear treasury | 800 | 259 | 1 575 | 1 309 | 1 147 |
| **ACTIVE TOTAL** | **24 811** | **23 841** | **29 930** | **48 482** | **53 448** |
| **LIABILITY** | | | | | |
| Own capital stocks and reserves | 13 896 | 13 814 | 6 385 | 4 254 | 2 012 |
| Losses of the exercise | -263 | -7 720 | -1 695 | -4 122 | -3 417 |
| Long term loans | 0 | 0 | 0 | 0 | 0 |
| Circulating liability | 3 631 | 2 307 | 7 417 | 6 358 | 5 004 |
| Negative treasury | 7 547 | 15 440 | 17 823 | 41 992 | 49 849 |
| **ACTIVE TOTAL** | **24 811** | **23 841** | **29 930** | **48 482** | **53 448** |
| | | | | | |
| Debt ratio | 0 | 0 | 0 | 0 | 0 |
| Working capital Net | 9 838 | 1 315 | 92 | -4 517 | -6 071 |

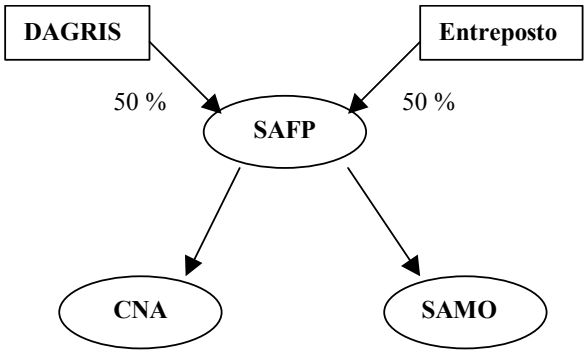
764. It is noted that for 5 years the CNA has been in loss. As at 31/12/2000 the own capital stocks is negative as well as the working capital. The treasury also was always negative during the period, and the bank short term credit did nothing but increase since 1996. As a result, during 2000 the financial charges accounted for 10% of the sales turnover.

765. **The need for financial restructuring is assessed to 50 billion MT (approximately 2.5 million USD) in the form of contribution in own capital stocks and consolidation of short term credit in medium term credit.**

766. This restructuring can be carried out only if the company shows that it is viable (cf price cost) However when the prices of cotton were regarded as satisfactory the CNA was loosing money. This fact is probably due to the low production during the first years of the project.

### *5.2.7. Current situation of CNA*

767. DAGRIS and ENTREPOSTO are shareholders of the CNA via a company holding according the diagram hereafter:




768. At this time the holding company was established, but according our discussion with CNA and AFD, it appear that at this time the DAGRIS share paid-up capital has not been paid in totality.

### *5.2.8. Conclusions*

769. Most of the objectives of the project have been completed. The farmers involved in the cotton farming has significantly increased during the last four years (+100% from 96/97 to 1999/2000), the production too (+450% during the same period), the yield per ha which was around 200 kg in 1996/97 was more than 700 kg in 99/00. It can be noted also that the prevailing situation for the other companies in 99/00 (very poor performances compared to the former crop season) was not the case for CNA which increase its production and the number of farmers involved in cotton growing.

770. The difference between LOMACO and CNA in their ways to develop the cotton production is probably due to the difference of approach of each technical operator, CIRAD and DAGRIS. LOMACO was more directed by research and less for productivity, and DAGRIS due to its background was more cotton production and productivity oriented.

771. For the development of the associative sector, LOMACO, due to the proximity of the region of Nampula and the existence of numerous villages was more concerned by this problem. For CNA the issue was not the same due to its monopoly without other competitors.

772. For the two companies the financial standing is very poor and the need of restructuring is obvious and urgent for both.

773. **For the future, CNA still need support to consolidate its development program. Five ways can be suggested:**

- **To increase the production in order to reach 20.000 tons with 40.000 farmers.**
- **To reduce the costs of transport by balancing the development of the production in districts closer to Beira (Nhamatanda, Gorongosa and Buzi in the SOFALA province and Gondola, Sussudenga in the MANICA province)**
- **To develop the mecanization (culture attelée) of the cotton farming in the Province of Manica where there is already a tradition of mecanization for food crops.**
- **To develop the food crops with female extensionists.**
- **Applied research under the co-ordination of the INIA.**

## 5.3. General conclusion on the projects

### *5.3.1. On the two projects*

774. It can be noted that most of the objectives of the two projects financed by AFD have been reached in term of production, farmers involved, training, associative development despite the local difficulties and the low cotton prices.

775. In 1996 the LOMACO had already negative net worth, and CNA has lost money for five years. It is really astonishing that the two projects could be completed under acceptable conditions for the private operators and the Government.

776. **That proves, once again that, the Financial Backers for Development can and must support and fund this kind of project implying private agro-industrial operators in their field of competence, to promote the rural development. Many examples in Africa and in various fields had proven this fact: rubber (Ivory Coast, Cameroon and Ghana), Oil Palm (Ivory Coast, Ghana, Cameroon) notably.**

### *5.3.2. On their price cost compared to other countries*

#### *5.3.2.1. Self and modern farming*

777. The first observation is that modern farming with mechanization fertilizers, herbicides and other inputs is not currently profitable in the Mozambican context. In addition there is a lack of manpower during the harvesting season. As a consequences most of the cotton self farming system (Buzi, Lomaco, CNA, SODAN …..) and "privados" have stopped their production or reduced their self farming area to the production of selected seeds for the farmers (Lomaco, Sodan).

#### *5.3.2.2. Post-harvesting costs*

778. The comparison of the costs price between some countries is not easy to be realized. Indeed, because of the variety of the operators and the definition of the costs to be charged on the cotton costs price

779. Some operators are state owned companies (Mali, Burkina, Senegal etc….) whereas other are private.

780. Most of the time, the purchase price of the seedcotton is administrated and depend upon the government decision.

781. Some operators with new ginning factories have heavy amortization and financial charges.

782. Fixed costs and subsidies as management cost and state funding have to be clearly defined.

783. Most of the operators are reluctant to show their figures in an atmosphere of reform, privatization, competitiveness .and suspicion between the operators in same country. An example is shown in ICAC "Survey of the Costs of Production of Raw Cotton" where most of the "after harvesting" costs in Africa are missing or are not mentioned: South Africa, Burkina Faso, Cameroon, Mali, Nigeria, Tanzania, Mozambique, Senegal, Togo etc…..

784. We get the costs price of LOMACO and CNA with all details and with the same structure. These prices costs are the following :

# 6. The prospect for new actions

## 6.1. A context of crisis which gives room for positive prospects

785. There is no actual progress without being precede by crisis, this is true for any activity involving human being. In the specific area of economy, there is a close connection between conflict and cooperation. This is what Schumpeter has pointed out at the beginning of the 20th century as it has been recently recalled (H. de France, 2001) Lack of cooperation induces conflict and it is through the identification of common ground for cooperation that conflict could be solved properly, this is what has been observed in the analysis of a century of cotton development in Mali (Fok, 1993).

**786. The confusion situation in Nampula will be solved necessarily, this is a matter of political courage since farmers are asking for the continuation of the cotton production and that private operators have been showing their faith in the cotton business by extending themselves in other provinces. Before solving totally the confused situation in Nampula, it is possible and rather easy in preventing the diffusion of the phenomenon in the other provinces. This is a matter of reassuring private operators who have or who are investing in these areas.**

## 6.2. The method in analyzing the current context and identifying prospects

787. The approach in foreseeing possible actions to implement in the future has followed an analytical method.

788. By analysing the cotton sub-sector in Mozambique, we have identified 12 structural factors which are influencing the performance of the cotton sub-sector as it is revealed in the analysis of the various constraints and assets above. These factors are not going to be modified drastically in the short run and they will influence the outcomes in the future. They are :

- An unfavorable trend of the world market
- Suitable natural conditions for cotton cropping
- operators motivated by the continuation of the cotton sub-sector

- agriculture of smallholdings with limited means
- some attractiveness of the political and economical framework
- a government attached to its regulation role in the cotton sub-sector
- accelerated commitment in the associative process
- absence of a bank for the agricultural development
- lack of input provider network
- insufficient and low level of the extension network
- limited background and resource limited research
- insufficient and bad state of the road network.

789. These factors are responsible of many prevailing situations. Several factors may induce a same prevailing situation, as well as a unique factor may induce several situations that prevail. The relationship between the structural factors and the prevailing is summarized in tables of the annex xx

790. By the same time, along with the prevailing situations, there are phenomena, observed locally or in other African cotton producing countries, which are observed and which could push the prevailing situation into a more negative or a more positive direction. Targeting at better situations in the future would mean to counter-act the phenomena that pushed towards the negative direction or to favor processes that could pull towards a positive direction. The relationship between these phenomena of influence on the prevailing is summarized in the tables of the annex ??

791. Both tables indicated above do not correspond to another vision of the Mozambican cotton sub-sector, they are just summaries of the analysis we have implemented in the chapters 2 and 3. In other words, these tables allowed a synthetic view of the analysis being implemented.

792. The analytical approach has help in identifying possible actions to implement in the future. These actions are categorized according to their impacts on the three final goals which are object of kind of international consensus in the area of rural development : poverty alleviation, international competitiveness and environmental sustainability. The issue of gender and development is integrated generally in the goal of poverty alleviation.

793. Since that the final goals pertain to long term objectives to which should contribute midium-term targets, we have identified the medium term targets related to the possible actions we are suggesting. The relationship between final goal, medium-term target and possible action is reported in the annex xx

794. The prospect of the medium-term targets being identified correspond in practice to real challenges to be addressed by the cotton sub-sector stakeholders of Mozambican. These challenges are not exactly different titles given to the medium term targets, they are actually translation into cotton-specific processes to engage. The relationship between these challenges and the possible actions is reported in the annex ??

795. Finally, there are constraints attached to the possible actions being proposed, some of them are not difficult at to overcome, while others appeal for drastic change in the way of doing things. The annex ?? reports the constraints identified for each possible action.

## 6.3. The principles in identifying possible actions

796. There are principles underneath the actions being identified. They can be summarized as follow :

- Help to promote the public service provision in view of productivity gain
- Secure the institutional context as an incentive to have the private operators investing in their mission
- Help to build capacities destined to take charge of preparing productivity gain in the long run
- Consolidate existing positive actions where they have started
- Promote the extension of positive actions in selected new areas
- proceed to an actual coordination In order to achieve large diffusion of the outcomes
- Proceed through contractual implementation by involving relevant organisms duly re-enforced
- Help to proceed to a more autonomous management of the cotton sub-sector
- Go beyond the idea of self-financing by the cotton sub-sector in order to restrain the actions to what the sector could finance.

797. The identification of the actions was not constrained the limited financial resources that sector stakeholders could take charge off. Since several actions pertain to public service provision and whose impacts go beyond the cotton sector alone, they should not be financed only by the cotton sub-sector and we think that these actions must be pointed out.

## TABLES