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# **Southeastern Center for Forest Economics Research**

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## **Private Sector Economic Potential: Senegal Reforestation Project**

**By**

**Ernst Pfeiffer**

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USAID/SENEGAL REFORESTATION PROJECT 685-0293

Reforestation Project Paper

APPENDIX F i

TECHNICAL ANALYSIS

PRIVATE SECTOR ECONOMIC POTENTIAL

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Technical Analysis  
Private Sector Economic Potential  
by Ernst Pfeiffer

1. INTRODUCTION

One of the principal elements of this project is a massive national tree planting effort to arrest and reverse Senegal's desertification. This is to be coupled with promotion of a wide-spread awareness amongst individual farmers and communities that trees have not only protective qualities but also income-generating potential.

Another annex in the FP shows varied activities of 17 forestry development projects, as part of national and international efforts to check desertification. Yet, past experience has shown that these combined undertakings had only a limited and temporary impact on environmental conditions.

Clearly a different approach was needed. The beginning of change could be signaled in the GOS New Agricultural Policy of 1984. It indicated the intent of a gradual transfer of the traditional government role in business to the private sector.

In line with this approach, a perception will be generated amongst farmers and rural communities that trees are not only protective but also productive, if maintained and cared for. This productivity will benefit and serve many future generations as well.

This wider appreciation of tree potential should motivate farmers and rural groupings to become involved in private sector nursery establishment and seedling distribution. This activity is beginning to develop in various regions of the country.

From this focal point in the private sector will emanate a national ambition and drive to start participating in tree planting and to begin sharing in the protective and remunerative benefits of trees.

## 2. CONSTRAINTS AND OPPORTUNITIES

Existing bottlenecks in production/marketing and future potential for the private sector are detailed in subsequent chapters.

Some of the principal constraints would include such areas as:

- Existing government policies on production and marketing.

Supply quotas, floorprices, subsidies, monopolies and other free-trade restrictions should be eliminated, as the project evolves.

- Limited existence of essential supply surveys and marketing assessments for a more complete range of forest and tree products.

Development of the private sector would greatly benefit from a broadened information base. This effort should include reasonably up-to-date statistics on production, consumption and marketing of all principal tree and forest products.

- Limited research and analysis, preventing adequate identification of financial, human and institutional constraints, supply obstacles, production bottlenecks and marketing structures.

For example, limited time has made this report, of necessity, an introductory and preliminary effort.

Timely corrective actions in these overall areas of constraint, should accelerate remunerative opportunities for the private sector, with specific benefit emphasis on rural communities and individual farmers.

## 5. INSTITUTIONAL FRAMEWORK OF PRIVATE SECTOR PROMOTION

The approach should be twofold as follows:

### a. Domestic market:

To promote private enterprise for domestic production including such activities as:

- Establishment of private nurseries, in support of tree planting
- Contracts to do roadside tree planting and to manage and maintain such plantings, in support of environmental rehabilitation
- Growing, processing and marketing of various tree products and wood products to enhance living standards and nutritional values for the population.

### b. Export market

To promote growing, processing and marketing of various forest and tree products, to help Senegal in a gradual broadening of its export earnings. Included are such products as:

- Cashew nuts in various forms
- Various tree gums
- Fruits and vegetables
- Added-value tree and forest products

- Other tree products with export potential.

The focal point of the first activity would be G.E.S., being Groupement Economique Senegalais.

They are a group of private Senegalese businessmen, with a permanent General Secretary located in Dakar. Currently the Secretary is a Mr. F. NDiaye

Three major executives in the group are Mr. Bamba Sourang, Mr. Djim Keba and Ambassador El Hadj Mbaye Diouf.

Ambassador Diouf and two of his G.E.S. colleagues met recently with the Director of USAID/Dakar and the members of the Project Design Team for general introductory discussions.

Subsequently a visit was paid to Mr. Diouf's small private nursery enterprise in MBao, to experience a demonstration of the basics and the potential of this private business sector.

Mr. Diouf has been a governor in 3 of Senegal's Regions. Subsequently he served the country as Senegal's Ambassador to 3 African nations.

The overall feeling is that contact and coordination through ambassador Diouf could have favorable potential for this activity.

The focal point of the second activity would be the C.S.C.E., being the Centre Senegalais du Commerce Extérieur.

The C.S.C.E. is a semi-private institution, which, inter alia, promotes Senegalese production for overseas export.

The Centre is located at the International Fair Grounds in Dakar. It comprises a General Directorate, a General Secretariate and three operational departments.

The 3 departments present the following coverage:

Commercial information and Training, including:

- Collection and dissemination of trade information, with monthly bulletin distribution in Senegal and principal overseas markets.
- Commercial and statistical data on overseas target markets

- Basic training programs for private sector production and marketing, including 4 seminars yearly on such topics as quality control, basic business administration, elementary accounting and export procedures.
  - Pursuit and promotion of product development with export potential
2. Assistance in trade promotion, including:
- Assistance in products - and trade development for specific small business sectors.
  - General commercial promotion of Senegal's production potential, including arrangements for domestic and overseas publicity, sales promotion and fair participation.
3. Research and planning, including supply surveys, market assessment and other analyses of domestic and overseas market potential.

A introductory meeting was held with the General Director, Mr. Raphael Diouf and the Training Director Mrs. F. Traore.

Interest in principle was expressed for future coordination potential with the project's TA private sector marketing specialist and the TA training specialist.

The above mentioned services would be available, without charge, for various small business groups, pursuing Senegalese production with eventual export potential.

Some short-term local training might have to be eventually considered to two or three employees of CSCE in order to reinforce this capability for promotion of private sector production, marketing and trade potential.

The above described twofold approach is to be coordinated within the DCSR framework, through the two commercial specialists, assigned to private sector development.

One of these DCSR specialist is Division Head of the sector of Forestry Production. The other is Division Head of the department of Forest Management at DCSR.

Training for each of 6 p/m should be provided at appropriate institutions in the following topics:

- Commercial planning and promotion, to include trade channelling, publicity, pricing, packaging, quality control and other means of stimulating the private sector's economic development.
- Development of marketing and trade information, including collection and dissemination of same through establishment and maintenance of commercial data bank.

#### 4. PRIVATE\_SECTOR\_ECONOMIC\_POTENTIAL

##### 4.1. NURSERY\_ESTABLISHMENT

An important earning opportunity for the private sector can be found in the establishment of nurseries.

A significant segment of this business would be directed to the market potential of intercropping needs. This segment holds indirect measurable benefits for farming, in terms of increased crop yields, soil fertilizer and forage supply.

Some of this business would serve windbreak purposes or specific fruit or nut production.

The GOS estimated that a seedling production of 100 million pieces per year is required to replace lost land- and forest cover. The current GOS production is estimated at 7 million seedlings yearly.

The estimated GOS production cost per seedling comes to about CFA 135 each, carrying the recurring costs of government operations. After application of state subsidies, the average GOS selling price to the nursery trade is around CFA 35 each. This operation would entail an estimated annual loss of about CFA 700 million. Usually the complexities of government participation would not permit the market flexibility and low overhead needed for this business.

As GOS will revise its business policies, the private sector would have an excellent opportunity to develop this nursery potential.

It is felt that the most cost-effective method for private nursery establishment would be through a large number of individual farmers, working with a plot of about 3 ha, as close as possible to the intended planting areas. This size of enterprise would not involve much of a financing requirement.

Another private sector earning opportunity for the nursery business could be found with rural communities, village and school groups. It is felt that the community nursery should measure up to a maximum of 15 ha.

It is indicated that by project's end, an estimated intercropping plantings should come to about 94,000 ha.

According to overall estimates about 66,000 ha will involve individual nurseries and about 28,000 ha rural community nurseries. Variable information is available on an indicated survival rate per ha. A conservative indication would be around 600 seedlings per ha.

Based on individual plots of 3 ha, the approximate private sector potential could come to about 22,000 nurseries operated by individual farmers. Based on 15 ha for community plots, the potential could come to approximately 1900 nurseries operated by rural communities.

An estimated private enterprise distribution potential of seedlings for planting could be indicated as:

22,000 x 600 x 3	=	39.6 million seedlings
1,900 x 600 x 15	=	<u>17.1 million seedlings</u>
<u>Total</u>	=	56.7 million seedlings

According to various reports the average open market buying price for seedlings comes to around CFA 15. Reported sales prices run from CFA 35 to CFA 75 depending on species potential. At an average sales price of say CFA 55, the private enterprise would have a potential income of around CFA 2268 million from nursery establishment.

Some more details could be drawn from an existing small nursery, operated by an individual farmer:

- Water is estimated to be one of the large cost factors, at times representing about 80% of direct operating expenses. For an average nursery of around 2 to 3 ha water could cost upto CFA 45,000 monthly.
- Maximum size for individual private nursery should be from 2 to 3 ha, so that the business remains manageable for a private farmer.
- Original seed costs could be kept at a minimum. Seeds are mostly collected from public grounds by experienced field hands at daily wages of around CFA 1500 plus daily supply of food.
- Choice of seedling cultivation should closely respond to popular tree choices and tree uses. E.g. Eucalyptus or Prosobis would sell well, as they are appreciated as farm windbreaks.

- Choice of seedling cultivation also should relate to market demand of potential tree species. F.i. seedlings for *Anacardium Occidentale*, for eventual cashew nut production, would fetch a selling price for the farmer of upto CFA 150 per seedling.

Adjacent to the private individual nursery, a rural community was in operation. It covered 2 ha and 625 trees, principally *Eucalyptus* and *Filao* for eventual intercropping and windbreak purposes.

This particular nursery did not focus on direct production potential of various different tree species. It was however a good example of communal cooperation in promoting the indirect farming benefits of increased soil fertilizing, crop yields and forage supply.

A neighboring GOS nursery covered 3 ha. It included mostly *Filao*, *Prosobis* and a variety of fruit species.

Seed collection has been done through a number of government field hands, finding seeds in public areas or buying specific seedlings at public markets. Some emphasis was put on growing of popular fruit species, with high nutritional value.

A section was maintained for filling of plastic bags. Another crew was installing, servicing and watering the growing beds, each containing from 1600 to 2500 seedlings, depending on species.

A volume of 140,000 plants was reported for the past year. The current crop, started in March 1986, so far produced 68,000 plants. The sale will take place in the course of August with new bed building and seed planting commencing in September 1986.

It was reported that in some GOS nurseries actual selling does not take place. The seedlings and plants are often freely distributed to local individual in some effort to promote eventual reforestation. It is probable that the private enterprise nursery, operated by individual farmers, would likely take also the productive species functions into consideration, in addition to the protective uses.

In a general sense it is felt that individual farmers and community groupings, to be involved in this business, would have the basic knowledge and experience in planting and maintaining seedlings.

It is however recommended that training and TA should be provided in such areas as:

- Production and quality control in order to assure business continuity.
- Regular upgrading of seed selection.
- Effective packaging with understandable instructions in applicable languages.
- Nursery management and maintenance.

- Costing, pricing, publicity and sales promotion.
- Essentials of business administration.
- Periodical dissemination of nursery business information and demand for private enterprise tree planting.

This support could be best achieved through extension services of the CERs, Peace Corps and FVO's.

This effort should be further promoted by periodic rural workshops, organized and conducted through the Peace Corps, FVO's and with the help of Rural Councils and leaders of the private business sector.

#### 4.2. CASHEW NUTS AND APPLES

There is an important private sector opportunity in growing and processing cashew nuts and cashew apples, through the establishment of nurseries and plantations of the *Anacardium Occidentale* species and adjacent facilities for shelling and other processing.

Some private nurseries in different areas of the country are already concentrating on seedling production of this *Anacardium* species, in view of the earning potential involved in this cultivation.

Additionally these efforts would contribute to export earnings, increased employment, learning opportunities for the rural community and the battle against desertification.

Medium-term potential for individual farmers and private traders is found in the production and export marketing of shelled cashew nuts and the domestic sale of cashew apples. The latter activity provides an important nutritional contribution to the rural community.

On longer term, the rural private sector has additional earning opportunities in the added-value production, derivable from the cashew nut and apple, including such marketable products as soaps, syrups, ceiling tiles, oils and lubricants. As markets for cashew nuts remain active and firm, it is likely that added-value production will be deferred for some time to come.

The revenue possibilities of this sector are quite attractive. After a growth of approximately 6 years, collection of nuts and apples could start at an estimated 4 to 6 kilos of both products per tree annually. Harvesting could often continue for periods of 25 years or longer. Such prolonged yield would be stimulated by spacing of at least 10 meters between trees.

It is estimated that about 60 to 85 trees are grown per ha. A potential is indicated of approximately 150 to 200 kilos of cashew nuts and apples per ha annually. Selective seedling imports from various global growing regions, would help improve production through cultivation refinement.

An approximate revenue potential of about us \$4 to \$5 per kilo is indicated in export markets for cashew nuts. The private enterprise possibilities for producing farmers, collectors and traders would clearly be quite substantial.

It is estimated that establishment of approximately 8000 ha in one planting region could be accomplished in a period of about 6 years, through individual farmers and rural communities.

Current indications are that in this size plantations an estimated 2000 farmers could be included in the growing and cultivation of the nuts and apples. A broad basis of rural employment and earning possibilities would be available.

Since the end of 1979 a Senegalese/German cashew development project has been operating.

The name of this project is Projet Anacardier Senegalo-Allemand. Its director is Mr. Abdoulaye Sy and the project's quarters are at Sokone.

Their objectives include.

- The growing of cashew nuts in the region of Fatick and Kaolack through the establishment of plantations of the *Anacardium Occidentale* species.
- Establishment of a facility for shelling of cashew nuts.

- Growing of cashew apples.

In general terms their aims include:

- Improvement of environmental conditions
- Diversification of agricultural production
- Development of rural communities, included in the plantation effort
- Added-value production to include soaps, jams and syrups.

The project has established approximately 9480 ha of plantations, of which about 9200 ha cover plantations by individual farmers and 280 ha collective village plantations.

The approximate area of plantation per farmer is estimated to cover about 4 to 5 ha. All individual plantations are protected against animal intrusion through barbed wire fencing.

No commercial details were released. However it is reported that the cashew nuts, in unshelled form, are traded and exported under a national monopoly through a firm in Kaolack.

A factory in that area will soon be in operation to shell the nuts and do other possible processing work. This will naturally further enhance the commercial value, which is already attractive as reported above. As the existing demand for cashew nuts has remained strong, added-value production of derivatives is not expected in the near future.

Another important segment of this effort is the cultivation of cashew apples, along with the nuts. A strong demand exists in domestic markets. This fruit is known to have an extremely high nutritional value and is therefor widely appreciated and used as baby food.

In line with anticipated revisions of GOS trading policies, it is expected that the above mentioned monopoly arrangements will in due course be eliminated. This freedom of trade would permit individual farmers and community cooperatives to independently go after available business in local and overseas markets. Through this approach a much larger spread of economic return would filter down to the many participants in this sector.

As trading practices will alter, there should be areas of possible cooperation with the above project. An interest in principle was indicated by the management.

The cashew activities on a national basis are still quite limited and of recent beginnings. With strong demand available in domestic and overseas markets, this sector would clearly present attractive potential for private enterprise. This should be without price restrictions or quota limits.

It is therefore recommended that a feasibility study be undertaken to establish the potential of private enterprise, in growing, processing and marketing cashew nuts and cashew apples, through establishment of plantations of the *Anacardium Occidentale* species.

Subsequent 10 p/m short-term assistance should include supply surveys and market assessment by a private sector product development and marketing specialist.

This person should also accompany 2 overseas market orientation tours by 3 prominent Senegal producers to target markets in Europe and the U.S.A.

This person should conduct subsequent marketing dissemination seminars in Dakar soon after completion of each of the market orientation tours.

#### 4.3. GUM ARABIC AND GUM MBEFF

Gum Arabic is a dry gummy substance derived from the Vereck tree (*Acacia Senegal*). The gum is produced by tapping or cutting into the tree bark, allowing the gum to ooze out and collect in drops. The drops are harvested, after they harden. In subsequent refining, wood particles are eliminated and the material is shipped in jute bags mostly to overseas markets.

Gum Arabic has been commercialized for over 2000 years and still provides a network of producers, collectors and traders with an attractive income. It is widely used in the production of adhesives, pharmaceuticals,

textiles and other products. So far this gum remains in demand for its unique and specific properties, irreplaceable by other material.

Special care has always been given by the farmers to protect and cultivate this tree due to its multiple productivity. It is mainly used as an income source from the gum cash crops.

But this leguminous species also contributes to soil productivity and reduces fertilizing costs. It provides live-stock forage and wood for construction, tools and fencing. It is likewise suitable for windbreak planting.

The original natural stands of Acacia Senegal have been largely replaced by plantations, concentrated in the northern part of Senegal. The regular regrowth of the Vereck tree has been reduced over the last several years. Contributing factors include rain shortage, over-tapping, abandonment of fallowing practices and pressing needs for cash-crop returns.

As a consequence the Gum Arabic crop has been considerably reduced. Available information indicates a drop in Gum Arabic production of about 83% over the last 3 years to a value of CFA 610.000.

To a good extent the gum supply has been supplemented by tapping of the Sterculia Setigera species from natural resources mainly in South East Senegal.

The gum Mbepp production from this species is indicated as having increased by about 139% over the last 3 years to a value of about CFA 20,701,000. It is well accepted in world markets and overseas demand is extremely active.

Connected with this supply development is a series of constraining government policies, setting minimum prices for gum and allocating fixed annual quotas for the respective producing areas. A recent floor price is indicated as CFA 195 per kilo.

Selling prices in export markets fluctuate widely and are currently in the range of CFA 200 to CFA 350 per kilo.

On the reported 1964 gum production of about 1.2 million kilos, an annual volume of approximately CFA 300 million would be attainable for Senegal under current conditions.

The government restrictions on production and its pricing policies have reportedly contributed to accumulations of gum supplies in local markets. Current artificial cost would often prevent competitive participation in port markets. Substantial export potential thus seems to be lost to competing African and Asian suppliers.

If such restrictive price and production policies should be abandoned by GOS. As recurring government costs will be eliminated in this sector, private enterprise would automatically become more competitive.

The increased volume and returns would benefit all participants in this sector, including producing farmers, collectors, refiners and traders. Private enterprise would be able to directly pursue available business in world outlets at free market prices.

A number of effort have been undertaken to restock the Vereck plantations in the Northern part of the country, with variable outcome.

In this connection a Senegalese-West German project should be mentioned, which started in 1975 in Saint-Louis, the old colonial capital in Northern Senegal. Its objectives are to become a model of environmental protection.

Various approaches of tree planting were tried out. During the first 4 years of work, only public planting was pursued, without any participation of individual farmers or rural community groups. This involved principally a protective reforestation effort, rather than a pursuit of a directly or indirectly productive tree planting campaign.

In the earlier stages of the project individual farmers and rural communities were not involved in the plantings.

Later on farmers and rural groups were gradually involved in ownership of the trees and the productive benefits. They began to share in the land maintenance cost and eventually they were given options to choose the type of species to be planted. For many years their species choice was the gum producing vereck tree (Acacia Senegal), which covered the majority of the plantation surface of about 12.000 ha.

A number of factors has still limited the Gum Arabic production of this Acacia species. No commercial information could be obtained. But it was reported that over-tapping of the tree and decreasing fallowing practices reduced crop production. Also lack of sufficient rain was cited as a factor.

Substantial and constant export earnings from freely marketing Gum Arabic are available to Senegal. Furthermore an eventual restocking of the stands would increase local employment, raise rural incomes and return the other benefits of this Acacia species to the region.

It is therefore recommended that a feasibility study is undertaken to establish private sector potential in cultivation of the Gum Arabic crop and other benefits from the Vereck tree, through establishment of Acacia Senegal plantations in suitable environmental areas. This study should include a survey of high-production trees and related propagation aspects.

Likewise it is recommended that a supply survey and market assessment are carried out to identify and promote private sector potential in Gum Mbepp production and marketing, related to the Sterculia Setigera species, located in the Eastern and South-Eastern areas of the country.

Subsequent 10 p/m short-term assistance should include supply surveys and market assessment by a private sector product development and marketing specialist.

This person should also accompany 2 overseas market orientation tours by 3 prominent Senegal producers to target markets in Europe and the U.S.A.

This person should conduct subsequent marketing dissemination seminars in Dakar soon after completion of each of the market orientation tours.

#### 4.4. LUMBER AND MACHINED WOOD PRODUCTS

The forest resources are mainly concentrated in the Casamance region and cover approximately 463,600 ha of classified forests under management of the Water and Forest Service.

There are six principal saw mills in operation. All work with band saws and have equipment for ripping, cross-cutting and end-trimming. The standard conveyance system is obsolete without live rollers slowing the production process. No equipment has yet been installed for kiln drying.

So far the production is limited to random boards, squares and railroad ties. No secondary wood working is undertaken, which leaves out the potential of moldings, furniture parts and other machined wood products for elementary housing needs.

Land degradation, forest fires and inadequate management by the Forest Department have contributed to a limited and uncertain log supply to the mills. Consequently their installed capacity stands under-utilized at around 46%.

Log availability is likewise constrained by a GOS quota supply system, instituted by the Forestry Department in an effort of resource protection. Annual quotas are set for 8 different species, allocated in fixed quantities to the mills, regardless of their needs.

Quotas are also allocated to a number of forestry cooperatives. They represent middle men in the supply chain, exercising a significant control over log distribution through political leverage, often a costly obstacle to a free supply flow.

Under such supply conditions and with an erratic mixture of logs, the current mill's output comes to about 10,100m<sup>3</sup> annually. The estimated recovery rate is around 51%, leaving unused some good volume of recovery material, cut-offs and other marketable waste products. Annual private sector income is estimated at CFA 115 million. Obviously this could be considerably higher with adequate log supply and elementary upgrading and addition of equipment, such as sanders, glue-equipment and kilns.

These limitations and constraints have not encouraged a needed updating of machinery, the installation of kilns and the expansion of the product range. At this stage investment attraction has remained limited.

As is anticipated, GOS business policies should be revised, as the project evolves. The private rural sector should become integrated in the management and utilization of the forest resources. Private initiative should be free to manage and regenerate the resources in accordance with the needs for protection, food supply, forage needs and wood production.

Reasonably managed plantations of Gmelina and a Teak species would have a future potential of supporting private enterprise saw milling with an additional input of about 29.000 m<sup>3</sup>. Some consideration is also given to future Eucalyptus plantations with an approximated yield of 18,000 to 20,000 m<sup>3</sup>. This combined plantation supply would have the potential of covering the wood products needs, which Senegal currently has to import mainly from the Ivory Coast.

With an adequate log-supply, full use of installed capacity and an improved recovery rate of around 75%, the mill output would be around 45,000 m<sup>3</sup> of wood products, with an income potential for the private sector of around CFA 246 million. This output would approach covering the basic needs for lumber and building material in the country.

Recommendations for medium to long term resource protection and improvement of production facilities would include:

- A gradual ban on cutting of primary redwood species, including e.g. cailcedrat trees.
- An increased utilization of secondary species, including Linge, Tomboise, Santan, etc.

- Promotional efforts by the mills to have these secondary species accepted by rural and urban consumer markets.
- A more flexible log supply, providing a fuller utilization of installed mill capacity representing an estimated additional output of 12.000 m<sup>3</sup> of home construction materials annually.
- Improved log utilization to reduce log extraction and increase mill's output of primary and secondary wood products.
- An expansion of the products-range through utilization of recovery material and waste, representing a potential output increase of about 5700 m<sup>3</sup> of construction material annually. This should include briquetting of saw mill waste as contribution to fuelwood needs.
- Essential equipment upgrading contributing to protective management of the resource base, coupled with maximum waste elimination and optimal use of raw material.

As GOS will transfer its traditional role in business to private enterprise, the incentives should be created to restore adequate supply to this sector and develop standards for protection, management and regeneration of the forest resources. Adequate functioning of this sector should produce substantial import reductions, income opportunities and employment to the surrounding rural communities.

It is therefore recommended that an in-depth survey be made of the potential of the wood processing sector, including identification of the financial, human and institutional constraints, the supply obstacles, production bottle necks and available markets.

A subsequent 6 p/m short-term technical assistance should be provided through a product development and private sector marketing specialist.

#### 4.5. ADDED-VALUE TREE AND FOREST PRODUCTS

Opportunities for private sector earnings would be available for individual farmers, rural communities and trading enterprises, in the development of added-value production from the supply of fruits, nuts and other tree products.

An abundant supply of most of such products is available in the rural areas, often at very little expense. Private enterprise should play a major role in organizing this income source and have the nation benefit from a supply, which is currently utilized in a very limited way.

There should be attractive marketing potential locally and overseas for such processed products as dried figs, pitted dates, mango jelly, various jams, etc.

Other secondary products, marketable through a wide spectrum of the private sector, should include soaps, oils, lubricants, ceiling tiles and papers, derivable from various nuts, including cashews.

Although a private sector opportunity would be clearly available in his production and marketing efforts, very limited activity and experience as so far been developed in this potential business endeavor. Some of the above-mentioned production is still included in the nation's imports.

There is a broad earning and employment potential in this sector and a wide range of rural participants stands to benefit from this private undertaking.

An initial feasibility study is recommended to identify private sector potential in this area.

Subsequent 10 p/m short-term assistance should include supply and market assessment by a private sector product development and marketing specialist.

This specialist should also accompany 2 overseas market orientation tours by 3 prominent Senegalese producers to target market in Europe and the U.S.A. Furthermore this person should conduct subsequent marketing dissemination seminars in Dakar soon after completion of each of the market orientation tours.

#### 4.6 CONTRACTS TO DO ROADSIDE TREE PLANNING

In the overall promotion of business transfer from GOS to the private sector, individuals and rural communities will find an earning opportunity in undertaking planting contracts for trees along roadsides and in other public areas.

Such contracts would include maintenance and management of these windbreak plantings

Current DSCR planning reportedly includes roadside tree planting in regions amounting to an estimated 277 km.

By project's end it is indicated that approximately 400 km of windbreaks should be planted.

It is estimated that individual nursery entrepreneurs and rural communities will have planted and will manage approximately 240 to 300 km of roadside windbreaks out of this restoration effort.

Current DSCR schedules would indicate an average of approximately 20 km of roadside planting in each of 5 pertinent regions.

On an estimated initial average of about 3 km road assignments to private enterprise, this planting sector has the potential of about 100 to 130 planting and maintenance contracts of variable values.

On an estimated daily wage of CFA 1750 for 300 working days an average group of 10 planters would generate approximately CFA 5.25 million in earnings per contract, benefitting the private rural sector.

For the estimated roadside planting projection, this could potentially produce private sector income and wages in the vicinity of CFA 503.8 million.

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ANNEX I  
PROPOSED ESTIMATED BUDGET  
PRIVATE SECTOR DEVELOPMENT

1)	LT. TA. PRIVATE SECTOR MARKETING AND PRODUCT DEVELOPMENT 6 YEARS X \$170,000		\$1,020,000
2)	CASHEW NUTS: FEASIBILITY STUDY:	\$60,000	
	ST. TA. SUPPLY SURVEY AND MARKET ASSESSMENT, INCLUDING 2 MARKET ORIENTATION TOURS TO USA AND EUROPE WITH SENEGALESE PARTICIPATION AND 2 SUBSEQUENT DISSEMINATION SEMINARS IN DAKAR. 10 P/M X 15,000	\$150,000	
	3 SENEGALESE ON 2 MARKET ORIENTATION TOURS: 2 TOURS X 3 PERSONS X \$3000 AIRFARE	\$18,000 \$15,000	
		TOTAL	\$243,000
3)	TREE GUMS, SAME AS PRECEDING		\$243,000
4)	ADDED-VALUE TREE AND FOREST PRODUCTS, SAME AS PRECEDING		\$243,000
5)	WOOD PRODUCTS DEVELOPMENT SURVEY	\$60,000	
	ST. TA. PRODUCTS PROCESSING AND MARKET DEVELOPMENT 6 P/M X \$15,000	\$90,000	\$150,000
6)	ST. TRAINING 2 PERSONS COMMERCIAL SECTION OF DCSR 6 P/M EACH 6 X 2 X \$3500 AIRFARE	\$42,000 \$3,000	\$45,000
		TOTAL	\$1,944,000

## ANNEX II

WOOD PRODUCTS, EXCLUDING PAPER AND PAPER PRODUCTS

<u>Saw and Veneer logs</u>	<u>Quantity 1000m<sup>3</sup></u>		<u>Value 1000 US\$</u>
	<u>1982</u>	<u>1983</u>	<u>1983</u>
Production	20	20	20
Import quantity	34	29	29
Import value	3700	3200	3200
Consumption	54	49	49
<u>Other logs</u>			
Production	493	506	519
Consumption	493	506	519
<u>Lumber</u>			
Production	11	11	11
Imports quantity	13	10	10
Imports value	3350	2500	2500
Consumption	24	21	21
<u>Plywood</u>			
Imported quantity	5	5	5
Imported value	2800	2800	2800
Consumption	5	5	5

ANNEX III

PRODUCTION OF FORESTRY SECTOR

Année	Gomme Arabique		Gomme Mbepp		Tamarin		Huile de Palme	
	Quantité*	Valeur CFA	Quantité	Valeur CFA	Quantité	Valeur CFA	Quantité	Valeur CFA
1982	693 124	3 465 620	451 745	9 034 900	87 565	875 650	716 076	10 741 140
1983	233 436	1 167 180	384 620	7 690 900	192 389	1 923 890	843 242	12 048 630
1984	122 002	610 010	1 035 076	20 701 530	104 075	1 040 750	944 091	14 161 365

\* Quantités en kg

	Palmiste		Madd		Ditakh		Pain de Singe	
	Quantité	Valeur CFA	Quantité	Valeur CFA	Quantité	Valeur CFA	Quantité	Valeur CFA
1982	2 959 013	29 590 130	24 055	240 550	399 282	3 992 820	390 945	3 909 450
1983	3 550 499	35 504 990	878 027	8 780 270	543 849	5 438 490	1 265 294	12 652 940
1984	2 361 079	23 610 790	1 220 009	12 200 090	752 599	7 525 990	1 939 830	19 398 300

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## ANNEX V

In-country travel has included field trips to:

- Projet Allemand-Senegalais d'Anacardier in Sokone and surrounding areas.  
(Cashew nuts and cashew apples production)
- Casamance Region. Trip with the Regional Inspector of the Ministry of Waters and Forests to various plantations, mills and forestry projects in Ziguinchor, Tabor, Bignona and Kolda.
- Projet Senegalais-Allemand pour le Reboisement in Saint Louis and surrounding areas. (Gum Arabic production)
- MBAO for visit to various nurseries, operated respectively by the government, by a rural community and by an individual farmer.  
(Cultivation of seedlings and plants for intercropping, windbreaks, roadside use and fruit/nut production.

## ANNEX IV

EXPORTATIONS DE QUELQUES PRODUITS SENEGALAIS

Valeurs en francs CFA; Quantités en kg

ANNEES	1981		1982		1983		1984	
	Valeurs	Quantités	Valeurs	Quantités	Valeurs	Quantités	Valeurs	Quantités
café arabique dure du Ferlo	75 655 444	252 303					11 060 600	18 319
café arabique friable	-	-					155 000	175
noix d'anacarde	23 826 900	170 089					72 178 100	231 200
bananes fraîches	6 347 510	32 970					122 357 300	1 244 577
avocats	6 316 565	13 374					6 290 900	40 830
langues greffées	7 463 050	156 188					26 695 900	218 975
langues non greffées	4 153 500	131 440					6 948 800	16 089
bananes	493 000	8 658					12 421 000	101 498
noix de coco non rapées	55 075	445					2 267 000	10 208
autres fruits tropicaux	65 181 666	1 170 120					257 610 000	2 975 960

Source: Statistiques douanières, Direction de la Statistique

STATISTICS FOR 1982 AND 1983 ARE CURRENTLY UNAVAILABLE AS THE PERTINENT FILES COULD NOT BE LOCATED.

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