Albania

Supply, Distribution, and Marketing of Fertilizer and Other Key Agricultural Inputs

Prepared by

W. Edward Clayton
IFDC Transportation-Distribution Specialist

and

Dean Alter
USAID Agri-Business Specialist

International Fertilizer Development Center (IFDC)
P.O. Box 2040, Muscle Shoals, Alabama 35662

Albania

Supply, Distribution, and Marketing of Fertilizer and Other Key Agricultural Inputs

Report by International Fertilizer Development Center (IFDC)

in Support of

the USAID Agricultural Input Design Team

October 28, 1991

Report prepared under Grant No. MD 1182543 from the United States Agency for International Development (USAID) to the International Fertilizer Development Center (IFDC) under the terms and conditions outlined in the grant letter dated September 18, 1991.

USAID Design Team for the Development of an Agricultural Support Program for Albania

Team Members

Mr. J. A. Becker	Agricultural Development Officer, USAID, Team Leader
Mr. G. Hazel	Project Development Officer, USAID
Mr. Dean Alter	Agribusiness Specialist, USAID
Dr. W. Edward Clayton	Transportation-Distribution Specialist, IFDC

Associated with:

Mr. Carl C. Mabbs-Zeno	Regional and Policy Information Section Leader, Economic Research Service, USDA
Dr. Vivan M. Jennings	Deputy Administrator, Extension Service, Agriculture Programs, USDA

The team visited Albania from September 30 to October 17, 1991.

Appreciation is expressed for the considerable assistance and support given to the team by the Minister of Agriculture, Dr. Nexhmedin Dumani and his staff, by the Ministry of Minerals and Energy Resources, by the Ministry of Transport, and others in Albania.

Table of Contents

Currency

US $1 = 25 Leks

Supply, Distribution, and Marketing of Fertilizer and Other Key Agricultural Inputs

1. Supply and Distribution of Key Agricultural Inputs in Albania

1.1 Background

Following the breakup of the cooperative farms in Albania about a year ago and the redistribution of the land to the farmers, the totally planned system for supply of agri-inputs to the state farms and cooperatives is no longer operating. This has hit especially hard in the case of fertilizers which are produced in-country and which were previously moved regularly through the system under the "Plan," more or less as produced, directly to the state farms and cooperatives where they were stored until required. The state farms are generally located in the vicinity of the main towns and were intended to supply the principal food requirements of those towns.

In the case of other agricultural inputs, there is a government agricultural inputs supply agency, Directory Furnizimi Bujgesör (DFB), which still exists and will be discussed in more detail later. DFB has its headquarters in the main port of Durrës and has offices in all 26 districts, together with warehouses used for all products except fertilizers. DFB was responsible for arranging supply of the full range of inputs, including domestic and imported fertilizers (although only a few thousand tons of potash fertilizers were imported each year).

It will then be recognized that the key difference in the case of fertilizers as compared to other inputs is that fertilizer moved physically through the system without use of any of the DFB facilities in the districts, using only the state railways and the state operated truck mechanization centers in each district for direct delivery to the state farms and cooperatives.

With the elimination of the cooperatives and their management structure, the major "customer" no longer exists. With the demise of the "Plan" there is no longer any administrative mechanism for supplying fertilizer to the farmers, although small quantities are still moving to some state farms under some form of contractual arrangement. There is, therefore, an almost total lack of fertilizer available to the ex-cooperative, now small farmers, throughout the country. Both the nitrogen and phosphate factories are closed down because of nonlifting of the finished fertilizers. No private transport, storage, distribution, or marketing facilities exist, so re-establishment of a fertilizer supply system is clearly the number one priority in the agricultural inputs system.

However, once the fertilizer system is addressed the other agricultural inputs will become critical and their situation should, therefore, be addressed in parallel with the fertilizer activity.

1.2 Agricultural Inputs Supply

Key agricultural inputs in Albania in addition to fertilizer include seeds, inoculum, pesticides, farm mechanization, feed, and irrigation equipment. Although time was short and it was not possible to cover each of these inputs in depth, the team considered all of these input needs to be important and collected information on them while traveling in Albania. The following is a summary of the impressions and judgments which resulted.

The Seeds Directorate of the Ministry of Agriculture is the organization in Albania responsible for local purchase of seeds and supply of seeds to the farms. The team visited Seed Directorate warehouses in several districts (there is one in each district) and found them to be well kept and clean. Seeds in stock included wheat, corn, clover, grass, soybeans, beans, beets, cabbage, sorghum, onions, cucumbers, peas, and many others. Several public and private sources stated that seed quality is a problem which needs to be addressed. Dr. Vivan Jennings of the United States Department of Agriculture (USDA) Extension Service (and a corn expert), after examining growing corn said that the hybrid corn lines were "all crossed up." Mr. Petraq Gramo who served with Agroexport (the agricultural import and export agency of Albanian Government) for 15 years stated that Agroexport had made contracts with Dutch companies for importing seeds and producing seeds in Albania. The local production efforts were not successful in part due to inadequate efforts to educate the farmers.

At several state farms we were told that inoculum (brand Nitragin) is produced at Durrës (facility called NUB) and is applied on soybean seeds before they are planted. This inoculum was said to have a beneficial effect. Nothing is known about the quantities of inoculum available, quality, or whether other types of inoculum in addition to that specific to soybeans are available.

The Agricultural Supply Directorate (DFB) of the Ministry of Agriculture is responsible for distribution of all types of agricultural inputs in Albania including fertilizers, pesticides, herbicides, salts, tractors, machinery, hand tools, trucks, plastic sheets for greenhouses, feed for chickens and cows, office supplies, pipes, spare parts, and others, including some imported seeds (a responsibility DFB appears to share with the Seeds Directorate). DFB has approximately 100 employees in headquarters in Durrës plus about 300 employees at 26 district locations.

Lindane, a pesticide banned in the United States, is still in use in Albania. It is a chlorinated hydrocarbon, a carcinogen which stays in the soil for a long time and can cause damage to wildlife and show up in residues in milk. Questioning several officials at state farms, it appeared they were applying various pesticides without knowing what pest they were really trying to control. Earworm pest was found in several places in corn, leading to the conclusion that at least for that pest the farmers were not using the specific pesticide. DFB personnel showed little evidence of understanding pest control. They appeared to be simply distributing pesticides without any information about their appropriate use.

Nearly every person interviewed, starting with the Minister of Agriculture and including numerous government officials and farmers, stressed the need for more tractors, trucks, and farm machinery. Albania probably has the world's oldest inventory of such equipment. In each district, there is a central mechanization center using very old machining equipment and at which they fabricate some spare parts and perform repairs and maintenance to a remarkable degree considering the age of the equipment they are attempting to keep going. In addition, each state farm has a smaller mechanization station where equipment is stored and minor maintenance is done. Also, previously, the cooperatives had mechanization units of varying capacity. Due to the numerous national origins and varieties of the equipment, the machine shops find it difficult to fabricate adequate spare parts. No system is in place to order spare parts from the plants where the tractors and other equipment originated in the Soviet Union, China, Poland, and other countries, although some spares are apparently being made at a central unit in Tiranë. So the constant refrain we heard was the need for new tractors, trucks, tires, and other farm machinery. At a meeting of the Agricultural Committee in Pogradec District, the Manager of the Agriculture Bank Branch there stated that he was making loans to individual farmers to purchase tractors and that these farmer tractor owners would use the tractors on their own land and also hire out services to other farmers. How many tractors are in working order, what happened to the tractors on the former cooperatives, and just what the total need for new tractors is, was impossible to determine during the team visit. However, while fields were getting plowed, there were enough not getting plowed to indicate a serious shortage and need. Part of the problem, it should be noted was also a national shortage of fuel.

Clearly, there is an immediate need for supply of large numbers of tractors and agricultural machinery. This is beyond the scope of the present team effort, but technical assistance is urgently needed to assess the numbers and sizes of tractors and other machinery required; the practicability and economic case, if any, for

continuing to maintain and operate the old equipment; and an input structure to encourage private importers and wholesale- and retail-level entrepreneurs, together with the necessary credit structure.

There is clearly a need for improved pasture management (seeding, fertilization, etc.) and for a feed industry in Albania. Animal nutrition is obviously the most serious problem facing the livestock sector in Albania. At one state farm in Burrel District, chickens were being fed only wheat and wheat bran and cows were being fed only silage. The corn crop is principally grown for fodder and large areas are sown to lucerne. The agricultural area devoted to fodder crops in Albania is one indication of the great importance of the animal agriculture there. But the efforts and expense being devoted to growing animals are economically ineffective without scientific management of the crop production and feed formulation processes.

The Albanian mountains, which cover most of the country, are largely limestone and contain huge reserves of water. In addition, there are numerous lakes and man-made reservoirs producing hydroelectricity (even the most remote villages in Albania have electricity) and gravity-feed irrigation covering a reported 50% of the cropped area in Albania. These irrigation systems operated by an Irrigation Directorate of the Ministry of Agriculture are old, inefficient, in many cases clogging up, but are largely operational. Along with all other activities in Albania, irrigation services have declined in the last 2 years due to preoccupation with the political turmoil in the country. The existing facilities need to be brought up to their former level of efficiency. In addition, considerable potential exists to expand irrigated area to further cropped areas in Albania.

The primary initial focus of the project (especially during the first 6 months) is on fertilizer because of its clear priority as the weak link (or missing link) in the agri-input systems in Albania. However, the agri-input technical assistance team in country addressing the fertilizer sector will be charged with analysis of policies and procedures affecting fertilizer and other agricultural inputs, supply, distribution, and marketing in Albania and with organizing national and local workshops and training to focus attention and arrive at necessary consensus and action plans for agricultural inputs policies and initiatives in Albania. Experience in creating wholesale- and retail-level private entrepreneurs for fertilizer distribution and marketing will lead naturally to expanding private sector efforts to other inputs, including inoculum, seeds, pesticides, farm machinery, feed, and irrigation equipment.

Complementing this enterprise development effort by the agri-input technical assistance team will be the extension effort mounted under the project by USDA. This effort will include an integrated pest management component and numerous

initiatives to improve grain, vegetable, fruit, and livestock production and productivity on farm. These efforts will help develop the demand and utilization of the improved agri-input supply.

2. Status of the Fertilizer Factories

2.1 General

There are two fertilizer production sites in Albania. One, at Fier, south of Tiranë, produces prilled ammonium nitrate and prilled urea, based on gas from the surrounding Fier gas fields. The other is at Lac, north of Tiranë, and produces single superphosphate, based mainly on imported phosphate rock and on sulfuric acid, which is produced either from the sulfur dioxide off-gas from an associated copper smelter or from iron pyrites.

Both plants were started about 25 years ago. Further details are given below.

2.2 Nitrogen Fertilizer Production at Fier

The factory at Fier has three nitrogen production units as follows:

	Production Units	Capacity (tpy)	Origin	Age (years)	Comments
A.	Ammonia/nitric acid/ ammonium nitrate	110,000	Montecatini	25	Can run on naphtha or gas
B.	Ammonia/urea	85,000	Chinese	15	Gas based
C.	Ammonia/urea	100,000	Chinese	1	Gas based

The factory supplies around 1,000 tons of ammonia per month by rail to the steel complex at Elbasan.

In spite of the age of the first two plants and an active problem with shortages of spares, the units are well run.

The key problem is shortage of natural gas from the Fier fields. The supply of natural gas for fertilizer production has fallen from a previous level as reported by the factory of 500,000 m^3 of gas per day to the present level of 155,000 m^3 per day.

Because of the shortage of natural gas, the ammonium nitrate (AN) plant is now running on naphtha. The plant uses two Sulzer oxygen compressors in its ammonia unit, one of which is broken, limiting capacity to 60% of design rate. The

cost of a new compressor from Switzerland is estimated at $300,000, for which no foreign exchange is available. An additional problem is the need for a catalytic unit costing $100,000 to remove hydrogen from the recovery section of the plant. The catalytic unit was said to be essential to avoid risk of explosion in the scrubber which cannot now be used, leading to an annual loss of some 6,000 tons of AN and serious ammonia pollution to the atmosphere.

On the urea plants, there are problems with the absorption equipment on both of the units leading to the loss of around 3,000 tons of urea per year per plant. The old urea plant gives major problems on maintenance and spares. The new urea plant was commissioned in 1990 and produced 24,000 tons that year but has a number of technical problems and has produced only 9,000 tons in 1991. The technology is alleged to be outdated and inefficient and requires technical assistance for rectification. There are also equipment problems.

As noted, there is not enough gas to run either of the two urea plants at full rate. The first unit requires 210,000 m^3/day and the new unit requires 260,000 m^3/day to run at full capacity. Information from the director of petroleum technology is that the present gas field is depleted and may maintain supplies to the fertilizer plant for the next 2 years at the present level of 155,000 m^3/day, after which the supply will decline further. Assuming that the new plant can be improved technically, it would seem apparent that in these circumstances that the old urea plant should be closed down. The current gas supply is only sufficient to run the new urea unit at about 60% of capacity.

The Fier factory has limited bulk storage capacity as follows: AN, 1,200 tons (4 days); urea I, 2,400 tons; and urea II, 2,400 tons (8 days). There is no storage capacity for bagged fertilizer. The plants have been closed down for over a month because, as discussed earlier, there are no "Plan" movements and no other mechanism for supplying the ex-cooperative small farmers. Factory bulk stocks when seen were approximately: 900 tons AN; urea No. I, 1,500 tons; and urea

No. II, 1,800 tons. Fully filling the bulk storage is avoided because of severe caking problems. There is some storage available at the state farms and cooperatives, although it was reported that much of the co-op storage had been destroyed by the farmers.

The enforced shutdown of the nitrogen fertilizer factories is very costly, resulting in loss of output of about 8,000 tons per month at current production levels, equivalent to approximately $1.6 million in additional fertilizer import requirements. Mechanical difficulties are also created by shutdown and startup of a continuous process plant.

2.3 Packaging of Nitrogen Fertilizers

The ammonium nitrate and urea from No. I urea plant are bagged in "45-kg" bags using volumetric packing equipment, which is obsolete and should be replaced by modern load-cell weighing equipment on the ammonium nitrate plant. It should also be replaced on No. I urea if the plant is kept in service. No. II urea plant uses modern (Chinese) load-cell weighing equipment, with 45-kg bags. It is recommended that a standard 50-kg bag should be used, which will be consistent with imports.

The 45-kg bags used for AN and urea from No. I plant are single-film PVC valved bags made in Lushnje from imported polymer. Poor manufacture of the end seams leads to failure, even on the bagging line, and the valve design is also inadequate.

It is recommended for ammonium nitrate (and urea from No. I plant, if produced) that single-film polyethylene bags should be used, with improved quality control, with an improved design of valve and in the 50-kg size. These should be cheaper and also more environmentally acceptable. Woven polypropylene may also be considered.

Urea from No. II urea plant is packed in 40-kg woven polypropylene bags imported from Turkey. These should be adjusted to 50-kg.

2.4 Production of Single Superphosphate (SSP) at Lac

The factory at Lac has three sulfuric acid plants feeding two SSP plants, disposed as follows:

Acid Plants	Origin	Age	Raw Material	Capacity (tons 100% acid)	
Pyrites/H_2SO_4 I	Chinese	26 years	Mineral pyrites	24,000	SSP I
SO_2/H_2SO_4 II	Chinese	15 years	SO_2 from copper smelter	35,000	160,000 tons
Pyrites/H_2SO_4 III	Polish	1 year	Pyrites concentrate	60,000 →	SSP II 160,000 tons (not yet commissioned)

Around 20,000 tons of sulfuric acid is sold for industrial use. The factory also has a number of smaller units, producing sodium silicofluoride, oleum, and fuming nitric acid. The fuming acid (99%) is produced from 53% acid supplied from Fier.

The older fertilizer plants are in extremely poor condition. By their very nature, such plants are difficult to maintain in good condition and with the lack of spares, equipment problems, and their great age, the whole plant area is very run down and actively polluted. It is commendable that production staff have even managed to keep the plants in operation.

The new sulfuric acid and SSP plant have technical problems not fully defined, and it has not so far been possible to commission them.

Urgent technical and economic assessment is obviously needed with a view to immediate improvement or shutting down of the plants.

A rebuilding project for the oldest unit (H_2SO_4 No. I) at a cost of $2.5 million has been discussed with the Chinese. When No. II sulfuric plant is shut down, the SO_2 from the smelter is vented to the atmosphere. This can apparently happen for prolonged periods. This happens in any event at other smelters in Rrbik and Kukës.

Production is based principally on phosphate rock from North Africa, imported through Durrës and moved to Lac by rail in bulk in open wagons. Some indigenous rock of lower quality is supplied from Gjirokastër and blended in production with the imported rock. The SSP produced is 15% P_2O_5.

2.5 Distribution and Packaging of SSP

The SSP plant produces run of pile (ROP) or powdered material, but there is granulation capacity for up to 60,000 tpy, nominally up to 4 mm in diameter. Remarkably, the finished product is dispatched in bulk, in the same open rail wagons which bring the phosphate rock, or by road, in open trucks or tractors and trailers. The product is not covered. Rail connected bulk stores of approximately 500 tons capacity were constructed at all main stations to receive the product. From these stores, the SSP was previously delivered to the state farms and cooperatives in open trucks. As discussed earlier for nitrogen fertilizers, there is now no "Plan" for regular dispatch, no cooperatives to receive the product and no mechanism for farmers to obtain the SSP. There was an almost total lack of phosphate throughout the country for the fall wheat planting, yet when visited, the 10,000 bulk store at the plant was full. The only products seen moving were a few tractor-trailer loads (unsheeted) from Lac going to a state farm about 15 km distant, under some old contract arrangement.

The bulk distribution system obviously leads to direct losses, serious deterioration of physical quality when it rains, and the product is not weighed. Bagging of the product is essential to reduce losses, protect the product and the transport equipment, and to provide a standard weight.

Bagging should be in woven polypropylene bags with polyethylene liners in the 50-kg size.

2.6 Technical Assistance for the Fertilizer Factories

Urgent technical and economic appraisal and assistance for the fertilizer factories are recommended to evaluate and, as appropriate, restore cost-effective production while simultaneously reducing pollution, which is a serious problem at both Fier and Lac. This assistance is a win-win proposition, since the measures which will increase indigenous production and economic efficiency will also reduce imports and result in major environmental and health benefits.

Specific recommendations for the fertilizer production units are as follows:

A. Nitrogen Fertilizer Factory at Fier

1. Urgent technical appraisal of the gas supply situation for fertilizer production.
2. Technical and economic study of the urea units with the possibility of: (a) early shutdown of No. I urea plant and (b) upgrading the technology and equipment of the new urea plant; assistance in supply of absorption equipment for the new urea plant.
3. Technical and economic study of the AN unit with immediate supply of (a) a new oxygen compressor at a cost of approximately $300,000 and (b) catalytic hydrogen unit at a cost of $100,000.
4. Product weights should initially be standardized at 50 kg. Consideration may be given later to standardizing on smaller bags, possibly in the 25-kg size, which is more appropriate for the smaller farm units. The current

PVC bags for AN and urea should be replaced by polyethylene, with improved quality control or manufacture and an improved design of valve (in the 50-kg size).

Both urea and AN plants urgently require other unspecified minor equipment and spares.

B. SSP Fertilizer Factory at Lac

The entire site is desperately in need of technical, economic, and environmental appraisal. It is unclear whether it is economically justified to continue production of SSP at Lac. A thorough technical and business systems analysis is required to determine whether the plant should be in some way renovated to continue production or be shut down.

Considering the age and rundown condition of the pyrites roasting, sulfuric acid and SSP plants, the efforts of management and workers in keeping the plants in operation are little short of heroic. However, there have been recent strikes over conditions, with agreement of all at Lac that improvements on health and environmental grounds are essential and urgent.

The initial technical, economic, and environmental reviews recommended above will require a multi-disciplinary team for each factory to be in-country for several weeks. In addition, continuing technical support, procurement of equipment, and supervision of installation could be required over the next 2 years. The cost of this continuing effort cannot be estimated until the initial assessment is completed but is likely to be justified several times over when compared to the alternatives of continuing loss of fertilizer production, higher fertilizer imports, and continuing major environmental degradation. The cost of the initial assessment is estimated at $500,000. To cover immediate equipment requirements and the technical assistance following the initial assessment, a reserve fund of $2.0 million should be held available from this project. Total costs may be significantly higher.

2.7 Fertilizer Plant Production Levels

Some comprehensive agricultural data from the Ministry of Agriculture includes the following on fertilizer use:

	1986	1987	1988	1989	1990
	('000 tons product)				
AN and Urea	195 (76)*	169 (66)	177 (69)	206 (80)	186 (72)
SSP	165 (25)	174 (26)	163 (24)	167 (25)	148 (22)
KCl (MOP)	6 (4)	6 (4)	5 (3)	6 (4)	6 (4)
	366 (85)	349 (96)	345 (96)	379 (109)	340 (98)
Nutrient use (tilled land) (kg/ha)	148	134	132	158	135

* '000 tons nutrient.

These indicate commendably high production levels, and it is possible that they were Plan figures. However, figures obtained at Fier for actual production in 1989 and 1990 are as follows:

Fier Factory Production

	1989	1990
	(tons product)	
AN	109,140 (36)*	93,420 (31)
Urea No. I	92,420 (43)	65,680 (30)
Urea No. II	-	24,410 (11)
	201,560 (79)	183,510 (72)

* '000 tons nutrient.

These are in good agreement with the 1989 and 1990 figures for AN and urea use in the previous table, which are then accepted as actual, rather than Plan.

Because of the relatively small storage capacity in the system and in the absence of imports, production is then taken as equivalent to use (or vice-versa).

2.8 1992 and 1993 Fertilizer Plant Production Levels

Based upon current information, projected domestic fertilizer production is estimated as follows:

Product	1992		1993	
	Product	Nutrient	Product	Nutrient
	(tons)		(tons)	
AN	50,000	17,000	90,000	30,000
Urea	50,000	23,000	50,000	23,000
Total N fertilizer	100,000	40,000	140,000	53,000
SSP	60,000	9,000	120,000	18,000
Total	160,000	49,000	260,000	71,000

3. Agricultural Input Supply Organizations and Systems

The organization responsible for distribution of agricultural inputs throughout Albania is DFB, Directory Furnizimi Bujgesör, or the Agricultural Supply Company, which is still in place under the Ministry of Agriculture (MOA). DFB has around 400 employees and has its headquarters in the town of Durrës near the port. About 100 of the employees are in Durrës and the remaining 300 in the 26 district offices throughout the country.

DFB is responsible for distribution of all agricultural inputs from imports and domestic supply, including fertilizers, pesticides, herbicides, mineral salts, tractors, plastic sheet, metal and plastic pipes, feed for chickens and animals, hand tools, harnesses, office supplies and others, including imported seeds.

There is a separate Seed Enterprise Directorate under the MOA with responsibility for provision and distribution of seed within Albania. The Seed Enterprise has warehouses in all districts and is associated with a number of research institutes. For example, the Forage Research Institute and Seed Farm is located in Fush-Krujë, near Tiranë, and has 25 ha for research, including greenhouses, and 250 ha for production.

DFB Headquarters in Durrës has around 2,000 tons of storage for all products and open storage areas for equipment. However, these facilities were used for only relatively small tonnages of imported fertilizers. As noted, DFB has no fertilizer storage in the districts since domestic movements were made directly through to the state farms or cooperatives, where the fertilizers were stored until required. Primary movements were mainly by rail and some storage was available in warehouses at the stations (or by detention of the rail wagons). DFB has requested $10 million for construction of storage and 100 trucks of 2- to 5-ton capacity for distribution within the districts.

Distribution of SSP from Lac is a special case, since, unusually, product passes through the system in bulk. The SSP is loaded into the same rail wagons used to bring phosphate rock to the factory from Durrës or Gjirokastër. It is not covered. The railway authorities report that bulk receiving stores with a capacity of about 500 tons have been built at all main railway stations. From these, the SSP is moved in open lorries or tractors and trailers to the state farms and formerly to the cooperatives. Clearly, SSP has been perceived as a low-value product with losses having no significance. In a commercialized system, some method will have to be devised to bag the SSP or otherwise sell to the farmers by weight.

Under the Plan, fertilizers from the domestic factories at Fier and Lac were moved through the system more or less as produced–some to the state farms and the majority to the cooperatives with coordination by DFB. With the breakup of the cooperatives, the system has almost completely collapsed. The cooperatives no longer exist and farmers in the former cooperative areas have no means of obtaining fertilizer, since none is stored in the area, even if they had money or access to credit. They cannot hire transport to collect from the factories since movement was all by state enterprises and truck transport is all owned by the state.

The current situation is then that the system for distribution of fertilizer is at a halt, except for some very limited supply to the state farms. This is evidenced by an almost total lack of fertilizer in the districts and the fact that both factories are shut down because of full storage and lack of removal. At Fier, finished product storage capacity is only 4-8 days production in bulk (and no bagged storage), against a more usual 30 days. At Lac, there is a 10,000-ton bulk store for SSP (currently full).

Urgent technical assistance and advice are needed to get the system moving again. A key target objective will be to establish private dealers, handling fertilizers and other agri-inputs, in all districts. In the short term, it is inevitable that DFB must be involved. Transport arrangements must be made, and storage must be

identified and organized in the districts. Many former cooperative buildings, including storage buildings in the districts, have reportedly been destroyed by the farmers.

In the present poor state of the production facilities, significant import quantities are forecast. These would preferably be stored in or near Durrës port and at several regional sites as a safety stock to guarantee availability to farmers through a DFB/dealer system. Availability of warehousing in the Durrës area is limited and, although properly managed outdoor storage is acceptable, there is a lack of suitable sites for this. Assessment of the transport and storage situation is clearly the initial priority for the technical assistance team.

4. Technical Assistance Needed to Get the Fertilizer System Moving

It is clear at this point that there is a need to mount a major fertilizer distribution and marketing effort in two phases to get fertilizer moving through the system to the farmers as follows:

Phase I – Urgent and Immediate

Placement of expatriate consultants with expertise in organization, marketing, physical distribution and handling, and credit, working with existing organizations to devise methods : (a) to move fertilizers through the system from both the domestic factories and from imports into all districts, (b) to make suitable storage arrangements for domestic production and imports at all levels, and (c) to make the necessary arrangements in the districts to facilitate purchase of the fertilizers by the farmers and state farms.

It is envisaged that this will involve coordination of other donor import programs with arrangements for establishment of up to 40,000 tons of working inventory in or near Durrës port and/or at appropriate regional and district sites. This may be in existing covered storage or as properly operated outside storage.

In this phase, close cooperation with DFB, the factories, and the responsible Ministries is essential.

Emphasis will initially be on efficient movements by rail, while all means of obtaining additional truck-carrying capacity are investigated.

Pricing and the role of the Agricultural Credit Bank will be addressed.

Phase II – Urgent and Continuing

This phase will evolve toward the overall target objectives with major input by the team involved in Phase I. These objectives include the following:

1. Upgrading of domestic fertilizer production facilities.
2. Establishment of approximately 10,000 tons of bagged storage capacity at Fier for AN, and 10,000 tons for urea. Bagging and bag storage facilities for SSP at Lac as defined in the technical study. These recommendations assume both factories remain in production.
3. Distribution and marketing from both Durrës and the factories by private dealers in all districts to be assisted with necessary credit and training through the project.
4. Formulation of rules, procedures, and policies to facilitate and assure successful fertilizer distribution and marketing in the framework of a free marketing system.

These and other technical assistance activities are summarized in the attachment to this report.

5. Agricultural Input Needs and Related Fertilizer Import Requirements

5.1 General

As discussed in previous sections, the critical input for restoring or maintaining agricultural output in Albania is fertilizer. Definition of requirements for seeds, pesticides, herbicides, and similar inputs are fully recognized as important, but within the timeframe of the current study, it has not been possible to collect and analyze these data. Attention therefore remains concentrated on fertilizers.

5.2 Estimated Fertilizer Consumption and Import Requirements

Fertilizer consumption for 1992 is estimated at approximately the levels achieved during the years up to 1990 (Section 2.7). An approximate 10% increase is assumed in 1993. These estimates may be optimistic considering the depressed state of the agriculture economy in Albania and the possibility that the very large fertilizer subsidies may be significantly reduced or eliminated. Nonetheless, it is considered prudent to plan for this level of potential needs while adjusting estimates on a monthly basis in the light of experience.

An in-country working inventory of approximately 2 months' supply is envisaged to guarantee continuity of supplies to the farmers during the next 2 years.

On the above bases, the estimates of production, consumption, and imports for 1992 and 1993 are as follows:

	1992			
	AN	Urea	SSP	MOP (KCl)
	(Product tons)			
Production	50,000	50,000	60,000	0
Consumption	100,000	65,000	160,000	4,000
Working inventory	16,000	11,000	9,000 (TSP)	700
IMPORTS	66,000	26,000	42,000 (TSP)	4,700

	1993			
	AN	Urea	SSP	MOP (KCl)
	(Product tons)			
Production	90,000	50,000	120,000	0
Consumption	110,000	70,000	175,000	4,500
IMPORTS	20,000	20,000	20,000 (TSP)	4,500

Note: Imports of AN and urea are in the same proportion as previous use and imports of TSP are assumed. SSP is not widely traded internationally because of the low nutrient content. TSP is agronomically similar to SSP but has 46% P_2O_5 as against 15% for SSP from Lac. It is recommended that consideration of new products, such as DAP or NPKs, should be left to a later stage.

It should be recognized that these are indicative overall balances. For development of an import program, further data on seasonality of offtake and assumptions on production throughout the year are needed. These data are not readily available but should be estimated during the first month or two of the technical assistance.

The total estimated cost of fertilizer imports at current international prices is then as follows:

5.3 Estimated Import Costs

Product	$/Ton (Landed, Durrës)	1992 Tons	1992 $ Million	1993 Tons	1993 $ Million
AN	180	66,000	12	20,000	4
Urea	200	26,000	5	20,000	4
TSP	200	42,000	8	20,000	4
MOP	150	4,700	1	4,500	1
Totals		138,700	26	64,500	13

6. Transport Infrastructure

6.1 General

The overall situation on transport in Albania has been reviewed in a number of recent reports, including a World Bank Aide-Memoire dated June 17, 1991; a UN Inter-Agency Humanitarian Needs Assessment Mission draft dated July 25, 1991; and a number of other reports on food aid.

The World Bank report considers the basic capacities of roads, rail, and ports to be basically adequate for now. The critical limitation is the lack of vehicles to use these facilities. The current study looking at the situation in terms of moving agri-inputs, particularly fertilizers, would agree with this assessment. The most urgent need is to replace the ancient road transport fleet. If this were done, subject to appropriate ownership and deregulation of the system, it should be possible to get road transport and the fertilizer distribution system operating efficiently in a relatively short time, using the existing road network.

However, upgrading of the national transportation system is not within the scope of the present agri-input study. The immediate approach can only be to make best use of the existing vehicles and facilities in the most effective way, largely by strong action on planning, management, and operation of the road and rail vehicles used for fertilizer movement. This includes the possibility of hiring or renting equipment or vehicles, possibly from outside of the country, to overcome short-term difficulties. This will be assessed by the in-country technical assistance team on arrival.

6.2 The Transport System

An outline of the transport system is shown in Figure 1. In spite of its mountainous areas, the country is relatively well served by rail and road.

The main port of Durrës is located on the center of the coastline and 's fairly close to the capital of Tiranë. Durrës might be considered as the originating point for the road and rail networks, with roads and railways radiating throughout the country. Being a relatively small country (approximately 350 km N-S and 120 km E-W) all districts are within 1 day's journey by truck from Durrës, except during the winter when some mountainous areas are inaccessible.

6.3 Ports

The main port is Durrës. Other minor ports are Shëngjin, Vlorë, and Sarandë, which are used only for coastal traffic.

An outline plan of Durrës port is shown in Figure 2. Draught is currently around 9 M, said to be capable of taking maximum 20,000-ton to 25,000-ton vessels, depending upon construction.

The manager of the port stevedoring company indicated that the port is capable of berthing some 14 ships and is capable of working 8 general cargo vessels and 3 bulk vessels at one time.

The main traffic through the port has been iron, nickel, and chrome ores, coal, and other bulk materials. In 1990 exports were around 1.4 million tons, mainly bulk ores; imports were around half of this level and included 55,000 tons of wheat.

There is a small area for handling containerized cargo at the end of the bulk wharves.

Bagged fertilizer imports would be handled at the general cargo berths, at rates of at least 1,000 tpd. Confidence was expressed that these rates would be achieved, even with major tonnages of wheat being handled during the same period at the bulk berths. Any limitation is most likely to be caused by a lack of lorries to remove the cargo at a fast enough rate, or by lack of sufficient suitable storage in the port area.

6.4 Railways

From Durrës the northern branch of the railway serves Tiranë, passes through Lac (the phosphate factory) and goes north through Shkodër to the Yugoslavian border and Titograd. The southern branch passes through Fier (the nitrogen factories) and down to Vlorë. There is an eastern branch to Pogradec, on the eastern border with Yugoslavia and Greece.

The director of rail transport is confident of the railway's ability to carry all fertilizer requirements, including imports. Eighty percent to ninety percent of fertilizer from Fier and Lac goes by rail. Apparently, there were major plans for new fertilizer factories and the number of wagons was increased in anticipation. There are some 2,300 wagons available of which 500 are specials (cement, ore, etc.), leaving 1,100 open wagons and 700 box wagons, which are a mixture of 2-axle/24-ton payload and 4-axle/50-ton payload. The major traffic has been ore movements, but this is declining.

Optimistic journey times were quoted, e.g., Fier to Lac, 8 hours, with 3 days allowed for offloading. The team saw bagged ammonium nitrate from Fier on open railway wagons in the stations at Lac and at Pogradec. The loads were uncovered, which is unacceptable. Closed wagons or waterproof sheets should be used. The wagons at Lac had apparently been there for some time because the railway warehouse was full.

From observation and discussion with the railway authorities, it appears that significant rail carrying capacity is available and it should be possible to mobilize this capacity relatively rapidly for movements of imported fertilizer, as well as for fertilizers from Fier and Lac. Clearly, receiving arrangements will have to be organized in advance of such movements. Trucks will be required for final delivery in the districts and will be required in the port area if imports are warehoused, even temporarily.

Operation of the rail delivery system should be preplanned and tightly managed to ensure rapid offloading and turnaround of wagons, use of closed wagons for bagged fertilizers, and use of sheets if open wagons are used.

6.5 Road Transport

The entire road fleet appears to be very old and tired, with vehicles up to 25 years old. Under the Plan system, there were transport and service centers for trucks in every district. The system is now breaking down, although not totally.

Around 2 years ago, the Ministry of Transport (MOT) had around 4,000 8-ton trucks on its books and is now down to about 3,000. Some of the vehicles, on short distances, were seen as losing money and were transferred to the production systems, mines, and factories using them.

The standard truck is a 2-axle/8-ton payload. The MOT has considered three axles (twin rears) with a 12-ton payload. They are currently receiving Italian credit for Iveco trucks on test.

So far, there are no private truck operators. It was accepted that a private fertilizer dealer could move fertilizer by rail and hire from the state truck enterprise in the district, but the case has not yet arisen.

The team was not able to assess the potential of the road transport system at the present time. Since goods were moving regularly until just over a year ago, it would seem the the potential exists, but spares are difficult to obtain and there is less organization and little incentive to go to great lengths to keep the trucks running. A technical assistance team would need to go more deeply into the situation as a matter of urgency. Alternatives, such as hire or lease of trucks for temporary import, might be considered.

There is a strong parallel between the truck situation and the position on tractors and farm machinery discussed earlier. Just as Albania requires renewal of almost the entire stock of farm machinery, so it requires replacement of almost the entire truck fleet. This would certainly revitalize the agricultural, food, and transport sectors, but it is well beyond the scope of the current agricultural project.

Contact with the Government of Albania (GOA) and other donors should be maintained to determine how this transport problem is going to be handled.

For fertilizer import purposes, a small number of trucks may be purchased or leased for work in and around the port area.

Figure 1. Infrastructure.

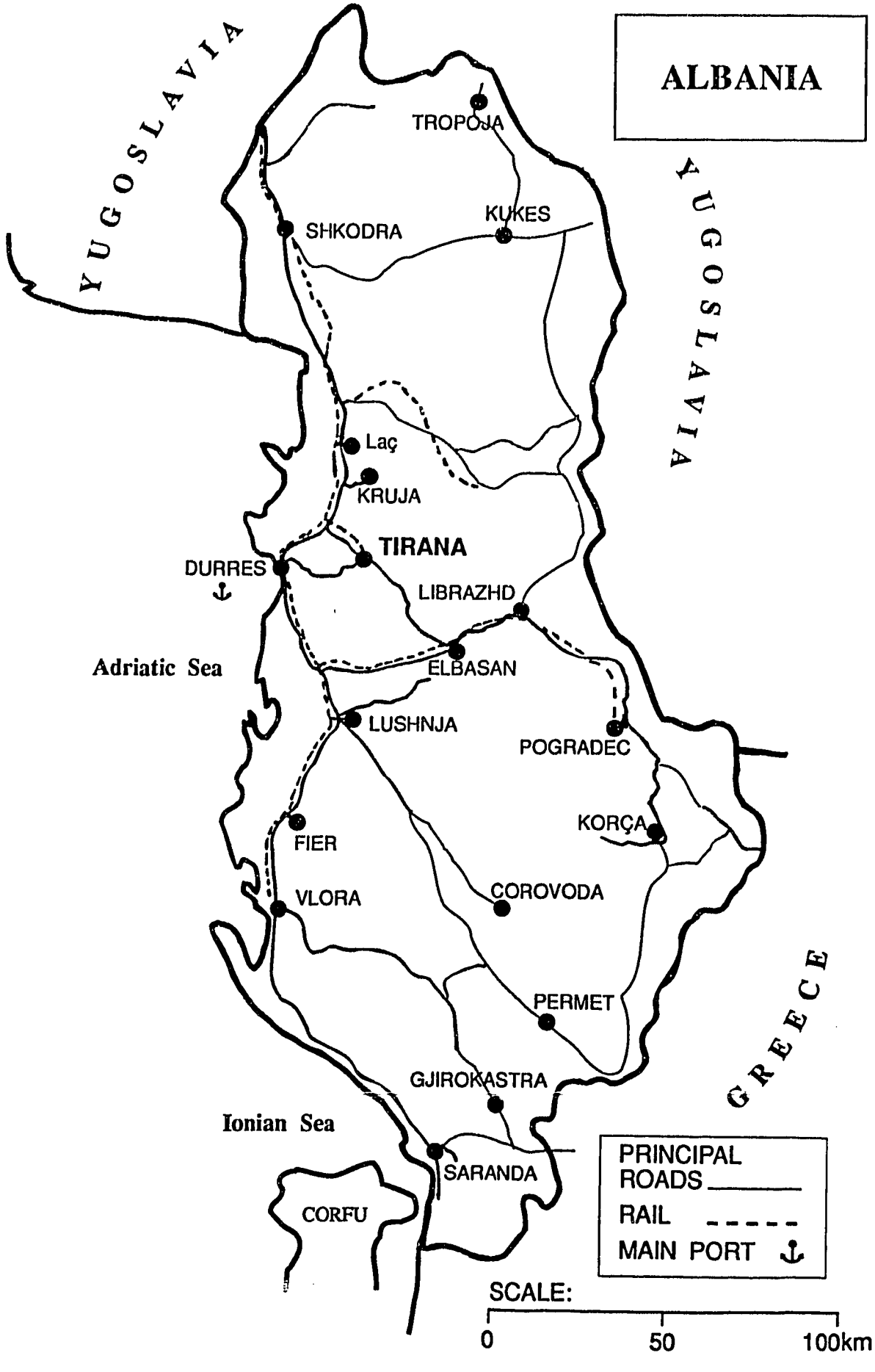
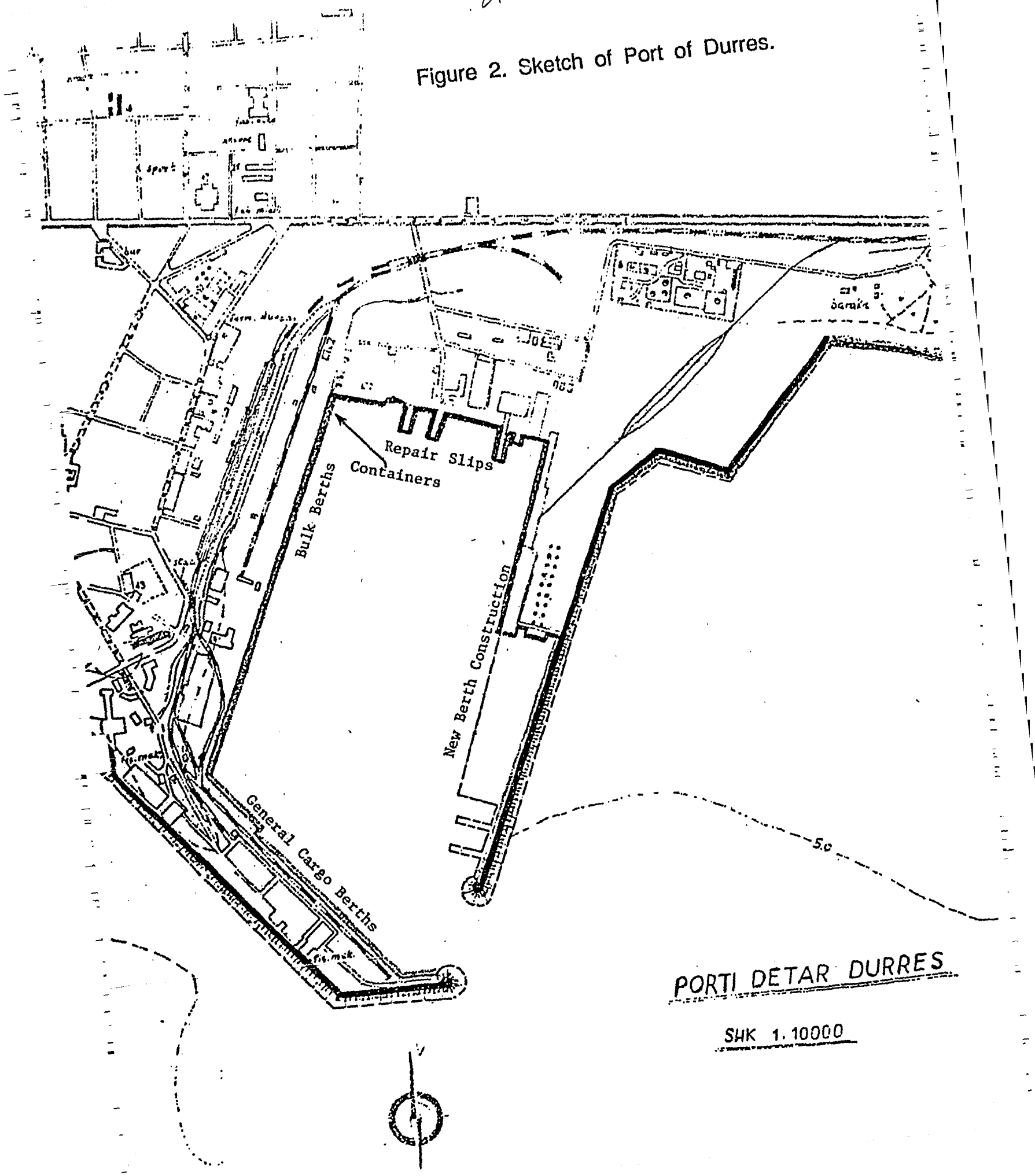


Figure 2. Sketch of Port of Durres.



Attachment 1

Outline of Technical Assistance Requirements

The following preliminary outline of technical assistance activities is based on the initial appraisal in this report and will require additional development and prioritization.

Production

1. **Gas Fields** – Urgent technical appraisal of the gas supply situation from the Fier field, specifically for nitrogen fertilizer production, in the short and medium term. Evaluation of alternative supply possibilities.
2. **Nitrogen Factory at Fier** – technical, economic, and environmental evaluation of all production units. Recommendations for immediate equipment requirements and action to restore output. Recommendations for future production strategy, upgrading of process technology and improvement in operating systems and efficiency.
3. **Phosphate Factory at Lac** – The same as for the nitrogen factory at Fier plus recommendations for packaging of the product.

Fertilizer Procurement

4. **Imports** – Assistance in immediate procurement and shipment of fertilizers. Establishment of administrative and financial procedures in collaboration with the GOA for control of in-country donor stocks and transfer to the marketing system. Continuing coordination and assistance to donors in specification, procurement, and import of fertilizers.

Fertilizer Marketing/Privatization

5. **Technical Assistance in Fertilizer Import and Distribution**
   a. Arrangements for storage in and despatch from the factories.
   b. Handling of fertilizer imports and arrangements for storage in or near Durrës port and at regional sites in collaboration with GOA.
   c. Establishment of systems and facilities for distribution by road and rail from the port and factories to all districts, working initially with DFB. Identification and organization of storage in the districts.
   d. Establishment of fertilizer delivery mechanisms in the districts for supply to state farms and small farmers, including credit arrangements and pricing.
6. **Technical Assistance in Marketing**
   a. Establishment of private dealer system, including possibility of factory participation in marketing.
   b. Definition of distribution, transportation, and storage practices.
   c. Development of credit systems for agricultural input dealers and farmers, involving Agricultural Credit Bank or other sources.
   d. Development of a free import and marketing framework.

e. Consideration of the optimum product mix and need for macro- and micro-nutrients.

Agricultural Research

7. **Collaborative Research** – Collaboration with agricultural, soil, seed, fertilizer, and crop research centers and agribusinesses to evaluate existing systems and to develop improved agricultural systems, with attention to current environmentally favored practices including biological nitrogen fixation (BNF), green manures, and use of crop modeling.

Other Agri-Inputs

8. **Agri-Input Supply** – Consideration of requirements, use, alternative supply systems, and enterprise development for seeds; herbicides and pesticides; animal feeds and supplements; tractors and machinery; irrigation equipment; plastics; small tools; and other equipment.

Agri-Business

9. **Agri-Business Development** – Assistance in optimizing effective use of agri-inputs and in development of agri-business activities in both the domestic and export markets.

Information Systems

10. **National Fertilizer Information System** – Development of systems for analysis, reporting and projection of data on fertilizer, production, consumption use practices, and requirements. Logically associated with other agricultural, agronomic, and crop production data.

Environment

11. **Environmental Impact** – Assistance in analysis of the impact of the production and use of other fertilizer and agricultural inputs upon the environment and in development of programs to minimize adverse impact.

Policy

12. **Agricultural Policy Development** – Development of policies and procedures affecting fertilizer and other agricultural inputs, including supply, distribution, marketing, pricing, and subsidy.

Training

13. **Development of Appropriate Training Programs** – Assistance in creating appropriate training programs and workshops in the agricultural sector to disseminate the skills required to operate in the newly developing free market environment.

Attachment 2

List of Contacts

Ministry of Agriculture	
Nexhmedin Dumani	Minister
	Privatization Director
	Foreign Relations Director
Alqi	Manager of Privatization
Fatos Gjini	Specialist, Privatization Division
Sali Metani	Interpreter
Mrs. Zhaneta Doci	Journalist/Interpreter
DFB (Agri-Inputs Agency)	
Selami Begeja	Director of Finance
Agricultural University of Tirana	
Haxhi Aliko	Rector
University of Tirana	
Petraq Papajorgji	Manager of Computer Center, Information Chair, Faculty of Science
Soils Research Institute	
Albert Dubali	Director
Ministry of Minerals and Energy Resources (MMER)	
Abdyl Xhaja	Vice Minister, MMER
Albert Hajnaj	Deputy Production Engineer, Ministry of Industry, Mining, and Energy
Nestor Babameto	Translator
Tasi Rapi	Director of Petroil Technology, MMER
Ilir Bano	Directory of Petroil Technology, MMER
Ministry of Transport	
Vladimir Maqellari	Specialist in Maritime Directorate
Shkelqim Xhaxhiu	Director of Shipping
Qemal Sino	Director of Railways
Fehim Godo	Directory of Road Transport
Durres Port	
Zamir Ramadani	Technical Director
Niko Simo	Manager of Stevedoring Company
Enver Shehi	Ministry of Economy, Commission for Privatization

Fier Factory

Andon Dema	General Director
Yani Sila	Chief Engineer
Kujtim Alite	Chief, Ammonia Production
Artan Basha	Production Engineer

Lac Factory

Tonin Nikolla	Chief Engineer
Kurt Sallaku	Production Superintendent
Ndrec Doda	Production Superintendent
Ms. Alma Bujari	Economist, Data Controller

Banks

Orfea Dhuci	General Director, Bank of Agriculture and Development (BAD)
Teodov Gedeshi	Deputy Director, BAD
Ardian Fullani	Albanian Commercial Bank

Iliria Holdings S.A.

Petraq Gramo	Import Manager (Formerly Legal and Contracts Officer for Agroexport)

Albanian Chamber of Commerce

Siman Poveci	Vice Chairman

Shkoder District

Ali Spahia	Head of Executive Committee
Fatos Gjyrezi	Secretary of Executive Committee