PNAAQ-995
ISN: 36515

Productivity Improvement in the Egyptian Automotive Feeder Industries

Volume III

Strategy for the use of Aid Resources

Final Report

July 1984

Kearney: Management Consultants

VEHICLE ASSEMBLY FEEDER INDUSTRY IN EGYPT

PROJECT NO. 263-0090.r

EXECUTIVE SUMMARY

A. T. Kearney, with assistance from Rockwell International, Automotive Division, submits herewith the report required by Section VII 2 and 3 of the Scope of Work. This work was performed under the leadership of Dr. Adel Gazarin, Chairman, Engineering Industries Corporation and with the invaluable assistance of personnel from El Nasr Automotive Company. This report consists of three volumes:

I. PRODUCTIVITY IMPROVEMENT IN THE EGYPTIAN AUTOMOTIVE FEEDER INDUSTRIES

This volume analyzes:

- Worldwide Trends and Opportunities
- Egyptian Trends and Opportunities
- Goals of the Industry
- Obstacles to Growth and Productivity
- Recommendations to the Industry

It identifies opportunities and presents recommendations to improve productivity throughout the automotive sector of Egypt.

II. PRODUCTIVITY ISSUES AND RECOMMENDATIONS

This volume presents an analysis of opportunities for improving productivity in each of five feeder industry companies. Many of the conclusions in Volume I are based in part on these analyses. However, to maintain the confidential nature of the data, distribution of this volume is limited.

III. STRATEGY FOR THE USE OF AID RESOURCES

In this volume we recommend specific actions USAID might take to assist the Egyptian automotive industry. A three-phase program is suggested:

Phase 1) Industry Diagnosis and Planning. This phase, to be complete by the end of 1984, should outline development of the industry over the next decade.

Phase 2) Structural Development, a set of eight interventions from mid-1984 to mid-1985, programming the expansion of six private sector companies with U.S. technical partners, and creating the necessary industrial focus in Egypt for their success.

Phase 3) Investment and Production Growth, with interventions in late 1985-1988 of capital and technical operations assistance patterned on AID's successful aid to a public sector company in the automotive feeder industry (TRENCO, a tyre manufacturer).

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1.0 CONTEXT FOR USAID ASSISTANCE

THE OPPORTUNITY

The market for vehicles and their parts is growing rapidly in Egypt, and is expected to triple in the next 15 years. For many parts, a demand sufficient for economic production in Egypt will be reached in a very few years.

The Egyptian government has recognized the demand for transportation and is promoting growth in vehicular manufacturing. It is reviewing the sector as a whole to determine national needs and the opportunities for sound economic production. Development of plants to produce as many as 140,000 cars per year, and major expansion of truck and bus manufacture, are under active consideration. Expansion of the feeder industries is a major consideration in this planning.

Even if the proposed major assembly plants are delayed, demands of existing assemblers and the aftermarket are growing. During the past year, both NASCO and AAV (Arab American Vehicles, a joint venture of American Motors and the Egyptian government) have greatly strengthened their efforts to develop local suppliers. General Motors is building a plant to produce 18,000

light trucks and buses per year and is committed to substantial local content within a few years. These efforts alone could justify a program to develop automotive parts manufacturers.

Heretofore, most automotive manufacturing has been performed by public sector companies. Private investors have been deterred by the difficulty in identifying a viable project, by previous market limitations, and by uncertainty as to public sector developments. The future outlook is much brighter for the private sector. The government does not have funds to pursue both assembly and parts manufacturing. The market is now large enough to define the opportunities.

THE PROBLEM

Despite these opportunities, there are significant obstacles both to growth of the entire industry and to the private sector in particular:

- Fragmentation. The market is currently very fragmented, reducing the opportunity for economies of scale. The proposed new projects should eventually overcome this problem.

- Policies and Practice. Because of past policies, regulations and practices, public sector companies are burdened with many inefficient practices. They are seeking help to improve so that rapid near term growth of manufacturing can be achieved.
- Small Scale. The existing private sector companies are innovative but very small. Their owners will need significant help both managerially and financially to achieve the doubling and redoubling in size required.
- Technology. In order to ensure quality, assemblers such as GM prefer that local suppliers have a technical relationship with a qualified foreign supplier. U.S. suppliers have expressed interest in Egypt but the small size, technical complexity and time required to understand the Egyptian market deter follow-through.
- Identified Projects. Both Egyptians and foreigners have been deterred from investing because markets have been hard to identify in Egypt and because policy on such projects was not clear. The latter is being explicitly developed now but clear definition of feasible projects is needed to encourage action.

A THREE PHASE APPROACH

As the result of consultations with Egyptian authorities, the High Committee, assembly and supplier industry executives and on-site production exposure, we recommend that the opportunities and problems of the Egyptian automotive industry be approached through a three phase program. Each phase requires significant effort by assemblers, the Egyptian Government and USAID. An outline of the program is presented in Appendix I. It incorporates, where appropriate, initiatives already under way in Egypt and the comment of key figures in automotive industry development.

Phase I centers on industry diagnosis and planning. As shown in the outline, this work (which began in mid-1983) is well under way. AID contributed initially through the consultant effort by A. T. Kearney, with results and recommendations reported in Volume I of this report.

The concept for a more focused but much larger industry has been developed. Proposals have been solicited for expanding passenger car production, while programs for expanding truck production are active. The need to identify the economic implications of alternative development scenarios has been recognized. An experienced consultant is being engaged, and decisions should be feasible by the end of 1984.

Phase II would be devoted to structural development. During this period negotiations for the new assembly plant would be completed, NASCO's future plans clarified, GM's new truck plant completed, and needs for feeder industries specified. A few existing feeder companies should begin expanding and at least six new feeder projects should be defined. This phase should run through 1985.

During Phase III, the fruits of the expansion and growth should begin to be realized. The new assembly plants would be built and at least 15 substantial feeder projects should be established. This phase should run from late 1985 through 1988.

REPORT ORGANIZATION

The following three sections take up each of the three phases in turn and describe USAID's role in them. The final chapter presents a brief review of several existing USAID supported projects with recommendations on how they might be more helpful to the automotive industry.

2.0 PHASE I, DIAGNOSIS AND PLANNING

WORK IN PROGRESS

Considerable diagnosis and planning have already been done in the Egyptian automotive industry. In 1983, responsibility for many of the public sector companies was devolved into a holding company headed by Dr. Gazarin, the former chairman of the largest car assembly company, El Nasr Auto. This should encourage greater focus and coordination in the industry.

This organizational change paved the way for the formation of a High Committee with a mandate to look at the entire industry. The Committee quickly determined that fragmentation and small scale manufacturing are major obstacles to progress. From that diagnosis grew the concept of producing only two passenger models in much larger quantities than total production today.

The Committee acted on its conclusions by encouraging the cancellation of several proposed projects and then requested proposals from ten world scale manufacturers for the development of the two models.

Proposals from the companies are expected to arrive in the last quarter of 1984. Meanwhile the High Committee is studying the economic implications of the new projects.

Most of the above work has centered explicitly on the automotive assemblers and only implicitly on the automotive suppliers (feeder industries). During the same period, USAID commissioned this study to examine the feeder industry.

The High Committee's examination and this study (as well as a number of earlier efforts) point to the need for a thorough analysis of the economics of the industry before substantial investments in new assembly plants are made. The next subsection proposes that USAID assist that analysis.

USAID ASSISTANCE

Recommendation 1 - Prepare Economic Analysis

The High Committee has requested USAID to provide a consultant to conduct a prefeasibility study of the car project. The object of the study is to establish first estimates of the level of investment required and the probable economic implications of the project. We support their request especially if the project provides a structure for refining the analysis after bids are received. The estimated cost of this study is $150,000. It will have great importance for feeder industry development by helping to define viable scales of growth.

The bids from the world scale automotive companies should contain considerable detail that is not readily available now. Therefore, USAID should be prepared to supply additional assistance to refine the prefeasibility analysis in light of better data. The estimated cost of this refinement effort is $45,000 for 3 man-months of work.

There analyses should help the High Committee select a course that is economically advantageous to Egypt. They will also provide USAID with a better basis for deciding to fund the programs described in Phases II and III. All of this analysis should be complete by early 1985.

3.0 PHASE II, STRUCTURAL DEVELOPMENT

INDUSTRY ACTIVITIES

During this phase decisions will be made about car production, with the world scale companies involved in the two car assembly plants. General Motors should complete its new truck assembly plant. A decision should be reached on other truck proposals (e.g., Ford), and a decision made on future investment in the NASCO plant. At this point, the nature (in many cases, the specifications) of the parts required can be identified. Planning and development attention can then be shifted toward the feeder industries, for parts production needed to supply the assemblers.

To encourage rapid and economic growth, we recommend that Egyptian companies and agencies undertake the following activities:

- Design and implement an automotive industry information system that provides the market data required by both investors and the government.
- Using that data, identify feeder industry projects that are needed and likely to be economically attractive and publicize these opportunities in the Egyptian investment community.

- Encourage expansion of private sector companies to fill the void left by insufficient investment by the public sector and to encourage greater innovation.
- Implement a productivity measurement system for use in the public sector companies and to any private sector companies who might choose to participate. This system would increase consciousness of productivity, provide baseline data against which improvements may be measured and suggest goals for improvement.
- Establish an Automotive Industry Syndicate through which industry participants can help shape policies affecting the industry. This agency might also provide the information and guidance services suggested above.
- Implement a productivity improvement program in at least one public and one larger private company. These projects should demonstrate the improvement potential and provide "centers of excellence" for training other managers.
- Establish professional societies (on the pattern of the Foundryman's Society). These societies could provide leadership in fostering innovation in Egypt and in transferring technology into companies.

USAID ASSISTANCE

Recommendation 2 - Implement Information Systems

Lack of appropriate information is a major obstacle to growth and development of the industry. Three major initiatives in information services deserve USAID support:

1. List of Projects. Once the new car models are chosen, a list of parts that assemblers would like to buy locally and which are likely to be economically feasible would be helpful to investors. A USAID supported consultant could work with each of the assembly companies to develop the list. In the process, he could also promote a higher level of intercompany cooperation and standardization.

2. Market Information System. Rational growth of the feeder industry is dependent upon more accurate and timely information about capacities, program and product change, project status, and the like. Key figures in the industry have stressed to us that lack of shared information has blocked progress on new investments they are planning. Banks should also benefit from this information. The High Committee needs it for accurate sector planning.

AID assistance is needed to initiate this process. To be most effective, an industry information system in Egypt would combine the useful services provided in the U.S. by Wards Automotive, Thomas Register, and some trade associations. At a

minimum, it should provide:

- o Statistics on vehicle and parts production and imports.
- o Statistics on the vehicle park.
- o Information on planned new programs in the industry.
- o An annual directory of feeder companies.

We recommend the services of an AID-funded expert to:

- o Define the data required by industry decisionmakers and investors.
- o Design the formats for collection and presentation of the information.
- o Publish the first issue.

3. Productivity Measurement System. If productivity is not planned and measured, little progress is achieved. The reporting system presently utilized in the public sector focuses on last year's financial results and a variety of detailed purchasing data. The private sector has done little or nothing in this field.

A system that establishes goals and provides measures for following achievement of the goals is needed. An important subset of the system would be goals and measures for improving productivity. The recent establishment of holding companies offers the opportunity for establishing such a system at the company level.

We recommend that USAID fund the establishment of such a system for the Engineering Industries Corporation, as it has requested.

The total cost of USAID for providing a consultant to develop and implement those systems should be approximately $230,000 for 11 man-months of effort.

Recommendation 3 - Expand Private Firms

The annual market for vehicle components and aftermarket spares in Egypt may reach $750,000,000 in five years. The domestic feeder industry should aim at 50% of this market, leaving the balance to imports. (A lesser target would make the vehicular industry a very heavy drain on Egypt's foreign exchange.)

Meeting this goal will require major investment in both the public and private sectors. There is an unusual opportunity for mutually advantageous apportionment between them of manufacturing roles. (Private industry in Egypt has been careful not to venture into roles competitive with the public sector, for good reason, and this has been a major factor in deterring its growth.)

Public sector feeder industries will be hard pressed to meet the growing demand for parts they are already manufacturing, and for the more capital-intensive and precision-oriented components of original equipment. There are many other important components for which private manufacturers are particularly well suited, where public sector capacity does not exist, and for which Egypt appears to have a comparative advantage over imports. Also, the large aftermarket or replacement demand seems particularly adapted to private operations, as does the regional export market.

Egypt must export a substantial quantity of vehicular components to pay for raw materials used by parts manufacturers and to compensate for imported components in which Egypt does not have comparative advantage. The private sector has greater potential for successful exports, particularly where joint ventures can be formed with U.S. and other supplier firms, taking advantage of their expertise, market reputation, and distribution channels. Links with major trading corporations are also promising.

We can estimate the potential profitability of private investment from a recent case. A U.S. manufacturer has offered to supply a complete brake shoe assembly manufacturing plant to Egypt for $650,000. The offer includes the cost of training Egyptian staff, assembly, and start-up, and participation in up to 20% of the equity. The joint venture would produce 240,000 assemblies per year on a two-shift basis, an output which can be utilized by the Egyptian aftermarket alone. The total cost of production per unit in the U.S. would be about $2.05. It should be less in Egypt as labor cost per unit could be 20% less than in the U.S. The selling price in Egypt is likely to be 25% above the U.S. price. Although these figures are the roughest approximations and merit further careful analysis, they do illustrate the profit potential available for private sector growth in Egypt.

We recommend that AID help to demonstrate how this potential can be realized, by limited initial assistance to six pilot companies, for manufacture of five vehicular components, selected

according to the following criteria:

- Evidence of comparative advantage for manufacturing in Egypt.
- Relevant experience in private sector manufacturing.
- Lack of competitive capacity in the public sector.
- Evidence of adequate market in Egypt (OE plus aftermarket) to support efficiency of scale.
- Likelihood of joint venture interest.

We have tentatively identified shock absorbers, gaskets, radiators, and brake assemblies as meeting these criteria for success. Other opportunities certainly exist. There are qualified entrepreneurs already in the feeder industry, and there is evidence of potential technical/equity interest in collaboration by U.S. parts manufacturers. Self-reliance should be achieved within two years.

The project could be performed in two phases.

Phase 1 - Opportunity Definition. For each component, conduct limited investigations to determine:

- Product characteristics required to serve the market.
- Size of effective market for these items.
- Minimum efficient and optimal scales of production.
- Interests and standards of assemblers in local sourcing.

Phase 2 - Opportunity Realization. For each Phase 1 project, assist qualified Egyptian entrepreneurs or companies to:

- Prepare a business plan, identifying specific needs for capital, technology, and personnel.
- Prepare a justification for capital lending or participation.
- Identify candidates for U.S. technology and equity participation.
- Prepare an implementation plan.

The estimated cost is $65,000 for Phase I and $216,000 for Phase II. These amounts would provide three man-months of expert assistance per product in Phase I, and two man-months per entrepreneur in Phase II.

Recommendation 4 - Encourage Foreign Relationships

The most successfully managed firms in Egypt have derived their excellence from early and continuing association with well-managed international firms, first as models during start-up of the plant and then as technical partners during full plant operations and development of new products. AID has rightly fostered this process for excellent public sector supplier firms (e.g., the Transportation and Engineering Company, TRENCO, for radial tire production) which was assisted by both CIP and IPP.

AID should give priority access to AID capital loan and grant funds (e.g., the Commodity Import Program) to feeder industry firms seeking expansion to economic size in collaboration with a U.S. technical/equity partner.

Cost: None additional.

Recommendation 5 - Incentive Programs

Productivity is a joint function of management and workers and will be realized best where rewards for success are tangible and related to specific performance targets. However, poorly designed incentive programs may cause higher production volumes accompanied by higher reject or defect rates, or otherwise frustrate net success.

Many Egyptian firms are experimenting with incentives, with varying results. Success of these experiments would remove one of the greatest impediments to productivity (apathy resulting from low fixed wages) but must also be guided toward quality and reliability of product, if goals of manufacturing value added in Egypt are to be achieved.

Substantial success in increasing productivity in the U.S. has been achieved with "gainsharing" programs (Appendix I, Part I). This type of program is designed to both motivate and reward managers and workers for improvement in productivity. Gainsharing should fit the Egyptian government better than traditional piecework systems because it is based on performance of groups rather than individuals.

We recommend that AID commission a short consultant effort to organize a conference, under auspices of the Federation of Egyptian Industries, on incentive and gainsharing programs for

industry executives, with two objectives:

- To focus attention on and develop support for programs which can be effective in improving productivity in the feeder industries.

- To identify companies willing to participate in a pilot program.

Estimated cost: $35,000.

4.0 PHASE III, INVESTMENT AND GROWTH

INDUSTRY ACTIVITIES

Phase III should be a period of investment and growth in the Egyptian automotive industry. The requirements of the industry should be reasonably clear and the long term direction ensured. The new assembly plants should be constructed and, hopefully, a number of new ventures designed to feed these plants will be formed.

During this period, in addition to constructing the proposed assembly plants, the Egyptian government and automotive industry should encourage:

- Continued expansion of private sector suppliers.
- Establishment of service and distribution companies for the industry. We suggest a goal of two service companies (e.g., heat treating and steel drawing and slitting) and three distribution companies serving the aftermarket.
- Diffusion of productive practices among companies. This may be done through selective transfers and through using a long term expert consultant in selected companies.
- Improvement in marketing and sales. Near term, this effort should focus on internal markets but a well studied export program is also much needed to ensure the success of this industry.

- Restructuring of the large-scale, public sector companies. Organizational restructuring into smaller units is needed to speed decisionmaking, encourage innovation, and more clearly identify good and poor performance. At the same time, R&D programs should be established at least in leading companies in order to reduce the cost of imported technology and to better adapt products to local conditions.
- A new look should be given to incentive programs for today they are merely plans for increasing basic salaries. Better plans would encourage greater productivity thus permitting faster growth of real income in the long term. Better plans do exist that are compatible with Egyptian social and equity concerns.

TECHNICAL ASSISTANCE FROM USAID

Under the current decentralization program in Egypt, more responsibility is being taken by individual companies for their own investment decisions. Concentration on production targets is giving way to a more balanced consideration of market demand, special quality needs of clients, productivity improvement, production cost accounting and profitability. Demands upon company management thus are increasing, under the impact of market forces. These are important and salutary developments as Egypt's automotive industry moves toward the conditions of a market economy. Kearney proposes that AID assistance to feeder

USAID can help this occur by providing a technically qualified consultant to continue the role described in Recommendation 3 in Phase II. If a goal of development of 15 new projects were set, the estimated cost of this program would be $750,000 over the three year period. In addition, many of these companies would probably require some of the capital assistance described in Recommendation 10.

Recommendation 7 - Build Industrial Service Companies

Egyptian producers of automotive components, whether public or private, generally perform "in-house" almost all productive functions even when the task requires the utilization of highly specialized skills and machines for short periods of time. In Western economies, many such functions are performed by independent service companies which can obtain more efficient utilization of equipment by servicing multiple users. They can also develop higher levels of skill and productivity among operating personnel. Functions that are typically performed in this manner include:

- Heat treatment.
- Chemical treatment (e.g., galvanizing).
- Tool and die manufacture and repair.

We recommend that USAID fund a program to establish and develop such services in Egypt. Such a program should have two phases as follows.

industries in Phase III should therefore be:

- Negotiated primarily at the company level,
- Tailored to specific technical and capital requirements,
- Kept consistent with the goal of corporate self-sufficiency and independent initiative, and
- Designed to foster a major role for private enterprise, noncompetitive with the public sector.

Development programs at the company level can best be focused on and limited to the initial stages of business development, including management support and start-up. We see such a seminal role for USAID as having both technical and capital project assistance components, attuned to the differing needs of the public and private sectors.

Recommendation 6 - Expand Private Sector Feeder Companies

Assuming the private sector expansion effort recommended for Phase II is successful, the program should be continued into Phase III. The objectives should again be an increase in:

- The number of private sector manufacturing companies.
- Their share of the automotive industry.
- Their economic strength.
- Their contribution to innovation.
- The standard of living they offer their workers.

(a) Phase I - Facility Selection

Because these services are so often performed "in-house" today, a survey should first be made to identify the most appropriate facility for the service. Selection criteria might include:

- Quality of current work.
- Skill of personnel.
- Completeness and modernity of the facility.
- Separability from the existing parent organization.

Once such a center is defined, it should be developed into a true center of excellence.

(b) Phase II - Develop Center of Excellence

In this stage, a manager who has had top management responsibility in Western Europe or the U.S. should be selected to run the company for the first two to three years. He must have strong marketing and sales skills in order to change the current strong orientation to vertical integration.

The estimated costs per service are $30,000 for Phase I (1.5 months @ $20,000/month) plus $170,000 for recruiting and salary support for two years of Phase II. We suggest that USAID establish a goal of organizing two such companies. Total cost would then approach $400,000 over a three year period.

Recommendation 8 - Develop Wholesale Organizations

Both private and public sector managers stressed the difficulties in having to purchase large quantities of industrial supplies from abroad. Often they purchase enough to last several years because no suitable local organization exists to sell small quantities of a wide range of quality products at competitive prices. Cited particularly were:

- Steel products.
- Mill supplies.
- Chemical compounds.

Therefore, we recommend that USAID fund a program to establish and develop wholesale organizations in Egypt dedicated to providing raw materials and supplies to industrial companies. This program should have two phases similar to the previous recommendation.

(a) Phase I - Facility Selection

Survey existing wholesalers to identify the most appropriate organization to help become a "center of excellence." Criteria might include:

- Number and type of lines presently carried.
- Skill and capability of personnel.
- Organizational attachments.

Once such a center is identified, it should be developed as a true center of excellence.

(b) Phase II - Develop Center of Excellence

In this stage, a manager who has had top management responsibility in Western Europe or the U.S. should be selected to either assist the current head of the business or actually manage it himself. He should have strong skills in either inventory selection and management or in marketing, depending upon the skills of people currently involved in the business.

The estimated costs of this program per wholesale company are $30,000 for Phase I (1.5 months @ $20,000/month) plus $170,000 for recruiting and salary support for two years of Phase II. We suggest that a goal for establishing three such companies be set. Total cost would then be $600,000 over a three year period.

Recommendation 9 - Provide Top Executive Assistance

A number of companies including NASCO, El Nasr Forging, and Helwan Castings, have benefited from two to three months of assistance from an experienced executive from the U.S. we believe this type of assistance would be much more effective if the expert were to remain with the company for a much longer (probably two years) period of time. He would then be able to follow the basic recommendations through implementation and work to develop the management style of the organization.

We recommend that USAID try this approach with two large companies (e.g., Helwan Castings and Abu Yusef). The program could be evaluated after a year, and if found successful, expanded to other companies.

USAID could fund the cost of recruiting the appropriate person (which must be carefully done to ensure both a technological and personality fit) and his salary. The Egyptian company could fund all local costs. On this basis, the estimated cost per company is $190,000 for a two-year program. We believe four companies who play an important role in the automotive industry and who would be interested in this program could be identified. For this level of effort, the program would cost approximately $760,000 over a three year period.

CAPITAL ASSISTANCE FROM USAID

Recommendation 10 - Provide Capital Assistance

When Egyptian and AID-supported programs have helped focus the industry strategy, then assistance in obtaining capital and technical operating know-how will also be required. We recommend that AID support a selective capital assistance program, operated through industrial development bank, having the following characteristics:

a) Selection

Group 1: Companies already active in the feeder industry which face equipment-related impediments, either to productivity improvement in their present product lines or to extension of those lines to meet visible market demands. Prototypes are the five companies (3 private and 2 public) which participated in Phase I of the Kearney feeder industry analysis, although other feeder industries should also qualify.

Group 2: Nascent companies (private sector only) which should be formed to produce components for which Egypt has an attractive market and a comparative advantage for domestic manufacture. These companies would be established according to the criteria and for the products and services designated in Phase II planning.

b) Program Parameters

The recommended concept for AID assistance to both Group 1 and Group 2 companies is to demonstrate to Egyptian entrepreneurs the characteristics and methods for profitable new ("greenfield") or add-on investment in feeder industry, primarily in the private sector. Accordingly, capital assistance by AID would be limited to 10-12 companies, in these two groups, with the intent that all subsequent investment and growth would be entirely financed through commercial channels.

In order to facilitate transition to ordinary commercial sources for later development, AID financial participation in the original equipment acquisition should not exceed one-quarter of the total agreed upon capital investment by each company, and would of course be limited to equipment of U.S. manufacture plus specified U.S. support services.

The parameters of assistance should follow the successful patterns of AID assistance to the Transport and Engineering Company (TRENCO) in Alexandria, which has produced in exemplary time, budget performance, and technical results the erection of tire making facilities, including a new radial tire line. These parameters are as follows:

1. All equipment acquisition will be justified by an AID-financed mini-feasibility ("fast track") study, of the type accepted by AID for funding of the TRENCO and several other major industrial projects.

2. Capital assistance by AID will be limited to one-quarter of the value of the project up to a total not to exceed $2.5 million for any one company, and $15 million in total for 10-12 companies.

3. Purchase cost of U.S. equipment funded by AID loan will be on terms comparable to those extended to TRENCO.

4. Noncompetitive cost components of U.S. equipment procured under AID funding will be financed by AID grant (e.g., ocean freight, insurance, U.S. industrial engineering costs for start-up management, operational advice, and training of Egyptians).

5. Preference would be given to investments in which U.S. technical partners would contribute equity capital.

c) Illustrative Subprojects

Group 1: Many of the feeder industry companies reviewed by Kearney/Rockwell have plans to increase production of components as soon as the market demand is reasonably ensured. The precise identification of projects will be linked to further clarification of the Egyptian production strategy for automotive vehicles and to an analysis of the cost/benefit of each proposal. The total cost of justifiable investments is likely to be in the range of $20 million during the next few years.

As illustrations, several identifiable investment proposals are cited for the five companies which were assessed by Kearney.

Specific illustrations include:

Company	Illustrative Purpose	U.S. Procurement Cost ($1,000)
Giza Rubber	a) Establish production facilities for extruded rubber products b) Improve material handling facilities	$ 500
Iron Works Factory for Metal Manufacturing	a) Add die cast machines and support facilities to increase capacity and produce more sophisticated components b) Improve movement of raw materials and finished goods	$1,000
IAMCO	a) Add tool making equipment to expand existing skills in tool/die making b) Improve movement of goods at three-tiered factory c) Establish production line for selected electrical products	$1,000
General Metals	a) Improve production flow and reduce rejects/losses by adding materials handling equipment b) Improve quality of cast products	$1,000
El Nasr Forging	a) Improve quality of cast products b) Improve material handling	$1,000
Subtotal U.S. Equipment Procurement Loans		$4,500
Subtotal U.S. Implementation Grants (est.)		2,500
TOTAL		$7,000

Note: All local currency costs, including civil engineering and construction, would be borne by Egyptian sources as would other non-U.S. equipment costs and services.

Group 2: A total AID program for both Group 1 and Group 2 programs of $15 million for capital and technical operating assistance is recommended to launch self-sustaining growth of the feeder industry, through demonstration projects. The non-USAID contributions which would be approximately three times that of the AID component, or roughly $45 million, would include:

- Procurement of other needs equipment, including items more economically available in other countries plus locally made goods and services.
- All local costs such as for civil engineering and construction, local costs of training, local transportation, site preparation, start-up and working capital.

SUMMARY

European and Japanese automotive manufacturers require 50-80 cents in assets for every dollar of sales (more integrated companies tend to be higher on the scale). If the Egyptian industry were to provide 50% local content in 100,000 cars/year costing $6,000 each at a ratio of $0.70 of asset per $1.00 of sales, a total investment of $210 million will be needed. Current investment in automotive facilities probably does not exceed $50 million. Thus the $15 million capital investment we have suggested in this section would be less than 10% of the expected total.

The $2.5 million investment in management services, though even smaller, could mean the difference between the success and failure of the whole Egyptian automotive program. We believe, on the basis of the extensive interviews and plant tours made for this study, that the issues of good management, both in strategic

thinking and operations, are the primary obstacles to growth in both the public and private sectors. USAID funds will be well spent if it reduces these obstacles.

5.0 - ROLES FOR EXISTING AID INDUSTRIAL PRODUCTIVITY PROGRAMS

Our general strategy and recommendations for feeder industries afford numerous opportunities for contributions by current AID-funded productivity improvement programs, to obtain maximum value from program investments already made by USAID. Some of these are specified in the recommendations in Volume I, others will grow spontaneously out of improvements in industry focus and rationalization of company operations. In some cases we have cited initiatives to be taken by USAID-funded programs, while in other cases they are invited to follow up or coordinate with initiatives taken by others.

These undertakings may require a modest increase in resources or a curtailment of other activities, which cannot be measured at this stage. The prospective rapid growth of feeder industries promises a greater receptivity to IPI programs in comparison with more established industries, because advice is usually more welcome when new systems are being instituted and established patterns do not have to be disrupted.

MANAGEMENT DEVELOPMENT FOR PRODUCTIVITY

The Management Development for Productivity (MDP) program had not yet begun working with the automotive feeder companies when we began our work. As part of this study, MDP was introduced to General Metals Company and El Nasr Forging Industry. We understand that MDP is now working with General Metals.

The MDP program appears better suited to the needs of the larger scale (primarily public sector) companies. Because they are larger, a longer time is required to completely follow through on implementation than was designed in the original MDP program.

Proposed roles for MDP are listed in a number of our recommendations. Overall, MDP could offer several special emphasis programs that could significantly benefit all members of the industry, public and private, large and small:

- Planning and Priority Setting. Many of the companies, both public and private, are run by men with technical rather than business training. A series of workshops on company planning run for top managers followed by on-site, short-term, but repeated consulting could stimulate better practices.
- Marketing. Modern and sales methods are needed but rarely applied in Egypt. MDP could support a series of seminars/workshops on marketing in the automotive industry and assist development of a professional society of marketing and sales personnel. See the recommendation in Volume I entitled "Upgrade Marketing and Sales Function" for more detail.

INDUSTRIAL TECHNOLOGY APPLICATION PROGRAM

The Industrial Technology Application Program (ITAP) was not well known in the automotive industry, which is not surprising since it is a relatively new program. There is a real need for its short-term technical assistance programs - especially in the

small companies. Again we suggest that the time and effort spent in each company be increased so that there is some follow through to implementation.

Proposed roles for ITAP are listed in several of our recommendations. In addition to its present array of services, we suggest ITAP consider:

- Establishing R&D Groups. Few of the companies have an established product or process development program. These are very much needed to improve quality, to adapt local materials, and to adapt products to local conditions of use. In Volume I (under the recommendation titled "Encourage Develop- ment of Products and Processes"), we suggest how a pilot program might be started at NASCO. Regardless of the outcome, ITAP could be helpful in encouraging and establishing such efforts in other companies both public and private.
- Establishing Professional Societies. Professional engineering and manufacturing societies could encourage improvement in productivity by more rapidly publicizing successful efforts. We suggest that ITAP conduct, over time, a series of seminars/ workshops on process technologies in the automotive industry (e.g., heat treating or metal forming). As part of each seminar, ITAP could encourage and assist the participants to form a professional society. These societies could then become the channel for further assistance in that area. (See the recommendation in Volume I entitled "Encourage Local

Development of Products and Processes" for more details.)

VOCATIONAL TECHNOLOGY APPLICATION PROGRAM

There is no apparent lack of training for workers. There are, for example, several government operated training centers in the Helwan area. One specializes in basic vocational training, one in metallurgical subjects, and one in general engineering. NASCO also offers training programs in automobile mechanics and repairs.

Most company leaders believe they are not too effective and prefer on-the-job training. Managers are enthusiastic about sending workers to factories operated by foreign suppliers to gain knowledge and skills about new equipment.

We observed that, although workers might be instructed in better methods for their particular job, they appear sufficiently skilled for their tasks. We conclude that VTP-type programs are not required in the automotive industry.

MIT TECHNOLOGY ADAPTATION PROGRAM

We noted great need for development of production management and engineering skills in such areas as quality control, materials handling, work methods, and production scheduling. Senior managers attending the conference suggested that these skills might best be taught through an organization that specializes in hands-on factory training rather than theoretical work. Examples of organizations are set up to do this were given (e.g., Sadat Academy) but there appears to be a consensus that all have taken an academic approach.

We recommend that the MIT Technology Adaptation Program encourage development of appropriate curricula at Cairo University. If set up as a graduate program (e.g., Masters in Production Management), it could draw younger engineers who are already working in factories. The program could emphasize field work in the factories where students are employed and, by so doing, might draw professors out of the classrooms into direct contact with real industrial problems.

INDUSTRIAL PRODUCTION PROGRAM

The programs just discussed are all part of the Industrial Productivity Improvement (IPI) program. In addition, USAID has and is still funding productivity improvements under the Industrial Production Program (IPP). Several projects undertaken in this program could serve as models for extended work in the feeder industry:

- Material Handling. NASCO was helped to design material handling devices (racks and special pallets) to reduce damage to parts as they are moved. Use of these racks by suppliers (specifically El Nasr Forging and General Metals) was recommended. This review again suggests the need for improved material handling programs throughout the feeder industries.
- Information Systems. An information and supporting computer system was designed and installed for TRENCO, the largest automotive feeder company. As noted in this study, other companies in the industry have similar needs for which the TRENCO project could serve as a model.

- Cost Accounting. A cost accounting system was designed and installed for the Egyptian Company for Refractories. It is now being used to identify and set priorities on cost reduction opportunities, to control production, and to improve pricing. This system (already written in Arabic and consistent with the Egyptian Standard Accounting System) could be easily adapted to automotive feeder companies who very much need it.

DEVELOPMENT OF THE EGYPTIAN AUTOMOTIVE INDUSTRY

ACTION	PRIORITY	BENEFITS	EGYPTIAN SPONSOR	USAID ROLE	COST TO USAID
PHASE I - 1983 - 1984					
INDUSTRY DIAGNOSIS AND PLANNING					
a) Developed concept for a substantial increase in Egyptian automotive manufacture.		1. Larger scale assembly is likely to be more economically efficient for both assemblers and feeder companies. 2. Consequent reduction of market fragmentation will enlarge potential for manufacture for aftermarket. 3. Erlarges opportunity for feeder company sales and manufacture. 4. Enhances strategically desirable self sufficiency.	High Committee	NONE	NONE
b) Decentralized authority for automotive companies from Ministry of Industry to Holding Company. Most such companies now are part of the Engineering Industries Corporation. Placed Chairman of holding company on the GOFI Board of Directors.		1. More attention can be given to economic efficiency. 2. Greater opportunity should exist for intercompany cooperation. 3. An experienced automotive leader, Dr. Gazarin heads the group.	People's Assembly and the Ministry of Industry	NONE	NONE
c) Designed and began construction of a new plant to assemble buses and light trucks.		1. Increases opportunity for feeder company sales and manufacture. 2. Will provide Egyptians with experience in modern management techniques and practices. 3. Will encourage transfer of more advanced technologies into Egypt.	General Motors	NONE	NONE
d) Conducted study of productivity in the feeder industry.		1. Identified needs for structural change and more information. 2. Recommended a strategy for the future of the feeder industry. 3. Recommended intervention strategy for USAID.	Egyptian Federation of Industries and NASCO	Selected, hired and guided a consultant, Kearney	$183,000

DEVELOPMENT OF THE EGYPTIAN AUTOMOTIVE INDUSTRY

ACTION	PRIORITY	BENEFITS	EGYPTIAN SPONSOR	USAID ROLE	COST TO USAID
PHASE II: 1985					
STRUCTURAL DEVELOPMENT					
a) Complete negotiations for two car assembly plants.	1	1. Complete identification of major assemblers to be active in Egypt for the next decade. 2. See also Phase I, Action "a".	High Committee	See "C" below	NONE
b) Complete new truck plant(s).	2	1. Provide Egyptian-made substitute for vehicles now imported.	General Motors	NONE	NONE
c) Decide NASCO development program.	2	2. Provide additional opportunity for feeder companies. 3. Will encourage interest in Egyptian market by U.S. and European parts manufacturers.	NASCO	NONE	NONE
d) Assist coordination of plans for the feeder industries with the plans for the two new auto plants.	3	1. Should encourage economic projects and discourage others. 2. Should encourage faster activation of economic projects.	Engineering Industries Corporation	Provide a technically qualified consultant	$150,000
e) Expand production of private sector companies.	4	1. Enable private sector companies to fill the void left by insufficient investment by the public sector. 2. Should generate greater orientation toward innovation, growth and economic operation in the auto industry.	Federation of Industries	Same as above	$300,000
f) Establish Automotive Industry Syndicate.	5	1. Will provide an agency through which all participants in the industry - public and private can help shape policy. 2. Can provide the administrative force for gathering, analyzing and publishing industry statistics. 3. Could develop and coordinate an export program.	Engineering Industries Corporation and the High Committee	Provide support through the ITAP program	NONE
g) Design information system for the automotive industry.	6	1. Will provide the information needed by entrepreneurs or companies to plan expansions or new projects. 2. Will provide data required to improve decisionmaking of governmental agencies.	Automotive Industry Syndicate or Engineering Industries Corporation	Select and fund a technical consultant	$150,000

DEVELOPMENT OF THE EGYPTIAN AUTOMOTIVE INDUSTRY

ACTION	PRIORITY	BENEFITS	EGYPTIAN SPONSOR	USAID ROLE	COST TO USAID
h) Implement productivity improvement program in two companies - one public and one large private company.	7	1. Increase production. 2. Better understanding of market followed by higher sales. 3. Lower costs.	General Metals and one other company to be selected	Accomplish through the existing MDP program	NONE over that already budgeted
i) Implement productivity measurement system.	8	1. Will increase consciousness of productivity. 2. Will provide baseline data against which improvements may be measured. 3. Will provide data on which goals for improvement can be set.	Engineering Industries Corporation	Select and fund a technical consultant	$100,000
j) Establish professional societies.	9	1. Should provide wider perspective and thus greater encouragement for innovation to professionals. 2. Should speed up transfer of new ideas and practices among companies. 3. Can provide an administrative focus for training and other development work for the profession.	EIDDC, Automotive Industry Syndicate	Encourage ITAP to promote and support societies as part of its other regular programs	NONE over that already budgeted

DEVELOPMENT OF THE EGYPTIAN AUTOMOTIVE INDUSTRY

ACTION	PRIORITY	BENEFITS	EGYPTIAN SPONSOR	USAID ROLE	COST TO USAID
PHASE III: MID 1985 - 1988					
INVESTMENT AND GROWTH					
a) Build new auto plants.	1	See benefits listed under Phase Ia and Phase IIa.	High Committee	NONE	NONE
b) Continue expansion of private sector companies. Identify and assist 15 projects.	2	1. Will encourage strong, economic growth in private sector. 2. Will contribute to economic viability of the industry.	Automotive Industry Syndicate	Provide a technically qualified consultant	$750,000 management support plus $750,000 engineering plus $7.5 million loans
c) Establish 3 distribution (wholesale) companies; e.g., one aftermarket parts wholesaler, one steel supply warehouse and one mill supply wholesaler.	3	1. Will reduce cost and time to move goods from manufacturer to end user. 2. Will provide much better information about the needs of the market. 3. Will permit manufacturers to focus on manufacturing.	Automotive Industry Syndicate	Provide a consultant to help organize the projects and an experienced executive to advise the 3 companies for 2 years	$90,000 for organization +600,000 for 2 years of executive time per project

DEVELOPMENT OF THE EGYPTIAN AUTOMOTIVE INDUSTRY

ACTION	PRIORITY	BENEFITS	EGYPTIAN SPONSOR	USAID ROLE	COST TO USAID
d) Provide a senior executive for 2 years in 4 companies to improve their planning and operation.	4	1. Will improve company "culture" through long term follow-up. 2. Will install modern systems, procedures and methods of management. 3. Will likely encourage/develop a greater customer orientation in the company.	Four companies (to be identified later)	Select and fund the senior executives	$200,000 for each executive or $800,000 total
e) Transfer personnel from/ to centers of excellence.	5	1. Provide a method to replicate centers of excellence in other Egyptian companies without foreign intervention. 2. Stimulate managers to innovation and improvement by demonstrating alternative ways of accomplishing business activities. 3. Provide more opportunity for advancement for managers who have been innovative and productive. 4. Permit shifting excess personnel to other companies.	Engineering Industries Corporation	NONE	NONE
f) Encourage experts to Africa and Europe.	6	1. Will help balance trade in automotive trade. 2. Encourages Egyptians to focus on economic production. 3. Encourages Egyptian manufacturers to meet international standards of cost, quality and performance.	Automotive Industry Syndicate	Provide a consultant knowledgeable in world markets to implement an Egyptian export program for specific automotive components	$220,000

DEVELOPMENT OF THE EGYPTIAN AUTOMOTIVE INDUSTRY

ACTION	PRIORITY	BENEFITS	EGYPTIAN SPONSOR	USAID ROLE	COST TO USAID
g) Implement improved incentive plan in 3 companies.	7	1. Promote concern about productivity among all employees. 2. Encourage creativity in employees in solving production problems. 3. If properly structured, should reduce cost while increasing employee's pay.	Specific companies	Provide a consultant experienced in Scanlon type incentive plans	$100,000 per company or $300,000 total
h) Upgrade marketing and sales.	8	1. Encourage faster recognition and action on market opportunities. 2. Obtain a better match between customers' needs and manufacturer's response.	Specific companies to be identified	Sponsor (through MDP) seminars and workshops on marketing with follow-on assistance in specific companies	NONE additional
i) Restructure large companies into smaller companies better suited to Egyptian style of management.	9	1. Would better match Egyptian management style to the requirements of the organization. 2. Would provide more top management time for operating issues. 3. Would shorten lines of communication and decisionmaking. 4. Would more clearly identify good and poor performance.	Engineering Industries Corporation and other holding companies	NONE	NONE

DEVELOPMENT OF THE EGYPTIAN AUTOMOTIVE INDUSTRY

ACTION	PRIORITY	BENEFITS	EGYPTIAN SPONSOR	USAID ROLE	COST TO USAID
j) Establish 2 services companies; e.g., - Heat Treating - Tool and Die Making - Chemical Processing (galvanizing) - Steel Drawing and Slitting.	10	1. Provide higher quality products. 2. Reduce lead time for tools and services. 3. Reduce costs. 4. Substitute local manufacture and service for imports. 5. Encourage standardization.	Engineering Industries Corporation	Provide consultant to define the best opportunities. Provide a top manager with experience in the field to manage the company for 2 years	$200,000 per company = $400,000 total
k) Establish R&D programs in 4 companies.	11	1. Reduce cost of importing technology. 2. Adapt products more closely to local needs. 3. Develop a "can do" attitude toward improvements.	EIDDC and specific companies	Encourage ITAP to promote local development as part of its program	NONE additional
l) Publish a directory of products and services in the automotive industry.	12	1. Help buyers and sellers to find each other more quickly. 2. Increase competion in order to lower cost and improve quality. 3. Enlarge markets by providing more information.	EIDDC and later the Automotive Industry	Encourage ITAP to publish the directory as part of its large effort	NONE additional

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