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EGYPT, TUNISIA, ALGERIA, IRAQ

OBJECTIVES OF FIELD VISITS

March 1990

Objectives of Field Visits

The UNIDO mission statement requested that the consultant (Simpson Associates) review, analyse and select potentially viable electronic projects from candidates submitted by local experts and businesses. In practice, almost no work had been done to prepare projects in advance of my visits. Those that had been prepared were extremely sketchy with little or no information on market size, pricing, facilities etc.

There were one or two notable exceptions, viz. (1) The TEAM proposal for a professional printed circuit plant in Egypt (the best submission); (2) Mr. S. Sohairs' proposal for a printed circuit plant in Tunisia - brief but reasonably effective; (3) Some of the ENIE suggestions in Algeria for colour T.V. tube manufacture, radio communications equipment and again printed circuit board manufacture; (4) Proposals by Astein executives in Algiers for a personal computer and peripheral plant.

In all other cases I have had to extract as much data as possible within the limited time and budget available and expend considerable resources in piecing together acceptable proposals for the "sponsors".

There is a lack of professionally prepared market data for each country, analysis of current imports, listing and classification of existing public and private sector businesses.

There is a real need for a definitive analysis on the whole Arabian market and its trend in the next three to five years.

In most cases I have made educated guesses based on the few data available.

The projects fall into fairly obvious market categories for developing countries; they are:

CONSUMER ELECTRONICS

Colour Television Receivers

Every Arab country already has an installed base of colour t.v. sets and "screwdriver" assembly lines have been established in Egypt (400,000 per year, all parts imported), Tunisia (private companies led by King Electronics, 100,000 per year); Algeria (400,000 per year at ENTF, tuners, capacitors, transformers, yokes, resistors, cases, antennae also made by ENIE); Iraq (Electronic Industries Co. makes 250,000 colour t.v.'s per year plus tuners, yokes, transformers).

Each of these countries has plans to reduce importation of expensive components (hard currency) by adding more local value in manufacturing plants.

The most obvious component is the colour picture tube (c.r.t.) which is quite bulky, fragile and complex.

Project submissions were made independently by Egypt, Algeria and Iraq - all understand that economic viability depends on exporting to neighbouring countries some 60% to 75% of output. The total colour t.v. tube demand for the region (Egypt, Algeria, Iraq, Tunisia, Saudi Arabia, Morocco, Jordan) is about 2 million units per year. The approximate price of a 21 inch colour t.v. tube from a Korean supplier is \$30. Currently freight, handling, insurances etc. adds 15%. The sales volume of a 2 million tube plant is therefore \$60 million. Profitability of such a plant at this capacity level could approximate \$9 million annually (dependant on pricing policy). Savings of foreign currency would approximate \$35 million per year.

This was by far the largest project being considered in my visits and it clearly calls for pan-Arab co-operation in its location, funding and pricing. Total investment is estimated at \$40 m.

A major tube manufacturer will be required as the technological partner and the production equipment will need to be specified and purchased from Japan, Korea or from Thomson in France. The fabrication of glass envelopes could possibly be developed into a global business, given the relatively low energy costs and availability of high quality silica in Arabia.

Other Consumer Products

Components for radios - loudspeakers, capacitors, resistors, silicon integrated circuits.

All Arab countries are producing radio sets and audio tape recorders in one form or another. These are designs licensed from the developed world manufacturers. In each country certain components for radios are being produced - single sided p.c. boards, potentiometers, coils, transformers, cases, knobs, metalwork. In Egypt proposals were made for resistor loudspeaker and capacitor manufacture. These facilities already exist in Algeria and in Iraq. Requests were made for expansion and modernisation of the Algerian resistor, loudspeaker and bipolar transistor plants.

New Consumer Products Requested

Video tape recorders and tapes were requested in Iraq and consumption in the Arab region will become very high as soon as prices are reduced to reasonable levels in local currency. Could be at least 1.0 million units per annum.

Compact disc (CD) players were discussed in Iraq and again the Arab region demand is likely to be high when units are freely available at reasonable local currency prices.

Telecommunications

All of the Arab countries have made substantial commitments for P.T.T. infrastructure improvements and are already contracted to major suppliers for electronic exchanges, packet switching networks, fibre optic cabling etc.

However, the PABX and key phone market is still open and each country has a proposal to manufacture PABX's. Total Arab region demand is estimated to be in excess of 100,000 units per year. The assembly and testing of PABX units can be integrated with other electronic assembly operations and there is probably a good case for each country doing its own thing. Key phones or multiple line switching units for small offices are also in demand and this would make a good small operation in each country.

Tunisia already has PABX assembly in two locations.

Radio Transceivers

Egypt, Tunisia and Algeria all have plans to produce VHF and UHF transmitter receiver sets for usage by airports, fire services, police etc. The investment required to enter this market is not high if designs and technology are licensed from the West.

Computers

Every Arab country is assembling personal computers from kits supplied by a wide range of Far East, North American and EEC suppliers.

There was some interest in computer design and manufacture in Algeria and a good proposal was submitted by a private sector entrepreneur. The feeling in Iraq is that the P.C. market will "explode" when prices come within reach in local currency. Presently these machines when imported or assembled from kits cost two to three times the EEC price.

Several people in each country discussed software design and supply but no specific project proposals were made.

Further work needs to be done in this area because there are considerable numbers of very well qualified engineers who could form a very valuable resource for software package design for export from the region.

Office Machines

The ubiquitous "Xerox" is everywhere in the Arab region but little or no assembly is done.

In Iraq a vague proposal to manufacture the Xerox or NEC (Mitac) copier was submitted. This could be a major opportunity for foreign exchange savings since many basic parts of the machines could be assembled in all the countries.

We also discussed FAX machines but shortage of telephone lines and poor line quality will limit expansion of this market for two or three years (particularly true in Iraq and Algeria).

Electronic typewriters are in demand and some projects are already being discussed in Egypt. Iraq made a specific proposal for an electronic typewriter production line (10,000 units/year).

Peripherals

Various kinds of printer (dot matrix, ink jet, laser) are in demand and again Iraq had the most ambitious idea to get started with a line for 10,000 units/yr.

Floppy discs and disc drives were discussed but this is somewhat premature until P.C. usage increases, although there is a modern facility in Jeddah. U.P.S. (Uninterruptible Power Supplies) were the subject of three proposals and are certainly needed because of the poor regulation of electrical supplies.

Factory Automation and Process Control.. Instrumentation

Proposals were made by all countries to enter this essential field. With the petro-chemical industry and downstream production of by-products and plastics, each country is spending millions of dollars on importing know-how and equipment from abroad. Individual engineers, some private companies and the public sector in Algeria have plans to tackle segments of this market.

Applications software, computer hardware, signal conditioners and transducers are all potentially viable areas for each country.

Interconnection, assembly

Present methods of assembly for t.v. sets etc. in each Arab country are primitive measured against the latest available technology. Professional standard printed circuit boards are also not made in production quantities anywhere in the Arab region. To build a "world class" electronics industry these components and processes will have to be installed.

Several proposals are in preparation in this area.

Silicon Integrated Circuits (SIC's)

Modern electronics uses both analog (linear) and digital SIC's, either in "standard" form or as custom or application specific designs (ASIC's). Algeria and Iraq both invested in bi polar silicon facilities in the 1970's and these are currently in use for some TTL products and a few ASIC's. However, the technology has not been kept up to date and is now hopelessly uneconomic compared with foreign plants.

A proposal has been worked on since 1986, mainly in Iraq but in close co-operation with Algeria to build a "state of th art" CMOS silicon foundry to support future demand in the Arab region.

My personal view is that this proposal is extremely premature. A precursor should be the development of ASIC design centres in every user's area. Training engineers to design gate arrays, cell based custom and full custom products will take time and money but is the best assurance for future growth of competitive electronics in the Arab region. Manufacture of the silicon wafers can be done at foundries in Europe or elsewhere in the initial stages.

A high quality pilot plant where the various critical steps of manufacture can be learned should be built close to the best university facility in the Arab region.

The most competent group I personally encountered during my visits was in Algiers. There the engineers were using advanced CAD tools to design complex ASIC's which were then fabricated by ES₂ in Aix en Provence. A very good clean room has also been built in this same laboratory which would be capable of supporting 1 Micron technology if properly facilitized. I am preparing a draft project proposal for this in conjunction with ES₂ (I am a director of ES₂ which is a pan European organisation with investments by Siemens, Philips, Thomson and major venture capital houses).

CONCLUSION

The potential for building an Electronics Industry in the Arab region is real. There is an awareness by country governments and by private sector businesses that electronics is a major industry and essential in the development of a modern state. The technology allows implementation of information generation and dissemination; the world market is larger than for steel or automobiles. The independent and joint actions by the Arab countries demonstrate an intent to develop this industry and there is already a lot of skirmishing about who does what.

In fact, the greatest problem I see in the region is how to get logical co-operation and division of resources and effort.

This will need one or more carefully organised "summit" conferences to agree a balanced plan for the region.

Jerry Sanders, founder of American Microdevices Inc. coined the phrase that "Silicon was the oil of the 90's". Taking that as a theme, we need an OPEC like structure to help administer the large investments and assist with global marketing strategies in the Arab region.

Key projects that may possibly be in an advanced stage by the May conference in Algiers will include:

- * 1. Colour t.v. tube production (including glass) (3)
- * 2. Professional printed circuit board plant(s) (4)
- * 3. Silicon I.C. design centres (2)
- 4. Pilot Line for CMOS fabrication.
- * 5. Modern interconnection facilities (including surface mount)
- 6. Video tape production
- 7. Transreceiver production
- 8. Tantalum capacitor production
- 9. Expansion, modernisation of resistor production.
- * 10. Process Central Instrumentation
- 11. Deflection Yoke Production
- 12. Television tuner design
- 13. Computer dot M production
- * 14. Subcontract Assembly facilities
- 15. Computer assembly & test.

* I will personally follow up on these projects with potential partners. All projects should be circulated to UNIDO sources.