



ESCWA

FRIEDRICH
EBERT
STIFTUNG

FES



ERF

Distr.
LIMITED
EA/ESCWA/ID/1997/WG.1/15
19 June 1997
ORIGINAL: ENGLISH

Expert Group Meeting on the Impact
of the Peace Process on Selected Sectors
23-25 June 1997
Amman

الجمهورية اللبنانية
مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام

THE IMPACT OF THE PEACE PROCESS ON HIGH TECHNOLOGY INDUSTRIES IN THE ESCWA REGION (LEBANON)*

by

Team International**

Republic of Lebanon
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)

CO-SPONSORED BY:

United Nations Economic and Social Commission for Western Asia (ESCWA)
Friedrich Ebert Stiftung (FES)
Economic Research Forum for the Arab Countries, Iran & Turkey (ERF)

HOSTED BY:

Amman Chamber of Industry

* Issued as submitted.

** The views expressed in this paper are those of the author and do not necessarily reflect those of the sponsors of the Meeting.

ACKNOWLEDGMENTS

TEAM International wishes to express its deep gratitude to all those who supported this study by giving useful suggestions, information and guidance to sources of information. In particular, we appreciate the contributions from all the government officials and industrialists who gave their invaluable time to deal with our queries. We hope that this work will serve as a humble contribution to the national recovery plan of Lebanon.

TABLE OF CONTENTS

<u>Title</u>	<u>Page</u>
1. INTRODUCTION	3
1.1 Background.....	3
1.2 Objectives of the Study	3
1.3 Scope of the Study	4
1.4 Methods of Work.....	4
1.5 Arrangement of the Report.....	5
2. HIGH TECH INDUSTRY IN LEBANON.....	7
2.1 Evolution of the High Tech Industry in Lebanon.....	7
2.2 Current Status of the High Tech Industry in Lebanon	9
2.3 Current Problems and Constraints of the High Tech Industry in Lebanon	18
3. IMPACT OF THE PEACE PROCESS ON THE HIGH TECH INDUSTRY IN LEBANON.....	20
3.1 Lebanese Officials' Points of View	20
3.2 Lebanese Industrialists' Points of View.....	24
4. POLICY RECOMMENDATIONS	27
5. REFERENCES	30
APPENDICES	

CHAPTER 1: INTRODUCTION

1. INTRODUCTION

This introductory chapter is divided into the following sections :

1.1 Background

1.2 Objectives of the Study

1.3 Scope of the Study

1.4 Methods of Work

1.5 Arrangement of the Report

1.1 Background

TEAM International (TEAM), was commissioned by the Economic and Social Commission for Western Asia (ESCWA) and the Friedrich Ebert Stiftung (FES) to study the **Impact of the Peace Process on the Industrial Sector in the ESCWA Region** as it pertains to the high tech industry in Lebanon.

The peace process is changing the status quo, as well as the political and economic relations, in the ESCWA region and consequently, is creating a high level of uncertainty towards the future regional economic structure. It has already caused economic and political changes in the region, and is expected to result in more fundamental changes in the future.

1.2 Objectives of the Study

The objectives of the study on “The Impact of the Peace Process on the High Tech Industry” are to:

- Analyze the changes that have already occurred in the industrial sector in Lebanon.
- Attempt to predict future potential changes resulting from the situation of progress towards peace in the region.
- Discuss the opportunities and threats that will be brought about by such progress.
- Come up with certain policy recommendations that may help the development of the high tech industry in Lebanon.

1.3 Scope of the Study

TEAM was asked to address the following issues:

- Size and importance of the high tech industry in Lebanon.
- Policies toward the sector.
- Opinions of the interviewees on the Impact of the Peace Process on the industry in Lebanon.
- Recommendations for supporting the high tech industry in Lebanon.

1.4 Methods of Work

The methods used to collect the necessary information were as follows:

1. The study team deeply undertook an in-depth review of the requirements of ESCWA and FES through the documents presented to TEAM.
2. The team selected the list of private organizations and officials that will assist in providing the necessary information.
3. A detailed questionnaire form addressed to the private high tech industries was prepared by the study team to cover the needed information, while a set of questions addressed to officials was prepared for the same reason. A copy of each is presented in Appendices (A) and (B) respectively.
4. The interviews were held with high level managers of the selected organizations and data was collected. Lists of the interviewed organizations are given in Appendices (C) and (D).
5. The information was compiled and analyzed, and the report was prepared accordingly.



1.5 Arrangement of the Report

The report is arranged in four chapters and four appendices as follows:

- **Chapters:**
 1. Introduction.
 2. High Tech Industry in Lebanon.
 3. Impact of the Peace Process on the High Tech Industry in Lebanon.
 4. Policy Recommendations.

- **Appendices:**
 - A. Survey questionnaire form.
 - B. Questions addressed to officials.
 - C. List of officials interviewed.
 - D. List of private industrial organizations interviewed.



**CHAPTER 2: HIGH TECH INDUSTRY
IN LEBANON**

2. HIGH TECH INDUSTRY IN LEBANON

This chapter is divided into the following sections :

2.1 Evolution of the high tech industry in Lebanon.

2.2 Current status of the high tech industry.

2.3 Current problems and constraints.

2.1 Evolution of the High Tech Industry in Lebanon

Lebanon has traditionally been viewed by the Arab and Gulf states as the leading Arab exporter in terms of quality and variety of manufactured goods - in addition to agricultural produce and commercial services. The fifteen years of war (1975-1990) had a negative impact on the Lebanese economy in general, and on the industrial sector in particular.

According to the Ministry of Industry and Petroleum's Report of Industrial Census, the Lebanese industry is a recent one. Out of the 23,518 Lebanese industrial enterprises (satisfying the criteria of at least one machine, one worker, one material input and a finished product), only 12% have been established before the seventies. The years 1990 to mid-1994 saw a rise of 7,000 industrial entities, 1,808 of which were established in the first half of year 1994. As far as the industry of equipment and electric products is concerned, more than 41.3% have been set up in the nineties right after the war.

As far as the introduction of the high tech industry is concerned, the Electricité du Liban was the first among its Arab counterparts, in the mid sixties, to be computerized. Computer companies like IBM, Olivetti and others set up their regional offices in Beirut. But like other economic activities, growth and development of the high tech industry in Lebanon were severely hampered by the fifteen year of civil war.



The early nineties saw a surge in the high tech industry in Lebanon. New industries started to manufacture UPS, electronic boards and other electronic goods, as well as information technology. However, tough economic times and competition from cheaper imports limited the high tech industry to software development, assembly and maintenance of personal computer hardware.

The whole high tech industry is now lagging behind, compared to the momentous pace of progress characterizing this technology internationally.

On the other hand, current international trends show that the high tech industry will continue to grow both in sophistication and demand worldwide.

Lebanon should be more ready to take advantage of this opportunity for the following reasons:

- The high tech industry requires large numbers of highly skilled and semi-skilled personnel. With the general and traditional tendency among the Lebanese population to pursue higher education, and the currently large number of qualified job-seeking Lebanese technicians and computer engineers, the expansion of this industrial sector should be feasible as far as human resources are concerned. This should also be taken as an opportunity to reduce future unemployment.
- The electronics, IT and software industries are relatively clean and environmentally friendly industries that cause minimal noise and air pollution. They can also be established on relatively small grounds. These characteristics are important considerations for geographically small countries, like Lebanon.
- With respect to the IT and software industry, the opportunity is even wider and can be realized immediately. In addition to the favorable characteristics shared with the electronics industry in general, the software industry does not require high capital investment and it is a white-collar service oriented occupation, which suites the typical Lebanese job seeker.

2.2 Current Status of the High Tech Industry in Lebanon

Banque Audi, in its fourth quarter report of 1996, stated that the volume of agricultural and industrial export increased by 27.6% in 1996, in comparison with 1995, from USD 824 million to USD 1,019 million in spite of the weakness of demand. This growth in production, in a context of stagnation of bank loans to industry, shows the improvement of the competitiveness of Lebanese products, in spite of the permanent appreciation of the real exchange rate of the Lebanese Pound. This effort demonstrates both the need to reconstitute the fixed capital of businesses and to extend industrial activities to new high-value added products reflecting the comparative advantages of the Lebanese economy.

In 1996, bank loans to agriculture and industry were 16.2% higher than in 1995 and the import of industrial machinery was 2.7 times the volume in 1995 increasing from USD 115.5 million to 313.4 million.

According to the statistics of the General Directorate of Industry, 459 new industrial enterprises were founded in 1996 (compared with 431 in 1995), employing 3,414 persons and requiring an investment of almost 100.9 billion LBP¹.

The software industry in Lebanon is an emerging industry with a promising potential. It is a very important industry for the future of the Government, businesses and society.

Most of the software activities in Lebanon are applications, developed to meet the needs of users. These applications deal mainly with accounting, stock management, and budgeting. However, there are some firms that develop larger systems for local and international markets.

The past few years have put new demands on the software industry. The management of large companies as well as small and medium enterprises have started to perceive the value added of a software to their business. In spite of the economic hardships, these companies started to invest in software and hardware, which resulted in a significant growth for the IT industry in Lebanon. The government policy toward modernizing the public administration have also had a big impact on the software industry growth in the country.

¹ Lebanese Pound



Based on the report of the UNIDO mission to Lebanon on the "Software Technology in Lebanon : Realizing a potential" by Michael Hobday and Abbas Taher, the computer industry consists of around 650 firms, 250 of which actually develop and maintain their software. The remaining 400 companies are small shops supplying personal computers to the local market. Only 70 firms out of the 250 have been in business for more than two years.

Based on the same report, the software and hardware suppliers in Lebanon are divided into six categories:

Category A: brand name hardware vendors. This category consists of 20 firms, mostly distributors or agents of major foreign computer makers such as Olivetti, SUN and IBM. These firms buy brand name computer hardware and sell it to local users.

Category B: niche specialists, fully customized package developers. This category is an emerging group consisting of 10 to 15 companies which provide fully customized solutions for specific niche markets in Lebanon and overseas. In contrast to Category A, they develop fully tailored packages for individual clients and are software-led.

Category C: niche specialists, standard package developers. This category consists of around 15 firms. They sell a standard package to a wide range of customers. Although they may tailor their products, the degree of customization is much less than category B.

Category D: assemblers, micro enterprises and individuals. This category is made up of between 200 to 300 suppliers, many of which are retail outlets which conduct some software activity. Of the assemblers, 10 to 15 are fairly large companies which buy parts directly from Taiwan and other sources and produce low price PC clones. The vast majority are very small firms which purchase hardware from Category A to produce clones.

Category E: software teams within large user organizations. This category consists of around 85 organizations. They are an important group of software producers which develop software within large user organizations (such

as banks, manufacturing companies, hospitals, large distributors and universities).

Category F: agents for brand name (foreign built) software packages. This category consists of around 5 firms in Lebanon which supply foreign brand name software packages into the local market and supply some degree of internal software modification, support, training and backup.

Referring to a previous report presented to ESCWA by TEAM International in 1995, table 2.1 shows turnover estimates of the market distribution in thousands of U.S. Dollars for the years 1991-1994, and forecasts for the years 1995-1997.

Figures in table 2.1 are updated in table 2.2 showing the turnover estimates in thousands of U.S. Dollars for the years 1995-1996, and forecasts for the years 1997-2000. The data in table 2.1 for the 1995 estimates are displayed in Chart 2.1.

We notice from the above tables a sharp decrease in UPS manufacturing. Due to enhancements in the electricity supply in Lebanon, most of the clients are preferring low-cost, high tech imported UPS with internal batteries (where local competition is minimal). UPS manufacturers shifted from selling locally-made units to imported goods. Instead of the forecasted 50% increase in UPS manufacturing in 1995, the industry shrunk by about 15%. The more advanced technology characterized in smaller size of components, smaller batteries and consequently smaller products, eased the imports of UPS and gave an edge to large international manufacturers.

We may add to the categories mentioned in tables 2.1 and 2.2 new sectors like digitizing of data and Internet that have started to flourish in Lebanon. Table 2.3 shows the forecasts for these two items and the grand total of the data in tables 2.2 and 2.3 in thousands of U.S. Dollars. Chart 2.2 displays the data in tables 2.2 and 2.3 for the forecasts of the year 2000.

It is worth mentioning that the Lebanese government is seen to be the leading future user in Lebanon. Although the computerization of transactions at the public institutions lags behind banks, hospitals and retail, the reconstruction program and the modernization of various administrations point to the rapid market demand in the future.



Impact of the Peace Process on the High Tech Industry in the ESCWA Region (Lebanon)

A substantial part of the 1996 government budgeted money for computer technology was not spent due to difficult laws and purchasing procedures which are not yet adapted to this sector. However, some of the unspent money will be transferred to 1997 budget, while some other were canceled.

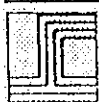


Table 2.1: 1995 study

Turnover Estimates for 1991, 1992, 1993, and 1994

Turnover Forecasts for 1995, 1996, and 1997

(in thousands of U.S. Dollars)

	Estimates	Estimates	Estimates	Estimates	Forecast	Forecast	Forecast
	1991	1992	1993	1994	1995	1996	1997
1995 Study							
Hardware	18	22	25	38	45	80	120
Software	6	9	14	20	30	45	60
Consultation	N/A	N/A	N/A	1	2	6	12
Computer Training	0.7	1	1.6	3	5	10	15
UPS	14	16	18	20	30	40	50
Hardware & Software Support	32	35	35	40	50	70	90
Total	71	83	94	122	162	251	347

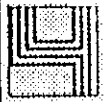


Table 2.2: 1997 study

Turnover Estimates for 1995, 1996
Turnover Forecasts for 1997, 1998, 1999 and 2000
(in thousands of U.S. Dollars)

	Estimates	Estimates	Forecast	Forecast	Forecast	Forecast
	1995	1996	1997	1998	1999	2000
1997 Study						
Hardware	22	45	80	120	130	190
Software	28	42	45	60	90	120
Consultation	2	5	20	40	45	76
Computer Training	3	4	6	15	18	30
UPS	16	12	10	12	14	16
Hardware & Software Support	41	52	55	90	110	125
Total	112	160	216	337	407	557

Chart 2.1: Market Distribution for the year 1995.

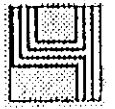
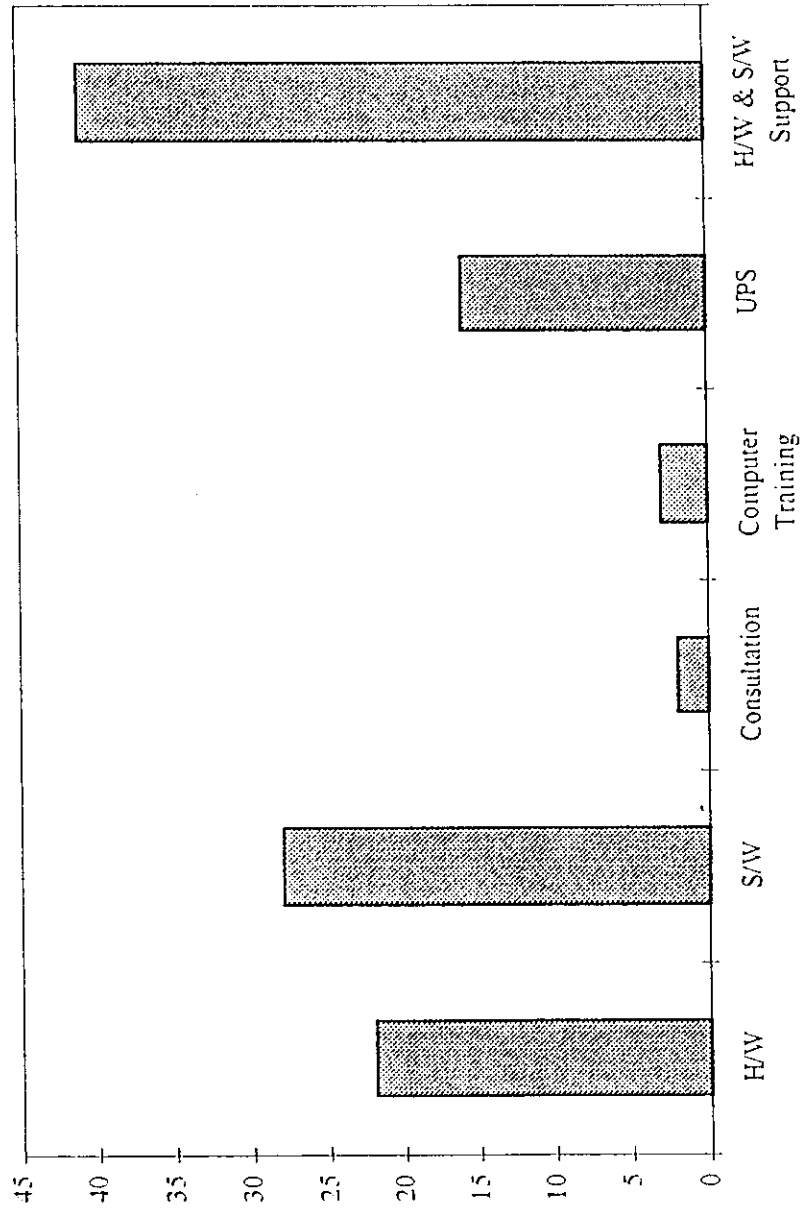
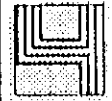
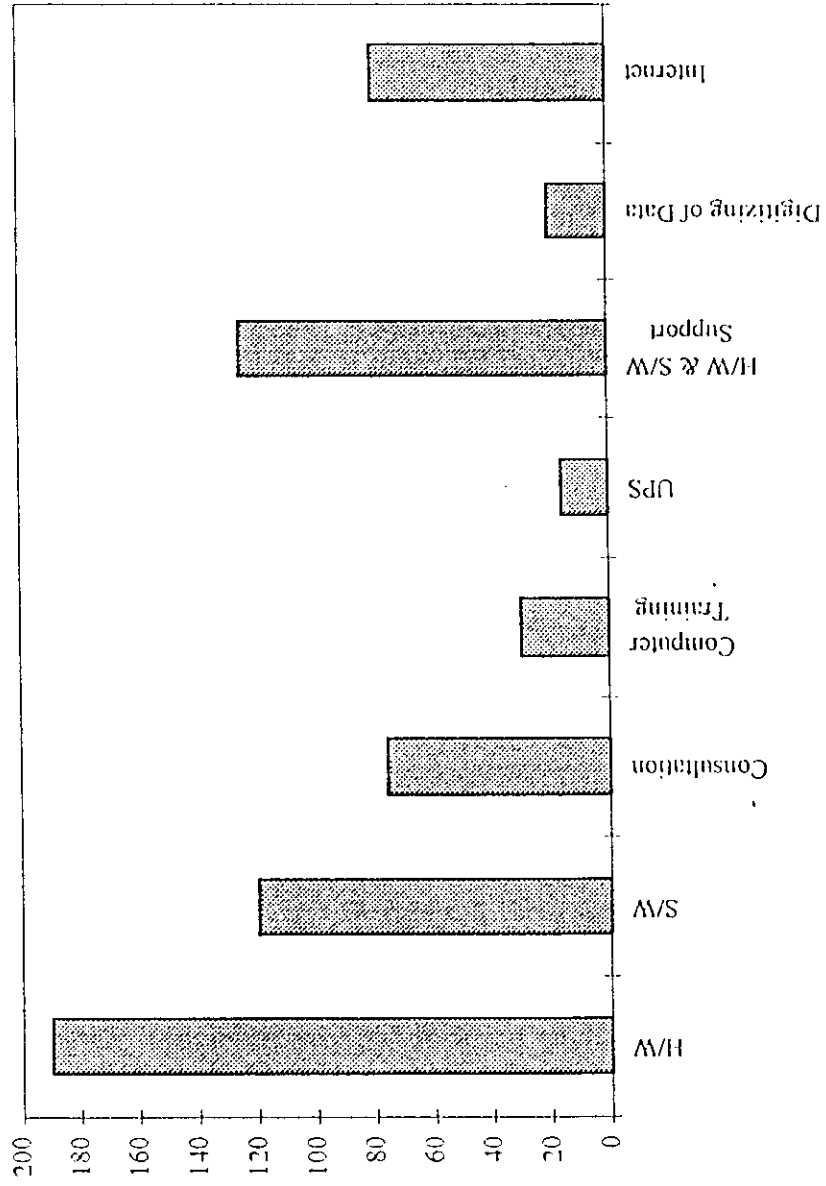


Table 2.3: 1997 study

Turnover Estimates for 1995, 1996
Turnover Forecasts for 1997, 1998, 1999 and 2000
(in thousands of U.S. Dollars)

	Estimates	Estimates	Forecast	Forecast	Forecast	Forecast	Forecast
	1995	1996	1997	1998	1999	2000	
1997 Study							
Digitizing of data			15	45	30	20	
Internet (connection, page-design, hosting and updating, advertising)		2	10	50	60	80	
Grand Total	112	162	241	432	497	657	

Chart 2.2: Market Distribution forecasts for the year 2000.



2.3 Current Problems and Constraints of the High Tech Industry in Lebanon

Severe problems and constraints confront the high tech industry in Lebanon, such as poor infrastructure, lack of capital, high interest rates and inadequate technological support facilities.

Thirty-one companies in the field of high tech industry were selected, seventeen of which were interviewed.

Five of these companies declared that they have stopped their business in manufacturing UPS and other electronic products, as they were unable to compete with the imported goods, especially from Taiwan, in terms of prices and quality.

Seven companies responded positively and answered the questionnaire, while the remaining five companies refused to cooperate.

The problems and constraints faced by those who have responded to the questionnaire are the following:

- Low volume of exports compared to production due to the lack of competitive prices in Lebanon.
- General lack of market appreciation of the value of high tech in Lebanon and poor understanding of the uses of software in promoting business and enhancing education.
- Absence of government financing and investment banks.
- Absence of research and development financing.
- Security problems due to the unstable situation in Lebanon which affect the trust of foreign customers.
- Lack of sophistication of management.
- High taxes on raw material.
- Employment laws are highly complex and bureaucratic for start-up firms.
- High risk of piracy resulting from and contributing to the under evaluation of the industry.
- High turnover of new staff.
- Telecommunication infrastructure is still very slow and unreliable.
- High rates of interests on the bank loans.

**CHAPTER 3: IMPACT OF THE PEACE PROCESS
ON THE HIGH TECH INDUSTRY IN LEBANON**

3. IMPACT OF THE PEACE PROCESS ON THE HIGH-TECH INDUSTRY IN LEBANON

This chapter is divided into the following sections:

3.1 Lebanese Officials' Points of View

3.2 Lebanese Industrialists' Points of View

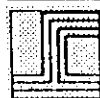
3.1 Lebanese Officials' Points of View

For the purpose of finding out the government's opinion on the impact of the peace process on the high tech industry in Lebanon, we met with officials from the Ministry of Industry, the Ministry of Economy and Trade, UNIDO, the Chamber of Commerce and Industry, the Investment Development Authority of Lebanon (IDAL) and the Association of the Lebanese Industrialists. Most of them stated that due to the fact that Israel is much more advanced in the high tech industry than Lebanon, there would not be such a major competition. However, competition might take place in the software field where Lebanon has a somewhat important industry compared to Israel. As for the trade relations, most of the interviewed officials denoted that it will take quite sometime before the Lebanese consumer starts buying Israeli products.

His Excellency Mr. Nadim Salem, Minister of Industry, stated the following :

- The government has allocated, in its 1997 budget, an amount of eight billion Lebanese Pounds to subsidize the industries in Lebanon. This subsidy will cover up to 5% of the interest rate that is above LIBOR²+2 on loans from commercial banks to industries.
- The government has adopted a policy demanding all public institutions to buy locally made products.

² International Interest Rate



- The government is currently studying two projects, one of which is giving a tax break to industries that set themselves up outside the major cities, and another is to set up a bureau to promote Lebanese exports abroad. This bureau may function like the existing tourism bureaus worldwide.
- There are no regulations to protect the local industries at this time because Lebanon has a free market economy.
- The government will be setting a strategy along with the upcoming treaties which Lebanon will be part of, namely GATT³, WTO⁴, EuroMed⁵, and the Arab Common Market.
- Public institutions like Libnor⁶ and the Scientific Institute for Industrial Research are being re-activated to help set higher quality standards for imported as well as for manufactured goods.
- If there is going to be peace with Israel, trade and industrial relations as well as subcontracting activities will be through a third party (USA and/or Europe); but these relations should be made direct so that there would not be any additional cost on goods.
- There should be a common regional industrial strategy where industries can be distributed all over the region. This leads to strengthening the cooperation and coordination among the countries of the region instead of competing among themselves.
- Lebanon can benefit a lot from the technological advancement of Israel because the civil war left Lebanon technologically behind other countries like Israel.
- All that Lebanon needs at this time, is technology transfer, as it has all the required capital and the qualified human resources. Lebanon as well, can always call on its huge emigrant population worldwide for either capital or skills.

³ General Agreement on Tariffs and Trade

⁴ World Trade Organization

⁵ European and Mediterranean Treaty

⁶ Lebanese Norms Organization



Impact of the Peace Process on the High Tech Industry in the ESCWA Region (Lebanon)

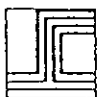
- The Lebanese government must support the high tech industry because it is the industry of the future.
- The Lebanese people have a potential towards technology which should be developed through technical and vocational schools.

Mr. Haïtham Al-Bawab, Head of the Department of trade at the Ministry of Economy and Trade, said that :

- the Ministry of Economy and Trade is supporting foreign trade through trade relations and foreign expositions with other countries.
- The European industry represents a real danger to the Lebanese industry.
- As Lebanon is about to take part in the GATT, WTO and the EuroMed, the Lebanese industry must be ready to face the new challenges.

Dr. Mehdi Al-Hafedh, UNIDO's Country Director (Lebanon, Syria and Jordan), stated that :

- A comparative study, covering the whole region, should be done in order to assess the areas of cooperation and competition.
- Israel may not be the biggest challenge to the Lebanese high tech industry, but industry giants from South-East Asia may represent the toughest competition.
- The competition from South-East Asia may force the Arabs to cooperate with the Israelis, which may become a threat to the Arab industry.
- Since the Israelis are not willing to share their technological know-how with any other country for security reasons, the Arabs must think of a long-term strategy to support their high tech industry in fields like new materials, bioengineering and genetic engineering. Mr. Al-Hafedh referred here to a workshop sponsored by UNIDO and ESCWA held in Syria on these subjects.
- If political and religious issues are set aside, trade relations and mutual subcontracting may take place through a third party, possibly Europe and/or USA, leading to direct relations and mutual subcontracting at a later stage.
- There will not be any capital investment in Israel.



Mr. Rashid Beydoun, Vice President of the Chamber of Commerce and Industry, said the following:

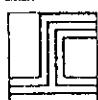
- There is no support and/or protection of the Lebanese industry from the government.
- Even in the international expositions, the Lebanese government is not offering any support for the participating Lebanese industries, whereas, other countries do support their local firms in such expositions.
- Israel will not compete on the Lebanese market, considering that Lebanon already imports most of its goods from Europe and the Far East.
- Israel will be like any another country the Lebanese merchants can import from.
- The real problem may arise if Israeli investors start buying shares in the Lebanese industry.

For Mr. Saad Oucini, General Manager of the Association of the Lebanese Industrialists:

- There is only a software industry in Lebanon, while the hardware industry is only of an assembly type.
- There is hope that all the promises from the government will be followed through action to protect and support the industry in Lebanon from foreign imports.
- The government is planning to set up a high tech industrial zone in Lebanon.
- As for the impact of the peace process, “the Lebanese people will not psychologically accept trade relations with Israel. Egypt is a proof of that”.

Mr. Imad El-Moghrabi, engineer at IDAL, along with his colleagues Mr. Tarek Takieddiene and Mr. Ghassan Tannous, stated that:

- Lebanon can not compete with Israel since the Israeli industry is subsidized by the government which is not the case with the Lebanese industry.
- If the peace process goes into effect, there will not be any trade relations with Israel in the near future.



- The Lebanese Government will be supporting the industry in general through setting up free zones and industrial zones where the “tenants” will enjoy tax breaks and many other incentives to help them produce and export to the world.

3.2 Lebanese Industrialists’ Points of View

In this section, we shall present some industrialists’ points of views about the impact of the peace process on the high tech industry in Lebanon.

The consensus was that although Israel has a much more developed industry, Lebanon can compete if the right policies are set to help the local industry develop and sell their products locally and abroad.

Mrs. Rania Monla, Manager at CDC systems, a local software company, believes that the Lebanese companies can compete with their Israeli counterparts if the right support is provided. The government must support the software industry by providing funds to finance R&D and long term projects. This support may come as grants, incentives, tax breaks, soft loans, etc.

Dr. Fadi Chehayeb, president of SMI, a software company based in Lebanon and in the US, said that the peace process will have a positive impact on his business as US investors will have more confidence in dealing with him and/or any other company in Lebanon. Peace will definitely bring more business to the Lebanese industry. However, he believes that there will not be any exchange of products and skills between Lebanon and Israel before at least three to four generations. He added that “the government has to play its role in providing incentives to help the industry prosper.”

Mr. Michel Nseir, General Manager of Software Design, a local software company, believes that Israel will only take a maximum of 30% of the local market but that will not really affect the overall software industry in Lebanon. He would like the government not to interfere with the private businesses in any way that may hinder its performance.

Mr. Moufid Charafeddine, General Manager of Professional Consultants, a local software company, stated that, although reluctant on investment awaiting the economic boom, the private sector started investing as of mid-1996 in upgrading their hardware and software

taking advantage of advances in technology (resulting in cheaper and better hardware), the new generation of software (windows 95..) and the Internet invasion on the business life. The mid-95 price cut on RAM chips caused the overall value of PCs to go down by more than 25% and to give more confidence to their clients. Lebanese dealers are offering free international support ranging from 3 to 6 years in order to comply with the major hardware companies offers. With better infrastructure and political stability, the software industry (already having good human resources mines) would become more competitive, especially with the use of the Internet as a fast and efficient way of communication and marketing. Thus, turnover figures on the software market would be higher if the investment in software export is encouraged.



CHAPTER 4: POLICY RECOMMENDATIONS

4. POLICY RECOMMENDATIONS

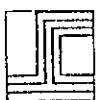
In the press conference of Wednesday 13th of March, 1997, the Lebanese Prime Minister, Mr Rafic Hariri, set out some policy recommendations and guidelines to revive the industrial sector in Lebanon:

- The government will support all industries that can be competitive worldwide and he left it to the Ministry of Industry and IDAL to identify these industries.
- The Council of Ministers agreed to prepare a law decree to encourage and direct investments in Lebanon.
- The government should facilitate the entry of foreign investors to Lebanon.
- The government will reduce the complex bureaucratic and administrative procedures for start up firms.

In addition, other governmental bodies like IDAL are helping out prepare drafts of law decrees that will enable investors to benefit from many incentives if they are approved by the Council of Ministers and the Parliament. These incentives include tax exemptions for a certain period of time, reduced utility rate, more lenient labor laws, renting spaces in the free zones; for example, exempting employees from the CNSS charges but on the other hand, forcing the employer to provide an alternative health insurance program.

The industrialists interviewed for this study suggested some recommendations for the improvement of the industry:

- Resolution of the current unhealthy rivalry, at the national level, among the numerous institutions by installing community spirit and a true sense of responsibility for the much needed coordination.
- Creation of implementation mechanisms to enforce favorable legislation and decrees.
- Support of the formation of an independent advisory body/bodies for the high tech industry aiming at organizing this sector. Such authority should be responsible for dealing with problems related to such matters as illegal competition, quality, prices, consumer protection, etc.



Impact of the Peace Process on the High Tech Industry in the ESCWA Region (Lebanon)

- Activation of educational programs and publicity campaigns to endorse the dependability of maximizing productivity of traditional industries on the electronics industry.
- Establishment of contingent associations between educational institutions and the industry, to facilitate R&D activities, the essential requirement for any progress in this sector.
- Establishment and maintenance of a modern and reliable data bank for researchers and investors.
- Acceleration of rehabilitation programs aimed at reversing brain drain.
- Review of higher educational and technical training curricula.
- Investigation on the possibility of exporting to Third World and Arab markets, especially Syria, as these are important extended markets where this industry may flourish and grow.
- Upgrade of the level of education and skills of the software workforce to current international standards.
- Monitor of the performance of the technical institutes and encouraging them to provide training on the latest computer technology.
- Legislation against and prevention of software piracy.
- Creation of investment banks that can provide soft loans to companies for their R&D and long term projects.



REFERENCES

5. REFERENCES

1. Ministry of Industry and Petroleum, Directorate of Industry, Report of Industrial Census - First and Preliminary Phase, Lebanon, December 1994.
2. TEAM international and Association of Lebanese Industrialists. "Study of the Electronics and Software Industries in Lebanon", ESCWA & A.I.D.M.O., Lebanon, September 1995.
3. Banque Audi, "Fourth Quarter Bulletin 1996", Banque Audi, Lebanon, 1996
4. Hobday, Michael and Taher, Abbas. "Software Technology in Lebanon: Realising a Potential", UNIDO, Lebanon, September 1996.
5. Hobday, Michael. "High Technology in Lebanon: Prospects, Problems and Policies", UNIDO, Lebanon, October 1995.
6. National Information Agency, Third Edition, Wednesday 12th March, 1997.
7. Mrad, Fouad. "On the Introduction of Industrial Automation to Lebanon", Assinaa' Wal Iktissad, No. 22, Lebanon, November 1994.
8. Barazy, Ma'an. "CDR: \$ 60.5 Bln for Horizon 2007", ECO NEWS, No. 005, Monday September 4, 1995.
9. Baroudi, Nohad. "Horizon 2000: A Synopsis", ECO NEWS, No. 005, Monday September 4, 1995.
10. Anon. "الصناعة بنظر خبير عالمي: التأهيل يوفر القدرة التنافسية", Al-Iktissad Wal-Amal, No. 189, Lebanon, September 1995.

APPENDICES

APPENDIX A: SURVEY QUESTIONNAIRE FORM

Company: _____ Date: ___/___/___

Interviewer: _____

Persons interviewed (Attach business card):

<i>Name</i>	<i>Title</i>

Telephones: _____ Fax: _____

A. Performance of the sector

1. Please, specify your production capabilities and your market share for the last three years. Itemize by product

	Quantity of Production (units)			% Market Share		
	94	95	96	94	95	96
Consumer electronics						
-						
-						
-						
Software						
Telecommunication						
Industrial Instrumentation						
Specialized applications						
-						
-						
-						

2. Trade relations (itemize by product as much as possible)

	94	95	96
Export as percentage of production			
Major Export Countries			
Major Import Countries			
Imported dominating items			
Exported dominating items			

3. Make a list of your relations to more advanced production partners

Exports agreements (division of labor)	
division of market	
Subsidiaries / subcontracting	
Partnership / Joint ventures	

B. Sector technological characteristics

1. Specify the level of production technology (compared to international advances)

Machinery	Poor	Average	Good	Excellent

2. Level and availability of local skills

	Number
Managers	
Engineers	
Technicians	
Others	

3. Level and availability of imported skills

Managers	
Engineers	
Technicians	
Others	

4. Is there any links between any industrial R&D and academic R&D, if there exists any R&D?
5. Specify any systematic educational and/or training programs you offer to your personnel
6. Specify any technological links to more advanced partners if any
- Sharing of innovations
 - Local R&D
 - Advanced training
 - Updating of machines / production techniques
7. Major problems faced?

C. Competitiveness of the sector

1. Analysis of the productivity: Output/employment.
2. Analyze the export performance of your firm with respect to:
- Problems faced in export market
 - Volume of exports versus production
 - Competitive position
 - Major Competitors
3. Analyze the competitiveness in local market of your firm with respect to :
- Imported foreign products
 - Volume of imports versus production
4. Competitive advantage of your product(s)
5. Production advantage
- Skills
 - Size of Market
 - Available investment, capital..

**APPENDIX B: QUESTIONS ADDRESSED TO
OFFICIALS**

A. What is the Country's policy towards the industrial sector?

1. What are the incentives provided by the government?
 - Subsidies
 - Tax incentives
 - Financial incentives
 - Export promotion
2. What are the government regulations that govern the sector?
 - Entry barriers
 - Licensing
 - Trade regime
3. Does the government provide any support institutions?
 - Marketing organizations
 - Export centers
 - Information network
 - Extension and advisory services
 - Standardization centers
 - Design and R&D support
 - Other facilities
4. Who owns the firms of the sector?
 - Public
 - Private

B. What are your expectations of the Arab/Israeli industrial and trade relations if the Peace process succeeds?

1. Trade Relations
 - i. What trade relations would emerge? (Import & Export)
 - Direct
 - Subcontracting
 - Via a third party
 - ii. Would the Lebanese products compete in the Israeli market?
 - iii. Would the Israeli products compete in the Lebanese market?

2. Industrial Relations

- i. Do you expect any emerging or potential cooperation relations?
 - Exchange of skills and information (fairs, conferences, training....)
 - Subcontracting (Software / Hardware)
 - Joint Ventures
 - Strategic Partnership

- ii. Do you think there would be links to more advanced third party?
(USA, Europe)
 - Direct
 - Subcontracting
 - Subsidiary investment

- iii. What would be the implications of the cooperation relations on:
 - Capital Investment
 - Technology Transfer
 - Attraction of third partner

C. Subcontracting Arrangements

1. What would be the actual activities performed under subcontracting arrangements (ex: OPT)?

2. What would be the potential activities performed under subcontracting arrangements?

3. What would be the forms, types and mechanisms of operating (and potential subcontracting)
 - Areas of Specialization
 - Exchange of Services
 - Benefits to each side

4. What profile of entrepreneurs are expected to operate in subcontracting?
 - Skills
 - Labor cost
 - Capital investment
 - Exporting advantages

5. What would be the Israeli cooperation links with the industrial sector in Lebanon?
 - Investment
 - know-how contracts
 - Transfer of technology
 - Partnership

الجمهورية اللبنانية
مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام

**APPENDIX C: LIST OF OFFICIALS
INTERVIEWED**

لائحة بالجهات الرسمية

فاكس	هاتف	العنوان	الشخص المطلوب للاتصال	اسم الجهة	الرقم
٤٢٧٢١٢	٤٢٧٠٠٨	ببارو	معالي الوزير نديم سالم	وزارة الصناعة	١
	٣٥٠٢٨٢	الصناع	السيد / سعد الدين العويني	جمعية الصناعيين اللبنانيين	٢
	٨٣٧١٥١ - ٣٥٣٣٩٠	الصناع	السيد / رشيد بيضون	غرفة الصناعة والتجارة	٣
	٣٤٥٢٥١	الحمراء	السيد / هيثم البواب	وزارة الاقتصاد والتجارة	٤
	٣٤٤٦٧٦	الحمراء	السيد / عماد المغربي السيد / طارق نقي الدين السيد / غسان طنوس	المؤسسة الوطنية لضمان الاستثمارات في لبنان	٥
٤٢٤٦٧٧	٤٢٧٩٩٨	بناية وزارة الصناعة والنفط	الدكتور / مهدي الحافظ	منظمة الأمم المتحدة للتنمية الصناعية (اليونيدو)	٦

**APPENDIX D: LIST OF PRIVATE
ORGANIZATIONS INTERVIEWED**

لائحة بالجهات الخاصة المعنية بالدراسة

الجمهورية اللبنانية
مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام

FAX	TEL	ADDRESS	COMPANY NAME	NAME	CODE
603129	01-864479, 603544	بناية يعقوبيان - شوران الروشة	MABECK	د. صبر مردم بيه	1
601759	01-482408, 601759	جديدة العنق	DATA MARKET	نقولا شويباتي	2
603362	01-301941, 818071	شارع مار الياس	EDMI	أليس بنة	3
424357	01-424357, 336511, 331821	مخرج الغزال - التبريز	DATA MANAGEMENT	كارون شمس	4
744102	01-744101	حمراء سكوير - الحمراء	CYBERIA	بسام جابر	5
443642	01-448153, 240326	مستقر مديا - العكاري - الاشرفية	CHIP	هادي نحاس	6
397721	01-397721, 397726	شارع القينا - السيوفي - الاشرفية	PAX NETWORK	وليد حاصي	7
602744	01-602744	بناية بطرس - شارع شيخ العاني - كرم الزيتون	CD SYSTEMS	باسم ملا	8
602462	01-333634, 348180	بناية الكونكورد - شارع فرانس	SACCAL	مصطفى صالحي	9
09-9466290	09-944450, 944451	خرجين	MATELEC	سامي التصغير	10
893978	01-333941, 333942	بناية الكونكورد - شارع فرانس	COMPUTER BUSINESS MACHINES	سعد الدين سم	11
602463	01-334061, 23	بناية جلا - الحمراء	BML PRODUCTS & SERVICES	جوزيف فضول	12
801974	01-339400, 803970	نهر ابراهيم - جبيل	LIBAN CABLES	عصان بيل	13
343523	01-343523	بناية عفاف - الحمراء	SMI	فادي شبيب	14
240076	01-240075	قرب شارع مار نقولا - الاشرفية	PC GROUP - PCA	بول شربل	15
390420	01-390420, 386023	بناية خميب - بارو	SOFTWARE DESIGN	ميثال نصير	16
591543	01-582089	كورنيش النهر	MDS	الياس عقل	17
503300	01-332336	بناية فرح - الحمراء	ROCKTECH	كمال مرهج	18
602254	03-219627	بناية خورافي - كلينصو	ELECTRONIC SERVICES COMPANY	وليفيق فتح الله	19
350819	01-863522, 863524	مستقر صباغ - الحمراء	BUSINESS MACHINE OF LEBANON	ميثال داغر	20
601320	01-601320, 283982, 283984	بناية دبس - شارع العنق - الكوافة	DEBBAS INDUSTRY	سمير طيل	21
904292	01-785025, 785044	مستقر ابوغاز - الحمراء	COMPULAND	جاد خلف	22
444728	01-444728, 584335	فيلا سولاركور - شارع النهر - مار مذائيل	SOLARCORE ELECTRONICS	جان مارك عزقنجهي	23
603129	01-864479, 603544	بناية يعقوبيان - شوران الروشة	MICRO SOLUTIONS	امين مردم بيه	24
865996	01-869090, 863737	مستقر الدفين - الروشة	CELTEC	طارق نور الدين	25
603590	01-851227, 861591, 603591	ساقية الجزير	LIBANCELL	أسامة عويدات	26
03-391009	01-281812, 284919	بناية المسنين - قطاع الشقروني - قرن الشبك	CELLIS	ساري تريبز داغر	27
867218	01-348805	بناية منتريال - الحمراء	SKYGAZER TECHNOLOGIES	عياض طاهر	28
810978	01-810978	الاصنوبرية	GULF STARS	سامي عزاهي	29
383980	01-381102, 383988, 8	بناية عشي جعفر - بارو	TELETRONIC	شوقي كيبك	30
644633	01-644633	بناية حمرا - شارع بشارة - ري	PROFESSIONAL CONSULTANTS	مفيد شرف الدين	31