OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

22487

Assistance in Designing a National Industrial Strategy and Industrial Policy for Croatia

A TECHNICAL AND POLICY-LEVEL ANALYSIS

XP/CRO/95/015 and XP/CRO/96/015

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Europe and NIS Bureau
Country Programmes and Funds Mobilization Division

January 1997

ACKNOWLEDGEMENTS

This Report has been prepared for the Government of the Republic of Croatia by the United Nations Industrial Development Organization (UNIDO).

UNIDO expresses gratitude to Ms. Ivana Halle, Assistant Minister for Industry, Ministry of Economic Affairs, for the coordination of the great number of national experts involved in the preparation of this Report.

Part I - General Strategy and Policy has been written by UNIDO national expert Mr. Ivan Teodorovic with contributions from Ms. Ivana Halle, Assistant Minister for Industry, Ministry of Economic Affairs; Mr. Franjo Misak, Head, Department of Industrial Policy and International Cooperation in Industry, Ministry of Economic Affairs; UNIDO expert Mr. Peter Koveos and national expert Ms. Mira Lenardic.

The various Subsector Analyses under Part II have been prepared by UNIDO staff members and international consultants in close cooperation with national experts, and under the guidance of Ms. Archalus Tcheknavorian-Asenbauer, Managing Director, Industrial Sectors and Environment Division. The review of:

- *the **textile** sector was contributed by Mr. John-Peter Moll, Agro-based Industries Branch, in cooperation with Mr. Ivo Ducic, Ministry of Economic Affairs;*
- *the **glass and ceramics** sector by Ms. Seniz Yalcindag, Chemical Industries Branch, and Mr. Can Apak, in cooperation with Mr. Ivan Vukelic, Ministry of Economic Affairs;*
- *the **metallurgical** sector by Mr. Jan Krouzek, Engineering and Metallurgical Industries Branch, and Mr. Jan Drbout, in cooperation with Mr. Ivan Poljicanin and Mr. Petar Sunjic, Ministry of Economic Affairs;*
- *the **electronics** sector by Mr. Cahit Gürkök, Director, Engineering and Metallurgical Industries Branch, in cooperation with Mr. Dragutin Baric, Ministry of Economic Affairs;*
- *the **petrochemical** sector by Mr. Uladzimir Bysyuk, Chemical Industries Branch, and Mr. John Oxley in cooperation with Mr. Franjo Misak, Ministry of Economic Affairs, and Mr. Kresimir Baksa, Assistant General Manager, INA Polimeri, d.o.o., Petrokemija;*
- *the **wood** sector by Mr. Robert Hallett, Agro-based Industries Branch, in cooperation with Mr. Branko Gustin, Ministry of Agriculture and Forestry, Mr. Ferdinand Laufer, Croatia-drvo, and Mr. Salah Omer Eldien; and*
- *the **machine tools and steel structures** sector by Mr. Cahit Gürkök, Director, Engineering and Metallurgical Industries Branch, and Mr. Antonio Pagani, in cooperation with Mr. Ivan Poljicanin and Mr. Petar Sunjic, Ministry of Economic Affairs.*

UNIDO is grateful to the management of the various enterprises which collaborated in this project and offered their hospitality to the UNIDO staff and consultants while on Mission in Croatia.

The Project Summaries under Part III as well as the compilation of the Report were done by Mr. Paul Wiedemann, Acting Director, and Hans Rosnitschek of the Europe and NIS Bureau of UNIDO.

UNIDO wishes to thank Ms. Ana Marija Bešker, Ambassador, and Ms. Jasna Ognjanovac, Minister-Counsellor, of the Permanent Mission of the Republic of Croatia to UNIDO for their support in arranging the various UNIDO missions to Croatia during this project.

January 1997

Table of contents

Part III ***PROJECT SUMMARIES***

STRATEGY OF INDUSTRIAL DEVELOPMENT OF CROATIA

Part I

GENERAL STRATEGY AND POLICY

1. GENERAL BACKGROUND

The economic development of Croatia has experienced dramatic changes over the last five years of its transition period. As in all countries of Central and Eastern Europe the problems of transition are proving extremely difficult.

The move from the socialist self-managed economic system towards a market economy meant overcoming the problems created by war and destruction in a great part of the country, in addition to all known problems of transition. The country had to provide a huge defence and security expenditure (estimates are at around 50% of the budget) and at the same time proceed with the transition, especially the privatization process. This process has slowed down as compared to the initial intentions, due to the fact that a quarter of the territory was out of the economic system, under occupation, and constant, high uncertainty generated by the possibility of military escalation.

The economy is now of mixed ownership, with an estimated share of 50% in GDP of private ownership contribution. Parallel with the ownership transformation, the process of restructuring of enterprises in under way. This is creating additional uncertainties. The transition of the economy and privatization, supported by incomplete macroeconomic measures caused at first great instability in the economy, culminating in hyper-inflation by the end of 1993.

In October 1993, an economic stabilization program was introduced. The program was designed in such a manner so as to be implemented in two phases. The first one was the stabilization process as such, and the second phase was economic and social restructuring. It was, in effect, an anti-inflationary program which concentrated not only on eliminating the sources of inflationary pressures, but also on establishing independent monetary institutions and mechanisms of economic control needed in a market environment.

The focus of macroeconomic policy became, therefore, monetary and fiscal policy. The stabilization program introduced tight monetary policy and control of budget spending, relying on hard budget constraints.

The program maintained the policy of price liberalization, open door policies for domestic and international competition - with the aid of a relatively liberal foreign trade system - and minimization of government intervention.

After two years of the imposition of the stabilization program it was possible to stabilize prices and exchange rates (the level of prices was 0.8% higher in September 1995 than in October 1993, and the nominal exchange rate, 0.7% higher, as compared to the established exchange rate in September 1993). GDP increased, in nominal terms, by 25%, domestic consumption by 46%, exports by 18% and foreign exchange reserves were $1,660 million higher than before the introduction of the stabilization program, reaching $2,300 million.

Average annual growth rates of GNP indicate a typical situation of a transition economy aggravated by war destruction. In real terms growth rates are:

1991	-15.1%
1992	-12.8%
1993	- 3.2%
1994	1.8%
1995	2.0%
1996 (estimated)	5.0%

Estimated GDP per capita for 1996 is $3,900 US.
The GDP is expected to grow from $17.5bn to $18.0bn by the end of 1996.

Gross domestic product by sectoral origin in % (constant 1990 prices):

	1991	1994
Agriculture, forestry & fishing	14.5	11.6
Manufacturing and mining	33.2	29.6
Construction	4.8	3.2
Trade, tourism & catering	1.6	3.6
Transport & communications	8.7	10.0
Crafts & other	37.2	42.0
Gross domestic product	100.0	100.0

Average annual inflation rates are in percent:

1990	135.6
1991	249.5
1992	938.2
1993	1,516.0
1994	98.0
1995	4.1
1996 (estimated)	3.5

The inflation rates over the last seven years indicate the dramatic changes from high inflation rates over hyperinflation towards the current stabilization demonstrated by the declining inflation rates and the present macroeconomic stability. The government has decalred a firm commitment to keep infaltion under control at the existing low rates.

Croatia is counting on labor as one of its resources and possible competitive forces. With respectto this factor of production at the moment some problems are present. In terms of labour costs, though at first sight they seem to be low, in real terms the picture is somewhat different. To the amount of net wages, social security contributions and taxes add 100-120% on top. Since companies are restructuring and changing their strategies employees have to be trained and this training tends to be expensive. Locals with masters degrees from abroad are not easy to attract, especially if they have already started their careers in the West. In practice, this means that locals who were educated abroad and who work abroad will request more money in net terms than they make in the West. On top of that come the high taxes and social contributions. Therefore, formal and informal training programmes on all management levels are essential.

The overvalued domestic currency and slow adaptation of businesses to the new cost mechanisms have created, in addition to certain positive results, serious problems that had started to manifest themselves by the

end of the stabilization program. The firms have a low level of capacity utilization, as well as declining competitiveness due to their obsolete technology and very low investment rates on the overall. The trend in international trade is such that increasingly higher growth rates of imports as compared with exports are causing a trade deficit. War has negatively affected the tourism business (which is in the meantime coming back but it will take some time before it reestabkishes its previous position), so that the oucome is a deficit on the current account. The trade deficit indicates however an increase in imports of intermediary and investment goods. This could be conditionally interpreted as a first sign of recovery.

The exports of goods is expected to reach $4.2 billion by the end of 1996, while imports of goods are estimated to be $7.1 billion by the end of 1996. Those movements in exports and imports affect the current account where a deficit is expected of around $1.2 billion by the end of 1996 as well. Thus, the trade deficit remains high. Industry is the main exporting and importing sector with the same imbalance as registered for the economy as a whole. OECD countries account for 70% of imported goods. Imports which boomed in 1995 are now stagnating. Increased personal consumption of imported goods in 1995 was associated with high expectations of an end of the war. Personal consumptions seems to have reached a plateau and main exporters to the country are registering stagnant sales in 1996. With higher demand associated with the revival of tourism, and a real appreciation of the kuna, sales may pick up in 1997.

Foreign debt of the country is under control. Total foreign debt is estimated at mid 1996 at $4.1bn, with official credits $1.8bn and private creditors $2.3bn. At the same time public internal debt is $2.9bn for the same time period.

Reserves in foreign assets with the central bank are $2.3bn by mid 1996, in IMF credits $0.2bn and with bank's reserves $2.1bn. The foreign reserves building up represents a dramatic change since 1990 when Croatia began its independence with zero foreign exchange reserves: all reserves had been held in Yugoslav central bank vaults in Belgrade to which Croatia had no access.

Debt indicators are:

* external debt and public internal debt Deb./GDP	37%;
* external debt / exports of goods and services	55%;
* inter. reserves (c.b.) / external debt	56%.

The indicators show that Croatia is unlikely to have debt servicing problems. Following its agreements with the London Club of creditors, Croatia is in the process of credit rating and is likely to receive its first rating by a credit organization; possibly a BBB rating from Standard & Poor's (USA). This should help the success of its proposed $150m Eurobond issue.

The currency is likely to remain strong and inflation low. But, as traditional employment in state enterprises declines, the new private sector is, at the moment, only likely to grow fast enough to prevent unemployment rising above its current 18% (256,000 people). This means that living conditions over the short run will remain rather austere, supporting the argument for a more export-oriented strategy as an outlet and as partial compensation for a narrowed domestic market. At the same time, it could be a way of reversing the trend over the long run.

1.1. Trade regulations

Trade regulations have been developed along the lines of IMF recommendations and are falling in line with WTO rules. The new tariff code came into force by July 1996. The trade regulations now valid have eliminated all extra import taxes and quotas. Import tariff range from 0% to 25%. The import tax of 10% and

1% customs statistics fee have been eliminated. Raw materials which either are not available in Croatia or are produced in very small quantities are virtually duty free (these include cotton, wool, natural gas, crude oil and others). Import duty on semi-finished goods which are considered "important" in a particular production process is levied at 5%. Finished products which are not produced in the country now have an average rate of 20%. An 25% duty as a maximum is levied on products which Croatia produces locally, thus protecting to a certain extent domestic producers. The government has made it clear that it will not allow local protected producers to increase prices or exercise monopoly power. In such cases, the government will reduce tariffs. To fight the growing trade deficit and to help local agriculture, imported food and agricultural products are now protected not only by a 25% import tariff but also by a certain amount of duty paid in kuna per unit of weight. In the case of imported beef, for example, the special duty is HRK9.8 per kg. The further intention of the government is to reduce the range of import tariffs by increasing slightly the lower rates and reducing the highest in a way not to affect the budget inflows.

Trade regulations and customs law puts the Croatian customs structure in line with the recommendations of the World Trade organization (WTO). The government is eager to join this organization and negotiations with respect to this are under way. Two round of talk with the WTO have been completed until now and the government is hoping that the country will join this organization during 1997. One of important points to be made is that import tariff codes are now fully aligned with the international coding system used in 140 countries worldwide.

Being a Central European country, Croatia is eager to join a corresponding regional economic association. Currently negotiations are under way with countries of the Central European Free Trade Agreement (CEFTA) on joining this association. With most of the countries that are members of CEFTA Croatia will sign by the end of 1997 bilateral free-trade agreements.

1.2. Conditions of payment

The high level of indebtedness of and insolvencies of companies especially the large state owned ones and the liquidity problems of the banks that became shareholders in outstanding loans in companies which have loss problems have also created demand pressures. Thus, the level of inter-enterprise debt remains high. One unfavorable aspect of the stabilization program is the fact that currency is now scarce, so many companies simply have no money to pay for necessary supplies. In other words, they are short of working capital. As a consequence, much inter-company business is done through barter arrangements. This is the case in foreign trade, where 'loan' arrangements are also used. Moreover, it is hard to deal with the high level of company debt. The six largest state-owned companies owe HRK 12bn ($2.3 bn), equivalent to about 13% of estimated annual GDP. In addition, there has been little change in the exchange rate of the currency (kuna) against the D-mark of around DM 1: HRK 3.7; while against the dollar, the kuna has strengthened from an average of HRK 5.9 in 1995 to HRK 5.3 at the end of November 1995. Most companies complain of difficulties in controlling receivables. According to the Accounting Office (Zavod za platni promet), the debt of companies reporting to it increased by 65% in the year to May 1996, reaching HRK 7.2bn ($1.4bn). The number of insolvent companies has doubled over the same period to almost 14,000, and 140,000 employees have not received salaries in recent months. The current legislation is aimed at resolving the payment situation (Zako o sanaciji) but there is still a bottleneck of old unresolved cases and a lack of commercial judges (over 1 million cases are estimated to be pending in commercial courts). The intention of the governemnt is to allocate in 1997 around 2,138bn HRK from the budget for the restructuring and the improvement of financial conditions of 27 companies in state and mixed ownership.

As creditors, the banks' position is equally difficult. It is estimated that 75% of the assets of commercial banks are "non performing" loans. In late October 1993 a law on banks and saving banks was promulgated comprising innovations regarding banking and bank control. At the same time laws were passed regulating the rehabilitation of insolvent banks. The rehabilitation of the banking sector is now a central part of the

government's economic policy, operating through the Agency for the Rehabilitation of Banks. The government expects to have to shoulder the cost of writing off half of the "non-performing" debts. HRK 4bn has been allocated for this purpose. It is the largest item of civilian expenditure. The banks, however, are trying to engage in debt-equity swaps, with the possibility of selling off some of the equity. In the context of well-defined role for the central bank, and along with the restructuring and privatizing of Croatian businesses, the new banking laws are intended to enable banks to assert themselves as institutions independent of state and government bodies and agencies, as well as their former owners. The law also regulates the supervision of banks, in which respect the central bank is given powers based on Western practice. Bank holdings of company equity seem more in tune with the principle of a market economy than direct state holdings, but the experience of the close relationship between banks and industrial companies in the previous economic system (with companies owing the banks) causes anxiety over the re-establishment of such links (in spite of the fact that the banks now own industrial firms and other companies). A foreign entity can establish a bank subject to reciprocal rights in its own country. Foreign banks may open branches and have representative offices, again subject to reciprocity.

The EBRD is involved in development and strengthening medium-sized financial institutions through special credit lines. It wants to increase its activity with selected medium-sized banks and their clients, which are mainly small and medium-sized enterprises. This framework offers lower cost financing on long term basis, to new private firms with healthy balance sheets.

The first stage of bank restructuring that ended by mid 1996 has brought a significant drop of interest rates. The forthcoming phase of bank restructuring in which the largest domestic bank (Privredna banka, Zagreb) is involved at an estimated amount of HRK4bn of financial interventions in its restructuring will, as it is hoped, by its completion affect the further downward movement of the interest rates.
The crucial issues for the banking system is its independence from the state and state intervention, that is still felt to a ceratin extent and that affects the financial market and the cost of capital in the country. For a further drop of interest rates more competition in lending will be needed.

1.3. Privatization

The process of restructuring and privatization has not taken as rapid a pace as expected, and, therefore, on February 9, 1996 the government introduced a series of legislative proposals to be presented to the parliament and designed to further liberalize the economy. These are: the revision of the privatization law, the anti-trust and competition law, a law to regulate investment funds, and a bankruptcy law. All of the mentioned laws have passed the parliament (Sabor) and are expected to be effective by the end of 1996.

Privatization is considered as one of the cornerstones in building a new quality in the national economy and therefore from the very beginning it was one of main goals of economic policy. The first law which regulated privatization was introduced during 1991, under the name The law on transformation of social enterprises (Zakon o pretvorbi drustvenih poduzeca). The main intention of this law was to transform the enterprises from the self management system in which ownership was socialized but uncleanly defined, dominantly into direct state ownership and at that stage just to a lesser extent into private and mixed ownership forms. The law introduced the establishment of the Privatization Fund which was established in 1993. As to the contents of the privatization law an extensive discussion was present among economists with respect to the model of privatization considered as the most appropriate for the given situation in the country. The first law on privatization can be considered a compromise amongst different approaches. Privatization has given the opportunity to the employed and management to buy shares at a discount depending on the years of previous employment and such an approach is considered as a substitute for mass privatization. The standard method was for about half the shares in each company to be sold at a discount to employees. They are paid for on an instalment basis, and some latitude is given when employees, most of whom currently have to struggle to cover normal household expenditure on their wages, fall behind in payments. Thus, this approach did not create additional capital (the amount actually paid up in mid-1995 was still only $220m, of which $70m was foreign

capital) and introduced in most cases a mixed ownership structure with the Privatization fund having up to 2/3 share and the Pension fund up to 1/3 ownership share in cases of enterprises that failed to undergo the transformation process by the end of June, 1992. In addition most of the large enterprises remained under state ownership. It was evident that the law did not meet most of the objectives set at the start of the privatization process, and has proven to be too slow in promoting privatization, so that by beginning of 1996 a new law was passed with the ambition to speed up the privatization process. This law introduces a long term equity payment period, a number of special discounts, the voucher privatization and introduces Investment Funds. The Privatization Fund still holds DM6.5bn in its portfolio out of the original estimate of DM25bn for privatization. This amount excludes large public enterprises (such as oil giant INA) which have still not entered the privatization programme. These major public enterprises should at first undergo the process of restructuring and be privatized on a case-by-case basis. Their privatization should be in conjunction with a foreign strategic partner.

The private sector share of Croatia's GDP has increased considerably, though not as fast as expected. At present private sectors share in GDP is currently around 50% (probably more if the grey market is included). This share is due to the privatization process and the growth of new private companies as such.

A list of state companies offered for privatization was published in June 1996 and they are valued at DM3.5bn. Those companies are being offered to the public and in addition a program of voucher privatization is being prepared. Under the voucher privatization, the veterans, victims of the war and displaced persons would receive the rights of ownership, but the problem is again the valuation of the companies since what remains for voucher privatization are the poorest companies in most of the cases.

Privatization revenues reduced government debt by some DM2bn. Future privatization revenues will go mainly to the Croatian Bank for Reconstruction and Development (HBOR) to support the renewal of war devastated regions and critical infrastructure projects.

1.4. Investment

A serious problem of the Croatian economy is the savings rate and investment. The aggregate level of savings is low and accounted for 12% of GDP in 1994 what is reflected on gross domestic investment. As a percentage of GDP they were in 1990 around 13.4%, 13.8% in 1994 and are estimated at 12% by the end of 1996. Thus, investment is on the average at the level of asset depreciation with serious problems of disinvestment in a number of industrial sectors and branches.

Domestic investors are targeting at small and medium sized companies, while foreign investors are looking at strategic sectors in the form of joint ventures and direct investment. In terms of foreign direct investment as compared with other transition economies the total amount can not be directly traced since there are at the moment no reliable statistics, but they are according to the estimates still modest. After the establishment of peace in the region and as prospects for stability increase the interest of foreign investors, multinationals and banks is growing.

At present, making acquisitions in Croatia is complex. Information is tightly guarded by enterprise managers. Many of enterprise managers are also afraid to lose their privileged positions. Influential local power brokers with close ties to enterprises in their area can make life awkward for investors. Yet another factor of discouragement is the method of valuation of companies which is due to the shallow financial market not possible through the known measures of financial valuation. Based on unreliable accounts and conflicting interests with the ambition of government to maximize financial earnings, the current approach of firm valuation is in most cases such that companies are valuated by far in excess of their potential earnings multiples. Therefore improvements in methods of firm valuation and further development and deepening of the local financial market are among the priorities of government activities.

Croatia provides a strong legal framework for investors and, according to Company Law, local and foreign investors have equal treatment. The constitution guarantees free repatriation of profits and capital. The corporate tax level of 25% (12.5% in free-trade zones) is one of the lowest in eastern Europe. However, by January 1997 the government intends to increase the corporate tax level to 35% (17.5% in free-trade zones) giving at the same time an outlet by allowing for accelerated depreciation of assets. Investment support dominantly through promotion activities is badly needed since local institutions provide poor investment information.

2. ECONOMIC POLICY

The government has proclaimed its intention to start a development cycle. Though a detailed program has not yet been elaborated or presented, there are hopes for high growth rates, stemming from the revival of the market by means of reconstruction of damaged capacities and a stronger export orientation.

The main objective of the current economic policy is to maintain economic stability under the criteria established by the Stabilization Program. The macroeconomic being placed rightly the current measures are targeted at speeding up the privatization process, restructuring of the economy, further development and deepening of the financial sector, building of market supportive institutions and further development of the legal system.

In addition the government is focusing on bank rehabilitation, enterprise restructuring, and upgrading of international economic and financial relations of Croatia with the world. In addition, by launching by the Ministry of Finance of zero coupon, one- to three-month Treasury bill auctions is seen as measure of increasing competition amongst borrowers and lenders in the hope of forcing down interest rates and thus starting the investment cycle.

3. INDUSTRY

3.1. Background

Manufacturing has accounted for about a third of GDP in recent years with a trend of shrinking of its share in GNP in favour of service industry. The largest industrial subsectors are: non-electrical machinery, textiles, foodstuffs, chemicals, electrical engineering, wood processing and shipbuilding.

The manufacturing sector has been facing a development crisis over the last 15 years. Due to the lack of real investment, poor strategies and overprotection most of the businesses in this sector have been losing their competitiveness.

In 1991 industrial production fell to 57% of its 1990 level (seasonally adjusted). It rose to 64% in 1992, but it fell to 55.6% in 1993. Since then, industrial production has barely risen. In May 1996 it reached 57% of its 1990 level, meaning that there has been virtually no improvement over the 1991 level. However, the year-on-year increase in industrial production in May 1996 was 2.3%, a sign that industry is slowly recovering, but much slower than expected. Many industries were damaged by the war, both directly and through the havoc caused to the infrastructure. Direct war damages to manufacturing plants are estimated at $2.5bn. Major enterprises lost many of their ex-Yugoslav and eastern European markets on which they had relied for decades. The relatively slow pace of supply-side reforms, the infant stock exchange, management and worker buy-outs, the lack of foreign investment, in addition to high interest rates, have all been serious obstacles to company restructuring. With unemployment high and rising, the industrial picture looks bleak in the short run. Recovery, although

foreseeable, will nevertheless be slow and hard, unless a more growth proactive government policy is introduced.

Indices of Industrial Production
(1990=100)

	1989	1990	1991	1992	1993	1994
Capital goods	118.9	100.0	64.9	51.0	45.0	43.1
Raw & basic materials	113.8	100.0	72.2	62.3	59.2	58.9
Consumer goods	108.4	100.0	74.0	64.1	61.0	60.8
Total	112.8	100.0	71.5	61.1	57.4	55.9

Source: Statisticki ljetopis Republike Hrvatske, Statistical Information.

Production of selected goods

('000 tons unless otherwise indicated)

	1990	1991	1992	1993	1994
Welded pipes	213	96	68	77	65
Ferro-alloys	130	124	82	37	54
Cast iron & steel, semi-finished, finished prod. & formed parts	81	41	31	33	30
Metal structures & parts	36	26	23	16	11
Tankers ('000 gwt)	389	228	173	145	124
Cargo ships ('000 gwt)	119	100	120	80	45
Manufacture of electro-motors, generators & transformers	18	11	8	8	9
Telephone & telegraph exchanges ('000 receiver)	2,505	1,869	1,876	2,065	1,563
Compound fertilizers	557	532	717	483	555
Commercial medicines (t)	4,305	2,588	1,750	1,519	1,753
Detergent	110	65	51	43	31
Cement	2,653	1,706	1,768	1,683	2,055
Corrugated & cardboard & paper & cardb packaging	284	157	117	106	122
Cotton text fibers (t)	20,372	12,448	12,132	10,301	10,587
Cotton fabrics, blankets ('000 sq meters)	39,762	30,125	28,881	28,759	22,753
Wool fabrics, blankets ('000 sq meters)	16,402	8,449	5,756	7,018	7,249
Ready-to-wear clothing ('000 sq meters)	49,510	41,296	35,696	36,393	34,327
Heavy leather footwear('000 pairs)	1,126	535	408	265	210

Men's, women's, children's leather shoes ('000 pairs)	16,711	8,127	7,156	8,176	8,106
Other footwear ('000 pairs)	5,357	2,898	2,670	2,495	1,523
Canned vegetables (tons)	44,429	23,043	25,574	21,763	23,843
Sausage products (tons)	39,839	32,748	28,810	30,624	31,073
Sugar	210	100	95	79	115
Beer (m hl)	2,801	2,249	2,720	2,481	3,122

Source: Mjesecno statisticko Izvjesce, Statistical Information.

Year 1995 could have been the first year of recovery of industry, but the aggregate growth in this year did not yet show any signs of recovery, since growth accounted only to 0.3%. The estimates for 1996 are that industrial production would increase by 0.6% year on year what is below the targets. However, the figure may slightly underestimate the actual picture because it fails to take into account new activities. As seen from the table of industrial indicators the only positive achievement in industry was a significant growth in productivity while the indicators for growth of production and employment are very disturbing.

Industrial indicators
(% change, year on year)

	Year	Year	Year	Jan-Jun
	1993	1994	1995	1996
Productivity	0.3	3.4	6.6	8.9
Employees	-5.9	-5.6	-6.0	-7.7
Production	-5.9	-2.7	0.3	0.6

Source: Croatian Statistical Office, Statisticko Izvjesce

Estimates for 1996 are that growth of the economy will be around 3%, well below the government target of 8% and some independent forecasts of 5%, despite the removal of many uncertainties last year and Croatia's greatly increased military security.

By sectors there was a sharp variation in performance as statistics on the previous table indicate. However, certain encouragement can be drawn from a 20% increase i machinery output and a 32% increase in shipbuilding in 1995. There was also a 23% rise in the production of building materials, spurred by reconstruction needs. The output of clothing and other textiles products, however, fell by 14%.

The strategy of industrial development is based on the concept of an open, business-friendly economy. Industry is still considered to be the backbone of the economy and the dominant export sector. It is expected that this sector will privatize faster, restructure and by means of new investment to improve its' competitive position. The structure of industry is expected to become much less exposed to the type of business risks that accompany tourism and services.

In order to establish this role, industry has to go through a number of significant changes. One is the finalization of the process of privatization of stated-owned companies and reduction of mixed forms of ownership (state and public). This is stimulated by the new law on privatization that has been accepted by

Structural changes in the industrial sector based on modern technologies and creation of conditions for sustainable development are to be intensified. With respect to this, a number of credit lines based on foreign loans have been opened, targeting small and medium-sized firms. Though these are still barely significant, their results should be encouraging.

Measures for increasing foreign direct investment are expected to play an important role in attracting the resources needed. They should be considered as a means of aiding the export-orientation of industry through restructuring of enterprises.

A set of criteria is being defined that should lead to corresponding structural changes and more efficient resource allocation. The whole process is being foreseen as a gradual one.

The strategy of industrial development as proposed by this document should be based on the concept of an open, business friendly economy.

3.2. Basic problems of industry

In order to implement such a strategy it is important that the following basic problems are being addressed:

1. Decisions on the future of plants that are constant loss makers (such as a steel plant, shipyards, and some other basic industries) under the new price structure and the existing rate of exchange.

2. Identification of the comparative advantages of specific sectors (textile and garments industry, chemical industry, building materials industry, telecommunications, and the wood industry) and modes of increasing competitiveness.

3. Designation of means of technological upgrading and creation of a corresponding information base.

4. Definition of criteria and methods of evaluation (based on the UNIDO approach) for plant rehabilitation.

5. Definition of a time frame for the first stage of industrial development (i.e., points # 1 - 4) aiming at a higher utilization of capacities (now under 50%). In conjunction with this objective, an elaboration of the role of the financial sector and industrial support institutions is under way. This could be considered the first step in establishing a growth-oriented strategy.

6. Designation of criteria for higher growth rates based on new investment and the elaboration of investment criteria for decision-making based on the UNIDO approach.

7. A detailed analysis of the five above mentioned industrial sectors and recommendations for their future development.

8. Identification of specific needs of relevant plants/companies.

General and specific answers to the problems of each of the selected industries as listed in the project document are presented later in this study, relying on secondary data, interviews and a survey. This activity has highlighted specific problems and needs of the industries and some of the sectors, branches, and specific companies, leading to the identification of a number of investment projects at a pre-feasibility level, as well as of other actions to be taken.

The following industrial branches have been studied at a general level:

- textile sector;
- glass and ceramics sector;
- metallurgical sector;
- electronics sector ;
- petrochemical sector;
- wood sector; and
- machine tools sector.

A detailed analysis of those industrial subsectors and branches is presented in the subsector analyses.

4. DEVELOPMENT STRATEGY

4.1. Background

The transition of the Croatian economy from socialism towards a market-oriented pluralistic society has been evolving along similar lines as the other Eastern and Central European countries. However, the partition of former Yugoslavia and the consequences of war that followed have created additional problems. The war has had a devastating impact on Croatia's economy. Hyperinflation and decline in output, especially industrial production, and the value of the country's currency are the principal characteristics. Beyond the numbers, of course, the war has shaped the attitude of the Croatian citizens toward the present and the future and diminished their confidence in effective planning. Hopefully, the worst seems to be over, and the country is poised to enter a new era in history.

In addition to the impact of the war, Croatia has had to deal with the demands of internal transition and the changing economic environments of Central and Eastern Europe and of the world in general. Thus, in a relatively short time period, Croatia must transform herself into a modern, market-based economy within rapidly changing regional and world economic and political orders.

The challenge for policy makers is the defining of priorities and the actions to be taken to establish proper programs and institutions. The most currently relevant is the Stabilization Program initiated by the Government in October 1993, which comprised the following three phases:

Phase 1: undertaken to fight inflation;

Phase 2: aimed at bringing about structural changes (involving the privatization process, banking rehabilitation, and restructuring of loss-making industries); and

Phase 3: whose objective is to return the economy to a path of growth.

Proposing the program and the policy of macroeconomic stability as well as implementing it can be considered as an important strategic step made by the Government. This program has been, in its main aspects, fulfilled, in spite of a number of unfavorable internal and external disturbances. Therefore, it can be stated that the first and crucial phase for sound economic development was successfully completed.[1]

---

[1] *See: "Put u nisku inflaciju, Hrvatska 1993-94, 1995, Vlada Republike Hrvatske."*

What has not been completed during this phase, is the process of privatization. This process was partial and concentrated, in its initial phase, on the transition from the self-management type of ownership towards state ownership, a mixed type of ownership, or only marginally public ownership. In addition, this process was brought to a standstill on territories under occupation. During this phase, the process of restructuring, especially in manufacturing has also barely started.

If we denote the phase of stabilization as the period which started by eliminating the sources of instability and will end with stability of prices, the gaining of confidence, the creation of stability for the domestic currency, balancing of the budget, and consolidation of the banking sector, then it can be stated that the process of stabilization has not yet come to its full end. What remains to be done is the creation of a modern financial sector, with a restructured and sound banking system, as well as efficient financial markets. The normal functioning of the financial market, supported by corresponding measures designed to promote growth, should enable the revival of the economy to occur.

This means that the focal points of policy makers and instruments to be proposed are part of the second phase, which is aimed at bringing about structural changes in the macroeconomic environment. Policies should concentrate on the privatization process, bank rehabilitation, full development of financial markets, restructuring of loss-making industries, and denationalization. These policies are the building blocks of rapid growth strategies. These should coincide with the ending of the transition process, clearly a long-term project.

Croatia, as a small country, should pursue the concept of an open economy as its main strategic consideration. Stability is essential for growth under the criteria of globalization. This means that the stability of an open economy and of the legal structures accompanying it minimizes risks and increases competitiveness. The strategy of development should rely on instruments favoring high rates of domestic savings, high employment rates, and creation of a broadly based human capital resource, including sound macroeconomic management, efficient administration, and minimal social distortions.

The legacy of the previous socialist economic system is an industrial structure that has been shaped by a degree of overprotection which did not contribute to its expansion. The real rate of investment over the last decade was very low. It did not even ensure for proper fixed asset replacements. The outcome was an inadequate industrial structure which reflected diminishing competitive capabilities due to technological decline. High and fixed levels of employment, poor management, and poorly allocated resources contributed to shrinking productivity levels. The shift to a market-driven system and increasing exposure to international markets have intensified those problems and a number of others.

In the transition stage of the Croatian economy, the problems facing the industrial sector are:

- transition to market economy conditions, in general;
- handling war destruction;
- liberalization of prices;
- privatization;
- dealing with ecological and environmental problems;
- human capital and managerial skills;
- restructuring;
- renewal;
- the need for proper institutions; and
- the choice of a development path suited for faster growth.

4.2. Transition problems

The old self-management system with undefined ownership was at first transformed into a system of state

ownership and then took the form of a mixed state and private ownership pattern in industry. The model used could be termed a mixed and gradualist one, with the final objective being entirely privatizing the industry.

The first stage of transition is terminated, except for the enterprises that were in occupied territories (where the process of transformation is currently under way).

According to a recent report by the Ministry of Privatization (Vjesnik, 17 February 1996), out of 2,672 enterprises, by the beginning of 1996, 2,557 enterprises have been transformed into joint stock companies in which the state still has a stake through the privatization fund and the social fund. The privatization fund still has the majority of shares in 12% of the companies. In addition, most of the largest companies in the petrochemicals, shipbuilding, mechanical, electrical engineering, and energy sectors are entirely state owned. The capital of those joint stock companies is around 82.2 bln kuna. By the beginning of 1996 270 companies were under the ownership of the privatization fund. and by the end of the year it is expected that only 103 of those companies will remain under the ownership of the fund (Vecernji list, 14.11.1996). Most of the companies that under the ownership of the fund were swapped between the fund and banks for shares of hotel enterprises and a part of companies entered the program of financial restoration required by law and provided by the government. The stake of the privatization fund, i.e. the state is expected to diminish further due to the planned swaps with the pension fund. The remaining portion of the portfolio will be offered for other forms of privatization, dominantly for vouchers. This might be one of the problems in interpreting the issues on the process of privatization. It is questionable what will in terms of financial viability remain for the voucher privatization. As measured by the 1995 end year results the fund had on one side in its portfolio companies that created a total loss of 530 mn HRK and on the other side only 44 mn HRK of profits. The largest loss makers were Dalmacijacement with 161 mn HKR, Torpedo Rijeka 44 mn HRK, Geotehnika 31 mn HRK, Inker 28 mn HRK and others. The highest profits of companies under the majority stake of the fund were Elka 15 mn HRK, Koncar 8mn HRK, Vecernji list 7.4 mn HRK, Tempo 3mn HRK and others. During the transformation process, 634,583 contracts were made with 576,513 shareholders. Most shares are being paid in installments. Thus, only 14.3% of shareholders have fully paid for their shares. According to the new proposal of the Law of Privatization, the small shareholder will be, most likely, allowed to pay in installments for their shares over a period of up to 20 years, but will be entitled the right of dividends immediately. This bears certain danger from the point of view of securing retained profits for further development of the companies.

Industrial plants are either entirely or predominantly public, where besides the shareholders, the state (privatization fund) and various funds (like social and medical), as well as the banks (through outstanding loans), have a corresponding share in equity.

With respect to the privatization process, there are specific problems in the still-occupied as well as newly liberated regions (such as Zupanija) within Croatia. The manufacturing enterprises in those areas have not yet been privatized. The action here should be:

- rehabilitation of abandoned and damaged plants;
- evaluation of the plants before privatization; and
- privatization according to the legal procedures.

When this process starts to be fulfilled, the overall picture of the transition process in Croatia will be improved.

The overall strategy should be the speeding-up of the process of privatization. The pace of privatization held until now is not satisfactory, and one of the major priorities of the government is to give new impulse to this process. Privatization has been slowed down due to the war and a drastic fall in the living standard of the population. The new approach to privatization is to encourage small shareholders. According to the new Law on Privatization, the population should be given a more just share in the privatization process through a system of vouchers and installment payments on shares for up to 20 years. The shares of the state and the privatization

fund are intended to be sold and corresponding capitalization is expected, as well as sound funding for the social and medical funds. This is extremely relevant for an aging population like the one in Croatia.

Another relevant issue is a just settling of nationalized property under the denationalization program. The problem of nationalization of property dates back approximately fifty years. Since then, it has been tackled by transformation into new assets. In this area, a new law is being prepared that would need monitoring and flexibility in the light of current suggestions of previous owners and their heirs.

4.3. Building the National Development Strategy and Industrial Policy

Croatia needs to pursue the basic goals of the Stabilization Program while reassessing and focusing its strategy toward growth and economic development.

The role of the decision makers and the state administration in general is to maintain an economic stable environment as the main assumption for a growth proactive role of the state. The administration has to provide the entrepreneurs and managers with clear and predictable conditions for the development of their activities and in which there are made no provisions for exceptions and privileges.

Successful formulation and implementation of the strategy presupposes appropriate consideration of the country's strengths and weaknesses, as well as the characteristics of the external environment. To the extent possible, positive experiences from other countries are being taken into consideration and their pertinence to the Croatian model analyzed. Finally, the strategy should contain objective control elements, promoting its proper evaluation and leading to its continuous improvement.

While Croatia is making progress on the domestic front, parallel progress is needed on the international scene. Country risk assessments have placed Croatia in a somewhat unflattering position. For example, Euromoney's March 1995 ranking put Croatia in 125th place overall, right behind Cameroon, Malawi and Guinea, but well ahead of Kazakstan, Belarus, and Russia. The rankings are generated by incorporating information on analytic indicators (economic performance, political risk), debt indicators, and access to international financing. However, the war is over and potential conflicts are minimized in the meantime so that the country risk assessment has to be considered under the new and changed conditions. So are the country risk ratings published by Euromoney as well, published for September 1996, ranking Croatia already on the 74th place what is a significant improvement. All the major indicators hint at further shift towards higher placements over time. Croatia's recent contacts with international institutions (IMF, World Bank, IFC, MGA, EBRD, Paris Club, London Club, and various export credit agencies) and markets (eurobond) along with improvement of its economic and political situations, should result in more favorable rankings next time.

The strategy of industrial development as a part of the overall strategy of economic development of the country is based on the concept of an open, market oriented and business-friendly economy.

4.3.1. Objectives of the strategy

The main objectives of the strategy is to attain the current level of economic development of western european countries in the shortest feasible time. Having the aim of joining the EU in due time means building similar institutions and criteria as well as reducing the gaps with respect to the level of economic development. Having this on mind the strategy of industrial development has the following objectives:

1. Gradual **structural adjustment of industry** relying on the strengthening of the local network of productive and service ties which should stimulate the process of endogenous local growth;

2. Growth of competitiveness in the long-run, based on a **stable macroeconomic environment** so that enterprises can act in the direction of diminishing the costs of their operations;

3. **Stimulation of competitiveness among enterprises and regions** by further development of local institutional environment necessary for faster development;

4. **Increase of competitive capabilities of enterprises materialized in the enterprises themselves with the help of the state measures that would lead to the reduction of prices of all inputs,** especially those of labor and capital;

5. **Acceleration of the privatization process** under transparent criteria and by correcting the evident cases of mistakes and illicit actions of privatization done until now;

6. **Productivity growth** has a crucial role in the long-term growth performance of industry and is essential for the achievement of social welfare, thus being a considerable compensating element for unfavourable demographic trends ;

7. **Increase of the national savings rate** in order to reach high levels of investment, which are badly needed in order to establish a new competitive industrial structure and thus to contribute to rapid economic growth;

8. Formulating and implementing a **new industrial policy based on the horizontal approach** instead of the protectionistic sectoral approach what implies the introduction of measures that support the development of key inputs like labor, capital, infrastructure, research and development and others;

9. **Support of research and development projects targeted at adoption and application of newmedium and higher technologies** in Croatian manufacturing but subject to proper economic evaluations of the proposals, as an important measure of structural change;

10. In order to alleviate the serious structural problems of the industrial sector in general and industries under crisis, and to reinforce the endogenous growth base, **formation of structural funds** should be taken into consideration such as

    - the regional development fund, dominantly for the development of regional infrastructure,
    - the social fund, aimed at financing of retraining programs and enhancement of regional mobility of labour,
    - support of projects targeted at identifying development possibilities under the restructuring program for major export oriented programmes like shipbuilding, textiles furniture, chemical industry and the like;

11. Support policies for structural adjustments demand an active export policy which should be supported by the **formation of an export bank**;

12. **Priorities for the enhancement of competitiveness of the Croatian industry are**

    - **initiate invisible investment,** such as to increase the level of knowledge, increase of research and development, formation of human capital and education of human resources, improvement of quality of products by implementing higher levels of knowledge and skills, introducing modern organizational structures that are highly adaptive to the changing conditions;

    - **stimulate direct foreign investment,** by development of competitive measure of economic policy as compared with the directly competing countries and by the development of investment

promotion institutions and agencies;

- **development of informatics infrastructure, electronic networks, data sources and bases as well as statestatistics,** essential for industrial development and faster adjustments to market situations;

- **development of cooperation,** primarily of the relations between stakeholders and managers and in this sense further development of a corresponding legal environment;

- **strengthening of market competition through liberalization measures** primarily by elimination of public assistance (except for the reduction of regional disparities and the renewal of war damaged facilities and plants) **and by forming the horizontal system of public assistance;**

- **participating in corresponding development programs of the EU, the EBRD and the World bank on sustainable industrial development** even the more since Croatia is counting on considerable contribution to growth from tourism and agriculture ;

- **participating in other international programs** by state support in financing programs and projects and supporting of the development of partnership relations on all levels;

- **support of development of small and medium enterprises and emerging entrepreneurship** by providing development assistance, business advisory services and credit lines;

- **improvement of management and performance of public services** with the objective of simplifying administrative procedures, transparent and that the administration of suchxc services is accounted for by their achievements.

The main objective is to speed'up the transition process, to reach the scale of a market economy in which instruments of economic policy and institutions suporting the new economic environment are being established to the fullest extent, creating a competitve environment by which the economy could grow faster and thus solve easier its current problems. As an economy with expanding international trade and transfers, it could become an interesting partner in future global and regional economic associations.

4.3.2. Strengths and concerns

The strategy relies on the strengths and concerns associated with the Croatian economy. Among its strengths are the country's locational advantages. The country possesses a promising economic structure, of which manufacturing is the backbone. Most of the enterprises have a long history in the local and regional markets, while some of the industries, like shipbuilding, electrical equipment, furniture, clothing, and others, have a permanent presence in the international markets. Also, the country can be a magnet for tourists. The country has a fairly well developed service industry capable of meeting the needs of the international market, especially in transportation services. Croatians are well educated and industrious and can develop into a labour force that can compete effectively in the years ahead. The manufacturing base will be an area of future potential after restructuring and with adequate transfers of technology and knowledge.

Several concerns can also be identified:

- Policies have been for the most part "macro" oriented, with relatively little attention paid to industrial structure;
- Production capacities have been underemphasized and underutilized;
- "Industry," as such, is not generally perceived as a principal activity and has not been supported and promoted adequately;
- Market segments (such as labor and financial markets) are not operating properly;
- Human resource development and management has not been appreciated or properly approached;
- There are significant financing constraints in almost all sectors;
- Very few support systems are in place for businesses, especially for the small and medium-sized enterprises;
- The accounting, financial, information, and technological systems are not entirely in place yet;
- The crucial banking sector is facing very serious problems;
- Financial markets are not well developed;
- International markets have suffered;
- There is no well defined social safety net;
- Short-term and long-term objectives may be in conflict;
- There are significant regional disparities; and
- Changing attitudes and breaking away from the past remain significant challenges.

These strengths and weaknesses are being addressed within the framework of the national strategy.

As compared with other more advanced transition economies amongst which according to the World bank and the IMF Croatia is classified, the statistics show that Croatia lags behind in terms of real GDP growth, gross fixed investment, gross national saving and government consumption. With respect to the last indicator Croatia spend relatively more as compared to other countries of this group.

The problem of most industrial branches in Croatia is technical obsolescence of a large share of capital stock inherited from the previous system, and therefore there is a considerable need for Croatian industry (and the economy as a whole) to sustain high levels of investment for a prolonged period. It is important to underline that investment must be financed dominantly from current production.

4.3.3. Sources and determinants of growth

General macroeconomic **sources of growth** in the case of Croatia are:
- postwar reconstruction,
- structural reforms,
- deregulation and
- trade liberalization.

In order to catch-up and reach high growth rates, conditions for them have to be created along the lines of the proposed development strategy of industrial development as proposed earlier. **Elements determining growth** in the case of Croatian industry are:

- growth of labour force,
- the accumulation of capital,
- productivity growth,
- improvements of labour and capital utilization in production of goods and services.

The principal characteristics of the Croatian economy over the next decade should be high rates of growth based on increasing utilization of existing capacities and reaping, over time, the benefits of restructuring and rehabilitation of its productive capacities and service industries. Structural changes should enable increasing

returns on productive factors since shifts from lower to higher levels of efficiency are expected. Rapid export growth can be foreseen as one of the major platforms for development. As a social state, it should seek declining inequalities. The principle of **shared growth,** by which business shares the benefits of growth with labor, assisted by economic measures, would allow for such an income distribution and would enhance productivity and investment. Creating a program of partnership in development and growth should become the standard for steady sustainable growth and social stability.

Croatia has a catch-up potential with respect to developed countries, that is roughly inversely related to its current income level and therefore should be able to grow relatively rapidly, provided that it removes obstacles to growth by terminating the process of structural reform.

High rates of investment, mainly private domestic investment, and rapidly growing human capital are expected to become the principal engines of growth. These factors should account for roughly two-thirds of growth. The remainder should be attributable to improved productivity. This is attainable, due to the low level of productivity in the base year period. The targeted productivity performance should result from the combination of efficient allocation of capital to high-yielding investments and catching up technologically to the industrial economies.

This is even more important when having in mind the unfavourable demographic trends with a pronounced aging of population similar to those projected for western Europe. Thus, population growth seems unlikely to be a growth factor in the future. High unemployment that prevails at present can be seen as a growth factor provided that the investment in labour and human capital be implemented along the lines proposed in the strategy of industrial development.

Unfavourable demographic trends will influence the savings rates as well. Therefore the proposed strategy of industrial development relies heavily on productivity growth and the design of policies that support it.

4.4. Policy issues for sustaining growth

4.4.1. General issues

In order to reach the basic objectives, the policies of the government should provide a stable macroeconomic environment and a reliable legal framework to promote domestic and international competition. The orientation of the country towards international trade and the absence of price controls should lead to low relative price distortions.

Favourable indicators of educational attainment combined with industrial tradition and available manufacturing skills in Croatia suggest that the quality of human capital may make an important positive contribution to future growth.

Investments in people, education, and health are legitimate roles for government in providing the services of a growth-oriented social state. In general the role of the public sector can be important in raising the marginal productivity of private capital through investment, the provision of education and the enforcement of private property rights in the economy. The principle should be to utilize multiple, shifting policy instruments in pursuit of straightforward economic objectives. Pragmatic flexibility in the pursuit of such objectives - the capacity and willingness to change policies - should play a role.

Government policy should help to raise significantly the long-term growth potential by lowering the share of public expenditure in GDP and where the policy framework leads to an increase in the share of investment.

However, in attaining the mentioned objectives, a transitory phase could be foreseen during which selective interventionist policies could be implemented. Selective interventions include:

- mild financial repression (keeping interest rates positive but low),
- directed credit,
- selective industrial promotion, and
- trade policies that push nontraditional exports.

Here, we bear in mind the fact that Croatia is a small country in which monopolistic structures could easily be created leading to failures in the working of the market (including in the products that could be 'imported'). In addition, a class of economic problems could be identified, coordination failures, which could lead markets to collapse, especially in the early stages of development. Therefore, the guiding principle for interventions that attempt to guide resource allocation to success should be the readiness to address failures in the working of the markets. What seems to be essential is the creation of cooperative behavior among private firms and clear performance-based standards of success designed by the government.

Though market-based competition should be fundamental, over the initial period, due to the shortage of resources - mostly of capital - the creation of **contests** that combine competition with the benefits of cooperation among firms and between the government and the private sector could be envisaged. At the beginning, they could be seen as routes of access to rationed credit for exporters and for regions and zones of special economic interest. It has to be stressed that for such approaches, competent and impartial referees - that is, strong institutions - are required. During this stage, effective but carefully limited government activism could be foreseen.

What is needed over the initial stage of creating a market economy is the establishment of a **pro-export incentive structure** which could coexist with moderate but highly variable protection of the domestic market. A wide variety of instruments could be used, including export credit, duty-free imports for exporters and their suppliers, export targets, and tax incentives. However, it is important to note that for export development, the best approach would be to rely less on highly selective interventions and more on broadly-based market incentives and direct foreign investment.

The policy measures of strategy implementation should create a "**market-friendly**" and "**investment-friendly**" environment that articulates the appropriate role of government to ensure adequate investment in people, provide a competitive climate for private enterprise, keep the economy open to international trade, and maintain a stable economy. Basic policies should include such traditional government obligations as providing adequate infrastructure, education, and secure financial institutions. Anything beyond this could do more harm than good.

Macroeconomic stability should encourage long-term planning and private investment, and through its impact on real interest rates and the real value of financial assets, should help to increase financial savings.

Economic policies should be flexible and allow for adjustments to possible trade shocks which could influence the speed of recovery of private investment.

The strategy underlines the need for fiscal discipline and high public savings. After creating all the needed governmental institutions, a project of implementing efficient government management should be introduced to encourage a reduction in public expenditures.

Specific programs for the medical fund and the pension fund should be priorities within this stage of the Stabilization Program, since the new model implemented will determine how costly or competitive doing business in Croatia will be.

4.4.2. Fiscal policy

Fiscal policy will have to play a key role in ensuring that levels of saving are sufficient to finance the high levels of investment required for sustained economic growth. The reason for this is even more important since the projected unfavourable demographic development of Croatia has adverse effects on the evolution of private saving rates.

A stable, transparent tax regime that minimizes the distortions to saving, investment, and production decisions is important. The approach in the fiscal policy must be balanced against the demands on the budget to finance social safety nets, bank restructuring, enterprise restructuring, environmental safety, and other needs for public intervention.

A budget that is not expansionary and in which there is a balance between funding and outlays is the target to be attained for fast growth. On one hand a business friendly environment requires a mild fiscal pression as the most and on the other it is essential minimize harm to social fabric. As the social policies are being reformed a better balance between social spending and its financing has to be established. A better targeting of pensions and other social benefits is needed. With respect to this a variety of measure will be needed, including an increase in retirement age, tightening of the eligibility criteria and increase payroll contributions and the like. To enhance resources available to meet broad social objectives, it will be necessary to bring the informal sector into the social insurance system, particularly in view of the declining share of the state sector in the economy.

4.4.3. Capital formation and foreign direct investment

Capital formation and foreign direct investment (FDI) are an important issues in the light of current estimates of modest levels of both public and private savings. An improved ability of Croatia to draw on foreign saving could have a significant influence on investment and growth. This ability will be enhanced with the peace prevailing in the region and with further settlement of the outstanding political issues in the region. Croatian industry has demonstrated the ability to attract FDI even during the war years and the evidence is that there is a growing interest of foreign investors since the establishment of peace. Other factors in favour of a positive attitude for investing in Croatia is the advanced transition stage of the country based on economic stability, the favourable legal system for FDIs and persistence of the government with respect to further reforms. With respect to the main laws, like the Law on privatization, Company law, Law on accounting, Law on securities, Law on VAT, and other, it has to be noted that they originate dominantly from similar European laws, mostly German, but foreign businessmen face differing interpretations of those laws (Vecernji list, Poslovni svijet, 13.11. 1996.). Another risk is seen as a prevailing reluctancy for change of the larger state owned companies. Foreign investors prefer as well to see first successful restructuring of such companies and transparent accounts and financial reporting of companies. Changes that are under way in this direction should be accelerated in order to open up the space to the growing interest of investors in Croatia. According to the analysis in the Central Europen Economic Review, a supplement of the Wall Street Journal the interest for investing in Croatia should be growing. The economy is accounted for as the most stable in central Europe and the growth prospects should be reflected on the stock markets, an additional reason for investing especially for managers of international investment funds. The first companies to be attacked seem to be the leading food processing enterprises and leading companies involved in the tourism business.

Therefore the target with respect to net capital inflows should be around 15 percent of GDP as have the Czech Republic and Hungary managed to reach. However capital inflows should be channelled into investment and not into consumption in order to avoid excessive external deficits and eventual painful economic adjustments. While capital inflows are no substitute for domestic saving, FDI's raise investment without a concomitant increase in the external debt burden. Such inflows not only embody new technology, but are accompanied by new managerial expertise. In order to be able to proof the repatriation of earnings to foreign investors, Croatia has accepted the obligation of current account convertibility under Article VIII of the IMF's Articles of Agreement.

Foreign direct investment relies heavily on the development of the domestic private sector which provide markets for inputs and market for local production. To develop the private sector capital is needed among other resources. Economic policy must therefore be conductive to domestic saving and investment. Economic environment that stimulates domestic investment will also attract FDI's. At the same time FDI should be treated the same way the domestic projects are, i.e. no more and no less favourably.

4.4.4. The financial system

The financial system performs a particularly important role in screening investment projects and enforcing hard budget constraints on enterprises and other borrowers. A notable improvement in this respect is noted in Croatia and especially with the banks which helps to ensure that investment funds are allocated to profitable projects with high returns.

The financial market and the degree of financial depth should be increased since it can affect the growth performance. Experience with the economies in transition demonstrates that countries with a greater proportion of credits intermediated by commercial banks and with a greater share of credits extended to the private sector, appear to grow faster.

The major problem of Croatia are the high levels of nonperforming loans, most of them stemming from the industrial sector what is being reflected on the condition of the banks. This situation should compel the government to set a priority to financial rehabilitation of the banks and their restructuring. Efforts for orderly working out of problem loans should be undertaken. The recapitalization of problem banks and debt swaps in which the banks exchange a share of their portfolio of bad loans for government securities that have started should proceed with the major banks, especially with the Privredna banka Zagreb as the major source of current problems in the banking sector. The current situation is being reflected on the levels of investment since the banks are compelled to introduce and maintain wide margins between lending and deposit rates. Such wide rates as applied in Croatia are present in most of the transition economies and they reflect several factors, including the riskiness of the loan portfolio as well as an indication of the serious economic consequences of the fragile state of the banking system. Such a situation with the banking system and the cost of financing the projects as a consequence has adverse effects on the allocation of investment funds. Potentially productive projects that cannot generate returns required to cover the cost of borrowing either go unfunded or are delayed, while the loans that are contracted may be the most risky and in the final end, over time, nonperforming.

Crucial for the development of the financial sector is the position of the banks and the complete process of recapitalization and restructuring of the banks should be accomplishes as fast as possible. It has to be underlined at the same time that measures to resolve problems in the banking system are unlikely to have lasting effects unless they are accompanied by structural reforms designed to foster enterprise restructuring. This will enable a further strengthening of the financial market in general and a more important position to the Zagreb stock exchange then it has at present.

4.4.5. Human capital building

With respect to **human capital building** the overall levels are already higher than in most of the low and middle-income economies. Maintaining a system of free education at all levels, with participation on the tertiary and higher levels, would be advisable due to the level of standard of living and the long tradition of free education in the country. The demographics can help in increasing the quality of human capital formation. Declining fertility and expected acceleration of economic growth could mean, even when education investment as a share of GDP remains constant, that more resources would be available per child. The limited public funding of post-secondary education should focus on technical skills with the objective of creating a broad, technically inclined human capital base well-suited to rapid economic development. The strategy should utilize

education policy to contribute more to equitable income distribution. The still prevailing relative equality in income and education should lead to educational expansion which will reinforce this equality.

4.4.6. Savings and investment

Increased savings and investment are a fundamental element of the strategy. The increase is expected from measures and policies that prevent inflation, avoiding volatility of real interest rates on deposits and ensuring that interest rates are largely positive. Another factor is ensuring the security of banks and making them more convenient to small and rural savers. Instruments that could be implemented to build a secure, bank-based financial system are strong, prudential regulation and supervision, limits on competition, and institutional reforms. Savings should be influenced by differential interest rates, including consumers loans, and through the fiscal system, for example, through stiff taxes on "luxury" consumption. It is clear that making consumers save when they would not otherwise do so imposes a welfare cost. But on the other hand, savings should generate high payoffs based on high rates of return to investments and, therefore, rapid growth of the economy. Investment should be encouraged by several means: creating infrastructure that is complementary to private investment and creating an investment-friendly environment through a combination of tax policies favoring investment and policies that keep the relative prices of capital goods low.

4.4.7. Alocation of resources

The economic policy should provide instruments for **efficient allocation of resources and productivity change**. With respect to labor market policies, using the market and reinforcing its flexibility could be advised. In the capital market, a mild government intervention could be foreseen, both to control interest rates and to direct credit within a framework of careful monitoring. Trade policy should include a limited but stimulative protection to local manufacturers, offsetting some of the disadvantages of such an approach by actively supporting exports. The **export-push strategy** that should encourage rapid manufactured export growth would result in numerous benefits, including more efficient allocation, increased acquisition of foreign technology, and more rapid productivity growth. This strategy, however, should be based on factor-based comparative advantage and changing factor endowments. Thus, productivity growth should be the outcome of mild government measures and market mechanisms after the basic restructuring has terminated and a normal process is under way. It can be expected that manufactured export growth could also provide a powerful mechanism for **technological upgrading** in imperfect world technology markets. Because firms that export have greater access to advanced technology, there are both benefits to the enterprise and spillovers to the rest of the economy that are not reflected in market transactions. These information-related externalities are an important source of rapid growth.

4.4.8. Environment needed for the success of the strategy

In conjunction with the stated strategy, the government must continue creating the conditions for macroeconomic stability and sectoral growth while promoting an environment that will further contribute to the strategy's success. This environment requires:

- Cultivating the country's resource base, including its human resources;
- Building the institutions necessary to attain the goals of the strategy;
- Generating the required conditions for proper functioning of the markets; and
- Attaining a degree of openness commensurate with international economic, institutional, and technological developments.

Articulation of the economic strategy and its associated objectives must take place as quickly as possible and involve decision-makers at the highest possible level, as well as individuals that are familiar with the basic strengths of the economy. The critical elements of the strategy must then be widely disseminated.

Among the benefits of this approach will be the attainment of objectively substantiated assessments of the characteristics of the economy. This would replace subjectively held views that may exist and which may contribute to misdirection of valuable resources. By establishing priorities, the strategy would also clarify the extent to which the country can rely on its industrial sector for its development by examining Croatia's industrial structure as it should appear in the future, not necessarily as it has been determined by past practices.

The authorities have understood clearly the need for macroeconomic stability and have attained some successful outcomes in conjunction with their policies. The three major sectors (real, financial, and social) require further attention to deal with the problems created by the rapid changes encountered, including the war and its aftermath.

4.5. Cultivation of the Country's Resource Base, Especially its Human Resources

The country's resource base has suffered heavily as a result of practices arising from the previous economic system, the war, and the burden of transition. The task ahead is substantial.

Resources (human and non-human) must be developed in a manner generating the maximum possible contribution to the country's development strategy. Investment in human capital is especially important. There is an obvious need for the development of training programs for large numbers of managers in the public and private sectors. Investment in advanced telecommunications and other infrastructural components is also necessary.

To facilitate the effective development of human resources, an inventory of presently available resources is necessary. Furthermore, the factors motivating individuals to develop knowledge and skills should be identified. Anticipated increases in wealth, predicated by the ability to acquire and hold private property (real and financial) is one of the motivators for better performance. In addition to its other ramifications, assertion of private property rights will contribute to the amount and quality of effort undertaken to enhance one's personal assets, including knowledge and skills.

Development of human resources can follow formal and informal approaches. It should start early, involving rigorous and relevant basic and higher education components. Furthermore, technical institutions can prepare youngsters for more immediate careers.

Training of **public sector** managers is extremely important in a country reassessing its governmental functions. Budget and ideological concerns attest to the need for the adaption of effectiveness and efficiency considerations in the public sector. The organization of the training function could fall under a newly created National Academy of Public Administration. The Academy will produce professionally trained managers whose performance could enhance the citizenry's confidence in the public sector.

Educating and training of **private sector** managers should be a governmentally-supported, but, for the most part, privately-operated, venture. The effort should involve government agencies, enterprises, chambers of commerce, and academic institutions. Initial leadership may lie with the national and regional/county chambers of commerce. The establishment of business schools in the Western tradition should be encouraged. In addition, training programs of various lengths could be designed. Contents should include general management, strategy formulation, finance, marketing, accounting, international business, and other related topics.

Academic institutions, economic institutes in particular, could work with the chambers to form enterprise consulting teams. The teams would be comprised of students, faculty advisers/supervisors, and enterprise staff. They will assist enterprises, while offering students the opportunity to receive valuable managerial training through exposure to real business situations.

Development of human resources should also address the more technical and vocational occupations. As the country is trying to catch-up technologically, every effort should be made to offer training or upgrading programs for engineers, computer scientists, and others.

Finally, the country should place great emphasis on the training of those people who will teach others at all levels of education. For example, "training the trainer" programs should be encouraged and placed on high priority status.

4.6. Building the necessary institutions

To implement its strategy successfully, the country must create a "business-friendly" environment. The appropriate legal and regulatory environment must be formulated. To help businesses to survive and flourish, a supportive network of agencies and institutions must be established. Those institutions should:

1. Generate the flow of information that can be used as an input to relevant decision making. The information provided should have domestic and international dimensions and include macroeconomic and microeconomic levels of aggregation. Those existing institutions, such as HIDRA and the State Institute for Macroeconomic Analysis and Forecasting, should be reinforced and be allowed to orient their services for use by businesses. Chambers of commerce and various business associations can also serve a valuable role by enhancing networking and accelerating the information flow.

2. Promote the operation of institutions that provide various forms of business assistance, including:

   - how to start-up a business;
   - formulation and review of business plans;
   - market analysis;
   - cash flow analysis;
   - incubation of start-ups;
   - technical assistance;
   - technology transfer;
   - managerial assistance;
   - access to available databases;
   - productivity assessments;
   - quality control; and
   - standards.

   The greatest portion of the assistance should be directed to the already important and most promising group of firms: the small and medium-sized enterprises (SMEs). The Ministry of Economic Affairs already has a Department of SMEs. The Department should be strengthened and develop programs that would deliver the necessary services to SMEs. Assistance could be provided on a periodic basis, through workshops, conferences, and seminars, and on a more permanent basis, through business development programs, short-term and long-term practical courses, and consultations. The experience of other countries can be helpful. Similar programs abroad should be identified and affiliation with those programs cultivated.

SMEs can be a source of many of the innovations encountered in the economic system. To encourage innovative development, a special program assisting firms during the various stages of innovation introduction and management should be designed and implemented. Related to this effort, the Department of SMEs should adopt a Croatian Entrepreneurship Program. The objective of the program would be to design and promote entrepreneurial activity in the country's firms of all sizes, but with special emphasis on small and medium-sized enterprises.

Two interesting concepts related to SME development have been the incubator and the research park. The incubator is a simple tool that has been found to increase the success rate of firms by allowing them expanded services and lower costs. SMEs, because of their limited funding, face a great deal of pressure to generate profits as quickly as possible. High start-up costs, however, and a sometimes lengthy learning process lead to high failure rates during the firms' early age. The incubator environment gives firms the opportunity to better afford the essentials of doing business and to learn faster.

The concept of the incubator is flexible enough to allow for adaption to the particular region's (Zupanija) development needs. In general, however, incubators involve shared buildings and such facilities as computing and shipping. They also involve shared administrative, managerial, and technical assistance. The ability of tenants to network and learn from the experiences of others in a similar professional situation and the availability of on-site managers and business services represent additional advantages of the firms over others not housed in the incubator.

The research park concept is related to the incubator, but pertains primarily to firms involved in research and development. Those parts provide a suitable environment for researchers to formulate, test, and develop new or improved products and production methodologies. In addition to offering valuable assistance to various industrial sectors, research parks underscore the region's commitment to the building of long-term foundations for economic development. Research parks also give better direction to existing industrial research institutes, whose potential may not be fully utilized, and may offer more substantial service to outside users.

3. Address one of the most serious problems faced by all firms (financial and non-financial) in Croatia: the lack of liquidity. Information and other possible assistance should therefore be provided with respect to financing. As a form of managerial and technical assistance, cash flow models should be introduced as part of decision making. Financing opportunities should allow individual investors and businesses to enter or exit by paying or receiving a fair price. The encouragement of the development of efficiently functioning financial markets should be of direct and indirect assistance to all businesses.

The Ministry's SME Department may establish certain criteria, based upon which firms could qualify for direct or guaranteed financial assistance. The following are examples of possible loan assistance:

- Construction Loans;
- Seasonal Loans;
- Job Creation Loans; and
- Export Loans.

Since most of those loans are expected to be guaranteed, two conditions must be met. The first is that there is a source of liquidity within the financial institutions and markets. At this stage of the country's financial-structure development, lack of liquidity is a pervasive problem. The magnitude of the problem is generally appreciated in Croatia, as it represents both a cause and the symptom of economic difficulties. Further attention, then, should be directed toward addressing the liquidity problem. The second condition is that a close relationship with financial institutions be cultivated, especially as some of those institutions are facing their own challenges.

4.7. Generating the Conditions for Proper Functioning of the Markets

The ability of Croatian businesses to survive in a global environment will depend on their ability to survive in the domestic market. The role of the government lies in the creation of an environment that fosters competition, allows the most efficient businesses to be rewarded, and eliminates market failures to the fullest extent possible.

Of critical importance to the ability of a market-based economy to function smoothly is the formulation and maintenance of a healthy and efficient financial system. The ideal system is composed of a sound network of banks and other financial institutions and the appropriate money and capital markets. These markets include primary and secondary markets for public and privately-issued securities, interbank markets, and foreign exchange markets. In addition, the system needs to provide the payments, clearance, and settlements mechanisms that will promote stability and enhance public confidence. It also needs to establish the appropriate accounting and information-generating frameworks to best serve system participants.

A well-functioning financial system allows channelling of funds from savers to investors and, subsequently, allocating them to their most efficient uses. Furthermore, it offers a continuous monitoring mechanism on the allocative and technical efficiency associated with these projects. Lack of a deep financial system may impose severe limits on the ability of firms to acquire external sources of funding for their various projects and adversely affect their liquidity positions. At the simplest level, privatization efforts cannot be ultimately successful unless shareholders feel confident that they can resell their holdings.

Since the Croatian economy is currently experiencing severe liquidity constraints, the development of efficient financial markets would serve as a necessary condition for alleviation of these constraints. Although this point is generally agreed upon, unresolved issues do remain, some involving the role of government during the various stages of financial market development. With bond and equity markets developing rather slowly, and with banks being relied upon to undertake the major burden for financing, governments have to decide on a policy that is effective in the generation and allocation of capital, yet does not put them in a permanent interventionist role. As the appropriate identity of the banking system is determined, regulatory and supervisory functions must be established.

4.8. Attaining and Maintaining Openness

Croatia represents a typical case of a small economy joining the world trading and investment community. As such, it needs to encourage the export potential of its businesses (within the WTO/GATT framework). The following tasks are at hand:

1. Assess the impact of outside forces on Croatia (European Union, WTO).

   As the country engages in discussions with the World Trade Organization (WTO), a detailed analysis of the new system's impact on the economy should be conducted. For the developing countries, the new trading system opens the doors to the potent markets of developed nations. The multilateral aspect of the new framework gives developing countries a fuller participation in the system and serves as an additional protective device against abuses by the developed world. Full analysis of the impact of the WTO/GATT on Croatia can take place in terms of the following three stages:

   First, a complete investigation of the country's competitiveness within the international trading system should be undertaken. The core competencies of the country's major sectors must be objectively assessed.

Second, the impact of the Uruguay Round agreements on these sectors should be indicated. Thus, the Round should be analyzed in terms of its effect on:

- Croatia's consumers
- Croatia's taxpayers
- The country's workers, and
- The country's producers

Permanent and transitory effects should be analyzed. Furthermore, the spillover effects of each sector's change on the rest of the economy should be estimated. In addition to the analysis conducted for manufacturing sectors, attention should also be paid to the impact on the country's agricultural and service sectors.

Third, the proper economic policies should be formulated to deal with the dislocation and other (positive and negative) adjustment issues raised.

2. Formulate a National Export Strategy

As these issues are analyzed, assistance to Croatian exporters should be provided immediately. Beyond the immediate assistance, however, a national strategy must be conceived and implemented. This strategy will be central to the future of Croatian manufacturing, agricultural, and service sectors. By enabling them to compete more effectively in the world markets, the strategy will result in making Croatian sectors stronger in the home markets, as well.

Depending on political feasibility, Croatia should develop a Ministry/Department/Office of Foreign Trade. Among other duties, the Office would be responsible for formulating the national export strategy, implementing international economic policy, administering trade matters, developing trade opportunities, and coordinating related activities of other government agencies.

The criteria used to formulate the strategy should include:

- efficiency in the provision of the necessary functions;
- adherence to overall economic goals;
- efficient allocation of the country's resources;
- maximum involvement of the private sector;
- maximum advocacy of Croatian exporters;
- adherence to international trade agreements;
- decision elements for joining regional trade associations;
- development of international database networks; and
- development of the appropriate control systems.

The National Export Strategy should incorporate the characteristics of the international environment, assess the strengths and weaknesses associated with specific economic sectors, identify each sector's export potential, establish specific action time tables, and formulate methods of strategy evaluation and policy revision.

Types of immediate assistance could include:

- Offering of trade-related Seminars and Conferences.

These seminars could cover a number of topics, such as:

- Market Analysis;
- Documentation;
- Foreign Exchange Risk Management;
- Methods of Entry into Foreign Markets;
- International Marketing Strategy; and
- Conducting Feasibility Studies on Foreign Markets.

- Establishment of Trade Information and Assistance Centers.
  These Centers would provide exporters with information on specific markets and tips on how to perform best given the available resources.

- Opening of Regional Export Centers.
  These would be located in the country's major regional centers and be responsible for export promotion activities originating from their region.

- Appointment of Country Desk Officers, specializing in providing information and assistance on particular export markets.

- Organizing a Small/Medium Enterprise Export Office, to perform services to address the specific challenges faced by the nation's SMEs.

- Working with various World Trade Centers.
  Croatia should have representative offices in World Trade Centers for existing and potential markets.

- Providing Financing Assistance.
  This is one of the most crucial needs of Croatian firms, including exporting firms (and those potentially able to export). When commercial financing is not sufficient, firms should be able to turn to an official agency for loans, insurance, export financing most likely within the national export bank (Hrvatska banka za obnovu i razvoj), and other related needs.

- Providing Sectoral assistance.
  Individual sectors must have available specialized technical assistance.

- Sponsoring specialized trade-promotion events, such as Trade Shows and Exhibits.

- Publishing of a Directory of Exporters.

Some of these services are already available through the chambers of commerce and other agencies. Agency linkages and coordination, however, will increase both the quality and effectiveness of the offerings.

3. Formulate a National Investment Strategy

The country's attractiveness for foreign investment ventures depends on the general condition of the Croatian economy. In addition, the government should make sure that foreign investment is simple to set up and that:

- It is not being discriminated against (nondiscrimination and national treatment clause), and

- It is appropriately protected against future internal and external adverse developments, including political instability and international disputes.

To guide the National Investment Strategy, there is a need for feasibility studies on the desirability and effectiveness of foreign portfolio and direct investment in general and some specific aspects, such as foreign trade zones. When possible, additional bilateral treaties on avoidance of double taxation should be entered into with major investment partners. This process has already started but should be accelerated. In addition, the feasibility of various incentives should be considered, including:

- tax credits and cash grants;
- income tax exemptions and reductions;
- tax rebates and refunds;
- export inducements; and
- customs duties exemptions.

In addition to being generally available, incentives should be formulated towards attracting investment to specific sectors. Particular emphasis should be placed on investments generating technology transfers, those dealing with infrastructural projects, and those resulting in more effective restructuring of state-owned enterprises. It should be emphasized, however, that incentives, alone, are not sufficient to attract foreign investment. The financial and managerial commitment necessitated as part of the foreign investment process forces firms to analyze the long-term attractiveness of a location. This attractiveness is augmented by factors that enhance profitability and mitigated by risk-producing factors. Progress in economic development and elimination of political risk will certainly contribute to making the country more attractive, regardless of additional incentives.

Capital flows to small and developing countries are associated with both benefits and risks to the recipient countries. Portfolio flows may have a destabilizing influence when they depart in pursuit of better opportunities. Direct investment also has potential positive and negative effects on the country's economic conditions, in general, and production, job creation, trade balance, foreign reserves, and other performance aspects.

The importance of direct investment requires the formulation of cost-benefit analytical methods. The benefits of direct investment (including those arising from payments to domestic workers, suppliers, and government) can be contrasted to the costs associated with such investment (including payments to foreign owners of real and intellectual property). Special assessments can be made for technology transfers.

Foreign direct investment is especially desirable during periods of restructuring of the economic system. When domestic private savings cannot fill the needs for project financing and there is an urgent need for technological infusion, as is the case in Croatia, foreign investment performs a valuable function. Its acquisition, then, should be an integral part of the National Strategy.

Although somewhat distinct, the Trade and Investment components of the overall strategy should be closely coordinated in order to maximize the utilization of the knowledge gained and avoid unnecessary conflicts.

4. Communicate the above to the rest of the world

In this rapidly changing world, Croatia has to compete for funds in the world market. The message that the country offers a great deal of opportunities needs to be widely disseminated. There is a need, then, for a long term publicity program that will cover all relevant markets.

4.9. Technological strategy

The transition from a predominantly inward-oriented industrial strategy to an export-oriented and competitive industrial system at this level of structural, institutional, and political development, requires a state role by which cooperative relations between various state agencies and business should be established. A symbiosis of public and private initiative leaning on the propulsive and innovation-oriented companies would boost the economy. This leads to the idea of defining an explicit technological/industrial policy sheltered from conservative industrial interests and easing the underlying structural problems.

4.9.1. Issues to be addressed

Issues to be addressed are:

- need for technological improvements;
- level of technological dynamism;
- the state of technology and innovation in the industrial sector;
- the state of incentives; and
- capabilities for technological advance.

a) **The need for technological improvements** is essential since industry has not been exposed to any significant changes for more than a decade. This will be facilitated by an increase in savings, i.e. investment, promotion of innovative practices and transfers dominantly through foreign direct investment and a direct exposure to the international market.

b) **Technological dynamism** is established by creation of a technologically dynamic surrounding. Here, macroeconomic and microeconomic aspects are relevant.

Medium-sized, developed countries have established technologically dynamic surroundings. This was possible due to the fact that such countries have strategies of industrial development and have open economies with all the necessary macroeconomic and microeconomic instruments supporting them.

An open economic system with market mechanisms already introduced and/or being implemented enables the creation of corresponding internal and external technological dynamism. Technological transfers are vital for adaptive systems. For, they are the main sources of progress. Croatia should be open to such transfers. In this respect, foreign direct investment, mergers and acquisitions, industrial cooperation, and other forms of partnership are important.

c) **The state of technology and innovation** in the industrial sector is relevant for determining the technological strategy of industrial development.

In large, developed economies or integrated economies, as is the case with the European Union, multinational enterprises (MNE's) are the dominant forces behind technological progress and innovation. This capability is reflected in their role in international trade and foreign direct investment.

In the case of Croatia, there are, basically, the first rudiments of an MNE presence in the manufacturing sector. The process of restructuring of industrial companies, together with the process of privatization, is leading to the establishment of medium and small-scale industries. The presence of foreign MNE's in the industrial structure is small and in the form of affiliations. Still, their influence is expected to

enhance the transfer of technology, know-how, and management. What is important with respect to the role of the MNE's, at the moment, is the demonstration-effect.

Under the assumption of establishing technological dynamism and the fact that there is generally no presence of a leading edge of world technology created in the industrial sector, the strategy focuses on medium and small-scale companies.[2] With small industrial enterprises facing competitive pressures and not being in a position to lobby within the state structures for supportive measures, there is much more scope for "nimble" operations, specializing in the quick and efficient transfer of existing technology, as well as for their adaptation to specific market demand.

The strategy is, therefore, a combination of increasing internal technology transfers and the creation of niche areas of high technology. This should be implemented through a combination of government actions, predominantly through fiscal measures and market incentives. Those niche areas are seen as sources of outward technology transfers from the country and roots of competitiveness in certain industrial branches. A typical example is the "Sumamed" antibiotics vaccine, produced by "Pliva" - Zagreb.

Along this line of reasoning, the most important task for government is to become more concerned about economic, especially technological, dynamism. Such a strategic orientation of the government should focus on the actions that would facilitate the creation and development of small and medium-sized, technology-oriented enterprises. Such support can, in turn, be subsumed under the general heading of support for "bottom-up" privatization, enabling government to side-step the tangles of industrial policy.

Facing a tight capital market, it is hardly conceivable to imagine the possibility of raising venture capital which would facilitate those actions. Consequently, an institutional unit should be proposed that would promote the development of SMEs. More will be said on this in the part on institution-building. Sound opportunity studies and assistance with investment proposals should be considered for such projects.

One important point is the development of environmentally friendly technologies which have to be implemented in some of the major economic sectors of the country, like tourism, agriculture, transportation, etc. and for which standards must be harmonized with the ones implemented in Europe. Relevant international sources of financing may be available for such projects.

The promotion of the SMEs should be more explicitly expressed in the National Scientific Research Program in the form of linkages of fundamental research, applied research, and implementation of research results in the corresponding sectors of the national economy.

d) **The state of incentives** is related to the degree of "market penetration." Incentives are shaped primarily by macroeconomic policy and derived from pricing and revenue effects of enterprises. The policy of the government should be one of making the market more conpetitive. Such an environment makes it easier for new firms to pioneer markets, especially international ones. The managers of the firms identify the incentives that stem from the market and, therefore, are expected to design their approaches in establishing corresponding systems of evaluation of innovative activities.

Incentives are efficient in a competitive environment which is based on free entries and exits. Any

---

[2] *Justman, Moshe and Morris Tenbal, "Strategic technology policy for new industrial infrastructure: Creating capabilities and building new markets," Jerusalem Institute for Industrial Studies, Industrial Policy Group, discussion paper 25, Jerusalem 1992.*

barriers that exist create distortions. They lead to oligopolistic and monopolistic structures which are in a position to lobby decision-makers and, therefore, influence the dynamics of change. Croatia should enact legislation on competition which involve standing up to the lobbies and prohibiting the creation of monopolistic market structures.

Active steps should be taken in further development of a business infrastructure, particularly in the domains of communication and market access.

Strategies today are strategies of change. All businesses must be concerned with what their current and future perspectives are. Are their strengths adequate for their specific activities? Are they deployed where they will produce results? What, specifically, is the market for this particular business, both at the present time and in the years ahead? The market environment creates competition, and when the market is not hampered, factors of comparative advantage and competitiveness of firms create incentives for change.

e) **Capabilities for technological advance** are related to the institutional basis of the economy and the needs of the future market economy. Institutional changes and adequate institution building for a modern and competitive industrial sector are needed to offset "institutional failure". Institution-building is increasingly seen as critical to the building and implementing of the criteria of a market economy.[3]

Capabilities are shaped primarily by education, industry, and technology policies. Educational policy should be oriented to increasing the propensity for creativity and elasticity. The knowledge of the existence of relevant sources of information and their use, as well as access to supportive institutions, are part of technology policy.

Changes in ownership and organizational structures that are under way should be accelerated in order to establish a corresponding environment. Continuous and persistent restructuring on the micro-level which addresses problems of firms' capabilities is as important as the aspects of macro-policy.

With respect to modern management, the focus should be on **innovative management**. Technological change is a complex and risky exercise. It is management's responsibility to deal with the risk and develop proper procedures for evaluation of the results. A successful innovative firm evaluates continuously the results obtained and compares them with initial expectations, thus building its own system of monitoring and risk analysis. Therefore, it is essential for Croatian firms eager to develop their competitiveness to have strong product-development departments and an organizational set up that is open to innovations. Innovative management, in short, is the key issue.

4.9.2. Defining the technology strategy

The technology strategy in the process of transition should gradually adjust to the market and non-market conditions in which the roles of the government and business are distinct.

The strategy of technological development of Croatia depends on the existing structure of the economy and its R&D capacities. It should reflect the direction of change and the expected position of the economy after

---

[3] *Winiecki, Jan, "Shaping the institutional structure", in: Siebert, Horst (ed.), Privatization: Symposium in Honour of Herbert Giersch,* Tuebingen, J.C.B. Mohr, 1992;
Sharp, Margaret and Keth Pavitt, "Technology policy in the 1990's: Old trends and new realities", Journal of Common Market Studies, 31/2,1993,pp.129-151.

the process of transition and restructuring.

Technological development is a part of the overall development strategy of the country. With respect to manufacturing, it should be designed in such a way as to enhance the competitiveness of leading export sectors. In an open economy, technological development is internationalized through international projects and scientific and technological cooperation.

It is important that development in this field leads to higher value-added production chains and products and that this will be determined by the international market and factors that contribute to the competitiveness of the economy. The basic unit should be the enterprise level. Support should be in the form of economic policy instruments (as elaborated in the part on economic policy).

For Croatian firms, it is important to establish strategic alliances with universities and research institutes to engage in joint research projects; and a data network of partnerships and donors should be created. In such partnerships, international donors and MNEs could be invited, especially ones with strategic interests in the country and the region. The goals of such a program could be:

- to create options for new business, either through the upgrading of present products or exploring new technologies; and

- to identify talented people active in the academic scientific community and introduce them to possible new research proposals, or even recruitment for the R&D units of interested companies.

A model of monitoring of this specific matching should be designed and related to the national goals of scientific development.

The main objective should be diminishing the lag in technological development that has opened up since the beginning of the eighties. What is essential for the reshaping of the existing industrial structure is allowing for technologies that would implement the cost-driven notion in industry. First, what is needed is to reach and maintain higher levels of *capacity utilization* through better demand forecasting, conservative capacity-expansion policies, or aggressive pricing. However, one of the major factors which will lead to cost advantages is technological advance. Companies that make investments in cost-saving technologies are often trading an increase in fixed costs for reduction in variable costs. Technological improvements should have the objective of lowering total unit costs, thus achieving a cost advantage - referred to as *economies of technology*. They should not cover only the factory floor, but office and service automation, as well.

It is clearly of immense importance to establish allocative price efficiency. The inherited industrial structure presents an example of the misguided use of price structure as a means of achieving national goals.

In addition to their allocative function, prices fulfil the function of adaptive mechanisms as well, i.e. conveyors of structural change. If countries and enterprises had always been constrained by the principles of static allocative efficiency, they would never have managed to exploit dynamic competitive advantages. Therefore, a certain degree of distortion seems indispensable for promoting structural change. Nevertheless, empirical research suggests that policy-induced distortions should be held at a minimum level.[4]

---

[4] *Dornbusch, Ruediger, "Policies to move from stabilization to growth", in: Proceedings of the World Bank Annual Conference on Development Economics, Washington D.C., The World Bank, 1990, pp. 19-58.*

4.9.3. Technology policy

Structural change of the manufacturing sector is central to the growth process. In this context, an export-oriented and limited, but active, role of government in correcting the operation of market forces and promoting structural changes are needed.

The government should support improvement in the quality of key inputs and access to technical assistance and information.

However, the emphasis is being placed on firms and may be termed, *general technology policy*.[5] This policy is based on offering and supporting:

a) freely available information (e.g., general infrastructure):

- building-up of the general education and science infrastructure;
- neutral instruments, like R&D tax credits and holidays;
- grants for innovation;
- general increasing of capabilities of enterprises;
- creation of targeted knowledge and programs that are very localized; and
- development of relevant data banks and networking.

b) strategic interactions between firms and government:

- establishment of interactive mechanisms with the surrounding environment;
- building of strategic responses through an interaction of strategic management and a coordinated pattern of collective behavior;
- identifying the challenges of and promoting prospects for competitiveness of relevant sectors of industries;
- creating room for experimentation and development programs;
- stimulating an increase of human capital in order to have an adequate "critical mass" of experts with interests and capabilities to conduct research;
- provide resources for training; and
- introduce joint projects.

c) privately financed and private industrial technology support services (private production of public goods):

The issue of industrial support services should enter into the focus of policy-makers once the institutional changes have been established and relevant market mechanisms are functioning. From the point of view of efficient allocation of resources, it is vital that measures promoting industrial technology are as direct as possible and responsive to the needs of the competitive firm.
Chambers of commerce and various business associations should be advised to support small-business consulting groups, which are involved in transfers of technology. In the value-added chain, such services should find their place in transferring know-how and technological innovations from universities and research institutes towards the relevant business sectors.

---

[5] *UNCTAD, "Report of ad hoc expert group in technology policies in open developing countries economies", ITD/TEC/3, Geneva, 1993.*

A specific role in promoting privately financed industrial technology support services can be played by the fiscal system. A system of tax deductions for businesses should be designed with the objective of promoting business and increasing investment rates.

d) specific institution building:

- creation of technology centers;
- support of faster development of the existing technological parks and creation of new ones attached to each university in the country;
- exchange of technological information by networking;
- organizing, with UNIDO assistance, the TECHNOMART; and
- fuller utilization of the INTIB.

Through these measures, the Croatian economy could rapidly join the ranks of the newly industrializing countries and maintain a steady path towards sustained economic growth.

Part II
SUBSECTOR ANALYSES

CHAPTER 1: REVIEW OF THE TEXTILE SECTOR

INTRODUCTION

A key sector in the development of a national development strategy and industrial policy is the textile and garment sector. An analysis of the sector suggests that, inter alia, main difficulties hindering a prosperous development of the Croatian textile are:

1. During the last six years none of the factories visited seem to have made profits. Investments in new technologies or reduction of debts were not carried out. The accumulated debts combined together with the presently very high interest rates are posing a high risk not only for the enterprises but also for the lenders (banks) as it seems impossible for most enterprises visited to earn the required amounts for debt service.

2. It is uncertain if the primary textile industry (spinning, knitting, weaving and wet processing) is able to produce, under presently prevailing conditions, at competitive cost in Croatia. A survey in accordance with the methodology applied by the International Textile Manufacturers Federation should be undertaken to determine if - or under which conditions - profitable production of textiles is possible.

3. The installed production capacities are a multiple of that required to meet the needs of the country for national consumption. Exports are therefore a necessity. However, closure of some enterprises might be necessary to reduce overcapacities. As most enterprises are still held by the government as the major shareholder, adjustments with the least social and economic impact have to be carried out now. If adjustments were delayed until privatization has taken place, a "cut-throat" competition between the privatized enterprises might result in a further financially weakened textile and garment sector.

4. A neutral, technical performance evaluation of the enterprises is presently not possible. While in the USA and EU the "factory efficiency" is based on the "theoretically possible output" Croatian enterprises are apparently deducting items like: "no material", "no order", "no personnel", etc. from the "theoretical possible output". By doing so, the efficiency figures become artificially higher and incomparable.

5. Based on the above, a forecast of costs to determine the profitability of an order is hardly possible. Presently, when most Croatian textile and garment enterprises are working as "outward processors" (another term for subcontracting or "Lohnarbeit"), an accurate costing is indispensable to become profitable. In the garment industry prices of DM 0.18 to 0.22 per "standard minute" are paid by foreign contractors. A thorough, impartial survey appears necessary for this industry to determine if the direct and indirect production costs can be covered. (see Part III).

6. Prior to 1990, most enterprises were exporting the majority of their products to the less demanding COMECON states. Garment factories received large bulk orders and were then domestically sourcing on their own the fabric, accessories (buttons, zippers, etc.) sewing thread and trimmings enabling them to undertake all steps (from designing to shipping) to manufacture a garment. Today, the same factories are working as subcontractors, receiving the fabric, accessories, trimmings, pattern and a detailed specification sheet from the foreign client, leaving only the cutting, assembling and shipping of the garments to the enterprises. This reduction to the less demanding assembly operations might pose a "psychological" barrier as these are the same operations which much less developed countries (with a

much lower salary level) are doing. In discussions with management of some garment factories, the view was expressed that the "Lohnarbeit" not only failed to fully utilize the existing capacities of the enterprises, but was also below the "esteem" of the enterprises. It appeared that the change from a suppliers market to a buyers market was not always accepted.

7. During recent years various small and medium-scale garment enterprises were established. They are mainly aiming at niche markets which are "unattractive" to bigger enterprises due to order size, delivery time, etc. (e.g. tricots for sports clubs with logos of sponsors of which only some dozens are produced). The production flexibility of these small enterprises - and their proximity to the market - also permits them to "copy" and reproduce within very short time "hot-selling" fashion articles. Although these type of enterprises contribute significantly to the employment generation in the garment sector, they apparently do not receive assistance from the government. This may be attributed to the low number of workers per enterprise but also to the low level of organization within the chambers of industry and trade (the multitude of activities to be performed by the entrepreneurs to keep their factories busy - from raw material sourcing to marketing and shipping - prevents normally an active participation in the chamber work). It can be assumed that in future this small and medium garment industry sector will have a higher growth rate than the bigger (>300 employees) ones. Growth of this sector might be stimulated by establishing "support centres" providing services which for a single, small enterprise will not be feasible but - if shared with other enterprises- will be mutual beneficial to all of them. Such services would be mainly in the area of CAD/CAM (pattern making, grading, marker making, etc.) but also "libraries" for special attachments (folders, gauges, special feet, etc.) which are improving the quality and at the same time reducing the sewing time might be considered.

8. The formation of a "market intelligence unit" for the textile and garment industry either under the auspices of the ministry of industry or under the national chamber of industry should be considered. Such a unit could - inter alia - assist in quota negotiations, advise on measures for the restructuring of the textile and garment sector, advise the industry on new technical development, participation in European research programmes, collect and disseminate information on competitive countries and their strategies in regard to textile and clothing, provide fashion and colour forecasts and trends to member enterprises, etc.

ACTIVITIES

As part of the analysis of the sector, visits were carried out to a number of textile enterprises. Initial comments based on these visits are as follows:

1. Textilkombinat Zagreb A.G. (TKZ)

A fully vertically integrated textile factory (including apparel manufacturing) in close vicinity to downtown Zagreb with direct access to the railway system. The products are mainly home textiles, outerwear for men and women, workwear and synthetic furs (fur imitations). The management stated that at present 850 employees achieve a turnover of DM 30-45 Millions. The installed machinery as well as the buildings are of such vintage that considerable investments will soon be required for modernisation.

2. Medimurska Trikotaža Čakovec (NITC)

A company focusing on knitting (warp and tubular) with apparel factories for sport, children and intimate wear as well as hosiery and socks.

Due to time limitations the visit consisted only of discussions with the general manager. A factory visit did not take place.

3. Varteks d.d. (Varazdinski Tekstilni Kombinat), Varazdin

A fully vertically integrated worsted and woollen textile factory with integrated apparel manufacturing (mainly suits) with presently 1700 employees.

The factory visit revealed that although the vintage of the installed machinery is rather old, the mechanical condition is quite good, permitting the production of high quality goods. However, the sheer size of the company will make it difficult to adapt to the market trend which is calling for small orders and "agile" response with short lead times between order and delivery.

4. Kontex, Karlovac

This company produces firehoses as well as coated fabrics and tarpaulins (max. width 2.80 in). Intense international competition in the firehose sector, a much smaller domestic market and missing ISO certification (which could assist in regaining export markets) are serious obstacles. During the factory visit it was observed that due to lack of orders for coated fabrics, bed sheeting was woven on a few Domier rapier looms (which for this purpose is very expensive, while the vast majority of the looms were idle) and that some operators were hemming kitchen towels by hand (an operation which is only done in countries with very low salaries and elsewhere fully automated). Under the prevailing conditions, a splitting of Konteks in three separate enterprises (firehoses, weaving and coating) might be considered whereby the weaving part could be merged with another textile enterprise or closed without endangering the existence of the firehose production and wide-width coating.

5. Pamucna Predionica, Glina d.d.

A modem spinning plant , well laid out, modem and in nearly perfect condition. The main problem of this factory appears to be the non-availability of sufficient and trained workforce to operate the factory. At present only a very small capacity utilisation can be achieved as neither workers nor cotton is sufficiently available. The revenue of the present, limited activities are far below the level necessary for the enterprise to be financially viable.

6. Pounje, Kostajnica

A large knitting and garment factory with a workforce of over 1.600 employees in 1988. The main products are warp and tubular knitted fabrics for sport, leisure, and intimate wear. At present approximately 50 employees are trying to maintain the (relative good) conditions of the installed machinery. The restarting of the factory depends mainly on the availability of sufficient and well trained workforce as well as recapturing lost export markets.

CHAPTER 2: REVIEW OF THE GLASS AND CERAMICS SECTOR

INTRODUCTION

Because of its importance to the Government of Croatia, an analysis was also carried out of the glass and ceramics sector. This review aimed at studying the Croatian glass and ceramic industry as a whole, with particular reference to the relation to the industry's raw material availability's within the area. It also aimed at formulating strategies for restructuring, taking into account economical, technological environmental and social considerations.

ACTIVITIES

The present state of the glass and ceramic industry of Croatia is outlined in an annex. Immediate comments on the two glass and two ceramic factories visited are presented below. The ceramic factories visited were, *Industrya Keraniike I Porculana dd. Hrvstaka (INKER)* near Zagreb and *Keraniik Industrija Oraliovica, (KIO)* at Orahovica whereas, the glass factories were, *Industroa Stakla Lipik p. o. (LIPIK)* at Lipik and *Tvornica stakla Straza dd. (STRAZ,4)* at Hum na Sutli. The latter is privatized and is owned 85% by a foreign company. The visit aimed to assess the state of technology that could attract a foreign investor.

During the visits, the following list of information is gathered for each industry.

- Factory's state of technology
- Need and possibility of improving the technology
- Efficiency of handling this technology
- Production capacity with respect to the Croatian market
- Exporting facilities and actual exports
- Laboratory facilities
- Environmental effects and measures taken
- Efforts on standardization

At this point it must be pointed out that all the comments, visions, and analyses mentioned below are limited strictly to the glass, ceramic and closely related industries (e.g. refractory or raw materials) and should be understood as such.

The analyses and the consideration of the data showed that before the war, Croatia had an industrial level that was equivalent to a developing country. The technological level of the factories corresponds to that of the year of their foundation and, with few exceptions, little subsequent modernization has been carried out. Their capacities were designed for the former Yugoslavian population and were aimed at import substitution.

The technical and administrative staff are, on the average, up to date in their fields and are capable of handling their production problems. On the other hand, few seemed to have a long term vision and their vision did not include "systematization of quality." Only one factory, INKER, had a sufficient laboratory and one company, LIPIK, had no laboratory at all. KIO and STRAZA have stated their plans to adopt ISO 9000 within one year, but neither of these companies have the analytical facilities to implement their intention.

All the companies visited were keen on exporting, not only to sell their excess production, but also to obtain foreign currency. The export prices are as much as 25% lower than the domestic prices and are commercially only slightly over the break-even point.

Croatia is not very rich in glass and ceramic raw materials and some of those materials that are available are in the occupied part of the country. Therefore factories import an important part of their raw material. It is expected that the domestic raw materials shall be available within 5 months.

All the factories visited were burning natural gas and glass factories had high raised natural stacks. Therefore no measurable atmospheric pollution is expected to happen. The only polluting factors can be the volatilization of the sulfurous ingredients of the raw materials and blow-off of the soda ash particles in the glass batch. Both factories use heavy soda so that the latter effect shall also be minimal.

Ceramic industries dump their production rejects at a nearby site. The rejects are environmentally neutral but have a negative aesthetic effect. Glass industry uses available cullet and does not reject any solid or liquid waste.

The neighbouring country, Italy has a two way effect on the sales especially in the ceramics market. On the one hand, Italy is the largest producer and exporter of ceramics in the world. They also import a substantial quantity of ceramics for re-exporting. Croatian industry enjoys their share of this market. On the other hand, products of inferior quality are also imported from Italy to Croatia at lower prices. This restricts the domestic sales of the Croatian producers.

Specific detailed information regarding the factories are presented in the annex at the end of this chapter.

RECOMMENDATIONS

A. General

Croatia is a country with a population under 5 Million people. This is roughly comparable to a world metropolis like London, New York, Istanbul or Tokyo. Therefore it should be visualized as a large and wide city rather than a country. Today, where industrial efficiency and productivity passes through volume production, the optimum economical size of most industries is too large for the Croatian population; accordingly, any such production must be planned by considering the needs of the neighbouring countries.

Fortunately, Croatia is surrounded with similarly small countries, industry of most of which also has to be re-planned. This industrial re-planning must not be made, separately for individual countries but for the area as a whole.

This will result in an extensive import - export activity between these countries that shall dictate other necessary conditions. Besides the necessity for an efficient international banking system, easy transportation and free circulation, which are outside the scope of this study, the goods manufactured must be cheap and of a high quality, if they are to be exported within a free trade market. From a technical point of view those Croatian factories operating with lower productivity, efficiency or quality standards must be rehabilitated.

The factories visited, did not have sufficient laboratory facilities except for INKER that had well equipped and well-organized laboratories operating with high professional standards. These laboratories can and must be converted to a National Technical Center to serve all the glass and ceramic industry in Croatia.

Using the facilities of this new center, all the production units can adopt ISO 9000 standards that are now mandatory, if one wishes to export to Western European countries. Subsequently, using the advantage of natural gas burning glass and ceramic industry being generally environmentally friendly, these plants shall adopt ISO 14000, together with the rest of the European countries.

B. Particular

INKER:

This is the factory that requires biggest consideration. It is the only table ware and sanitary ware factory in the country. Croatia is a tourist country; therefore they are in constant need of catering type table ware (hotel ware), also it has come out of war, a part of the country is devastated and therefore they need building materials and thus sanitary ware. Thus the production of INKER is a necessary part of the Croatian economy today. On the other hand a part of the capacity has to be exported. Therefore quality and efficiency are obligatory. This combination of external conditions force investment and modernization. Taking each section of the factory separately, the following are recommended.

Tile section

1. At its present technological state, the section is not competitive in conventional wall tile production. Both the machinery and the furnaces require excessive labour and since glost firing is done on refractory, system utilizes additional fuel and refractory. Therefore conventional wall tile production must be stopped.

2. Present system has the advantage of pressing and firing even the smallest sized tiles. This advantage must be used in producing micro tiles that has a higher added value and is in fashion in Europe.

3. If it is not possible to make this transformation, this section must be closed.

Table ware section

The section needs investment. Because the owners can not supply the required amount and money can not be found from external sources, leasing would be the obvious alternative. Since investment required in the tableware section is small in comparison with the rest, added value that would be created by the investment would easily pay the lease. Investment recommendations are as follows:

1. The casting hall must be converted to a casting line with mold drier. This simple machine is available from many countries or it can be made locally.

2. Sufficient number of saucer making machinery must be added to the machine park. These can be automatic rollers or dry isostatic presses. The latter should be preferred.

3. A part of the capacity of the glaze firing furnace is not being used. Light weight stands and batts must be purchased to utilize the furnace capacity completely.

4. Glost firing furnace also has to be changed with a modem roller but this is a matter of feasibility and at this moment not entirely necessary.

Sanitary ware section

The sanitary ware section is the least modernized department of the factory. One pressure casting line that had been added does not change this fact. The department must be modernized urgently. The following investments are needed:

1. The bench casting must be replaced with casting batteries. For the present production 3 core casting and 6 - 7 case casting batteries are necessary.

2. The old type furnace must be replaced with a modem, wide tunnel furnace.

3. Two modem glazing cabinets must be constructed. (One for closets and other for flatter items.) Glazing robots are an advantage but not entirely necessary at this time.

4. The total capital necessary for this investment shall be around 2.2 million USD. As in the tile section, these machines can be obtained by leasing.

Auxiliary

1. The mold making department must be mechanized. A casting line similar to that for the casting department would be sufficient.

2. The laboratory of this factory is unique in Croatia. It must be made into a national technical center for all Croatian glass and ceramic industry and more emphasis must be placed on quality related topics like quality assurance and ISO 9000 and eventually ISO 14000.

KIO:

In this factory correct decisions have been made. After bringing out the operation of the third furnace, the factory shall make higher profits. As a consequence of this, there is interest from foreign investors to the factory.

It is recommended that the company should employ their own designers to create a higher added value.

LIPIK:

The factory has a large capacity for glass processing and before the war they produced the flat glass for this line, in their own furnaces. Even then the quality of the glass was low, production costs nearly two times that of the modem float production system and the furnace had reached the end of its technical life. The factory officials were getting ready to replace this furnace with a 200 ton/day mini float furnace and a foreign company was ready to supply the capital. The capacity would be suitable for the former Yugoslavian population. The building that has been housing the previous furnace is not suitable for a float line; therefore either the production line or the building - but most probably both - would have to undergo major modification.

Today the total flat and float glass requirement of Croatia does not exceed 100 tons/day, meaning that the factory shall have to export half of its production. (On 3 mm thickness basis, around 5 million in m^2/year).

At the moment, there are 27 active float glass furnaces in Europe and each has a capacity of 20 - 30 million m^2/year. At least two new plants are known to be under construction. Thus Europe is the battle-field of large float glass producers, many with more than one furnace. A small factory with a very small capacity to offer shall have an equally small chance of survival in this market, if any.

1. As a natural consequence of the argument above, this company should not re-start manufacturing flat or float glass. Like many other European glass processors, they can feed their glass processing lines by importing

best quality float glass.

2. Since the company is no more a flat glass producer, the high capacity of the horizontal bending - tempering line is redundant. It is a new and modem machine. If the company can find a buyer for the line, it should be sold and the income should be invested elsewhere in the factory.

3. The only operating- furnace of the company is five years old and it has a life expectancy of two more years. The other rolled glass furnace of the company must be re-built in this period. The company does not have the funds to re build these furnaces. It was stated by the company director that there is foreign interest towards the company; this interest must be exploited.

4. Profilite is an important building material for the European market. Lipik is the only factory producing profilite within 1,000 km. The nearest factories are in Pizza, Italy and Oroshaza, Hungary. Both these factories shall stop production this year, for major furnace repair. This would create an even higher demand for the Croatian profilite.

   Company should use this advantage to gain a larger fraction of the profilite market and, during the building of their new rolled class furnace, they can expand their production capacity.

5. The company does not have any laboratory. Neither the input nor the output is tested. In only a few years, articles that do not comply with ISO 9000 shall have no market in Europe. If the company does not get their ISO 9000 certificate they shall also lose their European market.

   Company must start a small laboratory in their factory and with the help of another better equipped laboratory, they must get their ISO 9000 certificate.

CONCLUSION

The mission has gone as planned and only one factory (LIPIK) is found to have suffered war damage. The others have suffered indirectly. The general conclusion of the recommendations is given below:

1. In KIO factory, what is necessary is being, done and no intervention is necessary.

2. In INKER, tile section must stop producing conventional tiles and go into special, high valued products like micro tiles. Failing, this, they must stop production.

3. In INKER tableware section, a small investment financed through leasing shall pay back in a short time.

4. In INKER sanitary ware section, substantial modernization is foreseen.

5. LIPIK factory, must not re-start producing flat or float glass but must concentrate on rolled glass and profilite. Larger rolled glass furnace destroyed in the war must be re-built within two years. There are foreign companies interested in the project.

6. The factories other than INKER do not have sufficient testing and measuring capabilities. Laboratories of INKER must be converted to a "National Technical Center for Glass and Ceramic Industry" and with the aid of these laboratories, each company must get an ISO 9000 certificate.

7. The condition of the factories and raw material sources in the occupied areas must be assessed after the life in these areas return to normal.

ANNEX I

GLASS, CERAMIC AND RAW MATERIALS PRODUCERS AND CAPACITIES IN CROATIA

PRODUCER	CAPACITY /1000 t-pc-m^2/yr	% OPERATION	STOCKS
WALL TILE PRODUCERS			
"INKER" Zagreb	1600 m^2	95	120 m^2
"KIO" Oharovica	2600m^2	95 - 100	-
"PPK" Potpican	1600m^2	80	122 m^2
"SILIKEM" Vojnic (closed)	1500m^2	Not finished	
FLOOR TILE PRODUCERS			
"PPK" Rujevao (closed)	800 m^2	70	no data
TOTAL:	8100m^2		
SANITARY WARE PRODUCERS			
"INKER" Zagreb	360000pc.	95	30000 pc.
HOTEL WARE PRODUCERS			
"INKER" Zagreb	2370 t	95	240 t
TABLE AND DECORATIVE WARE PRODUCERS			
"INKER" Zagreb	90 t		
"INKER" Labin	300 t		
"CIRN" Zagreb	60 t		
"IGM" Cakovec	120 t	Only decorative casting now 60 t/yr	
"ZAGOKA" Bedekovcina	200 t	Decorative bricks and fireplaces	
"DEKOR" Zagrep	20 t	Closed	

REFRACTORY MATERIALS PRODUCERS

"ZAGORKA" Bedekovcina	900 t	Fire place refractory	
"SILEX" Samobor	Closed due to bankruptcy		
"SILEX" Krapina	1200 t	Normal refractory	
ACID RESISTANT CERAMICS PRODUCERS			
"ZAGORKA" Bedekovcina	5000 t		
RAW MATERIALS (SAND & CLAY) PRODUCERS			
"INKER" Zagreb	45,000 t		No data
"PETROVAC" Vrginmost	15,000 t		
"KIO" Oharovica	18,000 t		
"ZAGORKA" Bedekovcina	5,000 t	Fire place refractory	
"IST.RUDN.BOKS."Rovinj	20,000 t	Boxite	
"MIKROSIL" Pula	Out of action		

GLASS PRODUCERS

PRODUCER	TYPE	PRODUCTS
"Tvornica stakla" Lipik	Container	Glass containers
"Industrija stakla" Lipik	Flat	Building, industrial
	Rolled	Building and decorative
	Safety	Automotive and building
"Tvornica stk." Boris Kodric	Heat resistant	Technical, laboratory materials and domestic
	Neutral	Medical and pharmaceutical
"Samobor-kristal"	Lead crystal	Decorative and domestic
"Istarska tvornica stakla"	Insulation	Lighting
GLASS PROCESSORS		
	Neutral	Medical ampoules
	Heat resistant	Laboratory glass and instruments
"PIRAMIDA"	Neutral	Medical ampoules
	Water glass Calcia glass Lead glass Borosilicate	Electric bulbs

ANNEX - II
DETAILS ABOUT FACTORIES

INDUSTRIJA KERAMIKE I PORCULANA d.d. HRVSTAKA (INKER):

Owner: 85% State, 15% Private share holders.
War damage: None
Products: Consists of 3 factories built together. Wall tiles and borders, tableware and sanitary ware.
Production quality: Medium - high.
Production facilities:

- Wall and floor tiles:
  1 - Batch preparation with 2200 kg/h spray drier.
  10 - semi automatic tile presses.
  1 - tunnel drier (Down to 1% moisture)
  2 - glost fire furnaces.
  8 - glazing lines.
  2 - false roller glaze firing furnaces.
- Tableware:
  2 - single head dry isostatic presses
  5 - automatic roller production lines.
  2 - manual jiggerers.
  1 - one tunnel type glost fire furnace.
  1 - roller type glaze firing furnace.
  1 - decorating studio.
  1 - transfer making workshop.
  1 - decor firing furnace (in or on glaze)
- Sanitary ware:
  1 - manual casting shop.
  1 - Shanks casting line
  1 - medium pressure casting machine.
  1 - Conventional tunnel type glaze firing furnace.
- General:
  1 - complete laboratory.
  1 - raw material preparation plant.
  1 - fully manual mold making section.
  1 - single fire glaze furnace and repair furnace.

Capacity:

- Tiles: 1 Million borders / month (160 pc /m^2)
  40,000 tiles /month
- Tableware: 800,00 pc / month
- Sanitary ware: 20,000 pc / month

Capacity utilization: 100%. (Based on furnace utilization)
Technology: low to present day modern.
Number of employees: 1300 in total.

- Tiles & bord. :. 250
- Tableware:. 500
- Sanitary ware:. 250

- Auxiliary: 300

Sales:
- In tiles mostly domestic
- In tableware, 80% of all production is exported, nearly all to western Europe
- In sanitary ware, production is made mainly for the export market

Raw materials:
- Some clays, quartz, dolomite, limestone are local
- Kaolin, feldspar, some of clays, ZrO_2 and plaster of Paris are imported
- Some colours are local but decorating material is mainly imported

Laboratory facilities: Company has a well developed and well operated laboratory. It has the ability to give service to all the glass and ceramic industry in Croatia.

Competition: The production is open to competition. Tile production is in competition against cheap imported products as well as the KIO company in Oharovica. Tableware, being a matter of taste is always open to competition. Sanitary ware production is so varied that it does not have a strong position in its domestic market.

Observations:

Tile production

The factory is old. It has 10 semi-automatic presses where the raw material feed is automatic and the pressed blanks are collected manually.

Firing is done in two steps. The blanks are biscuit fired, rolled, glazed and re-fired. If a decoration is put on them, they have to be fired for a third time.

The furnaces are four-passage, first generation roller furnaces. Here, the tiles can not be placed directly onto the rollers but they require a refractory backing.

Owing to all the extra material and effort needed, production costs in this technology are over 2.7 times that of the modern technology.

The quality is at the high range of what can be expected of the technology but the products are not as straight and low tolerance as one would get from a single fired, modern plant with full automatic handling facilities and a roller furnace.

The plant produces a large variety of products and costly small pieces.

Tableware production

The tableware section of the factory is partially modernized. It is equipped with a roller type glaze firing furnace, a series of dry presses and roller lines, listed above. On the other hand, biscuit firing, casting and mould-making units are primitive. Production machinery is not balanced for the present production requirements. In particular, there is only one saucer line for five cup lines.

The quality of production is above average and, although the models aim mainly at the catering market, they can also be used for domestic purposes.

Sanitary ware production

This unit of the factory is the least modernized. It has a classical tunnel furnace and manual casting benches. The Shanks bench is claimed to be "unsatisfactory" and the medium pressure casting machine account for less than 10% of the whole production.

The production is composed of too many different forms, caused by the exporting of small amounts of each form. Such orders would be rejected by most of the European factories.

The quality of production is acceptable to high.

KERAMIKE INDUSTRIJA ORAHOVICA (KIO):

Owner: State

War damage: None

Products: Plain and decorated wall tiles (15x15, 15x20, 20x20 and 25x20 cm)

Production quality: High

Production facilities:
- One 6-year old full automatic roller line
- One 5-year old full automatic roller line
- One new full automatic roller line, to start production in 2 months

Capacity:
- 3 million m^2/year running capacity
- 1 m^2/year capacity shall be added by new production line

Capacity utilization: 100%

Technology: Very high to extremely high

Number of employees: 159 production personnel shall increase by 6 with the introduction of new capacity

Sales: 15% Domestic, 85% exported to Western Europe

Raw materials:
- Clay: local
- Dolomite, sand: national
- Frit, colouring: imported

Laboratory facilities: Only the physical tests on the products are possible. The company buys the rest of the laboratory services from France.

Competition: Cheap and low quality wall tiles imported from Italy.

Observations:

- The company is a high quality and efficient production unit. Al the production is made to order. They do not spend on design but produce to the customers design. Therefore, they sell at a price slightly under the price of similar European factories ($4/m^2$)

- Today they have a rather high stock level. These are said to be goods waiting until their payment is cleared.

- Presently they are exporting without profit ut with the commissioning of the new production line, the unit production cost shall go down and export shall also be profitable.

- The factory officials intend to adopt ISO 9000 within one year but they do not have facilities to analyze the natural raw material (clay) that they use. This will make it difficult - without outside assistance - to reach this target.

INDUSTRIJA STAKLA LIPIK P.O.

Owner: State

War damage: Extensive (estimated at USD 18 million)

Products: Rolled glass, profilite, laminated glass and tempered glass. Flat glass furnace and one rolled glass furnace is destroyed in the war

Production quality: Average to medium-low

Production facilities:
- 60 ton/day rolled glass furnace (operating)
- 90 ton/day flat glass furnace (destroyed)
- 120 ton/day rolled glass furnace (destroyed)
- Bending laminating line (operating)
- Vertical bending - tempering line (operating)
- Horizontal bending - tempering line (operational but redundant)
- Edge grinding and polishing (operating)
- Silk screening machinery and studio (operating)

Capacity: (Remaining after war)
- 60 tons/day rolled glass and profilite
- 5,000 pieces/day of bent - tempered or laminated glass/day

Technology: Medium to low

Number of employees: Not stated, but apparently around European standards

Sales: 10% domestic, 90% export

Raw materials: Local feldsparic sand, imported soda and sulfate

Competition: There is so significant competition

Observations:

- Because the flat glass production has ceased, the factory has to import float glass for lamination and clear tempering applications. This increases the cost and thus the price. Consequently the sales are reduced and the capacity of the horizontal bending - tempering line is redundant. Factory officials desire to sell this line and invest the income at other parts of the factory.

- During the war the 120 ton/day rolled glass furnace had been cooled with glass inside. Using present day knowledge, this furnace could have been re-heated. Unfortunately, it is already demolished. The only operating furnace is 5 years old and has a life expectancy of a further 2 years. By then, funds must be raised to build the 120 ton furnace; otherwise production in the factory shall cease.

- The company does not have any laboratory facilities. They also have no intention to obtain any standard certificates like ISO 9000 or ISO 14000. In a few years, this shall hinder their ability to export and shortly they will not be able to export to Europe.

TVORNICA STAKLA STRAZA d.d. (STRAZA):

Owner: 85% private (an Austrian company), 15% State

War damage: None

Products: Glass containers (flint, emerald green, olive green and amber)

Production quality: Medium to high

Production facilities:
- 6 glass furnaces (4 operating)
- 10 production lines
- Automatic inspection and sorting machinery on each line
- Hot end coating and cold end coating on each production line
- Multi-colour printing and print firing line

Capacity: 220,000 tons/year with 6 furnaces

Technology: Medium

Number of employees: 1,200

Sales: 40% domestic, 60% export

Raw materials:
- Dolomite, sand: national
- Soda, sulfite, colouring: imported

Competition: General competition from all European markets

Observations:

- The company has an average factory with average technology and is producing over average quality products.

- They intend to adopt ISO 9000, but since their laboratory facilities are not sufficient, they shall get their certificate together with the Italian container glass company Vetropac.

CHAPTER 3: REVIEW OF THE METALLURGICAL SECTOR

As part of the joint UNIDO-Croatian analyses of the industrial sector a review was made of Kumrovec rolling minimill, Brodosplit Shipyard Foundry and Steelworks Split as a part of the review of the metallurgy sector of the Republic of Croatia. The main results of company visits and mission were as follows:

FINDINGS

1.1 The utilization of manufacturing capacities is low - 30-50% and - in the case of Krumlovec the operation has ceased completely - with rather high costs of material and energy costs. In many cases, however, the detailed costs and consumption of raw materials were not available. The available technologies are feasible but partially obsolete, such as those commonly prevailing in Central and Eastern Europe. In some cases could be upgraded using inexpensive measures such as rebuilding existing EAF into ladle furnace, using second hand modern melting UHP furnace, etc.

1.2 The infrastructure including transportation is very well developed and the workforce is qualified. Labour costs are lower than in Western Europe, but higher than in some Central and Eastern European countries (e.g. Bulgaria, Hungary or Romania).

1.3 Market requirements should be determined in terms of quantity and quality for both domestic market and exports In view of the Croatian postwar reconstruction and development as well as those in the geographically closely located areas, the market outlook is promising but should be clearly specified. New areas where the Croatian companies could be competitive must be identified. For the review of the sector, better insight into complementary sectors is necessary (e.g. construction and building industries dynamics, shipbuilding, engineering, etc.).

1.4 Lack of funds is a key problem. The cooperation with banks and their attitude towards industry are not satisfactory. At the same time, the companies have no restructuring and strategic plans to satisfy the bankers. In the absence of the balance sheets, the review of the company's finance was difficult.

1.5 The energy conservation and environment management programmes, utilization of wastes and waste treatment systems are not seen as a priority due to the prevailing financial critical survival problems. Their impact, including existing environmental regulations, should be studied as a part of restructuring plans.

RECOMMENDATIONS

2. Based on the above findings, the following approach to the review/restructuring and ideas for UNIDO cooperation were developed and discussed with the industrial companies and the Ministry of Economy:

2.1 The restructuring of the Croatian iron and steel sector should be implemented in four practical steps:

The first step would be a UNIDO restructuring workshop which will address and explain the problems of restructuring to the senior management/decision makers of Croatian companies and institutions showing its importance for the sector survival and competitiveness. The tentative programme of the workshop could include:

a) Principles of restructuring, their problems and the ways of their solving, including case studies

of restructuring of Western and Eastern European steel industries;

b) Business planning in the iron and steel industry, financial and economic aspects, the demand for steel products and its impact on the structure of the steel industry, rationalization of the steel industry;

c) Marketing in the steel industry - definition of marketing and marketing concepts, trends and distribution strategies, identification of customer segments and their complexity, market studies (domestic and exports), pricing and sales strategies, sales servicing, impact of marketing on production and research, importance of market research before making investment decisions;

d) Quality assurance systems during the restructuring of the steel industry, definition and concepts of quality, quality control and total quality, organization aspects of quality systems, process capability, quality assurance and obtaining ISO 9000;

e) Human resources development covering structure of the workforce, labour costs and conditions, training and retraining of management, staff and workers, social problems;

f) Energy conservation and environment management, opportunities of saving energy through introduction of improved technologies, process control and housekeeping, raw materials, technology and environmental pollution aspects, pollution abatement of air, water and solid waste pollution, gradual introduction of environment protection, legislative and practical aspects.

The lectures in the programme will be accompanied by the discussions, questions and answers sessions and on-the-spot consultancy/advisory services in the multiple areas of restructuring provided by the UNIDO lecturing consultants who have had practical experience in the restructuring process, and particularly in the iron and steel sector. Additionally, representatives of the International Iron and Steel Institute, bankers and other UN institutions (ILO, UNEP, ECE) could be invited to report about their experience in restructuring of the iron and steel industry.

The workshop will result in joint recommendations for a restructuring study for country's iron and steel sector which will be based on the inputs of the representatives of individual plants and institutions participating in the workshop and their team work with the Unido experienced consultants.

The second step would include preparation of project document for the restructuring study, detailed terms of reference being based on the outcome of step 1 - i.e. the recommendations of the restructuring workshop. The financing of the study must be ensured in this stage.

The third step would be the execution of the restructuring study using the agreed methodology embodied in the terms of reference for the study. The restructuring study will be carried out in close cooperation with national experts from the participating plants and institutions.

The fourth step would refer to the implementation of the restructuring projects based on which the modernization/rehabilitation of the sector and related industries will be delivered. The restructuring workshop and study will be also used as a most suitable instrument for the preparation of business plans and other bankable documents which will be required by the banks for financing and by potential strategic partners.

2.2 Management training for marketing and restructuring. A study tour and/or training programmes to foreign countries, including among others, in neighbouring countries (with on-going UNIDO programmes) such as the Czech Republic and Slovakia.

2.3 Strategic partners could be identified for selected Croatian companies through the UNIDO investment promotion network and business contacts in industry.

2.4 A case study project for a company to be selected by the Ministry in the sector (e.g. foundry such as Brodosplit) could provide an example for cost model and strategic plan for other companies to follow.

Such a project could be implemented in parallel with the sectoral study, where the impact of complementary sectors should also be investigated.

2.5 Establishment of a consultancy and training capability towards the problems of restructuring strategic planning, marketing, financing, technology upgrading and modernization including cleaner production to support manufacturing is to be promoted.

The establishment of the above sectoral oriented manufacturing support center should be considered using an existing national institute and/or University (Zagreb, Sisak). Regionally based center could be an alternate suitable solution.

CHAPTER 4: REVIEW OF THE ELECTRONICS SECTOR

BACKGROUND

The very clear potential of the electronics sector for future development in Croatia led to the inclusion of this section in the analysis of areas of potential support by UNIDO to Croatia's industrial restructuring. The analysis focused on the following plants:

a) Industry Sector of the Ministry of Economic Affairs
b) RIZ-TU (telecommunications) Company
c) RIZ-Transmitters Company
d) CEI (microelectronics) Company
e) KONČAR Electrical Engineering Institute
f) KONČAR INEM (power electronics) Company
g) KONČAR Technology Park

In the absence of written material and statistics, most of the observations had to be based on the verbal inputs of the people met.

OBSERVATIONS

For the time being, limited availability of company-specific information makes it almost impossible to pass on judgements on individual companies. Therefore, a general analysis approach has been adopted.

The linkages and basic structure of an advanced electronics industry is shown in Exhibit 1. The situation in Croatia with regard to components shown in that exhibit is described below:

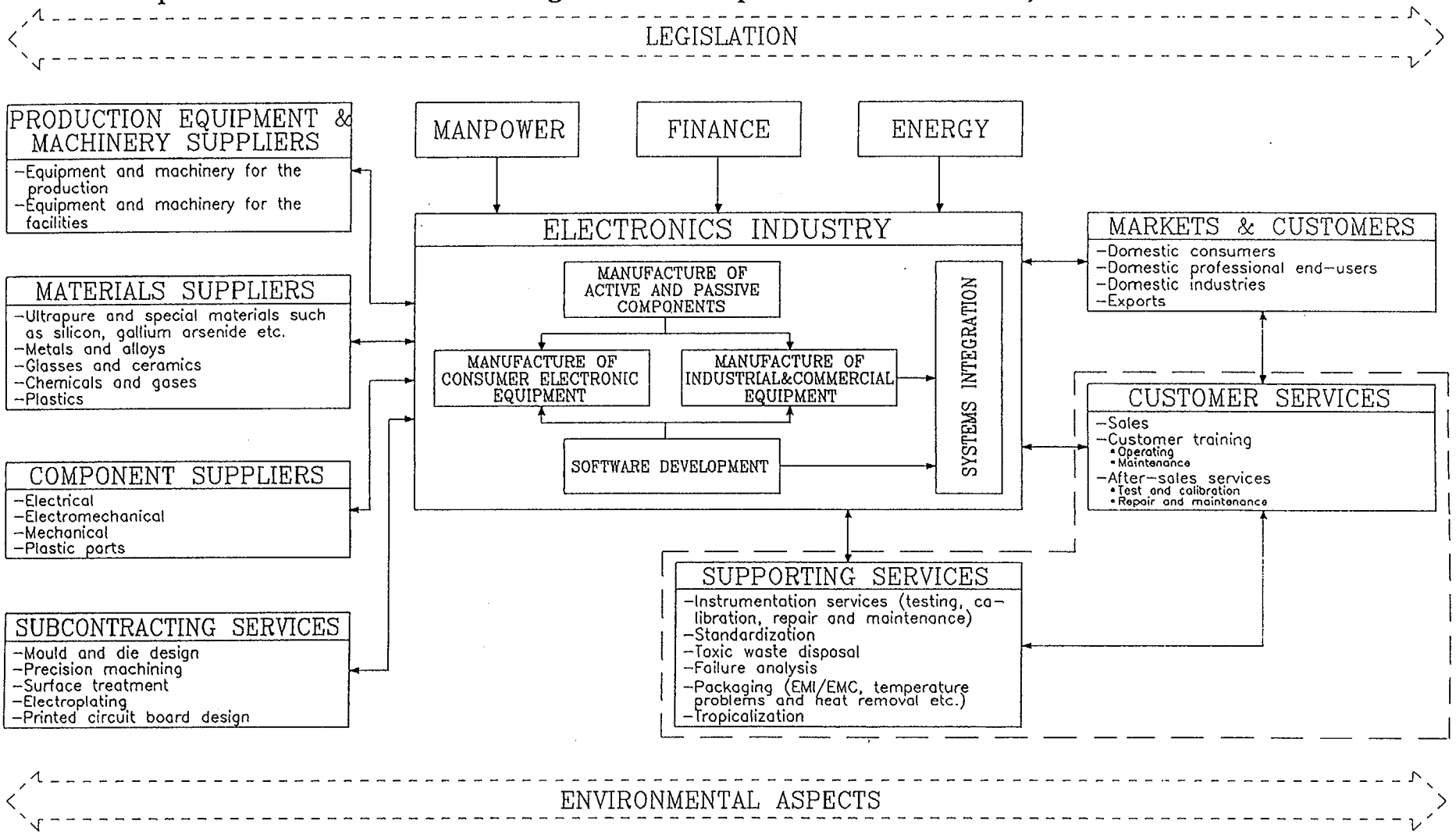
a) **Legislation:** Reference here is made to three laws:
- Enterprises Act;
- Law on Restructuring Socially-owned Companies; and
- Law on the Foreign Exchange System.

Although the Croatian legislation has been changed to promote the private sector and foreign investment, there should be more focussing on the preferred or priority sectors, including electronics industry.

b) **Inputs to the production apparatus:**

- *Design technology:* There are well-established design capabilities in some areas such as transmitters and power electronics. Existing manpower seems capable of absorbing and applying new (or more up-to-date) design technologies.

Upstream and downstream linkages of a developed electronics industry



- *Production technology and equipment:* With only a few exceptions, it seems that the technology and equipment base is five or more years old.

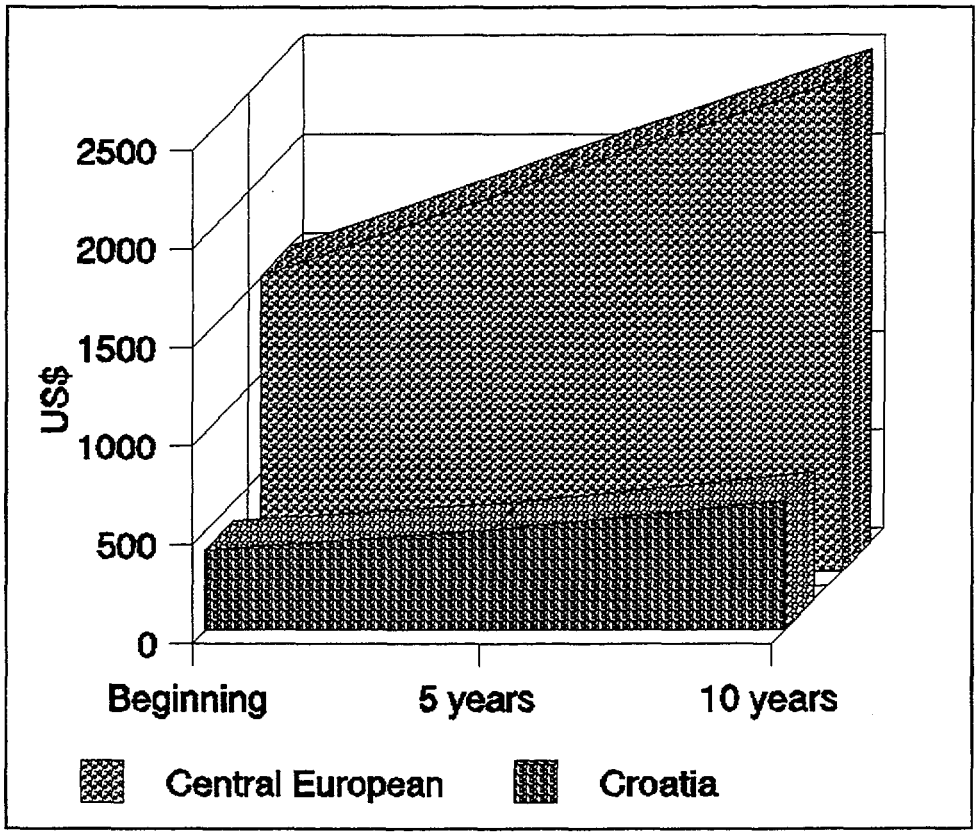
- *Materials and components:* These are predominantly imported. Urgent needs can be met from well-developed, near-by markets (eg., Italy, Germany, Austria, etc.). But low quantities and uncoordinated direct purchases push the average cost of inputs to high levels.

- *Subcontracting services:* The feeder services such as mould and die making, precision machining, surface treatment, etc. are all available in and around Zagreb.

c) **Manpower:**

Traditionally, Croatia has an established industrial manpower base. A good university education system, vocational training possibilities, well-established industrial culture, and considerable experience are advantages. Although the recent brain drain has negatively affected the manpower base, it is still one of the assets of the Croatian electronics industry. Low cost of labour is one of the causes of the brain drain; but it is also a comparative advantage. Exhibit 2 below compares the cost of qualified technical personnel in Croatia and some central or western European countries.

Exhibit 2. Comparison of average salaries of engineers



d) **Financing:**

Presently, the high cost of capital (credits) is a major problem in Croatia. This hinders new investments and creates operating capital difficulties for companies.

e) **Environmental and quality management issues:**

The international competitiveness of the Croatian industry is, in general, dependent, among other factors, on the industry's compliance with the international standards and norms. Two of those which are particularly applicable to electronics industry are:

→ *Environmental management:* The companies will be required to comply with the forthcoming ISO 14000 standard.

→ *Quality management:* Certification of electronics companies according to ISO 9000 will be necessary.

CAUSE-EFFECT RELATIONSHIPS

Croatia's electronics industry is in transition and, presently, it is not moving along a fast track. Although the prospects for the development of the Croatian electronics industry are good, there are a number of causes giving rise to this stagnation. Some of these causes are shown in Exhibit 3 and explained below.

a) **CAUSE: Change of economic system**

- Changing markets and demands for products and services
- Reorganization of companies
  - Privatization and other actions changing the ownership structure of companies
  - Changing financing arrangements
  - Management changes
- Changing intercompany transfers of goods and services

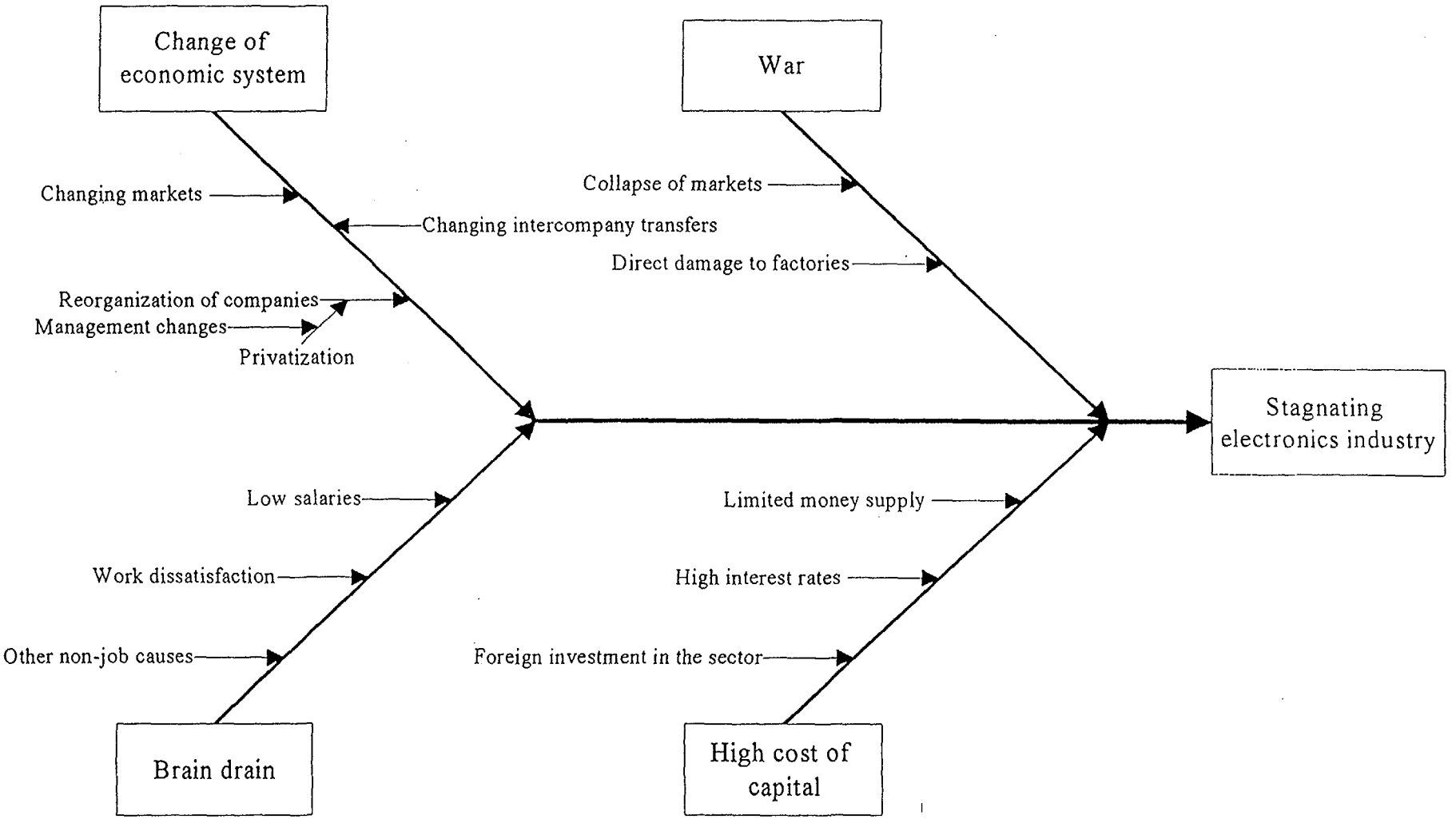
b) **CAUSE: War**

- Collapse of national (and in some cases) international markets
- Direct damage to factories

c) **CAUSE: Brain drain**

- Low salaries
- Work dissatisfaction
- Other non-job-related causes

Cause and effect disgram of the Croatian Electronics Industry



d) **CAUSE: High cost of capital**

- Limited money supply
- High interest rates
- Foreign investment in the sector

SWOT ANALYSIS

Some of the **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats (SWOT) faced by the Croatian electronics industry are shown in the Exhibit 4.

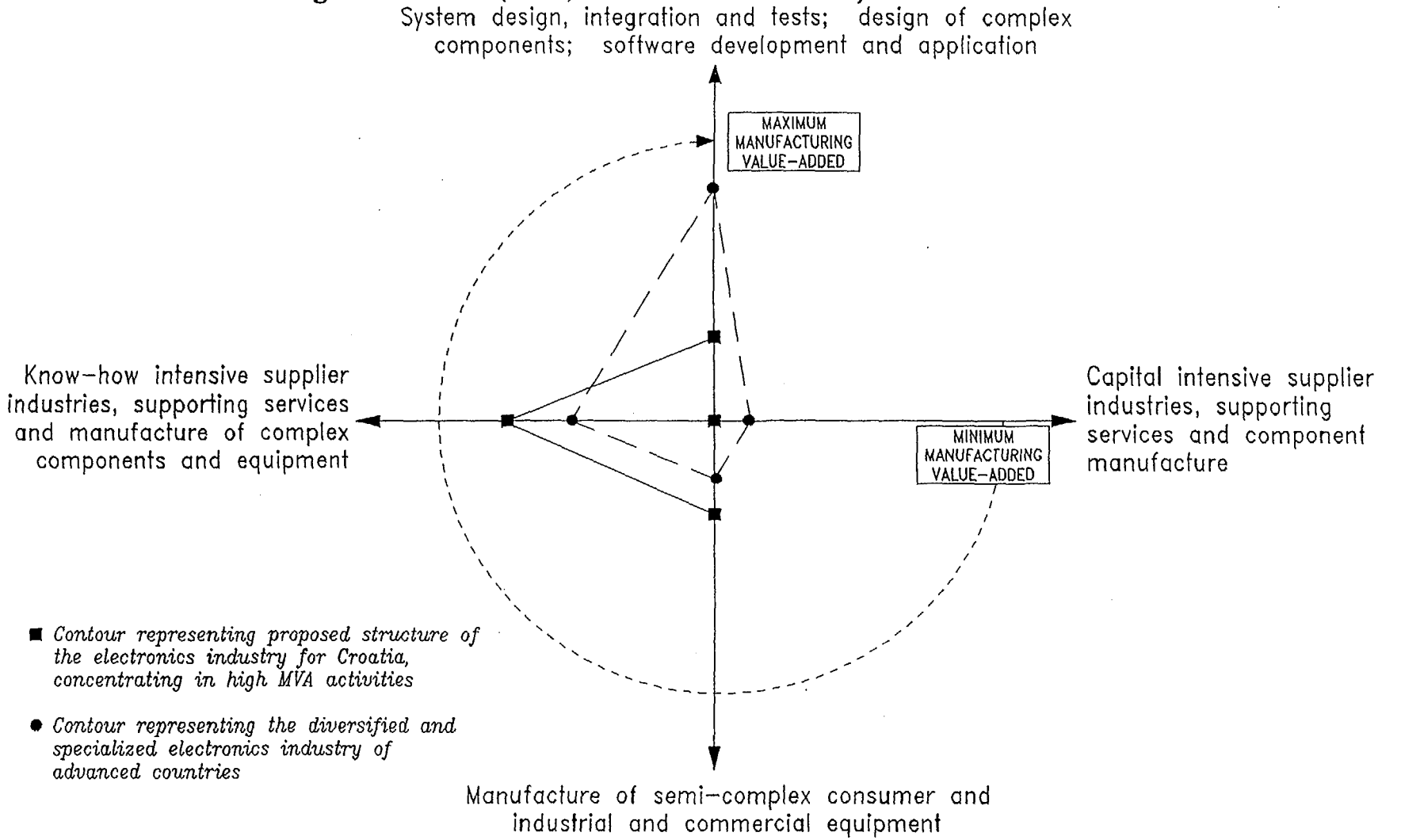
Exhibit 4. SWOT analysis of Croatian electronics industry

STRENGTHS: Manpower (education, university, experience, low-cost) Infrastructure (quality, standards, industrial culture) Products and consumer satisfaction	**WEAKNESSES:** Poor marketing Spreading limited resources over a wide area (Lack of focussing) Lack of financing
OPPORTUNITIES: Marketing high MVA services and products Further promoting niches (transmitters, power electronics, etc.)	**THREATS:** Competition (Far East, Developing countries, East Europe) Brain drain

6. Manufacturing Value-added (MVA) in electronics industry

Manufacturing Value-added in the electronics industry shows wide variations among sub-sectors, products and services. Exhibit 5 shows the qualitative situation. More precise information about the Croatian electronics industry is required to map the exact and quantitative situation. Such an analysis will be very useful in setting the targets of the industry.

Manufacturing value-added (MVA) in electronics industry



RECOMMENDATIONS

Products and services of the electronics industry and information technologies are affecting every sector of the modern economies and every walk of the life. Therefore, they deserve special attention.

1. The electronics industry has many linkages involving other industrial sectors; scientific and educational institutions; business and industrial associations; regulatory bodies, etc. Therefore, an in-depth study of the industry is needed to support the development activities.

2. In a market economy environment, companies are responsible for deciding on which products and services they should develop and market. However, in a country and economic system in transition such as Croatia, the Government may help to focus the activities of the companies. Such support may have different forms and may include legislative and other incentives such as tax concessions, reduction/waiver of import duties, etc.

3. Initial review of the MVA and SWOT analyses suggests that:

   Croatian electronics companies should concentrate in the development and supply of services and products with high MVA requiring qualified manpower.

   They should maintain and strengthened the market niches they have (such as power electronics products, transmitters, etc.).

4. Previously, the electronics industry scene in Croatia was dominated by few large-scale companies (KONČAR, RIZ, Nicola Tesla). New environment has a number of smaller companies created by privatization and/or down-sizing of those companies and a number of very small new companies. Particularly, these dynamic and very small companies should be supported.

5. The foreign investment in the sector, so far, is limited to Nicola Tesla and Ericsson joint venture. New agreements should be promoted.

6. New marketing avenues should be found to maximize the MVA in Croatia through sub-contract work for large companies in the Europe and elsewhere.

7. International competitiveness of the Croatian industry in general is dependent, among other factors, on the industry's compliance with the international standards and norms. Two of those which are particularly applicable to electronics industry are:

   Quality management: Certification of electronics companies according to ISO 9000 will be necessary. Small-scale enterprises may find it difficult to prepare themselves for the certification. Government support can accelerate the process.

   Environmental management: Major requirements of the European Union are EMAS (Environmental Management and Auditing System) and forthcoming ISO 14000. Ecolabelling may effect some electronics products. Compliance with these standards may require major improvements at the company level. Government or other institutional guidance can be instrumental in accelerating the overall process.

CHAPTER 5: REVIEW OF THE PETROCHEMICAL SECTOR

Given the importance of the sector to the economy, an analysis of the sector was undertaken, with a view to the establishment of a detailed Plan of Action for restructuring the Croatian petrochemical industry.

The analysis is based on visits to all of INA Polimeri's most important petrochemical producing plants (in Zagreb, Split, Zadar and on Krk), and this is the basis for the following recommendations, some of them detailed, for improving that company's profitability. There, however, are plastics processing plants, some of them belonging to INA Polimeri, as well as other chemical plants in Croatia, which do not belong to INA Polimeri, which it was not possible to visit. These include a chemical fertilizer plant at Kutina, and a polyester fibre plant at Varazdin.

The main conclusion which can be drawn is that the company, though according to the management may need some further restructuring, does not need major surgery, nor should it be closed down. Still less, should strategically important parts of it be sold in the belief that this would be a step towards privatization. Considerable improvements in the financial situation of the company would be possible by improved promotion of the domestic market. While the possibility of improving profitability by investing in new plant should be borne in mind, unless an unexpected very profitable opportunity presents itself, serious plans for expansion involving major investment should only be undertaken once profitability has been improved as a result of promoting the domestic market.

FINDINGS AND RECOMMENDATIONS FOR INA POLIMERI

I. Some basic considerations

1. The petrochemical industry is capital and raw material intensive rather than labour intensive, there is therefore no reason to have such an industry Just in order to increase employment in that industry itself

2. In general the petrochemical industry does not produce end products, which can be directly used by consumers, but supplies products, which are used by other industries to produce consumer products.

3. It follows from the above that for a country to have a petrochemical industry could be justified.

    a) The natural advantages for a country, such as those, which exist in a country such as Saudi Arabia, are such that a country can have a very profitable petrochemical industry, even if this industry is based on exporting most of its products.

    b) The petrochemical industry by making products easily available, adapting their characteristics to local requirements, and by supplying technical and development services can stimulate the growth and profitability of those industries using its products. In this context it should be noted that in general the value added by the industries using petrochemical products is higher than when producing petrochemicals.

II. The situation at INA Polimeri

A. At first sight and to judge by preliminary reports, it would appear that the situation at INA Polimeri is not encouraging.

1. INA was the largest company in former Yugoslavia and supplied products to customers throughout the Federation. Now its domestic customers (end consumers) instead of being the more than twenty million in former Yugoslavia are only the 4.8 million in Croatia. The result is that the company exports 88% of its products at prices, which are 20% less than can be obtained on the domestic market. Based on a total production of saleable products, plastic resins, of 363,000 tonnes per year and an average price of these products of US $ 800 per tonne, this alone (namely, selling at 20% lower price) means a loss of revenue of US $ 50 million per year.

2. Partially because of the termination in the mid 1980s of the joint venture with Dow to build an export petrochemical complex on the island Krk, the chain of production is not complete. For the production of PVC in Zadar and Split, Vinyl Chloride Monomer (VCM) must be shipped from Krk. For the production of VCM and polyethylene in Krk both ethylene and ethylene dichloride must be imported from abroad. For the production of polystyrene at OKI near Zagreb, which is inland, styrene is imported from abroad. In most petrochemical complexes in the world these products are all made on one site and shipped from one plant to another through at most a few hundred metres of pipe. The situation in Croatia results in higher transport costs.

3. Some important plants are not operating or operating at very low capacity utilisation. These include the 25,000 tonnes per year emulsion PVC plant at Split, the 10,000 tonnes per year plastics compounding plant at OKI Zagreb, which are not operating, (the PVC-E plant was shut down in July 1995), and the 15,000 tonnes per year expendable polystyrene plant at OKI Zagreb, which is only operating with an annual production of 7,000 tonnes per year, (capacity utilisation less than 50%). In this context it should be noted that expendable polystyrene beads are expensive and even potentially dangerous to transport and have a short shelf life of the order of a few months depending on storage and transport conditions, which means that it is not easy to build up an export market for them.

4. The ethane to polyethylene chain at OKI Zagreb is one of the few that is complete, transforming locally produced ethane to ethylene in a gas steam cracker and converting the ethylene to low density polyethylene in ICI and Ato Chemle licensed plants. However, here there are also problems as the ethane availability is limited and liable to decrease. The ethane content in the Slavonian natural gas is slowly decreasing, from initially more than 8% to about 2% at present. If this trend continues there will be a shortage of ethylene in the future. The present situation is also bad, as if more ethane were to be available, it would be relatively cheap to revamp the ethylene cracker to produce more than 30% more ethylene. Furthermore, the by-product propylene from the cracker (a potentially valuable by-product) is not being optimally used. At present the situation is so bad that ethylene is being delivered by road tanker, a very expensive way of transporting such a product.

5. Some products, which are used in Croatia, are not made there but elsewhere in former Yugoslavia. These products such as HDPE, which is used by the INA pipe making subsidiary at Dmis, is made in Pancevo, Serbia, and will have to be imported, when the pipe making plant starts up again. Steps are presently being taken together with the equipment suppliers to restore the plant.

B. A deeper analysis, however, reveals a number of strengths of the sector. In particular, some of the apparent costs are not as high as would be expected. In addition, there are good opportunities for improvement.

1. The plants are clean and well run. Though producing mainly for export, those plants which were operating were, with two exceptions, doing so at throughput near to or above 100% of nameplate capacity.

One exception was the DINA VCM plant on the island of Krk. According to the staff at DINA, this plant had been designed by Dow and at the time it was designed, at the beginning of the 1980s, it incorporated a number of Dow's new ideas. Some of which did not work. The result is that the plant only can operate with an annual capacity of 160,000 tonnes per year instead of the 200,000 tons per year for which it was designed. At the moment this is not a problem, as the PVC plants in Croatia can only absorb 135,000 tonnes per year.

The other exception is the Mass PVC plant at Zadar. This is the only plant, where there are occasional problem with regard to product quality. Also, the plant only operates with a capacity utilization of 64%. The PVC Mass process is reputed to be a sensitive one. The problems of the plant are at least partially caused by the fact that part of the plant, which was started up in 1974, uses the initially developed horizontal reactors - while the part started up in 1984 uses vertical reactors. Though the name of the owner of the technology has changed a number of times, and though the process is no longer under guarantee, efforts should be made to get help in this matter from the process licensor.

2. The plant at DINA on the island of Krk has an excellent deep water harbour, 40 metre in depth. Transport of materials from Krk to and from Porto Marghera, one of Europe's larger refinery and petrochemical complexes near Venice requires only eight hours sailing time, and is therefore cheap. Similarly, transport of VCM from Krk to the PVC plants in Zadar and Split is by sea and also cheap, as is the transport of PVC from these plants by sea to Italy. There remains the difficulty of transporting raw materials to the inland complex at OKI Zagreb and here efforts should be made to reduce the dependence of this complex on imports of raw materials and export of products by sea and road or rail transport.

3. The company has a well trained and relatively cheap labour force. Many of the engineers have experience working with the process licensors, all of which are famous companies with first class processes, or with the former joint venture partner Dow. According to the General Manager of the DINA plants in Krk 30% of his staff are university graduates. This is an extremely high figure and would mean that many of the engineers have hands on operating experience, which would make them very valuable.

The result is that though the company is not yet making a profit, INA Polimeri is not 'just covering its operating costs, but also paying back some of the capital investment.

C. In addition, there are numerous ways of considerably improving the financial situation of the company. These will be discussed in more detail below, but are listed here to complete the description of the present state of the company.

1. INA has a chemical terminal near to the PVC plant in Zadar. Such a terminal can, if well managed, be an extremely profitable operation and also reduce cost for and stimulate not only that part of the Croatian industry, which uses chemicals and petrochemicals, but also help trade with neighbouring countries, such as Slovenia and even Austria and Hungary, as well as with suppliers of chemicals such as Italy, other Mediterranean counties and even Saudi Arabia and the Far East. INA Polimeri has the management capability and experience to efficiently operate such a terminal both from a technical logistics point of view as well as from a commercial one. Though there is also a chemical terminal in Slovenia, the success of such a terminal does not depend so much on the physical facilities, though they are important, as on the commercial and trading abilities of those running it. Here INA Polimeri's experience, resulting from having to import raw materials and intermediates and export most of its products, is a most important asset.

2. The per capita consumption of plastics in Croatia is much lower than in most countries in Europe. The per capita consumptions in 1991 were:

For PVC	45% of that in W. Europe
For LDPE	34% of that in W. Europe
For rigid polystyrene	17% of that in W. Europe
For expandable polystyrene	29% of that in W. Europe

There is therefore room for growth in the domestic market, provided the company take steps to promote this growth. Increasing the capacity utilization of the EPS plant from 7,000 to 15,000 tonnes per year by producing product sold on the domestic market could increase value added by US $ 6 million, and it is not unreasonable to expect that experts in the other products or INA Polimeri itself could find ways of promoting growth in the domestic market for the other products.

3. INA Polimeri is not just an exporter but also an importer both of raw materials and products. Being a customer or potential customer gives the company leverage, when negotiating agreements with other chemical companies. This can be used and is probably already a factor in persuading foreign companies to help or at least tolerate INA Polimeri's exports. This leverage could be even greater, when the chemicals terminal at Zadar is brought back into operation, and the HDPE pipe extruding factory at Dmis, about 40 km inland from Split, is rehabilitated. This latter plant used to be the biggest producer of high grade HDPE pipes in Former Yugoslavia. These high quality pipes were even used for gas transmission, for which assured high quality is imperative. The HDPE used by this plant used to be produced in Pancevo in Serbia. If diplomatic and trade relations are reestablished with Serbia, being a potential customer for HDPE, could be used to bargain for Serbia buying products, such as LDPE and Polystyrene, both rigid and expendable, produced in Croatia.

D. Other observations are:

1. Though the processes used by INA Polimeri have been licensed or obtained from some of the foremost companies in the world, and the INA Polimeri staff have been trained by these companies so that they can operate them efficiently, there does not appear to be a core of senior staff, which understands these technologies sufficiently well to be able to develop them and in particular develop new types of products or specialties, which can be made using these technologies. In particular, though the rigid polystyrene plant uses technology from Dow - which is considered by many the foremost producer of specialty high quality polystyrene in the world - and, as Dow does not license its technology, is probably the only Dow plant in the world which does not belong to Dow, the situation described in 2 below has arisen.

2. Between 10 and 20% of the Croatian market for rigid polystyrene is supplied by imports from BASF. Apparently INA Polimeri does not produce the high gloss or extreme high impact polystyrene which this market segment requires. The fact that a competitor takes away 10 or 20% of the market is at first sight no cause for concern. However, a trend in the high impact polystyrene business to-day is the development of high impact specialties, which can replace the much more expensive ABS in many of its uses. If INA Polimeri does not develop more sophisticated specialties, or acquire the know-how to make them, there is the danger that it could lose a much higher proportion of the Croatian market in the future.

III. Recommendations concerning INA Polimeri

A. GENERAL RECOMMENDATIONS

1. Domestic Market Development

It is obvious that the top priority for the company is to develop the domestic market for its products. It is easy to say that this can be done by improved customer service, development of products, with characteristics adapted to the market, and promotion of new products. It is much more difficult to determine how this should be done in practice. To start doing this it is necessary to go into detail for each individual plastic being made, namely, rigid polystyrenes, expendable polystyrene, low density polyethylene, PVC-S, and PVC-M, and study ways of improving the efficiency of the downstream processing.

An example of this is action to be taken to develop new end products and promote the market for expendable polystyrene by introducing the continuous board moulding technology and for polyethylene by promoting the use of agricultural film, which has an extended life through the use of synergistic additives. A second example relates to how to approach the problem of making specialty high impact polystyrenes, which are already required by the Croatian market. These are discussed below.

The possibility of the Government promoting the use of insulation in order to save energy, or locally made products such as plastic pipes in building, by such things as tax rebates or cheap loans should be seriously considered. This is practised in some Western market economies.

2. Improvement of relations with other companies both foreign and local/strategic alliances

The fact that, thanks to an obviously competent commercial management, INA Polimeri's relations with foreign companies are already good, does not mean that they can not be improved and that both INA Polimeri and the Croatian chemical using industry should not profit more from this than at present. Also improved commercial coordination with the oil and gas producing part of INA could be of benefit.

3. Developing trading in chemicals

When developed, the chemicals terminal could be a priceless asset. Apart from being a source of profit, if intelligently managed, INA Polimeri with this terminal could become a reliable source of a wide variety of chemicals at reasonable prices for the whole region. Companies requiring a chemical product would first contact INA Polimeri; INA Polimeri could in other words become an entrepot. This has been a very successful commercial strategy throughout the centuries.

Croatia being a small country, it may not be worth while for many chemical companies to provide agents there with the type of technical support and service which marketing in the chemical business often requires. Even some very large and powerful multinational chemical companies might be very grateful if a company as competent as INA Polimeri were to do this for them. This would increase INA Polimeri's leverage with such companies, which could be important, when INA Polimeri is looking for technical help in matters such as the development of specialties.

4. Privatization

There is a discussion of privatization and the possibility of parts of INA Polimeri such as the pipe manufacturing plant at Dmis or the chemical terminal at Zadar could be sold off. It should be noted that the splitting off of valuable and strategically important parts of a company could seriously harm the concept of using the fact of being a customer for and distributor of products made by friendly chemical companies abroad to improve the companies commercial position. And promote the growth of that part of Croatian industry, which uses chemicals. This result of the analysis is that INA Polimeri has the technical and commercial competence to optimally operate these two parts of the company. While the benefit might be gained from operating these parts of the company as semiindependent profit centres and even giving them different names, their commercial strategy should be coordinated with the top management of INA Polimeri.

While it is a generally accepted business philosophy that companies should not get involved in the businesses practised by its customers there are important and profitable exceptions to this rule. One of the most famous examples is Wavin in Holland, one of the world's largest manufacturers of plastic pipes, which was founded by Royal Dutch Shell and the Dutch Water Board, and in which Shell has 50% of the shares.

5. Ethane/ethylene supply

For the reasons mentioned above, shortage of ethane and resulting shortage of ethylene is already a handicap for the Complex at OKI. If the ethane supply decreases the situation could become dramatic. A serious study involving INA should be undertaken to find ways of overcoming this. Ethane is obviously present in the refinery gases at both the Sisak (near Zagreb) and the Rijeka refineries. In addition both of these refineries have catalytic crackers, which means that the refinery gases contain appreciable amounts of ethylene and propylene. (Propylene whether purified or not must also be produced as a by-product of the steam cracker at OKI). There are technologies such as those used by the French oil company Total, which by increasing the reaction temperature and shortening the residence time in the cat cracker riser can considerably increase the olefine yield. It should be noted that since the OKI steam cracker was built there have been considerable advances in technology. For example, it should be possible to increase the capacity of the column immediately downstream of the cracking furnaces by as much as 30% simply by changing the packing in this column. Also there would appear to be room for an additional cracking furnace.

6. Dismantling of plants no longer in use

Prime real estate both at the OKI plant near Zagreb and the PVC plant at INA-Vinyl at Split, is occupied by old plants, which are no longer in use and most probably never will be used again. There appears to be the belief at INA Polimeri that it would cost money to dismantle these plants and that Croatia at the moment is poor. Experience (such as Dupont in the USA) suggests it can cost a company nothing to dismantle plants as they let it be done by contractors, who make money out of it by recovering the valuable parts of the plant. If this is possible in the USA where the cost of labour is high, it must be very profitable in Croatia where the cost of labour is low. If the management of INA Polimeri is convinced that these plant will not be used again, they should have them dismantled and even consider selling or leasing off the real estate.

B. DETAILED RECOMMENDATIONS

1. Market development for low density polyethylene/promotion of use of plastics in agriculture

In spite of a favourable climate and a low population density, Croatia actually has to import agricultural products. In many industrialised and developing countries, a major market for polyethylene film is for agriculture, for mulching, green houses, and as linings for irrigation canals. For example a large part of the strawberries sold at high prices in Northern Europe in the colder months before June are produced in countries such as Spain and Italy with the help of plastic films. The use of plastic film for mulching and green houses not only results in increased production, but in early production, when the farmer can get a higher price for his produce.

The promotion of the use of plastics in agriculture does not just mean making some film and hoping that the farmer will buy it. It is necessary to know the right thickness of the film depending on the precise use. With the right synergistic additives film for greenhouses will have a useful life exceeding three years, with the wrong additive only one year in the sun. The thickness of the film is particularly important for canal linings and methods have been developed in the USA and India for determining this. Properly developed, there could be a market in Croatia for several thousand tons of polyethylene per year for use in agriculture.

The UNIDO has been very active and successful in promoting the use of plastics in agriculture and has on its roster some of the finest experts in this field in the world. It could give advice on how to develop this market. With the existing facilities at OKI, the cost of doing so would be relatively cheap and pay of in increased sales at domestic market prices very quickly, probably less than a year.

The fact that INA Polimeri has already made experiments on the use of agricultural film and have produced them should mean that the UNIDO assistance could mainly be limited to fielding experts and providing know-how, thus making it very cost effective.

Though this recommendation only mentions polyethylene, many other types of plastics and thermosetting resins are used in agriculture.

2. Market development for expandable polystyrene/continuous board moulding

The present technology used by OKI for producing expanded polystyrene insulating boards by moulding blocks and cutting them up into panels is very inefficient and produces panels which are difficult to use. One of the problems of expendable polystyrene processing at INA is that the technology was bought from ARCO, who were not in a position to advise INA on advanced European technology for production of insulation material. For ARCO and the USA, plastic coffee cups were interesting but not energy saving. The production of expanded polystyrene goods is one of those fields where European technology is superior to that in the USA.

The UNIDO analysis would recommend installing a continuous board moulding plant, such as that, for example, developed at the end of the 1970's by Gull Fiber of Goteborg Sweden. With such equipment it is possible to produce profiled panels cheaply and efficiently. A great advantage of such panels is that they can be installed to insulate for example the roof of a house, using "do 'it yourself' techniques, by someone without any training or complicated equipment. Producing such products would enable Croatians, who are rebuilding their houses to provide for energy savings in a cheap way.

Apart from the extra profit made by making higher quality boards in a more efficient way, the increased value added by making 15,000 tons of expendable polystyrene beads instead of the present 7,000 would pay for the continuous board moulding plant in about a year.

3. *Development of specialty high impact polystyrenes*

In the long term if INA Polimeri is to remain profitable in the high impact polystyrene business it should be able to offer specialties to its customers. To develop such specialties requires an understanding of the nature of this product. Basically the melt flow index, which is important for processability is determined by the characteristics of the matrix and the impact strength by the characteristics of the mixed PS/rubber islands, whose formation is mainly influenced by conditions in the early stages of the process such as mixing and rate and degree of polymerisation. When this is understood it is possible to develop specialties; however, it costs money to carry out such development, and it is not certain that a relatively small producer such as INA Polimeri could justify such an expense.

Before spending such money, INA Polimeri should use its contacts and leverage with other companies to investigate the possibility of purchasing such know-how. It is also necessary to ascertain if it is possible or economic to make the specialties described above in the existing continuous plant.

4. As INA Polimeri has a compounding plant, some effort should be made to develop high value compounds and engineering plastics based on blends. Here it should be remembered that such products are not made by brute force, as suggested by some suppliers of expensive extruders, but use technological refinements such as "wetting" the solids to be mixed with the plastics before they are blended and compatiballsing plastics before compounding. UNIDO has had successful projects in this field.

IV. Recommendations for other parts of the Croatian chemical industry

While not based on plant visits, the following additional, and necessarily more general, comments can also be made.

1. *Proposal for making terephthalic acid*

Based on the fact that the 14,000 tons per year polyester fibre plant at Varazdin was not operating because it was not possible to obtain TPA, it is apparently being proposed to put up a 50,000 tonnes per year TPA plant. A 50,000 tonnes per year TPA plant would probably be the smallest such plant existing in the world and almost certainly uneconomic.

It is very hard to believe that a country, which makes and exports para-xylene, produced at the Sisak refinery production of TPA can not arrange a deal whereby, in return for p-xylene, TPA would be provided.

2. *Small-scale and specialty chemicals industries*

   An expert should visit these industries - particularly in view of the positive impact that the INA Polimeri chemicals terminal could have on such industries - and advise on development possibilities.

3. *INA Polimeri's domestic customers*

   These are most probably mainly plastics processors. Consultants should visit these companies with a view to making suggestions how they can easily improve efficiency and product quality, and thereby help INA Polimeri improve its domestic market. In this respect, it should be noted that UNIDO has a number of first class plastics processing experts on its roster. UNIDO has also been active in advising countries and companies in this field and has set up a number of very successful plastics development centres.

V. Conclusions

The main conclusions are:

1. Though according to the management, INA Polimeri may still need some further restructuring, it does not need major surgery. It has already reduced staff considerably, and little would be gained by further reductions. It should not be closed down.

2. Important parts of INA Polimeri, which can make a major contribution to the future profitability of the company, such as the chemicals terminal or the plastic pipe plant at Dmis and possibly other plastics processors, should not be sold in the misguided belief that this would be a step towards privatization. This applies in particular to the chemical terminal, which INA Polimeri is uniquely qualified to manage. Successful privatization involves getting the whole company into a growth and profit mode before privatizing it and only selling off those parts, which do not contribute to this. Piecemeal selling off of useful parts of the company just because there is a buyer can considerably reduce the total amount of money, which could be obtained by privatizing a complete working operation.

3. Considerable improvements in the financial situation of the company can result from improved promotion of the domestic market, and a number of suggestions for inexpensive ways of doing so have been made.

4. Trading in chemicals using the chemical terminal as a base should be aggressively pursued and coordinated with INA Polimeri's other activities.

5. While the possibility of improving profitability by investing in new plant should be borne in mind, unless an unexpected very profitable opportunity presents itself, serious plans for expansion, involving major investment, should only be undertaken once profitability has been improved as a result of promoting the domestic market.

6. While INA Polimeri is a very important part of the Croatian petrochemical industry, it is only a part of it. It would be very beneficial if suitable independent experts were to assist in developing a strategy for the whole sector of industry. The parts of the industry which should be visited by such experts should include, but not be limited to:

   - small and medium sized chemical producers including producers of so-called specialty chemicals; and

- users of INA Polimeri products, in particular plastic processors, the fertilizer and synthetic fibre companies.

Also though major oil companies tend to regard their petrochemical subsidiaries as being less important than their major activities - which are producing and selling oil and refinery products - discussions with INA did not demonstrate how they could inexpensively and profitably help promote growth of the whole chemical sector.

CHAPTER 6: REVIEW OF THE WOOD SECTOR

INTRODUCTION

The fact that the Croatian wood industry sector was comparatively well developed as part of Yugoslavia and that it lacks certain market oriented features has been well documented. The current situation with disrupted supply and commercial channels and the dispersion and/loss of key managerial, technical and operating staff has also been referred to. The importance of this subsector and its potential for contributing both to the economic revival in general and to more immediate reconstruction needs is obvious although a number of characteristics-merit mention by way of introduction.

Forestry and related activities are under the responsibility of the state monopoly HRAVTSKA SUME (HS) which controls 82% of the country's forests. This will be an important area to study with a view to making policy decisions on restructuring and the degree of privatization of logging and transport particularly.

Enterprises are now a mix of public and private and there is no clear policy regarding privatization nor for creating the enabling environment that would support development of "value added chains" and clusters of more specialized processors. Many firms are either bankrupt or have changed activities, some completely.

Primary production (particularly sawmilling) is not quality oriented for competitive marketing so as to be able to compete with imported raw material. A currently unknown number of mills are oriented towards production related to large and now obsolete complexes or single uses and not towards a market-oriented product mix.

Secondary processing including particularly manufacture of furniture and joinery products is disorganized, needs rationalizing based on analysis of wood supply, technical plant capacity and other resources plus market study to plan orientation at the enterprise level.

Finally, it will be important to link individual firm development with reconstruction needs as well as to consider whether, in the short term, the domestic log supply should be limited to either high value-added fully finished export-products or to the reconstruction programme. Similarly, relations with neighbouring countries, especially Bosnia and Slovenia must be examined with a view to determining the optimum degree of integration and commercial links.

PROPOSED PROGRAMME ELEMENTS

In general a programme such as this must follow an iterative process within a rather broad overall strategy which becomes increasingly better defined as decisions are made by both Government and private sectors which will be reacting to the ever changing situation in the country and the region. It should not be a set of rules or directives but instead a framework within which development can take place.

1. Forestry

The breakup of Yugoslavia disrupted well established supply lines and forestry practices. It will be essential to determine in each region what qualified staff are in place, what their views are on a great range of subjects such as privatization, allocation of concessions (possibly by auctions), royalty rates, environmental concerns, village or common rights, private forests and how their management should be controlled, logging control, inventory needs plus what level of technical assistance and support they feel will be needed to enable them to assume the agreed upon level of responsibility.

For any industrial strategy, the allowable annual cut must be estimated by species or species groups and decisions must be taken regarding stumpage price or royalty levels that will be attractive to domestic processors in competition with imported raw material and which will at the same time provide sufficient revenue to support forestry activities. Other problems which must be reviewed and discussed concern staffing, equipment (what is damaged, obsolete or missing) as well as physical infrastructure, buildings, roads and civil engineering works which may have been damaged and which are essential for forestry operations. Other aspects which must be looked into concern policy and funding.

Once certain decisions have been made regarding the structure and organization of HS the relevance and currency of existing forestry management plans must be reviewed and adjusted as necessary to compensate for the war and reconstruction needs.

Finally, support measures must be defined that will ensure "environmentally sustainable industrial development" of this subsector including - restructuring, training, - replanting research and development as well as mine clearance in certain areas.

It is UNIDO's view that FAO should be invited to participate in this programme element to provide a firm foundation f or development of appropriate industrial production.

2. Industry

The first step should be to update the list of wood-processing firms and group them by their main function. This will mean identifying what the sawmilling capacity is and where it is located so as to link this capacity with log supply estimates in order to rationalize production and minimize log transport costs. Where sawmills are part of larger complexes, their capacities must be examined with a view to orienting their product mix to satisfy both the raw material needs of what may be a changed enterprise as well as the sawn wood market in general. Similar consideration must be given to wood based panel mills. In this context, it must be noted that the list drawn up a few years ago by the Croatian fund to rehabilitate the wood industry does not include several substantial mills such as Papuk in Pakrac,, Gai Vocin, as well as at least one of the sawmills belonging to the construction firm Industrogranje. For this exercise to succeed, all existing capacity must be noted not just those belonging to one group or another.

Following such a listing, a technical audit should be made that would estimate the real capacity for primary processing, kiln drying, preservation, panels plus any special technologies such as production of glued laminated beams, veneer (peeling or slicing) which could be considered as intermediate products within the production chain.

Obviously the secondary processing/manufacturing enterprises will have many decisions to make regarding their future but it is felt that before they can do so rationally, the forestry and basic processing information must be available to them.

It will be important during this audit/analysis period to discuss with industry leaders what plans may already exist at the enterprise level and try to gain a preliminary understanding of the competitive advantages of each, if any. As part of this assessment, the human resource must be considered as to its current capabilities, needs for training and exposure to practices in more developed industrial countries. Therefore training opportunities and needs should be identified and consideration made to arranging study tours and fellowships for managerial and technical staff so as to stimulate creative and entrepreneurial energies.

3. Strategy development

UNIDO considers that it is of utmost importance to involve all stakeholders in policy discussions via seminars, analyses of options and problems so that decisions will be made that will be respected by all those concerned. People should be sounded out over their views on collaborating with Bosnia, Slovenia and Serbia with the aim of maximizing the value contributed by the forest based industries to the Croatian economy.

3.1 Government role

Legislation will be needed to enable the private sector to grow sustainably, probably involving incentives to establish industries as well as clear guidelines on privatization. consideration must be given to the level of support given to institutions (training and R & D mainly) and how these should be linked to and partly funded by industry. Finally, collaboration between Ministries, particularly agriculture and industry should be strengthened, possibly by establishing a working group or steering committee with representative from the 3 or 4 Ministries involved plus a few industry representatives.

3.2 Industry organizations

It will be important for industry to organize themselves into associations representing the various main groups such as loggers/primary processors" manufacturers/users, traders/importers/exporters, for example so that they may help each other to solve mutual problems as well as to make appropriate representation to Government and to the rest of the world not only regarding trade but also international standards and R & D needs. Without such cohesion, it will be difficult for them to provide meaningful support to the institutions and exercise control over their programmes. Their role would also extend to relations with supplying industries and any other groups that have an interest in this subsector.

3.3 Institutions

Because people and forests are the main resources, attention must be paid to the educational needs of those already working in the industry as well as those who may enter. The curricula of universities and technical institutions should be examined to assess their relevance under the new situation and assistance given to lecturers and staff to reorient curricula and "freshen their outlook" regarding their subjects. Similarly the role of research and development institutions must be appraised including the role of professional bodies (scientists, engineers, architects) so that they may be helped to link technically to colleagues in European Union countries as well as those of the new market economies (neighbours). Consideration should be given to helping professionals become members in bodies such as CIB W18, IUFRO as well as to national representation on UN committees such as ECE/FAO Timber Committee, ISO TC165 (on the strength of timber) and others regarding codes, standards, trade information and markets.

3.4 Consultants

It is considered essential to rebuild the national capacity of consulting engineers and economists by reorienting and upgrading skills as necessary so that technical consultancy advice may be readily available on machinery selection, processes, products development, design and marketing trends and other specialized topics. This could be accomplished by a combination of study tours, sponsored attendance at specialized trade fairs and exhibitions, assistance to take part in joint consultancy projects and partnerships with well known international firms as well as a series of national seminars and workshops that would bring together professionals and

technicians to hear presentations on a variety of issues and discuss Croatia's needs and the appropriateness of various solutions. This would also serve to create a sense of cohesion within the country and a common sense of purpose.

In the introduction, it was mentioned that an iterative process should be followed without laying down directives. If the above strategy is followed, together with collection of necessary information regarding the current forestry and industrial processing situation in the country, then a development programme will emerge that will find support from the UN agencies, bilateral donors and NGOs interested in this subsector in Croatia.

4. Links with existing projects

In late 1992, UNIDO began a project "Timber Framed Buildings for Emergency Shelter" funded first by Italy (US$800,000) and currently by Japan (US$700,000) which, over more than 3 years has attempted to introduce the light timber framing system that is so common in North America, Australia and New Zealand into Croatia. During January/February 1996 the last 2 of 6 buildings will have been completed with UNIDO's contribution being the main structural frame up to the installation of utilities and interior finishing off for a total of over 1,6OOm^2.

Through these projects, some knowledge was gained of the wood processing industry and the problems existing in the country concerning reconstruction. Although a certain basis now exists for the private sector to take over prefabrication and construction work using this system, the ongoing, in-depth evaluation of the project has pointed out the need for a public relations/promotional component that would disseminate not only the technical information but also cost experience and marketing potential and which would, by drawing together representatives of Government, private sector and institutional bodies interested in the role of the wood processing and manufacturing industry in Croatian reconstruction efforts, serve as a link between this project and a comprehensive rehabilitation of the wood processing industrial subsector.

An important feature of the emergency projects was the development of an appropriate, intermediate degree of prefabrication which combined the advantages of factory fabrication of wall and roof elements with the traditional building system whereby individuals and casual labourers and friends build houses over a period of time. The previous timber prefabrication systems relied on full credit being available as well as mechanized handling equipment for the fully prefabricated elements to be erected on site. The UNIDO intermediate system makes manual handling of all components possible and the initial outlay of capital is much reduced.

In general terms, the two project budgets (US/CRO/92/162 and TF/CRO/93/DlO) will be revised to cover activities during such a transition period including support to one or even possibly two private enterprises if agreement is reached between them and the Ministry of the Economy on "inheriting" the project and consequently UNIDO technical assistance.

- **US/CRO192/162:** The approximately US$25,000 remaining will be used to bring Mr. Peter Vidovich back to Croatia f or about 1 month as well as one or two specialists for shorter periods to participate in the seminar ref erred to above. A small amount will be held for miscellaneous expenses relating to winding up this project.

- **TF/CRO/93/DlO:** The approximately US$50,000 remaining will be used to engage National Consultants, particularly those who have been working under both projects and who are fully conversant with all details of the system, suppliers and operational details plus operating expenses, project and headquarters staff travel as well as a small amount for small specialized items of equipment.

During this transition stage, UNIDO would not be involved in supplying building materials per se but instead

would assist the selected private sector company (or companies) in applying the system. It would also serve to generate widespread interest in rehabilitating the wood processing subsector and securing broad support for such a programme.

5. Conclusions

The Croatian forest and wood industries were the third foreign currency earner (after tourism and shipbuilding), and the basic infrastructure and facilities still exists. A stock-taking exercise must be undertaken leading to broad-based discussions amongst all parties concerned, at all levels, and subsequently analysis and policy decisions that will enable a rationalization between the roles of the public and private sectors.

A technical assistance programme should be the result of this preliminary phase which, because of its participatory nature, will have a good chance of leading to sustainable development of the subsectors. The UNIDO projects aimed at introducing the light timber framed building system into the country have created considerable interest and can assist in initiating the above process. This experience needs to be disseminated widely in Croatia as a start to discussions. Relations with newly-formed neighbouring countries of ex-Yugoslavia as well as with the rest of Europe must be strengthened for the purpose of technical and managerial growth, marketing, transport rationalization and investment promotion.

CHAPTER 7: REVIEW OF THE MACHINE TOOLS AND STEEL STRUCTURES SECTOR

ACTIVITIES

The seventh sector of Croatia's economy which the Ministry of Economy requested UNIDO to examine was the machine tools and steel structures sector.

The privatization system in Croatia has the characteristic that a large portion of the company's capital is in the hands of various funds such as industry workers funds, agricultural workers funds and the like. These funds, in turn, are managed by the Government. The remaining part of the corporate capital is controlled by the company's employees, and in some cases by partner companies, structured along the same lines.

In the specific instance of the TORPEDO company in Rijeka, 53% of the company's capital belongs to the state privatization fund, abut 44% to the employees, and the remaining 3% to other companies (suppliers and subcontractors). TORPEDO is a well known manufacturer of engines and agricultural tractors with more than 140 years experience in foundry and metal industry. The company has been the first producer of diesel engines in the Balkans, becoming one of the leading engine manufacturers after reaching a licensing agreement with the firm Deutz. The tractors manufactured by TORPEDO, branded Adriatica, are of 4WD type and cover a power range between 33 kw and 68 kw.

Before the war Croatia has recently been involved in, the company was exporting more than 50% of its production and had a production volume of 4,000-5,000 tractors per year, though manufacturing capacity is topping I 1,000 tractors. At present, it has an agreement with the firm Stayer for the manufacturing of tractors over 90HP. Their production is mainly focusing on engines and they are also negotiating a co-operation deal with the firm Carraro in view of manufacturing tractors fitted with Carraro transmission and hydraulic systems. In addition to the plants existing in Rijeka, TORPEDO has three other manufacturing facilities, in locations where various type of components are produced. The company is actually confronted with serious production and marketing problems. As in the other cases examined, TORPEDO, due to the war, has lost its traditional markets and it is not structured to launch, by itself, an aggressive marketing campaign as it would be necessary. Parallel to this, lack of capital and financing makes the modernization of both projects and production facilities practically impossible. Unless a remedy is found to change this unfortunate situation, a valuable knowledge and experience endowment may be lost in a very short time.

Due to the characteristics of the regional agricultural environment and cropping system, a small mechanization pattern, basically centered on the utilization of mini tractors and power tillers was adopted since the 1970s.

The company LABINPROGRES TVORNICA POLKOPRIVREDNIH STROJEVA D.D.-LABIN signed in 1977 a license agreement with the firm Goldoni - which expired in 1989 - for the production of two models of power tiller with a capacity of 9 and 12 HP, respectively. In the past, production volume reached 9,500 units per year, though the plant capacity is 15,000 units. Up to 15% of the production was exported, while the remaining 85% was sold within the borders of the former Yugoslavia. During 1995 the company manufactured 900 units, employing about 100 workers (from the 340 employed in 1989/90).

At present, no major activities are ongoing at the plant, with the exception of some components subcontracted by foreign firms, such as gearbox elements produced for the firm Goldoni and parts of tobacco industry machinery for the firm Manfredi. In some cases, LABINPROGRES performs the machining of parts provided by the client itself.

The power tillers so far produced were fitted with engines manufactured by the firm ACME, though other brands such as Ruggerini and Lomabrdini were also utilized. The company's corporate structure is presently as follows: 58% belongs to the 'privatization fund' (State); 20% to the 'fund for the social protection of labourers'; about 8.5% to the 'pension fund for agricultural employees' and about 13.5% to the company's labourers.

The managers agree that there are basically four possible ways out of the present situation. These are: a) identify potential clients willing to subcontract the production and/or machining of specific components; b) boost marketing activities in order to enter new potential markets in Europe and/or in the other parts of the world; c) perform as 'products development centre' for larger, national and/or foreign manufacturers; and d) widen the products line, by venturing into the production of gardening machinery and equipment.

In the domain of power tillers, another important concern operating in Croatia is MIO METALSKA INDUSTRIJA B.D. This company, located in Osijek , in the North-Eastern region of the country, has a corporate structure similar to that of the companies already mentioned. Forty-six per cent of the company's capital belongs to about 700 workers. The remaining part is owned by a 'privatization fund', a 'pension fund for industrial workers' and 'fund for agricultural workers' for a total of 50.4%, while the last 3.6% is in the hands of a Croatian bank.

At present, MIO employs some 390 workers in the Osijek plant and another 130 in two facilities located elsewhere. Before the war, MIO engaged 1,150 people. Their production ranges from power tillers to hand-tools through water pumps, generators, sprayers concrete mixers, wood working equipment, fruit processing and gardening equipment. The power tillers are manufactured on the basis of HONDA technologies. The beginning of their cooperation with HONDA goes back to 1969. At Osijek plant, two and four engines are produced under HONDA license in a well organized and equipped set of facilities.

During the war some of the buildings were basically destroyed and major equipment, such as one of the two units for aluminum moulding severely damaged. Also due to this, and taking into account that before the war 50% of their output was for the Yugoslavian market, the volume of sales dropped of about 60%. According to the managers met their actual production may be estimated in 3,000 engines and 7,000 power tillers per year (from 20,000 before the beginning of the year), but during the first six months of 1996, 1,800 engines have been already manufactured. As explained by the General Manager, Mr. Slavko Tugek, MIO production philosophy rests on three main points: a) careful selection of raw materials sources; b) the highest possible productivity, and c) lowest possible labour costs.

Most of the raw material can only be found abroad and at a very high cost. As far as productivity is concerned, the available technology would call for a substantial improvement and updating. A more favourable situation concerns the labour costs though their parameters at equal productivity, is 50% to 60% lower than those available in Austria and Germany.

The effort that MIO is making, in order to win back the position held before the war, would mean for this company to solve a substantial financial problem, besides establishing new contacts and relationships with foreign manufacturers. This, not only in view of broadening their market, but also to have access to innovative technologies and to rise to the latest international standards.

One of the manufacturers that, as supplier of components, is related to the concern dealt with above, is the company named PROGRES D.D. (not to be confused with LABINPROGRES D.D.) located in Jastrebarsko. The company's capital, estimated by the managers in 50,000,000 DM, is distributed according to the following quotas: 30% belongs to the labourers, 30% to various State funds and the remaining 40% to the Zagreb Bank, which, in turn, is partly owned by the Government.

The main line of products manufactured by PROGRES is based on components for TORPEDO tractors, but the plant is equipped as to produce and machine a variety of metal items. At present, the company is trying to improve available technology, and, at the same time. to develop a new line of soil cultivation equipment. With regard to this, they have established preliminary contacts with a foreign manufacturer of rotary cultivators and harrows. Among of the most important items produced for TORPEDO is the tractor cabin, which is of satisfactory quality and could be adapted, with minor modifications, to other tractor models.

The more than 500 employees, working at the plant before the war, are now reduced to less than 130, mostly due to the fact that the orders from are limited, and no other alternatives for the utilisation of available facilities have been found as vet. According to Mr. Milevoj, Technical Manager, the only possibility to revitalize his company operations lays on the involvement, in various forms, of foreign manufacturers. In this respect, assistance is needed to widen their international horizons and to establish contacts with similar enterprises abroad.

One of the most important agricultural machinery concerns in Croatia (before the war) is the TVORNICA TRACTORA. The small tractors manufacturing plant. located in Bjelovar. used to and manufacture 6,000 tractors per year and employ 1,100 workers. nowadays reduced to 340.

Until recently, TVORNICO TRACTORA was producing small tractors for an Italian enterprise utilizing Italian diesel engines. These tractors, branded with Italian company's name, were then exported all over the world. The class of machines manufactured by this company was ranging from 13kw to 19kw, hence filling the gap between the production of MIO and LABINPROGRES, on one hand, and TORPEDO on the other.

The unavailability of cash, which prevents the company from purchasing necessary raw material and various components, has forced the management not only to alter production activity, but also to turn done new orders and interesting opportunities. In the meanwhile, just as a means to survive and overcome the ongoing critical transition period, the company is performing, under subcontract, minor foundry and machining jobs subcontracted by Croatian private clients and companies.

Also due to this forced immobilization, the Italian partner is withholding new orders, and the possibility exists that the overall deal may fade away, unless appropriate remedy action is taken soon.

One of the most interesting, among the companies visited, is the DURO DAKOVIC POLJOPRIVREDNI STROJEVI I UREDAJI D.D., a plant manufacturing combine harvesters and trailers located in Zupanja. DURO DAKOVIC is part of a major holding which, before the war, employed 16,000 people, nowadays reduced to less than 6,000. As mentioned, the company is mostly manufacturing combine harvesters as well as corn pickers and agricultural trailers.

The combine harvester technology has been acquired from the German firm Deutz Fahr in 1982. The deal included the provision of technical assistance for a number of years to follow, which proved to work very well, as close co-operation is still going oil. According to the managers met, 46% of the combine harvesters component is manufactured internally, while the remaining 54% (including the engine) is mostly imported from Germany. DURO DAKOVIC is actually about to obtain ISO 9000 certification. The relationships with the firm Deutz Fahr is actually based on exchange of information and technologies, as well as commercial co-operation on selected foreign markets. Although foreign suppliers were originally chosen by Deutz Fahr, at present DURO DAKOVIC is free to chose subcontractors and suppliers, at their own discretion, on the basis of quality and costs criteria.

The relationships with the firm Deutz Fahr is actually based on exchange of information and technologies, as well as commercial cooperation on selected foreign markets. Although foreign suppliers were originally chosen by Deutz Fahr, at present DURO DAKOVIC is free to choose subcontractors and suppliers, at their own

discretion, on the basis of quality and costs criteria.

During the discussion held at the company's premises, the managers mentioned their desire to identify, as potential suppliers, manufacturers of transmissions and gears, cardan shafts, tyres, seats and riddles. Moreover, within their future plans, there is the cooperation with foreign manufacturers in view of improving the standard of their corn picker and venturing into the production of tractor operated forage harvesters.

The overall impression received from the visit is that of a well organized and rather efficient plant which, as in many other cases, is suffering the lack of adequate market outlets and updated technological inputs. Unless appropriate action is taken to remedy such an hapless situation, the company's endowment in terms of technology, working experience and human resources, may be lost in a very short time. This would represent an unfortunate conclusion, considering that some of the products of DURO DAKOVIC, such as the smallest model of combine harvester, would probably have good market opportunities abroad, particularly in some developing countries and in the mountain areas of some industrialised ones.

FINDINGS

In general, the situation found on the occasion of the visits carried out during the course of the mission is rather homogeneous. In the majority of the cases, a quite solid industrial background emerges, mostly built upon the implementation of well aimed cooperation agreements struck, ten to fifteen years ago, with internationally renowned agricultural machinery manufacturers. Since then, however, it would appear - that not much effort has been made to expand traditional and domestic market horizons, nor to keep-up with the technological development ongoing in the industrialised world. This was possibly due to the combination of two main factors - on one hand, the lack of adequate financial resources and onthe other, a sort of inertia generated by the comparatively easier way of dealing with the internal and eastern European markets, as compared to that of venturing into new and more competitive ones.

With the war outbreak, which drastically reduced the dimension of the traditional markets, the striking changes occurred in Eastern Europe, the expiring of the various licensing and co-operation agreements, as well as the progressive declining of the technologies available, the overall situation has quickly worsened. Nowadays, agricultural machinery industry in Croatia is practically at a standstill, with facilities rapidly ageing because of lack of maintenance and, in some cases, war damages, and people increasingly, loosing their motivation. The kind of machines and components produced are, in many instances out of fashion, while their safety and quality standards probably not in line with the most recent internationally accepted ones.

On the other side, although a number of staff, workers and technicians were laid off or left their job because of the war, valuable human resources, both at management and manufacturing levels, still exist at all visited plants. the same applies to manufacturing facilities, whereby among rather obsolete pieces of equipment, still efficient machines and even a few very modern and expensive ones are available and in good working conditions.

In addition, a remarkable asset is represented by the number of moulds, jigs and fixtures available at each plant, that in various ways could be still utilized.

In summary, at least from the technical viewpoint, the basic prerequisites are essentially there for relaunching the agricultural machinery national industry. What is lacking, besides indispensable financial resources, is a new managerial approach, more motivated and somehow more enlightened. This, however, can not be easily achieved, unless a company different economic structure, thoroughly in line with the privatization criteria adopted in other European countries, is applied.

CONCLUSIONS

As mentioned in the previous chapters, the situation found is fairly critical and, unless something is done in the near future, the risk exists that a 'no return' stage may be reached within the next eighteen months. Essentially, technical facilities and human resources are available and could be fruitfully utilized as basement for the reconstruction of an efficient and internationally active industry of agricultural machinery.

Financial resources, badly needed not only for refurbishing damaged facilities and buildings, but also to upgrade manufacturing equipment, are instead lacking and appropriate action should be taken as to identify, especially in conjunction with the ongoing privatization process, new and alternative sources of financing.

Moreover, the products technological level is somehow 'out of date' if not already obsolete. An injection of innovative ideas and design, as well as the modernisation of manufacturing processes and methodologies is therefore manifestly required. The kind of machines actually produced have little chances to be competitive abroad, unless production costs are cut down substantially, and standards raised at internationally accepted levels. This particularly as far as environmental impact and safety requirements are concerned.

Within this uneasy scenario, a very relevant and positive aspect is represented by the government attitude towards the overall national industrial conjuncture. Instead of choosing chimerical solutions, such as pretending to assist the national industry through ephemeral protective measures, the government is trying to identify all possible means to support a substantial development based on a medium and long term strategy that could guarantee a long lasting presence of, on the international market, Croatian made agricultural machinery.

RECOMMENDATIONS

The following recommendations could be made:

I. With the assistance of a specialized institution. the government should establish, or update (if already existing), a data bank including all agricultural machinery and relevant ancillary enterprises presently in operation on the national territory, earmarking their actual production capacity and capability in order to assess the opportunities of promoting subcontracting activities. Parallel, a research should be made in view of identifying not only in Croatia, but also in other countries in Europe, the potential request for subcontractors in the metal working field that could be established by the above assessed internal capacity. Eventually, a full fledged **'subcontracting exchange'** could be established. This with the aim of profitably utilizing available resources and exposing national enterprises to a wider and international business environment.

2. All possible efforts should be made to facilitate the 'internationalization' of Croatian enterprises by patronizing contacts with foreign manufacturers in view of establishing, whenever viable and appropriate, co-operation ventures both of industrial and commercial nature. With regard to this, being the number of Croatian specialized enterprises relatively limited, **an international seminar** could be organized in Zagreb, with the participation of selected interested foreign companies. Scope of the seminar should be that to apprise and compare various parties requirements, capability, plans and willingness to enter into co-operation with each other. Interesting emerging opportunities, such as technology transfer Initiatives, industrial joint ventures, commercialization agreements, could then be the object of specific pre-feasibility or feasibility studies, as appropriate.

3. A study should be made to establish a **common service facility**, in the form of an association, to provide agricultural machinery manufacturers with a range of specialized services, including, among others, international marketing, training, technological innovation, equipment certification, identification of financially sources. international tenders participation, coordination of promotional activities abroad, partners identification and any other activity that companies could not afford to undertake at individual level. Such an association could be financed partly by the Government, partly operate on the basis of its members entry contribution (to be kept at the lowest possible level) and, principally, by the income generated by the specific services provided upon request. Similar structures are already successfully operating abroad and their advice could be sought.

Part III
PROJECT SUMMARIES

THE TEXTILE SECTOR

TITLE: *Techno-economic audit and benchmarking of the Croatian textile and garment industry*

DURATION: *6 months*

BUDGET: *USD 250,000*

BENEFICIARIES: *The textile and garment industry, the Government of Croatia, banks and financial institutions*

BACKGROUND: *Based on a recent fact-finding to assess the needs of the Croatian textile and garment industry, it appears that:*

- *it is uncertain if the primary textile industry (spinning, knitting, weaving and wet processing) is able to produce at presently prevailing conditions at competitive cost in Croatia. A survey in accordance with the methodology applied by the International Textile Manufacturers Federation should be undertaken to determine if - or under which conditions - profitable production of textiles is possible.*

- *during the last six years none of the factories visited seem to have made profits which were used to reduce debts or were reinvested. The accumulated debts combined together with the presently very high interest rates (3% per month were reported) are posing a high risk not only for the enterprises but subsequently also for the lenders (banks) as it seems impossible for most enterprises visited to earn the required amounts for debt service.*

- *the installed production capacities are a multiple of the national consumption. Exports are therefore a necessity to achieve such high levels of capacity utilisation that production becomes viable. However, closure of some enterprises might be necessary to take off capacity from the market. As most enterprises are still held by the government as major shareholder, adjustments with the least social and economic impact have to be done now.*

- *prior to 1990 most enterprises were exporting the majority of their products to the less demanding COMECON states. Garment factories received large bulk orders and were then domestically sourcing on their own the fabric, accessories and trimmings enabling them to undertake all steps from designing to shipping to manufacture a garment. Today the same factories are receiving the fabric, accessories, trimmings, pattern and a detailed specification sheet from the foreign client, leaving only the cutting and assembling of the garments to the enterprises. This reduction to the less demanding assembly operations might pose a "psychological" barrier as these are the same operations which much*

less developed countries (and also with a much lower salary level) are doing. In discussions with management of some garment factories it was expressed that the "Lohnarbeit" was under the capabilities of their enterprises. It appeared that the change from a suppliers market to a buyers market is not always easy.

- *a neutral, technical performance evaluation of the enterprises is presently not possible. While in the EU the "factory efficiency" is based on the "theoretically possible output", Croatian enterprises are apparently deducting items like: "no material", "no order", 11 no personnel", etc. from the "theoretical possible output". By doing so the efficiency figures become higher, incomparable and meaningless.*

TASKS: *The main result of the project would be the establishing of a multi-discipline team (six to eight) of economists and technologists, capable to undertake technical economic audits and an SWOT analysis (Strength/Weakness/Opportunities/Threats) of textile and garment enterprises based upon which the government and financing institutions can base their decisions. The strategy to be followed should be that initially a group of international consultants are auditing together with the local experts three to four textile and garment enterprises. During this learning-by-doing period the local experts will be acquainted with the methodology and benchmarking applied in West European and North American countries.*

ACTIVITIES:

- *Production cost comparison (ITMF methodology - sample enclosed) of the primary textile industry;*
- *Calculation of cost values per "standard minute" in the garment industry under the present conditions;*
- *Forecast of the domestic textile and garment consumption until 2005;*
- *Stocktaking of the available production capacities and their present capacity utilisation;*
- *Establish detailed benchmarks for the different subsectors of the textile industry (spinning, weaving, knitting, wet processing) and compare them with the presently achieved figures.*

Based on the above develop strategies - on the enterprise level as well as on the sectoral level - to improve the financial results on factory level and the employment and tax revenue generation on the sectoral level.

INPUTS:

	USD
International expertise (8 w/m)	*160,000*
National expertise (30 w/m)	*75,000*
Staff travel	*5,000*
Equipment	*5,000*
Miscellaneous	*5,000*
Total:	*250,000*

TITLE: *Support Centre for the Garment Industry in the Medimurska region*

DURATION: *12 months*

BUDGET: *USD 250,000*

BENEFICIARIES: *The garment industry of the Medimurska region and its employees (female 80%)*

BACKGROUND: *The region of Medimurska, close to the city of Varazdin, is since generations well known for the entrepreneurial spirit of its inhabitants. Recent closures and lay-offs of large, state-owned textile and garment factories triggered the creation of numerous small-sized clothing companies. Owners of these "shops" are mainly supervisors and managers, formerly employed by garment combinates. While technical know-how and well-trained work force is available, the size of the "shops" as well as their access to capital is limited. This is leading to a situation that prevents the exploitation of the potential of this sector which lies in their production flexibility and acceptance of small order sizes. Modem technologies with specialized machine attachments or CAD/CAM applications are not feasible at this size of enterprises although considerable savings in cloth consumption together with an improved quality can be achieved. To break the present vicious circle it is recommended to establish a garment industry support centre which can provide a variety of services. Ideally, the centre would be attached to a garment school, permitting not only support services but also training on modem, up-to-date equipment for students of the clothing industry.*

THE END-OF-PROJECT SITUATION:

a) *A CAD/CAM system, enabling the centre to provide pattern-making, grading and markermaking services and train students in these computer-assisted technologies. The system would consist of input devices like digitizer and scanner, output devices like printer and plotter together with the computer and specialized software.*

b) *A "library" of specialized feet, folders, gauges, rulers and attachments which are improving the quality and worker productivity for the various sewing operations. Against deposit and rental fee, companies can lend these productivity-enhancing tools, which are infrequently required in a single company and therefore not viable to buy.*

TASKS/ACTIVITIES: *Based on sketches, specifications or sample garments received, the centre prepares the first pattern, modifies it until the resultant garment conforms to the original sample, grades it and prepares the "markers" for cutting the cloth, analyses the cost of production and sends the markers to the designated factories. There, the markers are used* ***either*** *directly for cutting the cloth* ***or,*** *where repeated use of the same pattern is foreseen, the pattern is cut out from the marker. In either case, the* ***final garment will conform to the original approved sample.*** *In addition to being fast - thus permitting a quick response to the customers' needs - the computer-based process saves fabrics as the lay-planning on the computer screen (instead of manually on the cutting table) leads to a more efficient use of the available fabric area.*

The system should also be connected through a modem to the telephone system to receive files for markers and marker modifications from overseas clients, plot them out and deliver the markers to the garment factories.

The project's justification thus rests on three principal arguments:

- *better and more consistent product quality;*
- *faster response to customers' requirements; and*
- *reduced fabric waste.*

This will ultimately lead to an increased competitiveness of the garment industry in the Medimurska region.

INPUTS:

	USD
International expertise	*45,000*
Monitoring	*1,500*
Fellowships	*30,000*
Expendable equipment	*15,000*
Non-expendable equipment	*155,000*
Miscellaneous	*3,500*
Total:	*250,000*

TITLE: *Preparatory assistance for the establishment of a Croatian Textile Unit (CTU)*

DURATION: *2 months*

BUDGET: *USD 40,000*

BENEFICIARIES: *All parties involved in the textile and garment industry chain*

BACKGROUND: *The textile and garment industry is the largest manufacturing sector in Croatia, employing over 55.000 people. Despite its size and importance, no focal point exists which can provide statistics and up-to-date technology and market information to the government and to entrepreneurs.*

Available funds from bilateral and multilateral sources cannot be exploited as they are unknown or their access is not known. Assistance to enterprises to develop their export potential is not provided. Information on government support to the industry in competing countries is also not available.

TASK/ACTIVITIES: *The aim of the proposed preparatory assistance is to validate the necessity of the proposed CTU (Ministry of Industry, Chamber of Industry, Textile colleges, etc.), detail their terms of reference, propose staffing levels and provide an initial work plan.*

INPUTS:

	USD
International expertise (2 months)	*30,000*
National expertise	*6,000*
Project travel	*1,000*
Miscellaneous	*3,000*
Total	*40,000*

THE GLASS AND CERAMICS SECTOR

TITLE: *Production of Rolled Glass and Profilite*

DURATION: *6 months*

BUDGET: *USD 100,000*

BENEFICIARY: *Industrija Stakla Lipik P.O.*

BACKGROUND: *LIPIK has a large capacity for glass processing. Before the war the factory produced flat glass of a low quality with production costs nearly two times that of modern float glass production systems. The furnace had reached the end of its technical life and will be replaced by a 200 ton/day mini float furnace. Since the flat and float glass requirements of Croatia do not exceed 100 tons/day, half of the production would have to be exported. Since a number of large producers are already competing in the European float glass market, small companies like LIPIK have a small chance or survival in this market. It is therefore recommended that LIPIK should concentrate on rolled glass and profilite production. Profilite is an important building material for the European market. The present capacity of rolled glass and profilite is 60 tons/day. Furthermore the company has to establish a small laboratory and aim at getting a ISO 9000 certificate in order to find a market for its products in Europe in the future when compliance with ISO 9000 will be necessary.*

OBJECTIVE *The project will assist in improving the rolled glass and profilite at the LIPIK glass factory and to advice on quality assurance in accordance with ISO 9000.*

INPUTS:

	USD
International consultant (2 w/m)	*35,000*
Study tours	*60,000*
UNIDO staff mission	*3,000*
Miscellaneous	*2,000*
Total	*100,000*

TITLE: *National Technical Centre for the Glass and Ceramics Industry*

DURATION: *2 years*

BUDGET: *USD 910,000*

BENEFICIARY: *Glass and ceramics producers in the country*

BACKGROUND: *Most of the glass and ceramics producing companies in Croatia are operating with lower productivity, efficiency and quality standards than is required when exporting to and operating within an open market economy. In particular the quality standards are not up to the expected level. It is therefore essential that establish a national technical centre that serves the whole glass and ceramics industry. INKER, a glass and ceramics producer in Zagreb, has laboratory facilities that are well equipped and organized and operate with high professional standards. These laboratories could be converted to a national technical centre. Using the facilities of the new centre, all production units can adopt ISO 9000 standards that are now mandatory for exports to Western European countries. Furthermore, using the advantage of natural gas being environmentally friendly for burning glass and ceramics, the factories would be well placed to adopt ISO 14000.*

OBJECTIVE: *The project will assist in establishing a national technical centre able to serve the glass and ceramics industry in introducing internationally acceptable quality standards.*

INPUTS:

	USD
International experts (10 w/m)	*140,000*
Project travel, incl. UNIDO staff mission	*20,000*
Fellowships (5 months)	*30,000*
Study tours	*30,000*
Equipment	*680,000*
Miscellaneous	*10,000*
Total	*910,000*

THE METALLURGICAL SECTOR

TITLE: *Workshop on Restructuring the Iron and Steel Industry in Croatia*

DURATION: *3 months*

BUDGET: *USD 45,000*

BENEFICIARY: *Companies operating in the iron and steel sector*

BACKGROUND: *The Croatian iron and steel sector is characterized by a low utilization of manufacturing capacities at only 30-50%, and by rather high costs of material and energy. The available technologies are feasible but partially obsolete. Some technologies could be upgraded using inexpensive measures like rebuilding existing EAF into ladle furnace using second hand modern melting UHP furnaces. In order to tackle the restructuring of the iron and steel industry of Croatia, a UNIDO workshop on restructuring will address and explain the problems to senior management and decision makers of Croatian iron and steel companies and of the Government.*

OBJECTIVE: *The project will assist in the restructuring of the iron and steel sector through a workshop which will include the following programme:*

- *Principles of restructuring;*
- *Business planning;*
- *Marketing in the steel industry;*
- *Quality assurance systems;*
- *Human resource development;*
- *Energy conservation and environment management.*

INPUTS:

6 international consultants in multiple fields of restructuring (restructuring and privatization, business planning, marketing, quality, human resources, energy and environment) to give lectures at the workshop and provide spot consultancy services to senior management of metallurgical companies . . . . . USD 40,000

National expert (to assist in organization of workshop) . . . . . USD 2,000

UNIDO staff mission . . . . . USD 3,000
Total . . . . . USD 45,000

It is expected that the Croatian host institution would provide meeting room facilities and local logistics support.

TITLE: *Restructuring Study on the Iron and Steel Sector in Croatia*

DURATION: *4 months*

BUDGET: *USD 150,000*

BENEFICIARY: *Companies operating in the iron and steel sector*

BACKGROUND: *The Croatian iron and steel sector is characterized by a low utilization of manufacturing capacities at only 30-50%, and by rather high costs of material and energy. The available technologies are feasible, but partially obsolete. Some technologies could be upgraded using inexpensive measures like second hand modern production facilities. In order to provide Government authorities and companies advice on possible restructuring of the iron and steel industry of Croatia, a detailed study on the restructuring of the sector will be carried out based on UNIDO's experience in restructuring assistance in countries of CEE and the CIS.*

OBJECTIVE: *The project will provide advice on the restructuring of the iron and steel sector through a detailed restructuring study covering equipment and production facilities, raw materials and energy, environment, structure of workforce and costs, product mix, domestic market and export, quality control, capital facility improvement, funds availability and financing aspects, privatization, company strategy and business planning.*

INPUTS: *Team of consultants, including market and financial experts, specialists for steel making, rolling, tube manufacture, restructuring and privatization, environment and energy . . . . . USD 140,000*
National experts . . . . . USD 5,000
UNIDO staff mission . . . . . USD 3,000
Miscellaneous . . . . . USD 2,000
Total: . . . . . USD 150,000

THE ELECTRONICS SECTOR

TITLE: *Quality and Environmental Management in the Electronics Industry*

DURATION: *1 year (with possible extension)*

BUDGET: *USD 250,000*

BENEFICIARY: *Companies operating in the electronics industry in Croatia*

BACKGROUND: *Croatia's electronics industry is in transition to becoming a sector capable of functioning in a market economy; but not, however, on a fast track. Reasons for this stagnation are the change of the economic system, the recent war, the associated brain drain, and the high cost of capital. An initial review of the sector suggests that the Croatian electronics companies should concentrate on the development and supply of services and products with high manufacturing value-added (MVA) for which qualified manpower is available in the country. They should maintain and strengthen the market niches they have such as power electronics products, transmitters, etc. In order to maximize the MVA, new marketing avenues should be found through sub-contract work for large companies in Europe. To compete internationally, the Croatian electronics industry has to comply with international standards and norms, in particular with ISO 9000 regarding quality management and the European Union's EMAS and forthcoming ISO 14000 regarding environmental management. Ecolabelling may effect some electronics products. Compliance with this standards will require major improvements at the company level. Guidance by the Government or by institutions would be instrumental in accelerating the introduction of these standards.*

OBJECTIVE: *The project will strengthen the established institutional services and companies in the electronics sector to ensure the required structure enabling these companies to introduce modern concepts of quality and environmental management and techniques to increase productivity. Special emphasis will be given to small and medium size companies.*

INPUTS:

	USD
2 International experts (each 6 w/m)	*180,000*
Training (study tours)	*60,000*
Project travel (incl. UNIDO staff mission)	*7,000*
Miscellaneous	*3,000*
Total:	*250,000*

THE PETROCHEMICALS SECTOR

TITLE: *Production of Plastics for Use in Agriculture*

DURATION: *4 months*

BUDGET: *USD 57,000*

BENEFICIARY: *Plastics processing industry and user of plastics in agriculture*

BACKGROUND: *The favourable climate of Croatia enables the country to become a producer of agricultural products for the North European region. An increase of the existing agricultural production can be achieved through the use of plastic film for mulching, green houses and as linings for irrigation canals. This will not only result in an increased production but also in a early production when these products can get a higher price in Northern European markets. The production of plastic films for use in agriculture require a special know-how to produce films with the required thickness depending on their precise use and with the right synergistic additives to achieve a durability of several years. If properly developed there could be a market in Croatia for several thousand tons of polyethylene per year for use in agriculture. The existing petrochemical facilities of OKI near Zagreb the costs of developing plastics for agriculture would be relatively cheap. Not only polyethylene but many other types of plastics and thermosetting resins are used in agriculture.*

OBJECTIVE: *The project will assist in the development, production and promotion of plastics for use in agriculture*

INPUTS:

International experts:	*USD*
- Expert in application of plastic for greenhouses and crop processing (1.5 w/m)	*26,000*
- Expert in plastic application for mulching, irrigation, and plastic recycling (1.5 w/m)	*26,000*
Project travel (incl. UNIDO staff mission)	*3,000*
Miscellaneous	*2,000*
Total:	*57,000*

TITLE: *Development of Small-Scale and Specialty Chemicals Industries*

DURATION: *4 months*

BUDGET: *USD 56,000*

BENEFICIARY: *Small and medium sized chemical producers and producers of specialty chemicals*

BACKGROUND: *In the Croatian chemical industry INA Polimeri is by far the most important producer. In addition a number of small and medium sized companies exist like a chemical fertilizer plant at Kutina or a polyester fibre plant at Varazdin. For the Croatian economy it would be beneficial to develop a complete strategy for the chemical industry and not just for the petrochemical polymer industry. Such a strategy should also address small and medium sized chemical producers, including producers of specialty chemicals, as well as users of INA Polimeri products, in particular plastic processors and fertilizer and synthetic fibre companies. Although major oil companies tend to regard their petrochemical subsidiaries as being less important than their major activities, which is producing and selling oil and refinery products, the proposed strategy should address the role of INA helping to promote the growth of the whole chemical sector in Croatia.*

OBJECTIVE: *The project will assist in designing a strategy for the chemicals industry in Croatia emphasizing the promotion of small and medium sized chemical producers and defining the role of INA in promoting the growth of the sector.*

INPUTS:

International experts:	*USD*
- Expert in organic chemical industry (1 w/m)	*17,000*
- Expert in inorganic chemical industry (1 w/m)	*17,000*
- Expert in marketing of chemicals (1 w/m)	*17,000*
Project travel (incl. UNIDO staff mission)	*3,000*
Miscellaneous	*2,000*
Total:	*56,000*

THE WOOD SECTOR

TITLE: *Development Programme for the Forest and Wood Industries*

DURATION: *12 months*

BUDGET: *USD 88,500*

BENEFICIARIES: *Wood processing and manufacturing enterprises and professionals*

BACKGROUND: *A final activity of projects UC/CRO/92/162 and TF/CRO/93/D10 was the organization of a workshop/seminar at Tuhelj, 20-21 June 1996 aimed at determining what further actions should be taken to improve the competitive position of this sector. The participants had on hand the study:* ***Status, trends and strategy of development of the wood processing industry in the Republic of Croatia up to the year 2010****, prepared by Croatiadrvo, Zagreb, December 1995, which provided a comprehensive analysis of the sector.*

Various recommendations were made which were later (20-24 August) followed up by a consultant who discussed the whole range of issues with the Ministry for the Economy, Hrvatske Sume, Croatiadrvo and leading representatives of industry. These led to the proposals, summarized below, which constitute a package of small projects aimed at overcoming key constraints facing the industry and including a coordinating component.

OBJECTIVE: *To support the modernization and restructuring of the forest and wood industry improved the integration of government, private sector and professional efforts towards sustainable development of the forest-based industries.*

INPUTS:

Project 1: Pricing system for Croatia's forest resources . . . . . USD 25,000
Project 2: Study tour for wood researchers . . . . . USD 18,000
Project 3: Trussed rafter systems study . . . . . USD 15,500
Project 4: Strengthening of technical consultancy capacity . . . . . USD 30,000
Total: . . . . . USD 88,500

Budget-line	*Project 1*	*Project 2*	*Project 3*	*Project 4*	*Project total*
11-00	*24,000*		*11,500*	*24,000*	*59,500*
15-00				*2,000*	*2,000*
16-00				*1,000*	*1,000*
17-00			*3,000*		*3,000*
32-00		*17,500*			*17,500*
41-00	*500*				*500*
51-00	*500*	*500*	*1,000*	*3,000*	*5,000*
					Total: 88,500

THE MACHINE TOOLS SECTOR

TITLE: *Establishment of a Common Service Facility for the Agricultural Machinery Industry*

DURATION: *4 months*

BUDGET: *USD 85,000*

BENEFICIARY: *Agricultural machinery manufacturers*

BACKGROUND: *The Croatian agricultural machinery sector has a quite solid industrial background which is built upon cooperation agreements with international manufacturers concluded 10 to 15 years ago. Since then however not much effort was made to expand traditional market horizons nor to keep up with the international technological development. With the changed traditional market in Eastern Europe and the outbreak of the war, the situation has quickly worsened. Nowadays, the agricultural machinery industry in Croatia is practically at a standstill, with facilities rapidly aging because of lack of maintenance or being damaged by the war. Machines and components are produced with out-dated technologies and have quality standards below internationally accepted levels. Given the technical basis and the valuable human resources, which still exist both at managerial and technical levels, the basic prerequisites exist to re-launch the agricultural machinery industry in Croatia. For this purpose a common service facility should be established to provide agricultural machinery manufacturers with a range of specialized services.*

OBJECTIVE: *The project will prepare a study on the establishment of a common service facility for the agricultural machinery industry that includes international marketing, training, technological innovation, equipment certification, identification of financial resources, international tendering participation, coordination of promotional activities abroad, partners identification, and any other activity that companies could not afford to undertake at individual levels.*

INPUTS:

	USD
International experts (3 w/m)	*50,000*
Training (study tours)	*30,000*
Project travel	*3,000*
Miscellaneous	*2,000*
Total:	*85,000*

TITLE: *Establishment of a Subcontracting Exchange for the Metal Working and Engineering Industries and Relevant Ancillary Industries*

DURATION: *18 months*

BUDGET: *USD 235,000*

BENEFICIARY: *Enterprises in the metal working and engineering industries and in relevant ancillary industries*

BACKGROUND: *The Croatian metal working and engineering industry has a quite solid industrial background which is built upon cooperation arrangements with international manufacturers concluded 10 to 15 years ago. Since then however not much effort was made to expand traditional market horizons nor to keep up with the international technological development. With the changed traditional market in Eastern Europe and the outbreak of the war, the situation has quickly worsened. Nowadays, this industrial sector in Croatia is practically at a standstill, with facilities rapidly aging because of lack of maintenance or being damaged by the war. Machines and components are produced with out-dated technologies and have quality standards below internationally accepted levels. Given the technical basis and the valuable human resources, which still exist both at managerial and technical levels, the basic prerequisites exist to re-launch the metal working and engineering industry in Croatia. In order to expose national enterprises to a wider and international business environment, subcontracting activities should be promoted through the establishment of a subcontracting exchange.*

OBJECTIVE: *The project will assist in the establishment of a subcontracting and partnership exchange for the metal working and engineering industries in Croatia to provide information and advisory services to these industries, and to promote partnership agreements between local subcontractors and main national and international contractors.*

INPUTS:

	USD
Chief Technical Advisor	*35,000*
Short term consultants	*90,000*
National experts	*40,000*
Project travel (incl. UNIDO staff missions)	*35,000*
Training (study tours)	*35,000*
Equipment (computers, vehicle)	*25,000*
Miscellaneous	*10,000*
Total:	*235,000*