

- PN. ART-935

**Republic of Poland
Glassworks Sector Study
Phase II**

March 1992

Price Waterhouse L.L.P.

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Glassworks Sector Study
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**Price Waterhouse
International Privatization Group
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I. Introduction

Presentation Outline

I. Introduction

II. Flat Glass

- **Segment Overview**
- **Sectoral Scenarios**
- **Privatization Strategies and Recommendations**

III. Consumer and Technical Glass

- **Segment Overview**
- **Sectoral Scenarios**
- **Privatization Strategies and Recommendations**

Presentation Outline (continued)

IV. Packaging Glass

- **Segment Overview**
- **Sectoral Scenarios**
- **Privatization Strategies and Recommendations**

V. Next Steps

Goals of the glass sector project are to:

- **Create an overview of the competitive structure of the glass industry**
- **Develop a sectoral policy for privatization and restructuring**
- **Formulate enterprise specific privatization strategies and recommendations**
- **Implement recommendations**

On December 10 1991, PW–IPG presented its findings and recommendations to fulfill the first two objectives.

Goals of Phase II of the Sector Project are to:

- **Verify preliminary recommendations of Phase I**
- **Assist companies on "accelerated path"**
- **Develop and critique alternative sector scenarios**
- **Recommend enterprise specific privatization and/or restructuring paths**

The PW–IPG approach to Phase II involved the following tasks:

- **Communicating the sectoral overview and preliminary recommendations to each of the glass enterprises**
- **Revisiting plants for on–site diagnostics, to complete strategic audits and to develop privatization alternatives**
- **Interviewing government officials, plant customers and suppliers, and industry experts**
- **Contacting active and potential investors**
- **Attending glass trade shows**
- **Meeting with selected Ministry of Industry and vovoidship officials**

Today's Discussion

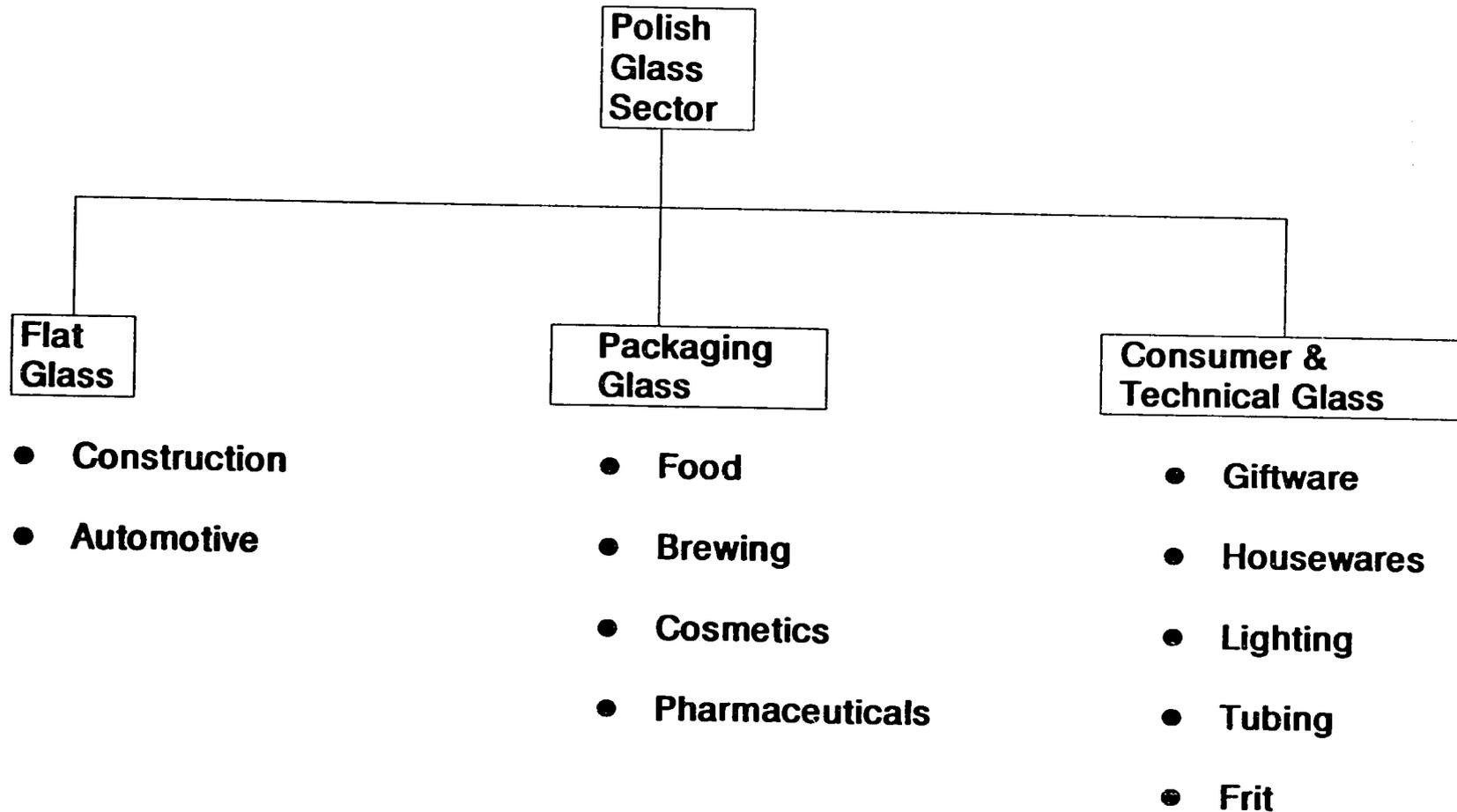
- **Working Session**
 - **Questions**
 - **Discussion**

- **IPG and project a tool for Ministry**
- **Part of a continuing process; not the end**
- **Impossible to include all information and analysis in presentation**

In addition to today's presentation, completion of Phase II will include the submission to the Ministry of the following:

- **Final enterprise description reports**
- **Detailed enterprise specific privatization and/or restructuring strategies**
- **Status report of investor contacts and prospects**

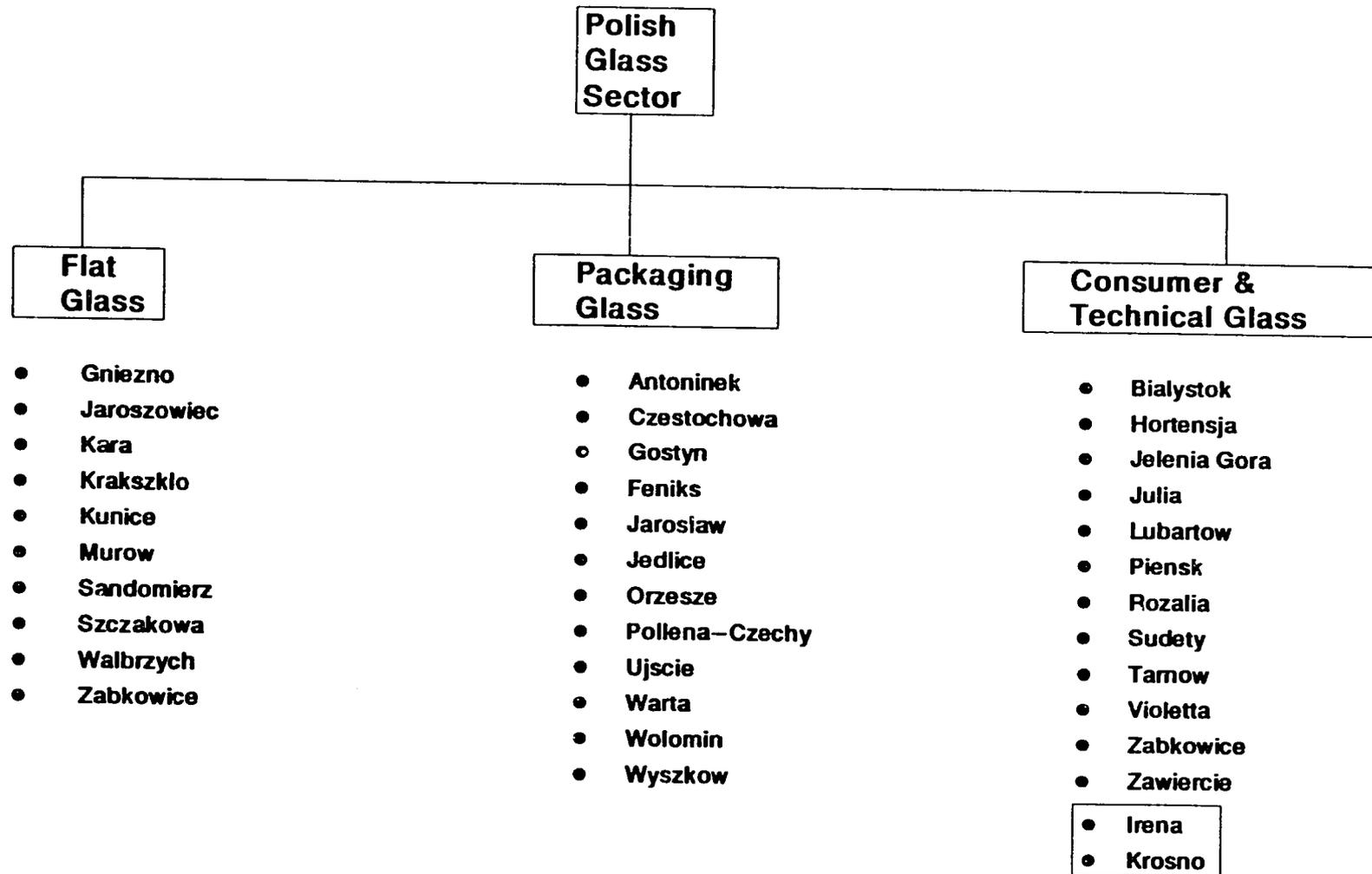
The Polish glass sector is comprised of three distinct segments:



In terms of sales and employees the industry segments are as follows:

	Total Sales (1991) (Billion ZI)	Employees in Poland
● FLAT	1,338	7,168
● PACKAGING	1,797	7,725
● CONSUMER/TECHNICAL	790	10,899

Thirty-four companies were included in our review of the glass sector



II. Flat Glass

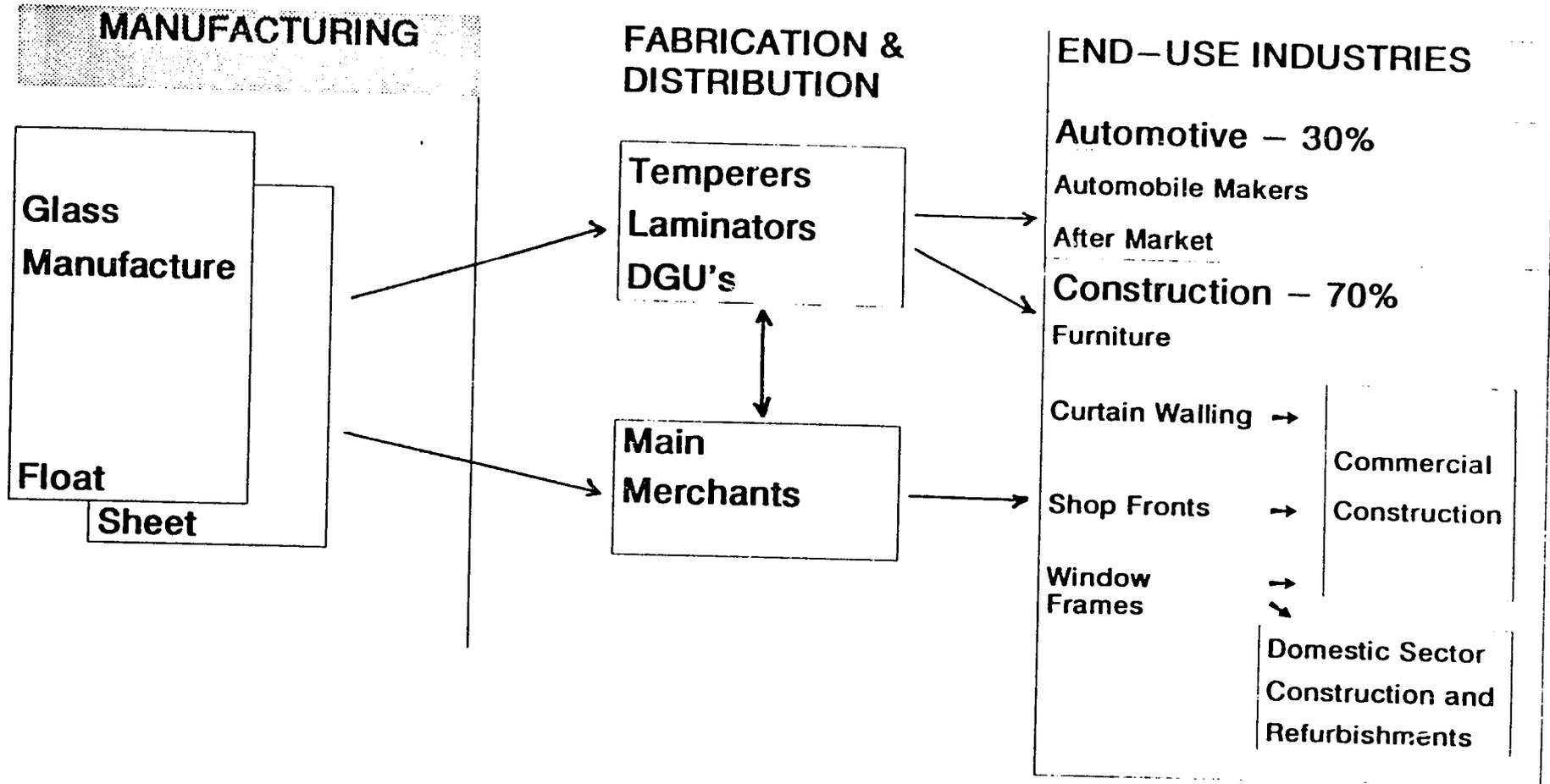
Executive Summary

- **The Polish flat glass segment is suffering from decreased demand, low profitability and liquidity problems.**
- **Float glass will replace sheet glass, as it has in every market in the world where it is available due to consistent higher quality and over time competitive cost.**
- **Overcapacity exists for foreseeable future in float in Czechoslovakia, Hungary and eastern Germany, as well as in Scandinavia.**
- **Discussions are underway between HSO Sandomierz and Pilkington to build the first float glass plant in Poland.**
- **Participants should carefully direct efforts, profits and cash flow toward transforming their businesses to serve the growing need for distribution of glass and fabrication of glass products. Additionally, there may be room for one or two specialist manufacturers (e.g., 2mm sheet) to survive and prosper.**

Flat Glass

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Flat glass serves two main markets, the automotive and construction industries and is divided into manufacturing and fabrication sectors.

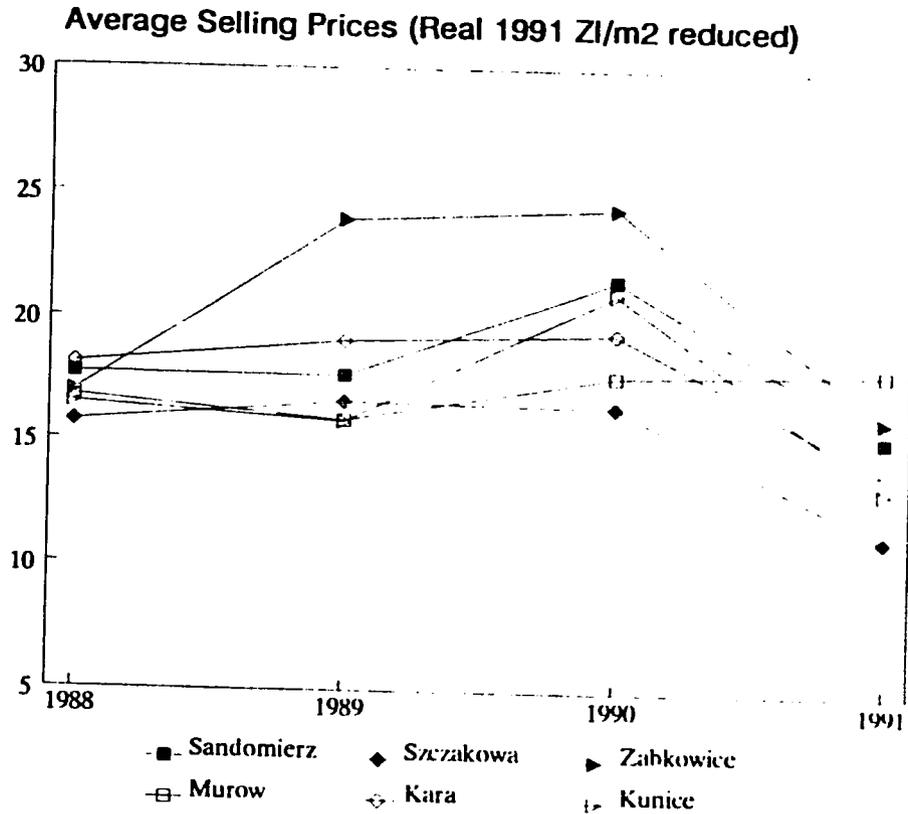
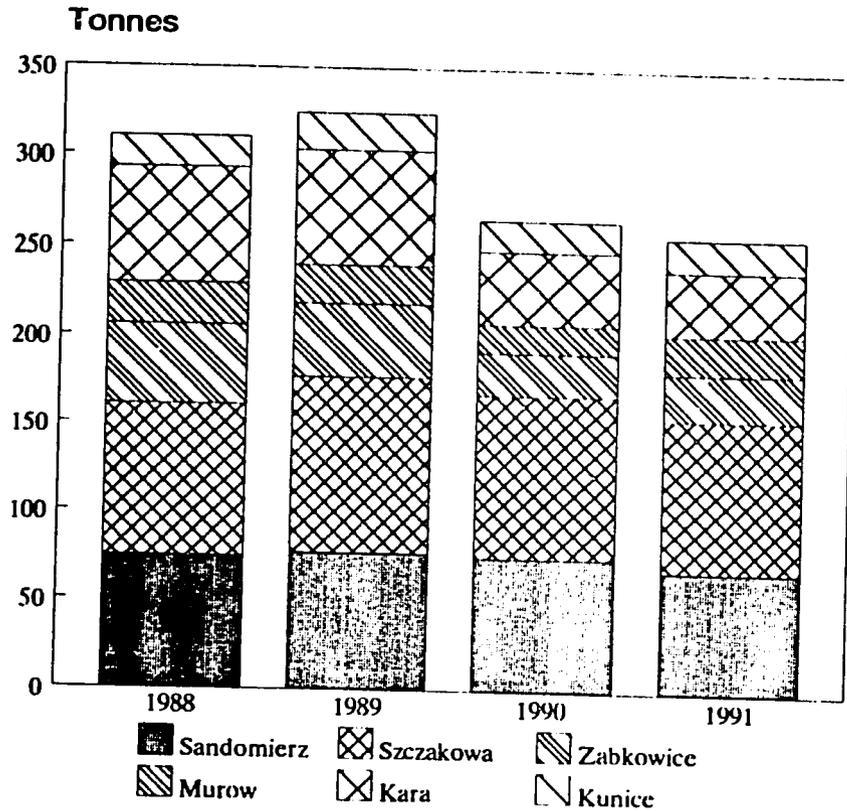


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Flat Glass

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The industry has suffered severely in the current recession in terms of both tonnage sold and selling prices:



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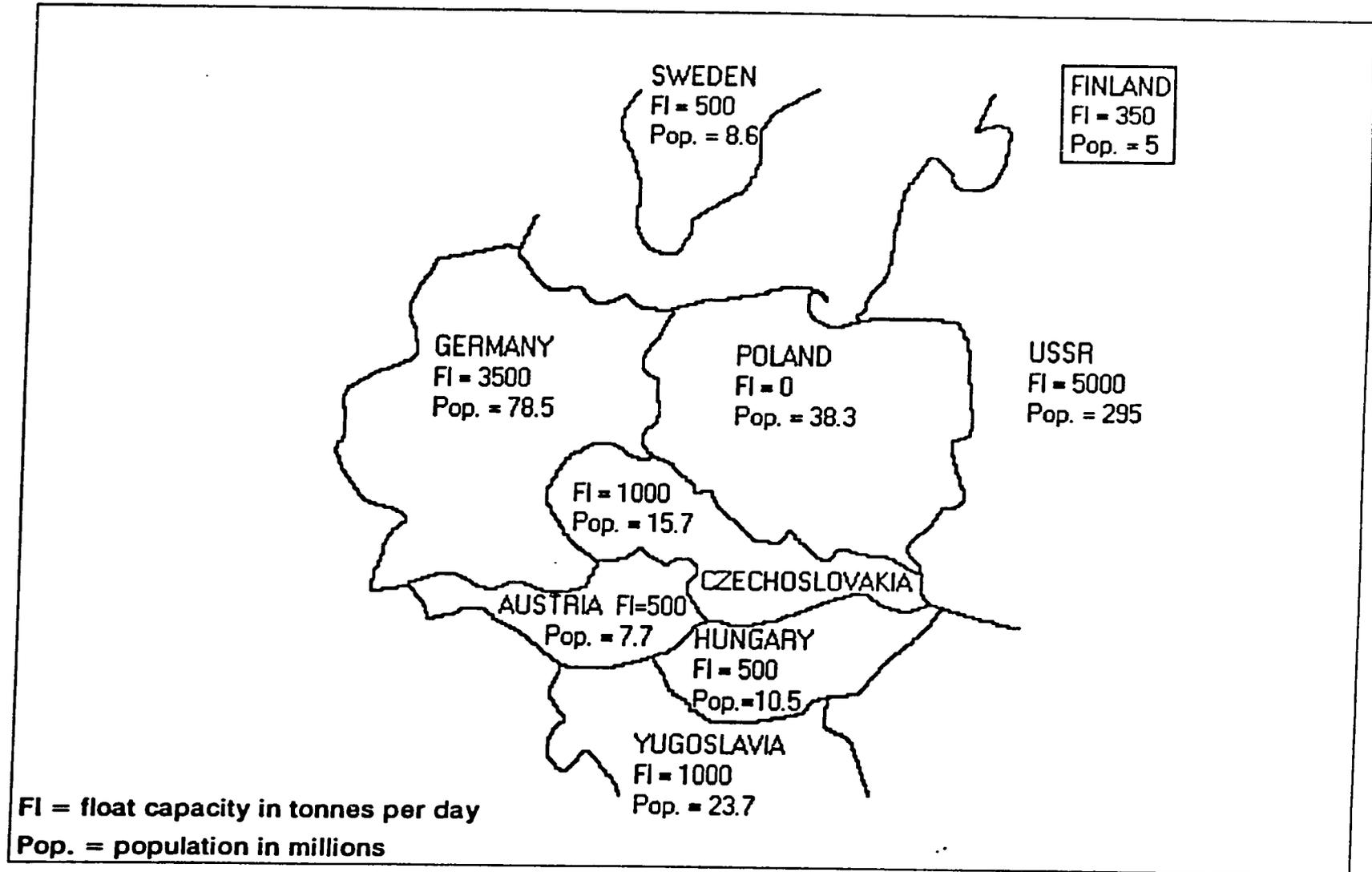
Source: IPG Analysis

The outlook for flat glass is one of fundamental technical change and is dominated by four main factors:

- **Polish float on stream during 1994**
- **The threat of substantial substitution of sheet by float imports**
- **The timing of sheet furnace repairs and the questionable advisability, and financial viability of furnace rebuilds**
- **The domestic market reaction to the introduction of float**

Variations to this outlook are primarily those of timing.

Float is available in all surrounding markets:



Flat Glass

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The present furnaces in the sheet glass plants will require major overhaul in the near future:

<u>Company & Furnace</u>	<u>Latest known repair date</u>	<u>Annual Sales (tons)</u>	<u>% Total Capacity</u>
Sandomierz #1 (P)	Sep 92	34,000	13%
Kara #3 (A)	Jan 93	32,100	12%
Zabkowice #2 * (F)	Mar 93	26,500	10%
Szczakowa #1 (P)	Jun 93	43,000	16%
Sandomierz #2 (P)	Jun 94	34,000	13%
Kunice #A (F)	Jun 94	13,600	5%
Murow (F)	Oct 94	22,300	8%
Kunice #B (P)	1995	4,500	2%
Szczakowa #2 (P)	1997	43,000	16%
Kara #2 (F)	1997	13,300	5%
TOTAL		<u>266,300</u>	<u>100%</u>

P = Pittsburgh
F = Fourcalt
A = Asahi

* Zabkowice #1 not operational

NOTE: Furnace repair dates can vary by up to 6 months. Decision to refurbish required 6 months in advance. Estimated cost of refurbishment is US\$ 4 to 6 million per furnace.

There will be serious employment impacts which must be addressed. The reduction in manning suffered during sheet to float transition in Belgium and the Netherlands was from 15,000 to 4,500, and in the U.K. from 13,500 to 3,000.

Current employment in sheet plants in Poland is:

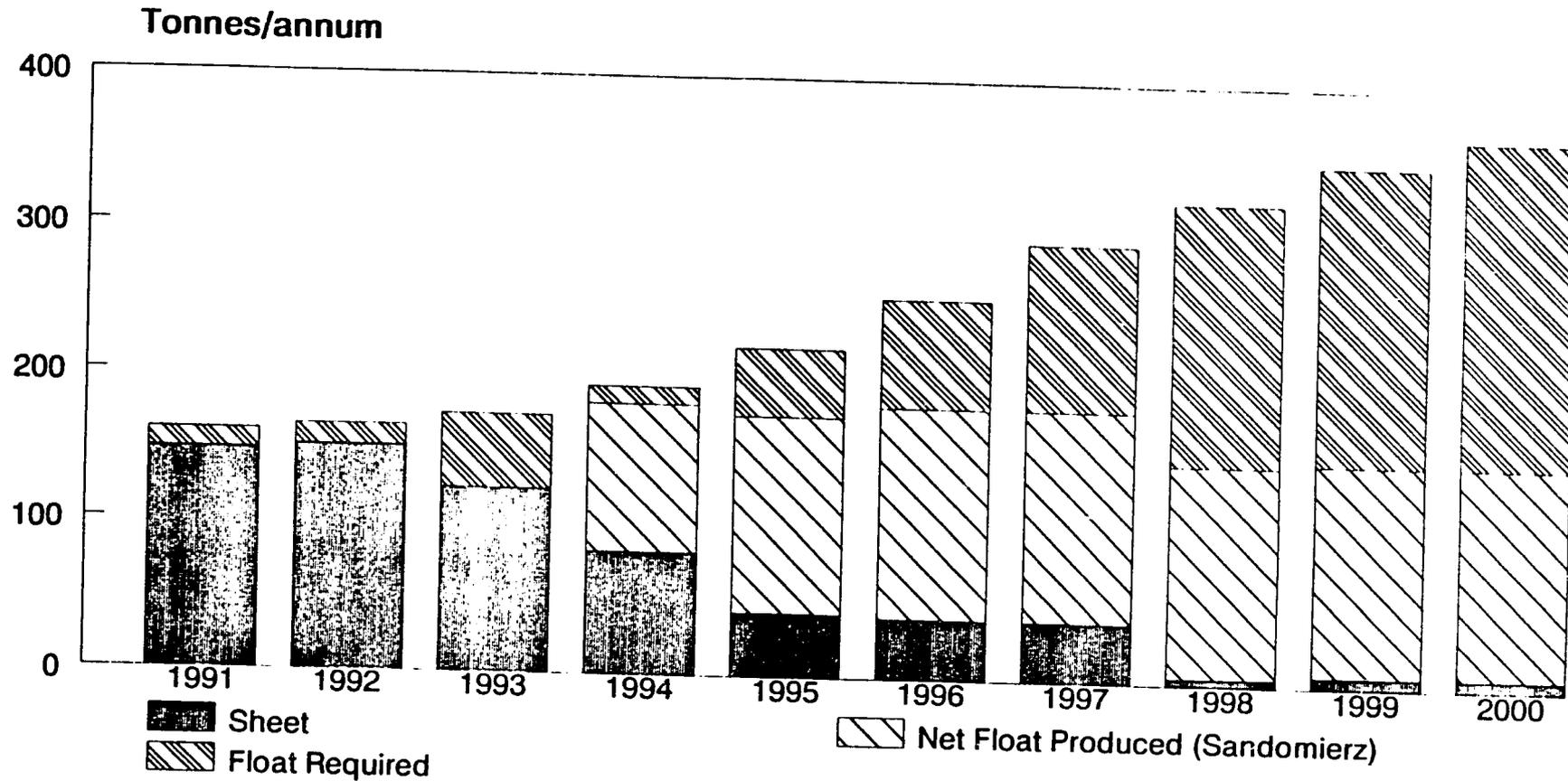
SANDOMIERZ	1,585
KARA	940
ZABKOWICE	835
SZCZAKOWA	1,500
KUNICE	566
MUROW	388
Total	<u>5,814</u>

It is vital that the changes in industry structure be managed so that alternative employment in downstream fabrication and distribution are maximized.

Flat Glass

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Float glass will rapidly transform the Polish market.



- Projections assume:
1. Growth to 386,000 tonnes by year 2000.
 2. No major sheet furnace refurbishment.

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Source: IPG Analysis

Flat Glass Sales in Poland Projections to Year 2000

(Figures in '000 tons)

	1991	1992	1993	1994 (2)	1996	1998	2000
Domestic Sheet Production	147	150	122	81	41	5	8
Domestic Float Production (1)	0	0	0	99	140	140	140
Total Domestic Production	147	150	122	180	181	145	148
Additional Float Required by Market	13	14	50	12	74	177	220
Total Domestic Demand	160	164	172	192	255	322	368

(1) Net of exports

(2) Bi-annual projections beyond 1994

Flat Glass

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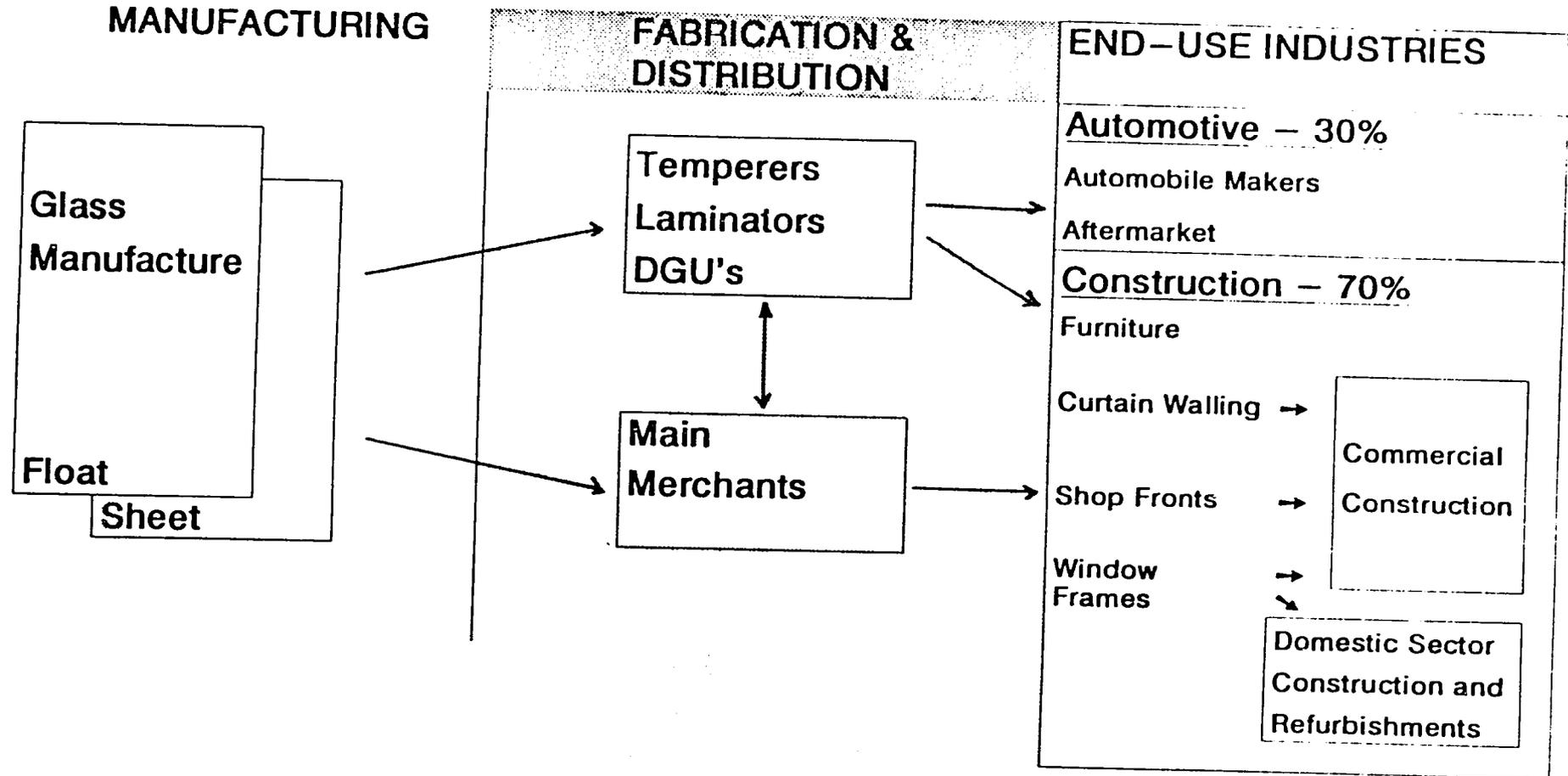
The following factors will influence the timing of the conversion to float of the Polish glass market. These should be considered in the context of the current severe recession which favors sheet but which will not last throughout the period under review.

LONGER TERM (Approx. 10 Years)	RAPID (Approx. 5 Years)
<p data-bbox="97 509 592 556">Lower current sheet prices</p> <p data-bbox="97 603 819 729">Continued acceptance by Polish public of lower quality glass in windows (based on price criteria)</p> <p data-bbox="97 776 1002 831">Employment issues at sheet manufacturing plants</p> <p data-bbox="97 862 646 909">Absence of legislative support</p> <p data-bbox="97 948 948 1074">Costs of furnace repairs at individual plants, versus high capital cost to construct greenfield float plant</p>	<p data-bbox="1067 540 1735 588">Float quality, led by window industry</p> <p data-bbox="1067 627 1778 705">Poland one of last remaining European sheet markets</p> <p data-bbox="1067 760 1832 838">Active marketing by float importers and by Polish float producer</p> <p data-bbox="1067 885 1714 964">More efficient/lower costs of float in distribution system</p> <p data-bbox="1067 1019 1638 1066">Diminishing availability of sheet</p> <p data-bbox="1067 1105 1908 1199">Increasingly competitive float price, influenced by higher productivity and lower energy usage.</p>

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There is good scope for development in the fabrication and distribution sector. Its value added products can make a major contribution to exports.

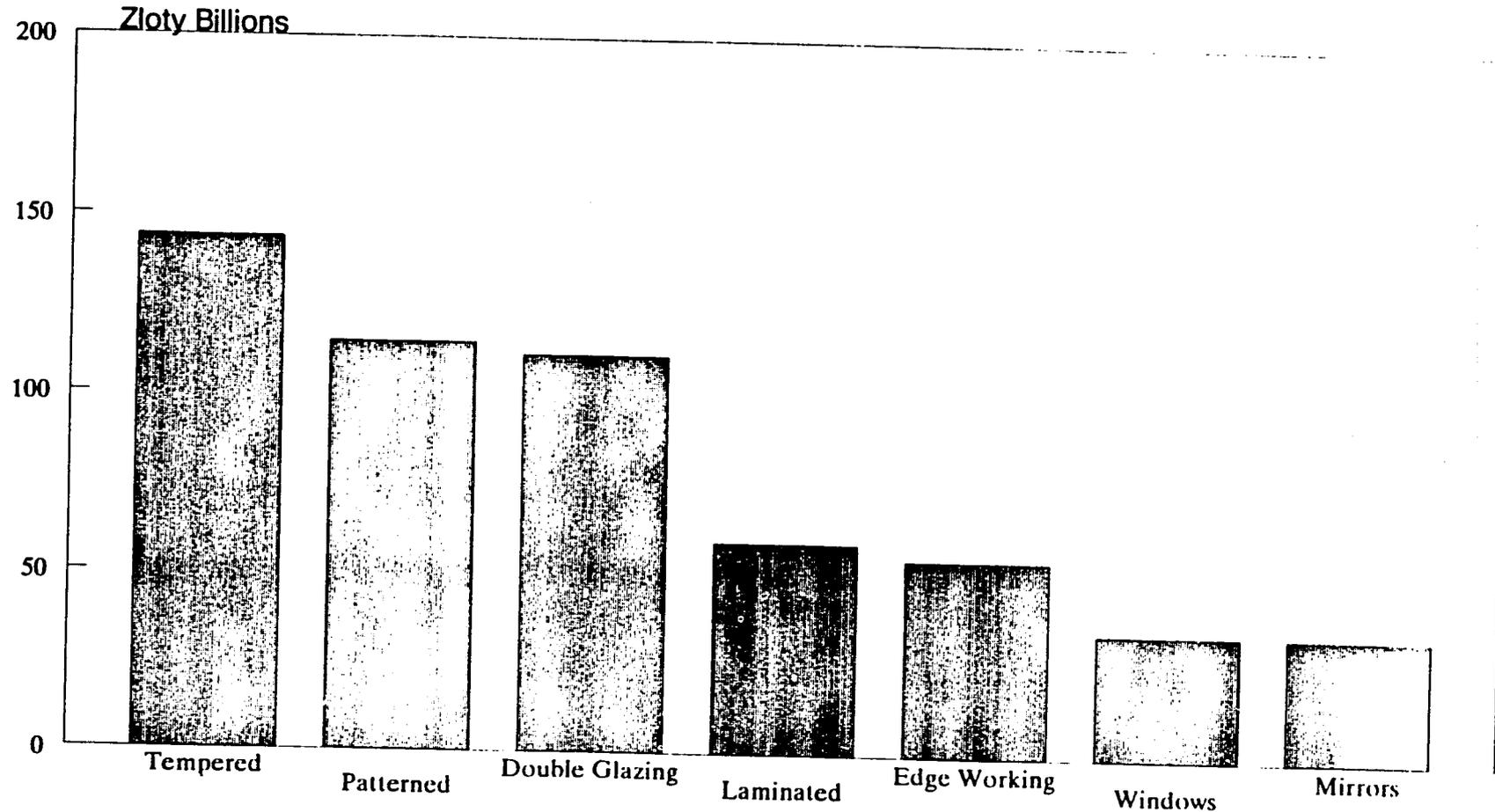


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Polish sheet glass manufacturers already produce a variety of fabricated products.



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Source: IPG Analysis

Flat Glass

March 1992

There are clear opportunities for sheet companies to upgrade, expand and diversify their existing fabrication activities.

	Trade (1) Distrib.	Edge Working	Flat Temper	Enam- elling	Auto Temper	Auto Laminate	Flat Laminate	Mirrors	DGU (2)	Window Frame
	<----- SAFETY GLASS ----->									
SANDOMIERZ			●			●	○		●	
SZCZAKOWA		●	○		○				●	●
JAROSZOWIEC			●	●					●	
ZABKOWICE	○	●	○						●	
KARA	○	●					○*		●	○
KUNICE		●			●				●	
MURCOW										
KRAKSKLO	○	●						●		○

● Existing

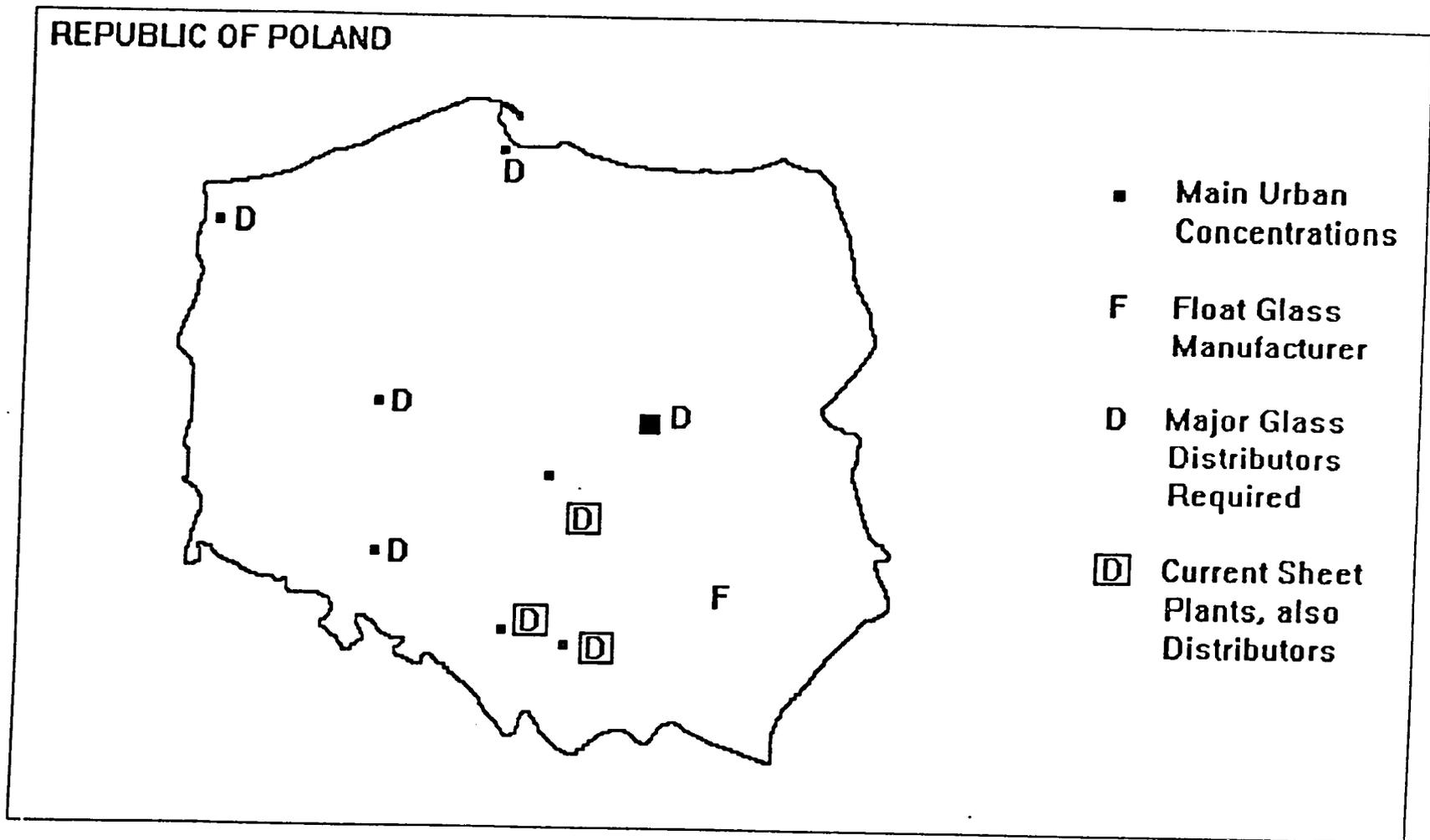
○ Potential

* Security Glass

(1) "Trade" Distribution defined as local and/or national branch wholesaling

(2) Specialization potential in DGU's (i.e., commercial, trade, direct selling with frames)

Every major city could support a distribution facility and, in due course, a tempering facility. These facilities should be established either by existing sheet enterprises or private entrepreneurs.



Legislative Support

The challenges faced by the Polish industry have not been successfully met in Western Europe without legislative support:

- (1) Safety glazing codes of conduct in buildings**
- (2) Use of double glazing**

Significant benefits are derived from such legislation:

- Environmental aspects and energy savings**
- Building and public safety considerations**
- Preservation of employment in the glass industry**

Alternative strategic scenarios for flat glass are:

- **Nonintervention, letting industry participants play out their own roles.**
- **Reinvest in and sustain sheet glass manufacture.**
- **Assist the sheet glass companies to refocus on fabrication and distribution activities or into niche market production.**

Scenario 1: Nonintervention

ADVANTAGES	DISADVANTAGES
<p data-bbox="306 357 846 404">Minimal short-term cash costs</p> <p data-bbox="300 475 853 639">Market forces totally free to determine fate of participants in the industry and its contribution to Polish economy</p>	<p data-bbox="981 373 1810 471">Sheet producers will all tend to identify and concentrate on similar markets (i.e., 2mm sheet)</p> <p data-bbox="981 490 1661 620">Insufficient resources will be devoted to long-term solutions which may involve difficult changes</p> <p data-bbox="981 655 1704 738">Enhanced risk of serious company failures over the long term</p> <p data-bbox="981 773 1598 859">Likely lead to market domination by Sandomierz-Pilkington joint venture</p>

STEPS REQUIRED:

- Advise management and workers that they need to devise own strategies for survival.
- Wind down privatization programs.

RECOMMENDATION

- Little to recommend as longer term crisis potentially formidable, with needless loss of competitive domestic market.

Scenario 2: Reinvestment in sheet facilities

ADVANTAGES	DISADVANTAGES
<p>Employment preserved short term</p> <p>Possible float import savings over short term</p> <p>Exports as long as Polish sheet glass remains competitive</p>	<p>Investments likely will not be economically viable</p> <p>Risk waste of resources in extended search for finance</p> <p>Potential for massive failures</p> <p>Long-term reduction of industry beyond that implicit in other scenarios</p>

STEPS REQUIRED:

- Secure funds of between \$40m–\$60m required for up to 10 furnaces over 5 years.
- Declare industrial policy to reinvest in sheet manufacturing.
- Impose significantly higher import duty for protection from float.

RECOMMENDATION

- A very high risk scenario not recommended in light of the sheet to float transition in other markets.

Scenario 3: Refocus on fabrication and distribution, with selected development of production for niche markets

ADVANTAGES	DISADVANTAGES
<p>Company strategies prepared and cash resources allocated for float onset</p> <p>Potential for external investment</p> <p>Preservation of some capacity and exports in specialist areas</p> <p>Potential for creation of modern distribution infrastructure</p>	<p>Earlier emergence of employment issues</p> <p>Problems managing the inevitable changes in a manner which will enable the industry to emerge truly competitive in European markets</p> <p>Marginal short term float import increase as sheet production declines</p>

STEPS REQUIRED:

- Companies encouraged to prioritize and devote all available cash flow to developing down-stream activities.
- Development of management structures and techniques to European standards.
- Early legislative support to promote change and to motivate the industry and investors.

RECOMMENDATION

- The least risk, highest long term employment option with greatest potential for inflow of foreign capital and technical know-how.

The central recommendations of this report presuppose that the Polish market will rapidly convert to float. It is predictable that:

- **Led by the highly competitive double glazing industry, which already imports float, the Polish construction industry and consumers will relatively quickly require float's improved quality.**
- **No external source of finance will be found to invest in sheet facilities.**
- **Polish glass manufacturers will substitute float for sheet to maintain their substantial glass fabricating activities at the end of furnace lives, if not before.**
- **Highly competitive markets will emerge upon the introduction of float to Poland. While advantageous to the consumer, the intense competition will result in extensive attrition of cash resources in surviving sheet companies.**

Whatever the rate of change, the recommendations for the industry to adapt to the change remain valid.

Flat Glass

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The Polish flat glass segment includes the following enterprises:

	1991 Sales Zl MM	1991 Pre-tax Profit Zl MM	Debt 12/91 Zl MM	Employees
Sandomierz	386,912	21,036	40,303	1,500
Szczakowa	332,263	44,670	78,187	1,500
Jaroszowiec	158,486	10,608	9,800	538
Zabkowice	130,707	3,076	21,435	835
Kara	120,045	18,276	7,000	940
Kunice	84,361	3,875	2,086	586
Murow	79,958	7,495	23,628	388
Krakszko	45,330	4,142	800	188

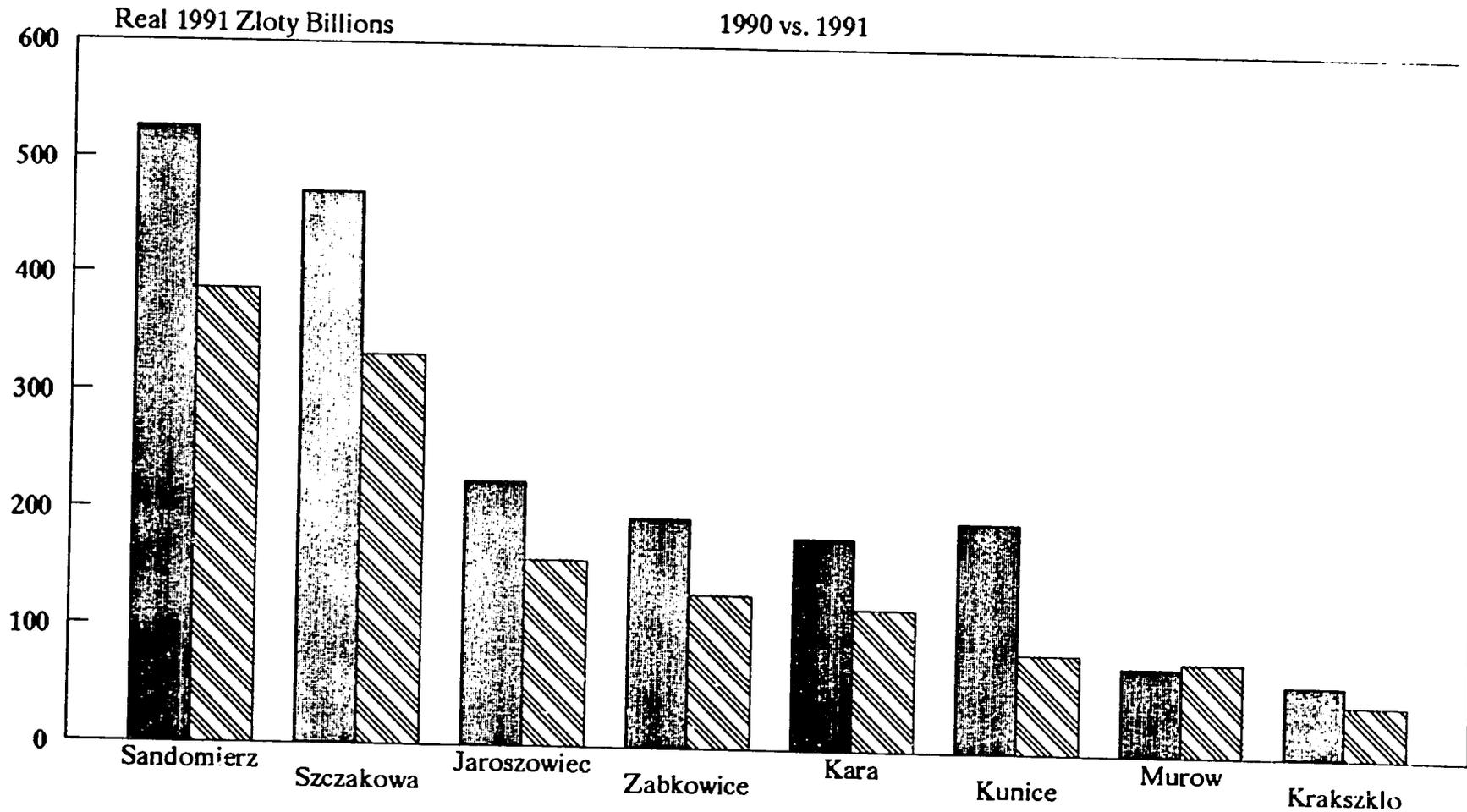
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Source: Company F-01, F-02's

Flat Glass

March 1992

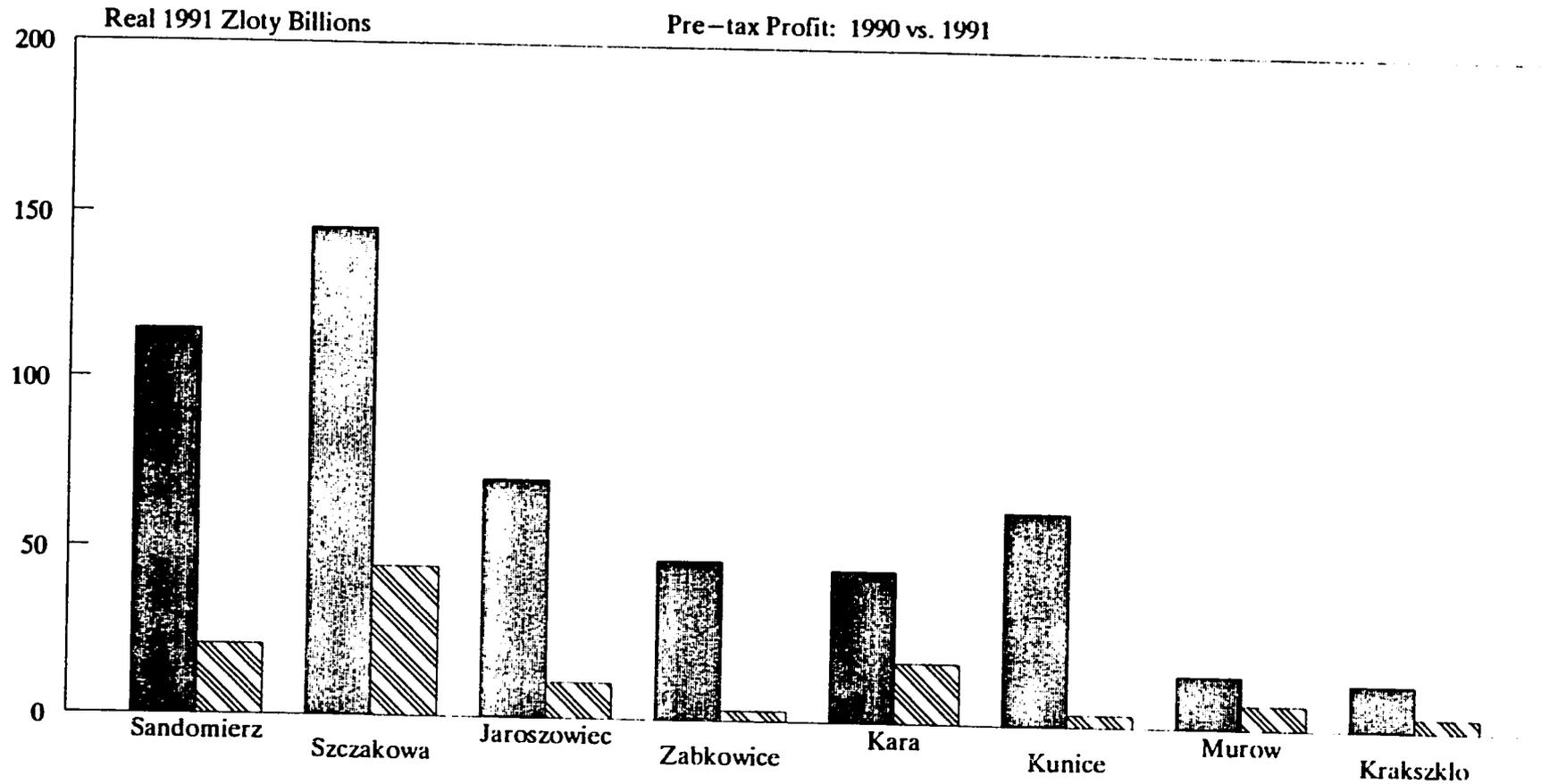
The industry is led by the two Pittsburgh process firms. Sales by all companies have been severely affected by the recession.



Price Waterhouse – IPG

Source: Company F-01's

Despite severe setbacks, the companies remain profitable.



Price Waterhouse – IPG

Source: Company F-01's

Flat Glass

March 1992

SANDOMIERZ

'91 Sales:	ZI 387 B
Employees:	1500
Products:	Sheet, DGU, Tempering, Laminating

Key Factors

- One of two major producers of Pittsburgh sheet glass in Poland
- Sole Polish producer of laminated glass for automotive windshields sold to FSO, FSM
- Largest Polish producer of tempered glass
- Foundation and frame standing for float glass plant

Recommendation

Joint Venture

- Negotiations underway with Pilkington to establish joint venture for construction of the first float glass plant in Poland
- Technological support essential

Steps Required

- Continue to serve as advisor to the Ministry of Industry and the Ministry of Privatization in the negotiations with Pilkington

Flat Glass

March 1992

SZCZAKOWA

'91 Sales:	ZI 332 B
Employees:	1500
Products:	Sheet, Tempering, DGU, Window Frames, Drinkware

Key Factors

- Large Pittsburgh sheet manufacturer, with substantial investment in fabrication
- Significant investment (US\$ 6 MM) in toughening furnace for automotive market, due to commence operations in second half of 1992
- Management in transition
- Severe liquidity problems, high debt (ZI 78 B)

Recommendation

Restructure/Trade Sale

- Cash flow from sheet to be utilised to enhance fabrication operations
- Technical, marketing and financial input required from fabricator joint venture partner

Steps Required

- Recommend immediate actions to improve liquidity (i.e., inventory liquidation)
- Major efficiency audit on overheads & manning to improve long-term viability
- Assist development of production quality standards of DGU's & of sales of window frames
- Consider market and optimum production location for drinking glasses (tumblers)
- Prepare company for sale, including legal and environmental audits

Flat Glass

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JAROSZOWIEC

'91 Sales:	Zl 158 B
Employees:	538
Products:	Patterned/Wired, Tempering

Key Factors

- Sole Polish supplier of patterned glass, a long-term declining market
- Record of profitability and competitive cost structure
- Lacks comprehensive marketing and sales strategy
- Good toughening facilities for construction industry

Recommendation

Restructure/Mass Privatization Program

- Develop comprehensive and focused marketing and sales strategy
- Company does not need infusion of capital or management

Steps Required

- Perform market analysis
- Design sales and marketing program
- Develop product costing program to complement aggressive marketing
- Submit company to MPP

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Flat Glass

March 1992

ZABKOWICE

'91 Sales:	ZI 131 B
Employees:	835
Products:	Sheet, DGU

Key Factors

- Little future for sheet facilities, without injection of specialized, extra-thin 2mm technology
- Long term DGU potential for commercial market
- Installing manufacturing line for fiber glass insulation; minimum of ZI 6 B required to complete investment

Recommendation

Restructure/Trade Sale

- Success of firm largely contingent on financing 2mm sheet glass proposal
- Current sheet glass proposal contingent on privatization of the company

Steps Required

- Major efficiency audit on overheads and manning to improve long term viability
- Assess feasibility of 2mm sheet glass proposal
- Develop DGU marketing techniques to attract specifiers and architects
- Investigate viability of fiber glass operations
- Explore and investigate investor possibilities

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Flat Glass

March 1992

KARA

'91 Sales:	ZI 120 B
Employees:	940
Products:	Sheet, DGU

Key Factors

- Lack of realism by management
- Severe overmanning, poor housekeeping
- Weak position in sheet glass market
- Furnace due for repair in January 1993
- Good distribution potential

Recommendation

Mass Privatization Program

- Meets MPP requirements
- Interest in being privatized

Steps Required

- Investigate any possible investor interest
- Review plan for financing possible furnace overhaul
- Submit company to MPP

Flat Glass

March 1992

KUNICE

'91 Sales: Z! 84 B

Employees: 586

Products: Sheet, Antisol, Automotive Tempering

Key Factors

- Good organization, European standard manning in automotive tempering division
- Lack sales volume and European market access for automotive tempered products
- Two site locations; one site devoted to Fourcalt furnace due for repair in 1994
- Low prospects for ongoing sheet manufacturing beyond current furnace lives
- Joint-stock company

Recommendation

Trade Sale

- Access to capital, European markets and technical know-how
- Restructuring company could enhance selling prospects

Steps Required

- Review of production capability and markets for specialized tinted glass
- Consider opportunities for direct export to European automotive aftermarkets
- Improve management control systems
- Develop realistic strategy for dealing with Fourcalt facilities
- Complete legal and environmental audits
- Conduct valuation and prepare information memorandum
- Solicit investors and negotiate transaction

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Flat Glass

March 1992

MUROW

'91 Sales:	Zl 80 B
Employees:	388
Products:	Sheet (high light transmission), DGU

Key Factors

- Good development of export markets in sheet for horticultural market and DGU
- Fourcalt furnace due for repair in October 1994
- Second DGU line set up as joint venture with Vitropol (Polish trade company)
- Handicap of ancient production facilities
- Innovative management

Recommendation

Restructure/Trade Sale and Asset Leasing

- Existing and potential investor interest in DGU facilities
- Profitable sheet glass operation, contingent on maintenance of major export contracts

Steps Required

- Develop plan for separation of businesses
- Purchase stake of joint venture partner in DGU facility
- Explore and develop investor interest in DGU business
- Implement asset leasing plan for sheet business

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Flat Glass

March 1992

KRAKSZKLO

'91 Sales:	Zl 45 B
Employees:	188
Products:	Mirrors, Edge Polishing

Key Factors

- Dominant position in domestic mirror market
- Low cost export potential for mirrors and processed mirrors
- Quality to European standards, despite old production equipment

Recommendation

Trade Sale

- Strong investor interest
- Access to new silvering line
- Management and work force in favor of trade sale

Steps Required

- Complete legal and environmental audits
- Solicit investors and negotiate transaction

Flat Glass

March 1992

GNIEZNO, WALBRZYCH

'91 Sales:	ZI 54 B (Walbrzych, 9/30/91); Not Available (Gniezno)
Employees:	0 (Walbrzych); 31 (Gniezno)
Products:	Patterned/Wired, Vitrolite Panels (Walbrzych); Mirrors (Gniezno)

Key Factors

- Walbrzych currently being liquidated under Article 19 of the bankruptcy law
- Gniezno has lost all export customers, all permanent large domestic customers, and was denied access to bank loans in late 1990; drop from 150 to 31 employees

Recommendation

Liquidation

- Liquidation of Walbrzych was announced in July, 1991, and is well underway
- Gniezno resources could be used for new business; company could possibly be liquidated at no cost to founding body since current assets exceed current liabilities

Steps Required

- No steps required for either Walbrzych or Gniezno
- Vovoidship is supervising reduced operations at Gniezno

Flat Glass

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Privatization Recommendations Summary

	Public Offering	Trade Sale	Mass	Joint Venture	Asset Leasing	Asset Sale
Sandomierz		○		●		
Szczakowa		●	○			
Jaroszowiec			●		○	
Zabkowice		●	○			
Kara			●		○	
Kunice		●			○	
Murow		●			●	
Krakszklo		●		○		
Walbrzych						●
Gniezno						●

● Recommendation

○ Alternative

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Flat Glass

March 1992

Summary of investor interest as of March, 1992:

	Known Interest	Comment	Development Potential
SANDOMIERZ	Pilkington (UK)	Detailed discussions on joint venture for float in progress	Excellent
SZCZAKOWA		Dependent on success of restructuring	
JAROSZOWIEC		Foreign investment interest probably small	
ZABKOWICE		Technical assistance talks Glaverbel (B) on 2mm	Possible Polish consortium
KARA	Concorde (UK)	Investor interest must be qualified	
KUNICE	PPG (USA), Pilkington	Current interest only in tempering facilities	Reasonable
MUROW		DGU joint venture in place with Vitropol (PL)	
KRAKSZKLO	Aurys (F), South Bank (UK), Concorde, Finnmirror (SF)	Preliminary negotiations	Good

CONCLUSION

- **The Polish market will rapidly convert to float over the next 5 years.**
- **Poland's first float glass plant will start production at Sandomierz in 1994.**
- **Szczakowa, Zabkowice, Kara, Kunice and Murow (all current sheet manufacturers) should direct their business strategies and resources toward converting their businesses to fabrication, distribution and/or niche market production.**
- **Jaroszowiec should develop an aggressive marketing strategy to monopolize the declining patterned glass market in Poland.**
- **Kraskzko should pursue trade sale opportunities to upgrade and expand its mirror production business.**
- **Gniezno and Walbrzych will be liquidated.**

III. Consumer and Technical Glass

Consumer and Technical Glass

March 1992

Segment encompasses three different activities:

	No. of Companies	Sales (ZL B)	Employees	% Hand- Made	% Export
Crystal: Tableware and giftware; contains lead and tends to be highly cut	4	321	4,084	81%	60%
Glassware: Tableware and giftware (vases, ashtrays)	5	295	5,092	79%	44%
Lighting/Other White and clear globes; frit (ceramics); tubing	3	174	1,680	77%	42%

Segment excludes two leading companies in the industry:

- **Krosno – 50% of glassware industry sales**
- **Irena – 26% of crystal industry sales**

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Executive Summary

- **Competitive advantage is low labor rates**
 - **Advantage will disappear gradually with wage inflation**
- **Critical success factors include developing marketing and design functions and improvement of quality and productivity**
- **A consumer glass industry that is focused on handmade products for export is viable in long term as critical success factors may be addressed through:**
 - **Direct investment by a Western glassware company or**
 - **Intensive education of management, followed by active implementation**
- **Both of these pathways will take time**
 - **Low probability of direct investment due to severe crystal industry conditions**
 - **Degree of management education required**
- **However, time is limited in the crystal industry**
 - **Crystal companies are on verge of bankruptcy**
 - **Potential competition from the Far East**

Crysta! Industry Trends

- **Very depressed market – 1990 worldwide sales of \$1.1 billion were flat as against 1989; 1991 worldwide sales declined by an estimated 10–20%**
 - **handmade crystal sales were particularly depressed – down 5–15% in 1990 and 15–25% in 1991**
 - **automatically produced crystal sales increased in 1990 but were flat in 1991**

- **Market conditions have resulted in plant closures in certain high wage countries (Germany, UK); expansion plans have been delayed**

- **International trade is primarily in handmade products reflecting the advantage of basing products in low wage countries given the high labor content of manufacturing (50% of total costs in the West)**
 - **typically, high and medium–priced crystal production has been shifting to low cost European countries**
 - **however, production expected to shift to Far East within 5 years placing pressure on Eastern European manufacturers**

Poland's crystal industry is severely depressed

- Total 1991 sales of Poland's six major producers estimated at 440 billion zlotys
 - approximately 81% is hand-made
 - approximately 60% is exported
- Reflecting worldwide market conditions, Poland's crystal industry was severely depressed in 1991
 - domestic demand declined significantly
 - export price increases did not match local inflation
 - profitability has fallen dramatically in the past two years

	1990	1991	% change
Domestic			
Volume (tons)	3,091	2,225	(28%)
Sales (MM 1991 ZI)	188,732	119,501	(37%)
Avg revenue/Ton (MM 1991 ZI)	61.06	53.71	(12%)
Export			
Volume (tons)	3,768	4,050	7%
Sales (MM 1991 ZI)	273,751	195,813	(28%)
Avg revenue/Ton (MM 1991 ZI)	72.65	48.35	(33%)
Net Income Margin	4.0%	(18.1%)	

Domestic, Export, and Net Income figures only for enterprises in PW – IPG study

A significant portion of the crystal industry is on the verge of bankruptcy.

Violetta, Julia, Sudety, and Lubartow –

- **Represent 57% of crystal industry sales**
- **Significant negative cash flow in 1991**
 - **low operating profitability exacerbated by high state payments, high interest costs, and high penalty rates**
- **Liquidity problems will continue**
 - **major capital expenditures have been delayed and are becoming imperative**

Poland's competitive advantage is low labor rates

Strengths

- **Low wage rates relative to West**
 - Polish average \$250/month
 - Western average \$1,350/month
- **Focused on medium quality handmade segment which is experiencing highest growth in international trade**

Weaknesses

- **No internal marketing function**
 - dependent on Minex
- **Very limited design capabilities**
 - Currently focused on traditional designs for which demand is stagnant
- **No product branding**
- **Low/medium product quality**
- **Small size – less than \$10 MM in sales**

Poland's future competitive advantage must rely on more than low labor rates.

- **Existing competitive strength – low labor rates – will gradually disappear due to wage inflation**

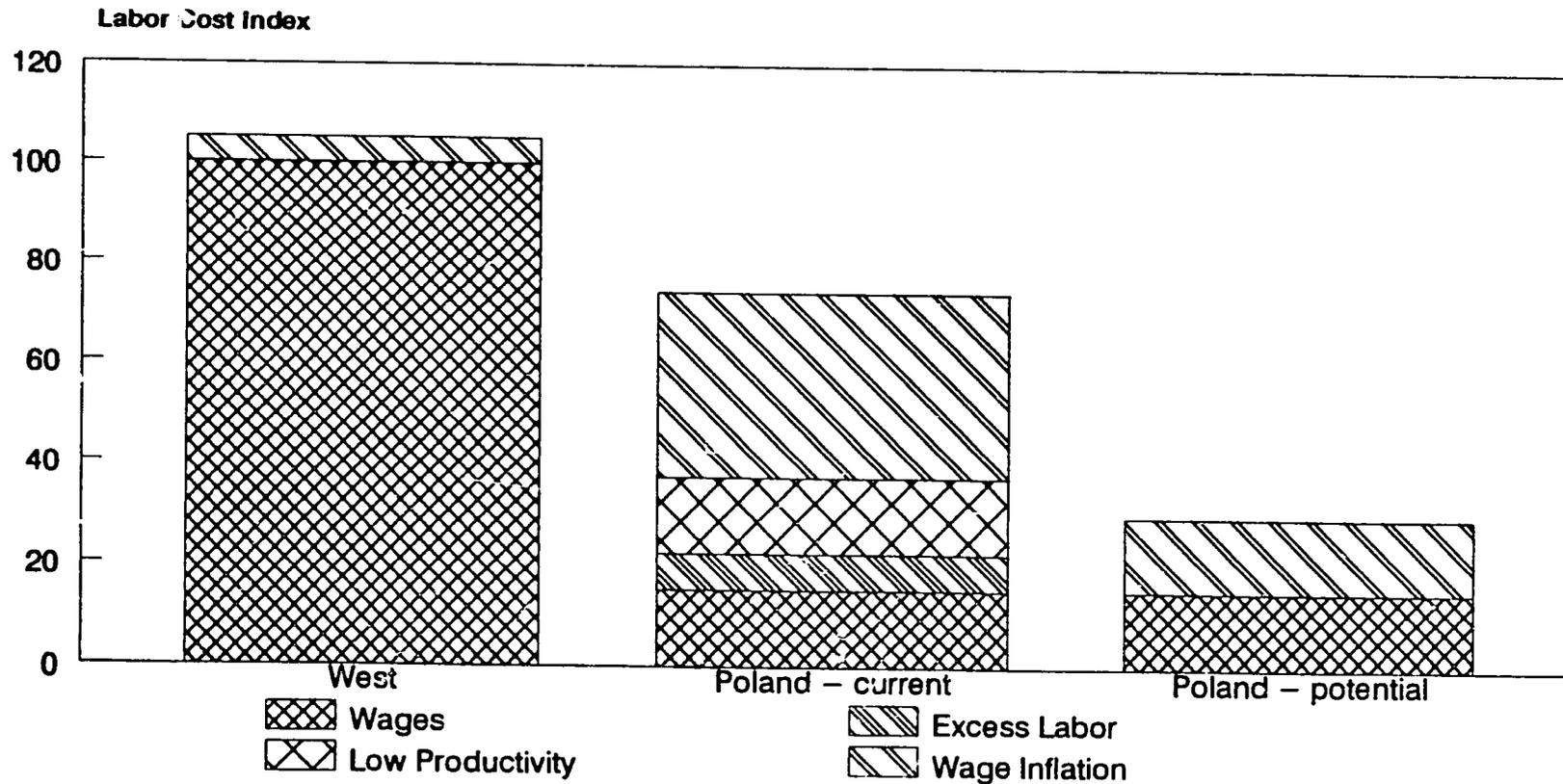
- **The critical success factors for long-term industry viability are therefore:**
 - **solutions to current weaknesses – marketing, design and quality**
 - **improvement in productivity to match Western standards**

- **These critical success factors should be considered in evaluating the different strategic scenarios:**
 - **Non intervention: companies devise their own strategies for survival**

 - **Individual Privatization: selected crystal manufacturers acquire Western expertise through a trade sale**

 - **Creation of a Crystal Holding Company: ownership to include a Western crystal manufacturer for expertise**

Improvement in productivity and reduction in workforce is critical, particularly given expected wage inflation after privatization.



Price Waterhouse - IPG

Scenario 1: Non intervention

ADVANTAGES	DISADVANTAGES
<p>Minimal short-term cash costs</p> <p>Market forces totally free to determine fate of industry participants</p>	<p>High risk of company failures</p> <p>Continued reliance on inefficient or suboptimal marketing channels</p> <p>Little opportunity for improved competitive position</p> <p>Little potential for reduced overhead</p>

STEPS REQUIRED:

- **Advise management and workers that they need to devise own strategies for survival**
- **Encourage establishment of voluntary manufacturers' association**
- **Scale down privatization programs**

RECOMMENDATION

- **Little to recommend as short-term crisis is formidable. Majority of industry may collapse during initial period of inaction.**

Scenario 2: Individual Privatization (Trade sale)

ADVANTAGES	DISADVANTAGES
<p>Select crystal manufacturers will receive Western capital and expertise</p> <p>Guarantees long-term survival for select enterprises</p>	<p>A number of enterprises with long-term potential may not succeed in arranging a trade sale due to severely depressed industry conditions</p> <p>Companies are close to bankruptcy and may fail before industry recovery, resulting in the disappearance of large portion of the segment</p>

STEPS REQUIRED:

- Seek and support all investment opportunities
- Permit immediate privatization by trade sale where applicable

RECOMMENDATION

- Proceed, but explore Holding Company alternative if little investor interest found

Scenario 3: Crystal Holding Company

ADVANTAGES	DISADVANTAGES
<p>All participating crystal manufacturers will receive Western capital and expertise</p> <p>Improves industry cost structure by eliminating duplicate overhead</p> <p>Provides opportunity for long term survival for all participating companies</p> <p>May aid access to international financial sources</p>	<p>Practical and political issues associated with forced compliance for some management</p> <p>Western manufacturers likely to prefer ability to select individual crystal enterprises</p> <p>Risk to government of lost investment</p>

STEPS REQUIRED:

- Identify potential Western crystal manufacturers as technical partner
- Develop acceptance of Holding Company concept among crystal producers
- Coordinate with founding bodies, especially those exercising control over enterprises
- Develop final structure and role of Holding Company
- Provide interim financial assistance to participating companies, as necessary
- Solicit interest from various financial sources

RECOMMENDATION:

- Continue development of plan and acceptance of concept
- Contact Western crystal manufacturers regarding interest

Consumer and Technical Glass

March 1992

The Polish crystal industry consists of the following enterprises:

	1991 Sales ZI MM	1991 Pre-tax Profit ZI MM	Debt 12/91 ZI MM	Employees
Violetta	116,865	(21,416)	22,538	1,600
Sudety	92,288	NA	NA	1,081
Zawiercie	72,179	3,682	24,429	800
Julia	39,655	(6,661)	1,801	603
Irena	164,328	13,123	14,050	1,619

Price Waterhouse – IPG

Violetta

'91 Sales: ZI 117 B

Employees: 1,600

Products: Handmade crystal

Key Factors

- Overall, may be considered the highest quality crystal manufacturer in Poland
- Good product range with high export percentage
- Western grade facilities
- But very poor operating margins – among the lowest of major crystal manufacturers – due to excess employees and high material costs
- Management has little understanding of issues and is unwilling to make difficult decisions
- Export marketing needs improvement – although strong presence in US market, customer base is 'down market' with dependence on one customer
- Liquidity crisis

Recommendation

Trade Sale

- Provides liquidity, marketing and management expertise
- Level of foreign interest is uncertain due to poor financial state of most crystal manufacturers
- Transaction may not occur in time to solve liquidity problems
- Workers' council has given approval for mass privatization only

Alternative – Holding Company

- Provides liquidity, marketing and management expertise
- May reduce level of foreign interest as other companies in Holding Company may be less attractive
- However, transaction may not occur in time to solve liquidity problems

Violetta

Steps Required

- **Coordinate with Walbrzych vovoidship, which is maintaining a close watch**
- **Evaluate current management; improve immediate liquidity (increase bank lines, moratorium on State payments, reduce labor)**
- **Commence active sale program**
- **Simultaneously, develop Holding Company concept**

Consumer and Technical Glass

March 1992

Julia

'91 Sales: ZI 40 B
Employees: 603
Products: Handmade crystal

Key Factors

- Above average product quality
- Very poor operating margins – inefficient use of facilities, excess employees
- Severe liquidity crisis arising from restricted bank credit – immediate capital expenditures needed to continue operations
- Management in flux due to changes recently implemented by vovoidship
- Very weak export marketing expertise and little knowledge of customers
- Suboptimal plant layout and assortment of facilities

Recommendation

Restructure

- Jelenia Gora vovoidship is in process of selecting an "improvement plan" and new management

Trade Sale

- Provides liquidity, investment capital, marketing and management
- Foreign interest is very uncertain and transaction will not occur in time to solve liquidity problems

Alternative – Holding Company

Steps Required

- Continue to provide advice to Jelenia Gora vovoidship
- Improve interim liquidity (increase bank lines, moratorium on State payments)
- Commence active sale program once restructuring is completed

Price Waterhouse – IPG

Consumer and Technical Glass

March 1992

Zawiercie

'91 Sales:	Zl 72 B
Employees:	800
Products:	Automatic/handmade crystal

Key Factors

- Strong product line in handcut automatic stemware where there is less competition
- Aggressive new Director with foreign experience
- Satisfactory operating performance
- Below average product quality
- No marketing expertise
- Managerial level vacancies – technical and production directors

Recommendation

Trade Sale

- Provides marketing expertise and quality improvement
- Foreign interest may be weak due to market niche (automatic)
- Application for transformation has not been submitted, but management open to foreign investment

Alternative – Holding Company

Alternative – Asset Lease

- Less effective than foreign ownership but management capable of significant improvement themselves

Steps Required

- Commence active sale program

Consumer and Technical Glass

March 1992

Sudety

'91 Sales : Z1 93 B
Employees: 1,081
Products: Handmade crystal

Key Factors

- Some good production facilities – acid polishing
- Product quality historically good but has declined – may in part be due to management problems
- No management – under control of consultant to vovoidship
- No marketing and design expertise
- Heavy operating losses
- Excess assets

Recommendation

Asset Sale

- Company is under responsibility of vovoidship/consultant, who are proceeding with an asset sale program
- Permits separation of non–operating assets, which improves the level of investor interest

Alternative – Trade Sale

- Provides management, marketing expertise and quality improvement
- Level of foreign interest is unknown

Alternative – Holding Company

Steps Required

- Consultant to continue restructuring operating assets prior to conducting an asset sale scheduled for April
- Revisit Sudety to review impact of improvement program and potential for foreign interest

Price Waterhouse – IPG

Poland's Glassware Industry

- Total 1991 sales by domestic producers is estimated at 621 billion zlotys
 - approximately 79% is handmade
 - approximately 52% is exported
- Reflecting world-wide recession, sales by Poland's glassware industry failed to match inflation
 - domestic sales came under pricing pressure from the market leader, Krosno
 - profitability fell in 1991 after two years of relatively constant margins

	1990	1991	% Change
Domestic (B 1991 zl)	434.5	297.9	(31%)
Export (B 1991 zl)	454.1	322.8	(29%)
Net Income Margin	7.0%	(4.2%)	

- Poland's competitive position is similar to that in the crystal industry with the primary advantage being low labor rates
- However, low labor rate advantage is less significant:
 - labor content is lower
 - transportation costs (relative to value) are higher

Consumer and Technical Glass

March 1991

The Polish glassware industry consists of the following enterprises:

	1991 Sales ZI MM	1991 Pre-tax Profit ZI MM	Debt 12/91 ZI MM	Employees
Lubartow	100,255	(12,523)	26,010	2,149
Tarnow	84,169	11,985	10,416	917
Hortensja	53,057	(1,625)	3,900	1,260
Zabkowice	30,184	NA	2,500	388
Rozalia	28,097	NA	NA	378
Krosno	555,060	2,604	NA	4,800

Consumer and Technical Glass

March 1992

Tarnow

'91 Sales:	Zl 84 B
Employees:	917
Products:	Automatic and handmade glass

Key Factors

- Above average product quality and good designs – however, coloration prevents penetration of high end markets
- Good operating profitability and liquidity
- Good management
- Limited marketing capabilities
- Expanded into automatic tumbler market (domestic) which has overcapacity

Recommendation

Trade Sale

- Provides marketing expertise and quality improvement
- Expect company will be attractive to foreigners – have already received some indications of interest

Steps Required

- Formally clarify why Tarnow's transformation request was rejected by the Ministry
- Commence active sale program

Consumer and Technical Glass

March 1992

Rozalia

'91 Sales:	ZI 28 B
Employees:	378
Products:	Tableware and giftware

Key Factors

- Good product quality
- Focused product line
- No marketing or design expertise – dependent on one customer for both
- Low profitability

Recommendation

Trade Sale

- Currently in progress under responsibility of Arnold Hill – has received 2 bids (Minex; Geissler, the major customer)
- Marketing and design issues are most likely to be addressed in a sale to a foreign investor

Steps Required

- If requested, PW – IPG will participate in bid review
- If requested, PW – IPG will assist in locating other potential foreign investors

Price Waterhouse – IPG

Consumer and Technical Glass

March 1992

Hortensja

'91 Sales:	ZI 53 B
Employees:	1,261
Products:	Colored and clear glass

Key Factors

- Wide product range, including colored glass
- Good facilities with expansion capacity
- Very poor management – consider 'external' factors are solely responsible for poor performance; unwilling to make changes; unreceptive to advice
- Very poor operating profitability – high overhead
- Limited marketing and design capabilities

Recommendation

Restructure

- Improve quality and design; reduce overhead

Trade Sale

- Provides management, design and marketing capabilities
- Company may not be attractive to foreign investors given degree of operational improvement required
- Existing management could further complicate sale process

Alternative – Asset Lease

- Permits change in management

Steps Required

- Obtain agreement of management to perform restructuring
- Visit vovoidship to discuss financial condition and management issues
- Commence active sale program upon change in management

Price Waterhouse – IPG

Consumer and Technical Glass

March 1992

Lubartow

'91 Sales:	ZI 100 B
Employees:	2,149
Products:	Thermos, Glass & Tableware, Crystal

Key Factors

- One good product line – thermos
- Facilities are low quality and poorly organized – total of 7 plants with most producing all 4 product lines
- Wide product line and low product quality
- Management is uncomfortable with change – operating practices have remained the same for 20–30 years; dislikes market economy concept
- Facilities are remotely located

Recommendation

Asset Sale

- Weaknesses are primarily due to facility issues which are best addressed through individual plant sale – improves possibility of retaining some ongoing operations (e.g., thermos facility)
- Current operations are not viable in the long term

Steps Required

- Continue contacts with thermos facility's major customer, Markutec

Consumer and Technical Glass

March 1992

Zabkowice

'91 Sales: ZI 28 B
Employees: 378
Products: Giftware and drinkware

Key Factors

- **Some good quality equipment**
- **Apparent profitability**
- **Management has no business acumen – little understanding of how to address problems**
- **Poor quality product and unfocused product range**
- **Inefficiencies resulting from backward/ forward integration and downsizing of operations**
- **No marketing and design expertise**

Recommendation

Asset Sale

- **Separation into individual plants commenced in 1989, with one plant remaining and two under lease**
- **Two furnaces and related equipment in good condition and potentially attractive to domestic investors**

Steps Required

- **Revisit Zabkowice to verify apparent profitability**

Although demand for glass globe lighting is stagnant, Poland is in a good competitive position – production is continuing to move to low wage European countries

- **World wide demand is adversely affected by two trends:**
 - Consumer preference for halogen and recessed lighting
 - Competition from plastic
 - However, certain markets retain a traditional preference (e.g., Scandinavia)
- **Handmade globe production is gradually shifting from high wage Western countries (e.g., Italy, Germany), to lower wage countries such as Poland**

Poland's Competitive Position

Strengths

- **Low labor rates relative to Western countries**
- **High skill based relative to other low wage countries**

Weaknesses

- **Products are semi-finished and thus have lower margin potential than fully designed products**
- **Medium quality**
- **Limited marketing skills**
- **"Old fashioned" products**

Shipments by Poland's lighting globe industry in 1991 were relatively strong in both the domestic and export markets

- Total 1991 sales by Poland's two producers were 144 B zloty
 - approximately 41% is exported, up from 34% in 1990
 - approximately 77% is handmade
- Industry showed relative strength in 1991 in terms of volume:
 - Volume increased 25% on both the export and domestic markets
 - However, prices were down 35% in real terms

	1991 Sales Zl MM	1991 Pre-tax Profit Zl MM	Debt 12/91 Zl MM	Employees
Piensk	73,965	(3,950)	31,983	878
Bialystok	49,123	225	7,642	685

Consumer and Technical Glass

March 1992

Piensk

'91 Sales: Z1 74 B

Employees: 878

Products: Automatic and handmade globes

Key Factors

- Good product quality, but limited to traditional designs
- Proximity to major German customers
- However, extreme liquidity problems due to large equipment investment and poor operating profitability
- Poor operating profitability – high wage rates, excess assets, excess employees and problems with new equipment
- Weak export marketing – dependence on one major customer
- Minimal decorating capabilities
- New automatic equipment – weak market for intended products

Recommendation

Trade Sale

- Provides marketing and design expertise, permits production of finished as against semi-finished products, provides capital for liquidity and investment
- Investment by largest customer (Herner Glas) likely, provided debt for equity swap and reduction of State claims is negotiated
- Sale to another foreign investor extremely unlikely

Alternative – Asset liquidation

- Lower value realized due to costs and loss of skilled workers
- Herner will remain interested

Piensk

Steps Required

- **Continue negotiations with Herner Glas – letter of intent provided March 3, 1992**
- **Negotiate debt for equity swap with Piensk's banks with assistance from Herner Glas**
- **Coordinate with Ministry of Industry on issues of interim management**
- **Arrange interim liquidity (bank loans, moratorium on State payments) to ensure operations will continue during negotiations**

Consumer and Technical Glass

March 1992

Bialystok

'91 Sales:	Zl 49 B
Employees:	685
Products:	Handmade globes

Key Factors

- Aggressive management
- Good product quality but very broad range
- Some export marketing skills – 90% is direct
- Well positioned in strong Italian and Scandinavian markets
- Reduced profitability reflecting impact of production changeover and inefficiencies in facilities

Recommendation

Trade Sale

- Investment by customer provides fully completed products with higher design content
- Reasonable likelihood of implementation – largest customer (ATMA) has expressed a strong interest

Steps Required

- Continue providing information to ATMA and arrange meeting in late March

Consumer and Technical Glass

March 1992

Jelenia Gora

'91 Sales :	ZI 51 B
Employees:	117
Products:	Tubing/Frit

Key Factors

- **Historic operating profitability**
- **Potentially valuable real estate and buildings**
- **High cash balance**
- **Loss of customer base for 70% of sales (December 1991)**
- **Products (frit and tubing) are commodity in nature and have little export potential**

Recommendation

Trade Sale

- **Investment by a ceramic manufacturer provides a new business which would be primarily directed to the domestic market**
- **Very preliminary interest expressed by Italian customers, but doubt other potential investors**

Alternative – Asset Lease

- **Management interested in developing an alternative business**

Alternative – Asset Sale

- **Buildings and real estate may be attractive**

Steps Required

- **Visit Jelenia Gora vovoidship (currently exercising oversight) to review status of operations**
- **Contact potential Italian investors**
- **Consider transfer of cash to State**

Summary of investor interest as at March 1992:

		Known Interest	Comment	Potential Interest
Crystal	Violetta	Miller (USA)	Level of interest unknown	–
	Julia	–	–	Stuart & Sons (UK)
	Zawiercie	–	–	–
	Sudety	Ampol (USA)	Interest may have receded	–
Glassware	Tarnow	–	–	Dartington (UK), Iittalia (SF)
	Rozalia	Geissler (D) Minex (P)	–	Kristall Glaswerken Essen (D) Rastal (D), Royal Copenhagen (DK)
	Hortensja	–	–	Royal Copenhagen (DK)
	Zabkowice	–	–	–
	Lubartow	Markutec (D)	Thermos facility only, limited resources	–
Lighting &	Piensk	Herner Glas (D)	Letter of interest 3/3/92	–
Other	Bialystok	Atma (I)	Strong interest	Other customers
	Jelenia Gora	B. Diamella SPA (I)	Expect L/I late March	–

Consumer and Technical Glass

March 1992

Privatization Recommendations Summary

	Public Offering	Trade Sale	Holding Company	Mass Privatization	Asset Lease	Asset Sale
Crystal						
Violetta		●	○			
Julia		●	○			
Zawiercie		●	○			
Sudety		○				●
Glassware						
Tarnow		●				
Radomsko		●				
Hortensja		●				○
Zabkowice						●
Lubartow						●
Lighting/Other						
Piensk		●				
Bialystok		●				
Jelenia Gora		●			○	



Recommendation



Alternative

CONCLUSION

- **To achieve long-term viability, Poland's consumer glass manufacturers must:**
 - **Improve productivity**
 - **Incorporate Western marketing and design skills**
 - **Improve product quality**

- **These attributes are best obtained through a direct investment by a Western consumer glass company**
 - **Trade sale is ultimately recommended for 9 companies – crystal: Violetta, Julia and Zawiercie; glassware: Tarnow, Rozalia and Hortensja; lighting/other: Piensk, Bialystok and Jelenia Gora**

- **However, as trade sales are unlikely to occur in the crystal industry due to the severely depressed conditions, a Holding Company structure should be pursued simultaneously**

- **Under either path, some interim financial support will be necessary to prevent disappearance of this industry**

- **An asset sale is recommended for the remaining 3 companies:**
 - **Zabkowice and Lubartow have facilities whose best opportunity is realized upon separation**
 - **Sudety is currently undergoing an asset sale**

IV. Packaging Glass

Packaging Glass

March 1992

There are eleven state–owned enterprises and one joint–stock company comprising the packaging glass segment in Poland.

- **Total employment is 7,985**

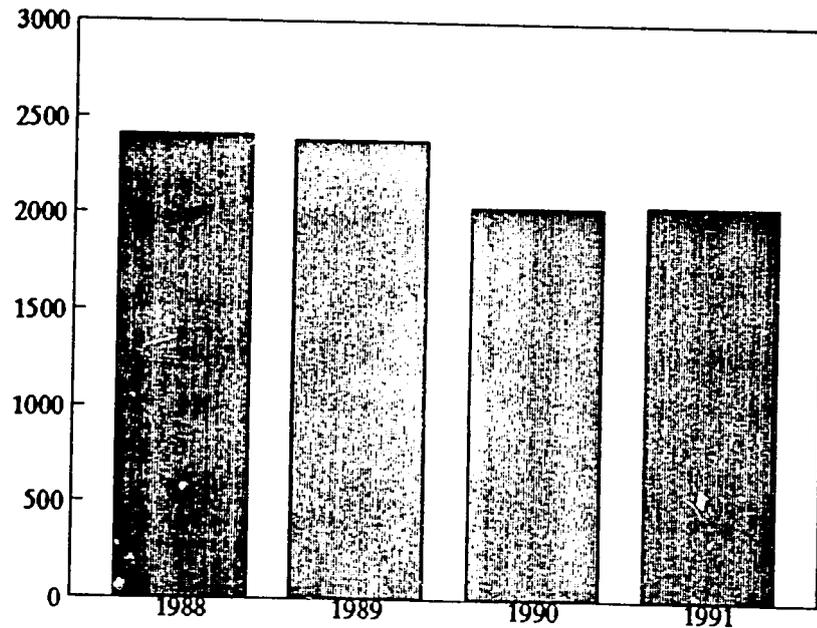
- **Total existing capacity is approximately 787,000 tons per year**
 - **there is production of flint, amber and green glass containers**
 - **there is no production of sterile–packed pharmaceutical ware**
 - **there is no production of high quality cosmetic ware**

- **1991 Revenues were 1,797 billion zlotys**

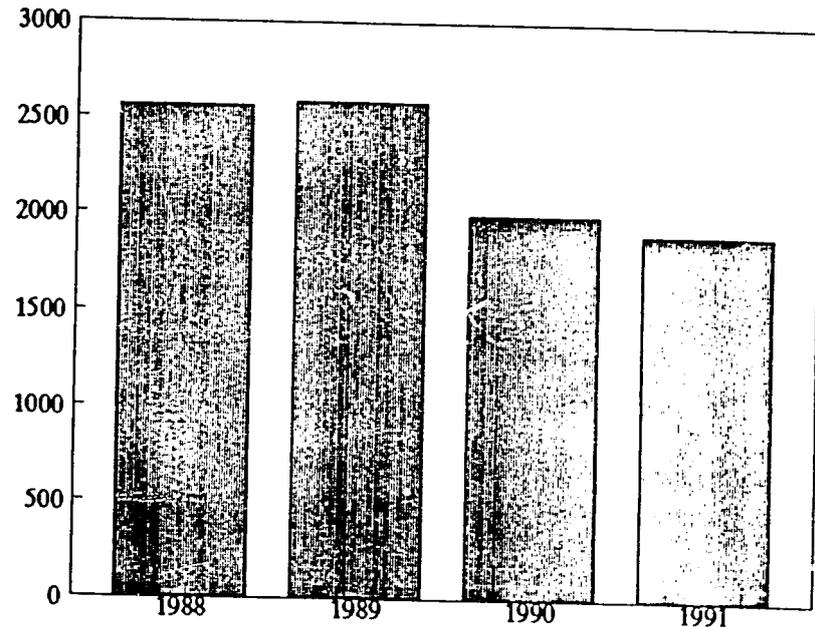
- **1991 Exports represented approximately 27% of total revenues**

The decline in consumer spending has had a negative impact on glass containers sold in Poland, with revenues declining more rapidly than units as producers compete for sales and try to reduce inventory levels.

Billion units shipped



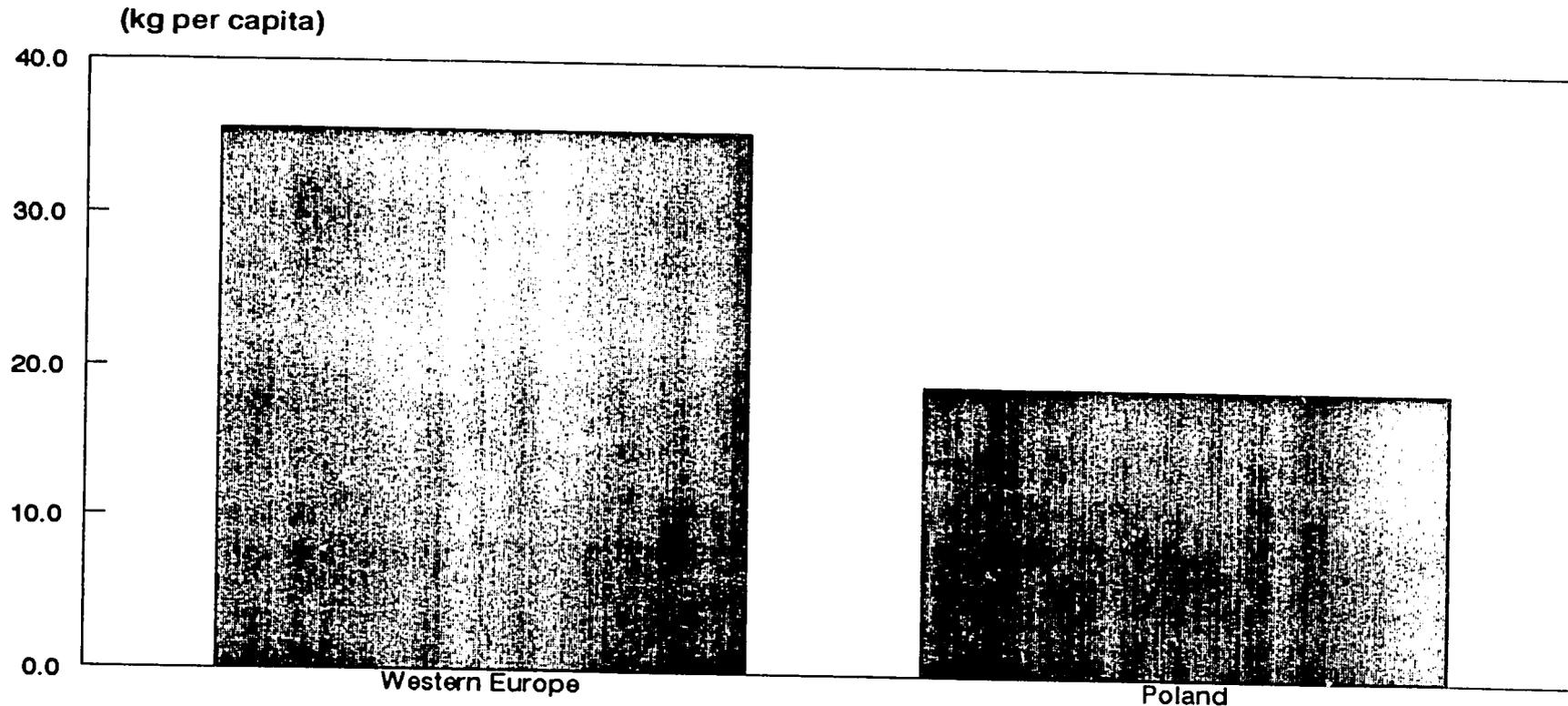
Revenues in 1991 Billion Zlotys



Packaging Glass

March 1992

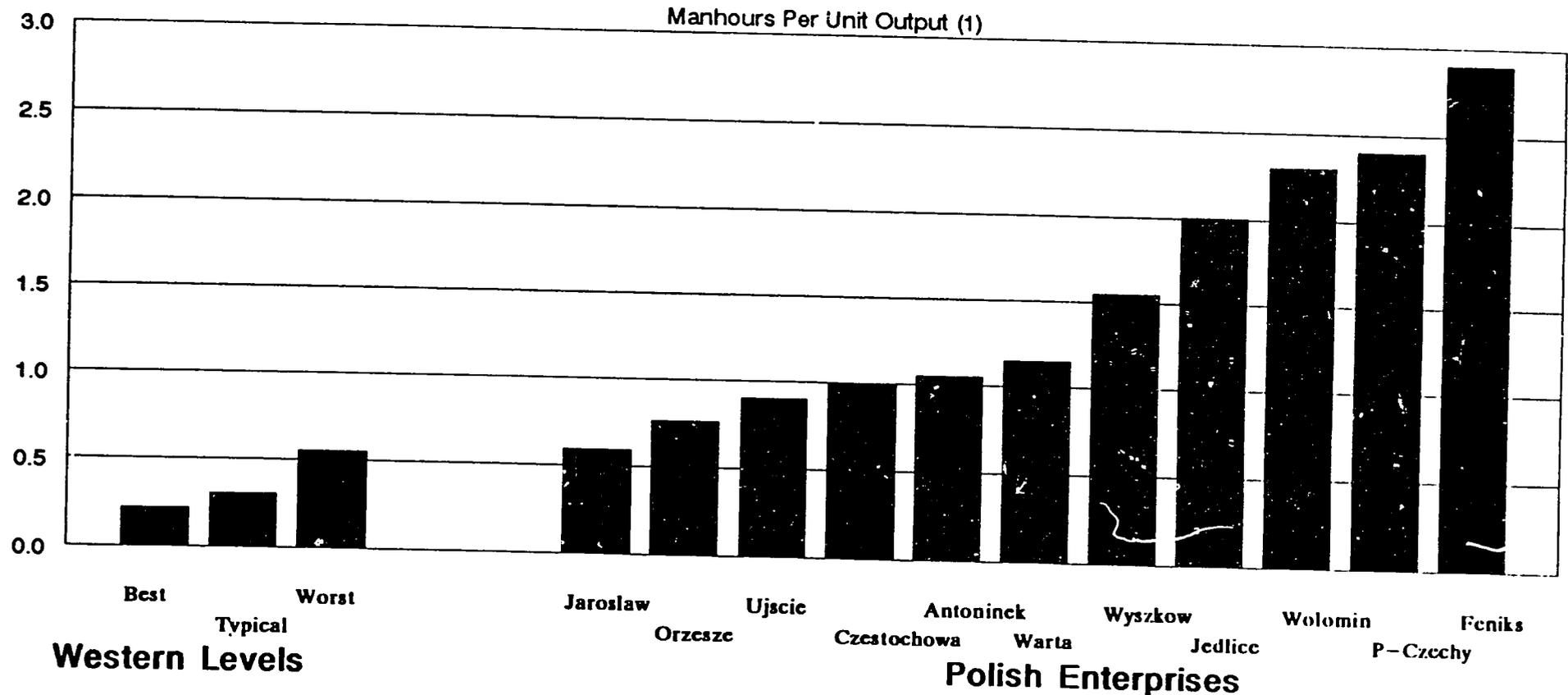
Currently, Polish consumption of packaging glass is far below West European levels. Domestic consumption is expected to rise to comparable levels, or by 87% over 15 years. This rise will support additional domestic capacity of 480,000 tons.



Price Waterhouse – IPG

Source: Arthur D. Little

Measurement of productivity enhances the issues of scale operations, forming speeds and overstaffing; these clearly highlight the differences in the viability of the individual plants.

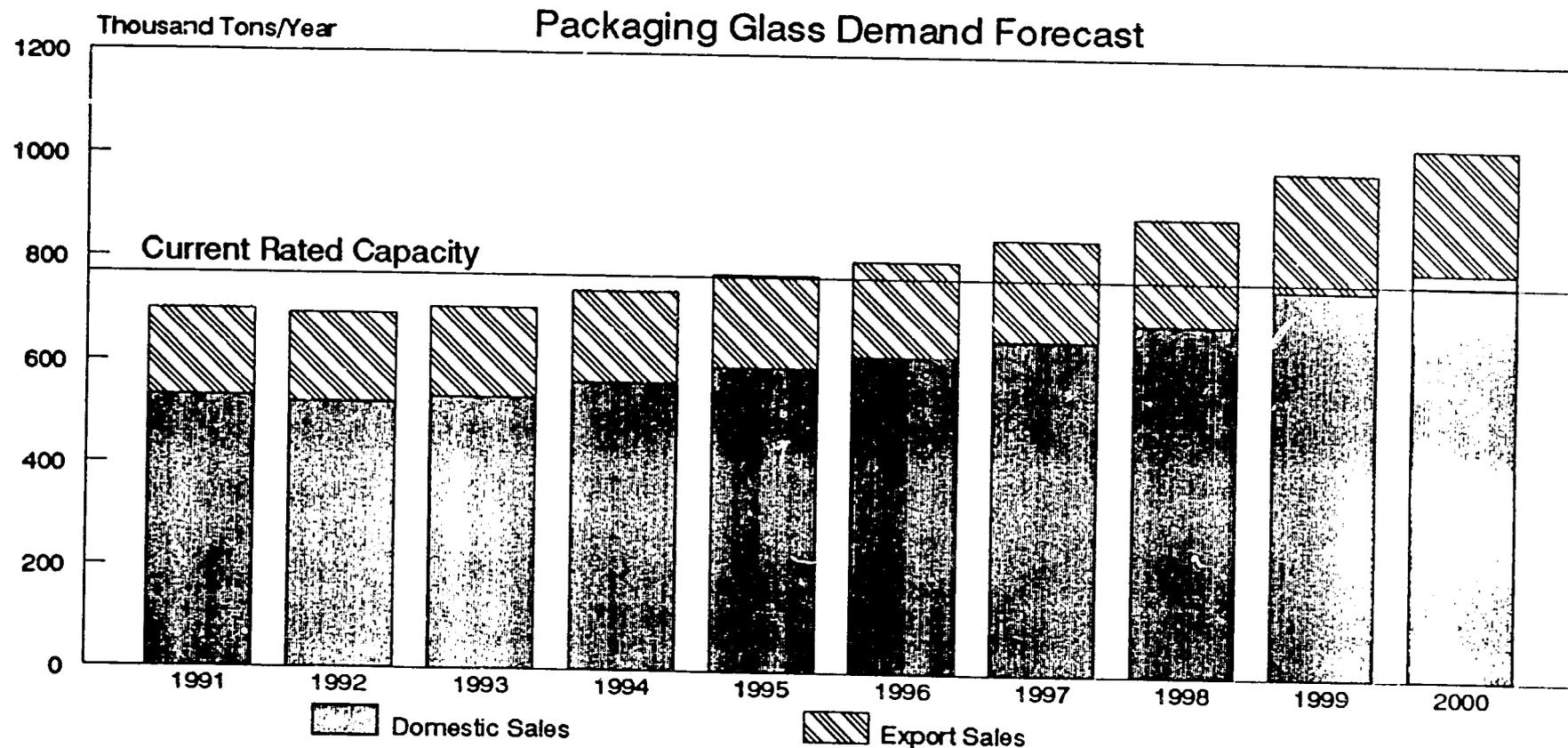


(1) Defined as Sq. Root of Gross--Hundred Weight

Packaging Glass

March 1992

Demand for Polish packaging glass will increase: as the economy improves, Polish glass consumption rates approach West European levels, and as Polish exports improve penetration of western markets.



Price Waterhouse - IBC

Present consumption and export levels in Poland can support six to seven competitive packaging glass plants, based on current demand of 700,000 tons per year.

- **Five existing plants**
 - 4 medium-sized plants producing over 200 tons per day
 - 1 large plant producing 600 tons per day

- **Increased consumption forecasts the need for new plant equivalent capacity within two to five years**

- **One or two additional plants to serve niche markets**
 - Single high quality producer for cosmetic industry
 - Single high quality producer for pharmaceutical industry

Competitive Overview

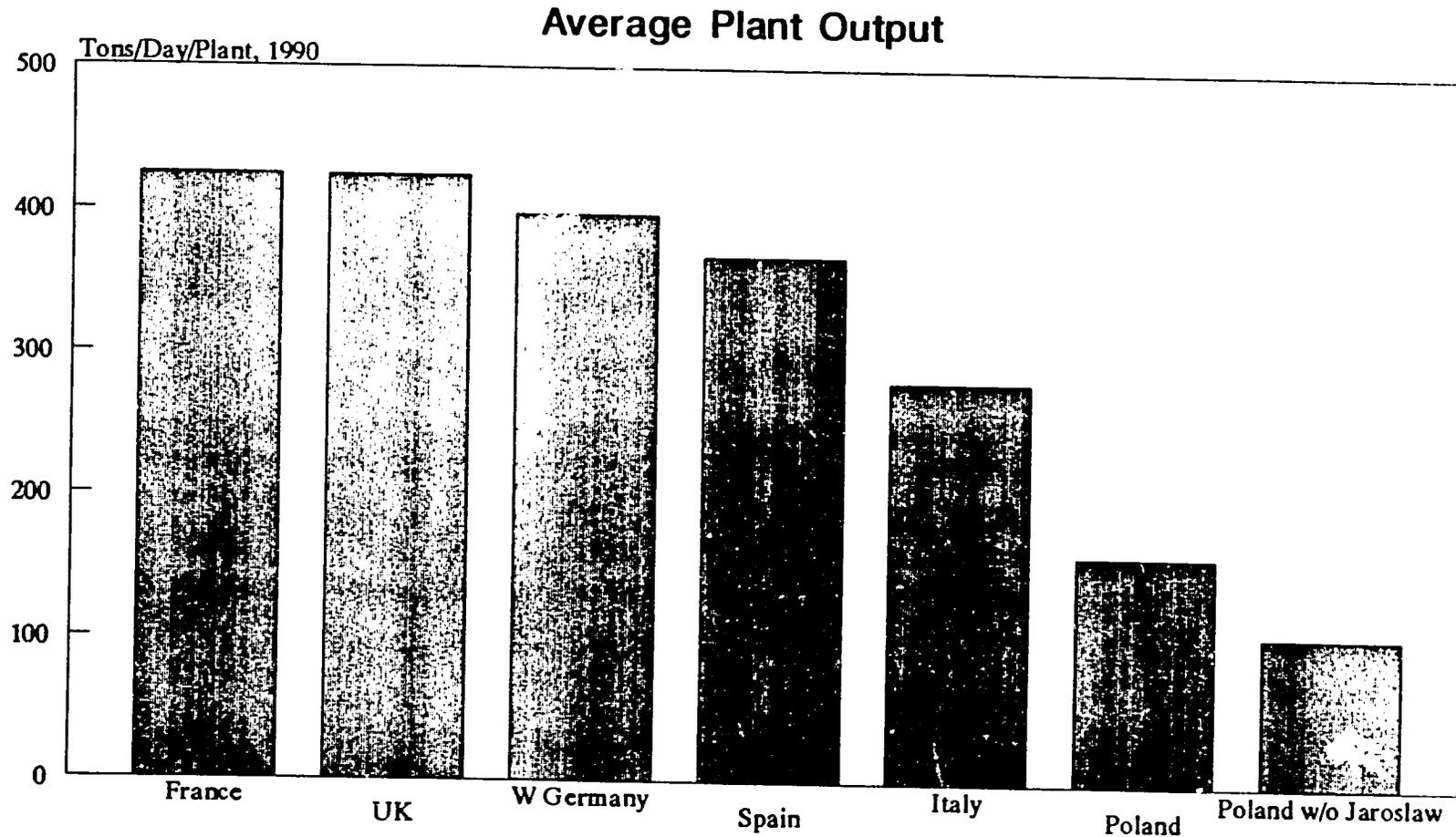
The packaging glass industry in western markets is driven by strong competition where plants are typically characterized by:

- Large scale, high volume operations (minimum size of 200 tons/day)
- Forming speed and efficiency improvements
- High quality control

In Poland, the industry has fallen far behind; many common problems include:

- Plants are generally too small and utilize inferior productive equipment
- Glass melting furnaces are inefficient and have short campaign lives
- Labor content is 2–3 times western requirements, and there is an overall lack of technical expertise
- Forming speeds and efficiencies are very low
- Product quality is poor

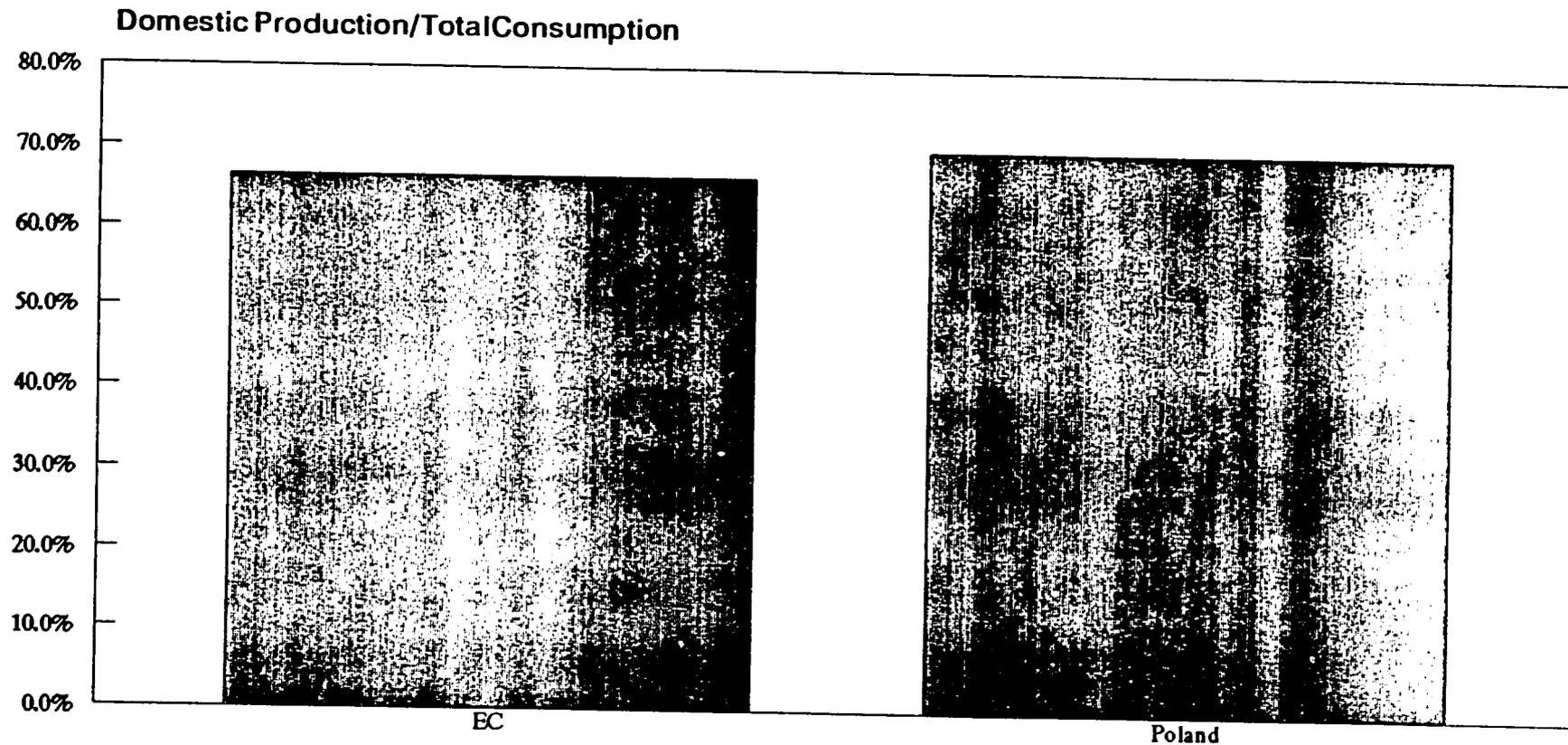
Polish enterprises produce at levels well below other European markets.



Packaging Glass

March 1992

The high transportation costs of glass containers help to partially insulate domestic production.



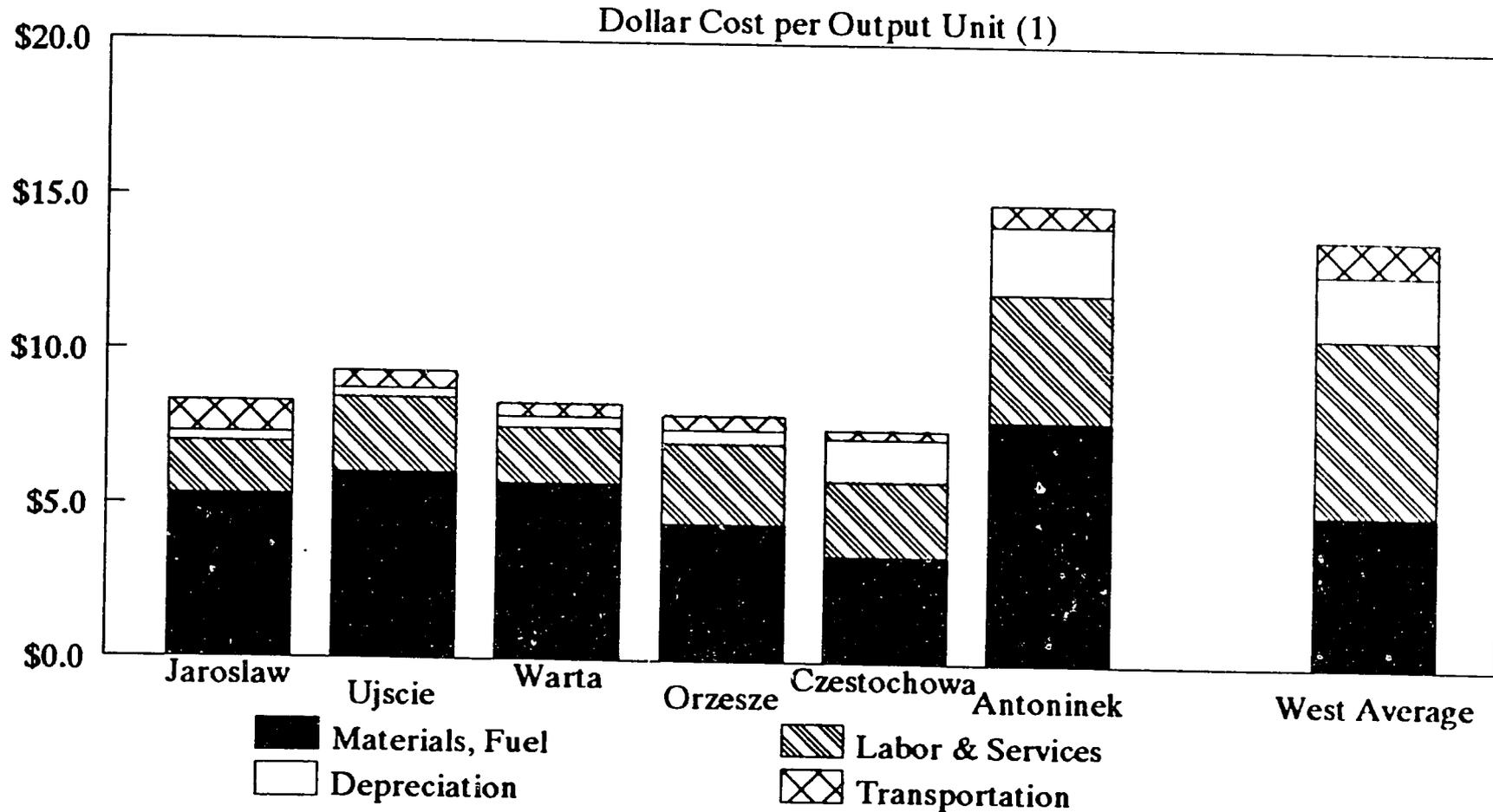
Price Waterhouse – IPG

Source: EC (CPM), MC

Packaging Glass

March 1992

The costs of Polish products are generally lower than western counterparts, but as costs increase, inefficient production methods will reduce competitiveness



(1) Defined as Sq. Root of Gross—Hundred Weight

Price Waterhouse – IPG

Source: IPG Analysis

The scale requirements of the packaging glass industry suggest that the differences among scenarios will relate to "middle" plants, whereas the future of the largest and of the smallest plants is more predictable

- Jaroslaw has the size, operating capability and management skills to compete over the long term
- Czestochowa is small, but has a good core group of assets that can be expanded for production in the niche pharmaceuticals market, with the opportunity to expand into cosmetics as that market rebuilds itself
- Feniks, Jedlice, Pollena–Czechy, Wyszkwow and Wolomin are unlikely to attract the necessary investment for even medium–term survival; there may be near–term opportunities for entrepreneurial ventures or asset sales
- Ministry action will best influence the survival of the "middle" plants

There are three likely scenarios for future competition in the packaging glass industry in Poland.

- **Several enterprises may individually attract equity capital while the remaining plants close in the near to medium term as furnace lives expire and capital limitations prevent continued operation**
- **Several medium-sized plants may merge together to produce a more attractive investment package, thereby keeping more plants open and in competition with Jaroslaw**
- **Major greenfield investments may introduce fully modern manufacturing facilities to Poland, limiting the long-term viability of all but a few other plants**

Scenario 1: Individual Privatization Approach

ADVANTAGES	DISADVANTAGES
<p>Orzesze, Ujście and Warta all have the basic facilities and market share to attract some investment</p> <p>Employment may be retained at all levels in short term</p> <p>Provides management with incentive to direct plant's future</p>	<p>All plants will not be able to individually attract necessary capital</p> <p>Strongest plant(s) will prevail while many of the rest will close in 2–5 years for lack of investment</p> <p>May likely result in investors choosing greenfield options over existing assets</p>

STEPS REQUIRED:

- Ministry must simply review offers and process transactions as they arise

RECOMMENDATION

- This scenario is only appropriate for Jaroslaw, due to its efficient scale; this application to other plants will likely result in medium-term closings

Scenario 2: Poznan Holding Company -- Antoninek, Ujscie, Warta

ADVANTAGES	DISADVANTAGES
<p data-bbox="303 397 978 566">Combine complementary businesses and equipment; eliminate overhead and give critical mass to technical and marketing resources</p> <p data-bbox="303 612 978 659">Much greater investor attractiveness</p> <p data-bbox="303 697 978 743">Strong competitor to Jaroslaw</p>	<p data-bbox="1015 405 1694 489">Likely resistance arising from need to eliminate redundancies</p> <p data-bbox="1015 535 1737 620">Potential culture clash may prohibitively hamper smooth merger of organization</p> <p data-bbox="1015 666 1645 751">May pose difficult problems for the government</p>

STEPS REQUIRED:

- Transform enterprises and conduct merger feasibility study
- Create holding company with single board to manage merger
- Solicit investors and negotiate sale of holding company

RECOMMENDATION

- This scenario is only appropriate for Antoninek, Ujscie and Warta; its application would result in a more viable whole than individual parts

Scenario 3: Greenfield Packaging Plants

ADVANTAGES	DISADVANTAGES
<p data-bbox="323 392 937 515">Would prevent high volume, high quality glass users from seeking non-Polish sources</p> <p data-bbox="323 562 937 693">Would improve quality/design of Polish glass-packaged goods for domestic and export markets</p>	<p data-bbox="1034 392 1670 523">Would result in phase-out of most existing Polish productive assets over the near to medium term</p>

STEPS REQUIRED:

- **No action would be necessary by the government**

RECOMMENDATION

- **Poland should take steps to improve utilization of existing assets through strategic configurations**

Outlook

- **Jaroslaw is the only producer with the sufficient level of scale and quality to be considered a long term international competitor**
- **Nearly half of the remaining furnaces and productive assets must be overhauled or replaced in the next three years**
- **The key to building a competitive packaging glass market in Poland will be a strategic alignment of the viable assets into a few scale operations or into niche markets**
- **There are a number of plants whose assets and skills will not remain viable beyond 2–3 years**

The Polish packaging glass segment is comprised of the following enterprises:

	1991 Sales ZI MM	1991 Pre- Tax Profit ZI MM	Debt 9/91 ZI MM	Employees
Jaroslaw	520,000	87,941	8,800	1,485
Ujście	208,498	34,370	6,100	760
Wolomin	208,321	(57,239)	2,000	1,530
Warta	197,524	39,510	5,000	615
Gostyn (est.)	160,000	28,000	48,200	785
Orzesze	136,432	27,997	2,000	477
Częstochowa	84,464	16,048	8,300	420
Wyszki	77,551	(14,231)	4,100	415
Antoninek	75,967	107	8,000	315
Jedlice	56,700	4,000	9,700	388
Pollena-Czechy	48,114	(7,777)	66,800	535
Feniks	23,271	(1,472)	23,700	260

Price Waterhouse – IPG

Source: Company F-01, F-04's

Packaging Glass

March 1992

Several producers supply each main segment of glass packaging in Poland.

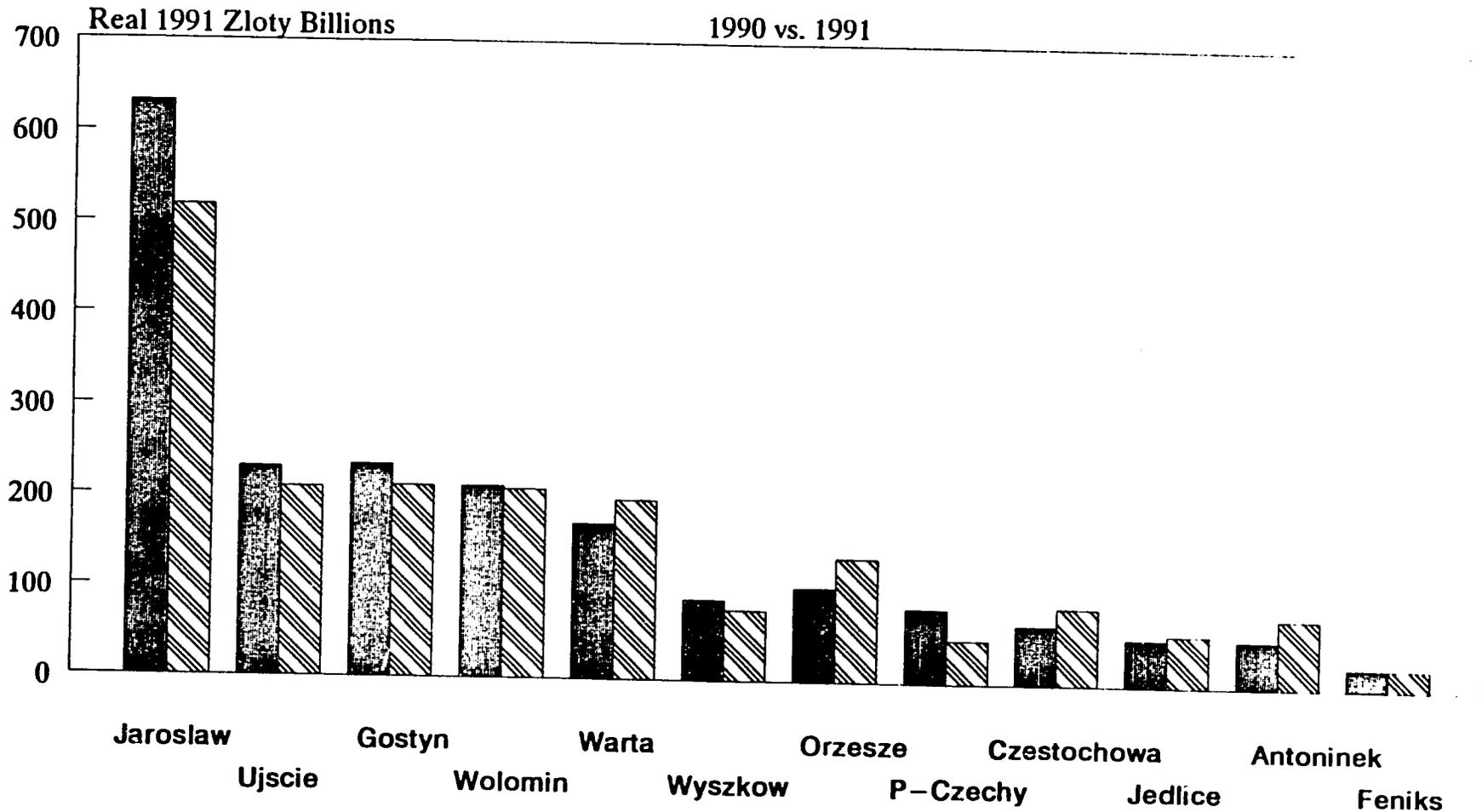
	Wine	Spirits	Beer	Drinks & Juices	Food	Pharmaceut.	Cosmetics
Antoninek		■		■	■	■	
Czestochowa					■	■	
Feniks					■		
Gostyn					■		
Jaroslaw		■	■	■	■	■	
Jedlice					■		
Orzesze			■	■	■	■	
Pollena-Czechy		■					
Ujście	■		■	■	■		
Warta		■		■	■		
Wolomin			■				
Wyszkow	■		■	■			

Price Waterhouse – IPG

Packaging Glass

March 1992

Sales levels vary widely across the range of container plants, reflecting the diverse range of operating scales.



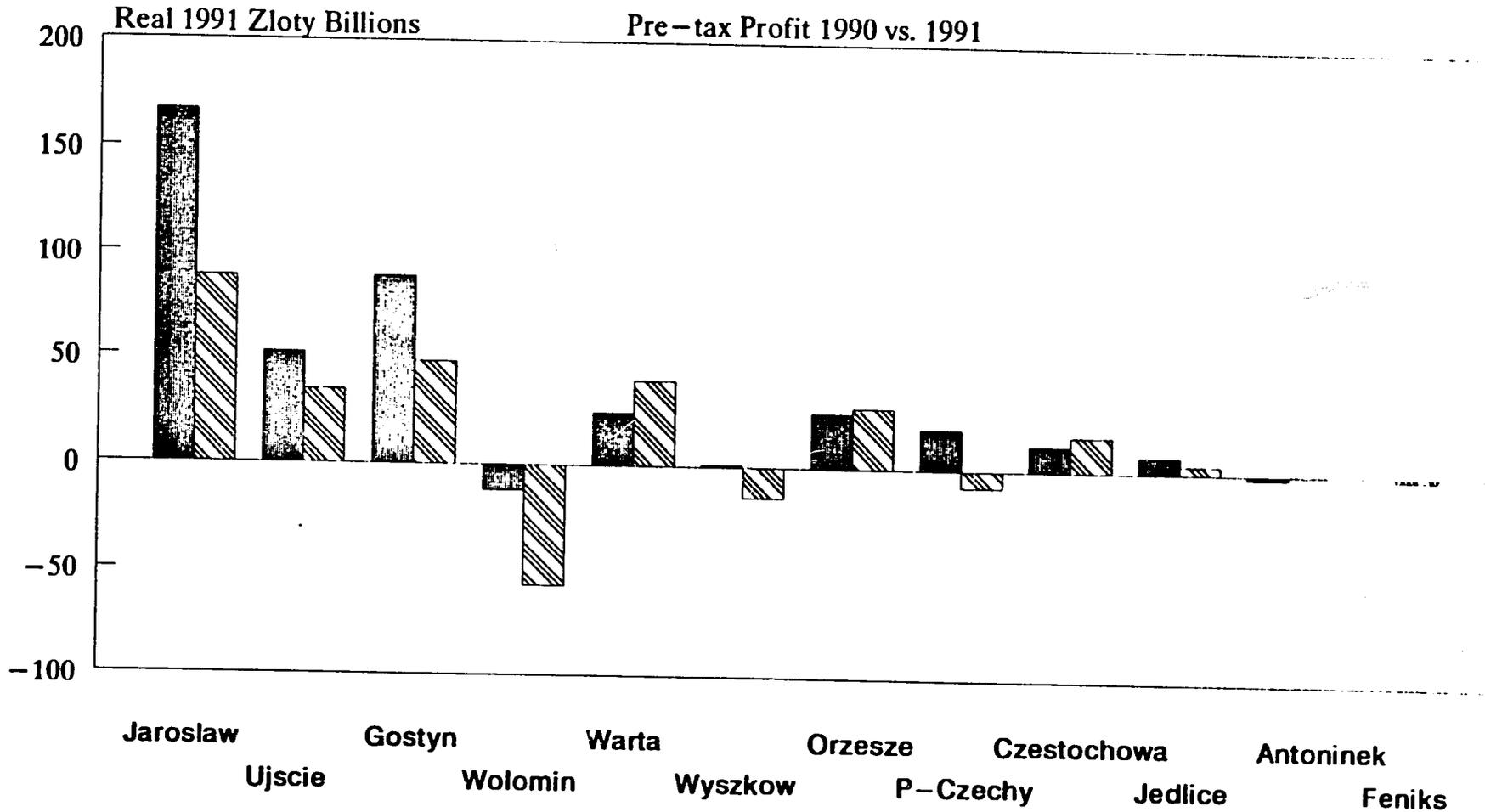
Price Waterhouse - IPG

Source: Company F-01's

Packaging Glass

March 1992

Operating profits for most smaller enterprises are too small to cover the necessary costs of plant modernization and repair.



Price Waterhouse - I/P/G

Source: Company F-01

The future composition and structure of the packaging glass segment will be driven by several critical factors:

- As the largest producer, Jaroslaw will take increasing market share as it is upgraded and expanded
- The capital requirements for furnace repairs and new forming equipment will force the smallest plants with fewer resources to seek niche markets or to close in the near term
- The remaining plants have resources to continue in the medium term independently, but will require major equity participation or a combining of several plants in order to achieve scale efficiency
- Timing of these changes is influenced by the repair dates for melting furnaces, plants' abilities to improve their quality and efficiency using the outdated technology, and the cost increases of energy, labor and transport

Jaroslaw

'91 Sales: ZI 520 B

Employees: 1485

Products: Amber, flint containers for all food and beverages

Key Factors

- Jaroslaw has the strongest relative operating performance and financial profile of the Polish plants
- Quality control and output levels do not meet needs of most important customers
- Liquidity shortages have led to postponement of critical furnace repairs and equipment purchases
- Jaroslaw is a joint-stock company

Recommendation

Trade Sale/Private Placement

- Selling an equity stake to interested investors would most effectively generate capital for necessary plant improvement: and would provide access to technical expertise;
- Equity participation could be widely sought internationally and domestically leading to numerous options
- Strong support from management and employees for proposed share sale
- Share sale would generate significant proceeds for the State Treasury

Steps Required

- Complete legal and environmental audits
- Conduct valuation and prepare information memorandum
- Solicit investors and negotiate transaction

Packaging Glass

March 1992

Orzesze

'91 Sales: ZI 136 B

Employees: 477

Products: Amber containers for beer, food and pharmaceutical

Key Factors

- Plant includes two 110-ton, well-designed furnaces with six adequate forming lines
- Furnaces will not need repair until 1995-96, but there is a current need for quality control and packing equipment
- Management is interested in liquidation/leasing, but do not possess capital for modernization

Recommendation

Restructure/Trade Sale

- Training and minor operational restructuring would increase the plant's attractiveness
- A majority owner with capital and technical expertise could implement plant upgrade
- Employees could participate in share purchase program

Steps Required

- Develop and implement training and restructuring programs
- Solicit investors
- Negotiate the sale

Packaging Glass

March 1992

Ujscie

'91 Sales: ZI 208 B

Employees: 760

Products: Amber, green containers for wine, beer, soda and food

Key Factors

- Plant has 3 large furnaces; one must be repaired this year for \$3–3.5 million
- 4 of 9 forming lines should be replaced with larger, faster lines and quality control equipment
- Close proximity to German border and long customer relationships support high export sales

Recommendation

Restructure/Trade Sale

- Create a holding company and manage plant with Warta and Antoninek to increase the likely access to necessary capital and best ensure employment and competitiveness of the merged group
- Training and minor operational restructuring would increase the attractiveness of the individual enterprises for outside investment

Steps Required

- Transform enterprise and conduct merger feasibility study
- Develop and implement training and restructuring programs
- Solicit investors for merged company
- Negotiate the sale

Price Waterhouse – IPG

Packaging Glass

March 1992

Warta

'91 Sales: ZI 198 B

Employees: 615

Products: Flint containers for spirits, milk, soda and food

Key Factors

- Plant has 2 furnaces at 110–120 ton/day; repair in 1992 will cost \$1mm, and the second in 1993 will be \$1.5–2mm
- 3 of 7 forming lines should be replaced with larger, faster lines and quality control equipment
- Strong relationship with Polmos vodka producers supports important Polish export
- Antoninek plant competes directly in regional market creating additional benefits from holding company consolidation

Recommendation

Restructure/Trade Sale

- Create a holding company and manage plant with Ujście and Antoninek to increase the likely access to necessary capital and best ensure employment and competitiveness of the merged group
- Training and minor operational restructuring would increase the attractiveness of the individual enterprises for outside investment

Steps Required

- Transform enterprise and conduct merger feasibility study
- Develop and implement training and restructuring programs
- Solicit investors for merged company
- Negotiate the sale

Price Waterhouse – IPG

Antoninek

'91 Sales: ZI 76 B

Employees: 315

Products: Flint containers for spirits, milk, soda and food

Key Factors

- Plant has 2 furnaces at 40–80 ton/day; one repair in 1992 will cost \$500–750m; the second in 1994 will be \$1–1.5mm
- 1 of 3 old forming lines will be replaced this year for \$500m, most likely with poor quality Czech equipment
- Warta plant competes directly in regional market creating additional benefits from holding company consolidation
- Plant does not have the scale necessary or the technical expertise for long-term viability by itself

Recommendation

Restructure/Trade Sale, or Privatize through Liquidation

- Create a holding company and manage plant with Ujście and Warta to increase the likely access to necessary capital and best ensure employment and competitiveness of the merged group
- Training and minor operational restructuring would increase the attractiveness of the individual enterprises for outside investment
- Without benefits of holding company or joint venture, plant will likely close in 3–5 years

Steps Required

- If holding company infeasible, prepare liquidation strategy
- If holding company feasible, develop and implement training and restructuring programs
- Solicit investors and negotiate sale or liquidation

Packaging Glass

March 1992

Czestochowa

'91 Sales: ZI 84 B

Employees: 420

Products: Flint, amber containers & vials for pharmaceuticals

Key Factors

- One furnace is fair quality; two forming lines are high quality
- The remaining furnaces and forming lines should be scrapped when furnace lives expire in 1–3 years
- There is on–site room for the expansion of facilities after scrapping old lines
- The workforce has strong experience producing pharmaceutical ware for Poland and for export markets

Recommendation

Privatize through Liquidation: Contribution into Company

- The plant is small, but the salvageable furnace and modern forming lines can serve as the core of a much upgraded and modernized plant
- No real prospect for obtaining the capital necessary for equipment purchase without outside investment
- Management signed non–binding letter of intent with Heye and Heinz (German glass and equipment manufacturers)

Steps Required

- Review recently prepared valuation and solicit investor interest
- Negotiate the establishment of joint venture

Packaging Glass

March 1992

Feniks

'91 Sales: ZI 23 B

Employees: 260

Products: Flint wide-mouth jars for food

Key Factors

- Plant has two furnaces, 12–23 tons/day; requires replacement of nearly all productive equipment
- Management is energetic and eager to develop survival skills, but have no capital
- Outside investors would consider greenfield investment significantly more practical

Recommendation

Privatization through Liquidation: Asset Leasing

- Motivating workers through an employee buy-out may be the only way to continue operations; there may be opportunities for short-term production of low-cost goods while furnace lives remain
- Asset sale is not advisable because no real saleable assets

Steps Required

- Propose liquidation to Founding Body and to employees
- Develop or review short-term business plan
- Arrange leasing agreements

Price Waterhouse – IPG

Packaging Glass

March 1992

Jedlice

'91 Sales: Z1 57 B

Employees: 388

Products: Flint wide-mouth jars for food

Key Factors

- Plant has two inefficient furnaces, 37 tons/day; 8 slow, outdated forming lines
- Low cost position is supported by furnace gas produced on-site which poses environmental problems
- Outside investors would consider greenfield investment significantly more practical
- Dynamic manager is seeking German customers to provide minor capital boost for short term contracts
- Vovoidship and enterprise have conducted competing valuations for liquidation proposal

Recommendation

Privatization through Liquidation: Asset Leasing/Sale

- Motivating workers through an employee buy-out may be the only way to continue operations; there may be opportunities for short-term production of low-cost goods while furnace lives remain
- Asset sale may enable German-financed management to buy assets outright

Steps Required

- Propose liquidation to Founding Body and to employees
- Develop or review short-term business plan
- Arrange leasing agreements or asset sale

Price Waterhouse – IPG

Pollena–Czechy

'91 Sales: Zl 48 B

Employees: 535

Products: Flint containers for cosmetics, specialty liquors

Key Factors

- Plant has one inefficient furnace, 50 tons/day; 3 forming lines run very badly, with no inspection equipment
- Outside investors would consider greenfield investment significantly more practical
- Vovoidship and enterprise have conducted competing valuations for liquidation proposal

Recommendation

Privatization through Liquidation: Asset Leasing/Sale

- Motivating workers through an employee buy–out may be the only way to continue operations; there may be opportunities for short–term production of low–cost goods while furnace life remains
- Asset sales of the forming machines to a surviving plant with better operating skills would improve their utilization

Steps Required

- Propose liquidation to Founding Body and to employees
- Develop or review short–term business plan
- Arrange leasing agreements and/or auction assets to another plant

Packaging Glass

March 1992

Wolomin

'91 Sales: ZI 208 B

Employees: 1530

Products: Tableware, labware, thermos glass, amber containers

Key Factors

- There is a confused layout of packaging and consumer glass production
- Packaging glass equipment is fair quality, but inefficiently scaled and operated
- Consumer glass operations are currently unprofitable
- Heavy debt burden prevents payments to suppliers and to banks; debt service has had to be temporarily waived

Recommendation

Restructuring

- Without immediate attention, the plant will soon enter bankruptcy
- Current mix of operations makes feasibility of packaging or consumer business unclear
- There is a need for streamlining operations and discontinuing unprofitable business
- Divested assets could be sold to other producers in the relevant business segment

Steps Required

- Examine feasibility and develop restructuring plan
- Pending above, conduct auctions of saleable discontinued assets
- Negotiate financial restructuring with banks: debt-equity swap of on-going operations or repayment through asset sale

Price Waterhouse – IPG

Packaging Glass

March 1992

Wyszkow

'91 Sales: Z1 78 B

Employees: 415

Products: Amber containers for beer, wine, soda

Key Factors

- Plant has one furnace, 40 tons/day; requires replacement of basically all productive equipment
- Outside investors would consider greenfield investment significantly more practical
- Management has retained business broker to value assets and solicit investment, but prospects minimal

Recommendation

Privatization through Liquidation: Asset Leasing/Sale

- Motivating workers through an employee buy-out may be the only way to continue operations; there may be opportunities for short-term production of low-cost goods while furnace lives remain
- Asset sale of two large-ware forming machines would benefit surviving plant more

Steps Required

- Propose liquidation to Founding Body and to employees
- Develop or review short-term business plan
- Arrange leasing agreements and/or auction assets to another plant

Price Waterhouse – IPG

Privatization Recommendations Summary

	Public Offering	Trade Sale	Mass	Joint Venture	Asset Leasing	Asset Sale
Jaroslaw	○	●				
Ujście		●		○		
Warta		●		○		
Orzesze		●		○		
Antoninek		●			○	
Częstochowa				●	○	
Feniks					●	○
Jedlice					●	○
Pollena – Czechy					○	●
Wyszków					●	○
Wolomin		○				○



Recommendation



Alternative

CONCLUSION

- **The demand for packaging glass in Poland is forecasted to create the need for additional capacity in the medium to long term**
- **The costs of transportation ensure that much of this demand will be satisfied by domestic producers**
- **To exploit the opportunities, Polish plants must be consolidated into a smaller number of large scale operations with modernized facilities and improved technical and marketing skills**
- **A number of the existing plants will discontinue operations**
- **Without a focused approach to maximizing the use of existing assets Poland may lose significant sales potential to higher quality imported glass containers**

Investor Summary

At present, there are significant levels of investor interest towards Jaroslaw

- **Gerber (US)**
- **Owens-Illinois (US)**
- **Gerresheimer (D)**
- **Rockware (UK)**

In addition, other glass companies have surveyed the Polish market and have expressed interest in investment

- **Hermann Heye Glas (D)**
- **Heinz Glas (D)**

There are a number of international glass companies and glass customers who are potential investors and would be the target of an investor solicitation program

- **St. Gobain, BSN (F)**
- **Avir, Beatson Clark (UK)**
- **BDF, Bormioli (I)**
- **PLM (SW)**
- **Pepsi-Cola (US)**

V. NEXT STEPS

Summary Review of Company Specific Recommendations:

Immediate Privatization:

Flat Glass:

- Sandomierz
- Kunice
- Kara
- Krakszklo

Consumer:

- Violetta
- Zawiercie
- Tarnow
- Piensk
- Bialystok

Packaging:

- Jaroslaw
- Czestochowa

Summary Recommendations (cont'd):

Restructure, Then Privatize

Flat Glass:

- **Szczakowa**
- **Jaroszowiec**
- **Zabkowice**
- **Murow**

Consumer:

- **Julia**
- **Hortensja**

Packaging:

- **Orzesze**
- **Ujście**
- **Warta**
- **Antoninek**
- **Wolomin**

Summary Recommendations (cont'd):

Revisit Briefly for Limited Assistance or Monitor

Flat Glass:

- **Gniezno**
- **Walbrzych**

Consumer:

- **Sudety**
- **Rozalia**
- **Zabkowice**
- **Lubartow**
- **Jelenia Gora**

Packaging:

- **Feniks**
- **Wyszkow**
- **Pollena – Czechy**
- **Jedlice**

There are a number of issues which the Government of Poland needs to consider and/or address:

Flat Glass

- Encourage five companies to change focus away from glass manufacture to downstream activities
- Energy Conservation through double/triple glazing
- Introduce a requirement for safety glass
- Stimulation of Housing Sector

Government Considerations (cont'd)

Consumer and Technical

- **Short-term financial assistance for crystal companies may be necessary**
- **Support for Holding Company, if feasible**
- **Creation of Polish crystal and glassware manufacturers' association**
- **Establish training center for skilled workers**

Government Considerations (cont'd)

Packaging

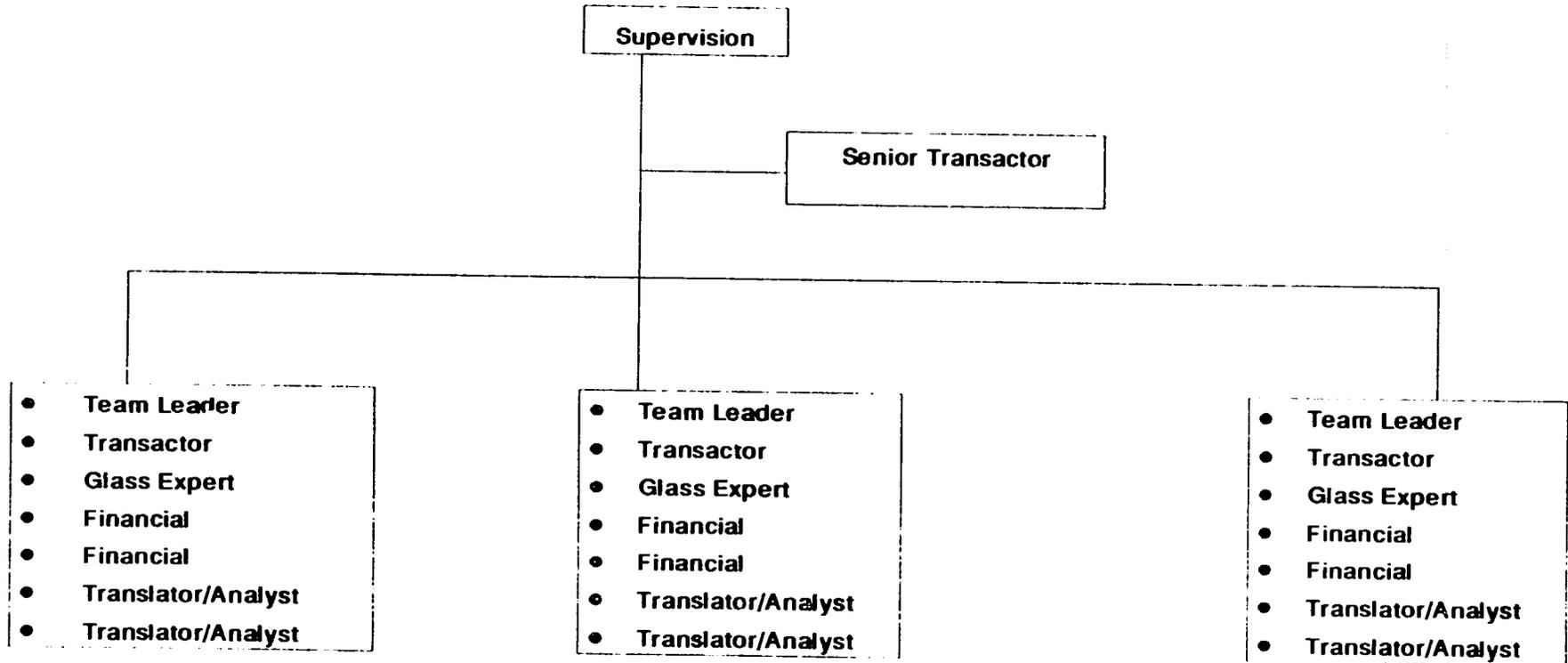
- **Consider implications of major packagers importing for lack of high quality domestic product**
- **Support for Holding Company approach (enterprise consolidation)**
- **Designate industry "priority" to encourage domestic production and to obtain preferential financing for key equipment purchases**
- **Review need for sterilized packaging regulations in pharmaceutical containers to encourage modernization of Polish producer and to increase export potential**

Government Considerations (cont'd)

General

- **Establish glass institute to set standards and represent industry interests**
- **Encourage upgrading of skills for technical organizations and support their use**
- **Establish management training programs in areas of finance, human resources, environmental, health and safety**

Phase III privatization activities will utilize three teams if proper funding is available:

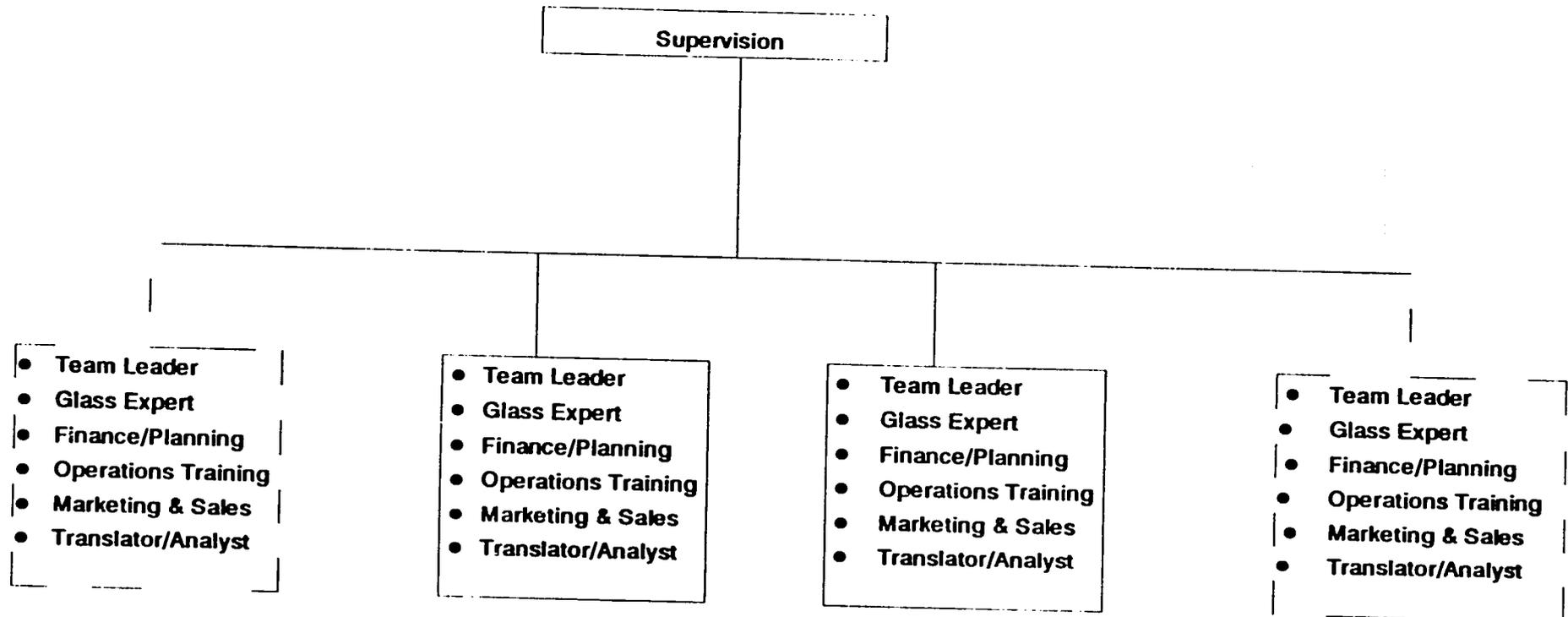


Note: These teams will make brief revisits and do monitoring for third category companies

The timetable for Phase III privatization is dependent on the level of staffing, the funding, and the time it takes to complete transactions

- **Each transaction team will initiate privatization activities for two companies simultaneously**
- **At a point approximately 6–10 weeks into the process, a third company will be added to each team**
- **As transactions are completed, and/or time demands permit, additional companies will be added by each team**
- **The entire privatization process may require 18 months to complete**

Present plans anticipate that restructuring activities will be coordinated by multi-disciplinary teams using broad ranges of industry and functional skills



Depending on final discussions with the IDA, it is expected that restructuring will be undertaken in tranches with four to five companies per tranche

- **Work in a company will typically take 6–8 weeks**
- **Some training may be most effectively done on a group basis**
- **Companies will then enter the privatization process**
- **Restructuring will not necessarily prevent undertaking privatization if an investor is identified along the way**

Extensive funding for the activities of Phase III will be required and is expected to come from a variety of sources

Privatization

- **Primarily USAID**
- **May include "Success Fees", where appropriate**

Restructuring

- **PHARE Program of IDA**

Time is of the essence for all concerned; particularly the companies

- **Delay will create confusion and may irreparably damage several companies**
- **IPG needs confirmation of recommendations, or prompt discussion to "fine tune"**
- **Funding must be confirmed**
- **Government needs to authorize proceeding**
- **Ministry and IPG need to establish in writing the mechanics of Phase III**

In Summary

● Immediate Privatization	11
● Restructure, then Privatize	11
● Brief Visit, Monitor	11
	<hr/> 33* <hr/>

*** Excluding Gostyn**