Privatization of the Estonian Electronics Industry

Prepared for the U.S. Agency for International Development under contract number EUR-0014-1-00-1056-00.

Daniel Hogan, Development Alternatives, Inc.
John Brown, Deloitte & Touche

June 1992

7250 Woodmont Avenue, Suite 200, Bethesda, Maryland 20814

A

TABLE OF CONTENTS

B

EXECUTIVE SUMMARY

Deloitte & Touche and Development Alternatives, Inc. (DAI) are pleased to submit this report to the U.S. Agency for International Development. The report discusses the background to privatization of the large electronics firms, legal reform, and government objectives; surveys the electronics industry and considers the need for restructuring the industry; suggests a plan for future privatization activities and presents recommendations for privatization of the large firms; and ends with a discussion of the need for providing assistance to small firms.

John Brown of Deloitte & Touche and Daniel Hogan of DAI compiled this report, following field visits on January 20-31, February 18-27, and April 3-9, 1992. Government of Estonia sponsorship for the project resided in the Department of Foreign Economic Relations and the Ministry of Industry; enterprise visits were sponsored by the Estonian Electronics Union and the Estonian Electronics Association, with assistance from the Estonian Academy of Sciences.

The team visited the entire range of electronics enterprises within Estonia — small, medium, and large manufacturers of diverse products that are either directly or indirectly related to the production of electronic goods with consumer, military, industrial, scientific, or research applications.

In general, although certain exceptions exist, the enterprises surveyed share the characteristics of heavy Soviet industry: outputs dictated by central planning authorities in Moscow; heavy reliance on the former Soviet Union for raw materials, technology, and markets; little or no financial accountability; management and production efficiencies regulated by output quotas; intense vertical integration; and limited contact with Western counterparts.

Indeed, it may be misleading to think of this report as being limited to the electronics industry. First, the enterprises visited were much more varied than those usually considered as electronics firms in the West. Second, the critical characteristics that repeated themselves in virtually all the large enterprises were those of an enterprise functioning under a Soviet central plan. The recommendations here are likely to be relevant well beyond the electronics industry, applicable to all those industrial complexes constructed on the Soviet model of enterprise development.

The assets of the surveyed enterprises, including property, plant, equipment, ancillary assets, and technology, are owned by the Government of Estonia, following Estonia's declaration of independence from the former Soviet Union in August 1991. Considerable legal reform will be required to resolve conflicting ownership claims, and to create the ability to transfer ownership in the future. Several enterprises are operating presently as quasi-autonomous entities under lease arrangements with the Ministry of Industry; others have made few, if any, changes to their legal status, simply becoming responsible to the Estonian Ministry of Industry, rather than to a Soviet Ministry. However, legal status aside, most former All-Union enterprises remain dependent upon the former Soviet system for production inputs, finance, and sales. The team also examined several entrepreneurial enterprises that were start-ups by local, technically

qualified individuals within certain product niches. All of the electronics enterprises lack adequate working capital, find raw materials scarce or unavailable, lack managerial experience, and have little, if any, access to domestic, regional, or foreign markets for their goods.

The industry, taken as a whole, appears to be unstable. Production cutbacks, layoffs, curtailment of procurement, and dwindling inventories are typical. With the evaporation of demand from the former Soviet Union, few new markets have been discovered. Capital investment is at a standstill, with no access to local or offshore commercial credit. Physical plant is inappropriate, outdated, and in poor repair. Equipment appears to be outdated, having been purchased from Soviet or Warsaw Pact sources, with routine maintenance and replacement largely ignored. Technology lags anywhere from 5 to 40 years, depending upon the type of production facility.

Significant and widespread engineering skills exist in a well-trained cadre of engineers, inventors, and scientists. Often-difficult production obstacles are overcome routinely through application of little more than raw talent. There is little reason to doubt that the human resources in place are capable of performing well when combined with the right tools, technology, and materials.

The products surveyed are included in the appendix to this report without technical evaluation, which is beyond the scope of this project. Most of the products surveyed do not now meet Western product certification standards, nor have they been tested for quality and tolerance specifications applicable in the West.

Recommendations for an enterprise-by-enterprise approach to privatization are included in this report. The recommended approach is to restructure enterprises into smaller firms, organized typically along technological lines. These firms should be transferred immediately to private hands, such as current managers and employees, in exchange for promises to share future profits with the government for a limited period. This approach avoids the need for valuation of the assets prior to transfer, and does not require financing of the transfer. Instead, the government exchanges the assets for a limited claim against future profits.

RECOMMENDATIONS

1. The Government of Estonia should begin restructuring the large enterprises of the electronics industry into small- and medium-sized firms.

Estonian electronics enterprises bear closer resemblance to a diversified village than to a modern international electronics enterprise. Foreign well-capitalized investors are likely to be uninterested in buying a jumble of what appear to them to be unrelated assets — the village — instead of the one or two streamlined product lines that interest them.

D

2. **The fault lines within the enterprises used for breakup should be along the borders of different technologies.**

For example, tool and die making should be separated from metal working. That activity in turn should be separated from plastic injection molding and the design and manufacture of printed circuit boards. Further separation should be made from the working of silicon into circuits and their assembly into chips. All these operations should be separated from the ownership of real estate. The maintenance of buildings and other ancillary assets, such as apartment buildings and other social assets, should also be separated.

Many of the separated small firms, such as metal working, while not necessarily interesting to foreign investment, are likely to have a role in developing the general internal capability of Estonian industry. The restructuring of these enterprises will contribute significantly to the development of a vigorous small-and medium-sized business segment in Estonia.

After restructuring, a significant number of small competing tool and die makers, for example, would have come out of these large electronics enterprises. These small firms would be enabled to, and would have to, enter the Estonian market to offer their goods and services to a wider marketplace. They would start to provide competitive tool and die making to the entire Estonian marketplace. Because there is currently excess capacity in tool and die making within the enterprises, absent the development of regional and international markets, some firms would fail and some would survive, depending on their skills and the demand for their services. In the process, the management involved would start to focus on filling the needs of the market rather than simply obeying the commands of the general director of the current enterprise.

If left in large enterprises, these small firms would become part of the larger failure of the enterprise. Any potential contribution to Estonia by these small firms would be lost, and the potential social costs to the Estonian government would likely be burdensome.

3. **The small firms that will be divested from the larger current enterprises should be offered to joint stock companies formed by the current management and workers within those technologies.**

This is not intended to preclude firms being offered to joint stock companies formed by other interested investors or even by other combinations of workers and management. When there is more than one party interested, the opportunities would be put up for bid in the manner discussed below.

4. **When appropriate or necessary, the small firms should be put up for bid to ensure that they go to the highest bidder.**

5. **Because managers and workers in Estonia have virtually no access to capital, the bids should be denominated in percentage of profits that are earned for a period of several years.**

E

Many of these firms will not be profitable: the assets that they have taken over are worthless. The new owners should not have to pay the government to take over and operate what turn out to be liabilities rather than assets.

6. The period of years should be simple and not subject to manipulation.

A fixed percentage might be used, such as 50 percent, of the years shown in the depreciation schedule used in the U.S. Internal Revenue Code for the depreciation of classes of assets for all assets older than half the depreciation age, and the full depreciation schedule for any newer assets.

F

PRIVATIZATION OF THE ESTONIAN ELECTRONICS INDUSTRY

BACKGROUND

Estonia is in the process of transformation from being part of a much larger centrally planned socialist economy to becoming an effective market economy integrated into the world economy, in a manner similar to other small Western countries open to international trade. Estonia's primary economic goal is to achieve that transformation as quickly, effectively, and permanently as possible.

Effective market economies are constantly being transformed within the private sector. Firms are born and die, technologies are introduced and retired, and skills are developed, rewarded, and made obsolete. Products and services are constantly being changed in quality, quantity and price.

The central characteristics of an effective market are:

- People are free to apply their skills and talents to their highest and best use;
- People face incentives to put their assets to their highest and best use;
- Consumers are sovereign, in that the economy is designed to respond competitively to their needs; and
- An enormously complex network of exchanges among private parties exists.

That network does not yet exist in Estonia, particularly in the electronics industry. In the past, all exchanges took place between individual enterprises and the center in Moscow. The center is now gone, and a totally different and much more complex web must replace the old one. Then, even if one segment of the web is lost, the stability of the network as a whole is not threatened.

The world marketplace has an even more complex web of knowledge about economic opportunities to buy, sell, and otherwise exchange. That web of knowledge is international in its scope. It is this knowledge of alternatives that allows one party to credibly demand that the other trading party act efficiently and competitively.

These networks cannot be provided by governments or by foreigners. They can only aid or impede the growth of these networks and webs of knowledge. The fastest way for a small and formerly isolated country like Estonia to develop such a web of knowledge is to expose people from every firm to foreign Western business and practice. For example, widespread attendance at international events like the Hannover Messe, a world class annual exposition in the electrical and electronics industry, would be helpful.

As privatization occurs, the transfer of enterprises and assets from the government into private hands, and, more importantly, private control is achieved. Thus, the prevailing form of private control becomes the driving force in the marketplace, and serves as a catalyst for subsequent development of entrepreneurial, financial, and management skills.

After privatization, the firms will be able to enter freely into contracts with suppliers and customers to buy, sell, borrow, and lend assets, products, and services without obtaining permission from or even informing the government. Private parties will continue the ongoing process of change that is the market process, all in response to the needs of consumers and producers in Estonia and abroad. Privatization must be accomplished in a way that does not interfere with the further buying and selling, and combination of assets.

The Range of Possible Privatization Options

The Do-nothing Option

Under this option, the Government of Estonia continues to operate the enterprise. This option could be the result of delay, or of excess waiting for better alternatives, or of a political decision. This option is contrary to the fundamental interests of the government and people of Estonia. Further, it is a virtual guarantee of failure of the enterprise, because the enterprises are bound up in their history as part of the former Soviet Union, under the direct control of ministries in Moscow, supplying far-flung parts of the now dissolved union. No one would ever create such enterprises in such a manner and on such a scale today.

The enterprises will have to undergo major technical changes in scale, technology, organization, and market to survive. The government is in no position to conceive, organize, finance, or carry out such major changes. Many of these enterprises will fail, no matter what is done with them. The burden on them of inappropriate mission, structure, capital, plant, equipment, management, and skills of the work force all are overwhelming.

The social cost of complete failure of large enterprises is large. The cost of restructuring large enterprises is likely to be overcome by the economic and social savings resulting from survival of some of the new firms that are created, as compared to allowing all the employees of the entire enterprise to become unemployed.

The government's goal for enterprises that will fail should be to make that failure as limited in scope as possible, while salvaging any useful parts of the enterprise. The worst outcome would be for failures to be seen as the fault of the current government of Estonia, rather than of the combination of the former Soviet Union and management.

Wait for Purchase by Well-capitalized Buyers (Typically Foreign)

This option in most cases would turn into the do-nothing option, because for most enterprises it would be a long wait indeed. Foreign companies are interested in firms that are strictly focused on specific production activities that are potentially profitable.

Turn Over the Enterprises in Their Present Form to the Managers and Employees

Former Soviet enterprises are unfocused, and produce items that are likely to have to undergo major change if they are to have any chance in world competition. Current management is unlikely to be able to manage such complex entities in an open trading environment. These enterprises functioned in a particular environment where competition did not exist. The sole task of these enterprises was to supply the ministry with meters of wire or motors. Now, each part of the enterprise must shift its focus from the orders coming from the center in Moscow to opportunities that are available in a diverse marketplace, in Estonia and around the world. Nowhere else in the world are electronics manufactured in such enterprises; why should they succeed in Estonia?

Restructure the Enterprises Into Several Smaller Firms and Turn Them Over to the Particular Managers and Employees

This is the alternative that is recommended and is discussed in the rest of the report.

Liquidation at Auction of the Individual Assets of the Enterprise

If the individual machines, tools, inventory, and buildings were to be auctioned off in the equivalent of a liquidation, it is apparent that most of the items would be sold as scrap. There is probably little market for them and finding it would usually be more expensive than simply selling for scrap. These assets have more value being kept in use, if possible, by the people who know how to use them.

Transaction Costs

Transaction costs in Estonia today are effectively infinite for certain types of transactions:

- Purchase and sale of firms, particularly large firms in the Estonian context;
- Purchase and sale of assets;
- International trade;
- Trade in producer goods;

- Borrowing and lending;
- Purchase and sale of real estate; and
- Restructuring of firms.

These transaction costs are high because of the lack of clear definitions of property rights that are normally provided by property law, contract law, and a commercial code.

Legal Reform and Privatization

Legal and legislative reforms are necessary for a successful transformation to an effective market economy.

The Government of Estonia is aware of the significant obstacles to privatization posed by the lack of a coherent legal structure. The usual definitions of rights and obligations found in every market economy are currently lacking in Estonia. This report is not a legal one; the legal obstacles to privatization are highlighted as yet another example of the importance of the task of legal reform facing the Parliament and Ministries. It is clear that without legal reform Estonia will remain a second or third tier choice for private foreign investment even among the emerging economies of Central and Eastern Europe.

The centralization of economic decision making in Moscow has had a profoundly negative impact on the legal, regulatory, and contractual framework within which individuals or firms operate. Little confidence exists that entering into economic arrangements is supported by a body of law for the economic arena in general or specific market-driven transactions in particular, such as a contract.

Privatization requires legislative success in providing processes and procedures by which individuals and firms can exercise their economic rights. Such success will require considerable diligence to write the enabling laws. These areas of legal reform are vital to privatization:

1. Taxation
2. Ownership
3. Bankruptcy
4. Contracts
5. Transfer of title
6. Succession of interest
7. Expropriation
8. Commercial code
9. Incorporation, registration, corporate liability
10. Shareholder rights and obligations
11. Clarification of "Spontaneous Privatization"
12. Securities law, including law for joint stock companies
13. Ownership implications of leases by joint stock companies

14. Citizenship
15. Intellectual property law
16. Labor laws
17. Antitrust
18. Freedom of international trade

Legal reform as applied to privatization appears to follow three basic steps: first, establishing clear ownership rights; second, setting clear rules for transforming enterprises into joint stock or other form-of-ownership entities; and third, establishing clear and transparent procedures for privatization. The ongoing debate in Estonia about all three of the above steps is lively and vigorous; significant progress has been made in many areas. Further progress is essential.

A further comment about antitrust is appropriate here. Many of the enterprises in electronics and in other industries have a monopoly position; indeed the whole economy of Estonia is rife with monopoly, and there is little competition in anything. The best antimonopoly strategy is a simple open-borders policy for international trade.

GOVERNMENT OF ESTONIA PRIVATIZATION OBJECTIVES

The Government of Estonia's motives for privatization are:

- Introduction of a market economy with its attendant economic efficiency;
- Establishment of democracy and political freedoms; and
- Establishment of new sources of government revenues.

Introduction of a Market Economy

In an important sense, this motivation stems from a highly negative response to the failures of the socialist system and the strong belief that individual initiative will produce results superior to those attained under government control. Systemic failures are highly visible in Estonia: growth has largely halted, so that the economy appears to have lost the capacity for providing sustained improvement in well-being; shortages of consumer goods and necessities (notably, this winter, heat and food) are frequent; and the standard of living is considerably lower than in virtually all countries of the West. The contrast with successful market economies is stark, as is the isolation felt by the country despite its ethnic and linguistic ties, as well as geographic proximity, to the Nordic region.

Thus, privatization becomes the catalyst for transforming the base of economic activity, inextricably linked to the establishment of the institution of private property via the divestiture of state assets. Indeed, the creation of private property rights and the rapid divestiture of state

assets are necessary conditions for credible and successful reform efforts. However, the often intricate and lengthy nature of some methods of privatization is likely to reduce confidence in the government, as the timing of restructuring will be determined by complex economic and political considerations.

Expected gains through the privatization of state assets are:

- Producing the same or higher levels of output at lower cost;
- Improvements from better organization and management; and
- Freedom to make decisions as a result of escaping from bureaucratic regulation and distant management.

A pivotal condition for efficiency is the ability to enter dynamic and growing activities and to exit from declining or unprofitable activities.

Substantial gains can be expected in Estonia. The enterprises are clearly inefficient in their use of materials and energy, as production costs are not accounted for nor considered relevant to outputs; the majority of the enterprises are almost certainly overstaffed, with per worker output much lower than comparable firms in the West; decision making, up to the present, has been largely a matter of responding to production goals; and finally, almost all enterprises are engaged in activities that have little to do with their core businesses.

Privatization will force the enterprises to undergo economic rationalization, with vigorous attention to costs and profits. Stockholder demands for accountability and profitability, competitive (particularly foreign) demands, pressure from newly elected boards of directors, the application of financial standards and practices, and the difficulty of securing adequate raw materials should combine to cause awareness of the productive capacity of the electronics industry as a valuable resource in itself.

Establishment of Democracy and Political Freedoms

One of the most openly ideological interests in privatization is the belief that economies based on private property are better at establishing democratic political institutions and preserving individual freedoms than are economies in which the productive apparatus is owned by the state. This conviction inspires the objective of spreading ownership as widely as possible: the wider the spread, the greater the bulwark against destruction of the new, emerging political institutions. Spreading ownership also makes destruction of the new economic system more difficult, because widespread ownership tends to reinforce another value of the democratic system: equality.

This natural outcome of privatization is complicated in Estonia by the evolving and, as yet, unresolved issue of the extension of the rights of citizenship. Nevertheless, it is clear, due to the sheer bulk of the Electronics Industry within the industrial sector of the country, that the

contribution to democracy of establishing ownership of a multitude of industry segments in private hands would be significant.

Establishment of a New Source of Government Revenues

Privatization is obviously a source of potential government revenues. Funds are raised almost immediately when a sale of stock or assets takes place by reducing the dependence of the firm on government subsidies, payment to the government for the property it has sold, and increasing the corporate income tax base. However, for those firms that ultimately fail, there will be unemployed workers who will require welfare support.

Certainly in the long term, the costs to the Government of Estonia will be lower by privatizing than not. Privatization becomes a permanent source of government revenues if the economy, through increased efficiency and higher productivity, moves to a growth pattern superior to that which existed prior to privatization, permitting the collection of taxes of increasing value.

DESCRIPTION OF THE ESTONIAN ELECTRONICS INDUSTRY

The Estonian electronics industry is the largest single industrial employer in the country, with some 28,000 employees who constitute about 12 percent of the industrial work force. The 13 largest enterprises employ 90 percent of the electronics work force, and account for some 95 percent of total electronics output. Total output of the sector was 525 million 1990 rubles. The industry is concentrated in Tallinn, with two significant sites in Tartu and two in Narva.

The industry grew substantially over the last several decades, governed by ministries within the former Soviet Union and directed, for the most part, by Soviet managers using imported Soviet workers. In the larger enterprises it was not unusual for 90 percent of the employees to be non-Estonian. There was little, if any, local influence or participation in the sector; indeed, much of it was secret, as many of the enterprises were directly linked to Soviet military industry.

Most electronics enterprises the team visited share the characteristics of heavy Soviet industry. Planned as what Marxists called "natural economies," the enterprises were completely vertically integrated, requiring no support from the local economy. Production outputs were ordered by the Central Planning authorities of the Soviet Ministry that governed the particular enterprise, with little emphasis on the production of consumer goods. Rather, most technology was applied to Soviet military and defense establishment requirements. Raw materials, production guidelines, product standards and specifications, final product shipping and handling — all were handled by the respective ministry. Thus, supplier relationships were virtually nonexistent; in addition, most enterprises had little real knowledge of their ultimate customer. They relied instead on the orders placed through their ministry as the means of reaching production goals. Marketing capacity, therefore, was never developed.

Financial accountability is lacking, as are standard balance sheets, profit and loss statements, inventory management techniques, tracking of accounts receivable, and cash management. Again, the all-encompassing system of filling ministerial requisitions replaced the management and production techniques normally associated with enterprises of this magnitude and technological capacity.

Raw materials, supplied almost entirely from outside Estonia by the former Soviet Union, are characterized by poor quality, irregular technical specifications, erratic supply, and, as of late, prices accelerating rapidly upward toward world market prices. Many enterprises are suffering from the inability to source raw materials, and have sharply curtailed production as a result. Most factory managers were not optimistic that their ability to purchase raw materials would improve in the near term.

Physical plant is, for the most part, inappropriate, outdated, and in poor repair. Many large enterprises are in nineteenth century multistory factory buildings requiring production lines to be split among different floors of the same building. Floors are uneven, clean spaces are difficult to maintain, and plumbing, heating, and lighting are makeshift. The exception was an industrial park outside of Tallinn that showed considerably more promise, with one-story production facilities among the most modern to be found in Estonia.

For the most part, factory equipment is outdated, having been obtained from Soviet or Warsaw Pact sources, and with maintenance and replacement lagging. Most managers were able to state the average age of machinery in their plants; a typical response when asked was 10 years. Replacement parts have already become difficult to obtain from the former Soviet Union.

Production methods are labor intensive, employing many more workers than would be typical in the West. It has been estimated by the Estonian Academy of Sciences that output per worker in the Electronics Industry is 5-10 times lower than a similar worker in the same industry in the West. There is little streamlining of production facilities; those operations most closely resembling assembly lines were operations in which units were hand-passed from one worker to the next.

Technology lags have been estimated at 5-40 years, depending on the product line. One of the most advanced technologies in use is in the production of semiconductors; the plant manager estimated that the production facilities and products were 7-10 years behind the West.

The variety of products is enormous: electronic components; complicated equipment and systems for industrial calibration, monitoring, and measuring; aviation devices; semiconductors; certain medical equipment; integrated circuits; diodes; thyristors; pumps; compressors; engines; transformers; and various analytical devices. See the appendix for a list of the enterprises surveyed, and their location and product lines.

The enterprises, at present, appear to be unstable. External factors have contributed significantly to this destabilization. The loss of value of the ruble against convertible currencies, the diminished raw material supplies from the former Soviet Union, and the end of demand for most military products are examples. However, the enterprises, even if restored to financial

liquidity with free access to raw materials, are positioned poorly to compete in the global marketplace, making Western investment implausible in the near future. Technological lags, lack of knowledge of the global electronics marketplace, lack of product certification according to Western tolerance and quality standards, and the dearth of marketing skills cripple the sector's ability to promulgate Estonia as a viable, competitive market force in electronics.

As is typical of the Soviet system, the Estonian electronics enterprises are replete with ancillary assets — those operating entities within the enterprises that provide services, housing, schooling, recreation, and so forth but are not essential to the production facilities themselves. (Examples are apartment buildings, catering services, musical groups, construction companies, fire departments, glass-blowers.) Distinct privatization methods need to be developed to separate these assets from the productive assets of the enterprises.

Three Categories of Enterprises

Large Integrated Enterprises

RET
Poogelmann
Elektrotehnika
Volta
Toostusaparaat
Tartu Aparaadiehitus Tehas
Tartu Kontrollaparatuuri Tehas
Eesti Kaabel
Baltijets

Small Estonian Entrepreneurial Ventures

Tallinna Elektrotehnika Institut
Shtamp
Tallinna Raadioelektroonika Konstrueerimisburoo
Various enterprises spun off from:
- Estonian Academy of Sciences
- Cybernetics Institute

Retail and Service Enterprise

Orbita Service

RESTRUCTURING THE LARGE INTEGRATED ENTERPRISES INTO SMALLER, COHERENT FIRMS

Concerned parties today cannot predict how the Estonian economy in general, or the electronics industry in particular, will be transformed on its way to becoming an effective market economy. Therefore, restructuring should be understood to be only the first of a series of changes that firms will undergo in the transformation to an effective market economy.

Restructuring Steps[1]

1. Identify the unit or units of the enterprise to be restructured, according to technological capacity.

2. Identify possible buyers or stockholders.

The likely buyers for any of the electronics enterprises or parts of enterprises are probably limited, at the present time, to current management and employees. However, it is possible that other unrelated parties, or even other configurations of managers and employees or suppliers and customers, might be interested in buying the firm. In that case, they should be encouraged to participate in the bidding process described below.

---

[1] Valuation of the unit or of the assets that comprise the unit is a normal part of restructuring firms in a Western context, or where there is a Western buyer, but it will typically be inappropriate here. The purpose of valuation is to assure the original owner of the assets that management is getting proper rewards for the disposition of the assets (and not too little), and to assure the stockholders of the buyer that an appropriate price is being paid (and not too much). The task of valuation is to identify a price at which a knowledgeable willing buyer would purchase the asset from a knowledgeable willing seller. Traditional valuation techniques include historical costs of assets, current sale value of the assets, or projected cash flows that will be generated.

Historical costs in the Soviet system are likely to be irrelevant to a knowledgeable buyer or seller because the costs were not arrived at using market values, and do not accurately reflect relative scarcity then or now. Most assets surveyed in the electronics industry were not state of the art, and are not on the market in the world economy, except at something close to scrap value. However, in some cases, there will be significant remaining value in the assets functioning in place until they are replaced by modern equipment in modern real estate. Projections of future cash flows are extremely uncertain, because it is difficult to predict with any reasonable degree of certainty what might flow from these assets. The amount of future cash flows depend critically on issues other than the assets: the effectiveness of management in a totally new environment, the ability of future owners to resell to higher bidders, and the speed and completeness with which the government of Estonia will be able to resolve all the legal and legislative tasks necessary for a fully functioning market economy.

Because of all these uncertainties, it will usually be folly to invest significant funds into obtaining independent valuation of assets. Privatization methods should be used that do not require the use of independent valuation of the assets, wherever possible.

3. Negotiate a price that will be acceptable to both parties.

Current management and employees have no access to capital markets, so they are unable to borrow against future earnings of the firm. Lack of access to capital markets will severely limit the amount offered.

Still, when more than one party is interested in buying, some form of competitive bidding would be desirable to provide incentives to potential owners to reveal their estimate of the value of the assets.

4. Ensure an appropriate bidding structure.

Because Estonians have no access to capital markets, bidding should be in terms of a percentage of the profits to be earned, rather than cash.

The tenor of repayment to the government should be limited, so that the transition period from socialism to capitalism is limited. The Government of Estonia should reserve the right to set a minimum bid. An example of a method of limiting the tenor of repayment is to use half of the economic life of the relevant class of assets, as used by the U. S. Internal Revenue Service for tax purposes. For example, a tool and die firm carved out of one of the electronics enterprises might be put up for bid, where the unit of bidding is percentages of profit for the next four years. Four years would be applied by the government as half of the assumed IRS life for similar assets of eight years.

Furthermore, if the assets that are provided in the privatization are resold outright to a different, subsequent group of investors, the Government of Estonia should receive a large percentage of the proceeds — a percentage that would decline over the expected life of the asset. For example, if the same tool and die firm sold its tools and dies and presses in the second year of privatization, it should owe a large percentage of the value to the government reflecting the depreciated value of the assets at the time of the privatization. However, if the assets were sold in the fifth year, the assets would be fully depreciated and the government would get nothing.

5. Provide sales contracts to the firm with its former enterprise or its successor firms, as a source of initial revenues.

6. Negotiate a lease for the real estate with the Government of Estonia.

Payments to the Government of Estonia for the Assets Transferred to Private Parties

The Government of Estonia will be paid for transferring property, plant, and equipment from two sources:

1. The result of the bidding process when a firm is profitable:

New firms will pay a percentage of profits for the first few years, as described above, if they are profitable. The government will receive nothing from those firms that are not profitable.

2. The result of a resale of assets by a new firm:

The government should get a percentage of any consideration received by a firm that has recently received assets under this program of restructuring. Here, the percentage should decline over time, to reflect the diminishing value of the assets granted during the restructuring in the value of the firm.

Relationship of Restructuring to Attempts to Attract Foreign Joint Venture Partners

Restructuring will typically make the firms more attractive to foreign or other well-capitalized investors than they are currently and will effectively clear out a great deal of undesirable assets from the perspective of the investor. Well-capitalized investors are not interested in taking responsibility for the extremely broad range of activities that these enterprises currently carry out in response to the needs of "natural economy." They may well see opportunities in assembling printed circuit boards or building thyristors, but are unlikely to be interested in becoming owners of tool and die making capabilities at the same time. Restructuring would create a more attractive rebundling of the assets of the old enterprises.

Restructuring has the potential to greatly reduce the difficulty faced by foreign investors wishing to invest in Estonia. To begin assembling printed circuit boards in Estonia, for example, after restructuring, a potential foreign investor or joint venture partner can simply negotiate directly and solely with the management of the restructured firm. The investor does not need to convince a large, unseen, and unknown coalition of government and private people of the merits of proceeding.

Priorities for Restructuring the Large Enterprises

There are many possible legitimate reasons for choosing one enterprise to restructure before another. They would include economic and social or political reasons as well as programmatic reasons. This report does not attempt to consider the social or political matters that may influence privatization decisions.

On the basis of the site visits and information received, the enterprises can be placed in the following groups, in order of priority for restructuring.

1. First project

   RET

2. Second priority group

Poogelmann
Elektrotehnika
Volta
Baltijets
Orbita Service[2]

3. Third priority group

PROMPRIBOR
Tartu Aparaadiehitus Tehas
Tartu Kontrollaparatuuri Tehas
Eesti Kaabel

RET was identified as the leading candidate for restructuring for several reasons. They include its modern facilities and its potential for export production. The borders between technologies are distinct, the enterprise has already been engaged in serious business planning, and RET products have broad consumer appeal.

ACTION PLAN

The next steps are critical to creating small privately held firms from state enterprises.

Using RET as the first restructuring project, the next step should be the creation of a quick response team of local and foreign experts to define the precise contours of the restructured firms arising out of RET. This restructuring is intended to be a model for application to the particular facts facing other enterprises in the large All-Union mold, both in and outside of the electronics industry. Because of the transferable nature of the model restructuring created here, later restructurings are likely to be simpler, after the initial model is developed.

This restructuring project will be achieved in conjunction with the Ministry of Industry, the State Property Board, and the Department of Foreign Economic Relations. The transfer of assets or stock will be accomplished in a manner consistent with the then current legal structure. The more completely the body of law is modernized by the Parliament, the more appropriate will be the legal basis of the restructuring.

---

[2] Orbita Service provides electronics retail sales and service throughout Estonia. It has entered the community television antenna business and plans to enter the cable TV industry. The distribution and retail functions performed by Orbita Service should be separated. The retail and local service functions can probably be sold separately from distribution, which in turn can be sold separately from the cable and antenna business. Separate retailers would probably want to retain a franchise relationship with the distributor, but the exact details of that relationship deserve significant further work.

The first restructuring will be undertaken with the assistance of a combination of professionals drawn from a team of financial planners, attorneys, financial analysts, economists, industrial engineers, electronics technical specialists, and others as may be required.

To speed up the restructuring of other enterprises and provide continual access to restructuring services, the consortium will provide quick response teams to help other enterprises take discrete acts to prepare for restructuring. These teams would typically include a financial planner, an economist, a lawyer, a financial analyst, and an engineer.

As experience is gained in restructuring, Estonian experts and professionals will increasingly fill the positions on the teams.

For each restructuring, the following assistance is recommended:

- Establishment of financial and cost accounting systems;
- Legal advice;
- Preparation of business plans;
- Identification of potential and actual environmental risks;
- Management skills; and
- Production efficiencies.

Additionally, the following general improvements are strongly recommended, aimed at overall enhancement of the industry in Estonia:

- Availability of low cost technology parks, similar to those found in electronics areas around the world, where there are modern, single-story, multipurpose buildings, with appropriate research and development as well as production facilities;
- A center for dissemination of market and technical information;
- An Estonian Bureau of Standards and Certification capable of testing products to world standards;
- A modern taxation system that would encourage the formation of venture capital;
- Improved telecommunications for the sharing of rapidly changing technical information;

- Personal computer based accounting software package, which, if properly used by the firms, will be adequate record-keeping for government accounting and taxation purposes as well as for private accounting;
- Access to industry publications, periodicals and journals; and
- Participation in world electronics events, both scientific and trade.

RECOMMENDATIONS

1. **The Government of Estonia should begin restructuring the large enterprises of the electronics industry into small- and medium-sized firms.**

Estonian electronics enterprises bear closer resemblance to a diversified village than to a modern international electronics enterprise. Foreign well-capitalized investors are likely to be uninterested in buying a jumble of what appear to them to be unrelated assets — the village — instead of the one or two streamlined product lines that interest them.

2. **The fault lines within the enterprises used for breakup should be along the borders of different technologies.**

For example, tool and die making should be separated from metal working. That activity in turn should be separated from plastic injection molding and the design and manufacture of printed circuit boards. Further separation should be made from the working of silicon into circuits and their assembly into chips. All these operations should be separated from the ownership of real estate. The maintenance of buildings and other ancillary assets, such as apartment buildings and other social assets, should also be separated.

Many of the separated small firms, such as metal working, while not necessarily interesting to foreign investment, are likely to have a role in developing the general internal capability of Estonian industry. The restructuring of these enterprises will contribute significantly to the development of a vigorous small-and medium-sized business segment in Estonia.

After restructuring, a significant number of small competing tool and die makers, for example, would have come out of these large electronics enterprises. These small firms would be enabled to, and would have to, enter the Estonian market to offer their goods and services to a wider marketplace. They would start to provide competitive tool and die making to the entire Estonian marketplace. Because there is currently excess capacity in tool and die making within the enterprises, absent the development of regional and international markets, some firms would fail and some would survive, depending on their skills and the demand for their services. In the process, the management involved would start to focus on filling the needs of the market rather than simply obeying the commands of the general director of the current enterprise.

If left in large enterprises, these small firms would become part of the larger failure of the enterprise. Any potential contribution to Estonia by these small firms would be lost, and the potential social costs to the Estonian government would likely be burdensome.

3. **The small firms that will be divested from the larger current enterprises should be offered to joint stock companies formed by the current management and workers within those technologies.**

This is not intended to preclude firms being offered to joint stock companies formed by other interested investors or even by other combinations of workers and management. When there is more than one party interested, the opportunities would be put up for bid in the manner discussed below.

4. **When appropriate or necessary, the small firms should be put up for bid to ensure that they go to the highest bidder.**

5. **Because managers and workers in Estonia have virtually no access to capital, the bids should be denominated in percentage of profits that are earned for a period of several years.**

Many of these firms will not be profitable: the assets that they have taken over are worthless. The new owners should not have to pay the government to take over and operate what turn out to be liabilities rather than assets.

6. **The period of years should be simple and not subject to manipulation.**

A fixed percentage might be used, such as 50 percent, of the years shown in the depreciation schedule used in the U.S. Internal Revenue Code for the depreciation of classes of assets for all assets older than half the depreciation age, and the full depreciation schedule for any newer assets.

PROVIDING ASSISTANCE TO EXISTING SMALL FIRMS

In addition to evaluating the large enterprises in Estonia during the site visits for this report, several start-up firms producing small quantities of niche electronics products were also investigated. These firms were often started by entrepreneurs with a technical background, and had strong links to the Estonian Academy of Sciences. Although dependent upon the Academy for initial investment costs, the firms operate independently, and are run as for-profit businesses.

The future development of the industry in Estonia goes well beyond the restructuring of the large, former Soviet enterprises, to include those smaller niche firms at the leading edge of technology changes. It is conceivable that a considerable part of the electronics industry in the future will consist of smaller firms engaged in the following main fields of activity:

1. Manufacturing of subproducts and components for larger firms;

2. Final assembly and testing of products;

3. Pilot production of high-tech products;

4. Service and maintenance; and

5. Distribution and supply of materials and components.

Assistance is required to enable these smaller firms to thrive. These firms would benefit from:

- A program for the development of small and medium business managerial skills;
- Assistance in establishing financial and cost accounting systems for the new firms in order to make financial accountability feasible;
- Assistance in preparing joint stock company documents;
- Assistance in preparing suitable business plans;
- Identification of potential and actual environmental risks from existing and planned operations;
- Management training;
- Assessment of production methods, with recommendations for improvements; and
- Advice on legal structure and appropriate documentation.

Employees, managers, and owners of these small firms — many of them resembling technical think tanks with limited product output — have been isolated from mainstream technical advances. Receipt of scientific journals has been constrained, as has participation in trade fairs and scientific expositions, because of lack of funding. Personal contacts among outside industry counterparts have been negligible. It is critical that this be changed immediately. Electronics in the West is a huge undertaking where products, processes, and, therefore, opportunities are changing constantly. Until Estonians are constantly meeting, reading, writing, and negotiating with their Western counterparts, it will be impossible for them to anticipate the best use of their scarce resources in such a rapidly changing world.

As the electronics privatization process unfolds, it is recommended that the Government of Estonia investigate the possibility of using funds raised from the sale of state electronics assets to foster the development of the smaller firms within the industry. Such funding could replace other government or A.I.D. funding to support the exchange of scientific information, further

educational exchanges, subscription to scientific journals, participation in conferences and symposia, and visits to other electronics manufacturers in the West.

APPENDIX: ENTERPRISES VISITED

A. Tallinna Tootmiskoondis Toostusaparaat
200107 Tallinn Lastekodu 48

Mr. Anatoli I. Makarov
General Director

Ms. Elena Jermakova
Deputy Economic Director

Mr. Nitikin
Chief of Planning Department

1,200 employees

Annual Revenues: 1991: 100 million RBLS.

Electromagnetic consumption meters, heat counters, transducers, switches, transformers, sensory devices for aviation

B. Tallinna Elektrotehnika Institut
200103 Tallinn Pirita tee 20

Mr. Gunnar Toomsoo
General Director

Mr. Valentin Timofejev
Assistant General Director

400 employees

Annual Revenues: 1990: 10 million RBLS.

Semiconductors, test equipment for semiconductors, control systems for industry, transformers, data processing systems

C. Ettovote Shtamp
200103 Tallinn Pirita tee 20

Mr. Adolf Talkop
General Director

200 Employees

Tool and Die Shop

D. Teadus-Tootmiskoondis Elektrotehnika (ESTEL)
200100 Tallinn Telliskivi 60

Mr. Vladimir Mirosnitsenko
General Director

Power semiconductor devices (thyristors, diodes), transformers, power supplies for electric railway substations, electric drives of pumps, compressors

E. Tallinna Muundurseadmete Tehas
20014 Tallinn Betooni 6

Mr. Mikolai Adamov
Director

3,500 Employees

Annual Revenues: 1991: 170 million RBLS.

Power semiconductor devices (thyristors, diodes), transformers, power supplies for electric railway substations, electric drives of pumps, compressors

F. Tehas Volta
200110 Tallinn Toostuse 47

Mr. Boris Churikov
General Director

Mr. Jouri Khatchaturian
Sales Manager

3,500 Employees

Annual Revenues: 1991: 120 million RBLS.

Electric Motors

G. **Poogelmann Electrotechnical Works**
142 Parnu Street
200107 Tallinn

Mr. Juhan Jalakas
General Director

Mr. Abru Uno
Chief Technical Officer

2,500 Employees

Annual Revenues: 1991: 85 million RBLS.

Semiconductor devices, Linear integrated circuits, hearing aids

H. **Tootmiskoondis Orbita Service**
200006 Tallinn Liimi 1

Mr. Vello Rink
General Manager

800 Employees

Annual Revenues: 1991: 36 million RBLS.

Cable Television Installations, Television Repair Service, Individual and Communal Antennae

I. **Tallinna Raadioelektronika Tootmiskoondis (RET)**
200102 Tallinn Narva Mnt. 11

Mr. Aleksander Plustsajev
General Director

Mr. Tonu Aas
Chief Technical Officer

J. **Tallinna Raadioelektroonika Konstrueerimisburoo**
Estonia Avenue 3/5
200090 Tallinn

Mr. Rostislav Lukin
Chief Engineer

Annual Revenues: 1991: 70 million RBLS.

Electronic digital voltmeters and calibrators, consumer electronics (radio receivers, turntables, audio amplifiers)

K. **Estonian Academy of Sciences**
Institute of Cybernetics
Akadeemia tee 21/1

Mr. Hari Tani
Deputy Director, Computer research and development division

Mr. Ants Work
Assistant Director

L. **Tehas Eesti Kaabel**
200106 Tallinn Kingissepa 64

Mr. Valeri Malosko
General Director

Mr. Vladimir Markov
Commercial Director,
EKSI Ltd. (Joint Stock Company)

500 Employees

Annual Revenues: 1989: 22 million RBLS.

Cables and Wires

M. **Eesti Teadiste Akadeemia Konstrueerimisburoo**
20018 Tallinn
Akadeemia tee 19

Mr. Karl Saar
Director

Mr. Heino Lind
Chief Engineer

270 Employees

Annual Revenues: 1991: 4 million RBLS.

N. **Kamitra, Ltd.**
Akadeemia Tee 21/1
20018 Tallinn

Mr. Heino Lind
Chairman

20 Employees

Chromotographic Instruments

O. **Tartu Apparaadiehitus Tehas**
Tartu

Flight data recorders, angular movement sensors, consumer electronics

P. **Tartu Kontrollaparatuuri Tehas**
Tartu

Engine control relay devices, industrial electronic pressure transmitters, pressure controls for refrigeration