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UNCERTAINTY IN INDUSTRIAL PROJECT EVALUATION
WITH SPECIAL REFERENCE TO EXPORT INDUSTRIES

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I. Introduction

Every investment is designed to achieve some results in the form of economic benefits. Types and volumes of these benefits, as planned categories, are considered in a documentation serving as a basis for making investment decisions. The documentation is in fact a realistic presentation of the ideas of the investor on the benefits he expects to achieve by the investment. On the basis of this, the investor should be able to discern the degree and volume of these benefits.

In some cases, however, the investor has only a wish to invest in order to achieve specified benefits, but has no definite idea regarding actual concrete projects in which to invest. In such cases, the availability of a great number of documentation on various projects, helps the investor to decide where to invest. Therefore, in these cases, the documentation serves not only for appraisal of the types and volume of the expected benefits, but also for selection of the most favourable project.

Actual benefits achieved by investment in a project, may be appraised only when the project is finished and when its production gives concrete results. It is only then that the investor can establish whether the planned benefits of his project and the relevant documentation have been achieved and to what extent.

Experience shows that great differences exist between the expected and the actual benefits in many cases, and unfortunately with negative effects in the main. There are several reasons for this discrepancy. Some are purely subjective in nature. In other words, both the investor and those who have helped him in making his decision (designing and consulting engineers, economists, financial analysts and other experts), have on the whole inadequately appraised the benefits (effects) to be obtained from the investment, underestimating the negative factors, and overestimating the positive factors influencing the planned results to be achieved. Others are objective in nature, that is outside the direct
The object of this paper therefore is:

- to explore difficulties arising in the process of evaluation of industrial projects, in particular those oriented to export, and resulting mainly from the inaccuracy of data on the basis of which the evaluation is made;
to point out possible errors in assessment of individual factors, which are necessary for getting a clear picture of the project, as well as to appraise the significance of individual errors and their order of magnitude;

- to indicate the consequences resulting from inaccurate data;

- to suggest measures for removing defects in projects and for possible elimination of errors.

This paper represents a summary of the experience acquired in the task of industrial project evaluation in Yugoslavia. It is designed chiefly for use as an annotated checklist for the issues connected with uncertainties arising from inadequate project evaluation.

The contents of this paper do not apply to any single country but to all countries facing largely similar problems in the course of their industrial development, irrespective of their social systems and of whether they have a planned economy or not.

If this paper conveys the seriousness of the problem and draws the attention of all those connected with evaluation of projects, namely investors, government, specialized agencies, or banks, to all the consequences arising from an inadequate evaluation of projects, it may be considered to have fulfilled its objective. This applies in particular to countries which do not have sufficient capital and which must not risk investment in bad projects. In this respect it shall be stressed that investments once made cannot be withdrawn. Therefore bad investments in a factory will remain as long as the factory exists.

II. Basic Considerations in the Reliability of Data needed for Industrial Project Evaluation

For all those concerned with evaluation of industrial projects, irrespective of their motives (as investors, financiers or, government organs) it is necessary to have at their disposal economic and technical documentation and other data, from which it would be possible to obtain
A completely clear picture, with all the needed details of the project under consideration. In this respect, it is necessary first to consider the available factors as basic factors, with which the project can be carried out. These basic factors, in this section, are: the natural basis, price, water, transport, and labor.

Other factors, which in evaluation of industrial projects must be taken into account, are those which will establish the economic justification of the project, in other words, they are the factors determining the volume of benefits which the new project should afford. Here, project evaluation involves examining the economic factors of the project, if raw material prices and transportation, of the sale price, market possibilities, financial analyses, and so on.

The economic and technical documentation, which serves as a basis for evaluation of an industrial project, is referred to differently in different countries. But irrespective of its manufacture, it must be such as to provide a realistic picture of the industrial project as possible. We shall use the term investment program (investment project), to denote this type of documentation. It is prepared by feasibility studies on follow-up engineering basis.

In this section, a basic consideration of such factors, primarily of the basic factors, will be included. Other factors will be examined in more detail later.

1. Evaluation of the Reliability of Data Needed for the Determination of Basic Conditions

a) Raw Material Basis

Special attention should be given in the investment program to the raw material basis; detailed explanations must be provided as to the sources of raw materials from which the needs of the future project are to be supplied. The analysis of the raw material basis is of a twofold character: it is necessary, on the one hand, to check the statements made in this respect in the investment program on
and on the other hand, to establish, irrespective of the statement made in the investment program, whether the required quantities of raw materials are actually available at the time of the investment.

In order to make sure that the raw material to be used is a sound one, it is necessary first of all to establish precisely the kinds of raw materials required for the different operations, both in annual quantities. For this purpose it is desired to ascertain the productive capacity of the future plant and the annual number of shifts.

To check the exactness of the calculation of the quantities of raw materials required, we should first find the minimum technical norm for the quality of raw material to be used in order to finish the product. The quality of the raw material is an important consideration in the establishment of the new plant in order to produce the required materials.

The next problem to consider is one relative to the selection of the raw material to be used in the various processes. It is, to say the least, desirable that the raw materials should be utilized in the most efficient manner.

Static Sources of RAW MATERIALS: A basic consideration in the selection of raw materials is the static one. There are certain factors to consider, which shall state briefly for static considerations in this connection:

1. Sources of supply. The source of the raw materials should be stable (all kinds of coal, steel, etc.), and to find a stable source:

- stability of supply sources. It is desirable that the source be of non-existent supply, and that the stability of supply be assured. Once the source is established, it is desirable that the source be well established, and that it be possible to maintain a stable source.
the existence of the reserves in question. In some countries special government agencies have been formed for carrying out geological exploration and testing. These agencies issue certificates confirming the availability of the ores reserves. Ore reserves which have not been fully explored are not eligible for exploitation and any reserve or mineral deposit is in estimating the perspectives of future exploitation.

On the basis of the established ore reserves and the existence of the mine, the working life of the mine is calculated by dividing the reserves by the capacity of the mine, and in this way the number of years of potential exploitation of the mine is obtained. Additionally, it is assumed here that the reserves will permit utilization of the capacity of the mine to the full extent over the whole period of its life. On the other hand, it is extremely important to establish the dynamics of exploitation of the reserves, that is, to find out how much ore can be extracted every year. It is observed that the quantity of ore extracted varies from year to year, particularly at the beginning and end of the potential exploitation period. At the beginning this is due to the large quantities of gangue, which has to be extracted before the main part of the ore body is reached; at the end of the exploitation, it is caused by the reduction of the ore, while the percentage of worthless rock is increased. The crucial point here is to establish the number of years of full working capacity of the mine;

determination of the calorific value, or the metal content of the ore, or of the quality of non-metals. Experience has shown that a mine should not be exploited at all if the calorific value of coal, the metal content of the ore, or the quality of the non-metal is below a certain given standard. In such cases it is not necessary to proceed with the profitability analysis; and it may in advance be established that the domestic sources cannot assure the raw material basis.
Generally speaking, what has already been said as far as mines, applies mutatis mutandis also to exploitation of oil fields.

Metallurgy. Then speaking of the raw material basis for projects in the sector of iron and steel, we must conclude that the type of investment project we have in mind. For project evaluation purposes at least the following production facilities must be considered individually: iron ore mines, iron foundries, steel works, rolling mills, etc. These may constitute individual projects or they may be integrated as combined single projects uniting all the facilities individually, at least the last four of them.

Raw materials for iron foundries are iron ores, limestone and coke. Then establishing whether their iron ore supply is reliable for the blast furnaces it is necessary to see whether the iron ore mine of ore iron ore as the source of raw material can supply enough ore for the blast furnaces of the planned capacity and planned duration of portion. As regards coke, it is necessary to determine first whether domestic or imported coke will be required. If metallic coke is to be used, that has been said about iron mines as lumps here also.

Raw materials for steel mills are pig iron and scrap. Iron; raw materials for rolling mills are the products of steel mills, i.e., all kinds of steel.

If a combined project is envisaged, it should be ascertained whether the productive capacity of the blast furnaces is sufficient to supply the steel mill, and the rolling mill without impairing the requirements of old customers outside the project's steelworks. If the respective productive capacities cannot be coordinated, then it must be shown how the shortage is to be covered.

\[1\] In certain contemporary technological processes electric furnaces serve as a substitute for coke.
If the steel mill can't/ or the miller will not incorporate in their plant a new steel mill, then the steel mill will be explicitly stated.

In non-ferrous metallurgy, the following terms are distinguished: ores, anodes (electrolytic plate) and tin-mills.

All that has been said in the section describes the production of non-ferrous metals, so that the remaining section is the raw material for the production of individual non-ferrous metals. Attention must be paid to the chemical processes which will be carried out in the very first stage. In general, the reduction of aluminum consists of the reduction of aluminum oxide to aluminum in a reduction plant. The raw material for the reduction of aluminum is aluminum oxide and reduction of aluminum electric power.

In the case of non-ferrous distinct chemically inert are the mining and industrial production, as for instance the manufacturing of refractories, glass, cement, etc.

Everything that has been said about in non-ferrous metals also applies to non-ferrous metals.

Chemicals. This is a very extensively realized complex field; therefore, in only the most essential particulars: living products, like its derivates, agricultural fuels, forestry products, etc., all serves raw materials for chemical industry. Special care should be taken when the raw material basis is determined for chemical industries. For it may happen, that the raw material required is actually available, but in such a way that it is impossible to use it for reduction purposes in the envisaged project. Finally, this raw material must previously have to pass through various phases of manufacturing; and for these phases, which often require substantial investment outlays, productive capacities don't exist on; new investment capital has not been provided.
Also, it should be carefully investigated whether domestically produced materials will meet the peculiar requirements of envisaged production.

Manufacturing industry. Raw materials for machine-building, metal-working, shipbuilding and the production of electrical equipment and accessories are mainly the products of the iron and steel and non-ferrous metallurgy. If the investment program is oriented to the use of domestic metallurgy products, it is important to check whether the domestic sources of supply (both existing works and works under construction) have surpluses over and above their requirements of the already operating manufacturing industries.

For food processing and other branches of processing industry, sources of raw material supply should be determined with a high degree of precision. Accurate analysis of the raw material availability for projects in food processing industry is particularly important.

Only surpluses of agricultural produce available with a considerable margin of safety may be accepted as raw material basis for this industry. The determination of surpluses for industrial processing is a very complicated procedure and utmost caution must be exercised.

In order to determine whether the supply of raw materials for a given kind of production is assured, the present level of production (according to statistical records) must be taken as a basis; only after this evaluation of the raw material basis for a new by the investor can be made.

Evaluation of possibilities to obtain raw materials from abroad

If the raw material is to be supplied from abroad, it should be stated in the investment program. If possible, the country from which it is to be imported. If there is no exchange situation or the desire to develop economic relations with a particular country dictate the necessity to import raw materials of inferior quality, it should be established in advance whether the processing of such inferior raw materials in the plant foreseen by the investor will be possible.
It is a very risky enterprise to build a factory relying on imported raw materials if the supply has not been adequately or raised or if the supply has not been secured for a limited time. If the enterprise is at all large, each of the key components will work on reduced capacity. Difficulty may arise for many reasons:

- the raw material in question may be in short supply in the world markets or the nearest one. The basis for this kind of analysis is to survey the world market for the particular one of the raw materials in question or in the particular field.

- Development of a domestic producing industry in the primary producing country leads to a reduction in the quantities of that raw material available for sale in the world market, and this interrupts the flow of supply;

- the availability in the country from which the raw material is to be imported must also be carefully investigated. It may be that even though the raw material is actually available in the world market, it is not possible to purchase it in time to meet the demand for the material.

Development of an export-oriented industry with basis of imported raw materials is a rational undertaking only when cheap labour is available, or if there are already international transactions in the relations between firms in the primary producing country and firms in the country importing the raw material.

b) Power, Transportation and Labour

Power: Sources of energy may sometimes play an important role in the selection of location in analysis. The sources of power cover the following choices:

- it is necessary to determine what kind of energy has been selected; then, it shall be checked if a sufficient supply of it has been foreseen will finally, it is important to know if the supply is absolutely assured. For large-scale projects consuming quantities of electric power (for example, electrolytic plants
For production of aluminum it is necessary to build two or more electric stations. In such cases, it should be verified if the necessary resources have been secured for this purpose.

It should be checked whether the transmission capacity to the project has been provided (i.e., whether the transmission lines to transformer stations, i.e., to the transport of natural gas, etc).

Later, depending on the location of the station and its role in the collection of fuel, it is important to verify the characteristics of the water to conform to the requirements of the planned technical processes.

Transport. Transportation facilities may vary from place to place. In the selection of location, it is important to transport" in this context reverses the use of transport (i.e., "unloading" instead of "loading") and "transport" (which is the initial term).

Transport analysis aims to verify the following questions: the category of transport (railway, oceanary, etc.); checking of transport facilities is required to verify whether they can fulfill the required transportation tasks; whether they can be used in the finish stages of the project. Here, it must be taken into account whether the transport requirements of the given transport facility is about. For example, whether the necessary vehicles (trucks, refrigerated cars, naviation craft, etc.) are available, if not, whether the necessary resources have been secured for their purchase.
Labour. The following points should be checked as regards labour:

- whether the forecasted total number of workers is adequate to assure the execution with the planned framework;
- that an adequate number of skilled workers has been undertaken to train for the execution of the planned operations; this is particularly important in the cases in which the investor plans a new line of production in which he is not working at present.

2. Other important facts for the appraisal of the justification of investment programmes

The economic & technical documentation must be so detailed as to prove beyond all doubt the validity of these factors. It must contain all the details and all vital calculations.

The estimated cost of the project must be arrived at on the basis of reliable documentation; for construction works it must be based on the bill of quantities and cost estimates, while for equipment a complete engineering or their equivalent technical documentation shall be provided. In addition, it must be evident from the documentation whether all construction materials and/or equipment work may be obtained in the domestic market, or needs to be imported. In the latter case, it is important to establish whether these imports can be maintained on the basis of established channels or, conversely, to make special provision in order to assure the supply required for the project in question. Similarly, it is necessary to establish whether the equipment is to be imported or supplied by domestic producers. The efficiency of the domestic machine-building industry presents a special problem. There is often a tendency for the domestic industry to participate in the execution of a project although there are reasonable doubts as to whether adequate production facilities are available. Here, also, it must be clarified whether the required production materials are supplied to the local producers in the course of normal commodity exchanges, or will have to be assured by special arrangements for the construction of the project in question.
The presentation of raw material prices and of their costs is a vital factor in the preparation of financial statements. In view of the variable character of this element, it should be clearly indicated that such prices have been fixed on the basis of past prices. A similar procedure should be followed in determining the variable nature of selling prices.

On the basis of these elements, the financial statements are prepared. In this process, primarily in the project, there are several factors that influence the financial statements. These factors include:

1. **Errors in Estimation**

   In the preceding section, we have attempted to explain the kind of documentation required for the evaluation of the project. We have also indicated that in the future, this documentation is being revised. The most recent section is concerned with documentation which will be revised. The present section is concerned with documentation which will be revised.

2. **Revised Estimated Results**

   In the preceding section, we have attempted to explain the kind of documentation required for the evaluation of the project. We have also indicated that in the future, this documentation is being revised. The present section is concerned with documentation which will be revised. The most recent section is concerned with documentation which will be revised.

3. **Inconsistencies**

   In the preceding section, we have attempted to explain the kind of documentation required for the evaluation of the project. We have also indicated that in the future, this documentation is being revised. The present section is concerned with documentation which will be revised. The most recent section is concerned with documentation which will be revised.
in the evolution of the raw material basis. If such situation has arisen, every effort should be made to eliminate disturbances in the raw material supply as soon as possible. The shortages in one or two of the raw materials may be different. One of the raw material shortages are:

- the raw material basis has been restricted, i.e., it is impossible to obtain the required quantities of raw material from the sure sources in their intact as it is necessary. The additional sources;
- the raw material basis has been restricted due to natural disasters or other similar unforeseen circumstances, i.e., it has become necessary to choose other raw materials in the event of raw material supply;
- raw material prices are higher than the original prices in the project;
- the quality of raw materials available is not as high as the manufacturer's specifications in the project, etc.

All these disturbances in the raw material basis cause, in addition to disturbances in production, material shifts in production costs, for in such cases the raw material basis is insufficient. Frequently, additional investment outlays are needed to cope with these disturbances.

Slightly different circumstances are found to exist as in some projects shortages in the raw materials, which we call "pure shortages", i.e., in the case of shortages in the supply of electric power, water, transportation facilities, labor. Thus shortages in these elements do not reflect both in the increase in production cost and in the volume of investment.

A special group of eventual miscellaneous factors resulting from errors in the estimated cost of the project. Any increase in the estimated cost of the project means additional investment outlays and, in turn, result in an upgrading of the cost of production.
...calculations is connected with 'untrue' trends in signalling rates, which may lead to substantial distortions of actual results. In fact, all faulty calculations, in matters in which did they have occurred, or in fact, the x-reveal influence of such...

...subjective nature, that is why, though they seem to be vital, reflect minimization, if not, before action. This type of calculation, as in the front section, still distorts the actual results, still involves useful calculations. Further, it is seen, distorted results mainly but unrealistic solutions: the industrial culture, or errors in, to threats, signalling rates for use.

Detailed calculations will be given for each of these, more so than we shall that the unrealistic results will be eliminated. Initially, difficulties may enter in carrying out these calculations or substantiate. To arrive at a reliable and realistic calculations, which will not be very satisfactory, in requires the x-reveal of extremely careful. The calculation in this direction should x-reveal in the calculation x of actual results, particularly re-r-r-r in the hunts which x-visual results subject fluctuation in the market.

The main difficulties are evident in the solution of the rejection. Their calculation must be very critically, in all at becomes in which remains the calculation must be properly check. Then the necessary to reveal, calculations is necessary. To maintain x-revealing
th valuation. the project is a structure. it establishes whether the structure is realistic or not. It is not valuation in project. It's a matrix reflection of the structure, it is a virtual model compiled by different realistic results.

The situation of industrial project, the original

situation is not a project. Therefore it must be a project. In order to have realistic results, it must be considered as a project. However, whether the project will be realistic is the question. The question is how to construct the project in order to make it realistic. The question is whether the project will be realistic with the original situation.

Consequently, it is a question. In view of industrial projects, it establishes whether the project is realistic. Whether the project is realistic or not, is determined by the matrix realistic project. In this study, the matrix realistic project is almost the same as the realistic project. Unrealistic constraints, whether the project is realistic or not, have an adverse effect on the realization of the investment project. The unrealistic investment projects may affect the realistic project. This is why we should have a realistic project.
or fitability of investments. In calculating the rate of return, one may use the following:

1. By checking whether the actual results of operations of the investment projects are consistent with their projected values. If the investment returns are consistent with the projected values, the investment is considered to be in line with the financial plan. If the actual results of operations are not consistent with the projected values, the investment is considered to be below expectations.

2. By evaluating the performance of the investment projects against financial benchmarks. This can be done by comparing the actual results of operations with industry averages, or by setting specific performance targets for each investment project.

3. By considering the financial position of the investor. This involves assessing the investor's financial stability, liquidity, and profitability. If the investor's financial position is strong, the overall fitability of the investment is likely to be high. If the investor's financial position is weak, the overall fitability of the investment may be lower.

4. By evaluating the investment in terms of its contribution to the company's long-term growth strategy. This involves assessing the investment's alignment with the company's mission, vision, and goals. If the investment contributes to the company's long-term growth strategy, it is likely to be considered fitable. If the investment does not contribute to the company's long-term growth strategy, it is likely to be considered unfitable.

In summary, the overall fitability of the investment can be evaluated by considering various factors, including the actual results of operations, financial benchmarks, the investor's financial position, and the investment's contribution to the company's long-term growth strategy.
In the case of the traffic in the working capital and the number of successive years, starting from the moment of the closure (stock of raw materials, working capital, etc.) and finishing with the working capital collection (stock), the number of years for this calculation is normally 3 years. The calculation is divided into 4 equal parts (for example, the numerator for which the working capital raw materials stock) must be divided in half.

The calculation by levels involves the determination of the time in which the raw material is established in the working capital. The coefficient is then found in the interest rate, with corresponding coefficients for similar raw materials. For our substantial investment in raw materials, this is usually 10% in the calculation; it is therefore necessary to check the calculation by possibly 10% of the coefficient.

The determination of the level of the working capital with the raw material is established by the initial level of the working capital coefficient in which the raw material is involved. For example, it is known that the coefficient has been established for certain raw materials so that the initial level of the material is a million dollars in this case. Then, the raw capital should amount to 250,000 dollars (100%: 4 = 25%).

This is similar to the determination of the amount of working capital needed, but difficulties may arise in connection with the determination of the coefficient in raw materials. In this case, the raw materials in the coefficient of fixed assets to win in those of similar raw materials, with the difference in the level for specified qualifications of the raw material, involve critical difficulties when such a raw material coefficient is calculated.
real and relative reality within the

building blocks. The realization that the realization is not
an important int, because of the realization within the
building blocks, results in a sense of "building blocks. On the
other hand, the benefits of the realization within the
building blocks are likely, because it was not built int realization within the

...
The situation is still worse if the investment (as it may have been brought with the intention of having a say in the selection of the project) is such that additional finance must be raised to ensure the project's feasibility.

Involuntary reality: the need for construction, the part it takes in consideration that technical condition, the requirements of the civil engineer's works, and the usual terms of the investor's comments (that of the contractor is taken as a value of this). Intuitively, the reality of the project is the investor's role in this project or text at.

**Difficulties inherent in the situation:** The capital in the construction shall initially be spent only if the investor willingly assumes the full capital, whether it is realized or not. Surety of the investor, obtained from another surety if the investor will.

The situation of the investor will, however, be very interesting in this situation. Since it is not sufficient for the selection of the project but also for the realization of the projects of the project. In that case, he will be subject to additional capital in a hurry. This is a very interesting rule, the second for the situation: it is the capital of the rhythm of construction works on this, in turn affecting the level of capital cost, and in turn affects the rhythm of construction works. As, additional costs, mobilized hastily, is usually not realized as favorable conditions — higher interest returns with shorter repayment terms.

This causes a X increased risk to the estimate cost of the project. The limits of the estimated cost of the project are exceeded by the difference between this estimated cost and the initial cost, mainly for the following reasons:
- Per reuility of investment current. The investment has been far from a perfect measure of the current in the sense of construction. In such cases other things are current. The current of construction in a realistic sense is unrealistic; in real such current was not exclusive. The current of construction for the military service, for instance, is unreal; it is not with the current in construction. Further, the construction in the six months' work is indicative of it.

- Increase in value of work. The current of construction has not been in a satisfactory manner, but in the course of construction the investor's claim increases in value. However, it has not kept up with the rate of increase of the current of construction. This is not the same as the current of construction, as this is reflected in the value of the work of construction in work.

- Unfair claims. In such cases, the value of the current of construction has increased, not in the carrying-out of military or civil works, but in the carrying-out of certain kinds of works, or in the increase of the rate of carrying out the works. Such cases occur in military or public construction works.

- Price rises. This is no rises in the value of rise in the price of construction works. This is not a result of continuous rise, but in the rising of the rate of construction. It is a result of the rising of the materials and labor. It is a result of the rising of the rate of construction. It is a result of the rising of the materials and labor.
The student will still do worse in the strict test. This is because, as a rule, the test will not be effective in the new industry, will test the level of skill in existing industries, or result in a situation where the existing industry has insufficient capital for current reaction. The reason for this is that the student will test the time for the reaction of the existing industry with the capital utilization. This capital being just for testing industry starts reaction.

a) No capital sufficient to purchase equipment in the existing industry and its capital.

Every unit rail incurs certain capital for money at any given activity; they recall certain equipment. The capital incurs the same cost, and, in turn, the capital incurs capital for a unit of rail at a certain activity. It is not necessary to start in one test that this capital cost for rejection. Yet, the capital in these activities will entirely distort the situation for the future reaction.

The course will have a reaction to the strict test. This is that the rejection in the reaction of the strict test is usually caused by the following conditions:

- errors in the selection of the rail, for a new rail on labor resulting with a new, unrealistic norms, or with a new error, or correct, the specific local conditions have.
It has not been taken into account. (For example: the influence of local conditions on the working capacity of labor.)

- unrealistic rise in the index will reduce the rise in the future and its effect on the rise will be at least the same as the rise in the next section; all this is evidence that the rise in the next section will not affect the rise in the current rise. It must be considered that if the industry is in a state of equilibrium, then the rise in the industry cannot be 'too big' if the rise is in the market; thus the rise in the industry will not affect the rise in the market.

- increasing in the rise in the index will not have any effect on the rise in the index. It may be that some rise in the index will not have any effect on the rise in the index but the rise in the index will have an effect on the rise in the index, thus the rise in the index will not have any effect on the rise in the index.

Miscellaneous increases in costs of raw materials such as increase particularly in the index of raw materials in the industries. It is not true that the index is not at the lowest level, it is the industry's index in the current index in the market.

c) Difficulties in stabilizing market. rise.

It is reasonable to think it is not possible for such an increase in the index as it should not be expected that it will be possible to sell the products in the market. And this is possible if the rise in quality of the goods offered is acceptable in the market.
It is difficult to predict the reaction of the industry and the public to the 20% increase in the price of rice. While there may be some indication of resistance, it is likely that the increase will be absorbed by the market, at least initially. The price of rice has historically been subject to fluctuations, and it is likely that the current situation will not be different.

In the long run, the reaction of the industry will be dependent on the overall demand for rice. If the demand remains unchanged, the industry may be able to absorb the price increase without significant disruption. However, if the demand decreases, the industry may need to adjust its production levels to avoid excess supply and lower prices.

The reaction of the consumer will also be important. While some may resist the price increase, others may accept it as a necessary cost of living. The government may also play a role in moderating the market, through measures such as subsidies or import restrictions.

Overall, it is difficult to predict the exact reaction of the industry and the public to the price increase in rice. However, it is likely that a combination of market forces and government intervention will ultimately determine the outcome.
rie-lists usually 'ustic ruc rca, etc.

The reduction of the xet 'ric lvel in the 'tic
wick is that when the new iuct will be. 'or 'or rie
is primarily a ' 'tic rine n't f' curtin. The
following facts will loh f take into ccartian:
rent forces in the rian of the rics in the 'tic wick
particul, during the rict of the rie; tion of the
existing rietive rienti for this line. F ruction; the
construction of new inductios in this 'lic; th se vant f 'ton
for their curtin, etc.

In 'ric wick, in rie with rure rics is 'lways
hick, a tert th t the investor n't a wth rh, r
ny part, f his curtin. Th jeict ve the analysis is th
establih wh ther the envisaged new ruction will exnsive
nt in relat'w wick tories.

The rie with urue rics must »w when it
had been esablished th th rics sect 'o th iuct cum-
estion or th se 'tic rorie in the 'tic wick. For the rct th
rics sect 'o th investor m one
or th se 'tic rorie in the 'tic wick rories, h 'e n't en in
its if th 'tic rorie is 'xnsive or thse rorie
. If the existing inductiors in th county rone
rue rie which is exnsive or th se rorie, th
' e n't en th it would n invest in new ruction
of th types which would be exnsive or th exist-
reduction.

This analysis is abolutely obrrory in th ease of urue-
riented inductiors. E.r, th most import ant thing is h t to 'rmine
the urue rie. C 'certain inddor for iuct rict in urue
ociety exchanges; qu'tion lists 'arc curly publishto cury
hten 'ith ut much difficulty. As it is eortitely d
t to obtion it for rics for which, while they aren't quite in
The purposes, objectives, and results of advertising (as in the case with business and industry) are limited; the conditions and the resulting risks, still, are very keen. Various methods—

- arithmetic, statistical, existential, or certain statistical
- in the method. To which a: 4.

- arithmetic lists the individual item
- arithmetic quantifies and casts off
- interpretation, in the arithmetic
- but raw is the raw report, raw to the
- himself (static and in an arre)
- calculation. The arithmetic statistic can be considered in a test is not a test of it was said, i.e., for the interpretation statistics for raw material or raw material in the arithmetic statistics raw and raw for results.

In an arithmetic context, for raw material acts, for

characteristics—arithmetic, it is rather difficult to
certain relationships, to statics or statics. Particularly in the character is raw in various arithmetic. For, rather existent raw. This can be

achieved, multiplied in the quantity, which acts with statics in various raw, as well as in the qualitative and qualitative, and raw products and statics raw in qualitative and raw products and statics raw.

For example, a relationship between statics and raw, which acts in certain manufacturing firms, is as follows:
### Calculation of the Weighted Relation

The weighted relation will be calculated as follows:

<table>
<thead>
<tr>
<th>Type of Product</th>
<th>Unit</th>
<th>World Price</th>
<th>Domestic Price</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product A</td>
<td>t</td>
<td>430</td>
<td>510</td>
<td>1:1.19</td>
</tr>
<tr>
<td>Product B</td>
<td>t</td>
<td>440</td>
<td>530</td>
<td>1:1.20</td>
</tr>
<tr>
<td>Product C</td>
<td>t</td>
<td>550</td>
<td>600</td>
<td>1:1.09</td>
</tr>
</tbody>
</table>

**Product A**

<table>
<thead>
<tr>
<th>Product A</th>
<th>3,400</th>
<th>430</th>
<th>1,462,000</th>
<th>510</th>
<th>1,734,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product B</td>
<td>8,600</td>
<td>440</td>
<td>3,784,000</td>
<td>530</td>
<td>4,558,000</td>
</tr>
<tr>
<td>Product C</td>
<td>6,500</td>
<td>550</td>
<td>3,575,000</td>
<td>600</td>
<td>3,575,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>8,821,000</td>
<td></td>
<td>9,867,000</td>
</tr>
</tbody>
</table>

Consequently, the weighted relation will be:

\[
\frac{9,867,000}{8,821,000} = 1.12
\]

It means that the world and domestic prices are in the ratio of 1:1.12.

On the basis of such an analysis, a conclusion may be drawn as to whether a certain production is extensive or not. From the case in point, we can see that production is extensive in comparison to world prices but these are the individual products not taken as a whole.

It is even more difficult to anticipate future prices which will prevail in the world market at that time the production will start. Thus, we must rely on experience in forecasting to an even greater extent.

---
In establishing world prices at the time of sale of products, the trends of price movements must also be taken into account. Here, the data on the movement of prices in the last few years can be used tentatively but the construction of big production capacities in the world, and, in particular, on the territory where it is intended to market own products, should be borne in mind. This will be explained in more detail in the section of this paper dealing with sale in the domestic and foreign markets.

3. Measures for avoiding significant deficiencies in project evaluation

In the light of the preceding discussion we can see the reasons that account for an increase in the estimated cost of investment. A universal measure capable of eliminating all the mistakes could hardly be proposed. The appropriate measures will follow from the nature of the overrun of the estimated cost of investment.

It is reasonable, however, that attempts should be made to escape all mistakes resulting from a superficial and poorly prepared economic and technical documentation. It follows, therefore, that the preparation of this documentation should be entrusted to those who are qualified to do it. If such facilities are not available at home, then the documentation must be procured from abroad, i.e. from renowned world firms, provided however, that the latter has a thorough knowledge of the market conditions in the country of the investor.

Changes in the project during the execution of construction are not too desirable and are to be avoided as much as possible. It is better to prolong the period of preliminary studies and to make various analyses while preparing for the construction and then, proceed speedily to the construction without making any changes.

Mistakes in establishing the cost of the project resulting from higher prices and contingencies are eliminated by adding a certain amount as a reserve to the already established cost of the project computed on the basis of current prices. In this way, it is counted at the very outset with an increased cost, i.e. the value of the project when it is completed and not the estimated value of the project at the moment of the preparation of the investment programme is estimated. The value so calculated is then
used during the whole period. The necessary funds are secured bearing in mind this amount, and all calculations are made taking such an additional cost of the project. If the calculations show that the project is a profitable one and provides specific benefits notwithstanding the expenditure for its construction, then the construction is started and the possibility of experiencing unpleasant surprises in this respect is substantially reduced.

Calculation of the reserve is by no means an easy job. The experience gained so far has shown that the amount of reserves ranges from 10 per cent to 30 per cent of the estimated cost of the project established on the basis of prices prevailing at the time of the project preparation (assuming that the construction will be started immediately), which depends on the type of project, duration of construction, stability of the domestic market, inflation trends, and the like.

Reserve funds should also be provided both for the fixed assets and the working capital. There can be no unforeseen works in respect to the working capital, however, some other uncertainties may occur, such as greater consumption of raw materials, longer process of production, etc.; all these factors may arise on account of low labour productivity and inadequate training of manpower.

4. Reduced dependability of cost calculations encountered in projects due to accuracy limitations of capital investment and material input estimates

As the amount of capital investment and of costs of raw materials and similar expenses cannot be determined accurately, therefore the total costs of production (cost price) cannot be established with certainty. If some uncertainty is taken into account as regards the actual selling price at the same time of sale of products, it can be seen that the calculations included in the projects are not entirely reliable.

Two problems are easily distinguished here. The first one is how to ascertain in what way the changes in individual items affect the profitability of the project, or the planned return from the investment. The second and the more important problem is, what measures should be taken to reduce possible unpleasant surprises in this respect to a minimum.
In order to better understand the later considerations, we shall use a rough generalized example. In view of differing social and economic systems in individual countries, the details and specific characteristics as regards the arrangement and position of individual items of costs should not be given. However, we believe that this will not impede the comprehension of the basic intention of these considerations. Let us suppose that the preliminary calculations from the investment program, which served for the project appraisal, are as follows (the terminology is also generalized):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Value of output</td>
</tr>
<tr>
<td></td>
<td>21,000,000</td>
</tr>
<tr>
<td>II</td>
<td>Expenditures</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Material costs</td>
<td>13,000,000</td>
</tr>
<tr>
<td>Production wages</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Overhead expenses (material costs and salaries)</td>
<td>600,000</td>
</tr>
<tr>
<td>Depreciation allowances</td>
<td>1,400,000</td>
</tr>
<tr>
<td>Cost price</td>
<td>17,000,000</td>
</tr>
<tr>
<td>Profit</td>
<td>4,000,000</td>
</tr>
<tr>
<td>Total</td>
<td>21,000,000</td>
</tr>
</tbody>
</table>

The fixed assets amount to 16,000,000 dollars, whereas the working capital is 1,000,000 dollars.

The depreciation has been computed as follows:

<table>
<thead>
<tr>
<th>Principal</th>
<th>Rate of Depreciation</th>
<th>Amount of Depreciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building structures</td>
<td>$4,000,000</td>
<td>5%</td>
</tr>
<tr>
<td>Equipment</td>
<td>$12,000,000</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$16,000,000</strong></td>
<td>****</td>
</tr>
</tbody>
</table>

It is assumed that the following is paid out of the profit: repayment of loans obtained (for the fixed assets and the working capital) and contributions (taxes) to the community. Supposing that these two...
items are, for example:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Repayment installment</td>
<td>$500,000</td>
</tr>
</tbody>
</table>

the net profit will amount to:

\[
\begin{align*}
\text{Net Profit} &= \text{Total Revenue} - \text{Total Expenses} \\
\text{Net Profit} &= (\text{Total Revenue} - \text{Repayment Installment}) - \text{Taxes} \\
\text{Net Profit} &= ($4,000,000 - $1,000,000) - $500,000 \\
\text{Net Profit} &= $3,000,000
\end{align*}
\]

(out of which repayment installment is to be paid); it follows that the rate of profit on the total capital investment is:

\[
\text{Rate of Profit} = \frac{\text{Net Profit}}{\text{Total Capital Investment}} \\
\text{Rate of Profit} = \frac{3,000,000}{17,000,000} = 17.65\%
\]

whereas the net profit remaining in the hands of the investor is $2,500,000.

a) Influence of changes on the planned effects of investment. The degree of inaccuracy will depend on the greater or lesser intensity of the changes in individual items.

Influence of increased cost estimate of fixed assets. If we assume that during the implementation of the project an increase in the estimated cost of the fixed assets came about by, say, 20% for the construction work and by 10% for the equipment, the corresponding increase in the depreciation will be as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Increase</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building structures</td>
<td>20%</td>
<td>240,000</td>
</tr>
<tr>
<td>Equipment</td>
<td>10%</td>
<td>1,320,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,560,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,400,000</td>
</tr>
</tbody>
</table>

amount of increase 160,000

It means that the profit has been diminished by $160,000 and that it amounts to $3,840,000, i.e. the net profit is $2,880,000 (taxes have been reduced proportionately).

Effects of higher prices of raw materials and of other expenses. Higher prices of raw materials and other expenses are felt in a more drastic way. For example, if the increase during the whole period of preparation and
construction amounts to 10% and if this period is, say, 4 years, the increase will be 2.5% per annum and the item: material costs (cost price) will increase by $1,560,000 (10% of 13 + 2 + 0.6 millions), or the profit will diminish accordingly and amount to:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (in terms of $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total profit</td>
<td>4,000,000</td>
</tr>
<tr>
<td>Increase in costs of production</td>
<td>-1,560,000</td>
</tr>
<tr>
<td>Taxes</td>
<td>2,440,000</td>
</tr>
<tr>
<td>Repayment installment</td>
<td>-610,000</td>
</tr>
<tr>
<td></td>
<td>1,830,000</td>
</tr>
</tbody>
</table>

Therefore, the position is as follows:

Rate of profit = \( \frac{1,830,000 \times 100}{17,000,000} = 10.7\% \) instead of 17.65% as planned.

The net profit remaining in the hands of the investor is diminished from $2,500,000 to $1,330,000.

**Effects of reduced selling price.** The development is very much alike with the reduction of selling prices. For example, if the prices drop by 6% (say, by 1.5% per annum), then the value of output will diminish by $1,260,000 and will be followed by a concurrent diminution of profit by this amount.

In this case the position will be as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (in terms of $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned value of output</td>
<td>21,000,000</td>
</tr>
<tr>
<td>Diminution due to drop in selling price</td>
<td>-1,260,000</td>
</tr>
<tr>
<td></td>
<td>19,740,000</td>
</tr>
</tbody>
</table>

Consequently, the profit will be:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (in terms of $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes</td>
<td>-685,000</td>
</tr>
<tr>
<td></td>
<td>2,055,000</td>
</tr>
<tr>
<td>Repayment installment</td>
<td>-500,000</td>
</tr>
<tr>
<td></td>
<td>1,555,000</td>
</tr>
</tbody>
</table>
It comes out from the foregoing that:

Rate of profit = \( \frac{2,055,000 \times 100}{17,000,000} = 12.09\% \)

in lieu of 17.65% as planned.

The net profit remaining in the hands of the investor is reduced from $2,500,000 to $1,555,000.

Total changes resulting from the action of all items. In the previous subsections the individual effect has been observed of each particular item. However, in further consideration an attempt will be made to establish the all round effect produced by changes in every item concurrently. Starting from the changes indicated in the above examples as to what could be the deficiencies that may occur, bearing in mind the four-year period, our model of calculation will be as follows:

<table>
<thead>
<tr>
<th>I</th>
<th>Value of output</th>
<th>19,740,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Expenditures</td>
<td></td>
</tr>
<tr>
<td>Material costs</td>
<td>14,300,000</td>
<td></td>
</tr>
<tr>
<td>Production wages</td>
<td>2,200,000</td>
<td></td>
</tr>
<tr>
<td>Overhead expenses (material costs and salaries)</td>
<td>660,000</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>1,560,000</td>
<td></td>
</tr>
<tr>
<td>Cost price</td>
<td>18,720,000</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>1,020,000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19,740,000</td>
<td></td>
</tr>
</tbody>
</table>

The distribution of the profit will be the following:

| Profit | 1,020,000 |
| Taxes | - 255,000 |
| Repayment installment | - 500,000 |

On the basis of this actual calculation made after the completion of the project, it may be stated that:
Rate of profit amounts only to:

\[
\frac{765,000 \times 100}{17,000,000} = 4.50\%
\]

Net profit remaining in the hands of the investor is only $265,000.

From the foregoing it may be concluded almost with certainty that, had we known at the time of making the appraisal of the project that the effects would be as low as this in all probability the project would not be entered into at all.

It should be emphasized once more here that the above calculation and examples are generalized, and the results obtained should in no case be considered as definite findings, but as probable relations under specified conditions. Consequently, in ascertaining the degree of dependability in the above calculations, it is of no decisive importance whether the profit is computed in the above manner or by some other method, whether the tax rate is proportional or progressive, whether it is high or not, and whether the percentage of the rate of profit is big or not, namely, does it correspond to the prevailing market conditions in a certain milieu. The analyses made were intended only to show serious consequences, due to wrong evaluation of some essential elements, as a result of which large shortfalls or even complete failures may originate.

b) Measures for eliminating unrealistic calculations. In the preceding section we have attempted to show what procedure should be followed to achieve as realistic a cost estimate of investment project as possible and also, what measures should be taken for eliminating the effects of possible cost overrun. The starting point should be anticipation of an increase in the estimated cost to a specified percentage and all calculations should be made bearing this in mind. It should be taken into account also that the capital resources so computed will be required in actual fact and, consequently, should be secured to that amount.

However, the increased costs of production and drop in selling prices are to be considere as calculative items only. This is to say that it is essential to ascertain as realistically as possible the old prices at the moment of appraising the project and add thereupon a certain reserve. This
can be done in two ways:

- prices of raw materials should be increased by a certain percentage, whereas the selling prices should be reduced. Since the estimated cost of investment includes the increase, consequently, the depreciation in the production costs is automatically increased and should not be increased once more. The amount of increase in prices of raw materials and in other expenses, and the reduction in selling prices will depend on the concrete situation. Such estimation must be based on experience supported by background knowledge and, to a considerable degree, on forecast, or,

- calculations based on actual prices should be made in advance and the profit established, and then it should be ascertained to what limit the envisaged profitability or profit allow an overall aggravation, taking all items into consideration. This means that in this case the starting point should be the lower limit of profitability, i.e. the limit beyond which we should not go in any case, and then the amount should be established of the overall aggravation which is permissible within the limits of the difference in profitability or profit. The project would be approved only if it is appraised that this amount will be sufficient to cover all possible aggravation. This manner of computing the reserve is suitable insofar as the reserve is considered on the whole and it is of no significance at that stage to go into detailed analysis as to where the aggravation will actually occur.

IV. The Impact of Changes in Economic Policy Measures on the Expected Economic Effect laid down in the Project

In addition to cases where the results achieved were not satisfactory owing to miscalculations and subjective weaknesses, errors may also appear as a result of changes in economic policy measures. Although it may be assumed that economic policy measures of any country will not be such as to make the position of domestic industry difficult, especially not so in the countries with planned economy, the impact of possible measures must be understood, as they sometimes are due to actual circumstances. We shall discuss briefly some of those measures which have so far appeared most frequently.

1) Changes in Currency Exchange Rate

The impact of changes in exchange rate, in the sense of its fall, taking place from the date of the evaluation of project till the day when it
is put into operation may be manifested as follows:

- Funds in terms of local currency needed for procurement of import equipment increase, and for the same equipment a larger amount of local currency must be spent. As a consequence, the project becomes more expensive. This is reflected upon production cost as higher depreciation allowances must be provided,

- if the raw materials necessary for production are imported, the cost of production rises,

- the proceeds of sale of the export-oriented industry in terms of local currency increase.

It may be concluded from this that imported equipment, owing to such change in the currency exchange rate, has negative effects both on the cost of the project and on the cost of its production. However, in case of production oriented to domestic market, production cost rises because of the increased raw material prices and the result may be either a diminished profitability or an increase in selling prices. As for the export oriented production, although the production cost rises owing to the favourable effect of the exchange rate on selling prices, the profitability does not change, provided that in the meantime no change in the raw material prices occurred, on the one hand, and in the final product prices, on the other. The impact of changes in the exchange rate, in the sense of its improvement, has an effect in the opposite direction. Developing countries, especially those with a planned economy, endeavour by means of special measures to neutralize the negative effect of the changes in the currency exchange rate.

2) Changes in Custom Tariffs. Changes in the custom tariffs are a reflex of the economic policy of a country. However, the increase or decrease of the customs rate over the period from the evaluation of the project until its realization, are reflected both on the estimate and on the production cost.

The increase in the custom rate acts on the rise in value of import equipment, which brings an increase in the estimate value of the project, and this has a repercussion also on the increase of production cost through depreciation. Likewise, the increase in the custom rate for industrial raw materials and building materials, procured from export, acts so as to make
the domestic equipment and the construction work more costly. The consequences are the same as with the import equipment, that is the estimate value and the cost of production increase.

The increase in the custom rate on raw materials, necessary for production, which come from imports, causes a rise in prices, and also in production cost. In addition to its effect on the increase of production cost, the increase in the estimate value of the project creates difficulties for the securing of additional funds. The increase in production cost, either owing to increased depreciation or to the increase of raw material prices, acts in the sense of a diminution of profit and profitability. The decrease of the custom rate on import goods acts in the opposite direction.

On the other hand, however, the changes in custom tariffs on products exported, impairs or improves the competitive power of the enterprise in the foreign market, since the increased custom tariff brings an increase in cost prices and, vice versa, the decreased tariff lowers the cost prices. When changes in the custom tariff occur simultaneously with changes in the currency exchange rate, then usually both changes are mutually complemented and corrected, as with the increase of the exchange rate, as a rule, the custom rates decrease.

3) Sensibility to inflation. Inflationary tendencies, as is known, act on prices in the sense of their increase. How great the rise in prices will be in the period of preparation and construction of the planned project, will depend on the intensity of inflationary pressures. We have seen above how the rise in prices reflect on the estimate value, the production cost and the selling prices.

Taking into consideration the intensity of inflationary pressures, an evaluation should be made of the situation which will arise in respect of prices in the period of construction, as well as of the situation when the project is put into operation. On a correct realization of this occurrence will greatly depend the realistic appreciation of the project itself. The miscalculated evaluation which results from the change in prices and which include also the changes brought about by inflationary tendencies, have been discussed earlier in this paper.
4) **Other changes in the economic system.** Likewise, in evaluating the project there should be considered also all those elements of the economic system which may have an influence on the evaluation of the project. Of course, the investors cannot have great influence on the economic policy of the country, but if certain changes are being prepared or are in sight, they must be taken into account. The reference here is to tax policies, the policy of administered prices, etc. Apart from the above, it is very risky in evaluating the project to consider only the administered prices, if any, and not to take into account how they would be formed if these administrative barriers did not exist.

V. **Skill and Professional Competence of Key Personnel, who are expected to operate the Factory.**

In order that a newly built factory might function and produce, in quantities and quality as provided by the project, it must have, in addition to the above said, not only a trained technical personnel, which will do specified jobs in the technological process, but also executives who are entirely familiar with the technological process on the whole and who will effectively run the factory. In certain cases, where no experience at all is available for carrying out a specified technological process, it will be necessary to procure the relevant documentation required, that is the so-called "know-how".

In close connection with this is the need to appraise the influence of the period of the trial run on the economic efficiency of the project.

1) **Preliminary measures necessary to secure adequate staffing.** All measures in this respect relate to the training of the personnel in the period of construction (perhaps this should be started earlier), in order that the factory may run smoothly. As suggested earlier, the evaluation in this respect should consider the numbers and structure of personnel. If it is assumed that trained labour cannot be engaged, the project should provide for the training of personnel.

The estimate and then the realization in this respect move in several directions, as for example:

- efforts should be made, before the factory is put into operation, toward securing the personnel required, especially the executive staff,
that a specified number of such personnel be sent for training at factories of same kind, either in the country or abroad. The duration of the training should depend on the complexity of the technological process and the skill of the personnel.

Foreign specialists should be engaged, when it is a question of dealing with more complicated technological process, for a specified period of time, required for the initiation and training of domestic personnel. This question arises especially in industrially developing countries which do not have at their disposal sufficient personnel and for which it is more difficult to train their own rapidly for the managing staff.

In this matter it would be an error to be exceedingly sparing and self-assured that all can be achieved with one's own forces, as from an insufficiently trained labour double during may result. First, the production will not run at the rate which is normal, consumption of raw materials will be higher, waste greater, etc. Second, unskilled personnel will spoil the machines and installations and this will have in consequence new investments and stoppages in production.

Training labour is a complex problem and is not solved either easily or speedily.

When proceeding to procure equipment care should be taken that the supplier makes possible the training of personnel, either at his own factory (if he engages in such production) or in other factories, to which he has supplied the equipment earlier.

A means of acquiring the best possible knowledge of the technological process is that the future personnel of the factory be present, and, if possible, participate in the assembly of the equipment. Thus it will, before the factory is put into operation, acquaint them in detail with the machines on which they shall work.

All this involves heavy initial expenditure but proves ultimately advantageous to the new factory.

2) Impact of the trial production period on the economic efficiency of the project. Trial production is understood to cover the activity of the newly built factory during the testing of the functioning of the new plants,
and this only up to the starting of normal production. Normal production starts when everything begins to run normally in the production, both in respect of the volume of production and in respect of quality.

Regardless of all the preliminary measures taken, it should not be expected that the factory will start production immediately with the date of its being put into operation, in the volume and quality provided by the project. Even in industrialized countries it must reckon with a certain period of running in and an unevenness of production. This especially must happen in the industrially developing countries, which either have none or only a poor technical experience, at least in certain economic branches. The period of trial production varies according to the kind of production and the level of the industrial development of the country.

The period of trial production often ends with a negative result, that is with a loss, particularly so if this period lasts longer than what is considered as normal.

In connection with trial production the following should be pointed out: in the investment program, account must be taken of the trial production as well as of the loss that appears therein; when evaluating the project, the true period of duration of the trial production must be established, bearing thereby in mind all the considerations pointed out above. Also, the reality of the amount of loss which is forecast must be established; in providing funds for investment, those for the planned loss during the trial production must also be secured. If funds have not been secured, then in case of a loss difficulties appear in the working of the factory.

Errors in this respect may be twofold. On the one hand, the period of trial production may last longer. In such case the benefits reckoned with from new investment are delayed. This, however, may have more serious consequences if some firm commitments have in advance been entered into in respect of the new production. On the other hand, a higher loss than planned creates difficulties for finding new funds for covering the loss. All that taken together has a result that the increased loss diminishes the benefit expected from the investment in proportion to the increased loss.
as has been pointed out above, the construction of a project has a value only when the sale of the products that will be fabricated is entirely secured. That is why the project must contain a detailed analysis of the market where the products will be sold, and it should be clearly indicated whether the sale is intended for the domestic market or for export.

1) How market analysis should be carried out considering the above-mentioned limitations. In evaluating the project, full attention should be given to the market, since the sale of products is one of the essential factors for the existence of the enterprise. To make investments in projects for the products of which sales are problematic means to wreck definitively the funds invested or, in case of partially secured sales, to diminish considerably the profits from the funds invested.

The extent of explanation will depend a good deal on the kind of product and the consumption area. Namely, a different explanation will be given, for instance, of the sale of bakery products and a different one of the sale of a great aluminium factory. The narrower the consumption area, the easier it is to appraise market requirements.

Research of a market with a wider area, that is of demand over a larger region, is a complex problem, often beyond the reach of the investor's possibilities. Of course, the investor should within the limits of his possibilities tend to deal with the question of sales as best as he can.

For many important products special institutions should be responsible for market research (domestic and world market) and the results of such research should be available to all those interested, both to investors and those who carry out the evaluation of the project. Unfortunately, in developing countries such institutions as a rule either do not exist or are not able too often to accomplish successfully such a difficult task. The way out is to ask for advice of a foreign engineering firm or of specialised research institutes, which is a costly venture of course. Nevertheless, it is very important to appraise the sales element in a project to the fullest.
Analysis of sales resulting from an investment programme moves in several directions, and it should distinguish the domestic market from the foreign market. An analysis of the domestic market usually covers:

- in countries with a planned economy, an examination of how the planned production fits in with the long-term and annual economic development plans,

- survey of the trends in consumption of corresponding products for several past years, as well as how this consumption has been met. Namely, how much in that period of time was covered by domestic products and how much from imports,

- the utilization of the existing capacities may also be one of the indicators of the possibility of sale of articles which will be manufactured by the new factory. Poor utilization of the existing capacities is generally an indicator that the new products will have no sale. On the other hand, however, the full use of capacities especially if the total demand could not be satisfied, may be taken as a good evaluation of sales of future production,

- in establishing the existing requirements (production and imports) caution is called for because it may not be possible to wholly satisfy imports the residual demand not met by domestic production. Very often, imports are limited by the foreign exchange available, and they would be far larger if at the given time more foreign exchange were available,

- in making the decision as to whether the existing capacities are sufficient to meet domestic requirements, account must be taken of the assortment that domestic capacities could provide. It very often happens that some domestic production is limited in its assortment, so that it does not meet the demand of all its variations,

- when the demand in the domestic market is examined, not only existing requirements should be considered, but account must be taken also of the tendency of demand to rise, which will come as a result of the increase in needs. In evaluating the tendency of the demands to rise, caution is again recommended. The increase in the national income will certainly influence the growth in demands. Now, where this demand will be channeled, that is to what products, depends on various causes. The provision of funds
for certain investments, as well as the construction of the projects, may
be a good indicator for the sale of products which are in close connection
with such construction. For example, an intensive housing construction,
construction of hotels and other tourist establishments, increases the demand
for some building materials and certain articles for sanitary installations
(e.g. radiators, baths, wash-hand basins, etc.)

permanent shortage of some products in the domestic market is a proof
of unsatisfied requirements, but it is not easy to evaluate the extent of
needs that are not covered,

in evaluating the unsatisfied requirements, account must be taken also
of the factories in process of construction whose products, as substitutes,
can meet the ascertained needs. For example, prefabricated elements may
replace full bricks, cardboard may replace wooden packing-cases, plastic
materials may replace both wood and metal, etc.

in some branches of industry, as for example, in the chemical industry
(plastic materials, artificial fibres - nylon, parlon, terylene and the like),
the technical progress is very great, inventions follow one another, whereby
the latest one makes the preceding inventions, however perfect, obsolete.
Hence this circumstance must also be taken into account in evaluating whether
a product will have a ready market.

Matters are still more complicated if the question is of sale through
export in foreign markets. In such a case, the analysis is conditioned by
the knowledge of the world market, both as a whole and in its several parts.
It is on the basis of this knowledge that the conclusion should be made as
to whether it is possible to export the respective articles, and where to
export them. Since the evaluation of the possibility of exporting is
complicated and also a relative matter, in evaluating sales through exports
one should not be too optimistic (on this point see the section on prices).
This is more so if the bulk of the production, owing to a favourable raw
material basis, is directed to exports.

It should be noted here that if the new capacity is oriented toward one
or several products, but in large quantities, whereas the bulk of the
production is designed for export, particular attention should be given to
the long-term tendency of consumption of this product in the world, that is to evaluate whether in the long run consumption will grow permanently or whether there are signs that it will decline. In making this evaluation, account should be taken of all the great factories which are under construction all over the world for the manufacture of the respective articles and which will to a large extent contribute to the increase in supply in the world market.

Products which are dependent on constant technical improvement or products subject to the fancies of fashion while the equipment for their production is not able to follow the fashion are not particularly suitable for export. Hence in establishing factories for these purposes, caution is recommended.

2) Overall approach to the problem and partial solutions. With regard to the difficulties dealt with above, it can never be affirmed, with a hundred per cent certainty, that the sale of the product will be secured. The situation is slightly easier if only the domestic market is in question, especially in countries with planned economy. Of course, here also the situation changes according to the kind of product. The matter is, however, far more complicated if sale in foreign markets is considered.

The best solution is when the sale is secured by long-term contracts. There is no need to point out that only reliable foreign partners come into consideration for such a contract. In this way, the sale is secured, and the longer the contract the better the situation. The question arises here only at what prices deliveries will be made. Two solutions are possible: to fix in advance the selling prices which will be valid for the whole life of the contract or to make deliveries at world prices. Practically both methods have negative aspects, as in both cases there is a risk (indeed for both partners). In case of stipulated fixed prices neither of the partners looses, if prices do not change. If prices fall, it is the buyer who looses, if prices rise it is the seller (investor) who bears the loss. If deliveries are stipulated at world prices, the rise in prices profits the seller, while the fall in prices affects the seller. With the buyer the case is, of course, the reverse. Since there is little probability that prices will remain the same over a longer period, stipulations at fixed prices are not used.
When the construction of the project is carried out with credits provided from abroad, the repayment of the credit is often stipulated by deliveries of products, which will be obtained from the new project. In this way, the sale of products is in part secured (to the amount of repayment), but in fact only for the period of the availability of the credit. At the same time, however, it means penetration in the market of the country supplying the credit, and creation of conditions for further deliveries by way of sales.

Very often in evaluating the possibilities for sales, only specified areas abroad are taken into consideration. The foreign exchange position of several countries does not always allow to make purchases in the most industrialized countries. The natural exchanges between individual countries make frequently possible the sale of some products, certainly at world prices, in spite of world competition.

VII. How to evaluate the economically optimum degree of processing

From the raw material to the final product there are often several successive processing stages, each stage being accomplished in a separate factory, either within an integrated organization or in independent factories at different locations. For example, in the aluminium industry there are the following stages: bauxite mines, alumina factories, aluminium factories (reduction plant), processing of crude aluminium (sheet metal, strips, tubes, foils, etc.); for meat processing, the stages are as follows: slaughter houses, refrigerating plants, meat processing factories, canning industry, etc.; in the chemical industry likewise there are many such stages.

1) Reasons for manufacturing products with a maximum degree of processing. Experience so far has shown that any further stage toward finalization of production offers an increasing benefit. This is of particular importance for the export-oriented industries, which have a favourable effect on the balance of payments of the country. In order to illustrate this, we give the following as an example: the price of a ton of bauxite is $7, of a ton of alumina $70, and of a ton of aluminium $520, while the price of a ton of aluminium products is $1000 (of better assortment). If it is taken that two tons and half of bauxite are required for a ton of alumina, two tons of
alumina for a ton of aluminium, that waste in processing of crude aluminium is minimum, it follows that if 5 tons of bauxite are exported, $35 are obtained, and if 1 ton of aluminium products is exported (for which 5 tons of bauxite have been used), $1000 are obtained. In other words, in order to obtain $1,000 it is necessary to export more than 140 tons of bauxite. Of course, for producing aluminium, in addition to bauxite, also other raw materials and electric power are required, as well as labour, but independently from that, the example given above shows clearly the benefits resulting from a high finalization of products. Or let us take another example: the price of a cubic meter of cellulose wood is $10, of a ton of bleached sulphate cellulose $150, the price of a ton of woodless writing paper is $200 (of better quality). If it is taken that for a ton of bleached cellulose 5.2 cm. of wood are required and 1,070 kg of cellulose for a ton of woodless paper, it follows that if 5.7 cm. of wood are exported, $57 are obtained and if a ton of paper is exported (for which 5.7 cm. of wood were used), $200 will be obtained. In order, however, to obtain $200, through export of wood, it is necessary to export 20 cm. of wood. A similar case appears in the finalization of production in other economic branches, while in some, like the chemical industry, this is still more pronounced.

For this reason, there is a tendency in developing countries to achieve the largest possible degree of processing and then to export such products.

2) Integration tendencies toward raw materials. In addition to forward integration tendencies from raw materials to final product, general economic and profitability considerations may dictate reverse integration tendencies. This applies to all those cases where a factory with a higher degree of processing already exists, while the preliminary stages of processing, i.e. the supply of raw materials is not available. For example, there exists an enterprise as an electrolysis and zinc rolling mill, but the zinc concentrate is procured from another enterprise (from domestic market or from abroad). In this case, the tendency will be the opening of an ore mine with flotation equipment for obtaining concentrates.
Reduction of cost of production, especially through reduction of transport costs, a greater security in the supply of raw materials or semi-manufactures, as well as elimination of difficulties connected with the availability of foreign exchange, if such procurements are made abroad, etc., are among the most important motives for backward integration. These advantages, however, must be substantiated by previous calculations.

Integration movements toward raw materials may have two forms:

- merger with the already existing enterprises, and
- setting up of new departments or factories for preliminary stages, or opening of new mines.

It should be noted here that integration movements toward raw materials are also possible between different economic sectors. For example, between industry and agriculture, or between industry and forestry.

3) Economic impediments to the complete cycle of processing. When it is a question of production which may consist of several successive processing stages, then, depending on the degree of processing, the economic situation of each particular stage should be appraised. This practically means that the programme must examine in detail both the technological and economical aspects of each stage. Of course, the realization of the project itself may be achieved successively, according to possibilities, and according to the ability of eliminating economic impediments, which momentarily stand in the way of operating the optimal cycle of processing.

As principal economic impediments to a complete, economically justified, processing cycle, may be noted:

a) insufficient financial resources. The advantages of an integral cycle, for which as a rule, high investments are required cannot be utilised if the respective investment funds are not available. In connection with this problem, two factors must be emphasized:

- if it has been evaluated that a complete processing cycle in a production has an indubitable economic significance, the funds available should not be scattered over the construction of various projects, but should be concentrated on an integral production and the rest postponed. This applies especially to developing countries and in particular to those
with planned economy, in order that the advantages of the internal production could be secured, especially in regard to export industry.

In spite of the difficulties due to the shortage of funds, it is mostly not economically opportune to limit the project only to the stages of a low degree of processing, since here the accumulation is low, but the first phase of the project should include at least one higher stage of processing, in order to increase the profitability and thereby the accumulation also:

b) deficiency of skilled personnel. It is certainly more difficult to secure all the personnel and to master the technological process for all stages of a complete cycle, than for individual stages. The training of personnel has been referred to earlier;

c) difficulties in connection with civil engineering contractors. If plants for all stages of production are set up at the same time and the same location, it will be difficult to find a domestic contractor who would be able to undertake the construction of the whole project concurrently.

From the above it may be concluded that efforts should be made towards achieving the optimal degree of processing, but within the limits of possibilities. In this, if the construction by stages is the way out, each stage must form a whole, with clear economic effects, which later will be increased by further development. It means that the whole is appraised, but that construction will go, by stages economically justified, according to possibilities.

VIII. Evaluation of Export Oriented Industrial Projects.

The discussion so far on the evaluation of industrial projects has been general and relates to all industrial projects. In this section, however, we shall be specific and deal exclusively with the export oriented industrial projects.

1) Reasons for export orientation in economies with accelerated industrial development. In the course of industrialization developing countries are compelled to orient some projects to export. There are multiple factors that account for it which may be summarized thus: need to develop optimal capacities and achieve a favourable effect on the balance of payments,
to improve the quality of their products and through exposure to international competition, increase the economic efficiency of the production.

a) Development of Optimal Capacities as Reason for Orientation to Export

The industrially developing countries, as a rule, do not have a particularly developed market.

The possibility of sale to a smaller extent tells that factories which would be established only for meeting the requirements of the domestic market, could not be of a large capacity. It is known, however, that in some industries economy of scale plays a great role. In a majority of industrial undertakings, the value of investment per unit of capacity declines with the increase of scale. This may be illustrated by a much example taken from the field of iron and steel industry (figures expressed in dollars):

<table>
<thead>
<tr>
<th>Size of capacity</th>
<th>Investment per ton</th>
<th>Total investment in capital equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>500,000</td>
<td>400</td>
<td>200,000,000</td>
</tr>
<tr>
<td>1,500,000</td>
<td>255</td>
<td>322,500,000</td>
</tr>
</tbody>
</table>

It may be seen from the above that, although the capacity is three times larger, total investment costs only 1.9 times more. In addition to advantages in smaller investments, the size of the capacity influences the cost of production. This influence is both direct and indirect. The amount of investment affects directly the production cost, through depreciation and repayment of credits. In other words, the larger the capacity, the smaller the investments per unit of capacity, and, consequently, also the production cost is smaller (per unit of capacity).

Larger capacities allow application of a greater automation and more modern technological processes, which results in a fall in production cost through a reduction of workers, employment of less skilled labour and larger saving of raw materials (better utilization, less waste).

In addition to direct influence, the size of the capacity influences indirectly in various ways the reproduction cost, e.g., through the raw material prices, transport cost, overhead expenses, etc. Larger capacities allow to realize, say, less expensive procurements, easier supply, better use of transport facilities, proportionately lower overhead expenses, etc.
On the basis of the above discussion, the following may be stated:

- limited sale in the domestic market does not allow the setting up of factories of large capacities, and
- the larger the capacity, the lower, per unit of capacity, both the investments and production costs.

All these circumstances act in opposite directions, that is the one excludes the other.

From this we may conclude that larger capacities should be preferred, while for the sale of products which the domestic market cannot absorb, another solution must be sought. And this solution is to be found in export.

In this way, domestic consumption and export are complementary and enable the setting of larger capacities for the purpose of benefiting from the advantages that such capacities offer. This will benefit the domestic market, because the lower production costs will result in lower selling prices. Alongside with this lower prices create possibilities of sale in foreign markets, and help the industry stand international competition.

Simultaneous combination of domestic consumption and export, makes it possible to establish optimal capacities, that is such capacities where investment outlays and production costs are the lowest. Whether an optimal capacity will be erected, depends, of course, also on the available resources. The advantages of optimal capacities are of no use if the available resources are not sufficient for its setting up. In any case, however, it must endeavour to build rational capacities. These are not optimal ones (i.e. the best possible), but still large capacities, which give the above mentioned advantages, but only to a certain degree.

Automation and modern technology simultaneously make possible a production of better quality. Consequently, from optimal capacities products of high quality are obtained, this being one of the conditions for ready sale, both in the domestic and foreign market.

b) Favourable effect on balance of payments as reason for orientation to export. In the preceding section we have attempted to show that the higher the degree of processing the greater the possibility of achieving the economic optimum. This especially holds true in respect of products designed for export. Besides export of industrial products of a high degree of processing will mostly have a more favourable effect on the balance of payments of the country than the export of raw materials (products of mining, agriculture, forests, etc.)
One should not pretend, however, that with the date of putting the project into operation all will be running well and that exports will be realised to the full extent. Besides the period of trial production, additional time is required for mastering the quality of production and overcoming difficulties relative to exports. To anticipate the inflow of foreign exchange immediately to the full extent, is too optimistic and risky, as this may have undesired consequences, if on that basis some commitments have been made. In this respect it must be said that, until the requirements of the foreign market have been entirely satisfied, there is no need to hurry with exports. Once the confidence of the foreign markets is lost, it becomes very difficult to capture that same market again.

c) Cases of failures due to misjudgement of assumptions justifying orientation to export. The planned optimal capacity of the industrial project should enable the prices of the products to be on the level of world prices, and the planned exports to have a favourable effect on the balance of payments of the country. The industrial project will, considering its orientation, be able to exist only if exports develop smoothly. Failure in this respect (if assumptions do not materialise), may have very serious consequences.

Failures are not rare. Most frequently the reasons for failure are:
- the evaluation of optimal or rational capacity was unrealistic. In view of the situation in the world market or at least in a part of this market, where the export is channelled, these capacities should have been larger; as it is, their production costs turn out to be too high for sale at the world market prices. High prices are not always the result of insufficient size of capacity, but may be the result of low productivity and quality of the product, of the fact that the factory does not deliver the production, which the capacity makes possible, etc.
- misjudgement in respect of sales. Although conditions in respect of quality, prices, etc., have been fulfilled, the products cannot be sold, owing to the competition of firms from other countries, already introduced in the market,
- misjudgement of the actual impact on the balance of payments. Here, errors in calculations are possible in respect of the volume of possible export, of the selling prices, of the amount of tariffs (which are prescribed
by the importing country), of the cost of import equipment, etc. And the consequence of all this is the failure to achieve the effect on the balance of payments that had been anticipated.

2) Development of Export Oriented Industries.

a) Evaluation of preconditions for development. In the preceding section we have tried to explain why some industry must be export-oriented. Here we shall delineate some preconditions which make it possible for industry to be oriented to export. The success of the orientation depends, of course, on the extent of fulfillment of these preconditions. These preconditions apply in the first place to the industrially developing countries, whereas for the industrialized countries, such orientation is, in certain cases, possible also without fulfillment of these preconditions. Preconditions for the development of the industry which intends to orient itself to export, are as follows: availability of domestic raw material and available skill.

The role of indigenous raw material resources

The first precondition for development of industry designed to produce for export is that the raw materials required for its production should be supplied economically from domestic sources for a longer period of time. Thus, the industry will not need to secure foreign exchange for procurement of raw materials.

How the availability of raw materials would be appraised, has been briefly explained earlier. In evaluating a project, a particular attention must be given to this problem.

If such raw materials in unprocessed form had been exported until now, it is necessary to be cautious so that the new industrial production does not immediately liquidate the old exports of raw materials as that could have negative impact on the balance of payments of the country. It would be best if such raw materials could be obtained in quantities sufficient to cover both the requirements of export and of the new industry.

In addition to determining the raw material resources, in the form of ore reserves, it should be appraised whether the raw materials are accessible to operation (for example, the mine is opened, transport is secured), or new investments are required for the purpose. In the latter case, in calculating the impact on the balance of payments, this should be taken into account.

The role of available skill

Another factor, as precondition for development of the export oriented industry, is the availability of skilled labour, and trained personnel which
will be able to work on more complicated technological processes. Such facilities for training should be provided in due time.

As a consequence of lower wages in the industrially developing countries, in comparison to remuneration of labour in the industrialized countries, production costs are lower, which is an great advantage in favour of the domestic export industries.

If a great variety of raw material is available, which more or less secure through further industrial processing, a favorable effect on the balance of payments of the country th, when establishing the priorities for the construction of industrial projects, first priority should probably be given to projects, which require less investments but at the same time employ the largest possible number of labour, primarily unskilled and semi-skilled. The advantages of this are: first, because it helps to resolve the problem of unemployment, and, second, because for the training of such labour neither much time nor much money are required.

b) Cases of failure due to misjudgment of preconditions for development of export oriented industries. Failures in this respect do happen if the two above preconditions have not been well evaluated. The extent of the failure will depend on the degree of the misjudgment of these factors. Several such cases can be given as examples:

a) the evidence of the raw material resources has not been realistic, so that there are not sufficient domestic raw materials, or the ore reserves do not warrant a long life of exploitation. In such cases, three ways out are possible:

- the deficient raw materials must be imported, for which foreign exchange must be provided. Owing to transport expenses, production costs increase,
- the industrial capacity, owing to deficiency of raw materials, will not be operated to the full extent. This will reflect on production cost which will therefore be higher,
- urgent necessary measures must be taken (further prospecting carried) in order to operate the raw material resources as soon as possible. This will require new investments, which (inasmuch as the funds are provided) will result in an increase of the raw material prices and consequently in an
increase of production costs of the industry.

b) the analysis of the quality of raw materials has not been correct. In some districts, the quality responds to the analysis, but on the whole the ore is of poorer quality. The consequence is an increase in production costs.

c) prospection has shown that there are ore reserves, but mines have not been opened or the existing mechanization is not sufficient for the production of the quantities required. In this case, additional funds must be provided for investment.

d) transport has not been well evaluated, i.e., the capacity of the railways does not allow the transport of the whole quantity of the raw materials, the means of transport are insufficient, etc. Therefore, new funds must be provided.

e) labour is available in the country, but not in adequate numbers within the area of the new factory. This calls for expenses of construction of social housing projects, for accommodation of workers who will come from other regions.

f) difficulties in adjusting labour to industrial work, while the rate of adjustment is slower than expected,

g) labour turnover is greater than expected.

Finally, in addition to difficulties of a general nature which should be appraised in an overall evaluation of the project, the assessor in case of export oriented industries, is faced with special difficulties in respect of a correct appraisal of whether the assumptions which had been the starting basis for orientation to export will materialize, as well as the assumptions relating to the preconditions for development of that industry.

Errors in respect of both the elements which relate to all projects and of those specific elements, are possible in such a large number and intensity, that when the project is completed they may entirely paralyze the benefits which were expected from the new project. That is why the evaluation of the export oriented projects is more complex and needs to be more responsible, since if made superficially, it may have as a result not the acceleration of the industrial development of the country, but its impediment and economic disorganization.
IX. **Conclusions**

On the basis of all that has been set forth above, the following general conclusions may be drawn:

1) The evaluation of industrial projects is a very complex and responsible operation. It requires wide experience, thorough theoretical knowledge, an acquaintance with the domestic and foreign markets, as well as the ability of forecasting the situation that will exist at the time of putting the project into operation.

2) The basis for making the evaluation must be a solidly prepared documentation and firm proofs concerning the fundamental elements.

3) Errors in all kinds of calculations are possible and often a normal occurrence. They appear in estimates of capital expenses (both for fixed assets and working capital), of production costs, as well as of selling prices. Errors in these elements (sometimes even of minor importance) may have distorted the planned effects so much, that the project would not have been constructed had they been known in advance.

This is particularly important for developing countries, which lack capital, especially in relation to projects of the export-oriented industry.

4) Failures due to misjudgment of factors justifying orientation to export, as well as cases of failures due to misjudgment of preconditions for development should be specially studied. Failures of this kind bring the export-oriented industry to a difficult position, sometimes even without a way out. It is a matter of common knowledge that developing countries cannot allow their investments to be lost even in a single project.

5) This paper was intended to acquaint the reader with the errors in calculations and misjudgments typically found in the work of project evaluation. It may be possible to avoid most of these errors and misjudgment if the evaluator is forewarned about them.