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PLANNING AND PROMOTION
OF THE USE OF STEEL^{1/}

by

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SUMMARY

1. It is advisable to distinguish between planning - which to our mind includes forecasting or measuring the demand to which production facilities should be adapted - and promotion although both are inter-related.
2. Of the instruments for forecasting demand the most important is the market survey, of which there are three main forms, according to the period covered by the forecast:

(a) Long-term or trend forecasts

Their object is to detect possible supply shortages, in time to carry out necessary investments in the appropriate period.

It is usual to employ projection techniques based on the correlation between per capita income and per capita steel consumption.

(b) Short-term forecasts

They usually cover periods of one year and are part of the information essential to production and marketing agents for taking decisions.

Basically they include direct surveys of enterprises or users, although it is also possible to obtain indirect approximations by applying predetermined technical input to final demand coefficients, or by means of macroeconomic models.

(c) Studies of the near future

They allow variations to be detected that the market may suffer owing to occasional phenomena. For this purpose a technique based on opinion canvassing has been developed.

3. External markets are a highly significant variable and thus deserve constant attention in planning.
4. One of the ways of increasing steel consumption is by means of certain promotion measures designed to inform habitual or potential users of the possibilities of utilizing the material and of its relative advantages vis-à-vis other competing products.
5. The work of promotion may take a great number of forms covering technical, economic, esthetic etc., considerations, the most important means to this end being:
 - (a) Publications
 - (b) Teaching
 - (c) Symposia and technical meetings
 - (d) Advertising and dissemination
 - (e) Experimental work
 - (f) Product development
 - (g) Technical assistance
 - (h) Import substitution
 - (i) Exports

6. The case of the Instituto Chileno del Acero (Chilean Steel Institute) illustrates the kind of organization that developing countries might adopt to face the problems arising in connexion with domestic steel production and consumption.

The experience obtained in the few years of existence, in a wide range of matters including those discussed above, point up the benefits that the economy of a country may derive from the operation of an institution technically prepared to cooperate with steel producers and users, as well as with government agencies, in the task of industrial planning and promotion.

Steel consumption is one of the indicators characteristic of developing countries. Overall as well as per capita, the figures for these countries are only a fraction, very often less than 5%, of those for industrialized countries.

Although measurement methods and criteria considerably distort such comparisons, because steel is taken only in its primary forms and disregarded when included in processed products, the consumption level is obviously higher in the developed nations.

It is a statistically proved fact that there is a close relationship between income level and steel consumption. From this, however, it should not be necessarily inferred that the sole way of increasing consumption is first to achieve wealth, even though wealth be the determining element. Predetermined actions normally originated in the supply sector may have decisive influence on the consumption to income ratio, in specific cases, either improving it or forestalling its deterioration.

In this light, the planning and promotion of the use of steel has a significant role to play.

The following discussion is based on a steel industry in a market economy, whose object is to increase demand for its

products, subject, of course, to technical and economic limitations normally affecting developing countries.

It is advisable to distinguish between planning - which the authors feel includes forecasting or measuring the demand to which production facilities must be adapted - and promotion, although both are inter-related.

I Market Surveys

Among forecasting instruments the most important one is the Market Survey, of which there are three main forms, according to the period covered by the forecast:

(a) Long-term or trend forecasts

This type of forecast is most important, since it allows possible supply shortages to be detected ahead of time, and provides sufficient time in which to make the investments that would help to balance the market.

The most usual projection techniques are based on the correlation between income per capita and steel consumption per capita,^(*) considering either the historical elasticities of the country or region itself, or those arising from the analysis of information on other regions that may be selected according to the accepted picture of the future development of the country under study.

(*) Divers studies have found correlation coefficients over 0.9 and mean biases, in relation to the regression equation, under 9%.

Such a selection is most important in long-term projections when substantial variations in income are expected, since an inverse ratio has been observed between the income level and the value of the elasticity coefficient, which points to the existence of a theoretical limit to steel consumption per capita.

To overcome this type of problems it is customary to resort to the use of dynamic models where the income elasticity of steel consumption is a function of time.

The statistical instruments allow every degree of sophistication in order to make projections as accurate as possible. The choice of the most suitable model will depend upon the specific characteristics of each individual case and on the required or desired accuracy of the projected figures. It is possible to work with models of more than one variable, as when the composition of the GNP of the country or countries under study is a decisive element in determining consumption, as in the case of countries where there is high participation of the industrial sector, a great consumer of steel.

(b) Short-term forecasts

These generally cover periods of one year and may be used for programming production at industrial plants and identifying import requirements or possible export surpluses, as well as for procuring necessary supplies and services for operation; in other words they are part of the background information essential to production and marketing agents for taking decisions.

For this purpose it is usual to conduct direct surveys of user companies or institutions, requesting information on programmed consumption of the various types of steel (forms and grades), as well as on expected supply sources (domestic suppliers, or balance of imports).

It is also possible to obtain approximations in an indirect way if the amount of end products - both consumer and capital goods - is known; technical input coefficients of the various types of steel are then applied to these figures. This procedure requires a well set up information system and full knowledge of prevailing technologies and their modifications, in order to check the validity of the coefficients employed.

When it is difficult to obtain information of this kind, it is always possible to utilize functions of a macroeconomic nature. To do this, however, it is necessary to have reliable statistics on end uses of steel, in order to arrive at the correct comparisons between levels of activity of the various economic sectors and steel consumption levels.

Naturally, the results obtained by this means are not as accurate as those mentioned earlier, but they provide a satisfactory basis for analysis.

(c) Studies and analysis of the near future

The object of these studies is to forecast for very near periods (not more than three months away) any possible variations that may affect the market owing to occasional

and temporary phenomena which cannot be anticipated for any considerable length of time, such as difficulties derived from price movements, labour problems, foreign trade, climatic variations etc.

The measuring instrument is a questionnaire in which the amount of questions and the quality of the answers requested vary according to the periodicity of the survey, taking into account the time required for processing the information. The number of questions is usually low (15 to 20) and replies requested are mostly qualitative or opinions, thus allowing the questionnaire to be filled very quickly.

Very complete and easily handled methods for information processing and for interpretation and presentation of findings have been developed around the abovementioned sounding technique, which thus becomes a remarkably useful tool for checking market behaviour.

External markets

The consideration of external markets deserves especial mention. It is a well-known fact that steel industry production plant is indivisible and hence, as a rule, gives rise to surplus production capacity by comparison with domestic demand, either in rolled products or in some of the intermediate stages of processing, and also, obviously, to under-utilization of facilities owing to insufficient feeding from the previous stages.

As a result, sales to foreign markets, besides being feasible, are a significant element which may help to achieve optimum utilization of facilities.

Full knowledge of international markets, together with adequate policy and organization for foreign trade relations, may, either by long-term and short-term agreements or by individual operations, help considerably to attain a planned production that will optimize yields.

II Promotion of the use of steel

One of the ways to increase consumption or improve the use of steel is to carry out certain actions for promotion designed to inform habitual or potential users of steel as to the possibilities and forms of utilization afforded by the material, as well as of its relative merits vis-à-vis competing materials.

Promotion action may take any number of forms and shapes covering technical, economic, esthetical and other aspects. The ways to carry it out are also widely varied; among them the most noteworthy are:

(a) Publications

The range of subjects that may be discussed and disseminated by means of publications is immense. The choice of such subjects must bear in mind the kind of reader to whom the publication is addressed, and extension, degree of technicity, style, illustrations, graphs etc. must be selected accordingly.

By way of illustration, typical publication material is to be found in the many series of Technical Handbooks on a range of subjects that includes:

- Characteristic features of the various types of steel (dimensions, chemical analysis, physical properties, machinability, appropriate heat treatments, coatings, weldability, corrosion properties etc.).
- Specific steel applications in given jobs or sectors (architecture, furniture, stocking, agriculture, construction, highways etc.).
- Information for selecting steels according to the use to which they will be applied, or the processes to which they will be submitted, as well as appropriate tools for machining them.
- Manuals for designers.
- Others.

Another type of publications is concerned with studies tending to point out the technical and economic advantages of utilizing steel instead of other materials or certain grades of steel instead of others. These types of studies may include evaluation of construction works carried out with steel structures or concrete, or the behaviour of stainless and common coated steels in corrosive environments and so on.

It is also important to disseminate standards leading to improved steel utilisation.

Studies prepared for specific objects connected with or originating from other promotion activities should likewise

be taken into consideration, if they are deemed useful for purposes of motivation.

(b) Teaching

Professional activities and initial training stages in technical schools and workshops are a most important field of action to direct designers and constructors as to the use of steel.

The participation of experts lecturing for statisticians or professionals in architecture, engineering, industrial design and so forth, to show the advantages of this material and teach the technology for using it, will lead to having in the future a number of trained individuals interested in applying steel in their respective fields, the experts thus acting as indirect promoters.

To achieve the foregoing objectives, cooperation from other promotion elements - such as calculation tables, design manuals, and textbooks - is essential to aid the work to be done by participating students and professionals.

(c) Symposia and technical meetings

Their object is to keep people connected with steel informed on technological developments in the field.

At these meetings it is also usual to disseminate and discuss interesting or novel experiences in the use of steel in various applications and places, as one way of opening up the possibilities of applying steel.

Such meetings are normally addressed to the diverse users of the same type of steel, or to a specific user sector employing steels of different types.

In addition, these meetings have the advantage of allowing producers to know the feelings of users regarding specific materials, thus helping to resolve some of the problems that tend to arise in the fabrication industry.

(d) Advertising and dissemination

The media employed for this purpose are the usual ones, i.e. films, booklets, press, radio and television advertising etc. Very simple features of the product are usually stressed, such as strength, durability, economics, appearance etc., or the benefits accruing to the nation from its production and application are shown, including foreign exchange savings, job generation, works that have been made possible by the availability of steel - bridges, buildings, factories etc.

(e) Experimental works

Very often the best way of proving the feasibility and advisability of using a given material for a specific job of work is to do it empirically, so that actual experience will point up the true advantages and limitations of the product, while at the same time allowing construction problems to be detected and overcome before commercial operation begins.

(f) Product development

The supply of new types of steel may very quickly originate a significant level of consumption of them, by replacing either other competitive materials or other steels less appropriate for specific applications. In this connection, recent experiences with prepainted or plastic-coated steel prove the effectiveness of such promotion.

(g) Technical assistance

This function basically includes the assistance that producers or specialized institutions grant the users for selecting the most suitable steels for specific applications or processes.

As in all activities, the image that a customer has of his supplier in terms of the aid that the latter provides to resolve problems arising from the use of the goods he provides is an important element in deciding on new lines of production requiring the same services.

Technical assistance can also be given by answering questions related to problems arising in the processes of steel fabrication, occasionally including laboratory tests.

Another form of technical assistance is the specialized bibliographical information service connected with the material.

(h) Import substitution

A significant proportion of the steel consumed by

developing countries is purchased abroad in the form of processed end products, such as machinery, vehicles, domestic appliances, tools and so forth.

As soon as such goods can be manufactured in the country they entail true demand for steel.

It should be borne in mind that this increased demand is only the result of industrial operations having a far greater effect on the economy of the country by creating new production sources, foreign exchange savings etc. Thus the pursuit of increases in steel consumption may lead to action of far-reaching effect on economic growth, which is in fact the decisive element of consumption.

(i) Exports

Lastly, we come to the possibility of increasing production in order to sell to other countries. Although a kind of timidity is still apparent in developing countries with regard to exports, which are felt to be reserved to and feasible in the more highly industrialized countries only, this may be a significant justification for investments in the steel industry. The frequency with which the developed countries themselves must resort to foreign suppliers to meet demands that local industry is unable to cover must be noted. Furthermore, there are many countries that do not produce steel, owing to their specific conditions, and thus offer potential markets that may be captured by means of an appropriate export policy.

On the other hand, similarly to what happens with import substitution, additional demand is originated by indirect export of steel included in manufactured products, a procedure that is sometimes more feasible than exporting the unfabricated steel product.

III Experience of the Instituto Chileno del Acero (Chilean Steel Institute) in planning and promotion of the use of steel

Developing countries that have taken the decision to operate their own iron and steel industry and, having set it up, face, among others, the problems arising from production and consumption of steel, feel the need of having technical teams at their disposal, either inside or outside the enterprises, that will help to overcome those problems in the light of the specific conditions of the country.

In the case of Chile, in addition to the analysts, researchers and promoters connected with production or government development agencies, the producers and users, grouped in their respective trade associations, found it advisable to set up a specialized institution to work on these points. The Instituto Chileno del Acero (ICHA) was thus founded in 1958; it is defined by its by-laws as "a private association, for conducting studies and research leading to the development of activities designed to produce, process, distribute and consume iron, steel and secondary products, and to the efficient and harmonious growth of such activities".

In due course the need was felt to establish a close link between the institute and the industrial planning

apparatus, which led to the affiliation to ICHA of the Corporación de Fomento de la Producción (CORFO) - the Chilean Development Agency.

In fifteen years the Instituto Chileno del Acero, working with interdisciplinary teams composed of economists and industrial engineers, has covered a vast field of work including, among other things, practically all the activities discussed in this paper, which may be summarized as follows:

(a) In the steel and metalworking sector

1. Feasibility studies

Twenty-two studies have been completed, fifteen of which have been implemented, involving investments of more than 40 million dollars and providing employment for over 2,000 persons.

These studies include: gearboxes for motor vehicles, springs for motor vehicles, sewing-machines, machine-tools, steel discs for farming machinery, steel cables, farming machinery; etc.

2. Market and import surveys, and status of industrial sectors. Over 40 studies of this nature have been made.

3. Statistics

A number of continuing statistical series are maintained on production, prices, imports, exports, apparent consumption, end uses etc. of steel and fabricated products.

4. Programming

More than 13 studies have been made on various problems in industrial programming, from a National Inventory of Machine-Tools to proposed Programmes for Sectoral Economic Development.

5. Integration and foreign trade

This activity has become most important for industrial development of the sector, as shown by the fact that ICBA has completed over 23 studies on the subject, in addition to conducting a continuing analysis of related events.

6. Capital goods, automotive industry and specialization of the Chilean metalworking industry

As the degree of development reached by the Chilean metalworking industry in the field of consumer and intermediate goods did not present prospects of significant growth, particular attention was paid to more dynamic sectors, from the standpoint of internal and external demand, also implying expansion and improvement of the production infrastructure.

More than fifty studies have been made on these subjects, including feasibility studies, project development and negotiation with foreign investors.

7. Standardization, simplification and quality

Activities in this field cover preparation of draft standards, simplification of steel products, project and promotion of a centre for testing metallurgical materials and products which is currently operating.

8. Technical handbooks

Six technical handbooks have been prepared, including: Metal Stamping, Foundry Sands, Practical Guide for Cupola Furnace Operation etc.

9. Specialized library

A library and technical documentation centre have been organized for the needs of the institute and available to Chilean companies and institutions for consultation.

(b) In the construction sector

This sector, an important consumer of steel, has deserved especial attention in ICHA activities. In addition to a great number of studies on statistics and markets, programming and production, the technical handbooks deserve special mention, among them the following:

- Structures made of steel rounds
- Design of steel structures
- Light-framed steel structures
- General technical specifications for the construction of steel structures
- Painting of metal structures
- Atlas of structural details
- Calculation tables for steel structures
- Design handbook for cold-formed steel sheet structures

Interesting studies on other subjects include those on steel structures for low-cost housing, comparative consumption and cost studies of reinforced concrete works

using different types of steel. comparison of steel bridges, reinforced concrete and prestressed concrete. effect of seismic movements on steel structure buildings etc.

(c) In the canning sector

As in other sectors, numerous studies have been completed on programme statistics, foreign trade, technical assistance, technical handbooks etc.

Activities deserving especial mention are the organization of cooperative exports of canned goods to European markets, standards on containers, recommendations for the use of electrolytic tinplate in the canning industry, setting up of a canned food control laboratory etc.





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