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C E S M E C

Centro de Estudios, Medición y Certificación de la Calidad - Chile

An Exercise in Sustainability

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Synopsis

The report traces the history of a UNDP/UNIDO supported project in Chile which started in 1969. The objective of the project was to establish a public institution to provide quality control services to industry. The institution was able to adapt to drastically different economic environments in the country. Not only the institution continued to develop after the assistance ceased but subsequently it was privatized and is operating at profit. Reasons for this success, particularly in what concerns sustainability of the assistance provided, are analyzed.



This is a small contribution
to the commemorations of the
50th anniversary of the United Nations

CESMEC
Centro de Estudios, Medición y Certificación de la Calidad - Chile

AN EXERCISE IN SUSTAINABILITY

A. From the Idea to the Establishment

During 1967/1968 a UNESCO expert visited Chile and advised on the creation of a laboratory to provide quality control services to the growing metalworking industries of the country. The advice was based on the good experience acquired by the Chemical Laboratory of the University of Chile, which was providing such services on a limited basis.

The Government of Chile, through its Corporación de Fomento de la Producción (CORFO) - liked the idea and requested UNDP assistance to implement it. In view of the industrial nature of the request it was forwarded to UNIDO. UNIDO subsequently dispatched to Chile, in January 1969, a young staff member, a mechanical engineer, to analyze the request.

The idea was validated by the staff member. Together with the recently appointed director of the Center, the staff member prepared a "plan of operations" for the required assistance. This project received funding from the then Special Fund (SF) of UNDP. The project involved the establishment of the Centro de Servicios Metalúrgicos CESME with three main departments - Metrology, Materials Testing (chemical and mechanical) and Finished Products (non- destructive) Testing. The SF would provide equipment to the value of \$304,000 (easily ten times this figure in 1995 dollars), expertise to advise on the establishment and running of the Center (a total of 96 work months) and 28 work months of fellowships and study tours. Total UNDP financing was \$590,400. This phase would last for 3½ years.

The Government (CORFO) would supply the land, erect a building specially designed for the purpose and provide staff for the Center (10 professionals, 19 technicians and 10 administrative staff).

This plan of operations was negotiated between UNDP, UNIDO and CORFO and was finally signed on the last day of the Frei Administration by the Minister of Foreign Affairs who, interestingly enough, signed the approval of the second phase, this time as the Director of the Bureau for Latin America and the Caribbean of UNDP.

The role of UNDP was not limited to financing since in the early stages of the project the local office supported, advised on and assessed the planning and initial activities of the Center.

In the meantime CESME was incorporated as a publicly-owned company under CORFO, architectural designs were drawn up, bids for the construction were called and construction undertaken, while its professional staff began training abroad and equipment started to be purchased under the project.

At the start of the project UNIDO fielded a project manager, a Scot, with extensive quality control experience from a multinational in the electric equipment business. He had already proven himself in previous UNIDO technical assistance projects. Between 1970 and 1974 this manager worked behind the scenes to spread the principles of good entrepreneurship and quality management as well as the importance of applying human values in implementing those techniques. His inspiration and help in developing the confidence the management needed to conceive and lead the institution towards the success it has achieved is today considered fundamental.

The Center was formally inaugurated on 20 April 1971 by the then President of Chile, Salvador Allende, although it had started limited operations in March 1971 when the installations were completed and the first batch of equipment installed.

During 1971 to 1973 the Center had to operate in the context of the import substitution policy then in place and therefore to assist enterprises in developing and producing products with the limited means available. CESME had a major task, for example, in recreating (through dimensional, chemical and metallographic analyses) the Ford engine head used in the "collectivos" (public mini-buses) for local production which could not be imported from the US.

When the military took over in September 1973 drastic economic policy changes were undertaken under the guidance of a team of young Chilean economists educated in Friedman's principles, quickly dubbed "The Chicago Boys". A policy of liberalization relying on the market for resource allocation was established as a shock therapy. The public sector was retrenched, prices freed, non-tariff protection and subsidies abolished.

CESME had to follow suit and quickly adapted to the new environment. To start with it realized that its market was not only the metalworking industry, but the whole industrial sector. This was formalized in a subtle change of name. CESME became CESMEC (Centro de Estudios, Medición y Certificación de la Calidad, Ltda.). Services were correspondingly diversified.

The project was followed by a second phase with a UNDP contribution of \$ 680,000 and finally by a third phase with a contribution of \$ 293,030. External assistance ceased totally in the beginning of 1980. The second and third phase had an important cost-sharing component.

B. The Privatization

In 1975 CORFO concluded that only three of the nine specialized institutes it possessed deserved to continue operations, but only if they could be sold to the private sector. CESMEC was one of the three. It also concluded that any of these three institutes that could not be sold as operating entities, as well as the other six institutes, should have their assets sold and operations discontinued.

Later on it allowed for the continuation of CESMEC as a public entity, but only under the condition that all subsidies to CESMEC be eliminated by 1978, thereby requiring that

Later on it allowed for the continuation of CESMEC as a public entity, but only under the condition that all subsidies to CESMEC be eliminated by 1978, thereby requiring that CESMEC be self-supporting. The problem was that CORFO tied CESMEC to operating under budgets, prices, and employment regulations which led to a continuous deficit. It could thus only be sustained through subsidies.

Therefore, it was clear to management that if CORFO removed CESMEC's subsidies, it should also release CESMEC from its control.

Faced with the alternative of CESMEC's closure or an impossible requirement for self-sufficiency as a public entity, the Director of CESMEC was encouraged to lead a private takeover of the enterprise. He conceived a method for the employees to themselves purchase the enterprise from the Government and organized support for the idea among CESMEC's workers. In a letter to the CORFO President, dated 26 July 1977, he outlined the principal points of the CESMEC workers' proposal. First, he expressed their feeling that CESMEC's services were good for the country and for the industrial sector in particular

Next, he confirmed what the employees believed CORFO's objectives to be, namely to privatize those public operations that have the capability to be operated as private enterprises and to no longer subsidize public operations which were unable to operate efficiently.

He then asserted what CESMEC's workers felt should be the principles of the acquisition, namely that:

- 1 The real asset of an enterprise like CESMEC is its employees, who have become highly qualified through their extensive experience in the enterprise's operation
- 2 CESMEC's employees wish to maintain their working efficiency and believe that if the enterprise were to continue under CORFO's control that such efficiency would be difficult to achieve
- 3 So, if CESMEC's subsidies were to be removed, so must CORFO's control. This is necessary to enable CESMEC to compete effectively. Therefore, the enterprise would be ready to compete successfully if it were privatized

UNDP/UNIDO's provision of part of the capital equipment was important to CESMEC's privatization. At the time of privatization, this equipment had a depreciated value of only about US\$47,000, equivalent to approximately Pesos \$1,316,000 (at the then current rate of exchange of about Pesos \$28/US\$). However, the equipment was still operational (indeed some is still being used today) and would have been very expensive to replace. On the other hand, the equipment would have had no commercial value in the Chilean market.

The formula adopted to distribute the stock among its staff was a function of the employee's salary level, level of responsibility, and number of years in the company. Of the 87 employees offered the opportunity to purchase stock, 83 exercised this option.

When the stock was fully subscribed in early 1978, the six members of the Board of Directors, who were also the principal senior managers, controlled 36% of the equity.

Many viewed the purchase as a very difficult choice. At the time that the stock was offered to the key managers the cost was in the order of half a year's salary or more. Many of the key managers interviewed could not make such an acquisition without borrowing or making significant sacrifices in their living expenditures, or both.

The interest to borrow the funds for the purchase was very high at the time, dividends on the capital were uncertain, and therefore the purchase was perceived as very risky, even though the managers had confidence in the company and their ability to participate in its management.

Prior to the privatization, CESMEC had experienced significant operating losses. However, in 1977, just prior to privatization, CESMEC appeared to operate at breakeven.

CESMEC's privatization was completed and formalized on 13 January 1978. Because of a sharp decline in sales and profits in the early 1980s, CESMEC was unable to pay off all of the CORFO loan by 1985 according to the original schedule of the agreement. Two extensions were granted and CESMEC ultimately paid off the CORFO loan in 1993.

As of 1995, CESMEC has 100 stockholders. A few of those have left the company but retain ownership of their stock.

CESMEC's management succeeded in operating the firm at increasing levels of efficiency since its privatization. After tax, profits as a percentage of total sales, grew from 2% to 5% during the extremely weak economic period of 1980-81 to 9% by 1986 and 12% to 14% in 1987-89.

CESMEC was unable, however, to entirely avoid the impacts of Chile's economic decline in the early 1980s. The fact that CESMEC even made profits during 1980-81 is more remarkable and noteworthy given the extremely difficult economic conditions of the time in Chile. Many of CESMEC's clients replaced production with imports, which had become relatively unexpensive due to the overvalued exchange rate. CESMEC depended upon that production to sell its quality analysis services. In reaction to this CESMEC made some strategic changes in its operations and financial arrangements. In addition to renegotiating its CORFO loan as indicated above, it expanded quality control services to processing industries. CESMEC became more involved in product quality certification for exports of Chilean goods, particularly food products, and expanded the provision of its services into the provinces of Chile and to Bolivia. Sales to Bolivia remain marginal, not so much because of its being in another country, but because of low local demand. Diversification and regional growth was financed by a mix of own funds and commercial loans.

C. Paradigms of CESMEC

The principles which have guided CESMEC during its 25 years of existence can be summarized as follows

1. Offer of a range of diversified services well integrated in the prevailing economic policy of the country.
2. The human dimension is the ultimate dimension of everything.
3. Market orientation of services.
4. Honesty in operations and commercial relations.
5. Decentralization of operations with consequent delegation, empowerment and accountability.
6. Aiming always higher.
7. Transparency, solvency and objectivity of operations.

D. The Present and the Future

Since 1991, CESMEC embarked on an aggressive plan to reorganize the company to enable it to succeed in an increasingly competitive business environment. CESMEC's primary traditional services (that of providing quality testing, analyses, certification, etc.) is facing growing pressure from institutions, such as universities, which can effectively subsidize those services by absorbing much of their costs in general overhead. As a result, those institutions are able to price their services somewhat lower than CESMEC. CESMEC enjoys a competitive advantage in that CESMEC's clients perceive a greater added value to CESMEC's services and quality assurance, and as a consequence is able to retain those clients even at higher prices. At present, these services comprise about 80% of CESMEC's revenues, but management is concerned about its vulnerability in this area, and is seeking ways to diversify the quality analysis services into new products and for which quality analysis services are not available or not so competitive.

CESMEC is also diversifying into other activities. Specifically, CESMEC found that it could provide and service its own extensive vehicle fleet more economically than through leasing or other arrangements. The transportation division has grown rapidly, and as a separate profit center presently accounts for about 18% of CESMEC's revenues. CESMEC has also been fabricating a growing amount of its electronics equipment, finding that it can design and produce this equipment more economically than by acquiring it from outside suppliers. This profit center accounts for about 2% of CESMEC's revenues and has spun off as a separate company - MELDIC.

MELDIC is established in the premises of CESMEC. It manufactures various types of instruments for measuring wall thickness, depth of surface coverings, pore detectors, control systems, computer controlled autoclaves and tensile testing machines. It also imports a wide range of other instruments.

CESMEC presently has 500 employees, of which 400 are professionals and technicians and 100 are administrative and clerical. The management of CESMEC is organized in a matrix fashion, one dimension being functional, the other geographical.

Functionally, the management is divided into

- Operations,
- Administration and financing.

- Laboratories;
- Human resources;
- Quality.

Operations, the largest department is divided along sectorial lines as follows:

- Food and chemical products;
- Chemical analysis;
- Engineering services;
- Industrial inspection;
- Maritime services;
- Civil works;
- Follow-up and control;
- Mechanical services.

In addition to the Headquarters in Santiago, comprising 230 employees and responsible for 40-45% of the turnover, regional laboratory units have been established in the following places listed by decreasing order of turnover:

Antofagasta
 Talcahuano
 Iquique
 Puerto Montt
 Chuquicamata
 Copiapó
 Valparaiso
 Arica
 San Antonio
 Punta Arenas

The regional units do not possess all the technical capabilities of the head office but concentrate on the range of services most in demand in the region they cover.

The principle of cost centers is applied along the two dimensions described above, so that profitability can be ascertained by geographic or functional lines.

Annual sales are presently in the region of US\$ 11.5 million, the top four items being:

Food	\$ 3.30 million
Industrial Inspection	\$ 2.50 million
Chemical Analysis	\$ 2.05 million
Engineering Services	\$ 1.80 million

CESMEC covers between 30 and 40% of the estimated total national market for quality and certification services

E. Policy on Women

CESMEC does not have an explicit policy that seeks to hire and promote women as a proportion of its workforce. However, women comprise a large portion of the workforce. Women represent about 25% of the total workers and about 50% of the workforce in the chemical and food analysis division. Although no women are represented in top management, a woman heads the food analysis division and the firm's internal auditor is a woman.

The president has strong feelings on the particular gifts of women, to perform the type of services carried out by CESMEC. He feels that women are usually well-organized, methodical, careful about contamination of test materials, good with details, and do not get bored with routine or repetitive work.

F. Environment

Many of CESMEC's operations address environment protection. Specifically the firm performs analyses of contaminants in industrial products and undertakes studies of ecological impact. Management feels that it has a moral responsibility to promote environmentally sustainable industrial development and that such policy is good business. An example of activities in this line is the verification of chimney effluents within the Effluent Control Plan of Santiago.

G. Lessons

Why was the project successful (reached its objective) and sustainable (continued to produce and increase - in-depth and scope - the results beyond the project life)?

The question can also be put like this: Why was CESMEC successful and how did UNIDO's assistance contribute to that?

The case is a perfect example of dynamic sustainability where the project is able to sustain its development momentum well after the termination of the assistance.

Let us analyze the various elements contributing to this success:

Strong market needs and market orientation of the project/institution

Quality of products is a problem of supply and demand. In an open economy there will be producers ready to manufacture at higher quality levels when there are buyers willing to pay higher prices for such quality.

When governments employ their large purchasing powers to demand higher quality levels, a first step towards generating higher quality is taken. In the case of Chile - the State Copper enterprise CODELCO - from its inception demanded international specifications and quality levels which its suppliers should meet.

The opening-up of an economy - with its consequences of export orientation and competition from imports - is another element to generate quality.

The market for the services provided by CESMEC was always there, admittedly sometimes in an incipient manner. It should also be noted that this market was not a static one, but changing with the economic policy. The strategic planning adopted by the management of CESMEC was attentive to such changes.

Strategic planning

A vision of the future directed the strategic planning of CESMEC. Management was always attentive to market changes. At the same time it was able to develop latent markets (implicit needs). Two examples can be given: the introduction of a quality seal (already foreseen in the original plan of operations) and the provision of assay services (quality and quantity of bulk shipments). The latter was an idea of the project manager not foreseen in the plan of operations. It was particularly suited for a country heavily involved in ore exports. Both efforts were started by CESMEC before the applicable legislation came into force.

The technology of quality, including systems of total quality, is essentially not proprietary. However, it does involve a commitment of the full staff of the enterprise, starting at the highest level, to remain competitive.

Efficiency

CESMEC was always managed with efficiency criteria. Despite the fact that such institutions need to be staffed by technologically qualified people they also need to have - at least at management levels - a business conscience. The president's post-graduate in business administration in addition to his chemical engineering education helped considerably in this connexion. Management courses continued to be extensively undertaken by the staff. Considering that what is free is not appreciated, CESMEC charged - admittedly on a modest scale at the beginning - for its services. This was done in a somewhat confidential way since in those days it was anathema for a UN sponsored project to charge for its services.

Despite its start as a publicly owned and financed corporation, sound financial management was a preoccupation from the beginning. A first financial plan (of a cash-flow type) was handprepared already back in 1973.

Commitment to Ownership of the technical assistance

The idea, although originated and supported by the UN, was always espoused as Chilean CESMEC. From its beginning, was considered first a Chilean institution and second a UN project. The UN was there only to advise and assist.

A commitment of the project management to its objectives, and not using their position as a stepping stone for higher offices or other personal goals, is needed. The top

management of CESMEC in rather difficult times was attracted to better paid jobs, particularly abroad, but remained on board.

The presence of an experienced (from technical and managerial standpoints) project manager is considered a key figure in the success of the project and the institution. The equipment supplied was also a big help at a time when the country had scarce foreign exchange resources. But it was not only a case of budget support, since UNIDO's inputs included the selection, specification and identification of sources for such equipment. Well focused study tours and fellowships, mostly undertaken during the building's construction, also helped.

Would CESMEC be there today without UNIDO's project? Probably not. The capital investment in equipment, in foreign exchange, would not have been available. The good advice of the experts supplied and the know-how obtained during training provided the fertilizer on which CESMEC's tree grew.

Management-labor relations

CESMEC experienced excellent management-labor relations during its life. All workers receive a bonus based upon the company's performance in addition to the dividends on the stock. Management issues monthly statements of the company's operating results. The transparency of the company's financial performance is considered a critical aspect of its management - employee relations.

H. Replicability

UNIDO has used CESMEC's experience in other regions of the world but the results have been mixed. Managers of such institutions often have an exclusively technological background and are not business oriented. Their civil servant mentality - with a secure job and income, even if meagre - is not conducive to risk-taking. Income is mostly provided by the State, either through budget appropriations or special levies on exports or sales. Sales of services are low and often concentrated on mandatory operations. The lack of financial resources also leads to technical obsolescence (equipment and know-how) in what is a fast-moving field.

Industrial quality control institutions in developing countries could profit by examining CESMEC's interesting history

I. The actors (by order of appearance)

- 1 The UNESCO Expert - Derek Loveroy
- 2 The UNDP Resident Representative in Santiago from the time of the idea to the inauguration of CESMEC - L. Ramirez-Boettner (Now Minister of Foreign Affairs of Paraguay)
- 3 The UNIDO project officer
- 4 President of CESMEC and First General Manager - Pedro Vergara

5. General manager of CESMEC - at the beginning of CESMEC, Head of the Chemical Laboratory - Eugenio Ossa
6. The Minister of Foreign Affairs of Chile who signed the first plan of operations and who later approved the second phase as Regional Director, Bureau for Latin America and the Caribbean - Gabriel Valdez
7. Project Manager - John McCullagh