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Regional Expert Group Meeting for
Latin America and the Caribbean on
the Capital Goods Industry
with Emphasis on Machine Tools*

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Santiago, Chile, 8-11 April 1991

REPORT**

* This meeting was organized by UNIDO in co-operation with the Sistema Económico Latinoamericano and the Economic Commission for Latin America and the Caribbean.

** This document has not been edited.

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G. E. T. H. A. S. I.

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INTRODUCTION

1. The Regional Expert Group Meeting for Latin America and the Caribbean on the Capital Goods Industry with Emphasis on Machine Tools was held from 8 to 11 April 1991 at the headquarters of the Economic Commission for Latin America and the Caribbean (ECLAC) in Santiago, Chile. The meeting was organized by the United Nations Industrial Development Organization (UNIDO) with the co-operation of the Latin American Economic System (SELA) and ECLAC, and was attended by 29 participants, 2 observers and representatives of SELA and ECLAC. ^{1/}

2. The main objectives of the meeting were:

- (i) To review the problems faced by machine-tool producers in the Latin American and Caribbean region in the light of global trends in the machine-tool industry;
- (ii) To exchange experiences on the use of conventional and advanced machine tools in the metal-working and engineering industries;
- (iii) To propose effective modalities for bilateral, regional and international co-operation in the capital goods industry in general, and the machine-tool industry in particular; and
- (iv) To define issues to be further elaborated by the UNIDO Secretariat and presented to the Fourth Consultation on the Capital Goods Industry with Emphasis on Machine Tools.

I. AGREED CONCLUSIONS AND RECOMMENDATIONS

Conclusions

3. The machine-tool industry is of strategic importance by virtue of its contribution to the technological development of the metal-working and engineering industry.

4. There has been a significant decline of the machine-tool industry in the Latin American and Caribbean region, and the region as a whole has been marginalized in terms of global production and trade. Production of machine tools in the region is heavily concentrated in Brazil and to a much lesser extent in Argentina, while in some of the other countries it consists mainly of assembly operations and the manufacture of simple machines. Factors that have contributed to the limited development of the machine-tool industry in

^{1/} See Annex I: List of participants.

the region include, inter alia,

- i) The economic crisis and investment decline in the countries of the region; and
- ii) The lack of long-term industrial policies.

5. Industrial promotion policies have substantially changed in many Latin American countries and disappeared in some of them, and that fact, in combination with the steps being taken to open up their economies to external trade, is creating serious difficulties in terms of the survival of many capital goods industries in the region.

6. Owing to the heterogeneity of the machine-tool industry, there is wide scope for producers of conventional machine tools for local, regional and international markets.

7. Ample opportunities exist for regional co-operation in the machine-tool industry in the Latin American and Caribbean region. This co-operation may take different forms, such as:

- (i) Promotion of new projects for local production of machine tools with the help of producers already established in the region;
- (ii) Subcontracting arrangements for the production of parts and components;
- (iii) Assurance of adequate after-sales service and technical assistance by producers of machine tools in the region for user countries;
- (iv) Quality control arrangements that may include requirements for quality certification; and
- (v) Training at all levels from product design to shop floor operations and technical management.

8. The absence of appropriate financing that will simultaneously promote the production and export of machine tools as well as permit competition with imports is a major constraint for the machine-tool industry in the Latin American and Caribbean region.

9. The widespread practice of importing used machinery or accepting foreign investment for the sake of the transfer of obsolete industrial plants has created an industry in Latin America which has been inefficient since its inception, uneconomic with regard to international competitiveness, and injurious to local consumers, who have been obliged to purchase products of a lower quality and at a higher price than on the world market.

Recommendations

10. Governments should develop harmonized long-term policies with a perspective of regional integration for the development of the capital goods industry in general and the machine-tool industry in particular.

11. Latin American and Caribbean countries that have already entered the machine-tool industry should strengthen it, while measures to foster more efficient utilization of machine tools should be strengthened in all countries. Entry into the machine-tool industry by newcomers should be based on assessment of the strategic importance of the industry, the time horizon in which they operate, the existence of basic infrastructure and the perspective of being competitive.

12. Machine-tool producer countries should develop and adopt industrial policies aimed at promoting investment in the metalworking and engineering sector and provide incentives for the local production of machine tools to compensate for the reduction of trade barriers.

13. Special attention should be given to the specific problems of the Caribbean region. UNIDO is invited to convene a meeting of users and potential users of machine tools in the Caribbean region with their potential suppliers within the Latin American and Caribbean region to investigate and explore the issues related to the use of machine tools and the production of capital goods, spare parts and components.

14. Customs authorities should review their regulations for the temporary export and import of machine tools in such cases as leasing arrangements, trade fairs, etc., among the countries of the region with a view to streamlining and formalizing such arrangements on a sustained basis.

15. The Inter-American Development Bank is urged to revamp its facility for intraregional trade on capital goods and pursue further negotiations on this subject with the World Bank and other financial institutions. Likewise, ALIDE (Asociación Latinoamericana de Instituciones Financieras de Desarrollo) and CAF (Corporación Andina de Fomento) are also urged to search for mechanisms to solve the financial problems of the sector.

16. Governments and financial institutions should initiate studies on debt reduction schemes that involve trade and investment in the machine tool industry.

17. Technical assistance centres should be promoted to facilitate the solving of any problems that might arise with machine tools during the warranty and post-sales period.

18. Co-operation and co-production should be promoted and encouraged between manufacturers of machine tools and regional manufacturers in the areas of product development and integration of spare parts.

19. The formation of associations of manufacturers of machine tools to promote marketing, pre-sales and post-sales service and technical training of users in the countries of the region which do not yet manufacture machine tools should be supported and encouraged.

20. Government authorities should be requested to streamline the formalities for the importation of machine tool spare parts or components in order to avoid delays in repair of machines.

21. The governments of the region should maintain strong, dynamic policies to promote the buying of domestically and regionally produced products in view of the stimulating effects of State purchases on the industry.

22. UNIDO should expand its fellowship programmes for (i) training of machine-setters and programmers; (ii) post-graduate studies for production engineers in the field of new technologies; (iii) engineering courses on the maintenance of numerically controlled machine tools (NCMT); (iv) post-graduate studies for NCMT electronic and electrical engineering designers; and (v) management courses for engineers concerning technical aspects of NCMT purchasing.

23. Governments are called upon to avoid the importation of obsolete second-hand machine tools.

24. UNIDO and other international and regional organizations are called upon to assist and support the countries of the Latin American and Caribbean region, upon request, in the implementation of these recommendations, with special attention given to the smaller countries.

25. The issue of "Conditions of entry and measures to promote competitive local production and effective utilization of machine tools in developing countries" should be elaborated by the UNIDO Secretariat and discussed at the Fourth Consultation on the Capital Goods Industry with emphasis on Machine Tools. This issue should take into account the following aspects:

- (i) Stable, favourable industrial policies;
- (ii) Plans for financing in regard to investment, trade and technological innovation;
- (iii) Marketing strategies and entrepreneurial policies;
- (iv) Human resources development;
- (v) Acquisition and promotion of machine-tool technologies;
- (vi) Complementary aspects of production and regional co-operation;
- (vii) Industrial reorganization as it relates to the use of high-technology machine tools; and
- (viii) User-producer relations.

II. ORGANIZATION OF THE MEETING

Opening of the meeting

26. The meeting was opened by the Director of the System of Consultations Division of UNIDO. In his opening remarks, he expressed his appreciation to SELA and ECLAC for their co-operation in arranging the meeting. He outlined the objectives of the meeting and drew attention of the participants to the important tasks ahead including selection of issues for the Fourth Consultation on the Capital Goods Industry with emphasis on Machine Tools, which will be held in Prague, Czech and Slovak Federal Republic. Mr. Latortue underlined the importance which UNIDO attaches to the development of the capital goods sector in Latin America and drew attention to the regional consultation on the restructuring of the capital goods sector which is scheduled for the 1992/93 biennium. A regional programme for industrial automation of the capital goods sector in Latin America has also been initiated.

27. The opening session was also addressed by Mr. Grebe Lopez on behalf of SELA and Mr. Fernando Fajnzylber on behalf of ECLAC. The two speakers described the activities undertaken by their institutions in the industrial sector in general and in the capital goods sector in particular.

Election of officers

28. The following officers were elected:

Chairman: Mr. Salvador Lluch (Chile), Secretary General, ALABIC

Vice-Chairman: Mr. Einar Kok (Brazil), Director, SINDIMAQ-ABIMAQ

Rapporteur: Mr. Disrael Hutton (Jamaica), Director, Technical Engineering Services, JAMPRO

Adoption of the agenda

29. The meeting adopted the following agenda:

1. Election of officers
2. Adoption of the agenda
3. Global discussion on alternative development routes of the metalworking industry with or without a machine-tool industry.
4. Problems confronted by producers of machine tools in the Latin American and the Caribbean region
 - (a) Status of metalworking and engineering industries and prospects for growth
 - (b) Integration versus subcontracting arrangements/possibilities
 - (c) Institutional framework
 - (d) Industrial policies, particularly with regard to domestic industry protection
 - (e) Domestic, regional and international markets
 - (f) Comparative advantages
 - (g) Industry standards especially for software
 - (h) Entry into production of NCMT
5. Problems confronted by users of machine tools in the Latin American and the Caribbean region
 - (a) Experience of main users especially on diffusion of electronics technologies and prospects for production and trade
 - (b) Choice of technology between conventional and NCMT
 - (c) Use of computer-aided design
 - (d) Industrial competitiveness
 - (e) Quantity and quality of employment
 - (f) Organizational changes as prerequisites for acquisition of flexible automation
 - (g) Training of personnel
 - (h) Information/documentation for low-risk decision-making

6. Experiences on bilateral, regional and international co-operation
 - (a) The Capital Goods Integration Agreement between Argentina and Brazil
 - (b) Harmonization of promotion policies
 - (c) Impact of trade liberalization on domestic industry
 - (d) Tariff and non-tariff barriers
 - (e) Institutional arrangements
 - (f) Research and development
 - (g) Training
 - (h) Information exchange
 - (i) Role of multilateral agencies
 - (j) Financing problems of modernization programmes
7. Conclusions and recommendations
8. Adoption of the report of the meeting.

Documentation

30. The documents listed in annex 2 were distributed to the participants.

Adoption of the report

31. The report of the meeting was adopted by consensus at the final session on 11 April 1991.

III. SUMMARY OF DISCUSSIONS

32. A representative of the UNIDO Secretariat introduced the discussion paper entitled "Global Developments in the Machine-Tool Industry: Impacts on Users and Producers in Developing Countries" [ID/WG.508/6(SPEC.)].

33. He stated that a global perspective of the industry was particularly relevant for two main reasons: (i) the high level of international trade of the industry, and (ii) through the technological evolution of its products from conventional stand-alone machine tools to mechatronic systems, the machine-tool industry had changed the factors of competitiveness in the engineering industries. Within the engineering industries, the machine-tool industry played a role similar to that of the semiconductor industry in the electronics industries.

34. He gave examples of the factors which have contributed to the development of the machine-tool industry in some of the leading producer countries: Germany, United States of America and Japan. For Germany these factors included: (i) the industry is made up of medium-scale enterprises often specializing in one category of machines. Many of these enterprises were subsidiaries of large engineering firms. The parent firms considered their machine-tool subsidiaries as long-term investments and did not include them in their quarterly financial reports, (ii) the domestic demand of machine tools

in Germany was highly sophisticated. Technical superiority was of utmost importance to the German market; (iii) Government funding for research and development and training institutions; (iv) mastery of mechanical engineering technologies and close collaboration between mechanical and electronics firms.

35. In contrast he pointed out that the machine-tool industry in the United States of America had undergone significant decline over the years which had resulted in the position of that country changing from number 1 to 6 in production value. Factors contributing to the decline included (i) shortage of human resources, (ii) lack of export orientation: the geographic clustering of the firms around user markets and their reluctance to export gave the firms a regional view of the business leaving them unaware of developments elsewhere; (iii) technological bias towards military applications for advanced machine tools; and (iv) the tendency of U.S. engineering firms to favour proven technologies.

36. Japanese success in numerical control machine tools could be attributed to (i) company organization and the synergies that have been possible especially between computer, semiconductor and machine-tool firms; (ii) manufacturing capabilities. Japanese industry had achieved major successes in precision machinery associated with consumer products such as watches, sewing machines, and miniature bearings used in video tape recorders. Knowledge in precision machinery was crucial for the machine-tool industry; (iii) sophisticated market demands as in the case of Germany; and (iv) industrial policy.

37. He presented data on the diffusion of numerical control machine tools in various engineering industrial sectors based on national inventories. An accelerated pace of acquisition of numerical control machine tools by small and medium-scale enterprises had been perceived in recent years.

38. Three possible issues for the Consultation were then presented, namely:

- (i) Conditions of entry and technological advancement of the machine tools industry
- (ii) Considerations for the use of advanced machine-tool technologies in metalworking and engineering industries
- (iii) Elements of regional and international co-operation in the production and use of machine tools.

39. Another representative of the UNIDO Secretariat introduced the document entitled "Machine Tools in Latin America" [ID/WG.508/3(SPEC.)]. He stated that the document analysed the production, use and trading of machine tools in Latin America with special emphasis on flexible automation equipment. The industrial policies that have influenced the development of the machine-tool industry in the region were also analysed.

40. He said that production of machine tools in Latin America constituted a very small portion of world production. In 1988, the region accounted for only 2% of the world's total output. Machine-tool manufacturing had been concentrated in Argentina and Brazil. Some production had also been carried out in Colombia, Chile, Mexico, Peru and Venezuela.

41. In recent years there has been a dramatic decline in the production of machine tools in Latin America. Thus, for example, in Argentina four times as many units were produced in 1973 as in 1988. In Brazil, the number of units produced in 1988 was only half of the 1979 output.

42. Production of numerical control machine tools (NCMT) was carried out mainly in Argentina and Brazil. Although the number of NCMT units produced was relatively small, NCMTs accounted for a significant portion of the value-added output for the machine-tool industry. The higher contribution of NCMTs to the value-added output should, however, be cautiously interpreted since the prices of NCMT units produced in Argentina and Brazil were much higher than those of the international competitive market.

43. He explained that with the exception of Argentina, the machine-tool producers in Latin America sold their products primarily on their domestic markets. Brazil, which had the largest market and the most developed machine-tool industry in the region, was the only country whose proportion of imports in apparent consumption was much lower than the world average. This was because of the aggressive import substitution strategy followed by that country over many years.

44. The Latin American machine-tool industry continued to face a number of constraints both at the regional and international levels. At the regional level, the economic crisis affecting the entire region had led to decline in investments and hence decreased demand for machine tools. Several countries had also adopted import liberalization policies with the result that local products now face stiff competition from imports. At the international level, the machine tool industry had gone through a technological revolution based on applications of microelectronics technologies. The retraction of the market in the countries of Latin America discouraged investments in new technologies. The absence of a dynamic electronics industry close to the machine-tool producers also made it difficult for the latter to adopt new technologies.

45. He stated that various categories of machine-tool producers could be found in Latin America. Those included subsidiaries of foreign firms as well as locally owned large, medium- and small-scale firms. Foreign firms in Brazil were attracted by the large domestic market especially for the automotive industry. Those firms produced transfer lines and some special purpose machines utilizing designs and manufacturing technologies developed by their parent companies.

46. Large local firms were also found only in Brazil where they produce conventional machine tools and a few NCMT mainly for their own internal use. These firms acquired their technological capacities through copying and adaptation of imported technologies. They subsequently set up their own systematized research and development programmes that had given them a level of internal dynamism. In Argentina and the other Latin American countries, small- and medium-scale enterprises predominated in the production of machine tools. They operated under licensing agreements and produced conventional machine tools except in Argentina where NCMTs were also produced.

47. Government policies have had a direct impact on the development of the industry. Three policy patterns could be identified: (i) import substitution aimed at developing a fully fledged machine tool industry (the case of Brazil); (ii) import substitution followed by trade liberalization (the case of Argentina and Mexico); and (iii) low protection of domestic industry and encouraging imports (the remaining countries). These policies had had advantages and disadvantages. Thus, although Brazil has developed a fairly large indigenous industry, a number of macroeconomic factors including exchange rate fluctuations had contributed to the very high prices of Brazilian machine tools which were often as much as twice those of the international market. The machine-tool industry in Argentina and Mexico suffered abrupt shocks following relaxation of import restrictions and had virtually disappeared in the case of Mexico. Special credit lines and fiscal incentives for exports had been introduced to assist local producers in Argentina.

48. The UNIDO representative then described some features of the Capital Goods Integration Agreement between Argentina and Brazil. The agreement aimed at complementarities through a partial free trade zone for capital goods but excluding automotive and transport equipment. Negotiating teams from the two countries met and agreed on a "common list" of products to be treated as national products in the two countries irrespective of whether they were produced in Argentina or Brazil. This agreement seemed to have worked fairly well so far but in order to maintain and accelerate its momentum, a number of actions are called for. Those included the need to define common tariffs vis-à-vis third parties, establishment of an investment fund, harmonization of State purchasing policies and greater involvement of local machine-tool users in the implementation of the agreement.

49. Diffusion of flexible automation equipment had occurred mainly in Brazil, Mexico and Argentina, in that order. The major users of that equipment were producers of machine tools, automobiles, aircraft, ships, hydraulic pumps, oil exploitation equipment, glassworks equipment and agricultural machinery. The motivation for using flexible automation equipment included complexity of products, quality requirements and the desire to enter foreign markets. In some countries very high import tariffs have discouraged the use of NCMT. A training institute set up in Peru with Italian support remained underutilized as local potential users were not involved in the establishment of that institute.

50. With the exception of Brazil where local producers supply over 80% of the domestic consumption, all the countries were heavily dependent on imports (often accounting for more than 20% of apparent consumption). Overall imports had decreased in recent years while the opposite trend was observed globally. Thus the participation of the Latin American region in the international machine tools trade had declined. The major exporters of machine tools to the region were the USA, Germany and Italy. The leading regional exporters were Argentina and Brazil. There was, however, a need for the Latin American machine-tool suppliers to seek markets outside the region as well.

51. A representative of the Latin American Economic System (SELA) introduced document ID/WG.508/4(SPEC.) entitled "Supply and Demand for Machine Tools in Latin America: Opportunities and Policies for Co-production". The document reviews the international situation of the machine-tool industry in Latin America, and discusses opportunities for setting up co-production facilities and the required policies.

52. In discussing opportunities for setting up co-production projects, the SELA representative said that it was important to distinguish between the major machine-tool producers in the region -Brazil and Argentina- and the remaining countries which depended mainly on imports of machine tools for their metalworking and engineering industries. Two forms of co-production arrangements were proposed. In one scenario co-production projects could be set up between either Argentina or Brazil and any of the other Latin American countries. The other form of co-production would involve Argentinian and Brazilian firms.

53. He stated that the financial investment magnitude for machine-tool production depended on the type of machine tool to be produced, the level of local integration required, and whether a completely new plant or an addition of a new production line to an existing plant is involved. It should also be recognized that the bulk of the fixed asset investments required would be machine tools themselves. For projects, fixed assets were often lower than US\$1 million in value while larger projects might involve investments up to US\$50 million. Thus machine-tool projects were by and large of small and medium size. Financing for machine-tool production could often be arranged under suppliers credit terms.

54. Whilst it might be relatively easy to arrange for financing of machine-tool projects, a major constraint in the realization of those projects was the shortage of skilled personnel and difficulties in implementing the organizational changes required for efficient operation.

55. Distinct stages might be identified in the development of the machine-tool industry in Brazil and Argentina. Repair and maintenance of imported machinery formed the entry route to the industry. That was followed by the production of simple machines through copying. Eventually, more sophisticated machines would be produced. Licensing was used for the more advanced machine tools.

56. Design capacity was a fundamental asset for a machine-tool firm. As the level of production and product complexity increased, production engineering capacity assumed major importance. In addition to the designers and production engineers, the other key personnel were machine-tool operators. It took several years to develop the required skills in those areas. Training might be facilitated by drawing personnel from the metalworking and engineering industry and re-training them for machine-tool production. That fact showed another possible entry route to machine-tool production. Through product diversification, metalworking and engineering firms could enter the machine-tool industry by adding new production lines to their existing plants.

57. With regard to machine-tool industry integration, the SELA representative stated that the emphasis should be on local integration rather than vertical integration of the enterprises themselves. The major inputs for machine-tool production were forgings and castings but it was inefficient to set-up captive facilities for a single enterprise. There were also numerous other parts and components many of which were standardized (e.g., bearings, couplings, bolts, nuts, electric motors, hydraulic circuits). Before embarking on machine-tool production it was therefore necessary to carry out an in-depth study of the possibilities for local supplies of inputs and develop an appropriate suppliers policy.

58. Entrepreneurs that could be involved in co-production projects in the target countries included machine-tool producers, metalworking and engineering firms as well as distributors of imported machine tools. There were clear advantages for those entrepreneurs to forge partnerships with

Argentinian or Brazilian firms. For most among those was the fact that engineers and technicians in the latter countries operated in relatively similar environments as those of the other Latin American countries and as such were better equipped to tackle the industrial environment problems that might arise. Labour costs in Argentina and Brazil were much lower than in the industrialized countries and since training was a major part of technology transfer, the use of Argentinian or Brazilian experts would be cheaper. The small and medium-sized Brazilian and Argentinian firms were also more likely to be more flexible in joint venture arrangements than major multinationals with responsibilities in several countries.

59. He drew attention to the fact that the significant progress achieved under Protocol No. 1 of the Programme of Co-operation and Economic Integration between Argentina and Brazil had been based on installed capacity and had not led to new co-production projects as originally envisaged. Analysis of the current situation of machine-tool production in the two countries showed that both countries produced essentially the same types of machine tools (although with lower quantity and less variety in Argentina) and that the industries were characterized by high degrees of domestic integration as a consequence of the very high degree of vertical integration of many plants. That situation pointed to the need to restructure the industry in the two countries with a view to achieving more specialized production with lower vertical integration at the plant level. There was also a need to modernize the production facilities in these countries. New initiatives for the development of the machine-tool industry between the two countries might include the following:

- i) extension of the common list to include parts and components as a measure to reduce vertical plant integration;
- ii) promotion of joint projects for the production of machine tools that were currently imported but for which the joint market made their local production economically feasible;
- iii) establishment of a joint design project team for new models of machine tools, machine-tool parts and components and software products;
- iv) development, at the level of association of manufactures or technological institutes, of technological exchange projects relating to process engineering, total quality control, group technology and modular manufacture. Those projects might involve exchange of personnel and joint training programmes.

60. While stressing the importance of those initiatives, he pointed out that the several constraints that might hamper their implementation had to be recognized and hence the need for developing appropriate industrial policies.

61. Proposals for new industrial policies were given separately for countries with little or no machine-tool industry and for Argentina and Brazil which already had an active industry.

62. With regard to the first group of countries, those proposals covered commerce, fiscal incentives, personnel training and technology. On commerce, the use of ad valorem tariffs as opposed to non-tariff barriers as an industrial and technological development tool was advocated. The tariffs should, however, be time-limited (say five years) with gradual reduction of protection over the apprenticeship period. Suitable arrangements should be made to prevent dumping. Furthermore, tariffs should take into account exchange rate fluctuations and should permit the importation of parts and components that are not locally produced at zero or very low tariffs.

63. The basic tenet for commercial policy should be to develop a competitive industry in the medium term. Competitiveness should be based on performance and after sales services in addition to prices. To ensure that local users of machine tools were not put in an excessively disadvantageous position vis-à-vis other competitors in their own industries, it was essential to establish special lines of financing for the purchase of nationally produced machine tools.

64. On fiscal incentives, it was proposed that those be provided for manpower training and technological development projects. Preferential funding arrangements rather than tax reductions should be established for the purchase of fixed assets.

65. Personnel training necessarily involved the State as well as the individual plants. It was of paramount importance to establish links between on one hand machine-tool producer and user firms and on the other training institutions at various levels. At the regional level the demand for specialists might justify the establishment of a specialized machine tools training institute to cater for the entire region.

66. Technology policies should address licensing agreements, indigenous technological development, establishment of technological institutes and financing mechanisms for technological developments. Licensing arrangements should not only provide the product design and production technology but should also aim at building the capacity of the manufacturer in those areas as well.

67. He emphasized that for the success of co-production projects, the coherence of industrial policies along the lines described herein for the entire region was essential.

68. Progress in establishing co-production projects between Argentina and Brazil had been constrained by the lack of a specific industrial policy for the sector on the part of Argentina and lack of implementation of important provisions of the Capital Goods Agreement. Notable among the latter provisions were the establishment of an investment fund, legal basis for the status of joint enterprises and the failure to include parts and components in the common list.

69. Participants presented the situation regarding the use and/or production of machine tools in their countries. The necessity or otherwise of developing a national machine-tool industry was discussed in the context of the overall industrialization process and development of the metalworking sector in particular. Some participants stressed the strategic importance of the machine-tool industry and hence the need for each country to accord this industry high priority. Others were content to be efficient users of machine tools. They pointed out that the number of countries producing machine tools is decreasing and that this sector was becoming increasingly specialized. Several other participants felt that a regional approach was necessary in the development of the machine-tool industry. That was particularly so for the smaller countries including those in the Caribbean region. Co-operation possibilities existed between some of the smaller countries and the established machine-tool producers in the region. Examples of such possibilities included component manufacturing and exchange of experiences in the use of CAD/CAM systems.

70. The importance of strengthening the contacts between users and producers of machine tools was emphasized by several participants.

71. Constraints faced by countries planning to enter the machine-tool industry were identified. The development of the necessary engineering facilities for heat treatment, forging, casting, tool and die making and precision mechanics were mentioned as prerequisites for entering the machine-tool sector.

72. Industrial protection policies were discussed at great length. Some participants felt that import liberalization might lead to de-industrialization with detrimental long-term impact on the economies of the Latin American and Caribbean region. Those participants called for decisive action on the part of Governments to redress that trend.

73. The importance of building national capacities for repair and maintenance of machine tools was stressed. As users, countries should establish adequately equipped tool rooms and repair facilities and take steps to develop the necessary manpower for repair and maintenance of machine tools. The difficulty of obtaining reliable after-sales service from some suppliers was mentioned. A possible niche for established Latin American machine-tool suppliers would be in assuring adequate after-sales service for users throughout the region. This would encourage those users to purchase machine tools from the regional suppliers.

74. A long-term perspective for the development of the capital goods industry for each country was important. While the desirability for regional co-operation was also recognized, participants drew attention to the past failures in promoting such co-operation. The lack of political will and the absence of harmonized industrial policies were mentioned as obstacles that had led to such failures. Notwithstanding these constraints, however, the achievements of the Capital Goods Integration Agreement between Argentina and Brazil were noted. The future success of that agreement could serve as a model for other forms of bilateral and regional co-operation in the Latin American and Caribbean countries.

75. A participant from a leading producer country in the region expressed the feeling of desperation felt by industrialists in the face of frequent shifts in Government industrial policies. Recent changes in requirements for local content in capital goods had resulted in the joint venture firms in that country opting for importation of parts and components and abandoning their local production. That was particularly so for CNC machines. Local firms have had to abandon production of CNC machines and concentrate on conventional machine tools. After some years skills for CNC machine-tool production would disappear. He wondered what would happen if in future, policies change again in favour of encouraging local production of CNC machine tools.

76. Several participants felt that import liberalization policies should be accompanied by other fiscal incentives for local producers to enable the latter to compete in the domestic market. Such incentives could include special lines of credit. Local producers should also be encouraged to acquire niche markets often overlooked by producers from industrialized countries.

77. Government policies on metalworking industries in general had a direct impact on national machine-tool industries since the former were the major markets for machine tools. Coherent long-term plans for metalworking industries were thus important for sustaining a machine-tool industry.

78. The trend towards importation of second-hand machine tools was seen as potentially detrimental to the metalworking industry. Obsolete second-hand machine tools cannot produce products with the required precision and quality for the international market. Hence the local metalworking industry would find it difficult to export their products.

79. Many participants expressed the view that a favourable environment for joint production facilities did not exist in the region. Future efforts to promote co-operation in that sector should involve industrialists as well as trade and customs officials. The latter were instrumental in facilitating procedures for temporary exports of machine tools to participate in trade fairs and other promotional activities. In that connection the concept of leasing of machine tools was brought up and a representative of ECLAC presented a paper on financing arrangements including leasing.

80. Leasing of machine tools was seen as opening up new possibilities for co-operation between producers and users in the region. However, new financing mechanisms and customs procedures would have to be worked out to facilitate leasing arrangements. Furthermore, a legal framework for leasing would have to be established. Leasing also provided opportunities for joint ventures whereby idle capacities might be leased by other users.

81. Financing problems with regard to investment and exports and possibilities offered by debt conversion schemes were highlighted by several participants. A representative of SELA informed the participants about a meeting to be convened by that organization in July 1991 that would address the issue of Latin American industrialization including aspects of industrial financing.

82. The participant from the Czech and Slovak Federal Republic informed the meeting of the state of the machine-tool industry in his country and drew the attention of the participants to the Fourth Consultation on the Capital Goods Industry with emphasis on Machine Tools being organised by UNIDO and which will be held in Prague from 16 to 20 September 1991.

83. A representative of the UNIDO Secretariat informed the participants of UNIDO's regional programme for industrial automation of the capital goods sector.

Annex 1

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Annex 2

LIST OF DOCUMENTS

- | | |
|---|---|
| Background paper prepared by M. Humbert
Machine Tools in Mexico | ID/WG.508/1(SPEC.) |
| Background paper prepared by J. González-Roda
La industria de Máquinas-Herramienta y la
Difusión de Control Numérico en el Perú y
Bolivia | ID/WG.508/2(SPEC.) |
| Background paper prepared by J.R. Tauile
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Machine Tools in Latin America | ID/WG.508/3(SPEC.)
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| Background paper prepared by the
Latin American Economic System (SELA/LAES)
Supply and Demand for Machine Tools in Latin
America, Opportunities and Policies for
Co-production Projects | ID/WG.508/4(SPEC.) |
| Background paper prepared by F.S. Erber
Co-operation in Industrial Automation
between Argentina and Brazil | ID/WG.508/5(SPEC.) |
| Background paper prepared by the
UNIDO Secretariat
Global Developments in the Machine Tools
Industry: Impacts on Users and Producers
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Corr.1(SPEC.) |