OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

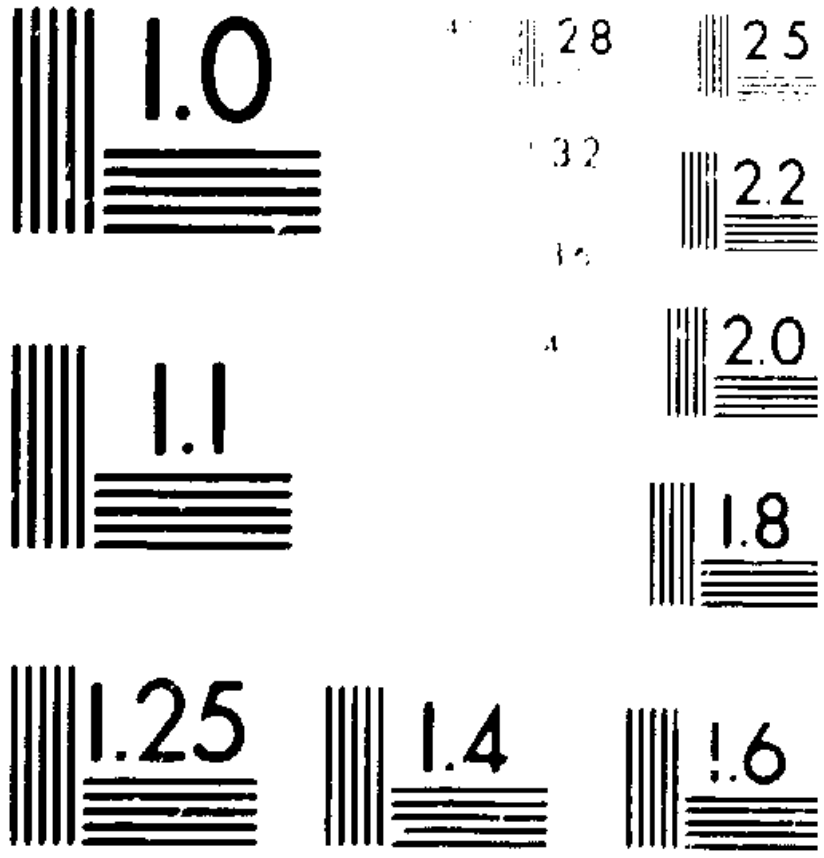
FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org



12984

Distr.
Limited

UNIDO/IO.558
29 June 1983

ENGLISH

United Nations
Industrial Development Organization

EXPERT GROUP MEETING ON INDUSTRIAL REDEPLOYMENT: TRANSFER OF OPERATIONAL PLANTS AND EQUIPMENT TO DEVELOPING COUNTRIES

Vienna, Austria, 11-12 April 1983

V.83-57771

Explanatory notes

Reference to dollars ($) are to United States dollars, unless otherwise stated.

Reference to "tons" are to metric tons, unless otherwise specified.

The following symbol has been used in the tables in the report:

A dash (–) indicates that the amount is nil or negligible.

CONTENTS

SUMMARY BY THE CHAIRMAN

1. The Chairman of the Expert Group Meeting on Industrial Redeployment made a summary of the Meeting, which is given below.

Reasons for redeployment of used plant and machinery

2. It was stated that one reason for the redeployment of used machinery was a voluntary shut-down of the plant for economic reasons; another was a voluntary shut-down for obsolescence, maybe in the technology of the machinery; and a third was a forced shut-down due to bankruptcy. It was important for the future user in the developing country to know why the machinery was being sold: whether the plant was shut down because the labour cost in the country of the seller was too high, the raw material could not be supplied or the machinery was worn out. It was mentioned, for instance, that a certain quality of textiles could not be achieved without modern laser-cutting technology; another type of obsolescence was that of machinery or products not being suitable in one country, though they might be in another.

3. One reason for a voluntary shutdown was a predicted over-capacity and it was advisable to check whether the transfer of a plant from, say, France to West Africa would change the market situation if the products from the new location were to be exported to Europe.

Types of redeployment of used plant and machinery

4. There were three groups of cases mentioned. The first was of the transfer of complete plants, such as the dimethylterephthalate (DMT) plant and some paper factories to India; the complete transfer of a textile plant from the Federal Republic of Germany to China; and a nitric acid plant from the United States of America to Brazil. Some negative experiences were reported of textile plants transferred from France to West Africa.

5. The second group of cases was of machinery: the most important was textile machinery but also there were machine-tool transfers, paper machines, special cases of truck manufacturing presses in Turkey and tube production and household equipment in the Syrian Arab Republic. Those cases covered essentially all the areas from the chemical to the mechanical industry.

6. The third related to certain parts of a complete plant being sold and the rest being scrapped; several such cases were reported.

7. The Chairman pointed out that the redeployment of electronics assembly had not been mentioned, but there would be a considerable relocation of electronics, even from the United States of America, by means of sub-contracting.

Industrial branches for which redeployment was suitable or not

8. As almost all industrial branches were suitable for redeployment, provided the price was right, it was decided to identify only those that were not suitable. Certain products that were no longer suitable for industrialized countries lent themselves to redeployment. For instance, tyre retreading, which had become obsolete in industrialized countries, would remain in demand in most developing countries for at least 10 years. However, some branches would require too much maintenance if used machinery were applied.

Countries for which redeployment was suitable or not

9. The suitability of redeployment for a country depended partly on the attitude of the government. There were no countries specifically suitable or unsuitable. Not long ago, there had been many transfers within Europe, but it was stated that some least developed countries did not have sufficient repair and maintenance facilities to operate used plant and machinery, which was generally thought to require more maintenance. However, some participants felt it was easier to repair used machinery than most modern equipment. It was unfortunate that countries that were technologically least developed, i.e. those that had no or very little industrial structure (not necessarily the same as those on the United Nations list of least developed countries, which related to per capita income), and that needed used equipment most in terms of financing, might not be in a position to accept it because even a gift would be too expensive to maintain.

10. The attitudes of governments to redeployment varied; some made no specific restrictions: Tunisia required a three-year guarantee; India placed certain restrictions on the import of technology; others, including Bangladesh, China and Malta, neither encouraged nor discouraged the import of used machinery but decided on a case-by-case basis.

Advantages and disadvantages of redeployment to the buyer

11. As long as the seller got more than the scrap value, redeployment was advantageous in the case of bankruptcies. If the previous owner participated in the new venture, he might be able to capitalize on his technological and marketing experience.

12. The buyers had two main advantages: first, the plant and machinery were cheaper in terms of total cost and foreign exchange; secondly, and more important, was the time element. However, one case took only a month or two less than it would have taken with new equipment because the reconditioning and dismantling took so long. It was, therefore, important when considering time-saving as an advantage to check carefully what the real time requirements were, including the reconditioning and engineering of the new plant. It was claimed that a second-hand plant could be more reliable because it had been tested, but opinion was not unanimous on that subject.

13. The disadvantages were, first, the chance of getting inappropriate technology or machines that might not be suitable for products that could compete on the world market, and secondly, the possibility that after reconditioning the price might be higher than expected.

Export processing zones

14. Export processing or free zones had a special advantage in countries where, otherwise, used machinery might be looked at with some suspicion because the red tape in the export processing zones was usually much less than normal and the previous owner could stay in the venture.

Expert advice on redeployment

15. A statement was made on the transfer of a textile plant from the Federal Republic of Germany to China regarding items such as packaging, insurance and the need for working out a detailed contract. Dealers or "match-makers" did not usually give advice to their clients. It was left entirely to the client or to the buyer to make up his mind and to bring his own experts. A plant could be transferred in a time period between three and nine months, but it was difficult to generalize. It was important to have a neutral body, such as an international agency or organization, give advice rather than an expert who was paid by one of the parties. In one country, a group of experts was required from both the buyer and seller: they sat together and tried to find a good price and conditions for the sale of the equipment.

Matching buyers and sellers

16. There was no system to bring together those people who intended to close down a plant or who already had closed one down and those that might be interested in it. There might be a way to use available publication sources, such as the UNIDO Newsletter or resource roster, the United Nations Development Programme Development Forum, the monthly publications of the Centre for Industrial Development (CID), Investment Promotion Services and bilateral institutions, such as Deutsche Entwicklungsgesellschaft (DEG), Export Credit Guarantee Department and Caisse Centrale. It was not widely known in business circles, even in companies working in their own countries, that there were certain institutions for the dissemination of such information. A way to systematize a match-making procedure should be sought.

Financing and insurance

17. Financing used plant and machinery was, in principle, the same as financing new plants and machinery. Cross-border leasing was probably not practicable owing to the problems of ownership. Buy-back arrangements might be possible. In the area of equity financing it was possible to bring in used machinery as a portion or full contribution of the equity, although it would have to be carefully assessed. For foreign exchange financing, export credit agencies would probably be ready to finance used machinery exports the same way they did new machinery. Whether there were regulations in the Berne Union (a group of export insurance companies) on financing exports of used plants and machinery should be investigated. IFC and DEG (as representatives of the multilateral and bilateral institutions) had no special problems with financing used machinery except that an additional assessment had to be done.

I. OPENING OF THE MEETING

18. The Expert Group Meeting on Industrial Redeployment: Transfer of Operational Plants and Equipment to Developing Countries was held at Vienna, Austria, 11-12 April 1983.

19. The Meeting was attended by 18 participants (annex I) involved in four types of economic activity: purchasers of plant and machinery (from Bangladesh, China, Colombia, India, Malta, Tunisia and Turkey); sellers of plant and machinery (from France, Germany, Federal Republic of, United States and to some extent Austria); international institutions (Centre for Industrial Development (CID), International Finance Corporation (IFC), United Nations Industrial Development Organization (UNIDO)); and a bilateral institution (Deutsche Entwicklungsgesellschaft (DEG)).

20. The Director of the Investment Co-operative Programme Branch of the United Nations Industrial Development Organization (UNIDO), who chaired the Meeting, opened the Meeting on behalf of the Executive Director of UNIDO and presented background papers (annex II) based primarily on studies undertaken by UNIDO of the field of the restructuring of industry in Europe, the United States and some countries of the Council for Mutual Economic Assistance (CMEA).

II. REPORT OF THE MEETING

Introduction by Chairman

21. The Chairman and a consultant introduced the main points of the paper prepared by the secretariat for the Meeting. Those studies indicated sectors where restructuring would take place not by building new plants in the traditional sense but by placing them in a developing country on a comparative advantage concept. Another form of restructuring was the transfer of operational used plants and equipment. The Industrial Development Board of UNIDO, and its General Conference, had dealt with the problems of restructuring; the subject was a very sensitive one, since it seemed that the developing countries did not want to become the dumping ground for the obsolete machinery of industrialized countries.

22. The Chairman said that the purpose of the Meeting was to discuss practical experience on investment projects resulting from industrial restructuring and redeployment including subcontracting using relocated plant and equipment. The Meeting should aim at defining advantages and disadvantages for the previous owner, the buyer in a developing country, the Governments of developing countries and of industrialized countries that were pursuing a redeployment policy, and lastly, the training aspect in the course of redeployment.

General discussion

23. It was emphasized that small and medium-sized plants were better suited for redeployment purposes than large ones. Owing to rapid changes in the industrial structures in industrialized countries and their changing comparative advantages in recent years, modern equipment performing to recent standards had become available. Some of that plant and machinery had been successfully redeployed to developing countries, which should give impetus to an increased practical redeployment in a more organized manner.

24. It was pointed out that the technologically advanced developing countries, because of industry-related experience, were in a better position to appraise the usefulness of used machinery than developing countries at an early stage of industrialization. It might be that used plants and machinery were much more frequently relocated in industrialized countries as they were usually better informed of the usefulness of such plants. One participant voiced the opinion that the interest in obtaining old plants would increase owing to the economic recession.

25. One consideration when acquiring second-hand machinery was the price. If the price of plant and equipment amounted to not much more than 25 per cent of its original price, the transfer was attractive to both the buyer and the seller. If it cost 50 per cent or more of the price when new, the additional costs for dismantling, reconditioning and adapting etc. pushed the price up so much that the installed cost was not much less than that of a new plant. The only remaining advantage was the gain in production time due to shorter construction and engineering time. Foreign exchange savings were relatively greater in the case of used rather than new equipment.

26. A considerable advantage to the buyer was the opportunity to study the plant while still in operation and to train his personnel on the plant they would later have to run. However, the buyer had to rely on the former owner's experience, which, after the plant closed down, was not always readily available. A feasibility study was not advisable since the plant or equipment might be purchased while the study was being carried out.

27. The representative from DEG stated that DEG had created industries in developing countries through financing and consultancy and long-term loans in 70 countries in Africa, Asia and Latin America. Contracts for used machinery and plants had been drawn up.

28. It was stated that IFC financed projects in various sectors, mainly in the industrial sectors in agriculture, energy and tourism. It co-operated closely with the private sector through equity investments and loans. The experience with operational equipment was sporadic from project to project, occasionally cases arose where part of the equipment was used. IFC checked whether proper arrangements had been made for rehabilitation that warranted the equipment used.

29. A United States company was represented whose main business was in buying used or operational equipment, mostly large machine tools, through auctions or individual companies. The company imported machine tools from all over the world, including China, Poland, Romania and Spain. The company had had some success in relocating industry to different parts of the world; it manufactured agricultural machines, welding equipment and plants for sugar, mining etc.

30. The Meeting was addressed by the Chairman of a Turkish holding company that was the main shareholder of about 30 industrial and commercial companies operating in the fields of automotives, textiles, and construction material manufacturing industries, tourism, banking, and insurance. The company had joint ventures with truck and bus companies and an engine company, for which used machinery had been obtained from the Federal Republic of Germany, that would take up production in September.

31. A participant from Tunisia outlined the franchise establishment of a joint venture with a partner from the Federal Republic of Germany and spoke of a law that allowed the installation of foreign plants free of taxes to companies that re-exported their products. That law, which was promulgated in 1972, created jobs in Tunisia when production ceased in the Federal Republic of Germany and all the equipment was transferred to Tunisia. Experience in that field had been gained since 1978. Used equipment that had been rejected in the Federal Republic of Germany was imported to Tunisia and the operation was started. The experience had been good; the products made in Tunisia were exported solely to the Federal Republic of Germany.

32. The Syrian Arab Republic was represented by two owners of a company manufacturing household equipment (washing machines, cooking ranges, motors for washing machines and also dealing with rubber and plastics). The company was nationalized in 1975. A new factory had been started with 120 workers in different branches. Production on used machines was restricted in the Syrian Arab Republic, since there had been many accidents on used machinery. Special interest was expressed in modern computer technology.

33. The representative of CID stated that it mainly promoted ventures with small and medium-sized enterprises with an investment ranging from $300,000 to $1.5 million. A project list was available for about 80 projects.

34. One participant represented an Austrian bank that was responsible for credits and issues and that administered guarantees on behalf of the Government of Austria. In the context of its activities, the bank had sometimes guaranteed the export of used machinery. Although that experience was limited, it had been mainly positive. The bank protected the rights of the guarantor in machinery supply according to the Export Promotion Act of Austria.

35. A representative from Malta spoke who was engaged in investment and export promotion. Malta sought new projects with either local or foreign investment or in the form of joint ventures. There were few projects with reactivated old machinery.

36. The representative of an Indian company that dealt with petrochemicals, gas processing, coal processing, polymers and paper plants in the lower capacity range spoke at the Meeting. He said that the plants were 100 per cent Indian owned. Experience with second-hand machinery lay particularly in the field of paper plants. Some of its associated companies had experience with the import of used machinery, particularly in can production.

37. Another participant represented a group of companies from the Federal Republic of Germany that had been in existence for over 25 years and that started off as industrial brokers dealing with complete plants. Later, the group began specializing in industrial properties. There was a special department for second-hand machinery and it was well known in the Federal Republic of Germany for auctioning machinery, and had wide experience in selling as well as exporting second-hand machinery. The group was interested in obtaining more information on such machinery. The reason for selling the machinery should be that it no longer operated economically in the Federal Republic of Germany, not that it was inoperable.

38. The representative of a French company involved in spinning, weaving and finishing textiles made a statement. The company's activities included engineering, technical assistance and general contracting. Its engineering department was in charge of studies, project implementation, supervision of equipment and start-up of machinery and equipment. Technical assistance included staff selection, training, organization and management of industrial units. The company worked in many countries in the world and had built many textile mills, mixing second-hand and new equipment.

39. A Chinese public company was represented that had been founded in 1952 and was the sole company engaged in importing plants, complete equipment and technical know-how; it was also in the insurance business. The main activity of the company was importing new plants, but it might also be interested in importing operational plants if there were a favourable opportunity.

40. A participant from Colombia represented the Federation of Coffee Growers that had been established 20 years ago. Their main concern was to try to use the land for other activities, such as sugar and wood industries, under the rural development programme financed by the World Bank. The Federation promoted projects in agro-industry, sugar and wood industries, import substitution and promotion of new export opportunities.

41. A consultant from the United States of America reported on his 35 years of experience, primarily in plastics factories, including the relocation to Venezuela of a second-hand plant; other relocation projects were to Spain, Hungary and Nigeria.

III. CASES OF REDEPLOYMENT AND THE PROBLEMS ENCOUNTERED

42. The participants discussed cases of relocation of operational plant and equipment that were known to them.

43. A negative experience was reported from Somalia. The relocation of a textile plant from Europe financed from bilateral official funds had not been successful. Spinning, weaving and finishing could not be continued, since the three plant components did not fit together. Also, political circumstances had had a negative impact. Other textile projects, transferred to Burundi, Rwanda and United Republic of Tanzania were unsuccessful, too. The redeployment of a seamed-stockings project was a failure because the women in the developing country concerned wanted seamless stockings.

44. One participant voiced the opinion that official development aid funds should be reduced for projects involving used machinery.

45. The regulations of developing countries on the import of used machinery differed; for instance, Chile forbade it; and in Turkey, the Government reserved the right to check used machinery because of foreign exchange regulations.

46. In some countries, import duty on second-hand machinery was as high as duty on new machinery. Therefore, the machinery was given as a "donation" in one case with the donator expecting earnings from future profits. However, even donated machinery could be too expensive if the spare parts needed had to be hand-made.

47. Regarding guarantees for used machinery, the Meeting underlined the necessity of local performance tests. It was stressed that a guarantee for the supply of spare parts was also required, as they were often hard to obtain.

48. The participants agreed that one of the most important features was the conformity of machinery to the standards of the developing country, therefore, the combination of machinery from different sources was a problem. Machinery with bearings and many moving parts was unsuitable; presses and saws, on the other hand, were well suited. It was observed that dismantling costs were often higher than expected. No problems were noted concerning the redeployment of power stations.

49. The opinion was voiced that the machinery should best be serviced by the manufacturer; that, however, had proven to be difficult. Also, pertinent manuals in foreign languages might not be available. Therefore, a checklist of items to be inspected should be drawn up. Expert opinion was of dubious value as there was the possibility of bias; a second expert opinion might be necessary.

50. It was reported that in one case machinery manufactured before the First World War had been exported with the dates erased; the company had been out of business for 20 or 30 years.

Development finance institutions

51. The representative of DEG reported that it had become wary of applications from firms in the Federal Republic of Germany wishing to transfer used machinery to developing countries since they had had a number of bad experiences.

52. The representative of IFC said it had been the policy of IFC during the 1960s not to finance used equipment. That policy was based on negative experience. In recent years the policy had been changed. IFC would finance projects in cases where part or all of the machinery was used, provided the technicians had satisfied themselves that the machinery was in good order and the price reasonable. Also all machinery must have a clearly established origin. Currently, IFC was participating in 10 projects utilizing a significant portion of used equipment.

Equity participation

53. The Meeting confirmed that the seller of used machinery often participated in a project. In 80 out of 250 cases his share in the equity often consisted in his supplying the machinery.

Transfer of machinery

54. Ideally, the company selling the machinery should still be in business, otherwise, there were no drawings or spare parts available. Furthermore, the machinery should be installed and in operation at the time of the sale. Production records were important to establish the capacity, downtime, maintenance costs and energy consumption.

55. Whether machinery should be bought piece by piece or in one unit was discussed. The participants agreed that while it was usual to buy machine tools as individual pieces provided the machinery was in good order, it was important to consider the type of machinery purchased: electrical equipment was sensitive and textile machinery was composed of different pieces of equipment (for dyeing, spinning, weaving etc.) thus requiring a large spares inventory. In that connection, the question was raised of responsibility for the availability of spare parts in cases of "cannibalization". It was considered desirable that the previous owners or operators be responsible through the dismantling, packing and shipment.

Government policy on the import of used equipment

56. The consent of the government to import used equipment had to be procured in certain countries; officials in the same country might take different views on the subject (see below).

Potential advantages to the buyer in a developing country

57. An important advantage to the buyer in a developing country was the savings in investment cost that might, at first glance, amount to 50 per cent. In that connection, the amount of additional, new equipment needed to make the transferred plant operational in another country should be considered. In order to decide whether a transfer was feasible, an estimate had to be made of long-term costs of new versus old equipment. Maintenance costs had to be added, which were higher in the case of the used equipment.

Difference between used plant and used equipment

58. It was pointed out that there was a difference between selling or buying used equipment and used plant. For instance, Mexico had needed a piece of equipment (a metal press) that had not been made for 15 years and therefore had to be refurbished (new castings, controls etc.). That could be done. However, with complete plants, the buyer did not know whether and how the plant would work, and guarantees were usually not given either on performance or machinery. Also, drawings and spares were often not available.

59. In the 1940s and 1950s old equipment had been dumped on developing countries, which had led to distrust.

60. The client assumed risks when it bought old equipment, but they were often covered by normal commercial insurance or other guarantees.

61. The case of a fatty-acid plant was reported that had been destroyed due to lack of a matching opportunity, since a potential client had taken too long to decide on its purchase.

Aging of plants

62. One participant stated that new plants were aging much faster than before. Furthermore, it was easier to keep old plants going. Sophisticated equipment took longer to repair, and spare parts sometimes had to be "illegally" imported if urgently needed. It was also stated that second-hand machinery could be more reliable than new, if the technology used were a simple one.

Repair costs

63. It was suggested that seller and purchaser agree to share the repair costs up to a certain amount. Repair work beyond that amount should be borne by the seller. The case of a DMT plant transferred to India was referred to in that connection. The price of the equipment was $10 million; repair work amounting to $2 million was shared by buyer and seller. A new plant would have cost 25 per cent more than the total installed cost of plant and machinery.

Textile plants

64. The problem with textile plants was the world-wide over-capacity. Argentina, Chile and Colombia presently had textile plants to sell. Malta had problems selling jeans. Textile plants were being transferred from one developing country to another. More auctions were expected, and some plants were bought as a source of spare parts only.

IV. EXPERIENCE OF PARTICIPANTS (BY COUNTRY)

Bangladesh

65. The Government neither encouraged nor discouraged the import of second-hand machinery. Permission for import was granted on a case-by-case basis. Four sectors had a strong propensity to use second-hand machinery: jute twine, cigarette manufacturing, sea-going ships and coasters (whose residual life could be accurately assessed[1]), and trucks and buses, which provided competition to local manufacture.

China

66. A complete textile plant was transferred from the Federal Republic of Germany to China, and both the buyer and seller were satisfied. Before that deal, China had only bought new machinery. The previous owner had gone bankrupt. A technical and commercial team from China visited the plant, inspected the system and agreed to purchase. Freight to China was expensive in comparison with the cost of the equipment, and they sought to reduce costs. The plant was dismantled by Chinese staff, which was unusual. The dismantling had taken six months and the overall time from dismantling to complete re-erection was expected to take two years. A firm specializing in packaging had been engaged. The importance of exact delivery specifications, including cranes, conveyors etc., was underlined. The contract between the buyer and the seller specifically covered the risks, especially the time of transfer of risks from the seller to the buyer. The contract also specified that spare parts would be available with the assistance of the seller and the original manufacturer, with whom the Chinese had direct contact, of the machinery, which had been manufactured in the 1970s. Erection of the plant was currently under way. Advice from a consulting or engineering company had not been sought.

Colombia

67. A sugar project relocated from Puerto Rico had been submitted to IFC for financing. The cost was 38 per cent of the cost of an equivalent new plant. IFC was not satisfied and did not approve the project. The plant had been in operation since 1978; small boilers would have had to be replaced by one big boiler to save energy, which change would have cost more than the used plant had cost originally, three years previously; used plant currently cost about 70 per cent of a new plant.

68. In a Colombia-Venezuela joint venture, a used plant was transferred costing 26 per cent of a comparable new plant. The National Customs Committee of Colombia had the right to check the negotiated price.

1/ Lloyds certificates are insisted upon before import can be effected.

France

69. One participant reported on two cases that had not materialized as the projects had not been accorded priority by the countries in question: one was the transfer of a carpet factory to Mauritius, the other, cotton-spinning equipment to West Africa. It was pointed out that the success of a project was not determined only by the age and price of the machinery; organization, know-how and operating costs were important factors in making a project a success.

70. In one case, production equipment had represented 25 per cent of the total cost, dismantling was 8 per cent, and total investment 77 per cent of a new plant.

India

71. India had 167 paper and board manufacturing units producing 1.8 million tons/annum of paper and board. The per capita consumption was still very low, 2 kg/annum, with a target for the year 2000 of 4.5 kg/annum. India manufactured small machinery in the range of 100-150 tons/day capacity, with 10-30 per cent of the components being imported.

72. The participant from India reported three cases of redeployment relating to the paper industry. In one case, it took four years to complete the plant with used machinery due to the financing arrangements. The costs of the machinery amounted to $700,000. There were power cuts, and financing and supply problems. The plant ran at 80 per cent of capacity. The second case involved a 7 tons/day special paper plant that took 18 months to construct. The investment was $300,000. The third case was of a $750,000 duplex-board plant.

73. Experience with used machinery was bad owing to lower performance, frequent breakdowns and maintenance problems. Whereas new machinery had a warranty and defects could be rectified at the expense of the supplier, that was not the case with used machinery. It had even happened that machinery was inoperable at the time of purchase.

74. The Government requested that used machinery should have been b[illegible] 1945, should have a residual life of 10 years or more and should be [illegible]ed by a chartered engineer. Experience showed that used plant had a lower-than-rated capacity, and problems with different types of raw materials occurred.

75. The operating costs for a 30 tons/day paper plant were $300,000 per annum. Thus, the difference in operating costs between new and used equipment amounted to $34/ton or 8 per cent of the operating costs.

76. From 1975 to 1982, several used plants were imported. In 1981, the Government imposed a ban on imported paper plants due to bad experience. That ban might be extended to other industrial sectors, including machine tools.

77. It was reported also that a 60,000 tons/annum DMT plant was transferred from the United States. In chemical plants, corrosion and erosion problems were bigger than in other plants; owing to different climatic conditions, larger cooling towers were needed in India. Also, the equipment had to be adjusted to operate at 50 cycles instead of 60 as in the United States.

Construction time was 30 months and thus only two months less than the estimated construction time for a new plant. The plant was reported to work satisfactorily.

Malta

78. In Malta, used plant and equipment needed no import licence. Malta had different problems owing to the small size of the island. A carpet factory and a tool factory had been redeployed to Malta from Belgium and the United Kingdom respectively, but had failed because of small local markets and because products could not compete in the export field. In another case, a plant was split between weaving and garment-making, based on used machinery.

Syrian Arab Republic

79. The price of new machinery in the Syrian Arab Republic was so high as to make the price of finished goods uncompetitive. The same machinery could be bought second-hand for one fifth (10-40 per cent) of the new price. One problem was the difficulty in importing spare parts, which often resulted in only a 20 per cent capacity utilization.

80. Machine tools were used in the manufacture of domestic appliances and of rubber and plastic goods, and business men reported that they were using both new and used machinery. One opportunity to buy plastic moulding equipment did not materialize: the equipment was too old, and the seller had tried to take advantage of the buyer's relative inexperience in the field. Some of the machinery offered was of unknown makes; some was of known makes and more reliable. Purchase of used machinery would be facilitated if the complete record of the history of that machinery were available. It was observed that it was usually fairly easy to obtain financing provided that the second-hand machinery was from a manufacturer of good repute.

81. The Government's aim was to raise the capacity of the jute twine industry from 18,000 to 75,000 tons/annum, therefore, jute processing machinery was in great demand. Such machinery was available from Europe and the United States from a quarter to a third of the price of the new equipment, which was so high that it made the prices of the final products uncompetitive.

82. There were no joint ventures with foreigners. The machinery was installed by local entrepreneurs who were familiar with the jute industry. If Bangladesh had the means to refurbish used machinery, the import of such machinery would be more attractive.

Turkey

83. The law in Turkey, which up to 1981 had forbidden imports of used machinery, had the following provisions:

(a) Imports must be in the Government's plans;

(b) The project must be either 100 per cent export oriented, must substitute for imports, or must not create over-capacity if products were sold locally;

(c) A feasibility study must exist;

(d) Foreign exchange requirements must be less than 50 per cent of the new plant;

(e) Foreign exchange needs must be earned by exports within three years, and exports must be expected for at least five years;

(f) Capital goods must not be older than half of their economic life;

(g) The Government could establish a committee, including the buyer and seller, to examine the plant.

84. Turkey produced 7,000 diesel engines of 135-485 kW (180-650 hp) annually for trucks and buses with machinery from the Federal Republic of Germany that had been bought at 25 per cent of value and a further 25 per cent had been spent on refurbishing. Expertise on pricing and performance had been paid for by the seller. The cabins needed redesigning since they were too light for road conditions in Turkey. The project was a successful one.

United States of America

85. The case of a 120 tons/day nitric (plus 280 tons/day ammonium nitrate) acid plant was reported. It had been in operation from 1956 to 1974. In 1981, the company decided to close it down since it was not profitable. A United Sates dealer bought the plant, preserved under nitrogen, and advertised it world-wide. A client in Brazil showed interest, and inspected the plant thoroughly. The plant was finally sold to Brazil and later split into two: part of the plant was then bought by Peru. All electrical components were replaced.

V. INDUSTRIAL BRANCHES SUITABLE OR UNSUITABLE FOR REDEPLOYMENT

86. It had been the experience of IFC that no sector appeared unsuitable for redeployment. Sectors that were especially suitable included textiles, petrochemicals, paper, automatic engine machinery and rolling mills, which however usually needed new bearings. Also suitable were plant and machinery in the chemical, fertilizer, power supply, electronic assembly, cement and mining industries. Voluminous equipment was not necessarily unsuitable for redeployment (e.g. DMT plant, India).

87. A 600,000 ton sponge-iron project was planned to be erected in Bangladesh; a British firm had offered two 400,000 tons/annum MIDREX plants that were almost new, but the proposal had not been accepted.

88. The type of recipient country should be taken into account, including available infrastructure (repair shops etc.); less developed countries probably should buy tailor-made plant and machinery. Countries must be able to absorb the technology: sophisticated technology meant sophisticated maintenance, requiring extensive training, although modern "black box" equipment might be easier to operate.

89. The move should be made from mechanical to electronic controls, for example, in a chipboard plant in the Caribbean, two years after installation, numerical control was added.

90. The standards in most developing countries were improving every day. In China, for example, plants for making bicycles, tape recorders and washing machines could be redeployed. In the Syrian Arab Republic, all types of washing machines, from simple to fully automatic, were produced (70,000 pieces per annum).

VI. SPECIAL CONSIDERATIONS

Redeployment to export processing zones

91. Export processing zones were of interest for second-hand machinery because of savings in duty on machinery and spare parts. There were fewer administrative procedures than in the rest of the country, and therefore the seller's continued involvement was easier.

92. Colombia had six export processing zones in operation; much used machinery, valued at about $85 million, was imported into those zones during a five-year period. In the export processing zones in China, there was no specific ruling relating to used machinery.

93. Malta had six industrial estates, and second-hand machinery was imported, e.g. for the plastics industry.

94. There were two export processing zones in India, one for the electronics industry, the other open to all industries. There was no special incentives for used machinery. It was again stressed that less bureaucracy was involved; however production was destined for export only.

95. In Tunisia, there were five export processing zones. The Government paid between $1,000 and $2,000 per job created in the export processing zones in a very poor area. In that case, the import of used machinery might be advantageous. The Government obliged the seller to guarantee the machinery for three years.

Matching industrial projects in developing countries with redeployment opportunities, taking factor endowments into account

96. The general situation of the industrial redeployment of plant and machinery from industrialized to developing countries was reported on. Plants in industrialized countries might be closed down voluntarily or compulsorily, the latter because of bankruptcy and insolvency. Due to the high unemployment rate in the Federal Republic of Germany, there have been political and trade-union pressure not to close down plants. It might take up to one year from the decision of the management to close down the plant to actually doing so and such decisions, for political reasons, were not made public until the last moment. After a bankruptcy case it took about 3-6 months to the final closing down of an enterprise. Usually in the case of bankruptcy, the complete plant or groups of machinery were for sale for 3-6 months. After that, separate parts were put up for auction. To guard the premises might result in high costs.

97. The time element might make the transfer of plants to a developing country difficult. Potentially interested foreign parties must be reached by advertising, direct mailing, telex etc., which was time-consuming. Auctioned machinery was sold against cash, and financing could be arranged in those cases; convertible currency must be immediately available. It might take up to three months to identify potential buyers as the machinery might not be in demand.

98. Severance payments and other social costs had to be paid. Some kinds of machinery, such as textile machinery or vehicles, had fairly fixed market prices. Other machinery might be difficult to price. Certain machinery might be sold for little more than the scrap value owing to lack of demand. Fear of competition might obstruct exportation. An example of the latter case was the sale of camera machine tools from the Federal Republic of Germany to Singapore. There were two customers seriously interested, but when a third country showed interest, the deal did not materialize. Tools worth DM 8-9 million were put on the market. The scrap value was only DM 400,000, but the tools could not be sold.

99. Cases of plants being forced to close in the Federal Republic of Germany included the following:

Aluminium metal rolling mill (VDM Frankfurt)
Kreidler motorcycle plant - sold piece by piece
Van Delden textile factories (1983), several factories for sale
Video and colour television tube factory
VKS spinning mill
AEG motor plant

100. Cases in Austria of plants being forced to close included a refrigerator plant and Klimatechnik. Only a small fraction of those plants were sold to developing countries, although there were certainly many possibilities even among the projects that were promoted by UNIDO. Therefore, UNIDO could be involved in the assessment of suitability and value of the plant as well as in searching for projects and sponsors in developing countries.

100. In all cases, prospective buyers were accompanied by experts, since the auctioneer did not offer any advice on the suitability of the machinery.

Financing and insurance

101. There was basically no difference between financing new and used machinery. However, most financial institutions, including commercial banks that financed foreign exchange components, were more critical of used machinery. Banks would give a discount on collaterals. Some export-financing agencies indicated that second-hand plant would be treated "as new" if usual guarantees were given; one agency did finance a completely renovated plant (aluminium rolling mill in Yugoslavia) for which renovation cost as much as the price for the used plant (DM 2 million). A rubber retreading plant redeployed to Malaysia was financed by cash plus a local DFC loan. In the case of the nitric acid plant relocated to Brazil, some time elapsed between payment and shipment, but insurance started from the date of purchase (insurance policy turned over to buyer, copy to original owner); the liability increased at the time dismantling started. Financing without recourse and forfeiting were both mentioned as possible instruments. Equity financing was considered only as a last resort.

Leasing

102. Local DFCs, and possibly regional institutions, such as the Islamic Development Bank, could purchase and lease new equipment.

103. In the projects in Turkey, mentioned above, the previous owner participated in the equity together with DEG; loans were from Turkiye Sinai Kalkinma Bankasi (Industrial Development Bank of Turkey) and IFC, which insisted on a performance guaranty from the "licensing" company as well as on maintenance and spare-part agreements. DEG in general did not distinguish between projects with new and old machinery provided the project was a sound one. It might be rather difficult to obtain local loans. In Tunisia, used plant projects were financed with both short- and long-term loans, including Middle East finance institutions. In Colombia, the "Coffee Bank" provided financing. There was a compensation bank that financed imports of machinery, transport equipment etc. against the sale of coffee to those countries; used machinery could be included. The paper plants mentioned for India were paid for in cash.

104. The question of whether used machinery could be financed through buy-back agreements could not be answered. However, in one case in Malta, the purchase of machinery was paid for by the sale of goods produced by the factory. The insurance provision, it was said, was higher for second-hand equipment than it was for new machinery.

Continued participation of former owners

105. The Centre for Industrial Development in Brussels recommended that previous owners took at least 20 per cent of the equity of the project; the value of machinery should be established by an independent valuation. DEG also preferred the previous owners to be involved in a long-term agreement. IFC believed that a foreign partner was desirable for second-hand machinery projects who could also be responsible for marketing. One example was Pak Paper in Pakistan (1965), based on used machinery, which was rehabilitated under the supervision of the previous owner.

Other items

106. In general, a differentiation should be made between deliberate fraud and lack of expertise. There was often a brand name transferred with the machinery; for example, the agricultural equipment plant "Solingen" transferred production to Colombia and El Salvador.

107. The real situation was not a buyer-seller relationship. There were many sellers and one buyer. For example, Colombia received eight offers for a particle-board plant (30-200 m^3/day capacity).

108. Energy aspects must be considered, since future energy prices were not known but were likely to rise.

109. Any used plant sales might incorporate a considerable continuing spare-parts business for the machinery manufacturers or reconditioners.

Annex I

LIST OF PARTICIPANTS

D.A. Bahjan
Centre for Industrial Development
Avenue Georges Henri 451
1200 Brussels, Belgium

J. Borg
Deputy Chairman
Malta Development Corporation
P.O. Box 571
Valletta, Malta

E. Bredenbreuker
Managing Director
Horst F. Angermann GmbH
Mattentwiete 5
2000 Hamburg 11
Federal Republic of Germany

H. Ellouz
Managing Director
Corona-Limes-DFM
Zone Industrielle
2034 Ez-z-Ahra, Tunisia

M. Ferber
Baldhamer Strasse 33 A
8011 Baldham
Federal Republic of Germany

G. Herdmann
President
DGH Industrieberatung
4600 Dortmund 30
Federal Republic of Germany

P.N. Kapadia
Deputy Managing Director
ICB Private Limited
168 C.S.T. Road, Kalina

R.D. King
Deputy Director
International Finance Corporation
1818 H Street N.W.
Washington D.C. 20433
United States of America

F. Miceli
Vice President, Chemical Division
S and S Machinery Co.
140-53rd Street
Brooklyn, New York 11232
United States of America

L. Motte
Deputy General Manager
Schaeffer Engineering Enterprises
B.P. 2136
68060 Mulhouse-Cedex, France

A. Nizamoglu
General Manager
Ercan Holding Co.
Bueyuekedere CAD No. 121
Gayrettepe/Istanbul, Turkey

F. Paetzolt
Head, Legal Department
German Development Corporation
Belvederestrasse 40
5000 Cologne 41
Federal Republic of Germany

H. Peraus
Director, Export Guarantee Department
Oesterreichische Kontrollbank A.G.
Am Hof 4, 1010 Vienna, Austria

H. Valdes Sanchez
Development Manager
Federacion de Cafeteros de Colombia
Apartado Aereo 30244
Bogota, Colombia

I. Starobin
Consultant
c/o UNIDO Investment Promotion Service
United Nations
New York, New York
United States of America

W. Watter
Ets. Wattar
B.P. 1259 Damascus
Syrian Arab Republic

Z. Wattar
Ets. Wattar
B.P. 1259 Damascus
Syrian Arab Republic

Zhang Xu-Ming
Managing Director
CNTIC
Agrippina Ufer 8
5000 Cologne 1
Federal Republic of Germany

Annex II

INDUSTRIAL REDEPLOYMENT OF PLANT AND MACHINERY FROM INDUSTRIALIZED TO DEVELOPING COUNTRIES*

Rationale for redeployment

1. Even the best-run businesses may be faced with unforeseen economic problems, since it is no longer possible to predict with any degree of certainly the costs of such inputs as raw materials and energy, or interest and exchange rates. One solution of impending insolvency could be the sale of the plant: either its hardware alone, or its hardware plus a package of services and know-how. The "redeployment" of a plant to a new location where factor endowments are more favourable can entail the shifting of means of production from an industrialized to a developing country.

2. Ideally, the seller and the buyer could negotiate a collaboration agreement, or become partners in the new operation. If an equity partnership does not prove feasible, the transfer of machinery and equipment could be accompanied by an operating and servicing contract or at least by a training arrangement and agreement to sell certain quantities of the produce on the international market. It would thus be in the interest of the seller to make sure that the plant was well run after redeployment. Finding the right partner for the redeployment project is essential for its success. Whereas in industrialized countries there is an abundance of information on business in the media etc., this is not the case in developing countries, and it is consequently more difficult to locate a suitable partner.

3. Moreover, certain countries have regulations prohibiting or hindering the importation of used equipment. A number of countries demand high import duties for used equipment, whereas new equipment is frequently exempted from duties. Obstacles of this nature can, however, be overcome once the buyer and the government of his country become convinced of the advantages that can be gained.

Advantages for the buyer of used plant and machinery

4. The plant best suited for redeployment is one that is still in operation. Thus the buyer has the unique opportunity of seeing for himself how the plant performs - technically and economically - and is able to recalculate these factors to suit conditions in his own country. A further advantage to the buyer is that the operation that he is acquiring has already overcome its teething problems. It must be noted in this context that to buy an entire plant is less risky than to buy groups of machines or individual machines, which at first may appear cheaper but will usually, after the necessary supplements and adjustments, end up being more expensive.

---

* Based on two background papers prepared by UNIDO consultant, G. Herdmann. The views expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO.

5. No rule of thumb can be given for pricing used plants. Prices range from a little over scrap value to about 70 per cent of new equipment prices. Added to the basic price are costs for dismantling, reconditioning, packaging, shipment, insurance and installation etc., as well as costs for redeployment engineering, which includes all engineering efforts for adaptation and reconditioning and the logistics of redeployment, including transport, re-erection and start-up. Should the seller not be willing to assume responsibility for these, the buyer would be well advised to hire an engineering contractor for this service package. He could also negotiate directly with the manufacturer of the plant he has bought regarding guarantees for materials and performance. Overall, savings can be as high as 40 per cent of the installed price of a new plant, with an even higher percentage of foreign exchange savings.

6. If the buyer is not able to assess the plant's value, he should hire a consultant (for example through UNIDO) to undertake this, taking into account wear and tear, costs for reconditioning and costs incurred in setting up the plant under new conditions. The assessment should also take into consideration the investment that will be necessary to develop the infrastructure for operating the plant at its new location, e.g. storage, packaging and loading facilities, technical and commercial administration procedures, supply and utility lines, including the negotiation of medium- and long-term supply and sales contracts.

7. The plant and equipment considered for redeployment should also satisfy safety and environmental protection standards at the new location.

Medium- and small-scale industries: an area for redeployment

8. The bulk of investments in developing countries in the past has been made in medium- and large-scale industrial installations in the public or parastatal sector, largely employing modern technologies, and thus committing the investor to enter into long-term credit obligations. Small and medium-sized investment programmes in the private sector were not always given the attention and support they merited. Generally speaking, the private sector investor was not able to benefit directly from the international technology market, but had to wait until the corresponding technology and equipment became available from local suppliers. This had obvious positive effects on the drive towards self-sufficiency, but it also considerably delayed technological development in the downstream processing steps.

Technologies and machines suitable for redeployment

9. Redeployment is best suited to technologies involving sophisticated and expensive mechanical or process equipment, which are normally designed for an operational lifetime of 12 years or more. Wear and tear during the first five years of operation is generally minimal. The following appear to be generally suitable for redeployment:

Textile and garment industry, including carpets from jute (spinning, weaving, knitting, dyeing)

Shoemaking industry

Pharmacuetical finishing and packaging equipment including complete (multipurpose) finishing lines

Printing equipment

Certain production lines in the woodworking industry, including the production of chipboard, particle board etc., and furniture manufacture

Production of gypsum board and blocks

Production of building elements such as windows, doors etc. (processing of wood, plastic materials and aluminium)

Plastics processing in general, including production of foils and polyvinyl chloride tiles, blow moulding and casting

Mechanical processing and production equipment, tool-making machines, repair workshops for road and rail traffic

Aluminium processing, e.g. rolling mills for foil and can production

Bottling plants, and other food and beverage oriented equipment

Certain equipment in the iron and steel processing industry

Many types of mobile and semi-mobile equipment in the transport, building and construction industries.

10. Technologies that are unsuitable, or only partially suitable, for redeployment are those subject to rapid innovation and those for which equipment has a high degree of wear and tear. Voluminous equipment (e.g. reactors) is also not suitable for redeployment, due to the high cost of dismantling, transport and re-installation.

Principles of redeployment: guarantees and financing

11. The simplest case of redeployment is the shifting of a specific production line from an industrialized to a developing country. Know-how in production, maintenance, administration, marketing, raw-materials supply etc. is made available to the new management. Financing matters are solved internally, and credit insurance is not needed unless additional financing is necessary. If equipment and machinery is part of a know-how-plus-equity participation transaction, the buyer will have to protect his own interests, even though he is affiliated to the seller. However, the main obstacles in this simple redeployment exercise may arise from legislation in the receiving country governing import duties and tax exemptions.

12. It is difficult to define liability to the satisfaction of all parties, namely the buyer, the financing institution, the insurer and the seller. The seller is invariably a novice at this sort of transaction, and is not usually prepared or able to take upon himself liability for the deal. The liability

gap could be breached by an independent consultant or by the contractor responsible for the practical details of the redeployment exercise. This will of course add to the cost of the project.

13. Long- or medium-term financing will be required by the investor, and credit insurance will be required by the seller or the bank, which may stipulate that the credit period be in accordance with the lifetime of the redeployed plant. When financing is requested from the same bank that financed the original investment, and some instalments are still outstanding, there ought to be a positive reaction. For example, both Hermes and CORFACE do not foresee any major obstacles for covering normal risks. The economic benefits derived from the redeployment transaction must be in relation to the business as a whole, and the economic risk must be covered by performance guarantees. A scrap deal would not find the backing of Hermes, COFACE or ECGD. These agencies would probably be willing to study a model case.

14. In addition to the establishment mechanisms for project financing, it is recommended that leasing arragmenets be investigated. Leasing arrangements could be applied for mobile and semi-mobile equipment such as civil works equipment. They may also be considered for complete plants, and could for instance be applied to mechanical and textile processing units and groups of machines.

15. Difficulties may arise in arranging for redeployment to a client in a least developed country, the credit rating of which is not sufficient to obtain the necessary loan or coverage from such export credit guarantee agencies as Hermes, COFACE or ECGD. Such countries are only eligible for the various national schemes available under economic aid, and under such circumstances it is suggested that special attention be focused on finding the optimal way of making redeployment opportunities available to them.

16. The United States has been an established market for used plant and equipment for over 30 years, with several major and smaller companies specializing in this field. However, their efforts have not been channelled to exporting to the developing countries, apart from some special cases and for mobile and semi-mobile transport and construction equipment. A similar situation also exists in the United Kingdom, where the internal market is more limited and less well organized. In the Federal Republic of Germany and other European countries, trading with used plants and equipment is left more to chance. Exports of certain machinery are arranged by trading houses that accept responsibility, on behalf of their client, for coming up with favourable deals. An exception applies to machine tools and textile machines. Here machine traders by the lot or are obliged to take back a used machine if they sell a new one (similar to the automobile trade). The old machine is sold, with limited guarantee, after reconditioning.

Advantages of redeployment for the recipient

17. The main advantage of redeployment, as opposed to plants that are designed and built to order, is a smaller total investment cost, especially if the volume of services to be rendered by the new owner can be maximized. Table 1 gives figures for a hypothetical case involving a medium-sized plant in the chemical/petrochemical or related field with a total investment cost

Table 1. Comparison of total investment cost of a new plant project versus a redeployment project taking as an example a medium-sized plant in the chemical/petrochemical or related field with a total investment cost requirement of $100 million
(In millions of dollars)

	New plant project		Redeployment project			
			Case 1[b]		Case 2[c]	
	Cost	FX[a]	Cost	FX[a]	Cost	FX[a]
Engineering and associated services	14	12	7	6	7	6
Equipment and materials	40	40	10	10	20	20
Reconditioning and replacement	-	-	6	6	4	4
Dismantling	-	-	6	3	6	3
Packing and transport	4	1	4	1	4	1
Civil works	14	2	14	2	14	2
Erection	22	4	20	3	20	3
Training and start-up	6	6	3	3	3	3
Total investment cost	100	65	70	34	78	42
FX[a] as percentage of total cost		65		52.3		64.6

a/ Foreign exchange requirement.

b/ Case 1: Equipment and materials are valued at 25 per cent of the cost of a new plant.

c/ Case 2: Equipment and materials are valued at 50 per cent of the cost of a new plant.

requirement of $100 million. Table 2 relates to a plant with a total investment cost of $10 million and assumes it will be installed in an existing industrial estate. In practice, each redeployment exercise must be evaluated on its own individual merits. Depending on the price to be paid for the equipment, the total investment cost may come down to 70 per cent or less of costs for a new plant, even with a rather generous allowance for reconditioning and replacement (15 per cent of the value of the new equipment and a budget for engineering and associated services of 50 per cent of the complete engineering and services package). Figures in the tables are given based on the assumption that the price for the equipment and material package is either 25 per cent or 50 per cent of the price for new equipment. In the latter case, the cost of reconditioning and redeployment does not appear to be attractive from a commercial point of view. Assuming an increase in the price of equipment of 5 per cent per year, a package that is valued at $40 million today cost about $35 million three years ago. If the seller gets $10 million, he in effect recuperates nearly 30 per cent of his original outlay.

18. Apart from factors affecting total investment cost, the foreign exchange or local currency ratio must also be investigated. In an optimum case of redeployment, foreign exchange spending might be as low as 30 per cent of the (reduced) effective total investment cost, or 20 per cent of the total investment cost for a new plant. The opportunity of training local engineering staff as part of the package is an added benefit.

19. Some aspects cannot be expressed in figures. These include the time span from the investment decision to the running-in of the plant: taking into consideration dismantling, transport, civil works and erection, time savings of a year or more seem realistic for redeployed as opposed to new equipment.

Redeployment as a matching exercise

20. As a result of global economic recession, redeployment has undoubtedly become a more interesting option. Investors in developing countries seem more positive towards considering buying used plant or machinery. The process is complicated in cases of receivership, but even then, the equipment can be made available for acquisition by a client from a developing country.

21. As an example, there are two leading full service industrial brokers in the Federal Republic of Germany. Both firms have recently extended their activities into this field. They arrange, plan and supervise mergers and acquisitions and restructure companies. If circumstances warrant, they break up lots and auction individual pieces of equipment. In their experience, no investor from a developing country has bought a whole unit or a substantial portion of a plant.

22. One broker operates mainly on the basis of orders from clients wishing to invest in certain types of industry, or on orders from clients wishing to sell part or all of their business. Its affiliated trust company arranges for interim management and the sale of premises and equipment on a brokerage basis. The other broker executes orders to sell and offers machines, groups

Table 2. Comparison of total investment cost of a new plant project versus a redeployment project for a plant of $10 million, assuming installation in an existing industrial estate
(In millions of dollars)

	New plant project		Redeployment project			
			Case 1[b]		Case 2[c]	
	Cost	FX[a]	Cost	FX[a]	Cost	FX[a]
Engineering and associated services	1.5	1.5	0.8	0.7	0.8	0.7
Equipment and materials	4.5	4.5	1.1	1.1	2.2	2.2
Reconditioning and replacement	-	-	0.6	0.6	0.4	0.4
Dismantling	-	-	0.6	0.3	0.6	0.3
Packing and transport	0.5	0.1	0.5	0.1	0.5	0.1
Civil works	0.4	-	0.4	-	0.4	-
Erection	2.2	0.4	2.0	0.2	2.0	0.2
Training and start-up	0.9	0.9	0.5	0.5	0.5	0.5
Total investment cost	10.0	7.4	6.5	3.5	7.4	4.4
FX[a] as percentage of total cost		74		47.3		59.5

a/ Foreign exchange requirement.

b/ Case 1: Equipment and materials are valued at 25 per cent of the cost of a new plant.

c/ Case 2: Equipment and materials are valued at 50 per cent of the cost of a new plant.

of machinery, packages of equipment and complete plants to potential buyers. Up to 10,000 catalogues of individual offers are sent to potential customers. Equipment is rated at its market value, which is between 10 and 50 per cent of the ex-factory price for a comparable item. The term "plant" is used for groups of components executing a specific operation.

23. In the United States, many companies are active in this field.

Conclusions and recommendations

24. The advantages brought about by the redeployment of existing plants have not as yet been fully realized by developing country project sponsors. UNIDO could set up an office - in effect an international redeployment agency - with the task of co-ordinating efforts in industrialized and developing countries through its established channels. This office would have to lay the groundwork for redeployment, primarily by advising potential recipients of the benefits resulting from the acquisition of used plant and equipment. It could carry out techno-economic studies to define opportunities and needs. It might, if necessary, administer a special fund for credit or credit insurance. It could negotiate contractual arrangements between buyer and seller, and monitor the plant's reconditioning. This could be executed by a contractor or supplier who specializes in the field in question, or who delivered the original plant. Guarantees for performance, materials and liabilities would vary according to the proportion of the original plant as compared to the reconditioning input. Thus area may need the special attention of the proposed redeployment agency. If a potential seller declares bankruptcy prior to a contract taking effect, the redeployment agency would seek to protect the interests of both parties, while at the same time seeing that the plant was relocated. In cases such as this, the agency may even have to participate in auctions and arrange for bidding on its client's behalf. Such an agency would make use of the services of reputed firms already established in the business.

Aspects of guarantees and insurance

Industrial redeployment in certain industrial sectors is considered to provide some additional advantages to the developing country partner. The following proposals are intended to develop an industrial infrastructure in the developing countries and to provide a basis for developing specialized small-scale industries as an important part of the national economy.

Benefits

The major benefits of an active redeployment programme may be summarized as follows:

(a) Quick access to technology and hardware packages that have proved to be successful, but whose value in an industrialized country may have been lowered as a result of industrial restructuring;

(b) Possibilities for training in the operation and maintenance of machinery as well as, although perhaps to a lesser extent, in such activities as the control of raw materials, parts, production and finished goods, and marketing;

(c) A reduction in the amount of foreign exchange required;

(d) The creation of a venture with an experienced partner from an industrialized country.

International agency

The conditions of industrial redeployment cannot be generalized. In all cases however the interests of the developing country partner need to be protected against fraud and irregular business practices. It is therefore recommended that an international agency be set up under the aegis of UNIDO with the following responsibilities:

(a) To develop guidelines for redeployment projects;

(b) To build up a roster of requests for and offers of redeployment projects;

(c) To provide assistance with the technical and feasibility aspects of redeployment projects as well as, where possible, the legal and financing aspects;

(d) To provide assistance in the traning of personnel in developing countries to work on such projects.

Plant performance

The international agency would not be in a position to provide any guarantees with regard to the technical and economic performance of the plant. Some guarantee of this sort should normally be given by the seller, although their enforcement might eventually prove to be difficult. The seller should undertake a degree of liability with regard to:

(a) The time schedule for the dismantling, transportation and re-erection of the plant;

(b) The adaption, reconditioning and reassembly of the plant;

(c) The performance of the plant, including raw material and energy consumption and output.

In the event that the seller is not willing or able to provide suitable guarantees for the above aspects, the buyer would be well advised to enter into a contract with an engineering firm that has experience in the relevant field of technology. A suitable firm could be the original manufacturer of the plant and machinery. Such a contractor should prepare a detailed assessment of the plant, provide the necessary time schedules and carry out the other activities described above.

The engagement of a third party might increase the cost of the project without however providing a guarantee to the developing country partner who still has to rely on the integrity and expertise of a firm in an industrialized country. It is hoped that with time, developing countries will develop their own expertise and will have competent companies of their own to carry out such tasks.

Some provisions for this cost is included in table 1. The incurrment of such costs at this stage of the project could avoid higher costs at a later stage.

Insurance

The possibility of insurance against the non-fulfillment of guarantees with regard to plant and equipment should also be considered. The payment of a premium for such an insurance scheme would also, however, add to the cost of the redeployment project. Payments out of the insurance scheme could take the form of loans, instead of outright disbursements, and could be repaid from the income earned by the project once production gets under way. In this case the insurance agency might have to guarantee the loan repayment.