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

09335

Distr.
LIMITED

UNIDO/EX.96
2 October 1979

ENGLISH

UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

REPORT OF THE UNIDO PROGRAMMING MISSION TO THE PEOPLE'S REPUBLIC OF CHINA[1/]

16 to 28 July 1979

prepared by

N. N. Tandon
Head
Programme Development and Evaluation Section
Division of Policy Co-ordination

1/ This document has been reproduced without formal editing.

CONTENTS

SUMMARY

The work accomplished by the Mission can be summed up as follows:

a) Finalization of project documents for projects included in the reserve list of UNDP;

b) Response point by point to the sixteen proposals the country had submitted to the satisfaction of the Ministries concerned and formulation of respective projects including identification of the areas where the short-term assistance will lead to large-scale projects with significant impact;

c) Development and discussion of additional specific project concepts dated for future implementation;

d) Preparing the ground for future programming in its widest sense.

INTRODUCTION

1. A UNIDO Mission consisting of the following Members visited the People's Republic of China in July 1979:

(1) Mr. N.N. TANDON, Head, Programme Development and Evaluation Section;
(2) Mr. H. MAY, Acting Head, Chemical Industries Section;
(3) Mr. L. BIRITZ, Acting Head, Factory Establishment and Management Section;
(4) Mr. E. MANNING, Senior Industrial Development Officer, Agro-Industries Section; and
(5) Mr. E. KRAJENBRINK, Senior Industrial Development Officer, Engineering Industries Section.

2. The Mission reached Peking in the evening of 16 July with the exception of Mr. May who arrived on 24 July 1979. All Members of the Mission also visited Shanghai during this period with the exception of Mr. May. The Mission stayed in China until 29 July with the exception of Mr. May and Mr. Manning who stayed slightly longer. Before the work done by the Mission is described in detail, it is essential to provide the background against which it was conducted.

BACKGROUND

3. A Programming Mission composed of Mr. Carlos S. Vegega, Deputy Assistant Administrator, Regional Bureau for Asia and the Pacific (RBAP), Mr. K.K. Tsien, Chief, Division I, RBAP, Mr. B. Devarajan, UNDP Resident Representative in the Philippines, and Mr. Hauet, Chief, Operational Division, Science Sector, UNESCO, visited China in December 1978. The Mission prepared a programme for the equivalent of US$ 12 million. Provision for a financial reserve of US$ 3 million was made to cover contingencies and cost

escalation. The two sums of money add up to a total of US$ 15 million which covered the allocation made by the Governing Council of UNDP to the People's Republic of China for the Second Country Programming Cycle. As the programme will cover only a period of two and a half years, a reserve list of projects involving UNDP inputs of the order of US$ 1.6 million was also prepared in order to ensure maximum delivery up to the ceiling of US$ 15 million. The following projects which fall within UNIDO's area of execution were included in this list:

Project No.	Project Title	US Dollars in Thousands
CPR/79/016	Light Industry	100
CPR/79/017	Textile Industry	100
CPR/79/018	Food and Oil Processing	100
CPR/79/019	Building Materials	100
CPR/79/020	Electronics	100
CPR/79/021	Machinery	500
		1,000

4. It was agreed that a Mission would be required from UNIDO to define and prepare the project documents once the Government has provided the information required for the purpose. The UNIDO Mission to China arose essentially from this agreement between UNDP and the Government. We were in constant touch with UNDP and the Chinese Mission in this connexion before the Mission was fielded.

SCOPE OF THE MISSION

5. The matter received attention at the highest levels at UNIDO Headquarters. A series of inter-divisional meetings were called by Mr. Carré while the Executive Director kept himself informed of the position. Preparations of project

documents for the six proposals mentioned above were commenced. In the meantime an interim report of the UNIDO Mission to China in May 1979, headed by Mr. Becker-Boost, was also received.* It contained some 34 proposals of a varied nature which provided a glimpse of the priorities assigned by the country in the matter of technical assistance to be provided by UNIDO. Subsequently, Mr. Cao Guibin, First Secretary, Embassy of the People's Republic of China and Alternate Permanent Representative to UNIDO, delivered a list of 16 projects selected from the above-mentioned 34 projects, prepared by the Ministry for Economic Relations with Foreign Countries for technical assistance by UNIDO (Appendix I).

6. These proposals are also broadly to be found in Mr. Becker-Boost's list. The view taken in the inter-divisional meetings held to consider these proposals along with the UNDP projects was that while all these proposals should receive the greatest attention, it was of paramount importance for UNIDO not to restrict its thinking and reflection to them, but to begin looking at programming in China in a long-term perspective. In other words, we should not simply become prisoners of specific proposals, but should rather go on beyond to cast an eagle's eye over the coming years in China and think of some of the "themes" in which they might conceivably be interested. Several project concepts were also brought forward:

(1) Large-scale biogas production from organic industrial wastes;
(2) Production of fermentation alcohol for use as fuel and chemical feedstock;
(3) Technical assistance in the establishment of pesticide research and development institute and various pesticide industries;

---

*The final report of the Becker-Boost Mission has also arrived since then. (UNIDO/IOD. 276, dated 2 July 1979).

(4) Introduction of high-speed paper coating technology;
(5) Prefabrication industry development;
(6) Cement industry development;
(7) Agricultural machinery and implements, and
(8) Pharmaceuticals.

These proposals, among others, were transmitted to China in broad outline. It may perhaps be added that UNIDO Headquarters did not have sufficient information about the background of projects or of the institutional framework and environment in which the project concerned was to function. A certain proportion of the work done at Headquarters had, therefore, to be based upon assumptions; and it was crucially important, first, to check with the Chinese Authorities whether these corresponded to reality, and, second, to obtain the required amount of information in quite critical areas. A Mission to China was, therefore, important even from the point of acquiring information vitally necessary for specific projects, and of visiting a few selected industrial units to get first hand acquaintance with the context in which those projects and, indeed, the programme in China as a whole was to be operated. Our queries were, therefore, transmitted to the People's Republic of China through their Mission in Vienna.

7. UNDP was kept informed invariably by correspondence and even by telephone.

INTRODUCTORY SESSIONS (17 JULY 1979)

8. The Mission was received by officials of the Ministry for Economic Relations with Foreign Countries (Sixth Department) led by Mr. Wang Zichuan, Deputy Director, during the morning session and Mr. Chen Xingnong, Director, in the afternoon session, on 17 July 1979.

The morning session was attended by the following officials:

(1)	Mr. Wang Zichuan	Deputy Director
(2)	Mr. Zhang Bingjian	Deputy Division Chief
(3)	Mr. Yang Zhenlun	Official
(4)	Mr. Xie Weirong	Official
(5)	Mr. Ding Jianwen	Official
(6)	Mr. Xu Shuyun	Official
(7)	Mr. Peng Muyu	Official
(8)	Miss Yan Juxia	Official

The above named also attended the afternoon session which was led by Mr. Chen Xingnong, Director.

9. Mr. Chen Xingnong in the afternoon session and Mr. Wang Zichuan earlier in the morning session, extended a warm and cordial welcome to the Mission. They mentioned that co-operation between the People's Republic of China and UNIDO had developed during the past two years; and they expressed the hope that it would be strengthened further as a result of the visit.

10. Mr. Tandon stated in response that he had brought with him sincere and heart-felt greetings from the Executive Director and the Acting Deputy Executive Director. He told them how profoundly sorry Mr. Carré was that he was not able to come to China; that he had had an attack of bronchitis from which he had not recovered till the departure of the Mission. He went on to say that UNIDO attaches the greatest importance, from the highest level downwards, to the programme of technical assistance to China and that it looks forward to increasing co-operation over the years. UNIDO welcomed the list of six projects included in the reserve list of UNDP and the sixteen projects which the People's Republic of China had presented through their Mission in Vienna.

We had already transmitted our tentative comments and in some cases drafts of project documents along with certain queries which were considered important from the point of view of adequate preparation of project documents. Mr. Tandon then explained the different sources of finance available to UNIDO and gave an outline of its capabilities and constraints. He added that these sources of finance were not intended to break up technical assistance into compartments, but were rather meant to be woven into an integrated fabric. Yet, at the same time, it has to be recognized that the funds available to UNIDO were not unlimited; in most cases approval of the higher authorities would be required; and in some the projects might have to go up to the Programming Committee. There could be no doubt, however, that UNIDO was deeply interested in all proposals and would consider these with utmost sympathy within its constraints. Mr. Tandon further clarified that each project would have to be discussed in depth with the Chinese officials concerned before any reactions could be given. He suggested that there could perhaps be three discussion Groups simultaneously for the purpose, divided broadly into the specialized disciplines of Mr. Biritz, Mr. Manning and Mr. Krajenbrink, with himself dividing his time among the three Groups. Subsequently, there could be yet another Group constituted when Mr. May arrived in Peking.

11. Mr. Tandon then took the opportunity of expressing the hope that discussions in Peking would not remain confined within the four walls of the specific projects included in the reserve list for IPF or of the 16 projects suggested by the country, but will go beyond to have a look at programming in a long-range

perspective. Detached from preoccupations of the moment and dissociated for the time being even with considerations of funding and sources of finance, it might perhaps be possible and advisable to raise our sight and look a little more into the horizon to see which directions UNIDO assistance might conceivably take in the coming years, in the light of the country's own perceptions. UNIDO looked up entirely to the country in this respect for guidance. Perhaps certain themes might be of particular interest to China; and these might provide the lead: For example, energy, biomass, fermentation alcohol, computerized management, pharmaceuticals. UNIDO will greatly appreciate the country providing some idea of what it would consider to be themes for the coming years in a certain perspective. The reaction of the country to some of the proposals submitted by UNIDO would also be appreciated.

12. Mr. Chen Xingnong, Director of the Sixth Department, stated in reply that he shared UNIDO's views with regard to long-term perspectives. While China participates in the multilateral activities of the UN system and has been making contributions to other developing countries, she was also now prepared to receive technical assistance. It is from this point of view that the country welcomed UNIDO and had requested assistance in the case of the six projects to be financed by UNDP. These six projects were broken up into 55 items as follows:

21	for studies abroad
13	for expert services in China
21	for fellowships abroad
55	total

The projects present a great variety covering, among others, light industries, the textile industry and the building industry. He said that he would prefer these six projects and the sixteen requests to be dealt with first, before a further discussion in terms of long-range perspectives was held. Discussions might be held separately in the context subsequently.

ORGANIZATION OF WORK

13. The following work schedule was agreed on in the course of the discussions:

17 - 21 July	Talks between two sides
22 July	Flight to Shanghai (CA 512)
23 July	Visits in Shanghai
24 July	Return to Peking
25 - 26 July	Continuation of talks
27 - 28 July	Open
29 July	Departure

14. In accordance with the request from the Members of the Team with regard not only to specific projects under discussion, but from the point of view of a general interest in the field of industry, the following programme for the Shanghai visit was worked out:

Sunday, 22 July

Afternoon:	Industrial Exhibition	Entire Mission

Monday, 23 July

Morning:	Shanghai Machine Tool Factory	Mr. L. Biritz
	People's Commune	Mr. N.N. Tandon Mr. E. Manning Mr. E. Krajenbrink
Afternoon:	Shanghai Marble Factory	Mr. L. Biritz Mr. E. Manning
	TV Set Factory	Mr. N. N. Tandon Mr. E. Krajenbrink

Tuesday, 24 July

Morning:	Radio Recorder Factory	Mr. N.N. Tandon Mr. E. Manning Mr. E. Krajenbrink
	Pen-Pu Machine Factory	Mr. L. Biritz

OUTCOME OF THE DISCUSSIONS

15. The outcome of the discussions held with different Ministries was, in the view of the Mission, most encouraging. The meetings took place in an uncommonly friendly atmoshphere. It was quite apparent from the manner in which the talks proceeded that officials from the various Ministries and the experts who accompanied them, had done their homework thoroughly. Although the Government officials were somewhat unused to the UN System, they were able to grasp the different points made by the Mission quickly and in their entirety. Detailed minutes of discussions concerning the different projects are appended to this report. (Appendices III through VI)

A. Projects for UNDP Financing

16. Drafts of 5 of the 6 proposals kept in the reserve list for IPF financing were prepared in Peking itself and shown to the Chinese Authorities in an informal manner. These draft project documents were prepared after extensive discussions with the Ministries concerned. While complete information was obtained on project CPR/79/021 - Machinery, it was not possible during our stay in Peking to prepare the entire draft project document since it requires the backstopping officer's personal attention. The Chinese Authorities were, therefore, informed that it would be prepared in Vienna in the near future and transmitted to them. This is a matter which shall receive IOD's urgent attention.

17. The normal procedure is that the draft project documents have to be seen by the UNDP Resident Representative who has the authority to sign and approve these on behalf of UNDP without reference to New York, if the value of the UNDP inputs does not exceed US$ 400,000. With the exception of project CPR/79/021 - Machinery, the project documents prepared by Members of the Team involve less than US$ 400,000 as UNDP inputs. Nevertheless, it might be necessary to send all these drafts to New York since the Resident Representative is not yet in his position in Peking and his office is yet to be installed.

B. Sixteen Requests Submitted Later through the Chinese Mission

18. Each one of these proposals was the subject of very detailed and extensive discussions between the Team and the different Ministries concerned. Details are given in Appendices III through VI, and all projects are summarized in Appendix I.

19. It can be seen that the country, in making its requests for technical assistance, came up with problem-oriented proposals. We found during our visit to factories and in the course of discussions that the problems were genuine and acutely felt. There is no question that in providing speedy assistance in an efficient manner UNIDO will help earn much good will through the provision of assistance where it is really needed. It is, therefore, most important to meet these requests on an urgent basis in an adequate manner. At the same time it may perhaps be mentioned that the Mission made every conceivable effort to ensure that any short-term assistance provided will lead eventually to larger-scale

assistance of more comprehensive character where such assistance is needed and is justified. This is particularly true of the projects which we have recommended for approval under SIS. The experts who will come for consultation on management problems will, for example, in all probability make recommendations for a broader, more inclusive project of assistance. The point that short-term assistance might not be adequate and that larger assistance to be financed from other sources of finance might eventually become necessary, was made amply clear in the course of discussions with the Chinese Authorities. The Mission, however, explained that no commitment as to financing from UNIDO's own resources was being made. (Perhaps some of the larger projects may be financed at the appropriate time from the Country Programme in the Third Cycle.)

20. The ground was prepared by the Team, on its return from Shanghai, for a broader presentation of programming perspectives to the Chinese Authorities. In fact, a meeting had already been fixed for 25 July 1979 for this purpose after the return of the Mission from its visit to Shanghai, 22 - 24 July 1979, described in the following paragraphs.

VISIT TO SHANGHAI

21. The Team arrived in Shanghai on the afternoon of 22 July 1979 and left for Peking on the morning of 24 July 1979. The Shanghai Industrial Exhibition which contains products of Shanghai's industry was jointly visited on the afternoon of 22 July 1979. Unfortunately, the section for light and small-scale industries was closed, owing to certain readjustments which were then in process. The Team got an opportunity, however to see the rest of the exhibition.

22. The exhibiton has halls for metallurgy; machine building and electrical machinery; chemical industries; textile machinery; ship building; automobiles and agricultural machinery; metres and instruments; light industry; textiles and arts and handicrafts. Among the many exhibits on display were a model of a 300,000 kw turbo-generator unit, models of a 10,000 ton freighter and a passenger cargo ship; petroleum exploring ships and vessels for special purposes; pharmaceutical products, including medicines based on an integration of Chinese and Western pharmacology; a 32-ton dip lorry for mines; automobiles; tractors; and agricultural equipment. The exhibition has on display a representative sample of the different products manufactured in Shanghai. The total impression one gets is one of solid achievement and of a substantial industrial base which the country has established.

23. In accordance with the programme already outlined in paragraph 14 of the report, the team also visited a TV factory, a tape recorder factory, a couple of machine tool factories, a marble factory and a commune. Detailed reports of these different visits are contained in Appendices II through VI.

24. It will be seen from the records of discussions and visits, that the country has attained a high level of industrial advancement. The country is already manufacturing cassette tape recorders and color TV. There is substantial achievement to its credit in the field of machine tool and heavy machinery. The general atmosphere in industrial units is orderly and disciplined.

25. The critical inputs needed by industry seem to be in the field of management, particularly production and financial management such as inventory control, accounting systems, modern techniques of production scheduling etc. There is also need

for assistance in the field of technology; and some of the processes would benefit from greater automation. It appears that to some extent a more systematic approach to training and to the building up of training institutions might help the country a long way. There may advisably be a greater emphasis on research and development, not only at the level of institutions, but also perhaps at the factory level. An area certainly worth investigating is that of building and strengthening indigenous R and D capability.

OVERALL PRESENTATION AND FINAL DISCUSSIONS

26. Mr. Tandon reviewed the work done by the Mission, provided his response to the various proposals of the Chinese Authorities and made an overall presentation to the Sixth Department of the Ministry of Economic Relations with Foreign Countries on behalf of UNIDO, on the afternoon of 25 July and on the morning of 26 July 1979. Before doing so, he had the benefit of the views of Mr. May who had already arrived and who had valuable and extensive discussions with the Ministry for Chemical Industry.

27. Mr. Tandon, in the course of his presentation, first gave his response to the Chinese Authorites on the question of the 6 UNDP projects and the 16 proposals which were submitted in addition through the Chinese Mission in Vienna. He informed them that drafts of 5 of the 6 UNDP proposals had been prepared and that they might have a look at these for concurrence. As far as the remaining sixth proposal was concerned, the required information had been collected and a draft project document would be prepared at an early date. As far as the 16 proposals were concerned, he gave his responses along the lines of paragraph 18, and the respective Appendices III through VI summarized in Appendix I.

28. Mr. Tandon then went on to speak about the larger question of programme development. He mentioned that as far as UNIDO could gather, the country attaches utmost importance to industrial development. The discussions which took place in the 5th Congress and the priorities indicated by Chairman Hua made it amply clear that the country proposes to concentrate on agriculture, industry, science and technology and defence. As far as the UN System is concerned, the first three of these priorities are certainly its concern, while defence is clearly out of its purview. If one analyses the situation, one would reach the conclusion that industry plays a significant part even in the spheres of agriculture and science and technology. Thus, it has to be a strong and powerful engine of growth for the overall economic development of China. He illustrated this point with the example of the pesticide development project which UNIDO had presented in its portfolio. Pesticides are vitally needed by the country for its different crops. There are thousands of different insecticides and the location of plants is determined by the ecological conditions peculiar to a given area. If UNIDO helps the country with the establishment of a pilot plant which has multiplier effects and stimulates the setting up of a network of projects throughout the country, it would be providing a critical input in the national programme of agricultural development.

29. Mr. Tandon made the point that while UNIDO would, no doubt, like to assist in problem-oriented projects, he repeated that it strives for an evolvement of a systematic and long-range programme. UNIDO Headquarters had tried to project a number of themes which in their judgement might be high in the scale of national priorities of technical assistance. He, however, eagerly looked forward to the country itself providing

the guidance and the lead in this direction. Therefore, he proposed to give first an outline of what UNIDO thinks it might perhaps be able to do in the nature of technical assistance to the country and later to invite the country to comment on these themes and to suggest others which might be added. In any case, UNIDO would prefer a thematic preparation of the programme rather than an ad hoc assortment of projects as and when a problem arises, although the latter must always have an adequate response.

30. Mr. Tandon enquired pointedly whether the country would like UNIDO to provide assistance in the matter of energy. This might consist of conservation of energy in industrial enterprises, or conversion of proven technologies into practical application. It may concern itself with exploitation of natural resources or utilization of available waste. It may also draw on utilization of coal or solar energy. Besides there is then the entire area of bio-technology, including alcolhol fermentation.

31. Mr. Tandon then dwelt on the subject of pesticides, reference to which has already been made in paragraph 28 above. An outline of a proposal relating to the establishment of a Pesticide Development Centre had already been submitted in the portfolio of projects transmitted to the Chinese Authorities. The cost of the proposal works out to US$ 488,600. In the meantime, Mr. May had already held useful discussions with the Ministry for Chemical Industry in this connexion. Mr. Tandon also spoke in this context about the advancement and further development of the fertilizer industry.

32. He went on to to enquire whether there was interest in new technologies in the matter of rural housing, especially

buildings constructed with composite materials such as jute and other natural fibres and plastics. He also enquired whether China would be interested in increasing the competitiveness of natural products such as rubber as against plastics and other artificial products.

33. An important question on which Mr. Tandon wanted further guidance from the country was that of training. He mentioned in this connexion the fact that it might be possible to study, among others, the twinning arrangements with institutions in selected advanced countries. It was possible for UNIDO to assist in strengthening existing training institutions from its own resources to a limited extent. In saying so, he had in mind the observations made by several delegates in the last meeting of the Industrial Development Board while discussing the Regular Programme of Technical Assistance. In any case, it appeared to him important that a comprehensive programme of training in the industrial sector be developed.

34. Mr. Tandon wondered whether metrology and standardization projects would be of interest to the country and whether specialized institutions might be built up in response to this need. He mentioned in this content,for example, the successful metallurgical standarization project in Brazil which was in the process of being assisted by UNIDO.

35. He placed great emphasis in his presentation on the need for greater Research and Development (R and D) and for specialized institutions in this content.

He referred to certain discussions Mr. Krajenbrink had with the 4th Ministry of Machine Building on the subject of computers when one of the representatives of the Ministry enquired if assistance could be possible in the field of software engineering. He made the point in this context that significant advancement in the field of software engineering might not be feasible without the development of a substantial indigenous R and D capability. UNIDO would be happy to assist in the building up of institutional support to R and D, and, in fact, to help in any other manner the country suggests.

36. Mr. Tandon also referred to the possibility of UNIDO assisting China in the field of economic co-operation among developing countries. He referred in this context by way of example to her capabilities in the spheres of bio-gas, pharmaceuticals and alcohol.

37. He dwelt at length and with some emphasis on the need for projects involving the introduction of modern management practices and techniques. This might involve a series of methods including the application and use of computers of different kinds including mini-computers.

38. He requested the Chinese Authorities to inform UNIDO whether they would be interested in pilot demonstration plants for synthetic fibres.

39. Mr. Tandon drew the attention of the Ministry to the project proposal UNIDO had submitted in the sphere of feasibility studies. This project may focus attention on the need to build up a nucleus of staff for preparing feasibility studies and for teaching Chinese nationals some of the modern and sophisticated methods of carrying out such studies. He thought that this was an important and useful proposal.

40. An interesting area of assistance could, in UNIDO's opinion, be the improvement of properties of polypropylene and applications development. This might involve provision of experts and possibly a small piece of equipment. The subject had in fact been discussed by Mr. May with the Ministry for Chemical Industry.

41. Another field of assistance might be that of technical consultation on petro-chemicals and polymers involving provision of a total of 6 experts for a three week duration. This matter had also been discussed on the afternoon of 25 July, by Mr. May with the Ministry for Chemical Industry. In suggesting these proposals the Team had in mind long-range projects of a comprehensive character to be taken up subsequently.

42. Mr. Tandon also proposed the establishment of a demonstration plant for synthetic fibres. The draft of a complete document had been presented to the Chinese Authorities. The project might involve UN inputs of the value of US$ 5 million. The fellowships on synthetic fibres might well be a prelude to this project. It was mentioned that the project might be well worth consideration while programming for the Third Cycle of the Country Programme.

43. Mr. Tandon also suggested a project involving the establishment of a petro-chemical development centre.

RESPONSE OF THE MINISTRY OF ECONOMIC RELATIONS WITH FOREIGN COUNTRIES

44. Mr. Wang, Deputy Director of the Sixth Department of the Ministry, mentioned that China would be interested immediately in the following assistance.

a) Polypropylene: Improvement of Properties and Applications Development

The Chinese Authorities were told that the proposals would be recommended. The Team recommends that it should be sanctioned under SIS.

b) Technical Consultation on Petro-Chemicals and Polymers:

The Team recommends that SIS projects of three weeks duration should be sanctioned separately for petro-chemicals and polymers. The two projects together will cost US$ 25,000

Mr. Wang, however, wanted some clarification with regard to the financing of the proposals. For example, he did not know how the Pesticide Development Plant could be financed. He was wondering in particular about the proposal of a demonstration plant for synthetic fibres since it involves UN inputs of the order of US$ 5 million. Similarly, he was not sure about the financing of the Petro-chemical Development Centre.

45. A detailed elaboration of the programming framework and procedures was given at this point on behalf of UNIDO by Mr. Tandon. It was explained by him that the proposal mentioned by Mr. Wang had to be studied in a long-term perspective. The programming process is usually of an integrated nature and diverse sources of funds may be used. Some of these proposals have to be phased out over a number of years. He explained that the Third Programming Cycle of UNDP would commence on 1 January 1982. If country programmes had to be put up to the Governing Council of UNDP in January 1981, the Resident Representatives would in all probability start a dialogue with Governments concerned, some time next year. It was crucially important in the context of a country like China to commence the process of planning and project formulation for the Third Cycle, without loss of time. In fact, SIDFAs in all other countries

had already been requested to get in touch with the Government's concerned. It would not be premature in the case of large and comprehensive projects to think in terms of the Third Cycle of the UNDP Country Programme. Moreover, he informed the Chinese Authorities that one or two of these projects might even be taken up for financing from UNIDF. He clarified, however, that no commitment in this matter could be made; that the proposals would have to be submitted to the Programming Committee; and that the Team had no authority to speak on the subject with any degree of finality. The point that no proposal could be considered by UNIDO without an official request was explained. (The Team proposes that the project for the Pesticide Development Plant involving UN inputs in the order of US$ 488,600 should be considered by the Programming Committee and that the United Kingdom may perhaps be approached for a Special Purpose Contribution.)

46. Mr. Wang gave a well-considered response of the Chinese Authorities to Mr. Tandon's presentation. He expressed sincere appreciation of the good work done by the Team and of the understanding displayed by them of the crucial needs and requirements of the country. He stated that the Government of China would be interested in the following areas or "themes" of technical assistance:

a) <u>Agro-Industries</u>:

The Government of China considers agriculture to be very important and regards it as the very foundation of the

economy of the country. To be more specific, agro-industries and agricultural machinery, chemical fertilizers and pesticides, are very important in their judgement. The Pilot Plant for Pesticides mentioned by the Team falls in this category. Although China produces fertilizers, it is deficient in new techniques which might reduce the cost of fertilizers. Any assistance in this field would be appreciated.

b) Light Industries:

These include textiles, food processing, paper, sugar and packaging. More specifically,in the field of textile machinery the country needs to improve its technology in the matter of chemical fibres. It needs to advance further in finishing of cotton, wool and silk. It needs new textile equipment which is efficient and automatic and up-to-date implements and equipment for textile testing. It also needs assistance in the improvement and modernization of its canning industry. There is considerable scope for improvement in the paper industry which has to import large quantities of pulp. China is interested in learning the technology of making high-grade paper at low cost. They also wish to introduce new methods and equipment in manufacturing sugar from both cane and beet. Moreover, they wish to master the techniques of dying and finishing process of leather tanning. They want assistance in utilization of wasted leather or manufacture of reconstituted leather.

c) Ceramics:

China would be interested in assistance in ceramics technology and insulation.

d) Digital Watches:

The country is interested in learning the manufacture of digital watches with integrated circuits. Integrated circuitry is at an experimental stage at the moment.

e) Packaging:

The Chinese Authorities think that the country needs very particular assistance in the area of packaging. (The matter has already been discussed with Mr. Manning.)

f) Energy:

Although China is not going through an energy crisis and has natural resources, it wants to use its fuel and energy in an economical way. Sometimes they have difficult situations as in the case of the electrical power plant equipment which needs to be improved. They would appreciate assistance in the field of energy exploration and oil refining. Although bio-gas is used in the country-side there is need to improve the equipment and technology which should have low-cost high efficiency characteristics.

g) Electronics:

Apart from electronic watches which were mentioned above, China would like to go in for semi-conductors and new techniques of integrated circuitry. They would also like to concentrate on improvement of the quality of TV sets. This was considered very important, indeed, by them.

h) Metallurgical Industries:

They would like to master the technique of iron ore processing. Although China is rich in iron ore deposits

most of it is all low grade. It also intends to introduce integrated control systems in the iron and steel industry. They will need assistance in concentrating and beneficiating low grade iron ores.

i) Building Materials Industry:

The country accords a very high priority to this industry, particularly cement production, the quantities of cement produced being insufficient. They are interested in new processes and low cost building materials and technologies. Subsequently, in separate discussions Mr. May had with the Ministry of Chemicals, interest was expressed in a US$ 10 million project for cement production and a US$ 17 million project for prefabricated housing. They have also expressed interest in the use of plastics with jute or other natural fibres for the purpose of building houses.

j) Management of Enterprises:

The country may need expert assistance for a long period of time. This is a field where China would require UNIDO assistance, recognizing the advantages of multi-lateral approach.

MEETING WITH THE VICE MINISTER

47. The UNIDO Mission called on Mr. Wei Yiu Ming, Vice Minister, Ministry of Economic Relations with Foreign Countries, 6th Department, on the afternoon of 27 July 1979.

48. Mr. Wei mentioned that co-operation between UNIDO and China had developed very well during the last two years. He

was most thankful to UNIDO for sending the Mission to China which had strengthened this co-operation. He expressed his appreciation of the hard work put in by the Mission, of the extensive discussions held with the different Ministries and of the interesting and useful suggestions made.

49. The Vice Minister went on to say that China had launched its programme of modernization. The country would welcome co-operation with friendly countries and all UN Organizations, including UNIDO, and other Specialized Agencies. Meanwhile, China, which is a socialist country, would also like to support other developing countries in the UN System, although the capacity of the country in this respect was limited and its per capita income one of the lowest.

50. The Vice Minister went on to say that the country was using various forms and channels to introduce advanced technology. The law on joint ventures had been published. They would like to have greater co-operation with other countries in trade, industrial production and import of raw materials, and the country is ready to accept technical assistance from the UN System.

51. The Vice Minister said that he was glad that the UNIDO Mission had made a careful study of the 16 proposals made by the country, although the question of resources had not been finally settled. He thought it was a very good start indeed. He was also particularly happy that there was an exchange of views on the question of a long-term co-operation

between UNIDO and China. He expressed the hope that the Members of the Mission would come more often to China and that other staff members of UNIDO would also visit the country. He was of the view that through these visits co-operation between UNIDO and China would be further developed and promoted.

52. The Vice Minister was happy that apart from the 16 proposals made by the country UNIDO had come up with some further ideas. He mentioned in particular projects concerning the Pesticide Plant, the Petro-Chemical Centre, the Synthetic Fibre Pilot Plant and the Cement Centre. He added that if the necessary resources could be found the country would be interested in the realization of these projects. He also noted that UNIDO had made certain proposals which might eventually have to be financed from IPF whenever funds are available. He pointed out, however, that UNDP had allocated US$ 15 million during the Second Cycle. The entire amount had been programmed. He did not know whether any further allocations would be made. He welcomed in this context the suggestions made by the Mission regarding early preparations for the Third Cycle. He said that a careful study would be made of the various proposals made by UNIDO.

53. He asked Mr. Tandon in particular to convey his best regards to the Executive Director, the Acting Deputy Executive Director and all Directors of UNIDO. When Mr. Becker-Boost was in China he had asked him to extend an invitation to the Executive Director to visit China some time. He asked Mr. Tandon to convey his invitation to the Executive Director on returning to Vienna.

54. Mr. Tandon, in his reply, thanked the Vice Minister for the kindness and hospitality of the Chinese Authorities throughout their stay in the country. The Mission was overwhelmed by the care and affection with which they were treated. For each Member of the Mission it was a most memorable occasion. The Mission was very impressed by the progress achieved in the sphere of industrial development. It was fully recognized by the Mission that China being a great country had to deal with a number of problems of a complex nature. On the other hand UNIDO's resources were limited. The Mission would, however, like to make two assurances to him: First, the country could count on UNIDO's willingness to assist and its absolute sincerity in providing assistance; secondly, the country could depend upon impartial and unbiased advice from UNIDO. Moreover, the assistance provided by UNIDO and, indeed, by the entire UN System is always rendered in a spirit of humility in accordance with the priorities and perceptions of the country itself. He added that from the Executive Director downwards, to the most junior levels, there was willingness to be of help and assistance to China. He concluded by saying that the stay of the Mission in China was not only useful, but highly interesting. This was possible entirely due to the imaginative planning of the visit and seriousness with which discussions were held.

55. Mr. May expressed gratitude on behalf of UNIDO for the technical assistance given by the country to other developing countries.

56. Mr. Biritz referred to the interesting discussions he had with the Economic Commission regarding technical assistance in industrial management.

57. After the Vice Minister left, Mr. Tandon had further discussions with the officials of the 6th Department. He thanked Mr. Wang for the very comprehensive response he had made to some of his suggestions. However, he still thought that some other subjects would probably need attention. These included standardization, R and D and feasibility studies. Mr. Wang said that these subjects would also be studied carefully by the Departments concerned.

ACTION TO BE TAKEN

58. The following action should be taken at Headquarters, as expeditiously as possible, regarding the six UNDP projects:

Drafts of the five project documents which have been prepared by the Team for UNDP financing from the reserve list should be forwarded to UNDP Headquarters. These have already been seen informally by the Sixth Department in Peking. We should request UNDP to sign these documents. The sixth project document pertaining to CPR/79/021 - Machinery should be drafted urgently now that all material has been collected. (See notes of discussion with the Ministry of Machine Building, led by Mr. Tian Wenyan, Appendix V. See also in this connexion paragraphs 16 and 17 of the report.)

59. With regard to the sixteen proposals submitted to UNIDO by the Chinese Mission later, action should be taken in accordance with the 'Remarks Column' of Appendix I of this report.

60. In addition to the 6 UNDP projects and the 16 projects submitted to UNIDO by the Chinese Mission, the following additional projects and related actions are recommended:

a) A proposal for sending experts on a short-term basis to suggest improvement of properties of polypropylene and applications development might be sanctioned under SIS. A draft project data sheet has already been prepared. The cost comes to US$ 18,000. It is hoped that this will result in a bigger project of considerable benefit to the country.

b) Two SIS projects of three week duration each might be sanctioned for technical consultation on petro-chemicals and polymers. The cost comes to US$ 25,000. These projects are likely to result in bigger projects including the Petro-Chemical Development Centre.

c) The Pesticide Development Plant project may be put up to the Programming Committee, suggesting a possible Special Purpose Contribution by the United Kingdom, amounting to a sum of US$ 438,600 (tentative).

d) Further thinking project formulation and programming will have to be done on the lines indicated by the Ministry of Economic Relations with Foreign Countries. Paragraph 49 may particularly be seen in this connexion.

e) An SIS project for plastics in building may be sanctioned for two man-months.

f) Prepare two draft project documents related to industrial management development and small computer utilization in industrial management, as described in Appendix IV (pages 10 and 11).

CONCLUSION

61. The work accomplished by the Mission can be summed up as follows:

a) Formulation of project documents for projects included in the reserve list of UNDP;

b) Response point by point to the sixteen proposals the country had submitted to the satisfaction of the Ministries concerned. In most cases care has been taken to ensure that short-term assistance leads to large-scale projects with significant impact.

c) Preparing the ground for future programming in its widest sense.

APPENDIX I

REQUESTS SUBMITTED TO UNIDO
BY CHINESE MISSION FOR FINANCING

Serial No.	Assistance Requested	Response of the Team	Remarks
1.	One (1) consultant to provide advisory service for the acquisition of manufacturing technology for the thermal power plant with a capacity of over 300,000 kw.	The new request for 2 consultants for 6-12 months each to provide technical assistance in matters involving design aspects of sectors of turbine-driven electric generators with a capacity of 100,000 kw, was thought to require first a preparatory diagnostic mission before going ahead further.	One SIS project will be formulated consisting of expertise total - 6 m/m max. Test equipment - max. $ 40,000* to fully assess the situation, define the best courses of action and at the same time assist in solving technical problems as far as possible. *(The amount required for test equipment purchase will be investigated before the project document is finalised.) (Appendices IV and V)
2.	One (1) consultant to provide advisory service for a joint venture instruments factory with a foreign company	It was agreed that it was necessary to field a consultant. It was stated that an attempt would be made to meet the request.	We think that a consultant should be provided under SIS for a period of 1 month. The cost would come to US$ 10,500. For a detailed record of discussions, please see Appendix IV (page 5).
3.	Two (2) experts (from Verein Deutscher Ingenieure of FRG) to help Shenyang First Machine Tool Plant improve its management.	It was agreed in principle that 4 m/m of expert services would be required for identifying problems and for finding solutions to a limited extent at 3 plants (i.e. Shenyang, Shanghai, Wu-Xi, as now being requested. It was important that problems of management in these plants were dealt with in a comprehensive manner. This may require more assistance in the form of a large-scale project.	The cost comes to US$ 30,000. We recommend that the project be financed from SIS. This project may very well prepare the ground for a large-scale project. The draft project data sheet will be prepared in Vienna. No commitment was made with regard to any larger project which may later be recommended. For details see Appendix IV (pages 5-6).

Serial No.	Assistance Requested	Response of the Team	Remarks
4.	Training of five (5) designers in the power plant system and five (5) designers in power transmission and transformation equipment in the USA and Switzerland.	We responded by saying that projects 4, 5 and 6 should be treated as one integrated project. We had already furnished drafts in this connexion which were found acceptable by the Chinese Authorities. We explained that while these projects were sent and certainly needed, it was not possible for us to indicate how these could be financed. We, however, stated that these were likely to receive sympathetic consideration. However, a final reply will come from UNIDO Headquarters.	The UN input involved in these proposals is of the order of US$ 185,000. It would therefore, not be possible to accomodate these projects within the Regular Programme of Technical Assistance. However, the projects are crucially important for the country. We, therefore, recommend that these should be put up to the Programming Committee urgently for consideration. It will be a good idea to negotiate with Special Purpose Donors with a view to getting suitable assistance. The cost would come to US$ 180,000. (see Appendix V)
5.	Training of two (2) technicians in the automobile exhaust gas purification, two (2) technicians in the dust removal and two (2) technicians in the noise control. They could be trained in Europe or Japan.		
6.	Training of two (2) designers in ball bearings in the USA or Europe .		
7.	One (1) or two (2) experts to provide advisory service to the Ministry concerned in China for drafting laws and regulations on investment and transfer of technology, etc.	The exact purpose of assistance was ascertained in the course of the discussions. It seems that the Government wants an expert to assist them in certain actual negotiations concerning transfer of technology. The expert has to explain what is involved in such transfer and to assist them also in drafting laws and regulations on investment. We responded by saying that it might not be necessary for an expert to come for 6 months or a full year; a period of 3.5 months in 3 phases was agreed on as adequate. We said that we were persuaded to believe that such assistance was necessary and that it would be a good idea to recommend it for the 3.5 months agreed on.	We recommend SIS assistance for a duration of 3.5 months. The cost will come to US$ 29,500. The draft project data sheet will be prepared by the Technology Group. For details see Appendix IV (pages 6-7).

Serial No.	Assistance Required	Response of the Team	Remarks
8.	Four (4) or five (5) experts on management of industrial enterprises to give lectures in China to train Chinese industrial enterprises management personnel.	We stated that while we fully recognized that the management of industrial enterprises was a high priority area, we wanted to be a little clearer with regard to the concept. We were told that the intention is that the experts concerned should spend some time in the country, visit factories to gain some insight into management problems, and suggest the kind of training required by the country. We also made it clear that the field of management was extremely wide and that the needs of the country were vast; and that the problem would by no means be solved in its entity by short-term assistance. In fact, any expert who may come to provide assistance is bound to suggest a larger and more comprehensive project of assistance.	We suggest SIS assistance in this connexion. A draft project data sheet will be prepared in Vienn The cost will come to US$ 38,000. We are definitely of the view, based upon our observations during visit to different industrial units in Shanghai, that management is a most crucial area of assistanc in the country. We think that the SIS mission may result in a larger projec possibly to be financed from IPF. For details see Appendix (pages 7-8).
9.	Eight (8) or ten-men (10) Chinese mission to visit Austria to conduct a study on the management of the industrial companies and enterprises.	We expressed the view that this was a welcome suggestion. We were, however, in no position to give any definite reply. We thought that it was likely to receive sympathetic consideration at UNIDO Headquarters.	We recommend that this should be financed from UNIDF. The best course of action will be to approach the Austrian Authorities in this connexion. Appendix IV (page 9).
10.	One (1) or two(2) experts to help the recorder factory improve the quality of its products.	We stated that based upon discussions and upon the visit of Mr. Tandon and Mr. Krajenbrink to the factory, we were convinced that technical assistance would be useful. We were of the view that a mission of two experts for a period of three months each would be helpful.	During the visit of Messrs. Tandon and Krajenbrink, it came to light that a number of problems required to be solved in this factory. The immediate needs of th factory cannot be properl met without the assistanc of a design expert who could cover all aspects cassette recorders and an industrial engineeri expert on all aspects o

Serial No.	Assistance Required	Response of the Team	Remarks
10: (contd.)			electronic equipment assembly. Some equipment will also need to be purchased as recommended by the experts, not only to assist in the maintenance of quality control. The visit to the Tape Recorder Factory in Shanghai and discussions concerning the proposal - please see Appendix V.
11.	One (1) or two (2) experts to help TV Set Factory in China improve the quality of its products.	We visualize that this SIS project will result ultimately in a large-scale project possibly to be financed from IPF.	During Messrs. Tandon and Krajenbrink's visit to the TV Factory in Shanghai it became evident that quality control and a certain degree of automation were required in the factory. It was urgently necessary to pro vide 2 quality control e One of them will concent on production methods whi the other will deal with sign simplifications. We recommend SIS assistance: 2 experts for a period of 3 months each and some equipment. The total cos will come to US$ 40,000. Details of the visit to the TV Factory in Shanghai and of the discussions with official of the Ministry are to be found in Appendix V.

Serial No.	Assistance Requested	Response of the Team	Remarks
12.	Sending two (2) technicians to Japan to study the manufacturing technology of organo-silicon.	We responded by saying that it would be a good idea if the proposal could be implemented. We informed the Chinese Authorities that we would make a recommendation accordingly.	We suggest that this proposal be financed from the Regular Programme of technical assistance. (Appendix III).
13.	Sending two (2) technicians to the USA to study the structural design and manufacturing technology for aviation tyres.		
14.	Sending two (2) technicians to UK, FRG or Switzerland to study the synthesis and application of plastic additives.		
15.	Sending two (2) technicians to UK or USA to study anti-corrosive technology for the chemical industry.		
16.	Sending two (2) technicians to West Europe to study the technology of metal coating for wearing parts of automobiles.	As requested, the pattern of identical fellowship training provided to Romania in the past will be followed, as suggested by the Government officials.	The costs come to US$ 10,000. For details of discussions with the Ministries concerned please see Appendix V (page 7).

APPENDIX II

Visit to the Ma Lu People's Commune, Jia Ding County, Shanghai

Mr. Tandon, Mr. Manning and Mr. Krajenbrink visited the Ma Lu People's Commune, Jia Ding County, Shanghai, on 23 July 1979, accompanied by Mr. Zhang Bingjing, Division Chief, Ministry of Economic Relations with Foreign Countries, Shanghai, and Mr. Shui Sha, Section Leader.

Background of the Commune

It is important to state in brief the background of the particular commune which was visited, along with the general hierarchical and organizational structure within which it functions. The primary and basic unit of a commune is the production team. Production teams are supervised by the production brigade. The brigades are responsible to the people's commune. The communes in turn are supervised by the county concerned, while the latter is answerable to the prefecture. Prefectures are responsible to the province concerned which is controlled by the central government. The Shanghai municipality has the status of a province for administrative purposes. The Ma Lu Commune belongs to the county of Jia Ding which is under the direct administrative control and supervision of the Shanghai municipality.

The population of the Shanghai municipality is 10,900,000 broken up as follows:

Urban area:	5,000,000
Suburban area:	5,900,000
	10,900,000

There are four suburbs which are divided into 10 counties. There are 207 communes in these ten counties of Shanghai.

Shanghai is the largest city of China and has the biggest industrial complex. Food has to be imported from other parts of the county but the communes are able to meet the requirements of vegetables and vegetable oils. The communes are not only engaged in agricultural production, but have in fact been running a number of industrial units mostly medium and small-sized. These factories are almost invariably agriculture-oriented and serve the lives of the people.

Information supplied by the Vice-Chairman of the Commune

The UNIDO team was welcomed by Mr. Sheng Qingrong, Vice-Chairman of the Commune's Revolutionary Committee, and Mr. Beng Yundien, Head of the commune's head office. Mr. Sheng welcomed the UNIDO team. He explained that the commune was established in 1958 with 17 production brigades and 147 production teams. There are 7600 families in the entire commune while the total of the population comes to little more than 30,000 persons. The cultivated area covers 2,281 hectars. The staple products are food, cotton and rape seeds. There are also small-scale industries. Apart from stock raising and sidelines occupations the gross product of the commune accounted to 34,540,000 yuan in 1978. Agriculture accounted for 6,940,000 yuan or 20% of the total. The contribution of industry came to 20,300,000 yuan or 58.8% of the total. Stock raising and sideline occupations accounted for 7,300,000 yuan or 21,2% of the total. The yield per hectare was as follows:

Wheat and rice	14.6 tons
Cotton fibre	1.14 "
Rape seed	2.34 "

There was very little industry in existence in the commune when it was set up in 1958. There was a total number of three blacksmiths. Some 200 persons however made bamboo ware and another 40 persons were engaged in processing food. The position now is that there are 63 factories today with 4,700 workers employed in them. These factories turn out 1,100 products. The net profit of industry in 1978 came to 4,900,000 yuan. As far as stock raising is concerned, some 40,000 pigs were raised. Out of these, 19,400 pigs were sold to the state, another 67,000 ducks and chickens were sold to the state. The sales of milk, fish and mushrooms were as follows:

Milk	440 metric tons
Fresh fish	460 " "
Mushrooms	185 " "

There are 38 electric irrigation stations. 99% of the area is irrigated. There are 219 medium and small-sized tractors with varying horse powers. Mostly, the 35 HP tractor is in use, but there are also 60 HP tractors and a few small ones with 10 HP. There are 31 trucks, 4 husking machines, more than 200 transplanters and 170 modern electric sprinklers.

The living standard of people has risen conspicuously, while the income per capita of the people living in the commune was 52 yuan in 1957, it came up to 256 yuan in 1978. The commune has established a pension fund for the aged which benefits more than 2,000 persons.

The commune also runs a hospital with more than 50 medical staff. There are 17 medical centres with 54 barefoot doctors. The co-operative medical system was established in 1970 with each person contributing 2 yuan per year.

There are 20 middle and primary schools and 300 teachers. All good students can go up to the junior middle school or the 8th class.

Employment opportunities have increased significantly with the development and expansion of industry.

The commune has accumulated 55 million yuan which is called the Public Accumulation Fund. 80% of this accumulation occurred due to the contribution of industry. The money ploughed back into the Public Accumulation Fund is used to promote and expand agriculture by building more tractors or installing electric irrigation systems. It is also used for building equipments for the expansion of industry and as working capital for manufacturing units. Moreover, a small proportion is used for the commune members' welfare including the pension fund and some expenses on education. The commune has a savings bank account of 2 million yuan which earns an interest rate of 2.6%.

The primary duty of the person living in the commune is the production team to which he belongs. If, however, he gets spare time he is permitted to work on his own private plot. The size of the private plot is limited to 50 square meters per person.

A total number of 23 persons are engaged in the administration of the commune at headquarters including the Chairman, the Vice-Chairman and the Director of the commune. Besides, 4 or 5 persons carry out administrative work for the brigades and a similar number for the production teams. Some more commune staff is engaged in the factories.

A total number of three crops are raised against two before the commune became into being. There are two rice crops and one beat crop a year.

Inspection of farms and factories

The team was taken out on a visit to farms and factories in the commune. We were shown an electric irrigation station which looks after the requirements of 140 hectare of cultivated area. One of the most impressing features of the irrigation system which came to light was the underground irrigation channels that had been laid out with a view to conserving water resources and to make the maximum use of cultivated land. Poultry and piggary management was found to be of a high order. There were a number of incubators in operations.

The team was shown the farm machinery station which runs the medium size tractors. It also saw a furniture factory and an integrated unit which makes automobile jacks. The unit has a foundry running on a cupola and there are other operations. Another unit making just gourmed powder, Japanese candles which are exported and baskets, was also visited. The unit is preparing to start making lemon concentrate. There is no doubt that the unit was very impressive; that the workers were doing their jobs skillfully and in an orderly manner; and that the overall picture was one of disciplined and organized work.

The mission also visited a family at their home. The house has six rooms including the kitchen. It is two-storied. The family consists of husband and wife, five children, daughter-in-law, a grand child and the mother-in-law. The house is owned by the family and was constructed at the cost of 7,500 yuan. The family has a private plot where they raise vegetable for their own requirements. We were told upon inquiry that it is possible to open saving bank accounts over which one has an interest of 3,7%. There is no income tax. The per capita income of the members of the commune depends upon the collective income of the commune. It is as high as 600 or 700 yuan a year in this commune close to Shanghai, with the result that members of the commune do not seek employment in factories. Communes located in backward areas with low incomes are subsidized from a fund called Public Reserve Fund at the commune level. 10% of the Accumulation Fund is used for this purpose. There is more pay for more work. Assessment of the work put in by each member is carried out each day. The figures are put together at the end of the year.

APPENDIX III

H. May - Report on Mission to China, 25 - 31 July 1979

A. SUMMARY

A series of discussions was conducted with Government officials responsible for development in the chemical sector with the following purposes:

1. Finalization of the project document CPR/79/019 Expert Services and Fellowships for Building Materials and Non-metallic Minerals (Mr. Biritz and Mr. May) and CPR/79/017 Fellowships and Study Tours for High-level Professionals working in the Textile Industry (Mr. Manning and Mr. May). These are submitted separately.

2. Agreement on implementation modalities of projects 12, 13, 14 and 15 in the additional list of 16 projects transmitted in Mr. Cao Cuibin's letter dated 11 June 1979.

3. Discussions on possible future UNIDO technical assistance in the chemical field.

Technical areas identified include strengthening or establishment of R + D centres, setting up pilot demonstration plants, training (group training, study tours and individual fellowships), twinning of institutions, expert advisory services in specific fields, organization of technical consultation meetings. These are listed in the table below:

Project title	Purpose	Proposed man months	Proposed source of financing
Petrochemical and Polymer consultation week	To discuss and review latest development and give consulting services to factories	6	SIS $ 25,000
Improvement in polypropylene production	Stabilization and application	4	SIS $ 18,000
* Study tour in cement production	Preparatory	2	RP $ 5,000
Cement Development Centre	Technical services training and R+D	60	IPF $ 2 - 10 mill.
* Study tour in prefabricated and industrialized building	Preparatory	2	RP $ 5,000
Centre for industrialized system of building	R+D, training, light weight materials	60	IPF $ 2 mill.
* High speed paper coating technology	Pilot plant for R+D training and technical services	48	IPF $ 3,285,600
* Pesticides Development Centre	Pilot plant for R+D training and technical services	36	UNIDF $ 4 mill.
* Petrochemical Development Centre	Pilot plant for R+D training and technical services	60	IPF $ 2 mill.

Project title	Purpose	Proposed man months	Proposed source of financing
* Synthetic Fibre Demonstration Plant	Training, R+D	36	UNIDF $ 4 mill.
* Plastics Technology Centre	Improvement in processing technology, application in rural development and agriculture	48	UNIDF - Austrian traini. programme - as initial step followed by twinning etc. $ 1.5 mill.
UNIDO HQ staff visits	Consultations if necessary to finalize details on above areas plus pharmaceuticals	6	UNIDO RB or TS

* Draft project documents or project concepts were given to the respective ministry officials.

Explanatory Notes

1. The projects proposed under SIS, RP and TS may be scheduled for implementation in 1979/1980.

2. Those proposed for UNIDF and/or IPF financing would be subject to availability of funds. The proposed UNDP/UNIDO inputs given in the table only serve to indicate the approximate order of magnitude of the costs based on UNIDO's experience with similar projects in other countries.

3. Preparatory activities such as study tours, fellowships and expert advice should be carried out in order to determine the prerequisites for the successful implementation of the large scale projects. Some of these preparatory activities have already been included in the list of "approved" projects. It is suggested that further details on drafting project documents should be worked out by visiting UNIDO HQ staff with the counterpart staff in China.

Statistical Information

Production statistics related to the chemical industry published by the State Statistical Bureau on 27 June 1979 (Beijing Review No. 27) gives the following:

	1978 (million tons)	1977 (million tons)	Percentage increase
Coal	618	559	12.4
Crude oil	104.05	93.64	11.1
Cement	65.24	55.65	17.2
Sulphuric acid	6.61	5.375	23.0
Soda ash	1.329	1.077	23.4
Caustic soda	1.64	1.386	18.3
Chemical fertilizer (based on 100% effectiveness)	8.693	7.238	20.1

	1978 (million tons)	1977 (million tons)	Percentage increase
Insecticides	0.533	0.457	16.6
Ethylene	0.3803	0.3027	25.6
Plastics	0.679	0.524	27.6
Synthetic pharmaceuticals	0.407	0.352	15.6
Chemical fibres	0.2846	0.1898	49.9
Machine made paper and paper board	4.39	3.77	16.4
Sugar	2.267	1.816	24.8
Salt	19.53	17.1	14.2
Synthetic detergents	0.324	0.257	26.1

From the figures, it was quite clear about the important development of the chemical industry.

B. DISCUSSIONS WITH MINISTRY OFFICIALS

Messrs. Zhang Bingjing, Division Chief and Xie Weirong, Official, the 6th Department, Ministry for Economic Relations with Foreign Countries, accompanied Mr. May in most of the discussions. Their kind assistance is hereby gratefully acknowledged.

I. Ministry of Textile Industry

Mr. May assisted Mr. Manning in discussions concerning the study tour of Chinese officials. It was agreed that 5 extra days be allocated to visit the FRG in order to visit the synthetic fibre institute of Stuttgart (Professor Herlinger) and some German manufacturing plants.

UNIDO's activities in synthetic fibre demonstration plant and recycling of textile waste were conveyed to the Chinese officials.

II. Ministry of Chemical Industry

Ministry officials: Wen Anjing, Division Chief of Technical and Scientific Co-operation
Su Zexiang, Interpreter
Fu Meimei, Technician

The Ministry is responsible for all manufacture of chemicals. These include agrochemicals (fertilizers and pesticides), petrochemicals (excluding refining), detergents, reagents, auxiliary chemicals, processing of rubber goods, basic chemicals, mining and refining of elements such as sulphur, phosphorous, boron and potassium. In addition, plant design and engineering as well as institutions for research and development are also the responsibilities of the Ministry. In the case of plastics processing the responsibility is divided between this Ministry and the Ministry of Light Industries.

a. Notes on agreed implementation of project numbers 12, 13, 14 and 15 in the additional list of 16 projects (Mr. Cao Guibin's letter dated 11 June 1979)

1. These fellowships would have to be financed from the Regular Programme.

2. Because of the very limited RP funds available, it was agreed, that all fellowships duration would be reduced by half namely: two fellows for a period of 3 months each (original 6 months) for each of the four projects).

3. The proposed starting date for all fellowships was second half of 1980.

4. UNIDO was requested to place all the fellows in pairs under each subject in one location. The fields of study could be somewhat different but complementary to each other.

5. Proposed fields of work

Ref.No.	Subjects	Location
12	Organo-silicon technology i) methods of manufacture ii) laboratory work including R+D, analysis and characterization iii) applications	Japan, USA, UK or FRG
13	Aviation tyres i) structural design ii) material selection iii) reinforcement by fibres iv) influence of additives v) testing in laboratory and in practical use	USA or UK
14	Synthesis and application of additives to plastics i) synthesis of chemical additives to polyolefins (LDPE, HDPE + PP) ii) testing and analysis of resulting product iii) synthesis and evaluation of selected plasticizers to PVC iv) product testing and analysis	UK, FRG or Switzerland
15	Anti-corrosion technology i) theoretical study of principles of corrosion of metals under stress (high pressure ammonia reactor) ii) non-destructive testing of equipment iii) methods of corrosion prevention and monitoring iv) possible use of alternative materials of construction e.g. GRP	UK or USA

Ref. No.	Subjects	Location
15 cont'd.	v) study corrosion problems in urea, ammonia and petrochemical plants and methods of prevention	

b. Discussion on future technical assistance projects
(please refer to the table)

1. Synthetic Fibre Demonstration Plant

It was agreed that the study tour under a textile project could be considered as the preparatory phase.

2. Pesticides Development Centre

This subject was of special interest because of the importance to agriculture. It was suggested that a UNIDO staff member should visit China to have more detailed discussions and prepare a final agreed project document.

3. Petrochemical and Polymer Consultation Week

Experts would conduct lectures, discussions and demonstrations as well as to exchange information and experience with the Chinese counterparts. These are typical projects successfully carried out by UNIDO in other countries.

4. Improvement in polypropylene production

This project was proposed by the Ministry for possible UNIDO support. The problems to be dealt with are stabilization systems colouring, composite materials production, applications in agriculture, packaging and upholstery etc.

5. Petrochemical Development Centre

Opportunity was taken to visit the Peking Petrochemical Research Institute and to have discussions with the following officials:

Liang Zhinu, Deputy Director
Soong Xiu Xiu, Deputy Chief Engineer
Wang Zhinshen, " " "
Tang Shipei, Chief of Research Laboratory
Shan Leng, Engineer

The Institute has a staff of over 1000 of whom about 50% are qualified professionals. It has 9 groups of laboratories and 2 pilot plant buildings occupying a total of 40,000 square metres. The Institute was established in 1958 and has undergone a number of expansions. It is one of the Institutes directly under the Ministry and conducts research work on all aspects of petrochemistry except refining. 3 laboratories were visited namely polymer, instrumentation and organic chemicals. The impression gained was that the Institute has an excellent knowledge of modern development with well equipped laboratories although some equipment appeared to be rather old. New equipment items such as electron microscop and Brabender plastograph were already under order.

A number of instruments are made in the country or by the Institute itself. For example, the gas chromatography and universal tester machines are all made in China. They have been noted for future reference as a means of introducing them where applicable to some UNIDO projects in other countries.

The idea of Petrochemical Development Centre was discussed and received interest. UNIDO's support would be needed in organising study tours and fellowships abroad, supply of certain laboratory equipment specially that to be connected with existing parts as extensions, environmental protection and the introduction of certain more sophisticated computer technologies.

III. Ministry of Building Industry

Ministry officials: Yu Xi-Tao, Head of Division
Wang Ming-You, Officer
Chang Chun-Fu, Officer

a. The project document CPR/79/019 was finalized by Mr. Biritz and Mr. May with the above officials.

b. Discussion on future technical assistance

1. Cement Development Centre

The proposal on study tour was received with interest. It was requested that additional information concerning the establishment of a Cement Development Centre preferably attached to an existing cement plant should be provided by UNIDO. The visit of a UNIDO staff member to have more detailed discussions to determine the prerequisites for the successful implementation of a large-scale project would be welcome.

2. Prefabricated and industrialized building

The remarks under 1. are also applicable here. It was further stated that the technologies on light weight building materials and light weight construction systems should also form an integral part of this project. Interest was expressed on the use of gypsum, hollow panels, expanded materials and agricultural waste for building and construction purposes.

On the other hand GRP and FRP systems using synthetic resins and fibres would not be of immediate interest. However, the study of carbon fibres for industrial use could be considered in the near future. It was agreed that UNIDO would send published information connected with the above subjects to the Ministry via the appropriate channels.

IV. Ministry of Light Industry

Ministry officials: Chen Wenying, Engineer, Division Chief, Department of Plastic and Chemical Industry
Zhou Yanling, Technician, Department of Plastic and Chemical Industry
Zhang Luan, Technician, Department of Plastic and Chemical Industry
Nie Kiujuan, Branch Leader, Beijing Municipal Plastic Company
Hu Shouzu, Engineer, Paper Making Department

Wang Weiwan, Engineer, Paper Making Department
Dong Zhiyuan, Engineer, Paper Making Department
Li Wenyan, Engineer, Paper Making Department
Sun Huiying, Engineer, Paper Making Department
Zhao Weici, Project Official, Department of Foreign Affairs.

a. The Ministry is responsible among other things for the production of paper and paper board, processed plastics, salt, leather, glass, ceramics, handicrafts, electrical goods, watches, bicycles, etc.

b. Discussion on possible UNIDO technical assistance

1. High speed paper coating technology

The project concept was received with interest. However, additional information concerning the nature of additives, equipment types together with samples and pictures describing this process will be necessary for further review by the Chinese authorities. In addition, raw materials bleaching techniques and environmental protection should also be studied. It was also thought desirable for a UNIDO staff member experienced in this field to visit China for more detailed discussions.

2. Plastics Technology Centre

The project concept was well received. Special interest was expressed in setting up a centre for application development in agriculture and rural development and building construction. R and D to improve quality and introduce new processes will form another objective of the centre.

With regard to training, the Austria/UNIDO programmes would be of assistance. It was suggested that Chinese participants should participate in these programmes and if possible to continue some R and D work after completion of the group training programme. UNIDO was requested to approach the Austrian authorities accordingly. Other areas of interest for the centre include development of biaxially oriented and stretched polypropylene, polyurethane foams and packaging. Information relating to plastics in agriculture (CIPA publications), equipment on biaxially oriented polypropylene has also been requested.

V. State Petroleum Corporation of Ministry of Petroleum

Officials: Hu Niejian, Officer-in-Charge, Technical Co-operation
Fu Zhida, Officer
Tao Dunko, Engineer

a. The Corporation expressed interest in participating in the Technical Consultations on Petroleum Processing. A letter of invitation together with aide-mémoire should be sent to the Corporation as soon as the project has been finalized.

b. The Corporation will be interested in co-operation on recycling of waste oil.

c. An interest was also expressed in modernizing old refineries. Any information in this respect from UNIDO will be welcome.

VI. State Pharmaceutical Administration of China

Officials: Zhao Shaofan, Officer-in-Charge
Zhang Shiulu, Technical Officer

The Administration was established in January 1979 having taken over the responsibilities related to pharmaceuticals previously shared by 3 other ministries. The Administration is organized with 4 State Corporations.

a. Chinese medical industry corporation (synthetic drugs)

b. Medicinal plants company (traditional medicine)

c. Medical implements corporation

d. Medical marketing company (distribution)

In addition, the Administration has a number of research institutes.

Being a very new state organization directly under the Council of Ministers, the Administration is, at present, not in a position to undertake any co-operative projects with UNIDO. However, in time the areas of co-operation could be defined with UNIDO. In this connection the visit of a staff member in this field would be welcome in the future. Study tours to China have already been organized for groups of pharmaceutical experts from Thailand, Nepal and Bangladesh.

Possible areas of co-operation with UNIDO in the technical assistance programme are indicated below:

1. Synthesis of antibiotics

2. Training abroad

3. Production of medical implements and replacement of internal organs

4. Materials for plastic surgery.

Participation in future at UNIDO consultation meetings and other technical meetings would be of interest.

APPENDIX IV

L.F. Biritz - Report on Mission to China, 16 - 28 July 1979

A. GENERAL OBSERVATIONS AND COMMENTS

The writer, as a member of the UNIDO Programming Team led by Mr. N. Tandon, dealt with several substantive subjects, but particularly with those related to industrial management and the transfer of technology (i.e. licensing, joint venture agreements, etc.). During the many discussions with officials and factory visits made, some relevant, basic impressions could be formed that might be important for future technical assistance activities, and these are summarized here, before the description of individual discussions related to specific projects, future project concepts and factory visits.

Industrial Management - One of the main shortcoming of the entire industry of China is the lack of expertise in modern production (i.e. manufacturing) management, such as inventory control, production rationalization and scheduling, maintenance management, etc., in financial management, particularly related to (standard) cost accounting and cash-flow management, and in the application of computers in all aspects of production, financial and general management (MIS, EDP). It appears that this lack of industrial management expertise is one of the major causes of factories operating below potential production capacity. This shortcoming is fully recognized by the Government and the need for technical assistance on a massive scale to improve the cumulative industrial management capability of the country will be needed for some time to come. The most formidable problem is the sheer size of the country and the number of industrial enterprises involved, in the order of 300,000. The task will be not only the development of entirely new and innovative methods for diffusing (i.e. teaching, transferring, "inocculating") management know-how speedily on an unprecedented scale but also of unique industrial management styles and approaches fitting best into China's social, cultural and political structure.

Transfer of Technology - In view of the new law promulgated enabling outside investment in China's industry in form of joint ventures, licensing and other means, there is great need for advice and assistance not only related to the formulation and finalization of specific technology transfer agreements with individual enterprises, but also in developing indigenous capability in this field. The reason is that presently China has very little experience in these matters. Therefore, the development of "technology transfer managers" is urgent and most important. In this context there might also be a need for determining the needed institutional structure for technology transfer and the corresponding assistance for establishing or strengthening such institutions.

Industrial Manufacturing - All the factories visited were in excellent physical condition. The plants were orderly and clean, the machines well maintained and properly operated. The workforce appeared to be well motivated and very industrious. There is good reason to assume that this is generally

the case in all of China's industry, a most positive factor for fast industrial development. Undoubtedly, design and manufacturing technology is lagging behind in many fields, also requiring immediate attention and assistance. But this is now being actively pursued by the Government on a broad scale and some remarkable progress can be expected in the coming years.

Improving Machine Design - Although machine tools made in China appear to be of sound design and good quality, there is definitely room for design improvement. One possible method would be, at no added direct cost (as suggested to the Officials), that new, modern machines purchased from abroad are first shipped to the factories specialized in the manufacture of the particular type of machines, so that they have the opportunity to inspect and study these in depth in order to learn new design elements and concepts that could be in turn incorporated into the machines made in China. Only after the particular machine tool factory has studied the new, foreign machine, should this be delivered to the factory that ordered it for its intended use.

Establishing and Strengthening the Activities of Technological Societies During the visits and discussions to the various factories it became evident that technological societies are not functioning vigorously enough to help the dissemination of technological advances made within the country itself. This is, however, most important for improving the level of technology within specific industrial sectors through frequent exchange of information among practicing, factory technologists. It is recommended that such technological (not scientific) societies are strongly supported and encouraged to achieve a synergistic interaction within industry through frequently held, regular meetings (i.e. at the local and regional level in particular).

B. DISCUSSIONS PERTAINING SPECIFIC PROJECTS

(a) IPF Project

DP/CPR/79/019 - Expert Services and Fellowships for Building Materials and Non-Metallic Minerals

There were 2 meetings held with Officials of the Ministry of Building Materials Industries on 18 and 25 July 1979 in order to finalize the already transmitted project document draft. The discussions were held with the following Government Officials:

Mr. Yu Hsing-tao	Head of Section, Foreign Department Ministry of Building Materials Industries
Mr. Wang Meng-yen	Staff member
Mr. Chen Chuan-wang	Interpreter

The Officials were very well prepared as they fully studied the submitted draft project document and had a complete Chinese translation of the document at hand. The document was thoroughly reviewed and corrections and changes,

all minor, were made on the draft project document. This is now ready for final typing and submission to UNDP as well as the Government of the People's Republic of China.

The specific comments and changes were:

a) The project duration remains 1 year; with the starting date being January 1980;

b) The total cost of the project will remain $ 107,900;

c) The budget will be readjusted so that the equipment component is utilized for any added costs required for the fellowship training and expert components. The remainder, if any, will be left under the equipment component, to be utilized partly for technical books;

d) In the text of the Budget Part of the Project Document the stipulation might be added that "the budget does not provide for fellowship language training, if such is needed, and should be provided over and above the established budget."
(Note: During the general discussion this point was considered and elaborated in detail, whereby the conclusion was reached that the cost of language training under all UNDP project should be taken up soonest with UNDP, since in the case of the People's Republic of China a considerable amount of such intensive language training of fellowship candidates can be expected.)

e) The 2 Experts in Marble Processing Technology should have different specializations, namely, one of them should be an Expert in Marble Quarrying while the other in Marble Processing. The Officials indicated that the more serious problem area is related to marble quarrying operations. It was also requested that the experts also give lectures in their field of specialization and that this is reflected in the Project Document and the respective Job Descriptions.

f) Names of several companies were provided, in addition to those already mentioned in the Project Document, where training of fellows could be carried out.

g) All parts of the Project Document referring to "stone, clay products and concrete products" and "silicate products" should be changed to "sand - lime - bricks" as this is the specific technology of interest.

(b) Projects submitted by the Mission of the People's Republic of China to UNIDO through the letter of Mr. Cao Guibin to Mr. F.Carré, dated 11 June 1979

Out of the total of 16 projects, the writer was involved in discussions and/or finalization of 7, as described below. (The summary of all projects can be found in Appendix I.)

Project 1: Advisory Service for the Acquisition of Manufacturing Technology for Thermal Power Plants with Capacity over 300,000 KW.

Two meetings were held with Officials of the First Ministry of Machine Building, on 19 and 20 July 1979, and a visit was paid to the Beijing Heavy

Electrical Machinery Plant on 25 July 1979, followed by another short concluding meeting. (The visit is described in Appendix V.)
The discussions were held with the following Government Officials:

Mr. Tian Wenyuan	Head of Department, Foreign Affairs Bureau
Mr. Wang Changde	Engineer
Mr. Su Zhaeji	Engineer
Mr. Zhang Xi	Engineer

The Government has not yet finalized its approach for the first meeting and requested more time.

At the second meeting the original request (i.e. technology transfer assistance) was completely changed and instead a request for 2 experts, each for 6 to 12 months, was put forward to assist in developing the present technology further, apparently abandoning the idea of licensing. One expert was to be a specialist on the manufacturing technology of large steem turbines and one expert on the quality, specifications, quality control and testing methods related to steem turbines manufacture. Because of this drastic change in technical assistance request, the entire situation was discussed in great depth and it was agreed that Mr. Krajenbrink and the writer will visit the plant during the second week of their stay in China to decide on the nature of immediate assistance requirements.

Initially, 2-3 month expert assistance was thought to be advisable to study the situation in depth and, based on the findings, recommend possible approaches for establishing in China the manufacturing capability for such large steem turbines, i.e. either through self-development (with help of experts) or through transfer of technology. It was agreed that the exact technical assistance to be provided will be determined after the plant visit.

The plant visit revealed the following major problems: "leaky" castings in high pressure steam line components; some difficulties in obtaining large, defect-free load bearing (e.g. rotor) castings; turbine blade corrosion (the blades are forged and machined); less than optimal turbine design causing vibration (i.e. electromagnetic) in large generators, resulting in far too early and frequent maintenance shutdowns; some material problems used in the construction of the generators.

In view of the above the conclusion was reached that a short but intensive diagnostic preparatory assistance (2 experts, 3 months each) might be advisable to define exactly the problem areas and the assistance input requirements. Only when this is completed should the decision be made whether the best route would be licensing (i.e. "technological quantum jump") or technical assistance-based internal development for upgrading the technology.

Project 2: Advisory Service for Joint Venture Instruments Factory with a Foreign Company

This project was discussed with the Officials of the First Ministry of Machine Building (see list of names under Project 1, above) on 19 and 20 July 1979.

The project is considered very urgent by the Government in view of the already advanced state of negotiations with a specific company (possibly FOXBOROUGH) and they would like to obtain the services of a consultant for 1 month as soon as possible, and not later than the last quarter of 1979. The expertise required is in electrical instruments of all types and particularly those used in power generation and power transmission systems and electrical industrial control equipments. In addition, the expert is expected to lecture on the subject of technology transfer.

A job description for the expert was provided by the Government to the writer for transmittal to the Section at UNIDO responsible for the implementation of the project.

Project 3: Management Assistance to the Shenyang First Machine Tool Plant

This project was discussed with Officials of the First Ministry of Machine Building (see list of names under Project 1) on 19, 20 and 25 July 1979.

During the first meeting the project concept was formulated and agreed upon along the following lines:

Shenyang is about 1000 kms North East from Peking. The plant has 6 - 7000 workers and its main products are machine tools, lathes in particular. It appears to be a completely self-sufficient plant, including the foundry making the necessary castings. The problem area is in general management and in particular production management. They have purchased two small computers and these are not properly utilized. The Ministry wishes to improve the management system of the plant in an exemplary manner so that this acquired management know-how can be transferred to other similar manufacturing enterprises. During the ensuing discussion the consensus was reached that the planned preparatory assistance project will only analyse the situation in the plant and make recommendations for a follow-up large-scale project to improve the management of the factory, but it can solve only few of the actual problems for which a much longer period and more extensive expert inputs and fellowship training will be necessary. The follow-up large project is expected to have a 2 year duration with the provision of 4-5 different types of manufacturing management expertise and related training. The magnitude of the project is estimated at or over US$ 300,000.

The present assistance is very urgent and Government officials would prefer implementing in 1979, although early 1980 would be acceptable. As indicated previously, FRG experts are preferred for the preparatory mission, lasting four weeks, as foreseen in the submitted project concepts. The two experts should carry out their assignment jointly.

During the second meeting the project was again brought on the agenda, quite unexpectedly, by the Government officials. They have provided job descriptions for the experts and additional background information for the project. The wish for the extension of the project to the Shanghai Machine Tool Plant was also expressed. This plant employs about 7000 people and its main product line is external grinding machines. The Wu-Xi plant located about 50 km from Shanghai and employing about 5000 people, makes most of the internal grinding machines. To the suggestion to tackle all three plants at once to improve their management, the officials reacted positively and the following plan was decided:

a) The duration of the two expert missions will be extended from one month to 2 months each;

b) They will start their assignment at Shenyong and spend four weeks there;

c) After that they will spend three weeks at the Shanghai plant and one week at the Wu-Xi plant.

The objective of the short-term assistance will be to determine what management shortcomings exist in these plants and, to what extent are their problems similar. In case of expected similarity among the three plants, the follow-up technical assistance project to improve the management of these plants could be formulated in such a manner that it is implemented simultaneously at all three locations. Furthermore, and in view of the fact that there are several hundred major-size machine building plants in China whose management problems can be expected to be similar to these three plants, the project will have to be "transferable" to other plants. The officials expressed hope that the project can be started soon.

Project 7: Assistance in Preparation of Legislation Regulating Foreign Investments and Technology Transfer

This project was discussed in great depth with Officials of the First Ministry of Machine Building (see list of names under Project 1) on 19 and 20 July 1979.

The Ministry presently deals with a number of foreign enterprises regarding various types of technology transfer agreements (licensing, know-how, joint ventures, etc.). The project, as submitted, foresees 3 experts. In view of the other planned projects, however, one expert might suffice for the start, namely a Consultant on Technology Transfer (proposed post 11-02). The expert should have extensive experience in the field of engineering and machine building industries, including automotive and related industries, since this sector is the responsibility of the First Ministry of Machine Building. The Expert on Technology Transfer Laws (11-03) could be omitted in view of Mr. Mohr's expected arrival, as he covers this subject. The Consultant on International Foreign Investment (11-01) could also be omitted, and the expert provided under the Project should lecture in this field.

For the second meeting, Government officials brought along the job description for this project. As agreed, the services of only one expert were requested, but it was noted with great surprise that this was increased from the original 6-10 weeks to 6-12 months. During the ensuing detailed discussion it was agreed that the expert should be provided for a duration of 3,5 months (14 weeks), split into three missions as follows:

1st mission, 6 weeks duration:

Lecturing by the expert and the provision of background material; also inputs into ongoing technology transfer agreement formulations.

2nd mission, 4 weeks duration:

Approximately three months after the completion of the first mission; more emphasis on advising on specific technology transfer agreements.

3rd mission, 4 weeks duration:

Same as second mission above.

The Government officials also became convinced during the discussions that maximum utilization of expert inputs will be possible in this manner. For example, the Government can send material (such as draft joint venture agreements) to the expert so that he can study these and prepare himself before embarking on his next mission.

During the project it should also become clear the type and magnitude of future assistance required in the field of technology transfer and related possible institution building.

Project 16: Fellowship for 2 Technicians to Western Europe to study the Technology of Metal Coating for Wearing Parts of Automobiles

This project was also discussed with Officials of the First Ministry of Machine Building (see list of names under Project 1) on 19 July 1979.

Two fellowships, for the duration of 3 months each, are desired in the manufacturing technology of high wear automotive machine component, such as piston rings, crank shafts, gears, cam shafts, valves, etc. The Government Officials referred to a successful UNIDO assistance to Rumania in this field and they would like essentially to have the same training repeated. The country (or countries) where the training is to be carried out could be the same as it was the case in Rumania, although other countries with the proper training opportunities are also acceptable, including the United Kingdom, Western Germany, Sweden, the USA, Austria, etc.

Project 8: Industrial Management Development Advisory Mission and Seminar for Top Executives

The meeting was held on 19 July 1979, with Officials of the State Economic Commission:

Mme. Chi Shu-hua	Head of Department, State Economic Commission
Mr. Wu Ze-shie	Staff member
Mr. Zhan Ing	Staff member
Mr. He Ming	Staff member

Mme. Chi stated that the project concept as presented is acceptable to the Government. The experts and consultants are to visit a number of industrial enterprises and factories to assess management practices and to identify management shortcomings. The experts and consultants are also expected to give specific lectures on various management subjects to high-level national and provincial officials of the State Economic Commission, of the Provincial Economic Commissions and to managers of large, important factories.

Mme. Chi expressed hope that the Seminar, as outlined in the project proposal, will be implemented as soon as possible. An agreeable date was set at or after March 1980. (Not February, when the Spring Festival takes place.) Since we did not receive guidance as to the subject of the lectures, the approach for the Seminar will have to be developed by UNIDO. It appears that the topics should deal with the following:

a) General Concept of Industrial Management (i.e. optimum utilization of resources within the micro-economic enterprise context);

b) Special Aspects of Industrial Management and Interrelations Among These (i.e. production - financial - sales - physical resources management, etc.);

c) Specific Topics Related to Production Management, as these are of utmost interest to Government Authorities at the present time: modern concept and methods of production planning and control, inventory control, managed maintenance systems, use of computers for production control, financial control, production scheduling, inventory control, etc.;

d) Financial Management: particularly modern cost accounting methods;

e) Introduction to Computer Systems for Management: integrated Electronic Data Processing (EDP) system;

f) When, Where and How to Utilize Mini-and Micro Computers;

g) Concepts of Productivity (labor versus capital intensity);

h) Management Approaches in Various Countries;

i) Modern Concepts of Personnel Management and Motivation.

It was also agreed that the consultants should conduct discussions with participants in order to gain insight into existing management practices in China and to determine what type of management training and on what scale is needed in the country in order to improve its management capabilities and the productivity of its enterprises.

The total duration of this project should be 6 weeks whereby 2 senior management experts with broad experience should be present continuously with several other short-term specialists (1-3 week duration) giving lectures on specific topics.

Project 9: Study Tour of High Officials on Industrial Management (in Austria)

This project was discussed with Officials of the State Economic Commission (see list of names under Project 8) on 19 July 1979.

Mme. Chi stated that the Government considers this study tour very important. Its timing should fall between March and June 1980, after Project 8 (Industrial Management Development Advisory Mission and Seminar for Top Executives) has been implemented.

The study tour is to be organized for 10 high-level officials concerned with management of the enterprises in China. The duration of the study tour should be 3 weeks and desired visits made to industries as follows: steel, engineering and machine building, light engineering and consumer goods, electric appliances (e.g. washing machines, refrigerators, radios, television sets, etc.), bicycles, food processing and textile. Other industries might be added. They wish to visit industrial enterprises in Vienna, Graz and Linz, but any other location should be included as deemed advisable by the Austrian Government.

It was suggested to Mme. Chi that the study tour of the Officials should be extended by one week to visit UNIDO. This would be an excellent occasion to familiarize the officials with UNIDO, its work, programmes and capabilities. Mrs. Chi has concurred with the idea and believes it would be very useful.

C. DISCUSSION WITH OFFICIALS OF THE STATE ECONOMIC COMMISSION ON INDUSTRIAL MANAGEMENT

This discussion took place on 26 July 1979, and it was the result and extension of discussions held by Mr. Becker-Boost during his mission (see UNIDO/IOD.276, Annex 16). Officials present were:

Mr. Chang Yen Ling,	General Secretary, State Economic Commission
Mme. Chi-Shu-Hua	Head of Department, State Economic Commission
Mr. Wang Zichuan	Deputy Director, Sixth Department, Ministry of Economic Relations with Foreign Countries

A general discussion on aspects of industrial management started off the meeting. Mr. Chang has stated that the country's present shortcomings in industrial management are recognized and that major efforts will be necessary for upgrading industrial management capabilities in China. He also fully recognizes the magnitude of the problem, considering that China has about 300,000 industrial enterprises, all of which require at least some management improvement. It was pointed out that to accomplish this in a relatively short time and on the enormous scale required, new approaches and new methods of "management transfer" will have to be developed, beyond the "known and tried" conventional management training methods. Also, China will have to develop its own, specific industrial management styles and approaches best suited for the country's social, cultural and political structure. Consequently, the various management methods and techniques from

all over the world will have to be studied, evaluated for their potential usefulness to Chinese conditions, properly adopted and introduced on a broad scale.

On Mr. Chang's question as to what specific industrial management shortcomings require the most urgent remedy, primarily production management, financial management and application of computers in industrial management were the most important topics identified, based on the findings resulting from visits to various factories. He agreed with this assessment and diagnosis and asked for specific technical assistance project concepts to improve quickly industrial management in China. Consequently, 3 specific concepts were put forward:

1. Upgrading the Management of Specific Factories and Utilizing these as "Teaching Plants"

For example, the management of the Shenyang, Shanghai and Wu Xi Machine Tool Plants should be upgraded as the first step. Once this is completed, these plants should be used as "in-plant management training centres" for other factories. The newly trained plants in turn should also take the role of in-plant management training centres and so on. This way an exponential effect can be attained, greatly accelerating the management know-how transfer process. The related technical assistance project will have to have 2 distinct phases: (a) upgrading the management of the first few factories, (US$ 500,000; 2 year duration); (b) training these factories in methods of training the other factories (US$ 600,000; 3 year duration). The above is applicable to a single sector only.

2. Training Centre for the Use of Small Computers in Industrial Management

Establishing such a Centre would take 2 years. The inputs required are:

- 1 Expert in Small Computer Operating Systems and Language Compilers
- 1 Expert in Basic Programming
- 1 Expert in Applications Programming and MIS Systems Design
- Equipment (Small Computer and 1 Mini-computer; total US$ 100,000)

The total cost of the project is estimated at US$ 460,000. During the first year the national instructor staff would be trained by the experts and training material (in Chinese) developed. During the second year 2 training courses on the use of computers in industrial management applications (working out real problems of various factories) would be carried out under the supervision of the experts.
(Note: this Centre could and should be incorporated as soon as feasible into the "Industrial Management Development and Research Centre" described in the following.)

3. Industrial Management Development and Research Centre

This would be a very large scale project, estimated at US$ 5 million, having a duration of 5 years. A large number of expertise would have to be provided and an even larger number of fellowships would have to be implemented. The provision of a considerable amount of equipment would also be necessary.

The purpose of the Centre will be to spearhead all activities related to industrial management development and management know-how transfer methods and approaches. Actual management development work would start already during the second year of the project, and by the end the national staff trained abroad should be able to take over all functions at the Centre until then performed by the experts. As soon as the Centre reaches a satisfying operating level, it should provide leadership in establishing more such Centres in other parts of the country where industry is concentrated.

Mr. Chang has welcomed the above proposed technical assistance concepts and requested that the corresponding draft project documents are submitted to the Government for study as soon as possible. The following time-plan was agreed upon:

Project 1: Upgrading the Management of Specific Factories and Utilizing these as "Teaching Plants"

The project document will be prepared upon completion of Project 3 requested by the Government in Mr. Cao Guibing's letter of 11 June 1979 (i.e. "Management Assistance to the Shenyang Machine Tool Factory")

Project 2: Training Centre for the Use of Small Computers in Industrial Management

The draft project document is to be submitted by September 1979.

Project 3: Industrial Management Development and Research Centre

The draft project document is to be submitted by December 1979.

In conclusion, Mr. Chang reemphasized that the Government considers both already requested projects, Project 8: "Industrial Management Development Advisory Mission and Seminar to Top Executives" and Project 9:"Study Tour for High Officials on Industrial Research (Austria)", as very important and expressed hope that nothing will stand in the way in their timely implementation.

D. PLANT VISITS AND IMPRESSIONS

Visit to the Shanghai Machine Tool Factory, 23 July 1979

Officials met:

Mr. Liang Renzhe	Deputy Chief Engineer
Mr. Zhao Yiyen	Chief Accountant
Mr. Sheng Zhengcheng	Chief Dispatcher
Mr. Lin Zhikang	Secretary of the Director's Office

The factory specializes in making external gear-, crank shaft-, surface- and double disc grinding machines; a total of about 200 types of different machines are produced, of which 50 types are made each year on rotation basis. The factory consists of two large, practically independent, plants, one producing surface- and other more simple grinders, while the other the gear-, crank shaft- and other high precision grinders. The plant has its own foundry

making all iron castings, employing two 10 ton cupolas. They also make hydraulic equipment, particularly gear pumps for their own machine production. In addition, there are a heat treating, finishing, and maintenance shops. The plant is well organized, very orderly and clean, making an excellent impression (as all other plants visited).

The plant employs about 6,000 workers of which little over 3,000 are involved directly in production. Total output of factory: about 2,000 machines per year; Yuan 50 million (US$ 33 millions) worth of production. The productivity of the plant is therefore, Yuan 8,300 (US$ 5,500) per worker overall, or Yuan 16,600 (US$ 11,000) per production worker. Most of the production is for the market in China; only about 10% is exported.

During the ensuing discussions two specific areas for technical assistance could be clearly established. One is the need for assistance related to all aspects of production management, i.e. inventory control, production scheduling, product line rationalization and simplification, including common components utilization; components lead time determination; most efficient batch size, etc. (To indicate the magnitude of the problem, presently they maintain an inventory of 10,000 product components). The other area for technical assistance is related to financial management, particularly the introduction of modern cost accounting methods and cash flow analysis and optimization. There was particular interest in modernized standardized cost accounting procedures. There is clear need for assistance in organization and management systems development.

During the discussions the introduction and utilization of computers in all the above fields (i.e. production and financial management, etc.) was often emphasized and should be an integral part of the technical assistance.

Regarding the improvement of the factories' technological capabilities they welcomed the writer's suggestion that modern machines ordered from abroad by various factories should first come to their factory for study and inspection in order to improve their design capability. (Note: this concept should perhaps be introduced on a broad basis in China).

Visit to the Shanghai Marble Factory, 23 July 1979

The officials met were:

Mr. Xie Fuxiao	Director
Mr. Ren Shouqin	Director, Workshop
Mr. Xu Shijian	Director, Workshop
Mr. Xu Genfu	Chief of the Production Planning Section
Mr. Hu Cuoxiang	Chief of the Technical Section
Mr. Chen Zhenhua	Chief of the Supplying and Selling Section
Mr. Zhong Peihua	Chief of the Finance Section
Mr. Xia Liangdi	Chief of the Equipment Section
Mr. Yu Tongjin	Technician

The factory has 500 workers; produces 75,000 m^2 of polished marble surface/year; has 13 sawing machines, 11 grinding machines, 3 automatic and 2 semi-automatic cutting machines. Raw material is brought in by river boats from the various quarries and stored outside in an area of 4 - 5,000 m^2. The main products are marble (and to a smaller extent granite) tiles for the construction industries of which about 60% is for export (i.e. Singapore, Hong Kong, Japan, Europe). The factory organization consists of the following departments: production planning, equipment management, technical design, raw material supplies, financial and personnel. There are 2 major workshops. A production incentive scheme for workers is in effect.

The following observations were made during the plant visit: hand labor is extensive, and is limiting production to the extent that the plant cannot meet demand, as we were told; breakage is considerable during the various operations (e.g. 40% during cutting); grinding is 50% manual, also with breakage problems; cutting speeds are low due to the use of steel cutters (would like to change to diamond cutters), all small marble scrap is discarded as plant personnel unaware of "synthetic marble" technology.

During the ensuing discussions it became clear that the improvement of the technology and know-how at all levels is urgently required. The following specific needs were expressed: information and technical literature on all types of modern marble processing machinery; technical literature on marble and stone processing in general; technical information on the manufacture of "synthetic marble"; expert advice on improving specific process unit operations; information on modern cutting, sawing and grinding materials, etc. There was a great eagerness on the part of the factory officials to receive technical assistance and to have the chance to visit modern marble processing factories in Italy in particular.

As an interesting note one should add that the factory has a small "art marble" operation on the second floor of one of the workshops, making stones and plaques with carved writing and also making some beautiful, small, hand-carved marble objects. It is the opinion of the writer that this activity could be expanded very profitably under sound marketing and design management. The color, beauty and great variety observed in Chinese marbles at the factory was astonishing.

Visit to the Pen Pu Machine Plant in Shanghai, on 24 July 1979

The officials met were:

Mr. Chen Wenyan	Deputy Director
Mr. Lu Jianmin	Director, Office of Chief Engineer
Mr. Chen Qi	Official for Management

This factory was formed in 1958 through the agglomeration of about 100 small factories. It is located on very large grounds in many buildings. Out of 3,300 total workers 1,700 are directly involved in production. Total production is about Yuan 37 million (US$ 25 million), giving a productivity of Yuan 11,500 (US$ 7,700) per worker overall or Yuan 21,800 (US$ 14,500) per direct production worker.

The major products are bulldozers up to 120 HP (a new 320 HP model is being redied for introduction) and this represents 65% of the total production. Hot and cold steel rolling equipment (max.dia. 650 mm) is the other major product, representing about 25% of the production. Metal cutting and sawing related auxiliary machines, iron piping equipment and trucks for molten iron transport make up the rest of the production, which is meant for internal use in the country; nothing is exported, except equipment that is provided under Chinese foreign aid.

The factory made an excellent, well organized, clean and orderly impression, as all the other factories visited. It had a good machine park, most of which was made in China, although a number of imported machine tools were also noted.

During the ensuing discussion need for technical assistance was expressed, particularly in the following areas: (a) quality control procedures and introduction of a modern quality control system; (b) manufacturing management related to production scheduling, rationalization, inventory control, etc.; (c) introduction of modern (standardized) cost accounting methods; (d) computerization of financial and accounting procedures, production scheduling and inventory control in particular; (e) improvement of certain aspects of product design and manufacturing technology.

It was noted with interest during the discussion that there seems to be little and infrequent professional technological society activities and meetings going on in the country to exchange ideas and experiences among factory technologists, as is the case everywhere in the developed countries. The writer urged the technical staff to participate and organize such meetings as often as possible, as this will greatly accelerate the diffusion of available technology and know-how within the country.

Visit to the Beijing Heavy Electrical Machinery Plant, on 25 July 1979

The visit is described in detail in Appendix V. The Officials met were:

Mr. Qian Xingqian	Deputy Chief Engineer
Mr. Feng Shuqing	Deputy Chief of the Designing Branch
Mr. Zheng Daowei	Chief Designer
Mr. Lu Shaoquan	Chief of the Technique Branch
Mr. Chen Xizheng	Deputy Chief of the Technique Branch
Mr. Meng Zhaofu	Head of the General Office

This very large, well managed plant, has mainly technological problems as regards both product design and manufacturing technology, definitely requiring and justifying technical assistance.

APPENDIX V

E. Krajenbrink - Report on Mission to China, 16-28 July 1979

Summary of Proceedings: 18 July 1979

Project CPR/79/021 - Machinery Building

Discussions on the project started on Wednesday, 18 July, in the morning.

UNIDO was represented at the meeting by Messrs. Tandon and Krajenbrink, while on the Chinese side the following officials attended:

Tian Wenyan, Department Leader of the Foreign Affairs Bureau
Su Zhaoji, Official of the First Ministry of Machine Building
Wang Changde, " "
Zhang Xi, " "
Liu Gueizhen, Translator (Mme)

Mr. Tandon opened the discussions with a brief explanation and background on the purpose of the UNIDO mission.

Mr. Krajenbrink then continued, initially by explaining what had been the follow-up on the request from the Chinese authorities, which had been formulated into project CPR/79/021.

During the discussions which followed, the various items contained in the project data sheet were analysed and a number of explanations provided for the benefit of the Chinese delegation. In particular, the budget section was discussed line-by-line, as it was felt that this would contain a great deal of interest for the Chinese delegation. In fact, the assumption proved to be correct, as a number of misconceptions and misunderstandings were cleared up.

Also, the procedures involving fellowships and study tours, were described in detail, in turn evoking many questions from the Chinese delegation, the questions were all fully answered.

The Chinese delegation then presented to the UNIDO mission drafts for the job descriptions for the experts to be engaged for those sections within project CPR/79/021 which would come under the jurisdiction of the First Ministry of Machine Building. Upon examination of these drafts it was noticed that certain important data were missing. This was pointed out by Mr. Krajenbrink. The Chinese delegation agreed to provide this additional information within the next few days if possible. *)

In addition, the Chinese delegation was requested to consider follow-up schemes for all of the sections for which the First Ministry of Machine Building would have responsibility. This information would, in due course, be forwarded to UNIDO.

*) Note: This information was supplied before the mission left Beijing.

With regard to the institutional framework, the Chinese delegation explained (when asked), that the organizations requesting technical assistance from UNIDO under the terms of project CPR/79/021, until recently were responsible to the first Ministry of Machine Building, but that a short time ago, the First Ministry of Machine Building was separated from functions involving agricultural machines, for which a new Ministry had been created. Consequently, the various requests for assistance now would fall under one or the other of the two Ministries. However, for the sake of efficiency, it was decided with the consent of the Ministry of Agricultural Machinery that the first Ministry of Machine Building would remain the counterpart implementation agency.

(The agreement by the Ministry of Agricultural Machinery on this arrangement was obtained in the afternoon when Mr. Krajenbrink had discussions with officials of this ministry on the projects with which this ministry is concerned).

The institutional framework involving all the organizations mentioned in the Chinese request for technical assistance, was, therefore, explained as those responsible to the First Ministry of Machine Building and those responsible to the Ministry of Agricultural Machinery.

The breakdown in items of technical assistance for which one or the other ministry is responsible, is as follows:

Expertise group of requests for assistance:

Originally 14 items, under the First Ministry of Machine Building, but now subdivided into:

(a) items: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14: First Ministry of Machine Building

(b) items: 2, 11, 12: Ministry of Agricultural Machinery

Note: a new item to come into this group, see under study tour x) group

Study tour group of requests for assistance:

Originally 13 items under the First Ministry of Machine Building, but now subdivided into:

(c) items: 1, 3, 4, 5, 6, 12, 13: First Ministry of Machine Building

(d) items: 2, 7, 8, 9, 10: Ministry of Agricultural Machinery

(e) item: 11 x): Ministry of Agricultural Machinery but transferred to Expertise Group x)

Fellowship group of requests for assistance:

Originally 2 items under the First Ministry of Machine Building but now subdivided into:

(f) item: 1: First Ministry of Machine Building

(g) item: 2: Ministry of Agricultural Machinery.

As the project data sheet prepared in Vienna was incomplete and could therefore not be finalized before the requested information was supplied by the Chinese authorities, it was unanimously agreed that this project data sheet be finalized either in Beijing (if the request would be received within a short time), or in Vienna (if the data could not be supplied immediately).

In any case, the Chinese delegation agreed that this meeting had put them in a position to fully understand all the procedures and at this point the discussions ended as far as projects for the First Ministry of Machine Building were concerned.

In the afternoon, Mr. Krajenbrink had separate discussions with officials of the Ministry of Agricultural Machinery. On the Chinese side the meeting was attended by:

Wang Jing-chuan	Division Chief, Ministry of Agricultural Machinery (M.A.M.)
Tien Hui-min	Division Chief, M.A.M.
Chang Yan	Engineer of the Bureau of Foreign Affairs, M.A.M.
Xiang Zhi-wen	Interpreter, M.A.M.
Chen Bing-chong	
Ji-Lin	Professor at the University of Technology of Beijing
He Zhung-Ling	Engineer of the Institute of Agricultural Machinery
Duan Guei-fang	Engineer of the Institute of Agricultural Machinery
Liu Hung shu	Vice Chief, Engineer of the Lo-yang project institute
Feng Wu-chu	Engineer of the Lo-yang Tractor Institute
Ting Tsien-Wen	Official from the Ministry of Economic Cooperation.

During the meeting, Mr. Krajenbrink again went through the explanations and procedures involving project data sheets and project implementation, for the benefit of the authorities of the Ministry of Agricultural Machinery.

A similar pattern, as developed during the morning session, also developed in the afternoon, with many questions-and-answer sessions. This delegation also had prepared drafts of job descriptions for the items for which the Ministry of Agricultural Machinery had requested assistance in expertise from UNIDO. Apart from minor omissions, Mr. Krajenbrink found these drafts to be complete and fully acceptable for further processing in Vienna.

Also, all the aspects involving fellowships and study tours were described and discussed, by and between Mr. Krajenbrink and the Chinese delegation, with the result that this delegation is now fully informed.

Additionally, the delegation was requested to consider follow-up schemes for all of the items for which UNIDO assistance had been requested under the terms of project CPR/79/021, and for which items the Ministry of Agricultural Machinery would be responsible. This information would, in due course, be forwarded to UNIDO.

With regard to item 9 of the study tour group, i.e. "Casting Techniques", the Government Officials were informed by Mr. Krajenbrink that, in addition to Romania and Yugoslavia as suggested, countries in Western Europe, the USA or Canada should be considered as the preferred choice in view of the great advances made there in foundry technology during the last ten years. The Officials accepted this proposal on the basis that their selection had never been firm and they were not fully aware of the relative state of foundry technology in this regard.

In keeping with the good results of the morning session, the delegation attending the afternoon session also agreed that the meeting had put them in a position where they now fully understand all the procedures and ramifications of project documentation and implementation and on this note the meeting ended.

Summary of Proceedings: 19 July 1979

1. Project CPR/79/020

Discussions on this project took place on Thursday, 19 July, in the afternoon, UNIDO was represented by Mr. Krajenbrink and, part-time, by Mr. Tandon, while on the Chinese side the following officials attended:

Prof. Xie Zhi-liang	Northwest Telecommunication Engineering Institute
and other staff members	"

Mr. Krajenbrink opened the discussions with a description concerning the background on which the project document, prepared in Vienna, had been based. In this context, the aspects of "Development Objective", "Immediate Objective", "expected Output", "Government Input" and "Budget" were fully described and a number of questions from the Chinese side were answered.

Professor Xie Zhi-liang then mentioned that he and his colleagues had, meanwhile, come to the conclusion that certain changed (compared to the initial concept sent to UNIDO via Mr. Cao Guibin, the Permanent Representative of China to UNIDO) were not desirable.

These changes involved the exchange of expertise for equipment, and the proposal was for two experts (or consultants) to be removed from the expert component and the funds so obtained to be used for the purchase of certain micro-processor equipment.

In addition, it was requested that the fellowship component be increased by 2 m/m to 18 m/m, also using funds available by the cancellation of the two expert posts.

Mr. Krajenbrink then mentioned that, at this stage, while the project document was still in a state of flux, these changes could easily be accommodated and UNIDO would have no objection to doing this.

The only question to be considered was whether the funds liberated by the cancellation of two posts, would cover the purchase price of the equipment Prof. Xie Zhi-liang wished to obtain, and finance the extra 2 m/m of fellowship training.

Prof. Xie Zhi-liang informed Mr. Krajenbrink that to his knowledge, this condition would be met and that perhaps some funds would still be left over, in which case it could be possible that a second expert post could be re-instated, be it for only one month or so.

He undertook to provide all necessary details to Mr. Krajenbrink as soon as possible in order that the draft documentation could be finalized during the mission's stay in Beijing.

The next question to be discussed was that of the context of the training assignments to be undertaken by Chinese specialists. In this regard it was mentioned to Mr. Krajenbrink that the accent was to be placed on software engineering, and that the Chinese authorities regarded the contact with industrial organizations in this field, most important. It was pointed out to them by Mr. Krajenbrink that the design and creation of computer software material is a most sensitive issue, considered by the companies involved as wholly proprietary and therefore subject to secrecy. Therefore, for UNIDO to arrange fellowship placements in this area was not going to be easy, knowing the difficulties UNIDO had already experienced with similar requests from other countries.

For this matter, Mr. Krajenbrink suggested that the fellowship training be taken partly at universities where software developments are also carried out, and partly at industrial organizations. The Chinese authorities agreed with this proposal. With regard to the division of time, Mr. Krajenbrink suggested a (4 to 2) -ratio for the six months training period for each of three fellowship candidates, the remaining two man months of fellowship training to be by a fourth candidate in an industrial organization. The Chinese authorities also agreed.

On the question of extra visits to commercial organizations involved with computer software developments, Mr. Krajenbrink informed the Chinese delegation that funds for this purpose were included in the budget under study tours, and that tours of this nature could be arranged by UNIDO, (provided the organization concerned agreed to co-operate) as soon as the project became operational and as soon as the Chinese authorities were ready to undertake these study tours.

The final discussions were concerned with administrative matters, i.e. the special forms required from each applicant for a fellowship or study tour, and with the information these forms had to contain before they were suitable for processing at UNIDO. It was also agreed mutually, that the title of project CPR/79/020, would be changed to: "Applications in Computer Systems and Software Engineering".

2. Discussions on requests 10 and 11 of the list attached to Mr. Cao Guibin's letter, dated 11 June 79

These discussions took place on Friday, 20 July, in the afternoon. UNIDO was represented by Messrs. Tandon and Krajenbrink, while on the Chinese side the following officials attended:

Li Ring-Wu	Engineer, State Bureau of TV Industry
Wang Wei-tai	Engineer, Third Radio Factory in Shanghai
Chen Huang-Hsiang	Chief Engineer, Nanking Radio Factory
Hsich Chu-Thang	Engineer, Nanking Radio Factory
Liu Chao-jung	Interpreter, Radio Station PRC

Mr. Krajenbrink opened the discussions with a description of the concept worked out at UNIDO for technical assistance representing the two requests number 10 and 11 in the list of 16 requests sent to UNIDO.

The resultant project document, prepared by Mr. Krajenbrink and entitled "Technical Assistance to the Electronics Industry" - tape recorders and TV equipment, had been designed on the basis of a once-only, full-scale, assistance effort to bring the tape recorder- and TV-industries in China into line, quality-wise, with industries of other (developed) countries.

However, on further examination after arrival in Beijing Mr. Krajenbrink had come to the conclusion that a preparatory assistance phase preceding the proposed large-scale project would be more appropriate, as the problems existing in the industries concerned were not yet fully defined x) and this should therefore be done first to ensure a smooth functioning of a large-scale operation to follow subsequently.

The Chinese authorities agreed with this proposal. Mr. Krajenbrink then suggested that 2 SIS projects be formulated, each for two consultants to spend three months in the tape-recorder and in the TV factories respectively where the problems existed. Again, the Chinese authorities were in full agreement. Mr. Tandon then described the mechanism of SIS funding. However, in this case, the criteria for SIS funding were clear and undisputed. He was inclined to support the proposal.

It was agreed that the project documentation would be formulated in Vienna after the mission's return there.

However, the format of:

- expertise à 6 m/m total
- special equipment (required to solve immediate problems quickly and permanently, apart from equipment required for long-term C.C. purpose to be specified during the implementation of a subsequent large-scale project) — $ 4000.-
- miscellaneous expenses (internal travel by consultants; reports; etc.) — $ 2000.-

was agreed upon.

The total cost per project would therefore be around $ 40,000.- or $ 80,000 for both.

As these SIS projects could be approved without much delay, the question of implementation then was discussed, and the Chinese authorities requested this implementation, if possible, to take place during the remainder of 1979.

Mr. Krajenbrink pointed out that recruitment procedures took a few months and, in addition that UNIDO was scheduled to move to new premises in September. This was bound to cause further delays. However, since job descriptions had been prepared by the Chinese authorities and would be handed to Mr. Krajenbrink before his return to Vienna, all efforts would be made to locate and field the consultants during 1979.

x) This opinion was later confirmed after a visit to two factories in Shanghai (the Shanghai TV. Factory and the Third Radio Factory).

Nevertheless, the Chinese authorities were advised to accept the possibility that implementation of these two SIS projects would not start until early 1980.

Summary of Proceedings: 20 July 1979

1. Discussions on requests 4, 5 and 6 of the list attached to Mr. Cao Yibin's letter dated 11 June 1979

These discussions took place on Friday, 20 July, in the morning. UNIDO was represented by Mr. Krajenbrink and, part time, by Mr. Tandon, while on the Chinese side the following officials attended:

Tian Wenyan	Department Leader of the Foreign Affairs Bureau
Su Zhaoji	Official of the First Ministry of Machine Building
Wang Changde	"
Zhang Xi	"
Liu Gueizhen	Translator

Mr. Krajenbrink opened the discussions with a description of the concept worked out at UNIDO for technical assistance representing the three requests number 4, 5 and 6 in the list of 16 requests sent to UNIDO. It was understood that the funds for this type of technical assistance would be coming from sources other than the IPF, say UNIDF or SIS.

It was explained by Mr. Krajenbrink that, in UNIDO's opinion, the three separate requests could be combined more advantageously into one project for which funding through UNIDF offered better opportunities.
The Chinese authorities agreed with this proposal.

The project document based on this proposal was then discussed.
No changes proved to be necessary.

Mr. Krajenbrink then presented a version of the implementation time scale, showing:

- for 1980: 5 candidates, each for a period of 6 months, undertaking a fellowship course in power plant systems or in power plant transmission and transformation equipment,

  2 candidates, each for a period of six months, undertaking a fellowship course in automobile exhaust gas purification,

  1 candidate, for a period of six months, undertaking a fellowship course in ball bearing design and manufacture;

- for 1981: 5 candidates, each for a period of six months, undertaking a fellowship course in power plant systems or in power plant transmission and transformation equipment,

  1 candidate for a period of six months, undertaking a fellowship course in ball bearing design and manufacture,

  2 candidates, each for a period of six months, undertaking a fellowship course in dust removal;

- for 1982: 2 candidates, each for a period of six months, undertaking a fellowship course in noise control;

all in accordance with the budget allocation of funds, as prepared in Vienna.

The Chinese authorities accepted this proposal but made the comment that they would like the fellowship courses for the candidates studying power plant systems and power plant transmission and transformation equipment, to be completed in 12 months.

Mr. Krajenbrink offered to investigate this possibility but cautioned that there could be problems in finding identical placements for ten candidates in one year, particularly if only one donor country would be involved, as would be the case when funding was obtained through UNIDF.

However, UNIDO would make every effort to accommodate this request but, at this time, no guarantee could be given.

The Chinese authorities then mentioned that they would also like the fellowships in "Dust Removal" and in "Noise Control" to be increased by 2 candidates to a total of 4 candidates each.

In considering this additional request, Mr. Krajenbrink then pointed out that the necessary extra funding could prove to be a stumbling block, in view of the fact that the present requirement already approached $ 200,000, and he suggested that these additional fellowship requests therefore be considered at a later date when the results of the present group of fellowships had been completed and analysed for their benefit and value to the industry in China.

The Chinese authorities agreed with this proposal.

Summary of Proceedings: 23 July 1979

In Shanghai

1. Visit to Commune

In the morning the Chinese Authorities had arranged for members of the mission to visit a commune near Shanghai.

This visit was most interesting as it provides a rare insight into the workings of a group of people living together as a complete self-supporting entity.

This commune proved to be a rather prosperous unit, not only because of the financial rewards due to the efforts of the members of the commune but also because of the good and careful management by its leaders, who communicated this information very willingly and without restraint to details.

Several of the commune's light industries were visited, i.e. a foundry, a metalworking shop, a soya-sauce fermentation- and bottling-plant, a mono-sodium glutomate distillation- and packing-plant, a basket weaving and handcraft workshop and a candle making plant.

Also the mission was taken around the agricultural sector of the commune, including a chicken- and poultry-farm, a geese- and duck-farm, a pig-farm, and a deer-farm specially created to produce deer horn for medicinal purposes. Altogether this visit, if anything, provided a good indication as to determination of Chinese people to take on a task and to do this well.

2. Visit to the Shanghai Television Factory

This visit was arranged as a result of one of the requests for assistance contained in the letter dated 11 June 79 from Mr. Cao Guibin to UNIDO.

It was explained that the products from this factory suffered from low quality, meaning that within a relatively short time after being produced, a set would develop faults, which the company would have to rectify as, in general, the guarantee period would still be in force.

Apart from the nuisance value, the company's reputation also now was tainted, be it very little as demand for sets still outstripped supply and the company still managed to sell all they could produce.

After examination of the various workshops Mr. Krajenbrink came to the conclusion that this quality-problem, more than likely, was the result of a number of factors such as human error, inadequate inspection, outdated production methods or the use of components being either faulty or having tolerances too wide for the application, singularly or in combination.

In addition, it was also mentioned that the company would like to increase their production, but thus far had not been able to achieve this.

Mr. Krajenbrink explained that the assistance UNIDO was contemplating extending to this factory, would include

- expertise: 2 experts each for 3 months
- equipment: to purchase urgently needed items, not only to immediately assist quality-control but also to speed up production *) but also to introduce new materials and design-data so as to simplify circuitry as well as production methods and thus to improve the MTBF.

Regarding the expertise, Mr. Krajenbrink mentioned that while both consultant would be Q.C.-experts, one of them would concentrate on production methods (also with a view to increasing production) while the other would deal with design simplifications as well as with the infra-structure supporting this factory and how problems within this infra-structure could be preventing from affecting this factory.

The management was very appreciative and unanimously accepted this proposal from UNIDO.

The individuals met at this factory, were:

Mr. Phon Bu Chen	-	Factory Chief
Mr. Chang Han Wong	-	Engineer
Mr. Chen Yu Chu	-	Engineer
Mr. Zen Yi Chun	-	Research Department Technician

3. Visit to one of the "Children's Palaces"

This visit was arranged by the authorities to show the UNIDO-mission what was being done in terms of extra-curricular activities for school children. The "Children's Palace" to which the mission was taken, is one of a number of such "Palaces" in Shanghai.

In this environment, about 1000 children each week receive tuition in hobbies, handcrafts, musical appreciation or stage crafts.

The displays shown were very impressive, particularly since some of the artists were only 6 or 7 years old, and proved beyond doubt that these activities were truly worthwhile.

---

*) The equipment concerned would be a) an automatic soldering machine
b) a booster amplifier to increase the signal strength of the test signal at the alignment benches.

Summary of Proceedings: 24 July 1979

In Shanghai

1. Visit to the No. 3 Radio Factory

This visit was arranged also as a result of one of the requests for assistance contained in the letter dated 11 June 1979, from Mr. Cao Guibin to UNIDO.

In this case the requests for assistance involved that for expertise in the design of certain parts of a portable cassette-recorder made by this factory.

The visit showed that the factory was still in the process of producing the first batch of 60,000 recorders, before placing these items on the market, and it was explained that this recorder included a crucial number of parts which presently were imported from Japan.

The company wished to replace these imported parts with locally-designed items, but had problems in creating these with reliability levels equal to the imported items.

In addition, the company also desired to increase their production to bet satisfy the expected demand for these recorders.

After examination of the various assembly lines Mr. Krajenbrink found that the production methods in use, were comparable to those used outside China in neighbouring developing countries where expertise from developed countries had already been introduced. However, in a few instances potential problem-areas related to human error, were noticed and pointed out.

Also, it was mentioned to Mr. Krajenbrink that, particularly in the alignment stages, the test equipment was unconventional (meaning: a mixture of instruments rather than one fully-integrated alignment test-unit) and becoming outdated and unreliable.

In summing up his findings to the management, Mr. Krajenbrink mentioned that the assistance UNIDO was contemplating extending to this factory, would include:

- expertise: 2 experts each for 3 months
- equipment: to purchase urgently needed items, as recommended by the experts, not only to assist maintaining quality-control, but also to speed-up production where possible. *).

Regarding the expertise, Mr. Krajenbrink mentioned that one of the consultant would be a design expert (on all aspects of cassette recorders) while the other would be an industrial engineering expert (on all aspects of electronic equipment assembly).

---

*) As this project is to implemented with SIS-finance, the equipment component, by necessity, can not be large and therefore excludes big items such as integrated alignment test-units.

The management was very appreciative and unanimously accepted this proposal from UNIDO.

The individuals met at this factory, were:

Mr. Ma Hongyuan	-	Deputy Director
Mr. Xie Huicheng	-	Deputy Chief of the General Office
Mr. Wang Yugin	-	Staff member

Summary of Proceedings: 25 July 1979

In Beijing

1. Meeting at Ministry - morning

This meeting was organised by the Ministry and was concerned mainly with final discussions on all projects - UNDP as well as those involving only UNIDO - to ensure that all aspects had been covered.

2. Visit to Beijing Heavy Electrical Machinery Plant - afternoon

This visit was arranged as a result of a previous discussion with officials of the First Ministry of Machine Building concerning a request for assistance to this plant.

This assistance, as originally formulated, was contained in a project in the group of 16 mentioned in Mr. Cao Guibin's letter of 11 June 79, and was then described as a technology transfer.

However, the first discussions involving this project indicated that not transfer of technology was required, but simply that of expertise to solve industrial problems. In order to assess the magnitude and problems involved, the UNIDO-mission then requested the visit.

During the discussions at the office of the factory and the subsequent inspection of the workshops, it was explained by the management of this plant that generally speaking, the problems were concerned with quality-control, in two areas, i.e.:

(a) the turbine unit
(b) the electric generator unit.

With regard to the turbine unit, the problem involved the blades, in so far that the management considered that these blades were not optimum in design nor was their bonding or the choice of material perfect. Consequently they requested that UNIDO provide the services of a design consultant to examine these aspects and make recommendations for corrections.

With regard to the electric generator unit the problems involved vibrations of the stator windings due to electro-magnetic forces, which vibrations had been damaging the insulation of these windings. Also, since these stator windings were water-cooled, further problems with leakage had resulted. Also, the factory had found that the insulation materials they were using in the manufacturing processes, were not altogether suitable and they therefore were anxious to obtain information on new and better materials.

As such, they requested that UNIDO provide the services of another consultant, this one being experienced in all aspects of industrial engineering concerning heavy electrical equipment (generators and motors in particular).

Responding to these requests for assistance, Mr. Krijenbrink then mentioned that UNIDO would evaluate these not only to formulate projects which would provide adequate time to investigate the problems and suggest solutions, but also to locate the finance for these projects, and that in due course the company would be informed of UNIDO's decision.

APPENDIX VI

E. Manning - Report on Mission to China, 16 - 28 July 1979

Mr. Manning had discussions with Government officials and professional personnel from the Ministries of:

(1) Light Industry;
(2) Textile Industry;
(3) Commerce;
(4) Food.

9 Fellowships and 12 study tours, involving the training of a total of 76 professional personnel, were discussed in detail. The Chinese representatives knew precisely the type of training programmes they wanted, including the countries for training, and in almost every case the names of universities and institutes for the training of fellows, and the names of companies they wished to visit in connexion with study tours.

They propose to send only high-level professional personnel with industrial experience on the fellowships and study tours requested.

Mr. Manning was impressed with the high level of competence of all the people with whom he had discussions.

Mr. Manning accompanied his UNIDO colleagues on a number of visits to factories which they were visiting in connexion with UNDP/UNIDO projects.

Mr. Manning briefed the Chinese representatives regarding UNIDO's project activities in cashmere processing, the manufacture of leatherboard from scrap leather, packaging of food products and industrial goods, and furniture making, as well as on the international packaging meeting to be organized by UNIDO and held in Yugoslavia in 1980.

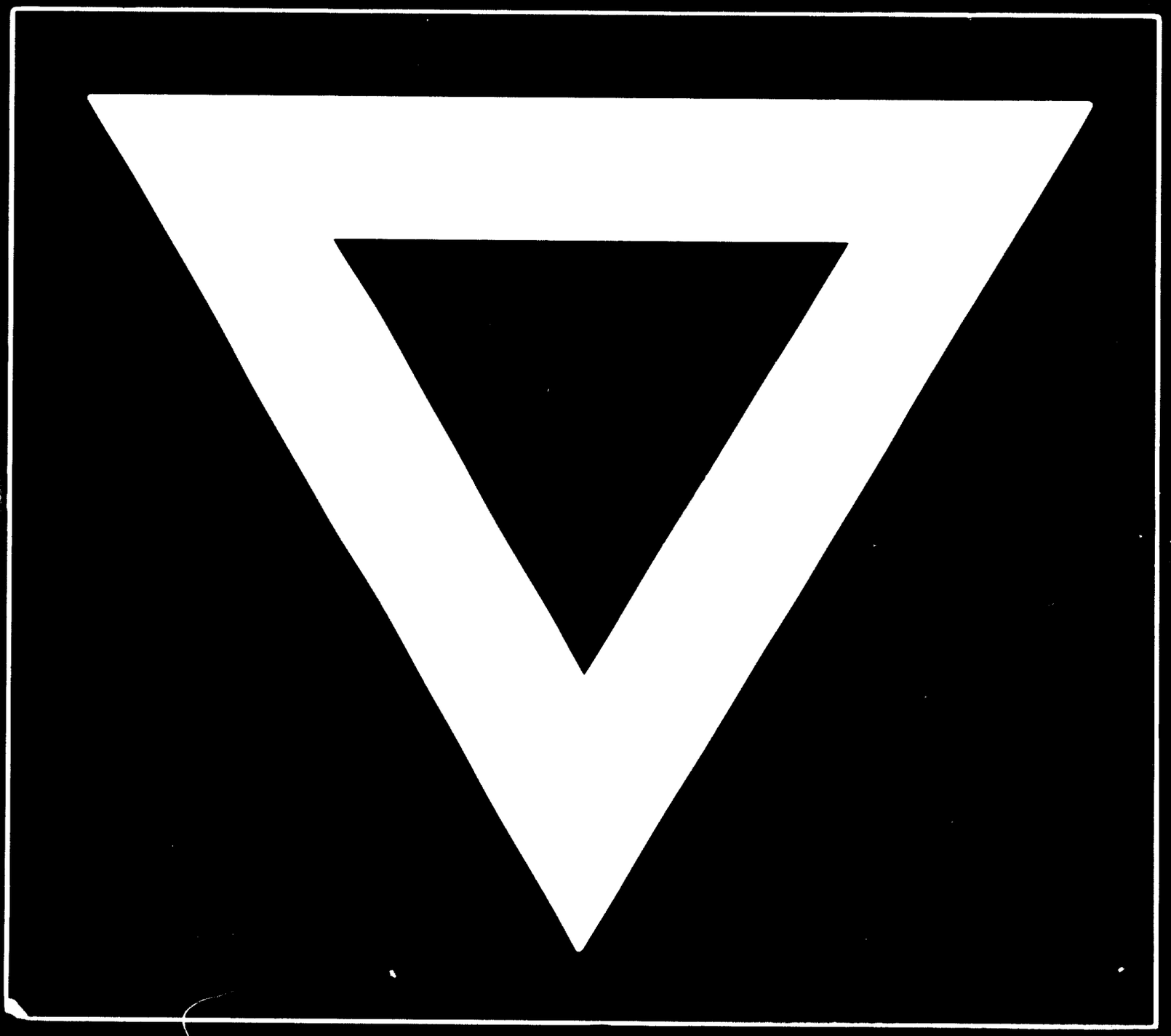
As a result of his discussions, Mr. Manning suggested three SIS projects for the Government's consideration. Three experts for one month each in cashmere processing, manufacture of leatherboard and establishment of national packaging institutes. Total estimated cost: US$ 15,000.

As a result of these discussions, project CPR/79/016 now amounts to US$ 108,930, project CPR/79/017 to US$ 96,155 and project CPR/79/018 to US$ 105,280 making a total of US$ 310,365 which is US$ 10,365 above the UNDP estimate for these three projects.

All three project documents have been revised on the basis of Mr. Manning's discussions with the professional personnel from the various Ministries, and were completed during the Mission, ready for submission to the Government and UNDP.

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

G-349



80.11.21