



TOGETHER
for a sustainable future

OCCASION

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



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

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

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



05323



Distr.
LIMITED
ID/WG. 148/13
24 September 1973
ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Technical Meeting on the Construction
Industry in Developing Countries

Vienna, Austria, 29 October - 2 November 1973

BI AND MULTI LATERAL AID FOR
CONSTRUCTION INDUSTRY^{1/}

by

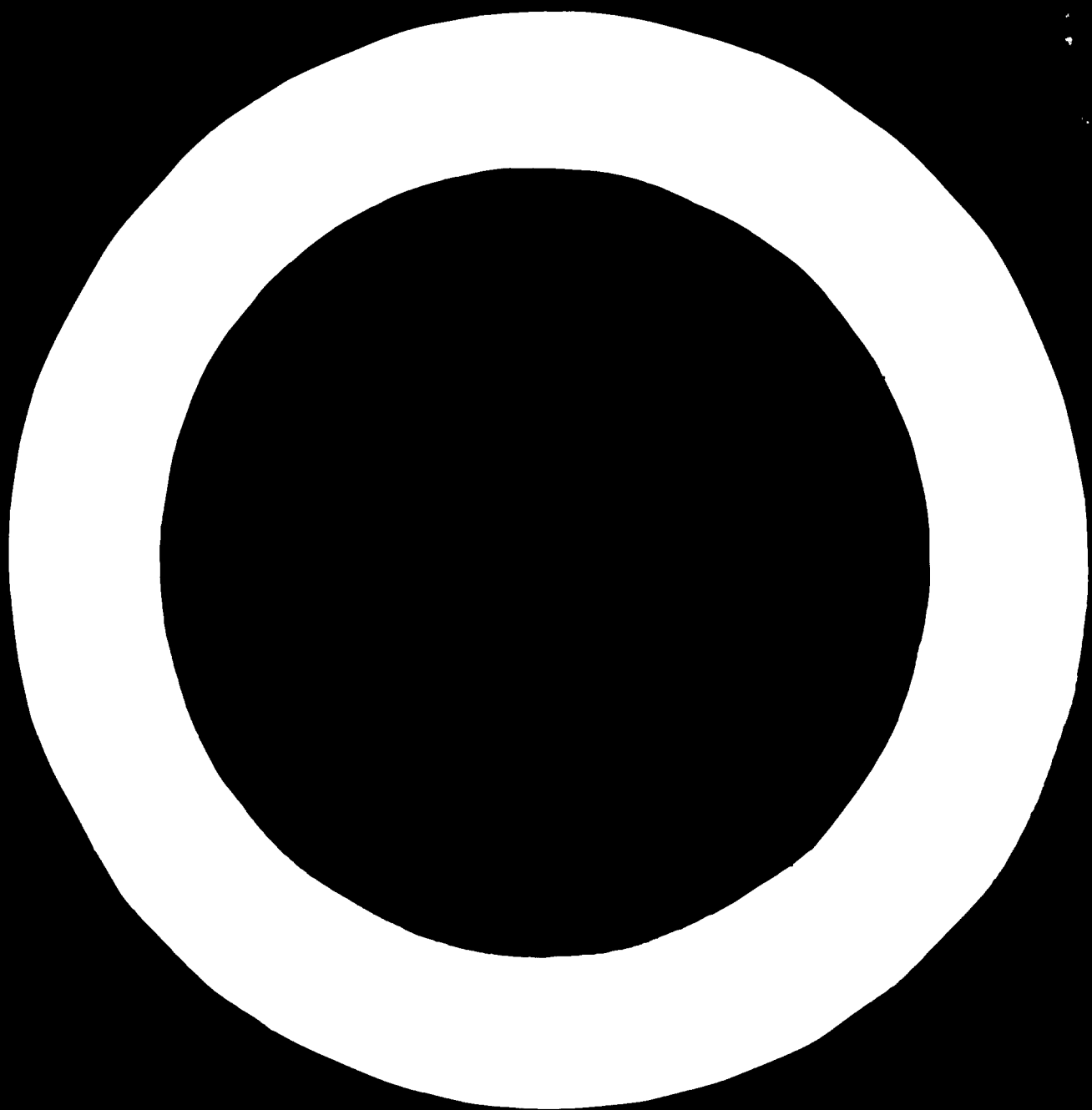
A. Nagabhushana Rao

Deputy General Manager
The Hindustan Construction Co. Ltd.,
Ballard Estate, Bombay, India.

^{1/} The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

id.73-6727

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.



CONTENTS

	<u>Page.</u>
Summary	ii
I. <u>INTRODUCTION:</u>	1
- Scope of this paper	
II. <u>NATURE OF ASSISTANCE:</u>	1
- Description of nature of assistance	
- Reducing the dependence on external assistance	
III. <u>VOLUME OF ASSISTANCE:</u>	5
- Volume of assistance	
IV. <u>ASSISTANCE TO CONSTRUCTION INDUSTRY IN INDIA:</u>	6
- Bilateral assistance to Construction Industry	
- Statements 'A' to 'F'	
- Assistance by United Nations Organizations	
- Benefits to the construction industry	
V. <u>ORGANIZATION FOR ASSISTING IMPLEMENTATION OF BI AND MULTI LATERAL CONSTRUCTION PROGRAMMES:</u>	15
- Agencies for assistance	
- Survey of potential	
- Position of India in rendering assistance	
- Organization needed for export of assistance	
- Basic factors to be considered	
- Complexities of construction activities	
- Steps that are required for the promotion of construction industry in implementing bi and multi-lateral construction programmes.	
V. <u>CONCLUSION AND RECOMMENDATION:</u>	21
- References	

SUMMARY

Assistance to India

1. Construction activity is complex and inter-related very closely with overall National Development. Since construction is not considered as an industry the data and statistics are scarce. Bi and multi-lateral aid comes to the construction activity indirectly. There are therefore limitations in dealing with this subject.
2. In India, external assistance has been relied upon to some extent as a supplement to the domestic development effort, particularly in helping to break through technological rigidities and filling in gap in investments. Most of the assistance has been in the form of interest-bearing loans. A very small amount is in the form of out-right grant. The foreign credits are country tied. Loans from a particular country having to be utilized for imports only from that country. In the case of most of the eastern european countries, repayment of such loans are effected in rupees, or else through export of Indian goods.
3. India has endeavoured to reduce dependence on external assistance in its development. Planning was carried out to reduce the dependence to nominal accounts by end of the fourth Five Year Plan. The aims of national self reliance on one hand, to put maximum effort into raising the domestic rate of saving and plan for greater import substitution and on the other hand promotion of export, do that savings and the balance of payment gap ceases to be a barrier to further national growth. To this end efforts are being made to have all construction equipment manufactured indigenously.
4. The volume of assistance has been reduced steadily from the first Five Year Plan to fourth Five Year Plan. External assistance during the fourth plan period both for projects and non-projects is estimated about \$5000 millions or Rs. 37,500 millions. A large part of export earnings are being used to service loans.
5. Both financial and technical assistance to construction industry has been mostly of an indirect nature. The development of other sectors through external assistance has given a boost to the construction industry both in its technological field in the use of construction equipment and in the methods of construction. The assistance has been direct however, in the case of construction

- equipment and spares and the provision of expertise in design and construction and also in facilities for training Indians in specialized fields. The volume of assistance to the different sectors of national activity, has a great bearing on the construction industry as no sector of national planning exists or develops without construction activity being associated with it.
6. Bilateral assistance has been at inter-governmental levels, whilst the United Nations Organizations and its agencies and the Indian Government deal with multi-lateral assistance.
 7. The benefits to the construction industry on account of this direct or indirect financial aid and technical aid has been great. The import of heavy construction equipment, new methods of construction, and design have all benefited and developed. The indigenous manufacture of construction equipment has been possible only because of this assistance. In the same contract the build up of modern skills both in construction design, consultation and construction management has been made possible. India is now in a position to offer assistance in these same fields to many developing and under-developed countries. Assistance depends on the stage of development of the country concerned and how the assistance could be mutually beneficial to both economically, socially and politically.
 8. A detailed survey of what assistance a country can offer in the field of consultation, construction, material and equipment services is necessary. Such a survey of Indian export potential has been recently conducted.
 9. Even though India is in a position to render services suited to come of the regions in Asia, Africa and Latin America, the firms of developed countries are deeply entrenched in many of these countries with the result that is difficult for any developing country to make a break through. This has blocked or severely reduced the possibilities for assistance programmes between developing and under developed or between developing countries.
 10. Future development of the Indian construction industry.
As construction activity has not been recognized or organized as an industry, in India though it has been given to it in its overall concept. It is considered necessary to have a central body in India to study the construction activities in all their aspects to find out existing deficiencies and the future potential of the industry.

11. A basic factor to be kept in view in implementing bi and multi lateral construction industry programmes is the socio-economic environment of India. Even though the technology adopted and construction programmes adopted may be beneficial to India, the possibility and extent of any long term adverse consequences especially on the growth of indigenous skill, technology, materials and plants and also the balance of payment position need to be analysed.
12. Construction activities are extremely diverse and complex. They cover everything from hutments to nuclear power stations from new works to maintenance from normal soils to man-made construction materials, the self employed workers to large private and public firms, the ordinary unskilled worker to the highly skilled tradesmen, ordinary design to sophisticated computerized design, hand tools and baskets to heavy construction equipment, self-financing to complicated national financing and problems connected with labour, and tendering. A comprehensive and well balanced approach to planning for improvement will be needed.
13. Conclusions on technical assistance problems
To achieve the best results in bi and multi lateral construction programmes it will be necessary to ensure that effective steps are taken at national and internal levels to set up an integrated survey unit or organization to analyse and establish the over all status of the construction industry in developing countries and to group such countries according to their technological and socio-economic levels. This will enable a more effective bi and multi lateral construction programme to be worked out between under-developed and developing, among developing and between developed and developing countries.
14. UNIDO has taken a lead in considering the construction industry as an overall concept. In my opinion UNIDO should endeavour to plan and co-ordinate the implementation of such bi and multi-lateral construction programmes.

BI AND MULTI LATERAL AID FOR THE CONSTRUCTION INDUSTRY IN INDIA.

I. INTRODUCTION:

1. Scope of this paper: Construction activity or industry in any nation is a complex activity as it is very closely inter-related with overall national development. In India, construction activity is probably second only to Agriculture. Construction accounts for a major share of the expenditure in national plans for socio-economic development. Construction of such is not yet recognized or organized as an Industry in India. Data and statistics relating to construction are not readily available. Construction programmes are inter-woven in a large measure into all sectors of development, be it housing, transport, industry, irrigation, power, education, health or defence. At the present time aid or assistance both bi and multi-lateral, always comes to construction industry indirectly, that is to say as a consequence of aid or assistance to the major construction activity. Such assistance also depends on the policies of the Government and the policies of the countries giving assistance and the priorities given to the different sectors in the national plans. (On the construction industry). Since data available are scarce the scope of this paper is of a general nature.

II. NATURE OF ASSISTANCE:

1. Description of the nature of assistance: "External assistance has been relied upon to some extent as a supplement to the domestic development efforts since the inception of the process of planned economic development in the country. Although the bulk of the resources needed for development have been generated domestically, external assistance, apart from helping to break through technological rigidities, has also been a factor towards relieving pressures on internal resources as well as balance of payments in the wake of rising investment levels. So far about Rs. 1,27,500 millions of external assistance in various forms have been utilized for purposes of development.

However the quantum of aid utilized considerably over states, under existing conditions, the active contribution of external assistance to India's Economic growth. For one thing, most of the assistance to has so far been in the form of interest bearing loans, only a fraction has been in the form of outright grants.

The share of grants in overall external assistance fell off sharply after the first plan period and, in recent years, has dwindled down to just about 5 percent. Loan assistance has involved essentially the provision of current accommodation in exchange for future repayments. As a consequence, the servicing of external debt is beginning to claim a sizable proportion of the country's foreign exchange earnings.

Aid in the form of credits, however, contains a genuine element of assistance insofar as it has generally been available on a softer terms than similar credits obtainable from the international capital market. The terms have been comparatively favourable as regards both interest rates and maturity periods; and in recent years there has been a tendency towards some fall in the rates of interest and a lengthening of maturity periods. In some cases, mostly involving transactions with countries in Eastern Europe, repayments are effected in rupees, or else, through exports of goods. However, in one respect loan assistance compares unfavourably with market borrowings, for most of the foreign credits are country-tied, loans from a particular country having to be utilised for imports from that country alone. The share of untied loans in external assistance flowing to India has gradually declined since the end of the Second Plan, currently, just over a tenth of external assistance consists of untied credits. The tying of credits in this manner involves a certain disadvantage for the recipient country, particularly when repayments have to be effected in fully convertible foreign exchange; while loan-financed imports have to be procured in the countries offering loans regardless of price or other considerations, no such constraints attach to the utilisation by the donors of interest and amortisation payments received by them**

2. Reducing the dependence on external finance: "A progressively diminishing dependence on aid has accordingly been one of the objectives of development planning in India. As a matter of fact, near-complete independence from net external financing by the end of the present decade was one of the explicit goals set out in the Fourth Plan. In accordance with the plan objectives, increasing attention has been devoted to the promotion of self-reliance and reducing the dependence on external accommodation in recent years. Events during the year have amply vindicated the soundness of the policy of aiming at the eventual elimination of external financing of development programmes. The unilateral suspension of a part of the commitments for economic assistance from abroad in the wake of the hostilities in December, 1974 has further intensified the national urge to do without external aid. Although there was a general awareness that assistance was often preferred because of non-economic motives, recent developments have made it clear that it is yet another instrument of diplomacy, which is liable to be deployed against us at a time of critical need. This realisation has strengthened the demand for greater self-reliance so as to ensure that the country's policies and programmes are not subjected to pressures from aid-giving countries. The actual contribution of foreign assistance to the financing of economic development has thus been markedly small in recent years. Until 1964-65, net external accommodation worked out to 3 percent of national income; it is now less than 1 percent. To put it differently, net foreign accommodation used to account for 25 percent of investments in the economy in the early 1960's. In recent years, the contribution of net foreign assistance to domestic investment has declined to 13 percent. Over the period of the Fourth Plan, it is estimated that it will account for only 8 percent of aggregate investments. If the current trends in respect of availability of assistance continue, it would be even less, even though the comparison is somewhat vitiated by the fact that capital formation itself has been at a considerable lower level than was contemplated in the plan. Recent events have added to the urgency of reducing the dependence on external finance. The problem is not one of merely

doing without a certain quantum of aid. Since external assistance provides support to the balance of payments as well as resources, for investment, doing without aid can simply mean doing without a certain volume of investment, and scaling down capital formation activities in the economy. This is certainly not what is implied by greater self-reliance. The latter should, on the other hand, reflect our ability to maintain, if not enhance, the rates of capital formation and growth envisaged in the Plans despite the shrinkage in the availability of foreign assistance. The core of self-reliance should, thus, consist of efforts at raising the domestic rate of savings on the one hand, and greater import substitution and export promotion, on the other, so that the savings and balance of payments gaps ceases to be a barrier to further growth.

The problems are not dissimilar in regard to machinery and equipment either. While complete indigenous capacity has been developed for the manufacture of steam locomotives, the switch-over to the manufacture of diesel and electric engines has temporarily led to increasing imports of parts and components. In the case of trucks too, even though for certain specifications no components need to be imported, the import bill has not come down, because the producers have shifted to the manufacture of larger-sized trucks which are still dependant on imported components. As we continuously increase the range as well as depth of manufacture within the country, there is a tendency for the import of one item to be replaced by the import of another item further down the process of production. As long as certain rates of overall economic and industrial growth are being postulated, it would therefore be hazardous to predict a complete thinning out of import requirements. What has to be emphasized is the necessity, of hastening the process of doing without foreign components. We now have the necessary technological base in the country; the stress has to be on basic research in specific directions and encouragement to improvisation. In such matters, an adjustment of attitudes by itself could bring about substantial results**

* Economy survey, Government of India.

I. VOLUME OF ASSISTANCE:

Although India embarked on her First Development plan period in the year 1951-52, economic assistance was received even earlier from 1949. The total amount of foreign aid in Loans and Grants (excluding commodity assistance from U.S.A.) authorized upto the end of First Five Year Plan was \$766 million of which \$413 million or about 54% was utilized during the Plan period.

During the Second Plan period India needed funds for new investments as also funds for maintenance and operation of the industrial capacity created during the First Plan period. Mid way through the Second Plan period India was faced with huge drain on her foreign exchange reserves due to heavy import requirements of a rapid industrial programme. The problem was aggravated by crop failure necessitating import of agricultural commodities. India's foreign exchange reserves which were sizeable before the Second Plan were depleted rapidly and she soon faced a major balance of payment crisis. In this background Aid India Consortium was formed in 1958.

India's Third Plan took a more balanced approach to both agriculture and industry in the light of the problems encountered during the Second Plan. This plan period (1961-62 to 65-66) however remained beset with difficulties. In three of the five years there was drought and failures in the agricultural field. Added to this the suspension of the aid for some time had a violent impact on the balance of payment position. In order to correct this imbalance the rupee was devalued on June 6, 1966 along with other measures to invigorate the economy. During this period further authorisations of foreign aid amounting to \$5,236 million was made making the total availability to \$6,684 million. As against this the amount disbursed was \$4,235 million having a balance of \$2,449 million for the Fourth plan. The rate of utilisation at the end of Third plan was as high as 72%. The Fourth plan was to begin in 1966-67 but as a result of poor crop in 1965-66, devaluation in June 1966 and a second crop failure in 1966-67, it had to undergo revision. In the meantime for three years 1966-67 to 1968-69 the country had to operate on the basis of annual plans.

The Fourth Plan officially came into effect from 1.4.1969. The Fourth Plan aims at stepping up to the maximum extent feasible the tempo of economic activity in general and industrial activity in particular consistent with maintaining stability and progress towards self reliance.

According to the requirements of the Fourth Plan external assistance for projects and non-project aid would be of the order of \$5,000 million or Rs. 37,500 million. This means an average of \$1000 million or Rs. 7,500 million per year. Against this commitment for the years of 1969-70 and 1970-71 agreements totalling \$1,655.87 million (Rs. 12,419.0 million) have so far been received.

While aid is received through tied funds, repayments of principal and payments of interest charges are met out of free foreign exchange where they are repayable in foreign currencies, with the result that a large part of the export earnings has to be used for debt servicing. The World Bank, which has been playing an important role since 1958 in co-ordinating economic assistance to India through the Aid India Consortium, formed under its aegis initiated moves for arranging suitable debt relief.*

IV. ASSISTANCE TO CONSTRUCTION INDUSTRY IN INDIA:

1. Bilateral Assistance to Construction Industry:

The construction industry has benefited only indirectly from both financial and technical aid. Any assistance by a country to any sector helps the development of the sector concerned which indirectly has to depend on construction industry for its implementation. The assistance to construction industry can be said to have been granted under different categories and these are summarized below from data extracted from "External Assistance 1970-71".

A. Direct assistance to construction industry - see statement 'A'.

* External Assistance 1970-71.

- B. Assistance to Technical Institutes connected directly or indirectly with the construction industry - see statement 'E'.
- C. Providing Experts and training of Indians in different subjects connected directly or indirectly with construction - see statement 'C'.
- D. Loans given to Indian Financial Institutions which in turn have financed various industries - see statement 'D'.
- E. Counterpart funds utilised to finance Projects - see statement 'E'.
- F. Indirect assistance to construction projects by assistance given to major economic sectors in terms of grants, loans, etc., in which the construction itself benefited through technical assistance, financial aid and construction machinery, and spares, while the major sectors for which assistance was made available expanded - see statement 'F'.

STATEMENT 'A'.

DIRECT ASSISTANCE TO CONSTRUCTION INDUSTRY:

As stated earlier the construction industry has been an indirect beneficiary of assistance. The major direct aid to construction might be considered as construction equipment and spares and also training in technology connected with construction. These are indicated as below:

Construction Equipment:

Australia: Earth-moving equipment -

- a). for Tungabhadra. Aust. Dollars 1.34 million
- b). trucks for Rajasthan Canal Project. " " 1.12 million

Canada: a). Construction Equipment Can. Dollars 3.50 million

France: d). Earth-moving equipment required for irrigation projects and Dandakarnya Projects FF. 24 million

Japan: Trucks and Tractors: Rs. in mill. 22.50

Vishakapatnam Outer harbour. " do. " 52.50

Poland: Cellular Concrete Factory at Ennore. " do. " 11.4

Sweden: Sipolex India Ltd. 7.17

STATEMENT 'B'

ASSISTANCE TO TECHNICAL INSTITUTES:

Several countries have given grants and technical assistance in terms of equipment, scientific instruments, books etc., to Technical and Research Institutes. Those which were directly or indirectly connected with construction are listed below:

1. Australia:
 1. Central Road Research Institute.
 2. Central Arid Zone Institute.
2. Britain:
 1. Indian Institute of Science.
 2. Indian Institute of Technology.
3. Czechoslovakia:

Central Machine Tool Institute, Bangalore.
4. Federal Republic of Germany:
 1. Indian Institute of Technology, Madras.
 2. Institute for the training of Foremen Training Institute at Bangalore.
5. Netherlands:
 1. Pilot Bahal Scheme for the reclamation and de-salination of unserviceable land along the coast of Saurashtra.
 2. Technical Teachers Training Centre for Polytechnic in Northern Region.
6. Sweden:

General survey and soil investigation and design in connection with the construction of Silo type Grain Storage Rs. 2.72 million.
7. U.S.S.R.:
 1. Institute of Technology, Bombay - Free gift of equipment worth Rs. 5.7 millions and also technical assistance.
 2. Central Mechanised Farm, Suratgarh.
8. U.S.A.:
 1. Indian Institute of Technology, Kanpur.
Loan of Rs. 42.6 million.
Grants of Rs. 48.1 million.
 2. Assistance to Higher Technical Education.
Loan of Rs. 265.7 million.
Grant of Rs. 160.1 million.

STATEMENT 'C'

EXPERTS AND TRAINERS:

<u>Australia:</u>	Public Health Services.		
<u>Britain:</u>	i) Experts for the Institute of Technology, Delhi.		
	ii) Consultation to carry out feasibility study of Bombay Water Supply and Sewerage.		
	iii) Total experts in different fields up to March 1971.	.....	315
	iv) Training given in U.K. to Indian personnel.	.....	3067
<u>Canada:</u>	i) Technical Experts in India.	.....	117
	ii) Indian technical personnel trained in Canada.	.....	1201
<u>Federal Rep. of Germany:</u>	Technical personnel trained in India between 1960-71.	.....	386
<u>France:</u>	i) Special training in Pre-stressed Concrete Dams and Civil Engineering:		
	ii) Indians receiving training in France	.....	662
	iii) Specialists in India.	.....	63
<u>Japan:</u>	i) Japanese Experts in India.	.....	111
	ii) Indian personnel trained in Japan	....	519
<u>U.S.A.:</u>	Technical Co-operation programme since 1951, assistance is given for training under different programmes.		

STATEMENT 'D'

LOANS TO INDIAN DEVELOPMENT BANKS:

Direct loans to Industrial Finance Corporation of India (I.F.C.), the Industrial Credit and Investment Corporation of India (I.C.I.C.I.) and National Small Industries Corporation Ltd., have been given by several countries. These organizations are using these loans for sanctioning sub-loans to medium and small industries in private sector. The sub-loans cover a large variety of industries such as Chemical Engineering, Paper, Glass, Glass products, Steel tubes, Metal castings, Electrical Cables, Cement, Sugar, Motor Vehicles, etc. A list of direct loan moneys is given below:

	£ in million
1. <u>Britain</u> : I.C.I.C.I.	5.00
	Deutsche Marks
2. <u>Federal Republic of Germany</u> : I.C.I.C.I.	87.50
I.F.C.	107.50
N.S.I.C.	50.00
	Fr. Francs
3. <u>France</u> : I.F.C.	15 million
4. <u>USA</u> Under P.L. 480 Funds	Rs. in million
Refinance - Corporation of India	802.0
I.F.C.	375.0
I.C.I.C. I.	250.0
I.D.B.I. (Industrial Development Bank of India).	475.0

STATEMENT

COUNTERPART FUNDS:

Australia: By sale of Wheat, Fertilizers, Power Milk etc., the money realized on the following development Projects:

1. Tungabhadra Project	Rs. 74,00,000
2. Construction of Wheat Godown at Santanagar	2,29,552
3. Laboratory Buildings and Fittings Central Arid Zone Research Station, Jodhpur	2,60,000
4. Building for Workshop at the All India Institute of Medical Science, New Delhi	80,000
5. Six Regional Medical Workshops	6,00,000
6. Indo-Australian Sheep Breeding Farm, Hissar	21,64,236

Canada: By sale of Commodity Wheat, Non-ferrous metals, Asbestos, etc., equivalent to Rs. 2832.3 millions.

<u>Used on:</u>	Rs. in million
1. Mayurakshi Project	67.3
2. Umtru and Umtru Extension	10.7
3. Canada-India Reactor	58.4
4. Kundah Stages I - III.	257.7
5. 7 Regional Engineering Colleges	47.6
6. Industrial Housing	52.4
7. Idikki Project	254.1
8. RAPP I and II.	202.5
9. Construction of Industrial Housing and School at RAPP	4.9
10. Railway (new Lines)	17.9
11. Soil Conversion	105.0
12. Minor Irrigation	920.2

STATEMENT 'E' (cont'd)

U. S. A. Loans and Grants given under PL. 480 Funds

1. Irrigation and Power	7568.5	89.4
2. Transport i.e. National Highways Development of major and minor ports.	756.0	196.0
3. Water Supply and Drainage.	587.0	X

STATEMENT 'F'

Indirect Assistance to Construction Projects
by Aid to Major Economic Sectors

Australia:

Remagunda Thermal Power.	Aus.Dollars.	2,390,622
Port Equipment.	"	140,958
Equipment for Neyvelli Dignite Corporation	"	61,387

Austria:

Equipment for Irrigation and Power Projects. Rs. 20.4 million.

Britain:

Durgapur Steel Plant	69.0	"
Heavy Electrical (India) Ltd.	29.5	"
Nabothahya Fertiliser Project.	4.4	"
Fact Always.	2.1	"
Sulphuric Acid Plant at Sindri.	0.7	"
Seamity Paper	1.8	"
Oil India Ltd.	2.3	"

Also maintainance type loans follow on which help in getting spares etc., needed for plant and equipment.

Canada:

Canadian chassis for Bombay Road and Transport.	Can.Dol.	4.35 million.
Canadian Locomotives and Sleepers.		30.30 "

STATEMENT 'F' (cont'd)

Czechoslovakia: Rs. in million.

1. Foundry Forge Plant, Ranchi	94.2
2. Heavy Machine Tool Project, Ranchi.	59.4
3. High Pressure Boiler Plant, Tiruchinapalli.	46.3
4. Heavy Power Equipment Plant, Hyderabad.	92.4
5. Heavy Plate and Vessels Works, Visakhapatnam.	21.1
6. Ennore Thermal Station.	120.3

Federal Republic of Germany: DM. in million.

1. Rourkela Steel Plant including Liaison Office, maintenance and personnel.	1,140.00
2. Mysore Iron & Steel Works, Bhadravati.	170.10
3. Rourkela Steel Plant.	40.83
4. Durgapur Thermal Power Station.	9.10
5. Hindusthan Shipyard.	8.56

France: FF. in million.

1. Cement machinery.	55.82
2. Power	61.32
3. Transport.	16.47

Italy:

1. Oil Pipe Line Project.	26.00
2. Fertiliser Plant at Durgapur - Cochain - Baurani Talcher.	93.96

Japan: Rs in million.

1. Fertiliser and Chemical Projects.	448.4
2. Alloy Steel Foundry Projects.	349.6
3. Projects and Transmission Equipment.	90.4

STATEMENT 'F' (cont'd)

Netherlands: Rs. in million.

1. Equipment for ports and Shipyards. 51.3
2. Equipment for Irrigation and Power. 25.2

Poland:

Thermal Power stations at Paras,
Bhusawal & Barauni. 102.2

Romania: Rs. in million.

Refinery at Gauhati. 55.9

Sweden:

1. Electric Power Scheme of State under
Electricity Board. 12.70
2. Madras Atomic Power Project. 9.57

Switzerland:

1. Uper Sileru. 50.52
2. Capital Goods and Components for
Private Industry 72.29

U.S.S.R.

1. Steel Plants. 3,720.00
2. Thermal Power. 1,034.70
3. Heavy Machinery Building Plant. 609.30

Yugoslavia:

Equipment for Power Projects under
various Electricity Boards. 100.8

STATEMENT 'F' (cont'd)

U.S.A.

U.S.A. has given loans and grants and assistance to different sectors of Indian Economy under:

Indo-U.S. programme of Technical Co-operation, through T.C.M. (Technical Co-operation Mission).

Development Loan Funds and its successors the Agency for International Development (AID).

The Export-Import Bank and Public Loan 480.

Programme: The volume of these are of the order of: 9.165 million dollars.

Soil and Water Excavation - Power, Irrigation, Ports,
Transport - Development of Industry both Public and Private.

2. Assistance by United Nations Organisations:

The United Nations Development Programme (UNDP) came into existence on 1 January 1955 by the merger of the U.N. Expanded Programme of Technical Assistance (EPTA - established in 1950), and the U.N. Special Fund established in 1959. UNDP is the largest multi-lateral source of pre-investment and technical assistance. It functions through Country Programmes and Special Industrial Services, and is supported by voluntary annual contributions from about 130 countries. It provides funds through which the specialised agencies of the United Nations supply experts, equipment and fellowships to nationals of developing countries. India is a major beneficiary of this programme. Some of the programmes financed by UNDP which are of interest to India's construction industry are:

- (a) Power Engineering Research Organization under C.W. and P.C.;
- (b) Central Public Health Engineering Institute;
- (c) Survey of Water Supply Research of Greater Calcutta;
- (d) Six Regional Engineering Colleges;
- (e) Soil Survey and Soil and Water Management Rajasthan Canal Area;
- (f) Groundwater investigation in different parts of the country;
- (g) Coastal Engineering Research Centre;
- (h) Survey of Fishing Harbours;

The World Health Organisation (WHO), the United Nations Children Fund (UNICEF) and the World Food Programme (WFP), which are organisations of multi-lateral assistance, have in addition to UNDP funds certain other sources available. They have also indirectly contributed to the promotion of the construction industry by their assistance both technical and financial to public health, rural water supply, dairy industry, etc.

The International Bank for Reconstruction and Development (IBRD) was founded in 1944. India has been receiving aid in the form of

long term loans from the IBRD for financing various development projects both in public and private sectors. In addition the World Bank is acting as the convener and secretariat of the "Aid India Consortium". The total loans by the World Bank to India are of the order of Rs. 7584.3 million and amounts on projects of interest to the construction industry are:

(a) Power Generation and Transmission	Rs. 1086 million
(b) Ports	Rs. 4.37 mill.
(c) Railways	Rs. 28.33 mill.
(d) Steel Plant	Rs. 1187 million
(e) Industries including Loans to ICICI	Rs. 1498 million
(f) DVC Project	Rs. 78.8 mill.

In May 1962 the World Bank agreed to finance foreign exchange for an engineering study to explore the feasibility of a second bridge over the Hooghly River. Total grant in aid on this for consultants was U.S.\$ 166,000. Surveys on coal transport problems and modes of transport of Eastern Region of India have also been undertaken as grant-in-aid programmes.

The International Development Association (IDA), an affiliate of the Bank was established in 1960 in order to meet the situation of a growing number of less developed countries whose need for, and ability to make use of outside capital is greater than their ability to service conventional loans. IDA assistance received up to May 1971.

(a) Agriculture and Irrigation	Rs. 1270 million
(b) Ports	Rs. 1112.4 million
(c) Power Generation and Transmission	Rs. 577.6 million
(d) Road Development	Rs. 446.0 million

Further non-project credits are extended by IDA for importing a wide variety of maintenance items.

4. Benefits to the Construction Industry:

The assistance given even though indirect, has helped in the modernization and mechanization of the construction industry. About 15,000 construction machines valued at about Rs. 3,000 mill. have been imported. Almost an equal value in spare parts have been imported to keep the equipment in order. The manufacture of heavy earth moving equipment, cranes, shovels, crushers, mixers, etc., have all been possible on account of this assistance direct or indirect. The services of experts and training given by different centres have helped in developing the research and design of structures which again has helped the construction industry to adopt itself to different methods of construction, use of different materials and machines on account of these. India is now in a position to give assistance needed to many developing countries and under-developed countries by collaboration in industrial and power and irrigation projects. Consultancy services in India have also developed. These consultancy services which were earlier mostly owned and manned by foreign personnel, are now mostly owned and staffed by Indians.

V. ORGANISATION FOR ASSISTING IMPLEMENTATION OF BI-AND MULTI-LATERAL CONSTRUCTION PROGRAMMES AFFECTING THE CONSTRUCTION INDUSTRY:

1. Agencies for Assistance:

Assistance may be considered in terms of what a country can offer in terms of construction materials, construction equipment, consultation services and construction services. Bi-lateral assistance is normally at Government levels, directly or indirectly. The UNDP, WHO, UNICEF, FAO, ILO, UNESCO, World Bank and Internal Development Association and Asian Development Bank are organisations dealing with multi-lateral assistance. Bi-lateral assistance is mostly a matter of arrangement between countries and depends on the state of development of the two countries and what assistance could be mutually beneficial to both, either economically, politically or socially.

2. Survey of Potential:

It becomes necessary to find out what a country can deploy in terms of civil engineering consultancy sources, construction materials, equipment and associated services and supplies. It is also necessary to ascertain what each country needs in these spheres and what is the general level of technical development that has already been attained. Some such surveys have already been made by the U.S. Agency for International Development. A survey of Indian export potential in these areas has recently been conducted.

3. The Position of India in Rendering Assistance:

India is in a position to provide the developing regions of Asia and Africa and Latin America the basic consulting and construction services needed for their development programmes. Geographical proximity in the case of Asia and Africa, low cost of engineering and other technical skills, the availability of plant and equipment and building materials, surplus know-how and expertise of the level required for infra-structural sectors, place India at an advantage in meeting the needs of countries whose economies are generally similar to those in India. But the present position in developing and underdeveloped countries is that the consulting and construction firms of developed countries such as Britain, Germany, Japan and some other European countries and the USA are well entrenched. This makes it more difficult for developing countries to assist each other or render assistance to underdeveloped countries. At present most of the Indian assistance is at Government level through Government departments and the volume is not yet great. Some private construction engineering firms have been able to penetrate the market but again the volume is not great. The Government of India has used consulting firms like Engineers India Ltd., Engineering Projects, Ltd., Indian Consortium for Power Projects, Water and Power Development Consultancy Services Ltd. These all operate under the different Indian Government Ministries. The Indian Railways are also rendering feasibility services in the form of surveys.

4. Organization needed for export of assistance:

The Federation of Indian Export Organisation is at present entrusted with the task of providing preliminary assistance required by the consultancy and construction services. As construction has not been able to achieve the overall concept and status of an industry, the implementation of any bilateral or multi-lateral construction programmes are not receiving the same treatment as other established industries. There is too little co-ordination between the private and public consultancy and construction services. If any country wishes to be in a position to assist in the implementation of bilateral or multi-lateral construction programmes, there must be a representative body, industry-wide or organisation, in the country which will make use of the best talent and services available in the consulting and construction services. A representative body dealing at the Central Government level, having as its members the well-established and reputable firms in consultancy, construction, equipment as well as material manufacturers and Government departments or organisations dealing with construction services, is necessary.

The organisation should:

- (i) Be able to collect centrally all data on the availability of capacity, expertise, material and equipment position, manufacturing technology, etc. It should make each of the organisations selected in a particular special field responsible for the task of implementing the programme assigned to it;
- (ii) Be in a position to receive as well as give all the technical assistance and be responsible for implementing the programme;
- (iii) It must be able to put forward clearly the kind of technical assistance the country can render in the fields of consultancy, construction, equipment and material;
- (iv) Bring further in what areas of consulting, construction and equipment it needs assistance and the nature and volume of assistance needed.

5. Basic factors to be considered:

It is of utmost importance to bear in mind the socio-economic environment of the country in implementing plans for assistance to its construction industry. Even though the technology adopted and construction programme assumed in a country receiving assistance may look beneficial immediately, its long term likely adverse consequences, especially on the growth of indigenous skill, technology, materials and plants and also balance of payments have to be carefully weighed before making out a case for bi-or multi-lateral construction programmes. This is particularly so with the contemporary developing countries. At present this is often not done, as careful study may not have been undertaken by any national or international organisation, as construction activity or industry has often not been given its due place in the socio-economic growth of a country.

6. Complexities of construction activities:

Any organisation set up to assist in implementing bilateral or multi-lateral construction programmes has to appreciate and analyse the complexities of construction activity in order to be effective.

- (a) Construction covers such a vast area, as almost all activities of society have some bearing on construction. Construction does not only cover the building of dwellings but also roads, dams, irrigation and power works, air-fields, ports, harbours, large industrial and residential projects and works connected with defence. It also covers the maintenance and repairs of previous works.
- (b) Construction agencies range from self-employed workers who build their own dwellings, to the large construction firm or Government agency carrying on national projects.
- (c) Construction materials range from ordinary size to the most sophisticated man-made materials.
- (d) Construction labour covers the ordinary unskilled worker employed in ordinary road making right up to a highly skilled equipment operator and service man in earth moving or concrete placement equipment.
- (e) Construction management is from a 'gang-man' managing works on a village road, to a well-established construction firm dealing with management of a major project.

- (f) Construction design ranges from self-designed dwellings to a consulting engineering firm dealing with intricate civil engineering designs of nuclear power stations.
- (g) Construction equipment itself ranges from simple hand tools and baskets to the most sophisticated concrete mixing and batching plant and cableways.
- (h) Construction financing embraces at the two ends of a scale an owner's self financing for his own dwelling to the complicated financial arrangements for a national project.
- (i) Construction methods again range from fully labour intensive to fully mechanised.
- (j) Construction tendering and contracting is another area of conflicting interests and is of a complicated nature as many parties are involved with different interests and approaches.
- (k) The standards and specifications for construction materials, tools, plant and equipment, and for different items of work vary with the agency handling construction.
- (l) The construction activity has to depend on the other sectors and industry for its development, so the status of those sectors has a bearing on construction.
- (m) Construction labour laws have to bear in mind the complications of the construction industry, its seasonal nature, its varying work volume, the closure of labour activity as soon as the structure is finished, the mobility of labour, the system of task work, and the system of contracting.
- (n) The organisation or methods required for new construction works are different from maintenance and repairs of older structures.
- (o) Construction activity is often carried out in a country by many agencies, private and public, many Government departments, Municipal bodies etc., their own vested interests, standards and methods each having its play.
- (p) Construction effects social habits, the standard of living and ecology.

7. Steps that are required for the promotion of the construction industry in implementing bi and multi-lateral construction programmes:

The UNIDO and the countries concerned can adopt steps to make the most effective utilisation of construction programmes in the overall national and international interest.

(A) First Steps:

1. As there is no clear definition or concept of what construction industry is, UNIDO can assist by defining what is construction industry in its overall concept so that a uniform system is adopted in data collection and comparison.

(B) Second Steps:

UNIDO, along with the countries concerned, should make an analysis of the construction industry in developing and under-developed countries and also make a comparative analysis with the developed countries. To achieve this, integrated Survey Units could be established in each country consisting of:

1. Regional Economist;
2. Construction Civil Engineers;
3. Construction Tool and Plant Engineer;
4. Construction Material Engineer;
5. Construction Management Expert;
6. Technical Training Expert;
7. Financial Expert.

and any other faculty that might be found to be necessary.

This team should be assigned to analyse and establish, consistent with the socio-economic and other considerations prevalent in the country, and the complexities of construction activity enumerated earlier or the follow-up activities:

- (1) Define the present status and prospects for the development of the construction industry.
- (2) Define material inputs with special reference to local production and imports.
- (3) Define the building tools and plant and machinery requirements consistent with the technology of available local production and imports.
- (4) Set up training programmes of construction skills and trades and institutional set-up.

- (5) Set up construction management and training programmes.
 - (6) Outline the guide lines for the establishment of the most effective set up of construction agencies, both in public and private sectors.
 - (7) Assess the man-power requirements and programmes for training.
 - (8) Establish financial requirements and the available sources of financing.
 - (9) Make guidelines to establish local industries connected with construction.
 - (10) Identify and specify fields in which lateral assistance is needed and the estimated volume of assistance that may be necessary.
- (C) Third Steps:
- (1) The UNIDO can be of assistance in identifying the developing and under-developed countries with similar technological levels and socio-economic levels.

VI. CONCLUSIONS AND RECOMMENDATIONS:

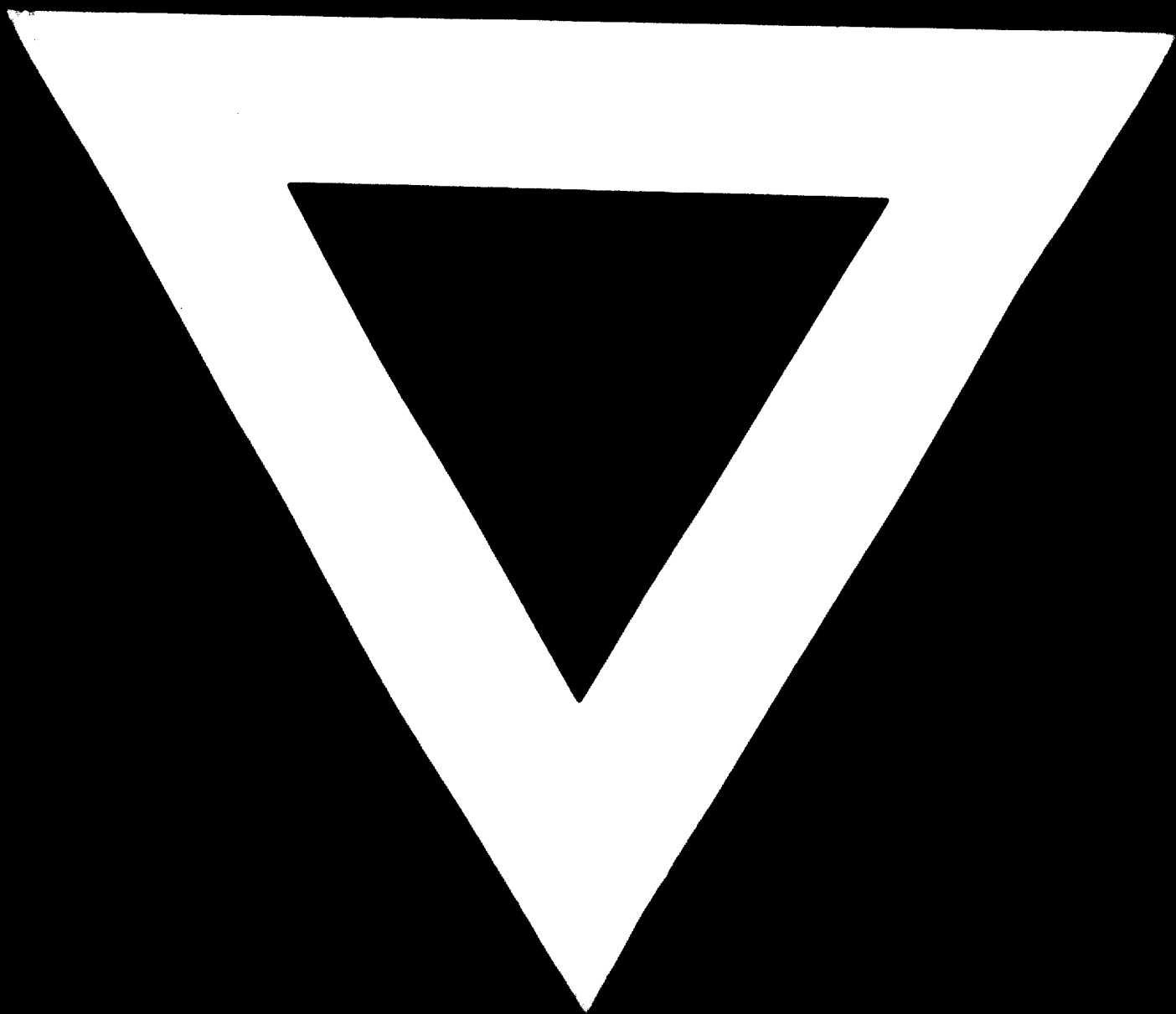
The bi- and multi-lateral financing of technical assistance to construction industry has come mostly in India indirectly or through the activities of other sectors of the society or the country. As construction activity itself is not considered as an industry in most of the developing countries and is not organized, data and statistics are not available. Whatever data needed has to be derived from other sectors and hence it is of very general nature. Any assistance rendered to a country has to bear in view the socio-economic environment of the country and the effect of technology and construction programme, on the growth of indigenous skill, technology and balance of payments of the receiving country. The construction activity is very much interlinked with all activities of the society. The special complexities are due to its very special nature, volume, development, seasonal nature, number of participants, with varied interests, contract and financing. There is no Central Organisation in India and many countries dealing with construction activity or industry in its overall concept. Even at international level there has been no single organisation within or outside the United Nations covering all facets of the industry. Wherever an organisation has taken interest it has done so in some particular aspect of the construction industry. UNIDO has already made a good start on construction activity or industry in its overall concept and the present meeting should give a clear lead for the future to UNIDO.

It is recommended that UNIDO takes active steps in arranging wherever appropriate to set up national organisations to consider construction in its overall concept and also take steps to co-ordinate effectively the activities of such national organisations, in implementing bi- and multi-lateral construction programmes.

REFERENCES:

1. External Assistance 1970-71
Ministry of Finance, Dept. of Economic Affairs, Govt. of India.
2. Economic Survey 1971-72, Govt. of India
3. Import of Capital and Technology.
A study of Foreign Collaboration in Indian Industry by Shri.
K.K. Subramanian.
4. Report of Construction Plant and Machinery Committee 1972
Ministry of Irrigation and Power.
5. Two Decades of Development - The Indian Experiment - V.V. Bhatt.
6. Survey of Indian's Export Potential of Civil Engineering Consultancy
and Construction Services.
7. Construction Industry - UNIDO Monograph No. 2.
8. Building Materials Industry - UNIDO Monograph No. 3.
9. The Fourth Plan Mid-Term Appraisal Planning Commission - Govt. of India.





74.09.13