



UNITED NATIONS
ECONOMIC
AND
SOCIAL COUNCIL



LIMITED

ST/ECLA/Conf.24/L.7
9 September, 1966

ORIGINAL: ENGLISH

LATIN AMERICAN SEMINAR ON INDUSTRIAL STATISTICS

Quito, 6-16 de diciembre de 1966

Sponsored by:

The United Nations
Economic Commission for Latin America
Bureau of Technical Assistance Operations
Statistical Office

The Inter-American Statistical Institute

In co-operation with the Government of Ecuador

THE CONSTRUCTION STATISTICS IN LATIN AMERICAN COUNTRIES

Prepared by the Statistical Office

1. The Statistical Commission confirmed at its thirteenth Session that construction statistics and other industrial statistics should be dealt with separately. Thus it is necessary to establish international recommendations in the field of construction statistics. Such recommendations must take into account both the methods presently being used in each region and any developments in construction statistics which may be anticipated. This paper will evaluate the existing construction statistics in Latin America and will try to point out some of the possible future developments in this field.

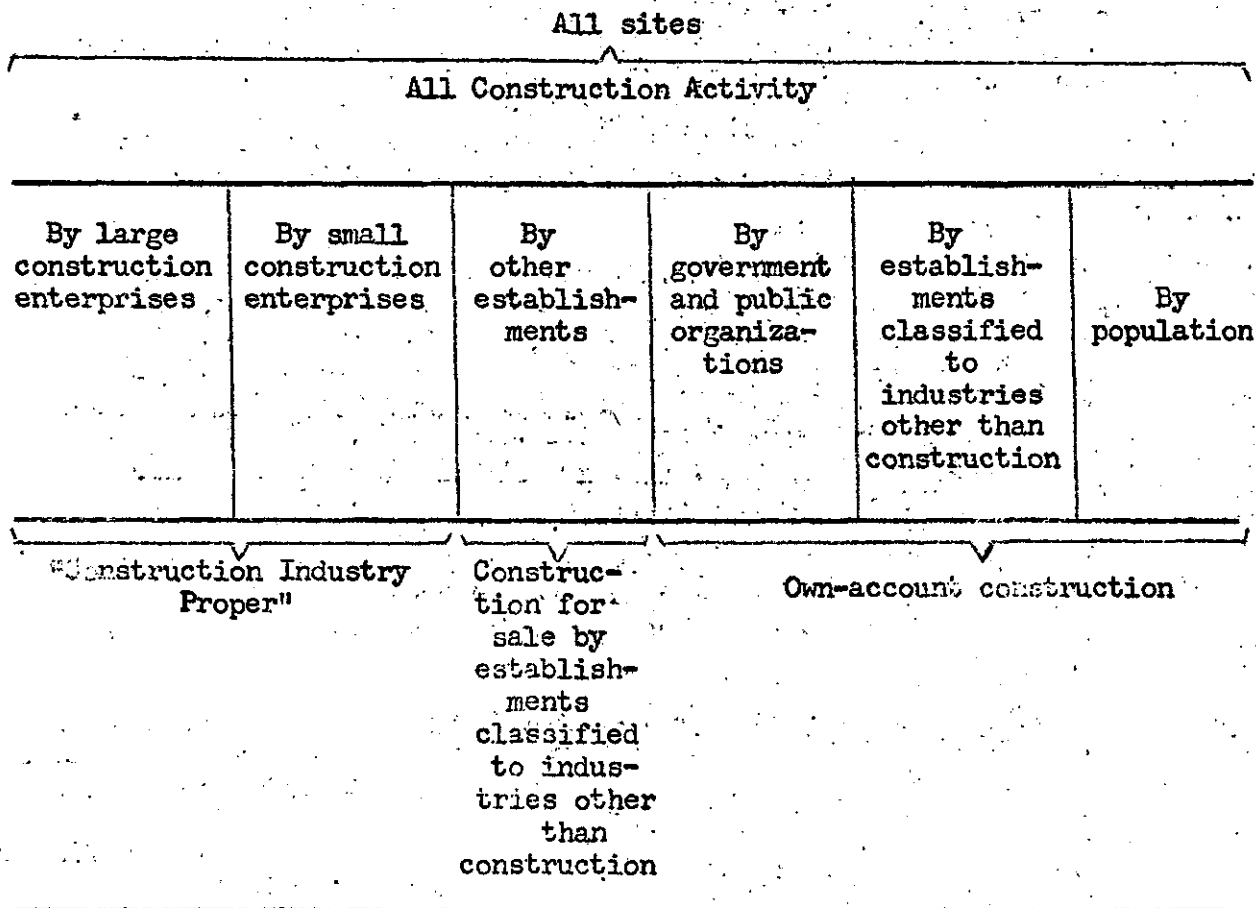
2. Although some of the existing international recommendations for industrial statistics do mention construction statistics briefly, these recommendations are more suitable for mining, manufacturing, electricity and gas, and they are not quite adequate for construction statistics. The recommendations are included in International Recommendations in Basic Industrial Statistics, Statistical Papers, Series M, No. 17, Rev. 1, and in International Recommendations on the 1963 World Programme of Basic Industrial Statistics, Statistical Papers, Series M, No. 17, Rev. 1, Add. 1. International recommendations are also included for Latin American countries in PIEB, where construction statistics are dealt with separately under industrial statistics. Finally, a study entitled Construction Statistics, Studies in Methods, Series F, No. 13, has been published by the United Nations.

3. The special characteristics of construction activity (as evidenced by the several types of units which are engaged in the activity, the continually changing place of work, the existence of a system of main and sub-contractors, the large number of small firms, the unique character of much of the product of the activity, etc.) make construction statistics not only different from the other industrial statistics, but a field where new difficulties are encountered as a result of these characteristics. Therefore, before analysing the work being done in Latin America, it is necessary to discuss several general questions concerning the scope, the coverage and the statistical unit to be used in construction activities.

Scope

4. The definition of construction activity is given in the International Standard Industrial Classification under Division 4. (The definition is reprinted in Series F, No. 13, page 26.) According to the ISIC, all statistical units - in most cases enterprises - whose main activity is construction, as defined under Division 4, are included. But this surely will not cover a large part of the construction activity because of the many different units outside that scope which are also involved in construction. Construction work is carried out not only by large and small construction enterprises, but by government organizations, by establishments

classified to divisions other than construction which carry out construction either for their own use (own-account construction) or for sale. Finally, construction might be carried out by the population for its own use. The following diagram illustrates the distribution of all construction activity according to the builder.



Usually the scope which might be recommended for most items of data to be gathered is the "construction industry proper". For production data or for some kind of production (e.g. housing), all sites (the whole of construction activity) might be covered, usually with the help of administrative records (i.e., permits).

Coverage

5. Having established the scope, the coverage can then be decided. If the scope is to be the "construction industry proper", then the proposed coverage might be the large and small construction enterprises for basic inquiries (the small enterprises might be covered by sample surveys), and the large enterprises for annual and more frequent inquiries. If the scope is the whole of construction activity of some type (e.g., housing), then in basic inquiries (e.g., housing censuses) all sites would be

/covered, while

covered, while in the annual or more frequent inquiries the coverage might be more limited (e.g., to main cities). These examples are given to show some of the possibilities for selecting the coverage and also to point out that in the construction industry the choice of the scope and of the coverage are very closely connected.

Statistical unit

6. The choice of the statistical unit clearly depends upon the scope and coverage selected. In other industrial statistics most of the Latin American countries use the establishment as the statistical unit. Ideally, the establishment is an economic unit which engages, under a single ownership or control, in one or predominantly one kind of economic activity at a single physical location. In the case of construction, where the main activity is carried out at a construction site which is constantly changing, the establishment (or similar unit) as a statistical unit is not applicable. The International Recommendations in Basic Industrial Statistics suggested that no restriction should be placed on the location of the construction activity in defining the unit. In connexion with this, the study, Construction Statistics, states: "...A variety of units can however be distinguished. Some contractors will operate in connexion with their construction activities from a fixed address which consists of an office only, and their only other activities will be on the construction sites. Others will, in addition, operate builders' yards for storage of plant, stores and repair depots. These may not be at the same address as the office, although they may be in the same locality. Enterprises will frequently set up temporary offices on sites (and this may be for a period of years) and some enterprises will also have a number of permanent regional offices from which to organize their activities in different parts of the country. Taking into account the above perhaps it is possible to accept that in the construction industry the statistical unit can be the enterprise or the site or anything between these two. The use of the enterprise will not allow tabulation of the data according to location, but in many countries no records are kept which provide the data needed for enumerating any unit other than the enterprise. The use of the site may be feasible in some countries if their statistical programme involves only a few items of data. The third possibility may arise in the case of enterprises operating through a number of permanent offices. In some countries these may be independent except for normal supervisory functions of head offices, i.e., they may have their own accounts, they may organize their own stores and plant depots, their own transport, etc. In such cases they could rank as separate units for the collection of most data, but the allocation of overhead costs from the head office would be likely to present problems, so that for questions of costs and of course for questions concerning legal organization the units would have to be treated as one. It is, however, common in the case of the large enterprise with more than one regional office, that the head office operates many of the major functions of the units' activities, for example, the preparation of tenders, the purchase and allocation of major pieces of plant, and in such cases the unit from which data will have to be collected will be the permanent head office.

Where separate

Where separate offices are in operation, it might be possible to use these to facilitate the collection of supplementary data relating to the geographical distribution of construction activity."

7. It follows that the two most important statistical units to be used are the enterprise (or one of the similar units) and the site. Here again it is necessary to stress that the choice of the statistical unit is closely connected with the scope. In cases where the scope is the "construction industry proper", the statistical unit chosen in most countries is the construction enterprise. In cases where the scope is the whole of construction activity, the statistical unit is usually the site or the construction work carried out by one permit. Of course it is possible to collect more items of data from the enterprises than can be collected from the site unit. But the site units may be classified into certain categories (geographical, according to type of work, etc.) to which the enterprise cannot, in most cases, be classified.

The basic statistic in Latin American countries

8. Nine countries of Latin America have carried out censuses or basic construction inquiries. The information on the items of data gathered herein refers to eight of the countries, Argentina, Brazil, El Salvador, Jamaica, Mexico, Panama, Peru and Venezuela, for which details are given in Annex I.

Scope and statistical unit

9. The scope of the construction inquiry was, in all countries, the "construction industry proper", as outlined in paragraph 4. All countries used the enterprise as the reporting unit and most countries used it also as the statistical unit. In two countries (Argentina and Brazil) the reporting unit was the enterprise but every enterprise had to submit a separate questionnaire for each administrative district in which it carried out work during the reference year. Two other countries (Panama and Venezuela) designed some chapters of their questionnaires in such a way that the enterprise could give separate information on activities carried out in different administrative regions.

Items of data to be gathered

10. As mentioned above, the items of data gathered by the eight countries in their basic construction statistics are shown in the table in Annex I. The following is a summary of the contents of this table.

(a) Employment and wages and salaries

11. The number of engaged and the number of employed are requested by all eight countries reviewed. Regarding status groups, all countries included working proprietors and active partners, operatives and other employees, but only six countries asked for unpaid family workers. Half

of the countries distinguished employment according to sex. Several countries asked for a further breakdown of the operatives according to skilled, semi-skilled and unskilled workers, and supervisors. In three countries, other employees are further distributed as directors, professionals, technicians, etc. Brazil asked for a breakdown between those born in Brazil, those who are naturalized citizens, and foreigners. Most of the countries tried to get average numbers of the operatives for the year. To this end, some countries asked for four, while others asked for twelve dates during the year. Four countries also asked for man-hours worked.

12. The wages and salaries paid were requested by all countries. Five countries (Argentina, Brazil, El Salvador, Mexico and Venezuela) requested the total of wages and salaries paid during the year according to each of the employees' and workers' categories described in the previous paragraphs. Four countries (Jamaica, Panama, Peru and Venezuela) requested, in addition to the annual data, the value of wages and salaries paid during a pay period. Jamaica limited the information regarding wages and salaries to those paid in a week for each of the described categories of employees and workers, and to an annual total for all categories. Four countries (Mexico, Panama, Peru and Venezuela) also requested the value of the payments for social services, according to category of employment.

(b) Fixed assets

13. The total cost of fixed assets acquired from others or produced ~~from ... in greater or less detail.~~
All countries except Argentina asked for separate data on the acquisition of new and of used fixed assets, and all countries requested the breakdown between machinery, equipment, construction work and transport equipment. All countries except Jamaica requested data on sales of fixed assets. With one exception, all countries asked for stocks of fixed assets at a specific date.

(c) Stocks, consumption of materials and other expenses

14. Five countries (Brazil, El Salvador, Jamaica, Mexico and Panama) requested data, relating to the beginning and to the end of the reference year, on the value of the stocks of construction materials and auxiliaries, and except Jamaica fuels and lubricants, and Venezuela requested the total value of the stocks belonging to the enterprise at the end of the year.

15. All the countries requested the value of construction materials consumed and, with the exception of four countries (Argentina, Mexico, Panama and Peru), this was also done for the quantity of selected important materials consumed. Four countries (El Salvador, Jamaica, Panama and Venezuela) requested a differentiation between domestic and imported materials.

16. The value of fuels consumed was requested by all countries and most of the countries also requested the quantity and value of the individual major fuels consumed.

17. Except for Venezuela, all countries asked for the cost of contract and commission work done by others. Brazil also requested the sub-contracted work by type of work. Several countries asked for data on other expenses, such as the value of electricity purchased, the cost of repair and maintenance of fixed assets, the value of rent, and the cost of advertising, insurance, depreciation, interest, taxes and social security.

(d) Value of work done or of output

18. As is stated in the study entitled Construction Statistics, Studies in Methods, Series F, No. 13, paragraph 4.54: "Many construction projects will be in progress for more than one year and the output has to be defined as the value of work put in place during the inquiry period. In the international recommendation it is suggested that three items of data should be gathered in order to obtain these figures:

- (i) value of work in progress at the beginning of the year;
- (ii) value of work in progress at the end of the year; and
- (iii) value of work completed during the year.

However, most of the countries which collect this form of data collect only figures of the estimated value of work done during the year. In most countries, construction contracts allow for progress payments on a monthly basis."

In most Latin American countries the value of work done during the inquiry period was requested. In the case of general building contractors, the work done by the reporting enterprise, in some countries, was treated separately from that done by sub-contractors. The various possible ways of reporting and the methods of avoiding duplications are dealt with in Construction Statistics, Series F, No. 13, paragraphs 4.54 - 4.58.

19. All Latin American countries are asking for sub-divisions of the value of work done and many countries are also requesting data on the quantity and value of finished products by sub-divisions. The sub-divisions used are set out in the table of Appendix I and are also discussed in Construction Statistics (op. cit.), paragraphs 4.60 - 4.62. One of the most important sub-divisions is the separation of repair and maintenance from new construction work. Many countries of Latin America sub-divide their work done during the period and their finished construction work according to the purpose of the construction (i.e., residential buildings, industrial buildings, roads, etc.). If this distinction is drawn, a precise list of what is to be included in each group is essential.

/(e) Other

(e) Other items of data

20. Several countries of Latin America asked for many other kinds of data. Among them, Brazil requested the value, at the end of the year, of the accounts receivable, and the number and characteristics of transport equipment being used by the enterprise on the last day of the year. Mexico included several additional questions for the purpose of obtaining more detailed information on the financial situation of the enterprise, such as accounts of the assets and liabilities, depreciation, etc., and also added a chapter designed for the auxiliary work-shop of the enterprise (including questions on activity, equipment, personnel, remuneration, consumption expenses and estimates of the value of the works carried out). Venezuela requested information on the capital and reserves, the date of founding, periods of operation and the economic organization of the enterprise. Venezuela also added special pages in which it requested the enterprise to indicate, in a comprehensive list, the machinery and transport equipment of the enterprise and, in an annex to the questionnaire, the number of personnel engaged, during a two-week period, by type of occupation and according to a very detailed classification, as well as the name, address, type of ownership, wages paid and type of activity, of the sub-contractors that worked for the informant enterprise during the reference year.

Current inquiries

21. According to the available information, annual and more frequent data are being sought in the countries of Latin America with the help of administrative records. These are set out in Annex IIA of Construction Statistics (op. cit.). Several countries compiled annual or more frequent data on dwellings completed and the floor area of all buildings for which permits were issued. Some countries also asked for the number of rooms.

22. It is clear that these data cannot be considered satisfactory for current construction statistics. The existing international recommendations (sources for which are given in paragraph 2 of this paper) propose more data, both annual and quarterly.

Proposals for items of data to be gathered in current construction statistics in Latin America

23. Taking into account that except for a few data (mainly for dwelling construction) which are taken from administrative records in most countries of Latin America, no annual or more frequent data are available which use the construction enterprise as the statistical unit, the introduction of construction statistics based on the enterprise as the statistical unit must be considered as something completely new. It therefore seems necessary to go forward slowly and carefully. For the first few years only a small number of items should be collected and perhaps it will be enough to limit the frequency to annual statistics. If there is a suitable quarterly labour survey in the country, this can be considered as one indicator of construction activity.

24. In Annex V of Construction Statistics (op.cit.) the items of data to be gathered in construction inquiries are set out. When the statistical unit is the enterprise, different recommendations are given for smaller and larger enterprises, for infrequent, annual and current construction statistics. As was stated above, most countries have considerable experience in basic inquiries. Therefore, the items of data recommended in Annex V might be considered as suitable. The following list shows the items of data which might be gathered annually from the large construction enterprise:

Scope: "The construction industry proper".

Coverage: Large construction enterprises.

Statistical unit: Enterprise (or one of the similar units).

<u>Items</u>	<u>Priorities</u>
1. Total number of persons engaged during a single part of the inquiry period	1
2. Number of employees as at several specified dates during the inquiry period	total 1
(a) Operatives	1
(b) Other employees	2
3. Wages and salaries paid during the inquiry period	total 1
(a) to Operatives	1
(b) to Other employees	2
4. Total cost of new fixed assets acquired from others or produced on own-account during the inquiry period	1
5. Cost of materials consumed or purchased and payment for services rendered during the inquiry period of which	1
(a) Cost of raw materials, fuels, supplies and components	1
(b) Quantity and cost of individually important materials	1
6. Value of work done (gross output) by the units own labour force during the inquiry period of which	1
(a) New construction	2
(b) Repair and maintenance	2

25. As for the quarterly or monthly inquiries, perhaps the use of permits might be recommended. The scope might be confined to residential buildings, except in countries where the permit system covers more (e.g., industrial and commercial buildings, etc.), where the scope might be extended. The items of data to be gathered as a minimum in the quarterly or monthly inquiries are listed below:

Scope: New residential buildings.
Coverage: Major cities and towns.
Statistical Unit: Site (or permit).

Items:

1. Starting date of project.
2. Total value of the projects started (or permit given) during the inquiry period.
3. Total value of work done up to the end of the inquiry period (priority 2).
4. Total value of projects completed.
5. Number of dwellings finished during inquiry period.
6. Floor area of dwellings finished during inquiry period.

Annex I

CONSTRUCTION CENSUSES: ITEMS OF DATA

	Inter- american programme	Countries							
		Argen- tina	Bra- zil	El Sal- vador	Jamai- ca	Mexi- co	Pana- ma	Peru	Vene- zuela
A. TOTAL NUMBER OF PERSONS ENGAGED DURING A SINGLE PERIOD									
1. Working proprietors and active partners	x	x	x	x	x	x	x	x	x
2. Unpaid family and other unpaid workers	x	x	x	x	x	x	x	x	
(a) Sex indicated		x	x	x	x	x			
<u>Employees</u> (except operatives) Total	x		x			x	x		
Directors, managers, executives		x						x	x 2/
Professional staff		x	x					x	
Technical staff		x						x	
Administrative staff		x	x					x	x
Salesmen in general								x	
Supervisors, clerical staff and salesmen					x				
(a) Sex indicated		x		x	x	x			
<u>Operatives: total</u>	x			x					
Foremen		x	x					x	
Shop stewards		x							
Assistant shop stewards		x							
Hand, apprentices and assistants		x	x 1/						
Skilled workers						x	x	x	x
Semi-skilled workers								x	
Unskilled workers						x	x	x	x
Artisans, technicians and operatives					x				
Manual labours and odd-job men					x				
Home workers and sub-contractors					x				
(a) Sex indicated		x		x	x	x			

Annex I (Cont'd 1)

	Inter- american programme	Countries							
		Argen- tina	Bra- zil	El Sal- vador	Jamai- ca	Mexi- co	Pana- ma	Peru	Vene- zuela
B. NUMBER OF MAN-HOURS WORKED BY OPERATIVES DURING THE YEAR			x	x			x		x
C. WAGES AND SALARIES PAID DURING THE YEAR									
1. To working proprietors and active partners with fixed amount		x							
2. Members of the proprietor's family		x							
<u>To Employees: (Total)</u>	x			x		x	x		
Directors, managers and executives		x						x	x 2/
Professional staff		x	x					x	
Technical staff		x						x	
Administrative staff		x	x					x	x
Salesmen in general								x	
Supervisors, clerical staff and salesmen						x			
(a) Sex indicated				x	x				
<u>To Operatives: (Total)</u>	x			x			x	x	
Foremen		x						x	
Shop stewards		x							
Assistant shop stewards		x							
Hands, apprentices or assistants		x	x						
Skilled workers								x	x
Semi-skilled workers								x	
Unskilled workers								x	x
Artisans, technicians and operatives						x			
Manual labourers and odd-job men						x			
(a) Sex indicated				x	x				

Annex I (Cont'd 2)

	Inter- american programme	Countries							
		Argen- tina	Bra- zil	El Sal- vador	Jamai- ca	Mexi- co	Pana- ma	Peru	Vene- zuela
D. STOCKS, PURCHASES AND SALES OF FIXED ASSETS									
<u>Value of stocks</u> (at the beginning and end of the year)	x								x
Raw materials or construction materials			x	x	x	x	x		
Fuels and lubricants			x	x		x	x		
Value of work in progress					x				
Value of finished products ready for sale					x				
<u>Value of fixed assets</u> (during the year)									
<u>New</u>									
Machinery and equipment (including transport)	x	x	x	x	x 3/	x	x	x	x
Buildings and other construction works	x	x	x	x	x 3/	x	x	x	x
<u>Own-account construction</u>									
Machinery and equipment (including transport)	x			x		x	x	x	x
Buildings and other construction works	x		x	x		x	x	x	x
<u>Used</u>									
Machinery and equipment (including transport)	x	x	x	x	x	x	x	x	x
Buildings, other construction works and land	x	x	x	x	x	x	x	x	x

Annex I (Cont'd 3)

	Inter- american programme	Countries							
		Argen- tina	Bra- zil	El Sal- vador	Jamai- ca	Mexi- co	Pana- ma	Peru	Venezue- la
<u>Sold</u>									
Machinery and equipment (including transport)	x	x	x		x	x	x	x	
(a) Breakdown into domestic and imported		x					x		
Buildings, other construction works and land	x	x	x		x	x	x	x	x
<u>Value of depreciation</u>					x	x			x
E. COST OF GOODS PURCHASED OR CONSUMED AND PAYMENTS FOR SERVICES RENDERED DURING THE YEAR									
Quantity and value of construction materials	x	x 4/	x	x	x	x 4/	x 4/	x 4/	x
Quantity and value of fuels and lubricants	x	x 4/	x	x	x	x	x 4/	x 4/	x 4/
(a) Breakdown into domestic and imported contract and commission work				x	x		x		x
Value of contract and commission work performed by others	x	x	x	x	x	x	x	x	
Other expenditures	x								
(a) Electricity purchased		x	x	x			x	x	
(b) Repair and maintenance of fixed assets		x			x	x	x	x	x
(c) Rent		x	x				x	x	
(d) Publicity and advertising		x	x				x		
(e) Insurance		x					x		
(f) Taxes and charges		x							
(g) Interest paid and or due		x	x		x	x		x	x

Annex I (Cont'd 4)

	Inter-American Programme	Countries							
		Argentina	Brazil	El Salvador	Jamaica	Mexico	Panama	Peru	Venezuela
(h) Employers' social security contributions	x	x							
(g) Freight		x		x					
(j) Royalties and other similar items					x				
(k) Payment for services provided by others (telephone, publicity, water, cable, insurance, etc.)							x		
(l) Others	x			x				x	
F. VALUE OF WORK DONE AND RECEIPTS FOR SERVICES RENDERED									
<u>Construction of buildings</u> (value and area in m ²)									
(a) Residential	x	x 5/	x	x	x 4/	x	x 4/	x	x 4/
(b) Industrial	x			x		x	x 4/	x	x 4/
(c) Commercial	x			x		x	x 4/	x	x 4/
(d) Others	x	x 5/		x	x 4/	x	x 4/	x	x 4/
<u>Other construction works</u> (value and area in m ²)									
(a) Streets, roads, bridges, airports and allied works	x		x	x	x 4/	x 4/ 7/	x 4/		x 4/
(b) Water supplies, sewage and other sanitary engineering works	x		x	x	x 4/	x 4/	x 4/		x 4/
(c) Port facilities	x		x			x 4/	x 4/		x 4/
(d) Dams, hydraulic and irrigation works	x			x		x 4/	x 4/		x 4/

Annex I (Concl'd)

	Inter- American Programme	Countries							
		Argen- tina	Bra- zil	El Sal- vador	Jamai- ca	Mexi- co	Pana- ma	Peru	Vene- zuela
(e) Works connected with the production, transforming and distribution of electricity and allied facilities	x			x			x 4/		x 4/
(f) Railways	x								x 4/
(g) Works connected with the production, refining and distribution of petroleum and gas	x								x 4/
(h) Other	x		x	x	x 4/	x 4/	x 4/		
<u>Value of work done as a sub-contractor</u>	x	x	x	x				x	x
<u>Value of administrative, supervisory and technical work</u>	x	x	x	x		x	x	x	x
<u>Value of products sold</u>	x						x		x

- 1/ Breakdown into persons over and under 18 years of age.
- 2/ Employees and managerial and technical staff.
- 3/ Fixed assets divided into (a) Buildings and land; (b) Machinery and equipment.
- 4/ Value only.
- 5/ Breakdown into private and public buildings.
- 6/ Enough space is given for the respondent to indicate the type of work.
- 7/ Construction work in relation to transport.