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Consultations on the Iron and Steel Industry -
Expert Group on Training Problems

Vienna, Austria, 24 - 26 April 1978

NOTE ON EDUCATIONAL NEEDS AND ALTERNATIVE ILLUSTRATIONS OF TRAINING REQUIREMENTS*

Prepared by
UNIDO Secretariat

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A. Educational needs

The report of the Preparatory Expert Group on training held in Vienna 9-11 January 1978 stated in para. 12 on page 3 "It seemed possible that the future educational requirements for steel industry manpower could be met from facilities expected to be available. However it would be necessary to provide UNESCO with some regional or country analysis of the figures before firm comments could be made". This point was examined further after the meeting, and UNESCO provided the following information about the numbers of persons graduating from higher education institutions in the year 1974 in three regions of developing countries.

Table I

Numbers graduating from third level educational institutions 1974

In the fields of study of law, social sciences, natural sciences and engineering

	(Thousands) ISCED levels		
	5 (post secondary, non-degree)	6 + 7 (first degree and postgraduate)	5, 6 + 7
Africa	3	30	33
Asia	26	318	344
Latin America	4	116	120
Total three regions	33	464	497

The coverage in this table is limited to the fields named as being the areas from which the staff of a steel industry would mainly be drawn.

The figures in the top half of the table attached to the report of the January meeting gave the educational requirements of the steel industries in developing countries in the year 2000 as a total of 240,000 including 1/,000 university graduates and 53,000 qualifying from high school at about 19 years of age. These last two items totalling 70,000 correspond broadly to the educational levels 5, 6 and 7 covered by Table I. By restricting the figure to the three regions shown in the Table it reduces to 49,700, and this total is analysed in Table II. The analysis by region has been worked out on the assumption that each region will be making the same rate of progress in its steel production over the years from 1975 to 2000.

Table II

Educational requirements of the Manpower for the steel industries in developing countries in the year 2000

(including allowance for loss)

	(Thousands) ISCED levels		
	5 (post secondary, non-degree)	6 + 7 (first degree and postgraduate)	5 + 6 + 7
Africa	1.4	0.5	1.9
Asia	16.4	5.3	21.7
Latin America	19.8	6.3	26.1
Total three regions	39.6	12.1	49.7

Using the factor of 10 relating the steel industry's educational demands to the total need for balanced industrial development, it will be seen that, fortuitously, the steel industry's need in the three regions listed for persons with tertiary education in the year 2000 was already covered by the numbers graduating in the year 1974. However the balance as between high school qualifiers (level 5) and university graduates (levels 6 + 7) is out of proportion on that comparison. Even when the growth in enrolment expected by UNESCO between 1974 and 2000 is taken into account the numbers of persons emerging with level 5 qualifications would not appear to reach more than 120 000 in the latter year, still well below ten times the steel industries' needs.

It may be concluded that the expression of confidence that the developing countries' steel industries' needs of educated people at the tertiary level would be met in total in the year 2000 appears justified, but there may be problems of proportions within the total. The same comment may apply to educated people at the secondary level, an issue which has not been analysed in detail.

B. Training requirements

The report of the January meeting asked on page 3 for alternative illustrative estimates to be prepared for the manpower requirements to match steel production growth rates different from that represented by an output of 500 million tons in developing countries in 2000. Table III shows the characteristics of three selected illustrations.

Table III

	Characteristics of alternative growth rates		
	Illustration A	Illustration B	Illustration C
Annual growth rate of steel production in developing countries from 1975 to 2000 (%)	10	9	7
Resulting steel production in 2000 (M/tons)	500	400	250
Estimated total numbers employed in the steel industries in developing countries in the year (millions)	2	1.6	1

The lower half of the table of manpower requirements attached to the report of the January meeting gave a total of 235,000 persons in four categories needing training in the year 2000 in the steel industries in the developing countries. Table IV repeats that figure for Illustration A and gives the alternative numbers for B and C. Figures for Europe remain included.

A regional analysis of training needs is given in Table V. It is based on the assumption that the steel industries in each region will be making similar progress in expanding capacity and that the regional balance of production by the year 2000 will be broadly the same as it was in 1975.

Table IV

Developing countries' Steel Industries' own training needs

Training Category	Thousands needing training in the year 2000 (including allowance for loss)		
	Illustration	Illustration	Illustration
	A	B	C
1. University graduates for technical and management training	24	18	10
2. High school graduates (19 year olds) for technical training	41	31	17
3. High school graduates (19 year olds) for commercial training	34	26	14
4. Secondary school graduates (16 year olds) for craftsman and process training	136	102	56
Total	235	177	97

Table V

Developing Countries' Steel Industries' own training needs

Regional Analysis

Training Category and region	Thousands needing training in the year 2000		
	Illustration A	Illustration B	Illustration C
1. University graduates for technical and management training:			
Africa	0.6	0.5	0.3
Asia	7.4	5.6	3.1
Europe	7.0	5.2	2.9
Latin America	9.0	6.7	3.7
Total	24	18	10
2. High school graduates (19 year olds) for technical training			
Africa	1.1	0.8	0.5
Asia	12.7	9.6	5.3
Europe	11.9	9.0	4.9
Latin America	15.3	11.6	6.3
Total	41	31	17
3. High school graduates (19 year olds) for commercial training			
Africa	0.9	0.7	0.4
Asia	10.5	8.	4.3
Europe	9.9	7.5	4.1
Latin America	12.7	9.7	5.2
Total	34	26	14
4. Secondary school graduates (16 year olds) for craftsman and process training			
Africa	3.7	2.8	1.5
Asia	42.1	31.6	17.4
Europe	39.4	29.6	16.2
Latin America	50.8	38.0	20.9
Total	136	102	56
Regional totals			
Africa	6.3	4.8	2.6
Asia	73.0	54.9	30.0
Europe	68.0	51.3	28.1
Latin America	87.7	66.0	36.3
GRAND TOTAL	235	177	97

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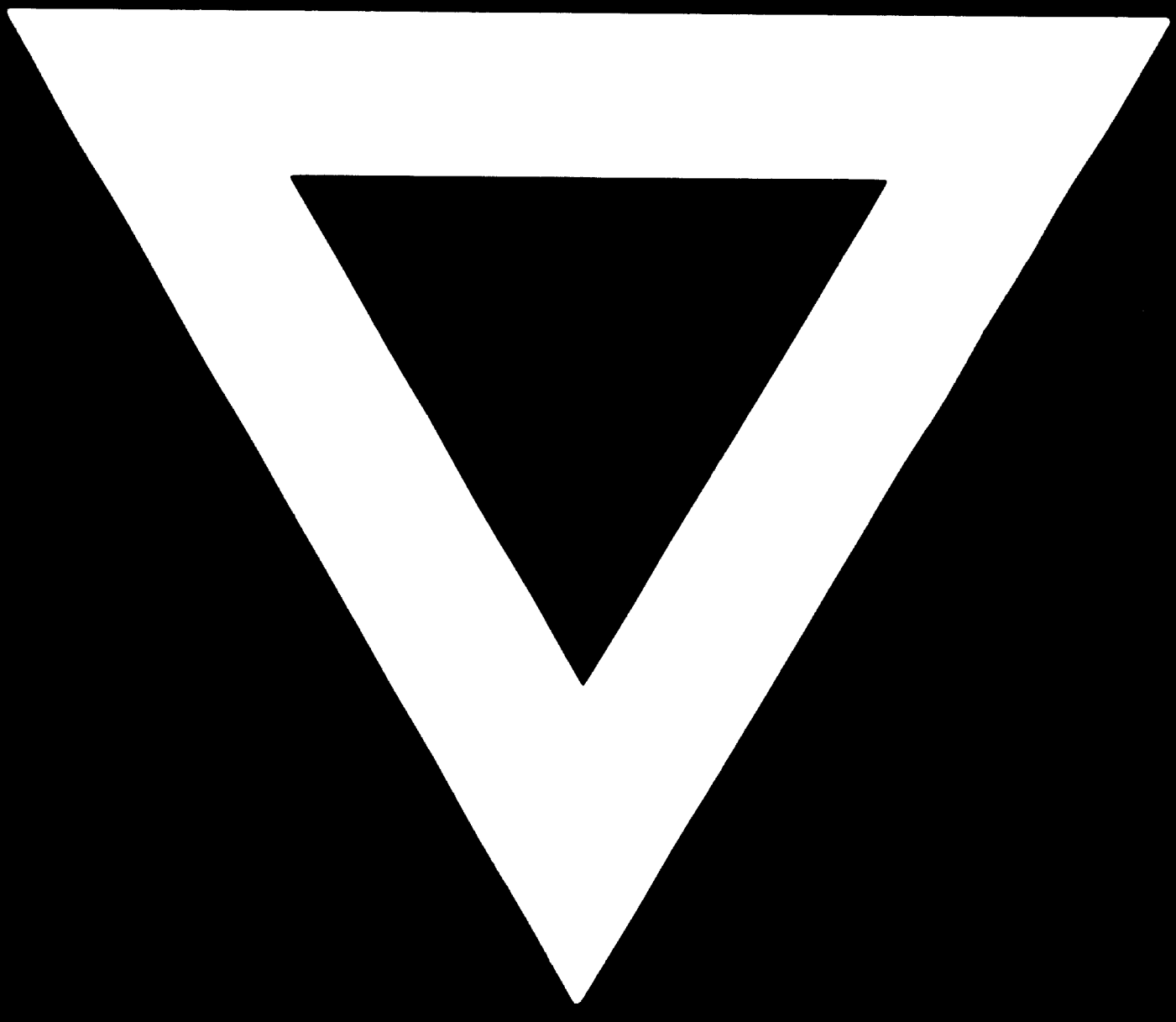

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