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LABOUR INTENSITY IN SMALL-SCALE INDUSTRY ✓

Note

by

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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.

The purpose of this note is to show how much employment may result from one unit of investment in various types of small industries, many of which are suitable for economies at early stages of industrial development.

The table below lists 35 potential small-scale industries, together with the US dollar investment per worker.

The 35 industries are ranked from the most labour-intensive to the least labour-intensive. For example, to establish a plant for the manufacture of laundry soap using a simple process, the investment per worker is shown as \$ 450. In contrast to this type of industry, the investment per worker in a plant to make certain types of plastic goods is \$13,000.

Index numbers in the column at the far right are provided so that users of the list can readily see the comparison of labour intensity from industry to industry.

The determination of labour intensity in different manufacturing industries is not an exact science. This is because there are numerous available technologies and production scales for making the same product. For example, hair oil or pomade is made in some developing countries by the most primitive methods involving one or two unskilled employees stirring a mixture of vegetable oils and perfumes in a vat. By contrast, hair oil is made in industrialized countries by complex chemical processes involving sophisticated instrumentation for quality control, laboratory testing, large scale vats, piping, compressors and pumps.

Therefore, the selection of technologies and scale for a small industry involves a judgement on which rests the conclusion as to whether a small-scale industry is capital or labour intensive.

With an infinite number of process variables, the conclusions shown in the table could be wrong in certain cases.

The table is based on a study written by Alexander Neilson, United Nations Expert on Industrial Engineering, who has served as an advisor to industrial development programmes in Indonesia, Turkey, the Philippines, Venezuela and Trinidad and Tobago. (Alexander Neilson's study is contained in a publication of the United Nations Industrial Development Organization (UNIDO, Vienna, Austria) entitled Small-scale Industry in Latin America, (United Nations publication ID/27, Sales No.: E.69.II.B.37)).

Mr. Neilson points out that in most feasibility studies made for the purpose of selecting suitable small-scale industries, one is faced with the problem of balancing the cost of labour against the capital cost of machinery. There is no universal solution to this dilemma, but as far as small-scale industry is concerned, the partial solution lies in selecting industries that use processes requiring a relatively high labour input and do not require special-purpose, high-capacity machines.

The table attempts to identify industries that are viable when small and which tend to be labour-intensive.

In preparing the above cited study, Mr. Neilson drew on the experience of the Industrial Development Corporation in Trinidad and Tobago. In some cases, where no local experience with a given industry was available, Mr. Neilson used a publication prepared by the United States Agency for Industrial Development called Industry Profiles. These are descriptions of industrial plants indicating the processes, raw materials, labour, capital, space, profitability and other characteristics of small-scale industry in the United States.

LABOUR INTENSITY OF SELECTED SMALL-SCALE INDUSTRIES

(A) Rank in Terms of Labour Intensity	(B) <u>Type of Industry</u>	(C) Capital Investment per Worker (unit: \$)	(D) Quartile ^a	(E) Labour Intensity Indicator (reciprocal of capital investment per worker x 10,000)	(F) Labour Intensity Index Number
1	Laundry soap (I) ^b	450	A	22.2	100
2	Woodworking, wood mouldings	600	A	16.7	75
3-a	Apparel (I)	1,000	A	10.0	45
3-b	Metalworking, metal spinning	1,000	A	10.0	45
3-c	Metalworking, sheet-metal work	1,000	A	10.0	45
3-d	Woodworking, mosaic parquetry	1,000	A	10.0	45
4	Plastic goods, for thermoplastic materials, slush moulding	est. 1,200	A	8.3	37.5
5-a	Agricultural products and by-products, sorghum (sorghum vulgare)	1,250	A	8.0	36
5-b	Apparel (II)	1,250	A	8.0	36
6	Knitted cottons (I)	1,400	A	7.1	32.1
7-a	Cement-based industries, concrete blocks	1,500	A	6.7	30
7-b	Drinking straws	1,500	A	6.7	30
7-c	Fluorescent light fittings	1,500	A	6.7	30
7-d	Metalworking, ornamental ironwork	1,500	A	6.7	30

^a Quartile A includes industries ranked from 1 to 10; B: 11 to 20; C: 21 to 30; D: 31 to 39.

^b (I) and (II) indicate technological alternatives for the same type of industry.

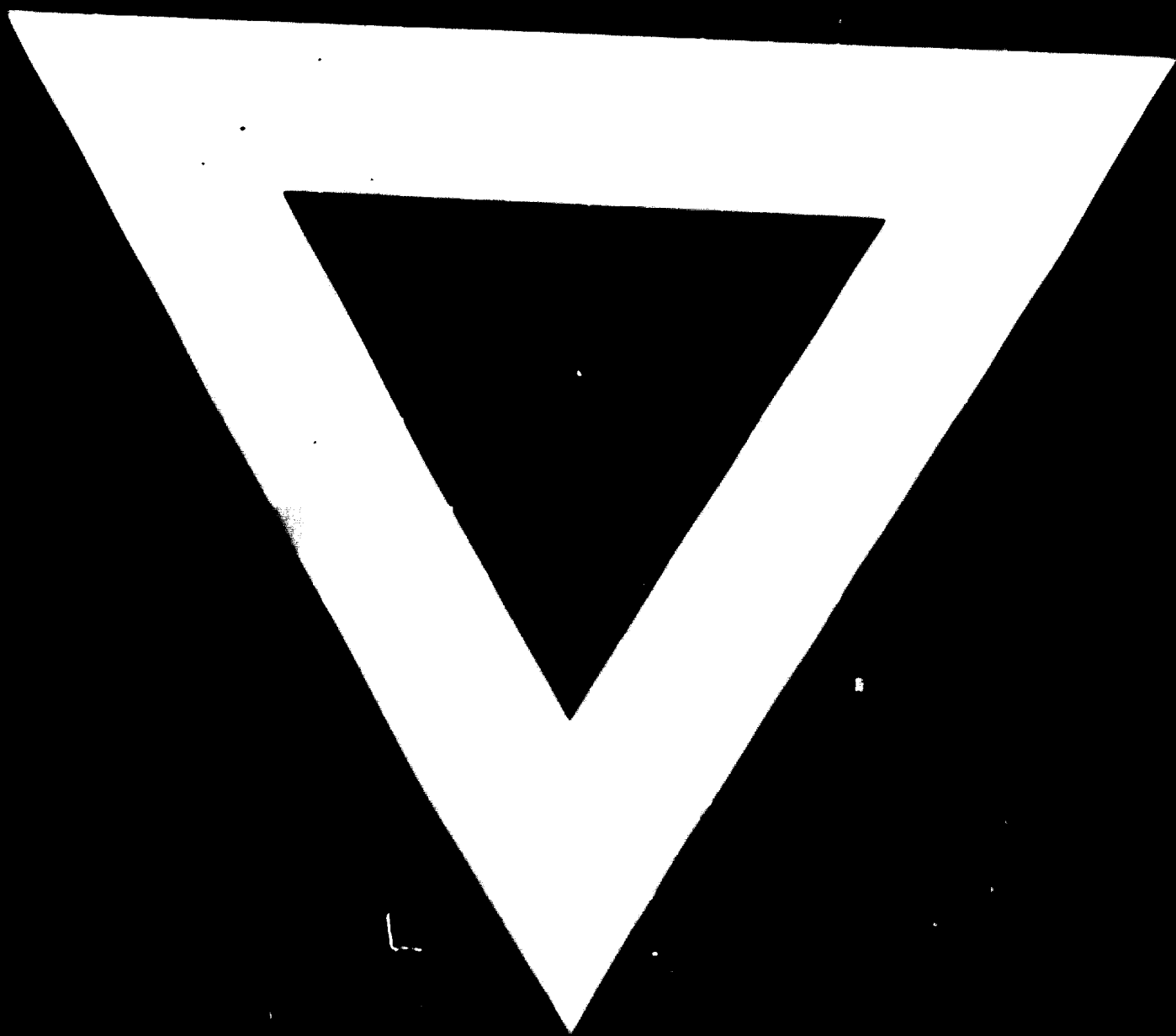
(A)	(B)	(C)	(D)	(E)	(F)
8-a	Agricultural products and by-products, bananas and plantains chips	1,600	A	6.3	28.1
8-b	Wooden furniture (I)	1,600	A	6.3	28.1
9-a	Mixing of animal and poultry feeds	1,750	A	5.7	25.7
9-b	Plastic goods, for thermoplastic materials extrusion	1,750	A	5.7	25.7
9-c	Plastic goods, for thermoplastic materials, sheet moulding	est. 1,750	A	5.7	25.7
10-a	Cement-based industries, cement and sand mixed and bagged	2,000	A	5.0	22.5
10-b	Laundry soap (II)	2,000	A	5.0	22.5
10-c	Mattresses (Interior spring) (I)	2,000	A	5.0	22.5
11	Agricultural products and by-products, coconut bristle fibre	2,250	B	4.4	20.0
12-a	Concrete-based industries, concrete tiles	2,500	B	4.0	18.0
12-b	Metalworking, mufflers and exhaust pipes (I)	2,500	B	4.0	18.0
12-c	Miscellaneous products, mosquito coils	2,500	B	4.0	18.0
13	Toilet tissues, paper napkins, sanitary pads, paper bags, envelopes	2,600	B	3.8	17.3
14-a	Burnt clay products, roof and floor tiles	3,000	B	3.3	15
14-b	Egg cartons	3,000	B	3.3	15
14-c	Glass products, glass scientific apparatus	3,000	B	3.3	15
14-d	Knitted cottons (II)	3,000	B	3.3	15
14-e	Mattresses (Interior spring) (II)	3,000	B	3.3	15
14-f	Plastic goods, reinforced mouldings	3,000	B	3.3	15
14-g	Printing	3,000	B	3.3	15

(A)	(B)	(C)	(D)	(E)	(F)
14-a	Rubber-based industries, rubber moldings	3,000	B	3.3	15
14-1	Sugar confectionery	3,000	B	3.3	15
14-j	Wax candles	3,000	B	3.3	15
14-k	Miscellaneous product, zip-fasteners	3,000	B	3.3	15
15	Metal furniture (I)	3,100	B	3.2	14
16-a	Baking powder (I)	3,200	F	3.1	14.1
16-b	Rubber-based industries, tire-recapping	3,200	B	3.1	14.1
17	Metalcutting, wirework	3,250	B	3.1	13.9
18	Miscellaneous product, polishes	3,300	B	3.0	13.6
19	Jewellery	3,333	B	3.0	13.5
20	Television and radio assembly	3,500	B	2.9	12.9
21-a	Lumber industries	4,000	C	2.5	11.3
21-b	Paper plates, sanitary cups, food containers	4,000	C	2.5	11.3
21-c	Rubber-based industries, camelback	4,000	C	2.5	11.3
22	Leather work	4,250	C	2.4	10.6
23	Cement-based industries, ready-mixed concrete with delivery trucks (I)	4,340	C	2.3	10.4
24	Biscuits	4,500	C	2.2	10.0
25-a	Black nuts and bolts	5,000	C	2.0	9.0
25-b	Burnt clay products, hollow blocks (I)	5,000	C	2.0	9.0
25-c	Bible oils	5,000	C	2.0	9.0
25-d	Glass products, laminated safety glass	5,000	C	2.0	9.0
25-e	Grey-iron foundry	5,000	C	2.0	9.0
25-f	Acetoni and needles	5,000	C	2.0	9.0

(A)	(B)	(C)	(D)	(E)	(F)
25-g	Metalworking, jobbing machine shop (I)	5,000	C	2.0	9.0
25-h	Non-ferrous foundry	5,000	C	2.0	9.0
26	Baking powder (II)	5,200	C	1.9	8.7
27	Concrete-based industrials, ready-mixed concrete with delivery trucks (II)	5,300	C	1.9	3.5
28	Glass products, mirrors	5,500	C	1.8	8.2
29	Miscellaneous product, powders, etc.	5,800	C	1.7	7.8
30-a	Glass products, glass ornaments	6,000	C	1.7	7.5
30-b	Plastic goods, cellular plastics, rigid expanded materials	6,000	C	1.7	7.5
30-c	Tanning, sole and uppers leathers	6,000	C	1.7	7.5
30-d	Woodworking, crate-making	6,000	C	1.7	7.5
30-e	Woodworking, flush doors	6,000	C	1.7	7.5
31	Wooden furniture (II)	6,200	D	1.6	7.2
32-a	Burnt clay products, hollow blocks (II)	7,000	D	1.4	6.4
32-b	Metal furniture (II)	7,000	D	1.4	6.4
32-c	Storage batteries (I)	7,000	D	1.4	6.4
32-d	Tanning, sole leather	7,000	D	1.4	6.4
32-e	Miscellaneous product, liquid bleach	7,000	D	1.4	6.4
33	Agricultural products and by-products, canners	7,800	D	1.3	5.8
34-a	Metal pressing	8,000	D	1.3	5.6
34-b	Metalworking, farm tools	8,000	D	1.3	5.6
34-c	Metalworking, jobbing machine shop (II)	8,000	D	1.3	5.6
34-d	Metalworking, tools and dies	8,000	D	1.3	5.6
34-e	Storage batteries (II)	8,000	D	1.3	5.6

(A)	(B)	(C)	(D)	(E)	(F)
35	Metalworking, mufflers and exhaust pipes (II)	9,000	D	1.1	5.0
36	Metalworking, radiator cores and tanks	10,000	D	1.0	4.5
37	Plastic goods, for thermoplastic materials, moulds	11,440	D	0.9	3.9
38	Exercise books, writing pads, loose-leaf notebooks	12,500	D	0.8	3.6
39	Plastic goods, cellular plastics, flexible foams	13,000	D	0.8	3.5

Source: Calculated from Development Possibilities for Small-scale Industry in Special Fields of Industrial Activity, by Alexander Neilson, contained in Small-scale Industry in Latin America, United Nations Industrial Development Organisation, Vienna, United Nations publication, ID/27, Sales No.: E.69.II.B.37.



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