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DISCUSSION PAPERS

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Industries in the Recovery and
Development of the Southern
Sudan**

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THE ROLE OF SMALL SCALE RURAL INDUSTRIES
IN THE RECOVERY AND DEVELOPMENT OF THE SOUTHERN SUDAN

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I. INTRODUCTION

The focus of development policy on the promotion of small scale rural industry arises from the continuous changes in the perception of development as a result of experiences with various strategies since the end of the second world war. The first emphasis on economic growth based on massive urban industrialisation did not bring the expected modernization and take-off into self-sustained growth in underdeveloped countries. Instead, urban open unemployment and underemployment, glaring inequalities and absolute poverty increased. Consequently, there was a shift in the literature on direct attack on poverty, inequalities and unemployment. The role of the informal sector in the urban areas and the role of agriculture in the rural areas were highlighted. But agriculture alone in the rural areas cannot lead to sustained development. Hence, later emphasis was put on integrated rural development. The integrated rural development was to embrace development of infrastructure and social services in addition to agriculture. The role of small scale rural industry aims at the diversification of the rural production system and hence enhance the employment, output and income earning opportunities in the rural sector.

This paper attempts to discuss the role of small scale rural industry in the Southern Sudan. Given the absence of data on this activity in the Southern Sudan, emphasis is given to qualitative analysis.¹ The activities that have been undertaken in the Southern Sudan are highlighted. Suggestions are

made on what else can be encouraged there. Integrated within the discussion of each activity are the necessary policies that could be pursued in order for these activities to play their role in the recovery and development of the Southern Sudan in the post second war period.

The importance of this subsector in the reconstruction and development of the Southern Sudan arises from the fact that this is the only industrial subsector that has had a greater role than large scale urban industry in the South. The skills for the revival of this subsector exist and given the less demanding complementary facilities and inputs this sector requires, it could respond much more quickly to the recovery of the South than the encouragement of large scale industry. Moreover, this subsector is of immediate direct benefit to the rural population through agricultural production, employment and incomes; poverty alleviation and minimization of rural-urban migration. Furthermore, it provides a sound basis for further development.

Rural industry also contributes to food security as it supplies and repairs the farm tools and implements. It increases the market for agricultural output leading to encouraging increased food production as well as the ability to purchase food by those not directly engaged in agriculture. In the case of crop failures rural industrial employment can provide earnings for food purchases from other areas and/or imports. Part-time rural industrial activity reduces underemployment, and therefore increases the income of the rural population and enhances their

ability to purchase food and have a diversified food basket.

However, before we discuss the role of rural industry in the Southern Sudan, we first outline the state of industrial development of the South before the second war. Secondly, we review the role of small scale rural industry in under-developed countries so as to situate the position of the Southern Sudan in a broader perspective.

2. INDUSTRY IN THE SOUTHERN SUDAN

Formal industrial development has hardly started in the Southern Sudan as a result of its political history. Traditional handicrafts has been the major form of manufacturing up to the present time. However, traditional handicraft production has been basically a secondary occupation and it is not long far back when its products entered the modern sector as commodity for sale.

With regard to modern industry it was only towards the end of the colonial era that the first factories were set up in the South.² In 1952, a spinning and weaving mill was established at Nzara. An oil processing mill started in Yirol and a number of saw mills were established in Katire, Loka West and Wau and other minor centers. A fruit canning factory was commissioned in Wau in 1967. The first civil war brought virtually all of these activities to a standstill and some were even destroyed.

Since 1972, a few private industries started operations in the South. These included bakeries, ready-made clothes

manufacturing, tobacco processing and manufacture, boat building, soft drinks, mineral water and ice production, and a number of small scale production units such as tailoring, carpentry, blacksmithing, motor and bicycle repairs, miscellaneous mechanical and electrical repair units, etc. Most of these activities were concentrated in the major towns, especially the largest three, namely Juba, Wau and Malakal.

To boost industrial development, the Southern Regional Government, in Juba, initiated a number of industrial development projects. These included:³

- (1) Handicraft industry;
- (2) Kapoeta Cement Factory (Feasibility Studies);
- (3) A Foundry;
- (4) A Fruit Processing Plant;
- (5) Plastic and Steel Pipes Manufacture; and
- (6) A Bicycle and Motorcycle Assembly Plant

In addition to the above projects of the Regional Government, the Central Government, in Khartoum, included in its development plans, the completion, rehabilitation or reactivation of a number of on-going or dormant projects in the South which were at various stages of implementation in 1972. These included:

- (1) The Nzara Agricultural Production Corporation;
- (2) The Wau Fruit Canning Factory;
- (3) The Tonj Kenaf Project;
- (4) The White Nile Brewery at Wau;
- (5) The Melut and Mongalla Sugar Projects [^]_{a;d}
- (6) The Mongalla Textile (Weaving) Project.

Until the outbreak of the second civil war in 1983, neither the Regional Government nor the Central Government projects had materialized. Those that had been operational and needed rehabilitation or overhauling, such as the Nzara complex, deteriorated further.

In the private sector, the Regional Government issued licenses for establishment, in the South, of the following industries:⁵

- (1) Juba Slippers Factory;
- (2) Tile Factory;
- (3) Biscuits Factory;
- (4) Rejap Mineral Water Factory;
- (5) Equatoria Oil Factory;
- (6) Equatoria Ready-made Clothes Factory;
- (7) The Unity Clothes Factory;
- (8) Unity Bakery;
- (9) Juba Plastic and Rubber Production Factory;
- (10) Mineral Water and Squash Industry; and
- (11) Taher Ready-Made Clothes Factory.

These private sector factories are definitely urban based. The location of the public sector industries depends very much on the source of raw material. Those dependent on agricultural and other primary resources tended to rural location, for example, the cement, kenaf and sugar industries.

Even the government handicraft industry was planned for location in Juba, Malakal and Wau.⁶ It was aimed at

encouraging indigenous crafts and skills. It was to help those artisans who have talents but could not afford to buy appropriate tools and raw materials to produce various articles which they could sell to make a decent living or to supplement their incomes. It was planned that three handicrafts centers were to be built in Juba, Malakal and Wau. Tools and raw materials were to be bought by the Regional Ministry of Industry and given to cooperatives or groups of craftsmen such as blacksmiths, carpenters, leather craftsmen, ivory curvers, etc. The Ministry was to recover its loaned money by charging a certain percentage of the profits made by the artisans. The Juba and Malakal centers did not progress beyond the design level as a result of difficulty of suitable locational sites. The construction of the Wau Center was completed in August 1975 but the floods of that year destroyed it and a new center was to be built at a new site.

While the assistance to handicraft activities in the urban centers is not in dispute, the greatest efforts should be directed at encouraging these activities in the rural areas where the majority of these activities are carried out.⁷ The employment, output and income effects would be greater. Growth and development of rural cottage and handicraft activities would also contribute to the minimization of the rural-urban migration as well as contribute to minimizing the distribution of development opportunities between urban and rural areas. Furthermore, it would meet urgently felt needs.

The various activities being carried out at the subsistence level, both in the rural and urban areas, include the following:⁸

- (1) Pottery;
- (2) Fibre weaving: making of baskets, mats, ropes, etc.;
- (3) Leather works: handbags, wallets, belts, etc.;
- (4) Carpentry and wood-carving: canoes, and human, animal and birds statues, etc.;
- (5) Iron mongery: spearheads, hoes, axes;
- (6) Home-made yarns and building materials;
- (7) Cheese making;
- (8) Carpet making;
- (9) Musical instruments making; and
- (10) Granary making or weaving.

Other small scale industries located both in rural and urban areas; but basically for commercial purposes include:

- (1) Grinding mills;
- (2) Crop processing such as tobacco curing;
- (3) Tailoring; and
- (4) Repair works especially for bicycles.

3. SMALL SCALE INDUSTRIES IN UNDERDEVELOPED COUNTRIES - AN OVERVIEW

This section summarizes many of the characteristics of small scale industries in underdeveloped countries. These features include the magnitude, composition, location, size, ownership, demand and supply factors and policies that have been used to encourage the development of this scale of industry

in these countries. It is hoped that this review of empirical evidence from diverse countries will give some ideas on what role these activities can play in the reconstruction and development of the Southern Sudan; and how their development can be brought about.⁹

The available evidence shows that small scale industry is a significant component of the manufacturing sector in under-developed countries. In Table 1 we see that in 13 of the 14 countries small scale firms account for more than 50% of total industrial employment. On the average, 71% of all industrial employment was generated by small enterprises.

Most of the employment was concentrated at the smallest end of the size spectrum. Nearly two-thirds of the manufacturing enterprises in these 14 countries employed fewer than 10 persons. Very few firms employed between 10-49 persons.

The relative importance of small scale enterprises, however, is partly related to the country's overall level of per capita income. Such firms are particularly prominent in lower income countries, playing a relatively smaller role in countries with higher incomes. For example, small scale enterprises accounted for 64% of industrial employment in those countries in the table with lower than \$1,000 per capita income, but generated only 42% of such employment in those countries where per capita income exceeds \$1,000. The implication of the latter finding is important for the role of these enterprises

TABLE 1. DISTRIBUTION OF EMPLOYMENT IN MANUFACTURING BY FIRM SIZE (PERCENTAGES)

Country and Date	Per Capita Income (\$) 1982	Firm Size (Number of Workers)		
		Small Scale Below 10	10-49	Large Scale 50+
India (1971)	260	42	20	38
Tanzania (1967)	280	56	7	37
Ghana (1970)	360	84	1	15
Kenya (1969)	390	49	10	41
Sierra Leone (1974)	390	90	5	5
Indonesia (1977)	580	77	7	16
Zambia (1985)	640	83	1	16
Honduras (1979)	660	68	8	24
Thailand (1978)	790	58	11	31
Philippines (1974)	820	66	5	29
Nigeria (1972)	860	59	26	15
Jamaica (1978)	1,330	35	16	49
Colombia (1973)	1,460	52	13	35
Korea (1975)	1,910	40	7	53

Source: Carl Leidholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p.15.

in the Southern Sudan given the low level of income there and the fact that per capita income in the Southern Sudan is likely to remain low for decades to come.

The contribution of small scale industry to industrial and overall production is also substantial as shown in Table 2.

TABLE 2. CONTRIBUTION OF SMALL SCALE MANUFACTURING TO GROSS DOMESTIC PRODUCT

		<u>Small Scale Manufacturing as a:</u>	
		<u>Percentage of</u>	<u>Percentage of</u>
		<u>total manufac-</u>	<u>total GDP</u>
		<u>turing GDP</u>	
Bangladesh	(1977-78)	50	4.6
Burundi	(1980)	64	8.2
Ghana	(1970)	26	2.9
Pakistan	(1979-80)	30	4.6
Sierra Leone	(1975)	43	2.9
Indonesia	(1974-75)	26	NA
Jamaica	(1978)	22	3.5

NA = Not available

SOURCE: Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p. 17.

From Table 2, it can be seen that small scale firms account for an average of 37% of manufacturing value added. Although the small firms' relative value added contributions were less than their relative employment shares shown in Table 1, their effect on the economy was, nevertheless, still substantial. As

a percentage of total GDP, the contribution of small enterprises ranged from 2.9% to 8.2%.

The available evidence on the composition of employment in small scale manufacturing establishments show that small scale industrial activities tend to be concentrated in the production of light consumer goods. Three two-digit industry groups [food/beverage (31), textile/weaving apparel (32), and wood products (33)] account on average, for over 77% of small enterprises employment in the 10 countries reviewed in Table 3.

Among these groups, clothing (primarily tailoring) predominates in most countries. With the conspicuous exception of Zambia, it accounts for no less than 20% and frequently greater than 50% of all small enterprise employment.

Furniture and wood crafts tend to dominate within the wood category, while baking, beer brewing and agricultural processing are frequently important within the general food group. Other small enterprise activities typically found with regularity are car, electrical and bicycle repair, blacksmithing, and light engineering. In the latter group, bicycle repair and blacksmithing are common in rural areas while the others in the group are basically urban activities.

In a study focusing on Africa, it was observed that clothing production (primarily tailoring) predominates in most countries, ranging from 25% of all establishments in rural Burkina Faso to 52% in Nigeria.¹⁰ Wood production (primarily furniture making) follows, with metal-working (usually blacksmithing),

TABLE 3. COMPOSITION OF EMPLOYMENT IN SMALL SCALE MANUFACTURING ESTABLISHMENTS (PERCENTAGES)

Item	Sierra Leone Entire Country 1975	Nigeria Mid-Western Kwara, Western & Lagos States 1972	Zambia All except Copperbelt Provinces & Lusaka 1985	Egypt 2 Rural govern- erates 1982	Bangladesh 11 Thanas 1980	India 5 North- ern States 1971	Thailand Provin- cial Villages 1980	Philippines Entire Country 1972	Jamaica Entire Country 1979	Honduras 3 Rural Provinces 1980
Food/ Beverages (31)	5	5	55	58	25	22	2	8	7	39
Textiles/ Wearing Apparel(32)	52	56	5	21	58	42	40	48	30	30
Wood Products(33)	18	11	33	9	13	10	26	6	35	15
Paper Products(34)	-	2	-	*b	*	*	-	-	*	-
Chemical Products(35)	-	-	-	*	1	*	-	-	*	-
Non-metal Products(36)	-	1	2	4	2	12	1	-	1	11
Basic Metals(37)	-	-	-	-	-	*	-	-	-	-
Other Metal Industries (38)	20	15	4	6	2	6	*	16	11	3
Othersc (39)	5	10	1	2	1	7	31	22	16	2
TOTAL	100	100	100	100	100	100	100	100	100	100

^aBased on number of enterprises; ^bless than 1%; ^cincludes repair activities.

SOURCE: Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p. 19.

food production (primarily baking), and vehicle, shoe, electric, and bicycle repairs also found with some frequency. In the rural areas of several countries, such as Burkina Faso and Botswana, beer brewing is a dominant activity, usually undertaken by women. In general, small-scale firms are involved in the production of light consumer goods--clothing, furniture, simple tools, food and drink.

As regards the size of the small-scale firms, the overwhelming bulk of these firms are extremely small. For example, in five of the countries reviewed in Table 4, over half the small enterprises are one-person firms. Moreover, 85% or more of the firms

TABLE 4. DISTRIBUTION OF SMALL SCALE MANUFACTURING ESTABLISHMENT BY SIZE OF LABOUR FORCE (PERCENTAGES)

Size (Number of Persons)	Bangla- desh 11 Thannas 1980	INDIA		Sierra Leone All 1976	Zambia 1985	Honduras 3 Rural Provinces 1980	Egypt 2 Rural Govern- erates 1982	Jamaica All 1979
		Punjab Rural 1971	Haryana Rural 1971					
1	15	65	57	42	68	60	63	62
2-5	69	32	38	53	30	35	34	32
6-9	12	2	2	4	1	4	2	4
10-50	4	1	3	1	1	1	1	2

SOURCE: Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p. 22.

in all these countries employed fewer than six persons. In most countries, the small number of small firms employing over 6 persons are quite modest. Such findings indicate that most small firms in underdeveloped countries are tiny indeed. Hence, the focus on this scale of firms in the South will not be out of place.

Labour is a major input for small scale enterprises. Table 5 reveals that proprietors and family workers account, on average, for over 50% of small enterprise employment. This figure reflects the predominant role played by the very small enterprises, particularly the one person firm.

The relative significance of apprenticeship labour, on the other hand, varies widely. Apprentices are particularly important in West Africa and Haiti, where they account for a major share of small enterprise employment. Apprenticeship plays a key role in skill formation. This is the case in the Southern Sudan in the case of tailoring and blacksmithing.

Hired workers typically form the smallest segment of small enterprise employment in most underdeveloped countries. These workers are frequently found in the more modern types of enterprises that operate on a somewhat larger scale, such as bricks and tiles, baking, repairs, and metal working. Although the wages paid to hired workers in small manufacturing vary quite widely, their average real wage is often on the order of half that paid to comparable hired workers in large scale enterprises as the government minimum wage regulations usually do not apply to these enterprises. The wage rates in small

TABLE 5: LABOUR FORCE CHARACTERISTICS OF SMALL SCALE MANUFACTURING FIRMS (PERCENTAGES)

Country	Proprietors and Family Workers	Hired Workers	Apprentices
<u>Sierra Leone</u> - Entire Country (1976)	41	17	42
<u>Nigeria</u> Western Region (1970)	39	11	50
Midwest Region (1971)	30	7	63
Lagos (1971)	33	10	57
<u>Ghana</u> Kumasi (1975)	29	6	65
Accra (1972)	39	9	52
<u>Burkina Faso</u> Eastern Ord (1980)	94	2	4
<u>Tanzania:</u> Dar and 20 Townships (1967)	52	41	7
<u>Egypt</u> Fayoum and Kalyubiya Gov. (1981)	64	27	9
<u>Bangladesh</u> 11 Thanas (1980)	71	28	1
<u>Thailand</u> Rural Towns (1980)	39	53	8
<u>Haiti</u> (1979)	34	31	35
<u>Honduras</u> Rural Provinces	63	31	6
<u>Jamaica</u> - Entire Country (1979)	57	32	10

SOURCE: Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p. 24.

scale manufacturing industries largely depend on the performance of the enterprises and personal relationship that exists between the employees and the proprietors.

Own-operators play a key role in small-scale enterprises. For example, in the six countries shown in Table 6, 95% of the small firms were owned by sole proprietors. There are few partnerships, corporations (or limited liability companies), and cooperatives, but almost no small enterprise in the public sector.

TABLE 6. OWNERSHIP OF SMALL SCALE MANUFACTURING ENTERPRISES (PERCENTAGES)

Country	Public	Sole Proprietor- ship	Partner- ship	Corp- oration	Cooper- atives	TOTAL	
						All	Female Owner- ship
Nigeria (3 states)	-	98.0	1.4	0.2	0.4	100	NA
Egypt (2 governrates)	0.1	99.7	-	-	0.1	100	43.0
Bangladesh (11 Thanas)	-	98.7	1.0	0.2	0.1	100	3.3
Thailand Rural Towns	-	80.4	-	3.4	-	100	37.0
Honduras (Rural Provinces)	-	98.7	1.2	0.1	0.3	100	61.0
Jamaica (Entire Country)	-	94.3	4.0	0.7	0.8	100	49.0

NA = not available

SOURCE: Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1989), p.30.

The female manufacturing proprietors in Egypt, Honduras, Jamaica and Thailand is exceptionally higher than normal in underdeveloped countries generally. Female proprietors tend to be concentrated in the handicraft, garment and food related industries. Female sole proprietors dominate certain small scale industries in a number of countries in Africa such as beer brewing in Burkina Faso, Botswana, Ghana [and Southern Sudan]; gara dyeing in Sierra Leone, and clothing production in Ghana.¹¹

Table 7 gives the evidence from the examination of socio-economic characteristics of the proprietors. These characteristics shed light on the ability of the proprietors to perform their various activities.

The evidence from the five countries studied indicates that the vast majority of proprietors were operating in areas where they were born. Another study reported similar findings on Nigerian entrepreneurs outside Lagos where less than 5% of the entrepreneurs were operating in regions other than that of their birth.¹² Relatively few proprietors were engaged in the same occupations as their fathers, many of whom had been farmers. Indeed, 65% or more of the proprietors in these countries had started their own business. Hence, while the small enterprise proprietors were geographically immobile, they were highly mobile in terms of occupation.

Except for Sierra Leone, the majority of proprietors had some formal education. The percentage of proprietors receiving informal training either on-the-job or through the

TABLE 7. SOCIO ECONOMIC CHARACTERISTICS OF SMALL SCALE MANUFACTURING PROPRIETORS (PERCENTAGES)

Characteristic	Jamaica	Sierra Leone	Honduras	Egypt	Bangladesh
Enterprise operating in area of proprietor's birth	82	-	-	-	92
Occupation same as father	10	-	13	22	45
Father's occupation was farming	64	63	-	26	-
Started own business	86	-	85	-	65
Any formal education	88	23	74	-	59
Formally apprenticed	75	99	26	49	25
Years of experience	13	13	-	23	18
Keeping records	16	18	14	6	6

SOURCE; Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p. 33.

apprenticeship system varied widely, ranging from 25% in Bangladesh to 99% in Sierra Leone. The high percentage of informal training in Sierra Leone may be compensating for the little percentage of formal education. However, the average proprietor had 13 years or more of experience while relatively few of them kept even a rudimentary set of business records.

A review of the capital stock indicates that the overall initial capital requirements for the small scale industries ranged from \$49 in Sierra Leone to \$1,104 in Jamaica and \$354 in Honduras in the middle.¹³ However, these overall figures masked the variations by enterprise type.

Capital has always been given as a major constraint on beginning many forms of economic activities. Table 8 shows the sources of capital for initial investment by small enterprises in five countries.

TABLE 8. SOURCE OF FINANCE FOR INITIAL INVESTMENT BY SMALL ENTERPRISES (PERCENTAGES)

Source	Bangladesh 11 Thanas 1980	Nigeria 3 states 1970	Sierra Leone Entire Country ±1976	Tanzania Rural Towns 1968	Haiti Port-au-Prince 1979
Own Savings	73	94	60	78	72
Relatives	2	4	20	15	9
Banks	**	1	1	1	1
Government	**	**	**	1	**
Money Lenders	1	**	1	**	1
Other*	23	**	18	6	16

* Includes nonresponses

** Less than 1%

SOURCE: Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p. 39.

It is clear from Table 8 that the overwhelming bulk of the funds for establishing small firms were obtained from either personal savings or from friends or relatives. Hardly any funds were obtained from either the government or from commercial sources. The informal financial market (money lenders) was also a minor source of funds for small scale manufacturing enterprises.

For expansion, the vast majority of the funds were generated from reinvested profits. In Sierra Leone and Bangladesh 89% came from this source while in Haiti, the figure was 81%. The remaining funds were obtained from money lenders, friends or relatives. These results highlight the nascent state of the financial markets in these countries and indicate the limited extent to which small firms were directly reached by formal credit institutions.

Demand for Small Scale Enterprises Products

Table 9 shows the relative strengths of the four sources of demand for small scale enterprises activities. Foremost among these is the domestic demand for consumer goods and services stemming from incomes of rural and urban households. The second sources of demand arises from backward and forward production linkages between small enterprises and other nongovernmental producing units of the domestic economy. Government and foreign demands for the products of small scale activities are negligible.

TABLE 9. PERCENTAGE DISTRIBUTION OF SMALL MANUFACTURING ENTERPRISE BY MAJOR BUYERS

Buyer	Percentage Distribution of Enterprises (%)			
	All Jamaica	Rural Honduras	Rural Egypt	Rural Bangladesh
Final Consumer	87	89	81	51
Intermediaries	12	NA ^b	17	49
Government	1	* ^c	*	*
Export	*	NA	2	*

^aIncludes wholesalers, retailers, traders, and industrial/agricultural purchasers of intermediate and capital goods.

^bNot available

^c* = Less than 1%

SOURCE: Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p. 48.

Household Demand

The overwhelming bulk of the items produced by small enterprises are light consumer goods and services demanded by rural and urban households. Typically, the household consumer places a specific order for a product or service with the small enterprise; production thus frequently takes on the characteristic of a job-shop operation. Hence, these enterprises are tied to the local market. Although some have argued that these types of product are inferior, the few empirical studies indicate that there is a strong, positive relationship between local

income and demand for small-scale industry products.¹⁴ For example, empirical evidence on Nigeria, Sierra Leone, Malaysia and Bangladesh reveal a strong positive relationship between changes in rural household income and changes in the demand for rural small-scale enterprise goods and services in all four countries. The expenditure elasticities for small scale rural non-farm activities are consistently high, ranging from +1.34 in Nigeria, to +1.40 in Sierra Leone and +2.05 in Malaysia.

However, the results derived for these cross-section expenditure studies may differ somewhat from the expenditure patterns that actually develop over time. To the extent that substitute goods produced by large scale enterprises replace traditional products, the demand for small-scale manufactured goods will fall.¹⁵

Backward and Forward Linkages

Two sectors that have existing or potentially strong linkages with small enterprises are agriculture and large scale industry. As these sectors' output increases, their demand for intermediate and capital inputs can generate a backward linkage to small enterprises; the forward linkages from these sectors relate to the marketing and processing of their output.

The empirical evidence on the linkages between agriculture and small scale enterprises is still sparse. The size of backward production linkages from agriculture to small-scale enterprises is crucially related to the pattern of agricultural growth, which in turn determines the composition of the

agricultural sector's demand for inputs. Johnston and Kilby have argued that the size distribution of farms and the type of agricultural strategy adopted are crucial determinants of the demand for non-agricultural goods.¹⁶ Many of the inputs demanded by larger scale farmers do not originate in the rural economy and are either imported or produced by large scale urban firms. The simple traditional tools, on the other hand, are typically provided by village artisans; and many farming inputs reflecting intermediate technology, such as imported implements, irrigation pumps and motors, and power tillers fabricated in light engineering workshops located in rural towns, are typically produced by small scale enterprises.

Forward linkages from agriculture to small enterprises reflect processing transport and marketing of agricultural activities; such linkages are frequently quite significant. Most input-output studies do not capture the forward linkages to small enterprises. However, Falcon's study of agricultural-industrial interrelationships in Pakistan reveals that crop flows to small scale processing activities are more than five times the flow to large scale processors.

The strength of forward linkages depends crucially on the choice and location of processing technology involved. Although there is some indication that a range or mix of technologies will sometimes be optimal most of the case studies of processing indicate that small scale, rurally-based processing activities generally are economically efficient in underdeveloped

countries. Studies of rice processing in Indonesia and Sierra Leone reveal the significant links between small, rural rice mills and rice production. Similar results for palm oil processing in Nigeria are reported by Miller.¹⁷

The empirical evidence of the production linkages between small and large scale enterprises is also somewhat sparse. Small scale enterprises are rarely explicitly incorporated into input-output analysis.

The backward linkages from large scale enterprises, where the large firms provide a demand for intermediate or capital goods, are most frequently discussed in terms of subcontracting arrangements. The parent firm, usually a large manufacturer, wholesale or retailer, formally requests another independent enterprise to manufacture or process parts or the whole of the product it sells as its own. The limited evidence indicates that small enterprise sub-contracting is quite prevalent in Asia.

At the other extremes, it appears that in Africa subcontracting and the backward linkages from large to small enterprises are rare.¹⁸ This may be due to the smaller markets as well as to the tendency of foreign-owned import substitution firms, which typically tend to dominate the large scale manufacturing sectors in Africa, to import a large share of their inputs.

Overall, the backward and forward production linkages are strongest in sub-Saharan Africa in the agricultural sector, where the processing of several crops, such as rice and oil palm in West Africa, and the production of implements for traditional

agriculture are frequently undertaken by small-scale firms.

Government and Foreign Demand

Governments have not been a major source of demand for small scale enterprise goods and services. For individual firms in specific product lines such as school uniforms, school desks, etc., however, government purchases can loom large.

Several factors contribute to the minor role played by government purchases. Small entrepreneurs complain that tendering and formalities associated with government purchases are unduly arduous and time consuming; they also argue that governments are tardy in settling their accounts. The size and quality of requirements of government orders may also serve to limit the participation of many small enterprises.

The available evidence indicates that exports typically do not provide a major source of demand for small scale enterprises. For particular product groups, however, exports form an important portion of the total market. For example, in Sierra Leone, approximately 20% of the total production of gara-dyed cloth is sold abroad. Baskets are exported from Botswana and Kenya. In Jamaica, virtually all crafts are exported, while in India, handicraft and handloom commodities accounted for 6% of the country's value of exports.

Supply Factors

Small scale industries are generally more labour intensive than their large scale counterparts. This is consistently demonstrated in Table 10 except in the case of Thailand where the

medium-scale industry is less labour intensive than the small-scale one.

TABLE 10. SIZE OF ENTERPRISE AND LABOUR INTENSITY (K/L)^a

Country	Size of Enterprise (Number of Workers)		
	1-10	11-50	50+
	Fixed Capital Per Worker (\$)		
Sierra Leone (1974)	158	225	1,175
Kenya (1960)	772	986	3,108
Ghana (1970)	1,372	3,724 (10-29) ^b	6,468 (100+)
Japan (1966)	934	1,040 (30-49)	4,333 (1,000+)
India (1965)	278 (small)	557 (medium)	2,450 (large)
Korea (1968)	1,096	1,411	1,796
Malaysia (1968)	521	997 (20-29)	2,671 (500+)
Philippines (1970)	1,020 (small)	2,850 (medium)	8,000 (large)
Thailand (1970)	4,280	3,385	6,355
Mexico (1970)	3,700 (small)	9,500 (medium)	14,500 (large)
Columbia	3,000	-	13,400
Honduras	125	250	2,684

^aFixed capital per worker (\$)

^bNumbers in brackets refer to size distribution when they differ from heading.

SOURCE: Enyinna Chuta and Carl Liedholm, Rural Non-Farm Employment: A Review of the State of the Art, (Michigan State University, 1979), p. 18; and Carl Liedholm and Donald Mead, Small-scale Industries in Developing Countries: Empirical Evidence and Policy Implications (Michigan State University, East Lansing, 1987), p. 67.

Since in most underdeveloped countries, capital and foreign exchange are relatively scarce, and labour, particularly unskilled, is relatively abundant, those firms that generate more employment per unit of capital would appear to represent techniques more appropriate to the country's factor endowments.

Furthermore, the evidence available shows that for most of the cases, the small-scale firms generate more output per unit of scarce capital than their large-scale counterparts. Table 11 shows that for Africa capital productivity decrease with increase in the size of enterprise.

An examination of labour intensity and capital productivity for Sierra Leone indicates that the rural activities are generally both more labour intensive and more productive per unit of capital than their larger, often urban-based counterparts in the same industry.

Studies on total factor productivity, as measured by the rate of economic profit or economic rate of return to capital, show that the small-scale firms generate higher economic rates of return to capital than their larger-scale industrial counterparts. Thus, while not conclusive, these findings do indicate that in several lines of activity, small-scale industries are economically efficient.

TABLE 11. CAPITAL PRODUCTIVITY (Q/K)^a BY SIZE OF ENTERPRISE

Country	Size of Enterprise (Number of Workers)		
	1-10	11-50	50+
	Value added per unit of fixed capital		
Sierra Leone (1974)	3.20	1.50	0.72
Ghana (1976)	0.60	0.30	0.60
			(100+) ^b
Kenya ^c (1972)	5.60	2.60	1.10
	(0-4)	(20-29)	(100+)
Japan (1966)	1.55	3.32	1.50
		(30-49)	(500-999)
Korea (1968)	0.66	0.66	1.16
	(5-9)		
India (1953)	0.00	0.47	0.73
	(1-19)	(20-49)	(500-999)
Pakistan (1960)	1.16	0.37	0.28
		(20-49)	(100+)
Malaysia (1968)	2.01	1.32	1.02
		(20-29)	(100-199)
Philippines (1960)	0.96	0.98	1.11
	(5-19)	(20-49)	(500+)
Mexico (1965)	1.34	0.64	0.61
	(1-5)	(16-25)	(500+)
Honduras (1977)	3.57	4.38	0.28
Jamaica (1978)	1.80	-	1.44

^aValue added per unit of fixed capital

^bNumbers in brackets refer to size distribution when they differ from heading.

^cRefers to distribution activities only.

SOURCE: Enyinna C. Ota and Carl Liedholm, Rural Non-Farm Employment: A Review of the State of Art, (Michigan State University, East Lansing, 1979), p. 37 and Carl Liedholm and Donald Mead, Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987), p.69.

TABLE 12. LABOUR INTENSITY AND CAPITAL PRODUCTIVITY BY PROCESS, AND LOCATION IN SIERRA LEONE

Activity	Labour/Capital Ratio (man-hours) Per \$ of capital	Output/Capital Ratio
A. <u>Rice Milling</u>		
Rural Hand pounding	638.00	40.90
Rural Small Steel-Roller Mill	1.25	1.80
Urban large Rice Mill	0.12	1.20
B. <u>Clothing</u>		
Rural Tailor, Small Scale		
Non-electric Sewing Machine	16.60	8.30
Urban Tailor, Small Scale		
Electric Sewing Machine	4.30	2.60
Urban Clothing Factory		
Large-Scale	2.20	1.70
C. <u>Bread Making</u>		
Rural Baker, Small Scale		
Traditional Oven	38.00	19.00
Urban Baker, Small Scale		
Multiple-Deck Oven	5.30	3.20
Urban Baker, Large Scale		
Tunnel Oven	2.60	2.60

SOURCE: Enyinna Chuta and Carl Liedholm. Rural Non-Farm Employment: A Review of the State of the Art, (Michigan State University, East Lansing, 1979), p. 42.

Policy and Project Issues

The above review of the role of small scale industries in underdeveloped countries shows that these activities are widespread and diverse, and play a significant role in the growth, employment and income generation in those countries. Consequently, policy measures have been pursued in the past to promote these industries. Past governmental efforts at encouraging the growth of small enterprises have generally concentrated primarily on project interventions, aimed at providing specific assistance to particular target groups. However, such efforts have often been frustrated by a policy environment that is detrimental to the development of small producers. Hence, two policy approaches should be undertaken. One is through seeking changes in the general policy environment that broadly affects small scale private enterprises, and the other is through the implementation of specific projects designed to provide direct assistance to individual small firms.

Policies

There are two major ways that the general policy can be made more supportive of small producers in underdeveloped countries. The first is through instituting a policy environment that is at least neutral with respect to firm size. In most underdeveloped countries, general policies are biased against smaller firms. Frequently, these biases result from the unintended side effects of investment, trade, credit and other policies implemented with the goal of promoting an expansion of large scale industries.¹⁹ Investment incentive laws frequently formally restrict the special tax concessions to large scale firms; where such overt restrictions

do not occur, small firms are often ignorant of the concessions available or are unable to undertake the protracted bureaucratic procedures required to obtain them.

The credit policies of most underdeveloped countries have also tended to discriminate against smaller firms. Governments have often imposed interest rate ceilings or other types of credit controls that have tended to keep interest rates low. Faced with excess demand for funds, the banks have responded by rationing the scarce funds to their traditional large scale clients. Consequently, small scale firms have been forced to obtain funds either from family members or from the informal market, where the rates are very high.

The second major way that general policies can effectively be used to support small enterprise growth is through enhancing the demand for their products. Studies have made clear that one of the key constraints facing small scale firms, particularly those located in rural areas, is the limited demand for their products.²⁰ A significant share of the low-cost consumer goods sold in rural markets is produced by small firms in that same area. Furthermore, the demand for these products as well as agricultural inputs is particularly high among the small scale farming households. As a result, policies that promote rapid increases in agricultural income can provide a powerful stimulus for small scale enterprises. Agricultural policies such as pricing and other measures aimed at increasing the income of small farmers are important not only in their own right, but also because they can contribute in a major way to the growth of small scale non-agricultural activities.

This fact also demonstrates that in reviewing the general policy environment for small firms, it is important to transcend the traditional sphere of industrial policy and include agricultural, trade, foreign exchange and other policies as well.

Projects

Projects rather than policy reforms have been the primary vehicles used to foster the development of small scale enterprises. However, small scale enterprises are difficult targets to reach through direct assistance. The firms are numerous, widely dispersed and not easy to assist in a cost-effective manner. Virtually all small enterprises surveys reveal that only a tiny fraction of the programs intended for them and even fewer have been aided by them.²¹

Moreover, these same surveys have revealed that the constraints facing small scale enterprises vary from country to country and from industry to industry. Consequently, the types of direct project assistance needed correspondingly vary.

Prominent among the various types of assistance measures that have been used to promote small scale enterprises in under-developed countries are the provision of finance, technical/production, management, marketing and infrastructural assistance. Hence, project interventions may be designed to provide financial assistance or non-financial assistance.

Financial Assistance

Credit projects have been the most commonly used method of providing direct assistance to individual small enterprises. Empirical surveys show that the demand for financial support is typically for working capital.²² However, the demand for working capital varied significantly by industry group and even by type

of enterprise within such groups. For instance, the demand tended to be relatively low for job-shop tailors, where customers typically supply the material, but relatively high for factory-type furniture producers where the production and marketing periods are lengthy.

However, working capital shortages are often the symptom of some other problem. For instance, a raw-material delivery bottleneck may force proprietors to keep their raw material inventories at unduly high levels. Similarly, managerial inefficiencies (e.g. siphon-off funds to non-business activities) can appear as a working capital shortages. Hence, some other underlying problem may appear as shortage of working capital.

Financial institutions have been reluctant to expand their lending to small scale firms. While this may be part of a result of institutional inertia, it is also rooted in the notion that the administrative costs and risks of lending to them are markedly higher than those associated with their regular, larger scale customers. Where special credit programs have been designed specifically to reach small and medium-size firms, the smallest firms generally end up receiving very little of the funds.

Recent studies have shown that several innovative credit schemes appear to have been quite successful in providing financial resources to even the smallest private enterprises.²³ There are several common characteristics of such schemes. First, loans are provided primarily for working capital rather than for fixed capital. Second, loans are screened in locally-based institutions with decentralized decision-making on the basis of the borrower's character. Third, loans are initially made for small amounts (\$50 to

\$1,000) and for short periods (3 to 9 months) with new loans conditioned on the repayment of the existing loans. The interest rate is high enough to cover operating expenses including the cost of funds.

Nonfinancial Assistance

Nonfinancial assistance schemes have also been a popular method of providing direct support to small scale firms. These services have varied widely and have included technical/production, management, marketing and infrastructure assistance. In some instances, they have been applied separately while in others they have been part of an integrated assistance package.

The small scale firm's demand for such services is generally quite small and a large volume of resources end up being concentrated on a relatively limited clientele. Small proprietors are generally not aware of their need for this type of assistance and the benefits they may derive from it. In a study of six countries, only marketing worries appeared overall among the most pressing problems cited by proprietors. Technical and managerial deficiencies were rarely mentioned as a problem by small proprietors.²⁴ According to the Economic Commission for Africa, "most small scale enterprises are unaware of the need for such services."²⁵

A review of the limited number of nonfinancial assistance projects indicates that most were not particularly successful in terms of cost-benefit analysis. However, some were successful and these possessed several common characteristics. First, the projects addressed situations where a "missing ingredient" needed to be supplied to the firm rather than an integrated set of multiple ingredients; for example, an improved market for Indonesian carvers,

a substitution of cotton for wool as warp yarn in the carpet industry in the Malagasy Republic, and an improved leather tanning technology in Afghanistan. Evaluation of the various Botswana mud oven training courses, which were designed to teach women to make mud ovens and bake bread for sale, revealed that the training schemes directed at women who had previous commercial baking experience generated benefits that exceeded costs. By contrast, the training schemes that took only women with no prior commercial baking background all failed; too many ingredients were missing in the latter case.²⁶ An important corollary of the "single missing ingredient" characteristic is that schemes assisting existing firms are more likely to be successful than those that attempt to establish new small firms.

Second, the successful nonfinancial assistance schemes for small firms tend to be industry and task specific. They were tailored to the needs of particular product group rather than to a general and disparate group of small firms.

Thirdly, before successful projects were launched, prior surveys of the industries had been undertaken to uncover the effective demand for the proposed assistance and particularly the number and type of "missing ingredients." Finally, the successful projects tended to be built upon existing institutions (public and private), or even informal ones such as the indigenous apprenticeship system in West Africa.

Overall, small scale industry can play an important role in the development of a country. It can contribute to promoting growth, employment, incomes, equity and alleviation of poverty.

It can increase the domestic market by raising the income levels of large sections of the country's population. However, to play this role a conducive environment should be created for their growth and development. This requires the pursuance of the appropriate measures and policies to encourage them to develop.

4. DEVELOPING SMALL SCALE RURAL INDUSTRIES IN THE SOUTHERN SUDAN

Because of the lack of data on the role of small-scale industries in the Southern Sudan, most of the analysis in this section is qualitative. Focus is on agricultural tools and implements, the processing of agricultural products, carpentry, tailoring among others.

Agricultural Tools and Implements

The immediate basic objective, when peace is realized, will be to attain reasonably adequate food supply with the ultimate goal of food self-sufficiency in the medium run; and then the realization of surpluses for export. To achieve this objective, availability of farm tools and implements at affordable prices is one of the key policy measures. Among the immediate farm implements: hoes, axes, pangas, matchets, slashers, etc. are basic. Facilities for the repair and maintenance of these tools and implements are a must.

While a lot of these tools and implements probably will be supplied along with the relief needs, their maintenance and repair will be a local responsibility. Given the scattered nature of the population in such a vast land area as the Southern Sudan, it will not be possible to establish maintenance and repair centers for most farmers. Hence, the traditional village blacksmith will be crucial in providing these services.

Virtually all of the South 's peasant farmers rely on simple hand tools and implements. There is considerable need for farm equipment innovation to lift peasant farmers from subsistence production and meet higher level objectives, including increased employment, bigger acreage cultivated, higher farm incomes and better living conditions generally. However, domestic farm technology innovation is likely to be a medium-and long-term objective. In the short-term period of reconstruction and rehabilitation, improved farm tools and implements will be met by imports. However, as happened in the 1970's, imported farm tools and implements will not meet most of the peasants' needs. Consequently, the local blacksmith will continue to fill the greater part of the need for farm tools and equipment.

Animal-powered and other inexpensive but appropriate and well designed farm equipment/implements can make an important contribution to increasing agricultural productivity, labour use, and the growth of output and employment among rural based manufacturing firms. At least the making of parts such as handles/frames as well as the repair work should be encouraged. Despite the "cattle culture" and the presence of tsetse fly in areas of nonpastoralists, experience in the 1970's showed areas of success in ox-cultivation.

To boost food production, the former Southern Ministry of Agriculture, in collaboration with the Lutheran World Federation (LWF), the Norwegian Church Aid (NCA), and the Sudan Council of Churches (SCC) introduced oxen implements for cultivation in the cattle areas. Ox tool frames and ploughs were imported in 1974/75 for experimentation at Malakal by the LWF, at Torit by the NCA and at Rumbek by the SCC.

The NCA ox-ploughing programme was the most successful. It established six training units adjacent to its Rural Development Centers in Torit and Kapoeta districts. The most successful units were those in the Acholi and Madi areas. These ethnic groups are sedentary. In addition, during their migration and refugee in Uganda, they became familiar with the use of oxen for farming.

A seasonal labour constraint at the time of cultivation and weeding serves to limit the area cultivated by a family and hence, in the absence of yield increasing technological inputs (including improved farm equipment) the amount of food produced. There is evidence from Gogrial district that seasonal labour constraint is a primary limiting factor on agricultural production.²⁷ There occurs a brief period of intensive activity when both cultivation and first weeding coincide. At the peak it is estimated that the actual labour input measured in manhours exceeds by 38% the arbitrarily-defined sustainable level (6 hours per day for 6 days per week). Time lost cultivating at this time reduces the area planted, while time lost weeding reduces the yield per unit area; consequently, the opportunity cost of labour is high.

This labour constraint may in principle be relieved by increasing either the power applied or the efficiency of the equipment/ implement in use. The available power in the traditional sector is limited to human power, the majority of farmers using hand tools and implements. The prevailing labour constraint can be considerably eased not only by improving the efficiency of existing tools and implements, but above all, through a step by step introduction of innovations, first represented by animal cultivation.

Supply Analysis

Sudan relies heavily on external markets for the supply of all farm equipment/implements ranging from tractors to hand hoes. The precapitalist blacksmith subsector constitutes the major domestic source of supply of simple hand tools and implements (hoes, axes, matchets, etc.). The blacksmith subsector is an active industry undertaking the production of a wide variety of tools which are sold direct to farmers or through local retailers.

Imported tools, on the other hand, are distributed through commercial merchants and traders drawing supply from Khartoum, the relief agencies such as the Luterhan World Federation (LWF), the Norwegian Church Aid and the Sudan Council of Churches (SCC). The Extension Division of the former Southern Regional Ministry of Agriculture also obtained supplies of imported tools, which it distributed to farmers. The Project Development Unit (PDU) of the World Bank also supplied some tools.²⁸

In the absence of any reliable data the quantity of tools supplied is not precisely known. Records of sales by some of the relief agencies give a general picture of the level of supply as indicated in Tables 13 and 14.

The supply figures would be higher if supply from the blacksmith subsector is included but there are no data on this.

Aside from sales by the PDU and the NCA, a large quantity of tools and implements are distributed through other channels. For example, a total of 12,000 Kolatch (a type of Melodo) is said to be distributed annually in the provinces of Jonglei, Lakes and Sobat. About 6,000 of these are procured from blacksmiths in Northern Sudan.²⁹

TABLE 13: TYPES, QUANTITY AND PRICES OF IMPORTED FARM TOOLS
SOLD BY PROJECT DEVELOPMENT UNIT (PDU), 1978/1979

Item	Quantity	Unit Price (L.S.)
Toria	10,208	1.75
Matchets	2,978	1.15
Sickles	689	0.70
Axes	504	1.70
Mattocks	413	2.20
Secateurs	165	N/A
Pruning Saws	124	N/A
Pick Axes	60	N/A
Grass Slashers	56	N/A
Rakes	9	0.70

N/A = not available

SOURCE: ILO/JASPA, Appropriate Farm Equipment Technology for the Small-Scale Traditional Sector: Synthesis Report, (Geneva/Addis Ababa:1983), p.191.

TABLE 14: SALES OF FARM TOOLS BY NORWEGIAN CHURCH AID (NCA),
1977-1978

Item	1977	Sales 1978	Stock 1978
Toria	2,575	2,275	46
Matchets	4,820	1,162	336
Axes	2,013	2,005	283
Sickles	352	671	289
Slashers	390	332	1,305

SOURCE: ILO/JASPA, Appropriate Farm Equipment Technology for the Small-Scale Traditional Sector: Synthesis Report, (Geneva/Addis Ababa: 1983), p. 191.

No comparable data are available for supply through the commercial channels. Sale figures recorded from five wholesalers in Khartoum show annual sales between 2,500 and 3,500 imported torias, while one wholesaler in Wau reported handling 8,000 sickles annually and 5,000 Omdurman manufactured pressed steel toria.³⁰ From this it can be estimated that a few thousand mainly imported tools enter the commercial distribution channel.

Demand Analysis

Data on the level of demand for both imported and locally produced farm tools and implements is scarce. The available evidence however, suggests a high and rapidly expanding demand. For hoes, for example, it is estimated that the demand could be between 15,500 and 18,500 per annum. This is based on sale figures of between 2,500 and 3,500 recorded from wholesalers in Khartoum. To this figure could be added a further 18,000 to 20,000 from blacksmiths and other sources. Assuming a replacement of 15,000 to 20,000 per annum, this will put the total demand for hoes at between 45,000 and 50,000 per annum.

Supply-Demand Gap Analysis

This cannot be accurately estimated in the absence of reliable supply-demand data. However, the available evidence suggests a wide gap between supply and demand. This is based largely on needs assessment rather than on effective demand, although the effective demand for traditional implements could be very high, given the relatively low prices of these implements and the inelasticity of demand arising from local preferences.

For hand hoes for which some data is available, the supply-demand gap is currently very wide. The preceding supply and demand analyses give a gap of 25,000. Although the accuracy of such estimates is not beyond contention, yet they provide a general indication in the magnitude of the problem of supply shortages in the context of a traditional economy where reliance is placed mainly on local blacksmiths for supply of essential tools and implements.

Local Manufacture

Outside the blacksmith sector, local manufacture of farm tools and equipment is non-existent in the Southern Sudan, reliance being placed entirely on imports.

With regards to large-scale manufacture, there are two companies in greater Khartoum. The Omdurman Digging Equipment Factory has been producing spades and hoes, while the Rhino Agricultural Implements Manufacturing Company has been producing tractor implements (harrows, ploughs, etc.). Both companies have the potential to expand given the appropriate environment. They could also go into new lines of production. However, their supplies may never reach the South or if they did the quantities may be too negligible to have an impact on agricultural production in the South.

The country has severely limited infrastructure to service the farm sector, and as such the institutions that do exist, including the aid agencies operate over localized areas. Poor transportation and communications put considerable limit on the support that can and are given by these agencies to peasants in particular to meet their equipment and other input requirements. However, in spite of the serious constraint imposed by the limited infrastructure, these agencies had established programmes/projects aimed

at assisting farmers with timely acquisition of essential inputs (including farm implements), upgrade their skills through training and help expand their crop yields and total production. This could be repeated in the post second war period.

However, the relief period will come to an end. Given the current foreign exchange shortage which will not be overcome soon, reduction of imports and substitution of locally manufactured tools and implements for imported items will yield considerable benefits, including foreign exchange saving, generation of new employment avenues and incomes and timely satisfaction of local demand for various farm tools and implements.

While establishment of new manufacturing enterprises as well as the removal of the infrastructural constraint will take time (medium and long-term objectives), in the short run the local blacksmith will play a crucial role and hence should be given financial, technical and material support to enable it to upgrade both the quality and quantity of its output to meet the increasing requirements. Acquisition of information from neighbouring countries or from countries at similar level of development of farm tools and equipment is important. Examples of these include the FAO agricultural equipment improvement project in Kenya, the FAO village workshop project in Zambia, and the UNIDO project on village production of agricultural implements by local blacksmiths in Tanzania.³¹

Crop Marketing and Other Rural Services

Availability of bicycles and lorries is a must for the marketing of crops, that is buying from surplus areas and selling or distributing in deficit areas. The bicycle is a basic capital

good for the peasant in the marketing of his crop. Initially, the bicycle will be imported but later an assembly plant must be erected locally. For long distance distribution the lorry is a must.

For the lorries, and hence, the marketing system, to function efficiently and be effective, it will be necessary to establish garages and fuel depots/stations in many places, close to the farmers, such as district and sub-district headquarters. The maintenance and repair of the bicycles will even need more dispersed bicycle repair units even up to the village level. What the policy-makers will have to ensure will be the availability in the village shops, of spare parts and tools at prices affordable by the village bicycle repairers.

Availability of grinding mills and water bore-holes at the village level will also contribute to increased agricultural production. The availability of these facilities will ease the work of women, and hence enhance their productivity as more of their time and effort will be released for other activities. Hence, the training of many borehole and grinding mill mechanics to maintain these facilities in the various villages is a necessity. The availability of spare parts and repair tools is another necessity.

Crop Processing

Being a basically agricultural area, the South will have to establish processing plants for its major crops. However, for most of these crops, this will be a medium and long-term undertaking after substantially increased crop production. Given the diversity in ecological zones, it is expected that these processing activities will be dispersed all over the Southern Sudan.

Mefit's study of the 1970's identified processing projects for groundnuts (peanuts), pineapples, cocoa, tea, tobacco and sorghum.³² Coffee and sugar processing plants will be necessary also. Although most of these activities will be medium and long-term undertakings, a short-to-medium-term crop processing activity is tobacco. This crop has been processed in the South since the 1950's, and its manufacture could be revived as soon as within a year or two after the end of the war.

Tobacco was introduced in the South in the 1950's by a Greek businessman Georges Hagggar.³³ By 1965 when flue-cured tobacco production came to a standstill, the crop had been adopted by small-holder producers in Kerepi and Magwi in Torit district in the east bank and in Meridi and Yei districts in the west bank of the White Nile in southern Equatoria.

In the 1970's, the crop was reintroduced by the National Tobacco Company (NTC) in the same districts except in Meridi. Unlike previous requirements for small holders to produce the green leaf, the company required individual farmers or groups of farmers to construct curing barns. This greatly restricted the number of small holders willing to adopt the crop because of its labour intensive nature.

From 1974 to 1979, the output of the flue-cured leaf in the South increased from 31,697 kg to 213,499 kg compared with decline in output in the North from 85,620 to 38,642 kg during the same period.³⁴

In 1981, Hagggar returned to tobacco production in the South. The two companies began competing for the recruitment of small holder farmers to produce flue-cured tobacco in the same areas.

However, the NTC prices for the same grade of cured leaf were lower and it had delays in paying producers. Hence, most of the small holders preferred to register with Haggar.

The number of smallholder households involved in production in 1981 was about 1,200. This was a small number and could be increased considerably if the companies provided central curing barns for small holders who are unable to have their own barns because of labour bottlenecks. With provision of small dispersed central curing barns for small holders, employment output and income can be considerably increased in rural Southern Sudan.

This policy will also have beneficial effects on the companies, especially Haggar, and the national economy. Because of the foreign exchange constraint, Haggar's factory in Khartoum North frequently closes down, because of lack of raw material, largely tobacco. During these closures, the company maintains all its employees and pays them from accumulated profits. Restoration and increased supply of tobacco in the South could solve this problem as well as make the Haggar factory in Juba operational. Hence, the employment, output and income effects will not be limited to rural Southern Sudan only but will spread to the urban economy. Furthermore, it will lead to stabilizing the price of cigarettes and minimize or even eliminate the hoarding of this commodity currently rampant in the country.

Forestry Products Processing and Manufacturing

The Southern Sudan contains most of the forest resources of Sudan. Vast natural forests with good timber species exist in Bahr el Ghazal and Equatoria. This has been augmented by planted hard and soft wood plantations. Initial exploitation of this vast

resource started during the colonial period by the establishment of saw mills and furniture-making workshops. After the first civil war, efforts were made to rehabilitate the saw mills and clear the hard and soft wood plantations. The saw mills at Katire (soft-wood), Loka West, Kegulu, Nuni and Wau were being rehabilitated. Building timber and railway sleepers were made available for both local use and "export" to the North.

There are big hardwood natural tree species that given machinery and technical skills, could bring significant income to the South. This is particularly so given the great demand for hard timber in all the Preferential Trade Area (PTA) countries.

Figures of sawmill production are available only for the early 1970's when most sawmills were not yet rehabilitated. Sawn timber was produced in Wau, Katire, Kegulu, Juba, Loka West and Yambio as shown in Table 15.

TABLE 15: SAWMILLING-PRODUCTION IN CU METERS

Location	1971/72	1972/73	1973/74	1974/75
Bahr el Ghazal	1,982	3,601	1,799	2,500
Equatoria	158	799	241	589
TOTAL	2,140	4,400	2,040	3,089

SOURCE: Directorate of Planning, The Six-Year Plan of Economic and Social Development: 1977/78 - 1982/83, (Juba: Regional Ministry of Finance and Economic Planning, June 1977), p. 101.

However, despite the substantial sawn wood availability in the South, household and school furniture have been greatly lacking. The prices of furniture was quite high as furniture making facilities were limited in the South and imported furniture inadequate in quantity and generally expensive.

Given the existing and growing need and demand for different types of office and domestic furniture, carpentry workshops should be established in various locations all over the South to produce various types of furniture such as chairs, tables, trays, cupboards, desks, etc. In fact, as far as the rural sector is concerned, a carpentry workshop should be established in every district/sub-district headquarters as well as in every trading center. The basic tasks of these carpentries are: first, to produce school furniture in their areas of location and secondly, to produce furniture for sale to the local population. They should be supplied with enough timber, and equipment and tools necessary for furniture making.

An urgent program for the rehabilitation of the saw mills is essential so that the sawn timber can be supplied to the districts and subdistricts by an autonomous Forestry Products Marketing Agency, which should have stores all over the South. The Sawmill Training Center in Wau should be rehabilitated and expanded. Furthermore, to increase the supply of carpenters (both quantitatively and qualitatively), the Wau Vocational Training Center, the NCA constructed complex at Torit and the Multi-Purpose Center in Juba should be urgently rehabilitated and equipped. More technical institutes should be constructed at Lainya, Malakal, Nzara, Tonj and at other suitable points in Bahr el Ghazal and Upper Nile.

These technical training institutes will not be limited to carpentry only but will also produce the other technicians such as mechanics, builders, borehole drillers and repairers, electricians, etc.

Animal Products Processing

About two-thirds of the Southern Sudanese are pastoralists. The livestock population in the South was put at 6.912 million cattle, 3.141 million sheep and 2.211 million goats in 1979/80.³⁵ There are also large populations of wild animals with trapping being widespread. Crocodile and other reptile skins are also produced in the Southern Sudan.

Production of hides and skins in the South was estimated at 148,835 pieces annually in the mid-1970's.³⁶ However, the quality of these hides and skins needs to be improved. Past experience showed that both hides and skins lose a great deal of their quality and hence value due to poor treatment during drying and storage.

A Hides and Skins Improvement project was initiated in the mid-1970's. This project was intended mainly to provide experimental and demonstration units as well as extension service to the private sector for improving the quality of hides and skins produced in the South. This was to be realized by introducing to the farmer the techniques of shade and frame drying and by building better slaughter houses and stores.

Using the above mentioned method, a total of 38,514 cattle hides; 2,183 sheep skins and 268 goat skins, all valued at LS 78,924.4 (until June 1978, LS1 = \$2.8716) were produced in

1975 under the supervision of the Hides and Skins Overseers of the Southern Government Department of Animal Production.³⁷ In addition, the sum of LS477,700 was collected from the export of trophies, tusks and wildlife hides and skins.³⁸ With the introduction and the spread of new and better methods of treating hides and skins, their value could increase; thus leading to increased value added and income.

Furthermore, employment, output and income could be increased considerably from both domestic and wild animals sources if an efficient hides and skins marketing system is established which offers the producer attractive prices and thus encourage him to produce more. To achieve this, a marketing organization backed by a well trained team of extension workers responsible for improving the quality of the products is necessary.

Increased quantity of high quality hides and skins could earn the South substantial amounts of foreign exchange in the short and medium run. In the medium and long run, they can provide raw materials for domestic tanning and leather products manufacture. Large quantities of high quality leather products such as shoes, purses, belts, suitcases, etc. could be produced domestically based on the improved products of the local animal resources.

Fish Processing

The inland waters of the Southern Sudan cover an area of more than two million hectares. The fisheries resources of this vast area have to a large extent remained under-exploited. The estimated annual production has been put at between 12,000 to 18,000 tons per annum while the estimated potential ranges from 140,000 to 150,000 tons per year.³⁹

The traditional fishing gear comprises harpoons, spears, cone-shaped fishing baskets, barrage traps, plant poisons and dug-out canoes. The traditional gear is utilized mostly in remote areas only because fishermen near the urban areas such as Bor, Juba, Malakal and Wau have been adopting modern fishing gear. In addition to purchasing ready-made nylon fishing nets, the traditional fishermen also have learned how to make modern gear which consists of gill-nets, beach seine nets and cast nets. These had become common before the outset of the war and were already displacing the traditional fishing gear. Improvement and spread of more efficient fishing technology to the remote areas could increase the off-take of the small scale fishermen.

Most of the large scale fishermen use motorized fishing canoes with outboard or inboard engines which enable them to fish distant areas and get their fresh fish in good condition to the markets in the urban centers.

Fish is either consumed fresh or processed in several ways to enhance longer preservation given the lack of refrigeration facilities. In areas where firewood is available in abundance such as at Nimule, Mongalla, Terekeka, Gemeija and Aliab, fish are usually smoked. In areas without firewood such as at Mashra Reg, Shambe, Adok, Kaka and the Sudd area, fish are sun-dried (SDF). Sun-dried salted fish (SDSF) is produced in government fish camps and by wealthy fish traders who can afford the main ingredient, salt. They also produce wet fish which is packed in tins. Lack of tins has retarded the production of the latter kind of fish product.

The transportation of fresh and processed fish is extremely poor. Landing facilities for fresh fish are non-existent even in the towns. The fishing camps are usually situated in areas which are remote from steamer calling points; and in the areas where steamers do operate, there are no facilities for storage. Transport by lorries is possible only for a few months of the dry season, especially in Jonglei, Lakes and Sobat provinces as most roads in this zone are impassable during the rainy season.

The time lag between catching and processing of fish and its transportation to market is about six months or more owing to transport difficulties. The fishing season starts in December and ends in May (dry season to beginning of rainy season). This means that the processed fish (SDF and smoked fish) has been exposed to the rains and insect infestation in the fishing camps. This results in a reduction of fish quantity and quality before reaching the consumer centers. Unreliable water and land transport as well as poor storage facilities have been hampering the distribution of fish. If the marketing of fish is to be improved, the means of transport should be upgraded and storage facilities provided in all the strategic fishing areas along the Nile and its main tributaries as well as along the other large rivers in the South.

Commercial fishing in the South started around 1951 with the introduction of improved fishing nets and boats/canoes and the setting up of vast new fishing areas for commercial exploitation by the Fisheries Department. The annual output of the government fishing camps accounted for about 10% of the SDSF while the rich traders/fishermen produced the other 90%.⁴⁰

Figures for SDSF of the large traders/fishermen are not available. The figures for public sector SDSF ranged between 200 and 700 tons between 1951 and 1958. From then until 1963, it ranged from 2,000 to 3,500. Government fishing activities resumed after the Addis Ababa Agreement, but the production figures averaged around 100 tons only between 1973/74 and 1980/81.⁴¹ This rather poor performance led the government to direct the Fisheries Department to cease commercial fishing in 1981/82 in favour of fisheries extension and training.

When government ceased direct involvement in commercial fisheries, attention was focused on extension services, especially in the training of local fishermen. A training center was established in Malakal in early 1976 by a Danish government organization. The general objective of this institution was:⁴²

- (a) To train local fishermen in boat-building using local material;
- (b) To teach local fishermen how to make fishing nets such as beach seines, gill-nets, cast-nets and the technique of mending them;
- (c) To teach local fishermen how to operate and handle outboard engines, and how to repair and maintain them;
- (d) To teach modern methods of fish catching using the improved types of gear in order to:
 - (i) increase their fish production capacity to meet local demand and eventually to produce surplus for export to the neighbouring countries, and thus increase their incomes and improve their standard of living; and
 - (ii) improve the image of fishing as a profession in order to encourage self-employment or the formation of fisheries cooperatives.

Initially, fishermen were drawn from nearly every part of Sobat province for the training. Most of these trainees later succeeded to form a fisheries cooperative in 1980/81 - FISHERIES COOPERATIVE LTD (MALAKAL). The ILO/UNDP assisted in the establishment of this cooperative. The cooperative limited its service initially to the area bounded by Kaka, Lake No and Nasir. Members benefitted from access to common facilities for catching, processing, transport, storage and marketing.

Earlier in 1978/79, the Sudd Fisheries Project was established in Jonglei province by FAO. Its objective was to organize the fishermen in the Sudd area into cooperatives in order to provide them with common transport, storage and marketing facilities. Two 15-ton barges were purchased for this purpose.

To boost the participation and catch of the small scale fishermen, improvement in fish processing in the local points of catch is essential as the problem of transportation in the main fishing area--the swamps of the South--will continue to constrain fast access to the market in the short and medium run. Hence it is important that the small scale fishermen is enabled to acquire plenty of salt so as to shift to the SDSF method of processing. Abundant supply of salt through credit facilities extended to the small fishermen or/ and to their cooperatives could boost employment, output and incomes of this class of fishermen considerably.

Alternatively, the large scale fishermen/traders should be encouraged to limit their activity to undertaking processing only, in plants they should locate in the main fishing grounds. They will then buy fresh fish from the small scale fishermen for processing. Limiting large scale fishermen/traders to processing

only will minimize the possibility of exhausting the fish stocks as the small fishermen technology, even when improved, will not be as capital intensive as that of the large scale fisherman/trader.

The boat-building project should be reactivated as soon as peace returns. The same should apply for the Fisheries Training Institute and the development of cooperatives. In the long run development of the transportation system is essential for the industry to prosper.

Other Small Scale Industries

As pointed out earlier, there are many other small scale industries being undertaken in the Southern Sudan. Among these are: wood and ivory carving, musical instruments, pottery, fibre-weaving, granary-making, brick-laying, brewing, etc. Brick-laying is an urgent activity to be promoted all over the Southern Sudan. Initially, every community should be involved in brick-laying for reconstruction of community facilities such as schools and health facilities. After the reconstruction period, some individuals can specialize in brick-laying for sale in the particular localities for construction of permanent houses and other buildings. Construction of large storage facilities will be necessary as agricultural production increases. The building of large granaries for grain storage from durable material such as bamboo stalks will contribute considerably to easing this constraint in the marketing system. The quality of the products of the weaving industry could be improved and diversified as this industry could earn the South some foreign exchange as the experiences of Botswana and Kenya show.

However, of considerable significance, in scope, employment, value added and income, among the other small scale enterprises, in the Southern Sudan, is tailoring. This activity is both rural and urban in the South. Most of the rural population buy clothing on made-to-order basis instead of ready-made clothing. This pattern of preference is likely to last for some time to come. But more and more tailors are becoming increasingly unable to replace their old sewing machines and entry into the industry is becoming restricted by the high cost of both second-hand and new sewing machines.

Howard reports that the price of second-hand manual sewing machines in Khartoum rose from LS50 in the late 1960's to LS100 in the late 1970's, and by the mid-1980's it was about LS300; while the price of a new sewing machine was over LS1,000 in 1983.⁴³ By the time the sewing machines reach the market in most parts of the Southern Sudan, the prices will be several times higher than the Khartoum prices. This means few tailors will operate in the rural areas of the South. Consequently, this rural population will have to walk long distances to purchase their clothing and other modern necessities since tailoring in rural Southern Sudan is generally undertaken jointly or at least in common premises with retailing. Hence, the consequence will not only be limited to reduced tailoring and its consequent negative impact on direct rural employment, value added and income; it will also reduce the supply of farm labour through the time and effort spent walking long distances to obtain the services.

A hire purchase system should be instituted for selling sewing machines to rural areas. For new tailors, the setting of the premiums should take into account the average income of the rural household. The timing of installment payment should coincide with the period of marketing of the major harvests. For established tailors, the installment rate should be tied to the average earnings from tailoring. For efficient operation of the industry, other tailoring inputs such as scissors, needles, thread, measuring tape, etc., should be available in the local shops.

5. CONCLUSION AND POLICY IMPLICATIONS

The task for the reconstruction and development of the Southern Sudan is great and difficult. The special difficulty arises mainly from the fact that many components of the essential infrastructure and skills are very thin indeed; as they never existed before the war. These prerequisites are not easily and quickly produced. Hence, the immediate major activities to be undertaken should largely consist of those activities with little demand on elaborate infrastructure, sophisticated technology requiring advanced skills and organizational framework. Definitely promotion of peasant farming will have to figure prominently among the directly productive activities.

In the industrial sector, the encouragement of small scale activities could give more certain and faster results than emphasis on large scale industry. Small scale operations are probably the most efficient way to deliver a wide range of products and services as well as impart skills in a poor and sparsely populated territory.

As the discussion in the proceeding sections demonstrate, these small scale enterprises produce essential commodities for the bulk of the population. However, these small scale enterprises

rely heavily on material inputs from foreign or domestic large scale industry. Hence, next to the priority of encouraging small scale enterprises, potential export crops (and other natural resource products) should be identified and their production expanded so as to facilitate the importation of the necessary inputs to service the small scale enterprises and other domestic productive facilities as well. Furthermore, the first large scale industries to be set up in the South should be those with strong backward and forward linkages with the small scale enterprises and the agricultural sector.

In the meanwhile, surveys and other researches or even feasibility studies should start to be undertaken in those areas safely outside the threat of combat. In fact, some of the activities discussed above can be safely initiated now without having to wait for a formal end to the war.

NOTES

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¹Lack of data on industrial activities in the Southern Sudan does not allow for quantitative analysis. Mefit's report on industrial and commercial activities in the Southern Sudan was not possible to obtain.

²For an outline of the history of industrial development in the Southern Sudan, see: Directorate of Planning, The Six-Year Plan of Economic and Social Development, 1977/78 - 1982/83, (Regional Ministry of Finance and Economic Planning, Juba, June 1977), pp. 15-16 and pp. 133-138.

³Ibid., pp. 133-138 and pp. 148-153.

⁴Ibid.

⁵Ibid., pp. 136-137.

⁶Ibid., pp. 134 and 148.

⁷The problem with the encouragement of industrial development in rural Southern Sudan is the absence of even the rudimentary infrastructural facilities. Hence, the government saw it easier to promote these activities in the cities as at least some form of infrastructure exists there however weak it may be.

⁸Directorate of Planning, op. cit., pp. 16 and 148.

⁹For comprehensive data on the role of small scale non-farm enterprises in developing countries see: Carl Liedholm, Small Scale Industry in Africa: Dynamic Issues and the Role of Policy, (Queen Elizabeth House, International Development Center, University of Oxford, April, 1990); Carl Liedholm and Donald Mead, Small Scale Industries: Empirical Evidence and Policy Implications, (Michigan State University, East Lansing, 1987); and Enyinna Chuta and Carl Liedholm, Rural Non-Farm Employment: A Review of the State of the Art, (Michigan State University, East Lansing, 1979).

¹⁰Carl Liedholm and Donald C. Mead, "Small-Scale Industry" in Robert J. Berg and Jennifer Seymour Whitaker, (eds.), Strategies for African Development, (Berkeley, Los Angeles & London: University of California Press, 1986), p. 309.

¹¹Ibid.

¹²Peter Kilby, Entrepreneurship and Economic Development, (New York: The Free Press, 1971). Quoted in Liedholm and Mead (1987), p. 31.

¹³Liedholm and Mead (1987), p. 35.

¹⁴Ibid., 47.

¹⁵However, the time period for these changes in consumption pattern to occur may be long. The length of this period will very much depend on the initial level of income.

¹⁶Johnston, Bruce F. and Peter Kilby, Agriculture and Structural Transformation: Economic Strategies in Late-Developing Countries, (London: Oxford University Press, 1975). Quoted in Liedholm and Mead (1987), pp. 53-54.

¹⁷W.L. Miller, An Economic Analysis of Oil Palm Fruit Processing in Eastern Nigeria, (Ph.D. Dissertation, Michigan State University, East Lansing, 1965).

¹⁸Liedholm and Mead, (1986), p. 315.

¹⁹For details on these policies see Liedholm and Mead (1987), pp. 90-100.

²⁰The most effective way of increasing effective demand in the rural sector is through increasing the income earning opportunities of the rural population. Farming constitutes the major activity in the rural sector and policies geared to developing it could boost the demand for non-farm rural activities considerably.

²¹Liedholm and Mead (1987), pp. 25 and 39.

²²For example, in Jamaica, over 90% of the small scale enterprises' financial difficulties were reported to be related to working capital shortages. Similarly cash shortages were cited by the majority of Haitian small proprietors as their most pressing financial problem. See Ibid., pp. 103-104.

²³Ibid., p. 106.

²⁴The six countries were Bangladesh, Egypt, Haiti, Honduras, Jamaica and Thailand. For details see these case studies. Ibid., pp. 109-110.

²⁵Economic Commission for Africa, Programme for the Industrial Development Decade for Africa, (New York and Addis Ababa: United Nations, 1982).

²⁶S. Haggblade, Rural Industrial Officers' Handbook, Volume Three: District Planning Series, Gabrone, Botswana: Ministry of Commerce and Industry, 1983).

²⁷ILO/JASPA, Appropriate Farm Equipment Technology for the Small-Scale Traditional Sector: Synthesis Report, (Geneva/Addis Ababa, 1983), p. 188. No other such evidence was sought from elsewhere in the South; otherwise a similar situation exists all over the crop growing areas in the Southern Sudan.

²⁸This aid mission unit of the World Bank to the Southern Sudan was attached to the Regional Ministry of Agriculture.

²⁹ILO/JASPA, op. cit., p. 192.

³⁰Ibid.

³¹Ibid., p. xvi.

³²Mefit S.p.A., Regional Development Plan: Kay Projects: Vol. 1 - Part Two, (Third Phase, Rome, 1979).

³³S.A. Koi Binyason and S.J. Dima, "Background and Economy of the Southern Sudan" in A.B. Zahlan and W.Y. Magar, (eds.), The Agricultural Sector of Sudan: Policy and Systems Studies, (London: Ithaca Press, 1986), p. 61.

³⁴Ibid.

³⁵B. Yongo-Bure, "The First Decade of Development in the Southern Sudan" in Mom K. N. Arou & B. Yongo-Bure, (eds.), North-South Relations in the Sudan Since the Addis Ababa Agreement, (Khartoum: Institute of African and Asian Studies/Khartoum University Printing Press), p. 39 (Table summarized).

³⁶Directorate of Planning, Plan (1977), p. 115 (Table summarized).

³⁷Ibid., p. 100.

³⁸Ibid.

³⁹Gabriel K. Bassa, "Fishery Resources of Southern Sudan" in A.B. Zahlan and W.Y. Magar, op. cit., p. 292.

⁴⁰Ibid.

⁴¹Ibid., p. 294 (Table summarized).

⁴²Ibid., pp. 293-294.

⁴³William Stephen Howard, Social Strategies in Petty Production: Three Small Scale Industries in Urban Sudan, (Ph.D. Dissertation, Department of Sociology, Michigan State University, E.Lansing, 1987), p.103.

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