INDUSTRIALISATION AND TECHNOLOGICAL POLICY IN TANZANIA : AN OVERVIEW

By

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1. – INDUSTRIALISATION DURING THE COLONIAL PERIOD

The penetration of capital into the underdeveloped countries (UDCs) in general and into Tanzania in particular distorted the economic, social and political structures of the country. The aim was to serve the interests of the world capitalist system. In serving the interest of capital, Tanzania had a role to play in the international division of labor, that of quenching the profit maximisation needs of capital. Colonialism, which is the imposition of a country's state apparatus on another country was practised in order to facilitate accumulation in the developed, capitalist countries.

In order for the accumulation to take place in the developed countries (DCs) it was imperative that exploitative relationship had to exist between the UDCs and DCs. The establishment of this relathionship meant that the structure of pre-capitalist economies had to be restructured (distorted) in order for the exploitation to take place. Agriculture was no longer meant to serving domestic needs and those of neighbours but had to be outward looking. That is, for export to the metropolis in form of raw materials to feed and «re-fuel» their industries. Again, by agriculture becoming outward looking, the producers (peasants) lost their freedom of deciding on what to produce. The loss of freedom was necessitated by the fact that the colonial government had introduced taxation system which compelled some peasants like those of Kilimanjaro and Sukumaland to grow coffee and cotton respectively in order to pay for the tax in cash. On the other hand, in the areas where production of cash crops was «prohibited» because of either natural reasons (geological and climatical) or deliberate colonial policy, its inhabitants became laborers (migrant labor) in plantations and estates where they earned meagre income for their subsistence and for paying the taxes.

At the level of industries, efforts of the colonial government were to de-industrialization. With the industrial revolution in Europe which had led to increased productivity through mass production, a factor of both technological advancement and better methods of organisation of labor, coupled with competition among individual and national capitalists, the products of industries were too much to be absorbed by their respective home markets. So the search and the need for markets increased. As a result of this, and given that the colonial government had the objective of satisfying this need, any domestic signs of existence or of growth of local industries were discouraged unless they were in conformity with interests of

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the ruling class or those of «perfection» of the raw materials for export. It is no wonder that the skilled artisants of the pre-capitalist period became unskilled artisants during colonialism and neo-colonialism. Hoes were no longer made locally but they had to be imported. The same applied to cloth and any array of other commodities. This process of de-industrialisation not only robbed of the colonies of innovative and technological base but created dependent relationship between the UDCs and DCs which has, as ever before working at the impoverishment of the UDCs.

Connected with the structure of production is the unequal development of urban and rural areas. The infrastructure to service both agriculture and industry, like insurance, banking, import and export houses plus the industries were concentrated in towns. All other amenities had to follow the same trend – telecommunication system, hydro or thermo power stations to generate electricity etc.. The effect of this being that rural areas were neglected and «exploited» at the expense of the urban areas. Even the basic social services such as education and health were concentrated in towns. The urban areas were not homogeneous in terms of development. Some towns had more industries than others, some had better infrastructure than others, just like some urban areas were more accessible than others. The level of development of urban areas depended upon their role in the colonial economy. For example, because of the importance of export-import nature of the economy the ports of Dar-es-Salaam and Tanga were quite developed. Just like the towns of Moshi, Arusha, and Mwanza because of their situation or location in the cash crop growing areas – coffee, sisal and cotton. This unequal development was also true in the rural areas, depending on their role in the economy. The cash crop growing areas of say, Bukoba, Moshi and Arusha were better-off, for example, in terms of income and education than Mtwara and Kigoma.

We have mentioned the unequal development because of two important reasons. First, the existence of inequality between rural and urban areas confirms the point that colonialism had no intention of developing the majority of Tanzania masses who live in rural areas. Second, with the existence of urban areas with better facilities and infrastructure than rural areas, the establishment of new industries tend to be attracted to these areas as a way of cost minimisation and consequently profit maximization. The net effect of this concentration is widening of the gap between rural and urban areas on one hand, and among urban areas on the other hand.

The colonial economy did produce a small class of indigeneous Tanzanians whose duty was to service the economy : Administrators, Church Ministers, traders, etc.., mostly through the colonial education system. This class, apart from working for the colonial government, acquired consumption habits which were in agreement with those of the colonisers. What we want to put forward is that the colonial economy gave rise to a class of luxury consumers. The importance of this phenomena is that the type of this consumption determined the nature of industries which were built in Tanzania and generally in the UDCs.

Again the continued existence of this class, even after independence, perpetuated these industries. Even more important at independence this very class of luxury consumers got hold of the state apparatus and thus became the main decision makers on issues affecting the economy. We contend that, given their major role as decision makers and as negotiators with the Multinational Corporations (MNCs) their tastes and interests will always be at the forefront. Bearing this in mind, therefore, one cannot fail to see the persistence of luxury consumption industries. We now turn our attention to the industries established during the colonial period.

1.2 *The 1900 – War I*

Prior to this period there is ample evidence that the technologies for iron-working, cloth making, salt refining, well shaft digging and irrigation had been in operation since 15th century. Iron-Works were found in south of Unyamwezi, Pare, Iramba etc.. Salt industry was common in Lakes Eyasi and Uvinza and Textile technology was widely dispersed within the country because of its raw materials. They ranged from cotton, bark to skins. From its character, these industries were for mass consumption. The products of metallurgy industry are as widely consumed by the populace just like the products of textile industry. Another important character of these industries was the existence of the iron industry. The importance of iron and steel industry in the whole process of industrialisation is incontestable. All manufacturing and agricultural machines and tools are product of iron and steel. The third character of the above industries is that all the raw materials were domestic.

The above character of the pre-capitalist industrialisation process was subordinated to that of the capitalist system. They lost both their mass character in terms of consumption and their domestic or local resource source. Again, the producer-goods industry, like that of iron and steel was never allowed to develop at all. These subordinated characters are not confined to the colonial period alone but also to the post-colonial period.

The type of industrial investment in Tanzania during the period under discussion, fall under three main groups:

1) Processing and Mining, as a matter of reducing bulkness. It became necessary that coffee, tea, sisal, cotton, copper and gold had to be processed before they were exported. Another reason for the processing, apart from that of bulkness, was that of maintaining quality. For example, in order to maintain the quality of tea, the picked leaves had to be processed within twelve or less hours. Coffee pulping requires almost the same time after picking. Quality maintenance just like bulk reduction, conforms with the «laws» of profit maximisation.
2) Production of those products whose transportation costs were too high if they were to be imported. The guiding principle here was that of comparing costs of local production to those of importation i.e. the transport components. Beverages, building material – like wood, had thus to be produced locally.

3) Production of those products – whose transport time was too long to maintain their palatability, flavor and «freshness». Perishables like bread fall under this category.

It is important to note that the amount and the type of industries established in Tanzania during this period were very much influenced and determined by what had already been established in Kenya. The «settler» economy of Kenya, coupled with the advanced infrastructure tended to attract most of the investments into that direction. Thus Tanzania and Uganda became markets for Kenya – based industries.

1.2 *Between the Wars (WW I to WW II)*

The character of industries during this period did not change; what had changed is that the war induced the establishment of more industries. As expected, the war created shipping crisis which led to partial «break» between the metropole and the colonies. The effect of this crisis was that goods (consumption) did not flow constantly to the centres of consumption in the colony. Because of this «disturbance» in flow of consumerables, the colonial government, for the first time thought of industries. For this reason the East African Industrial Research Board was started and based in Kenya while research committees were stationed in Tanganyika and Uganda. The investments of this board logically were concentrated in Kenya. To our list of industries, to mention a few, soap and margarine were produced in Kenya by East African Industries Ltd., a subsidiary of UNILEVER. Biscuits were also produced in Kenya for the East African Market. The uneven development of industrial development in East Africa, in favor of Kenya, started to take shape.

The period in discussion saw the opening of Amani Agricultural Research Institute, with the aim of looking for the possibilities of producing medicine, soap, oil, cigarette etc.. Thus by the end of the period, Tanzania had an added list of points, chemicals, edible oils etc.., on her industrial structure.

The period in discussion saw two open attempts of the colonial government of denying Tanganyika the right to have industries. In the late 1920's a Japanese Match factory was set up to produce matches in the country. The factory had to collapse because of heavy excise duty which was imposed on it by the colonial government in order to protect their import market. The early years of 1930 witnessed another attempt of discouraging local industries when a local firm set up three factories to manufacture binder twine (from sisal) for export (P. Massettee Kuuya, 1977, P.18). The character of the above «discouraged» industries did not differ from the pre-capitalist ones. They were for mass consumption (matches), again, they used local resources and an added character of exporting manufactured twine rather than merely processed sisal.

1.3 *The 1945–1961 Period*

The period saw the continuation of the character of industries discussed in the preceeding sections. The industries which were established during the period were stimulated by an external factor, this time it was not the war but it was the dollar crisis. Britain was suffering from the scarcity of dollars, the so-called dollar crisis. As a strategy, therefore, she had to look for means of both earning and saving dollars. The colonies were an answer to this, yet another crisis of capitalism. Since Britain was importing meat from Argentina, which was within the dollar circuit, she had to produce in the colony in order to save dollars. The effect of this was the establishment of the Tanganyika Packers Ltd. and the Metal Box Industries in Tanzania. The consequence of these establishments was that canned meat was now being imported from the colony. The same was for the other East African Countries.

Let us summarize the main findings of the colonial industrialisation before embarking on post-independence form of industrialisation. The growth of industries during the colonial period should be conceived in the context of the colonial economy which had two main features. First, the dominance of the export sector which was largely primary produce – based, contributing 45 % of all incomes generated locally in the economy. The economy also reflected excessive reliance on the external markets as a source of finished manufactured commodities to satisfy the local market. Consumer goods accounted for over 30 % of the total import bill. Second, the economy reflected a high degree of foreign ownership of the key sectors in the economy *(C. Y. Thomas 1974)*.

Industries as an important component of the structure of the above economy had the following characteristics: Firstly, as a sector its contribution to GDP was very small – about 3–4 per cent; and concentrated in a few towns and regions. Secondly, the industries were mostly in raw material processing for export and in luxury consumption commodities to cater for the needs of the colonial bureaucracy and the «elite» class. Thirdly, the industries relied heavily on imported inputs – machinery, spare parts, personnel and other semi and/or manufactured inputs. This phenomena presents an enclave character of the industries. Fourthly, the industries lacked an important ingredient, that is, the producer goods type of industries. The absence of their «sector» ruled out the possibility of having a local technological base and a self-sustaining economy. Lastly, but not least, all decisions on the how and what of industries were made by the colonisers in the context of their own tastes and interests. There is no evidence, at least in literature surveyed by the author, of industries being established in Tanzania during the colonial period because they were crucial for the development of the country.

2. – POST-INDEPENDENCE PERIOD

The attainment of political independence in 1961 gave a qualitative change to the post-independence period. The state apparatus were no longer in the hands of a foreign power. The independent state could now chart out her development priorities without «intervention» from outside. More important, by attaining political independence a base for waging economic independence war was established. The waging of the war became of necessity because although the new state «(had) the power to make laws, to direct the civil service, to treat with foreign governments, and so on, but (had no) effective power of the economic developments in its own country». *(Nyerere 1977 P. 5)*

The partial character of the independence arose out of the fact that the inherited colonial economy was never restructured but was perpetuated in a concealled manner but at an advanced level. The industrialisation process of the post-independence period should thus be conceptualised in the above context. Its character and form could be analysed in two periods: From Independence i.e. 1961 to 1966 and from Post-Arusha Declaration (1967) to the present. The main distinguishing factor between the two periods is that the latter period experienced some progressive steps and policies of «restructuring» the economy by changing the form of ownership and control of industries and by changing the organisation of production in the rural areas (agriculture).

Nevertheless, the character of the colonial industries remained but the strategy of their establishment changed, that is, that of import substitution, import substitution meaning, the domestic production or manufacture of those commodities which used to be imported. It is crucial to emphasise that the substitution did not include intermediate and capital goods production.

2.1 *The 1961–1966 Period*

The nature and the type of industries established after independence were conditioned by three important factors; nationalistic, regional and global (capitalist competition).

The nationalistic factor arose out of the very act of attaining political independence. The independence government had to show the populace that it was responsive to their demand of achieving economic development, at least, with some self-reliance. History of the developed had taught the young nation that industrialisation was a necessary ingredient of a strong and a self-sustaining economy. Given the backwardness of industries in the country at independence, the need for their establishment became quite logical. Unfortunately, nothing was mentioned of changing the nature of the industrialisation process. What was important, at least to the new government, was to see a radio being labelled «made in Tanzania» regardless of the high import content of the inputs and the consequent character of enclaveness to the economy.

The regional factor influencing the location of industries in Tanzania was a factor of the defunct East African Community. As we had cited earlier, Kenya's manufacturing sector was more developed than those of the other two partners. For example, in 1957 the sector contributed about 13 % of the GDP in Kenya, 10 % in Uganda and 6 % in Tanzania. Because of this imbalance, there was a feeling that the industries in East Africa should be decentralised. As a result, the Kampala Agreement of 1964 allocated into Tanzania the aluminium, the tyre and the radio industries. These industries were to cater for the East African Market. It didn't take long before the duplication of these industries was effected in both Kenya and Uganda.

The third and perhaps the most influential factor in determining the nature and the type of industries was the global competition among capitalist countries. The objective of the competition was that of conserving the former markets and/or that of establishing new markets. Political independence meant that the country was faced by «new» capitalist competitors seeking to have a foot in the economy both on the supply and on the demand side. As a strategy therefore, in order for the capitalist countries to have guaranteed markets in the country, domestic production was necessary, rather than importation. After all, the strategy «falls well» within the nationalistic demands. High tariffs were used to protect these industries in order to wipe out competition, the electronics – industry (Phillips and National) are cases in point.

The combined effect of the above factors was that by 1965 Tanzania had 589 establishments employing more than 10 people, as compared to 101 and 308 establishments in 1946 and 1960 respectively. Although there was a quantitative increase in industrial establishments, the contribution of the industrial sector to GDP was still marginal – less than 10 per cent. Again, the quantitative increase did not alter neither the luxury consumption (except for the textile mills) or the import dependence character of the industries. The concentration of industries in few urban areas (Dar-es-Salaam, Tanga, Mwanza, Arusha, Moshi) almost continued unchecked despite policy statements by the government to counter the trend.

Perhaps it is worthwhile discussing the form of ownership and control in the industries. In terms of ownership they fall into two categories; privately owned and joint-ventures. Privately owned industries (e.g. Phillips) were foreign and as such the control was purely for private interests. For the joint-ventures, local capital through Tanganyika Development Corporation, created in 1962 (later renamed National Development Corporation) came into partnership with foreign-private capital. It need to be mentioned that in most cases NDC had the minority shares. The minority ownership of NDCs and more crucial, management being in foreign hands, made the control of these industries to be external. It can be recalled that the idea of forming development corporations in East Africa was one of the four broad recommendations advanced by the World Bank.

The recommendations were a product of the World Bank's survey of the economic potential and prospects of each country. The survey was carried a couple of years before independence to recommend to the new governments on how to plan their economies. *(See Y. Tandon, 1978)* Since the World Bank Report acted as point of reference as far as economic issues were concerned, the control of the economy in general and industries in particular was external.

The other recommendations were that of the need to maintain a healthy investment climate, that of a «correct» economic orientation. This meant specialisation in the production and primary processing of raw materials for export to the developed countries. Lastly, that of the need to plan, «the three countries came out with their respective three or five-year development plans, consisting of shopping lists of projects».

2.2 *The Post-Arusha Dèclaration Period*

The pronouncement of the Arusha Declaration in February, 1967, brought major changes in the national economy. The documents defined the fundamental political and social orientation of the country, that of building a socialist and a self-reliant country. Whereas socialism means or implies elimination of exploitation of man by man or by a group, self-reliance entails effective use of local resource (man and otherwise) for the development needs of the society, in other words, effective control of the national economy.

The announcement of the Arusha Declaration should be seen as an eye-opener to (top leadership) after realising the mistakes made at the level of policy in the years after independence. These years were marked by the perpetuation of the colonial pattern of economic and industrial growth. The First Three Year Development Plan (1961–1964) or even the First Five Year Plan (1964–1969) or at least up to the time of Arusha Document, the economic policy of the country, as relates to industries, emphasized import substitution, processing of raw material(s) and export promotion. The document thus intended to inject structural changes in the economy.

The policy implication of the Arusha Declaration was the nationalisation of the commanding heights of the economy. Commercial banks and insurance companies were nationalized. The National Bank of Commerce and National Insurance Corporation were created to take-over their respective functions and likewise, both external and internal trade firms were nationalized, only to be replaced by the now defunct the State Trading Corporation and later by the Board of Internal Trade and the Board of External Trade.

On the side of industries, the nationalized industries were put under the aegis of the National Development Corporation (NDC) by the government simply acquiring majority shares up to sixty per cent (Industrial Share Acquisition Act 1967). «Unlike the previous joint ventures, however, the post-Arusha Declaration ones were formalized and officalized by the parliamentary acts» *(S. M. Rugumamu, 1980 P. 3).* To cite a few examples, the picture of joint ventures was as follows: Tanzania Tanneries Company (NDC 75% and the Edernburg Coy of Sweden 25 %) The General Tyre Limited (NDC 74 % and General Tyre International 26 %) The Tanzania Fertilizer Company (TFC) (NDC 60 % Kloeckner Humbolt 20 %), and the International Fertilizer Coy 20 %. The Tanzania Hides and Skins (NDC 70 % Booth International 30 %). These few examples reveal that there was no change of substance in the process of industrialisation except the changes in the form of ownership.

The nationalized industries needed both management and technical skills, unfortunately, for some industries, there was no local availability of these skills. The former owners had thus to continue as managing agents and technical consultants. The effect of this arrangement was/is the placing of all responsibilities of procurement, production and marketing on the shoulders of foreigners. The conflicts between private interests of profit maximisation and the public interests of economic development were the logical outcome.

The Second Five-Year Development Plan had envisaged that the increase in public ownership (public sector) would have led to an increased local control of the economy and more important central planning could have taken root. Experience has revealed the contrary. So long as the major economic issues affecting the economy and indeed the industries were outside the capacity of the nationals (even if the top managerial posts and directorships were occupied by the nationals) we could not expect meaningful control. Projects were established without a thorough study of inter-dependencies and enter-linkages between industries in terms of inputs, vertical and horizontal diversification, location, choice of technique etc.

The nationalization of industries did not necessarily results into less remittances abroad. Of course, the importance of profits as a form of remittance decreased because of the form of ownership and also because the industries were not doing quite well. But remittances in form of consultancy fees, management fees, expatriate salaries and allowances had to increase. Leave alone the dirty game of over invoicing and under invoicing imports and exports respectively.

The forms of payment for the services rendered by different Multinational Corporations (MNCs) were designed in such a manner that expatriate of capital was inevitable. The first form of payment was based on a stipulated percentage of the wholly or partly on profits plus a fixed minimum and maximum. TFC is a typical practioner of the same. The second form of payment is based on a fixed percentage of the wholly or partly on sales; The Instant Coffee limited and Tanganyika Packers are cases in mind. The third form of payment and the least used, is based on a single fixed fee regardless of sales or profits.

From the foregoing paragraphs we can conceive that despite the policies of restructuring the industrial outlook in the post-independence period, neither the dependence on the developed countries nor the character of industries did show changes in content. The successes of the second Five Year Plan to 1974 were confined to Import-substitution. The main concentration was in five basic consumer goods industries; food processing, beverages, tobacco, cotton textiles and shoes. This group of industries accounted for 52 percent of the total value-added *(Third Year Plan P. 39).* The period did not put much emphasis on structural changes, although it became a preparatory stage for the long term industrial strategy which was expected to restructure the industrial sector. A task which was to be implemented in the course of the Third Five Year Development Plan.

The postponement of this important task of restructuring the economy since independence should be seen as the major weakness in the country's planning mechanism in particular and the problems of development in a neo-colony. Most of neo-colony projects had to be implemented by an increasing dependence on loans and aid. The Third Year Plan banks on foreign sources of finance to the extent of 62 per cent of the total finances. Such state of affairs not only undermined the principle of self-reliance but also the intentions to control the national economy.

The history of development of industries, which we have been discussing so far, has identified the nature and the structure of industries in Tanzania. It has also attempted to pinpoint the forces at play in determining such a trend. Apart from the fact that the government did make some efforts to «revolutionize» the industrial sector and indeed the economy at large, such efforts were not fruitful. The sector remained marginal, accounting for approximately 10 per cent of the nation's Gross Domestic Product (GDP), growing at a slow rate of 2.1 per cent (compound annual growth rate) and employing less that 100,000 people. An examination of the issues of technology, the task of the succeeding section, might throw light on the reasons contributing to the above poor performance of the industrial sector.

3. – TECHNOLOGY IN TANZANIA INDUSTRIES

Among the most topical subjects of the demand for the «New International Economic Order» is that of transfer of technology. Technology has played such an important role in the economic development of the developed countries (DCs) that the underdeveloped countries (UDs) demand for an effective transfer of that technology in order for the latter to inject life into their economics. In appraisal of the import of the already «transferred» technology to UDCs, it has been found out that it has neither enhanced nor developed the recepient country's technological base apart from strengthening the dependence relationship.

The issue of transfer of technology, both innovative and productive, is problematic because one, science and technology (S and T) are not neutral since they are part and parcel of the political economy of a society; two, they represent an aspect of capital accumulation and use of such capital will be dependent upon the whims or otherwise of its owner or controller; three, their effective transfer is dependent upon the level of the socioeconomic formation of the recipient and the existence of an indigeneous S and T community and, four, they (S and T) are essentially in most developed capitalist countries privately owned and controlled, mainly by the transnational corporations (TNCs) whose paramount motivation is profit maximisation and repatriation. *(See S.M. Rosenblatt 1971 pp. 23-58 and also G.C. Gwassa 1978).*

The above factors are important in that «failure, on the part of importers of technologies into LDCs, to take cognizance of this important condition, leads to the superimposition of technology on false base «*(P. Masette Kuuya P. 8)* Tanzania, like other LDCs did not take care of this pre-condition. Tanzania was disillusioned by thinking that import substitution strategy would have led to the creation of a genuine local industrial know-how *(Second Five-Year Plan P. 75).*

The Government failed to take note of the fact that the technological base, especially the innovative capacity, was systematically destroyed by colonialism as the economy was being designed to serve the world capitalist system. At independence, we should have expected the restoration of this base before shopping for projects and contracting with the TNCs. No serious efforts were made towards this end. Whenever the attempt was there inconsistency and lack of coordination of such projects were always evident.

The post-independence period was seen as a time for establishing industries for their own sake. Industries were seen, correctly of course, as the rescue of the economy, and as such, given their smallness in the economy, they had to be established. The false base on which these industries took root was that establishment of industries would have automatically restructured the economy and thus solve both the problems of unemployment, expatriation of surplus value and effective use of the local resources. The experiences of the period proved the contrary; employment in industries grew very slowly, expatriation of surplus value in different form went on unchecked and utilisation of local resource just like effective decentralisation of industries were not satisfactory either.

3.1 *The Impact of Technology in Industries*

A number of studies have been carried in Tanzania to appraise the impact of industrialisation and technology in the economy and indeed in the industrial sector. For the purpose of illustration we will concentrate our attention on the findings of J. RWEYEMAMU, Masette KUUYA, A. C. COULSON, S. WANGWE and a few others.

The analysis of the impact of technology will be in the form of assessing its effective use of local resources; its conformity with local or national needs and its employment generation capacity.

3.1.1 Local Resource Use

The technology which has been in use both in the pre and post-independence has been very heavily factor – biased against the country. This aspect of bias makes import substitution strategy wrong, otherwise, there is nothing inherently wrong about the strategy. For example the Tanga based Fertilizer Company is almost entirely based on the import of all its inputs – rock phosphate, sulphur ammonia and potassium. Inputs whose control are in monopolies and thus whose prices have been increasing. Since these inputs accounted for about 54% of the value of the output *(Z. Dobrska pp. 53–65),* price increases were bound to affect profitability and more important increase the demand on the foreign exchange.

The use of imported raw materials was not a factor of their non-availability locally. Phosphate deposits of 9 million tons at Minjigu, near the Southern trip of Lake Manyara, and the high-grade gypsum, anhydrite, and anhydrous calcium sulphate deposits along the coast at Kilwa, were the potential local sources of raw materials. Although three proposals were made to NDCs between 1964–1967, to exploit these sources, all were rejected *(A. Coulson, P. 2)*.

The case of the Cement Factory at Wazo Hill, Dar-es-Salaam did not differ much from the above case. Despite the fact that cement production has a relatively wide range of alternative techniques of production, the management at the Waze Hill plant decided on a relatively capital intensive plant that consumed both oil and electricity *(Masette Kuuya P. 20)*. Apart from the machinery being imported, oil, an input which has been a headache to the LDCs because of its ever-increasing price, was also being imported. Local sources of fuel, especially coal, are of abundance in Southern Tanzania, Ruhuhu Depression and Songwe – Kiwira areas have reserves to the tune of over 200 million tons *(H. P. B. Moshi, 1979, P. 16)*. The case of the semi-automated bakery factory situated in Dar-es-Salaam manifests more or less the same abuses as the above cases. Automated machinery and wheat had to be imported. Surprisingly Tanzania's potential as a wheat grower cannot be doubted – Mbeya and Arusha Regions have that potential.

On the level of use of local manpower, the picture is not different from the above. Given the lack of the technological and managerial skills in the country, they had to be imported. It was hoped that these skills would be easily transferred to nationals in the long run. The reality was that the transfer was either too slow or did not take place at the stipulated time period. The cement factory just like the TFC do demonstrate this phenomena.

The use of foreign management or management consultancy and the high foreign loan – component of the investment, including foreign shares did constitute a lot to the high import component of the inputs to the industries at the expense of the use and development of local capabilities.

The factors contributing to these are mainly two; one, foreign interests of profit maximization underplayed the internal motives of development; and two, the national decision makers «were/are the most powerful supporters of the whole process. They of course, by their vocation and occupation for which the educational system had prepared them, multiplied the demand for the very services which depended on foreign technology.» *(A. Jamal, 1977)*

The last mentioned factor is very important in that the decision makers, consciously or unconsciously, perpetuated the colonial form of industrialisation. They became easy accepters of any type of technology and always mystified by the new or modern technology. In most cases they left the important decision of choice of technique to the TNCs. For example, the TFC contract contained the clause «Kloeckner will select the ***most modern processes*** corresponding with the ***latest technical development*** in the chemical industry...» (emphasis mine). No doubt this is placing too much on the shoulders of the TNCs!

The very act of leaving most of the important task of the projects to the disinterested parties, cross-circuited the process of planning and coordination. Each project mushroomed in its own way without taking into consideration the local resources, linkages to other industries and not even considering the development needs of the country. For example, the linkage between cement and fertilizer industries in the use of sulphuric acid was never conceived of. Just like oil refinery was never linked to synthetic industries. The ultimate outcome was «individual projects, very impressive, but not integrated. There was hardly any interdependence or linkages in the projects».

3.1.2 Conformity with Local Needs

The most pressing need of the LDCs and Tanzania in particular is that of economic development. A strong economy requires a technological base which will revolutionize the productive forces both in industry and in agriculture. The development of the productive forces thus necessitates a self-reliant and a self-sustaining economy. But in order to have a strong industrial base certain key industries must be present; these are the producer-goods and the mass-consumption-goods industries, which should use local materials as their sources of inputs. The character of industries in Tanzania show the absence of these two types of industries. Their mere absence show the weakness and dependent-type of the industries in the country.

Connected to the issue of meeting of the local needs is the question of raising the standard of living of the masses. The masses of Tanzania live in the rural areas, how then has industrialisation benefitted them? The answer is simple, very little. The hoe is still the main productive force in the rural areas!

The performance of industries in terms of capacity utilisation is an important determinant of cost of production and in turn determines the cost of living. Since technology in use is very much dependent on foreign exchange and whose availability is determined by the export sector, its non-availability or inadequancy has led to under-utilisation of capacity in industries. Apart from the cost of inefficiency, the prices of industrial products have been so high that they become more «luxury» than never – accessible to a handful of people. This has been another danger to the standard of living of the masses.

3.3.3 Employment Generation

The Tanzania's First and Second Five Year Plan (1964–69 and 1969–77) emphasized the need for the use of labour intensive technology whenever it was economically possible. Although there was no effort made to include such a clause in the contracts, the government aimed at the fulfilment of one of its social welfare functions, those of increasing employment and aggregate consumption.

On implementation, most of the established industries were capital intensive, except for one textile mill – The Friendship Textile Mill supplied by China on very soft loan terms. Mwatex, a plant owned jointly by Tanzania (80 %) and a French firm Amenital (20 %) employed only 100 workers and produced 24 million sq. yards of cloth per annum, (while) the labor intensive Friendship plant employed over 3000 workers and produced over 24 million square yards of cloth and 1000 tonnes of yarn per annum. *(Masette Kuuya, 1977, P. 25).* In the case of the cement factory, its capital /labor ratio was higher than those of Kenya and Uganda.

The choice of capital intensive technology was in consonance with the interests of the owner and controller of that technology. The aim being that of avoiding incessant labor unrest and also to increase expatriation of surplus value.

4. – WHAT IS TO BE DONE?

The history of development of industries in Tanzania in particular and in the LDCs in general, has shown that the industries did not adequately cater for the need to restructure the world's exploitative economic order. The imported technology in use did not spark off a process of enhancing the technological capacity and capability in the recipient countries. The impact of that technology on the economy are, one, that resources availability is not determined by the factor endowment of the country; two, that investments are biased in favor of complementing the metropolitan economies, and against the building of intersectoral links within the economy; third, that, depletion of surplus value through its outflow in the form of factor payments for capital and know-how; and lastly that, the country was unable to develop the technological base of skills, knowledge, facilities and organisation upon which further technical progress so largely depend *(J. Rweyemamu, 1973).*

The above experiences, as painfully as they are, do not mean that we should not deal with the TNCs, on the contrary we *need* them *badly.* In dealing with them we have acquired some technical know-how and we have developed some of our own productive forces, though neither of these to the degree we would have liked. What is required now is to define our development objectives more seriously and fight to adhere to them, i.e. consistency.

The definition of countries objectives should always involve development of one's own resources *primarily* through self-reliance in conformity with its *own needs.* These two ingredients call for serious planning in utilisation and development of local resources as well as the creation of appropriate institutions for carrying out and initiation of the policy.

The Third Five-Year Plan seems to be in line with the need to restructure the economy and indeed the industrial sector. It aims at creation or implementation of the basic industrial strategy. No doubt that the iron ore deposits in the country will be exploited. The ultimate establishment of the iron and steel industry will initiate and enhance machine-design capability and consequently stimulate research towards further enrichment of that capability. The same process will be expected to take place in the other industries within the basic-industry circle.

The successful implementation of the above strategy requires both the establishment of research and training institutions as well as the imposition of code of conduct on the TNCs. The creation of training institutions like the University of Dar-es-Salaam and research institutes like Tanzania National Scientific Research Council, Economic Research Bureau, etc.; is a good point of departure as far as training and research are concerned. Perhaps what lacks is coordination among the institutions on one hand and the decision makers on the other hand. The purpose of training and the research-results are important only when they can influence and direct the decision making mechanism. In this connection therefore, it is necessary that expertise knowledge should be part and parcel of decision making in the country's socio-economic objectives and priorities.

The lack of a coordinating body especially at the level of shopping for projects has resulted into lack of adherance to the set objectives. For example, while other decision makers are fighting for conservation of foreign-exchange others are acting the opposite, by contracting for the establishment of synthetic textile industries. Such acts of working at crossroads not only undermine objective attainments but make the process of development unnecessarily long because of irrational use of resources.

The newly established unit on Science and Technology (S and T) under the Ministry of Planning should correctly aim at coordinating policy and plans to develop appropriate science and technology base. The S and T should thus be the centre for the scrutiny of all tenders attached to projects before the signing of contracts take place. It's necessary that the unit be manned by various specialists in order to adequately establish backward and forward linkages to projects.

On the imposition of a «code of conduct» on the TNCs, both national and international efforts are called for. National efforts should aim at invitation of more tenders, from one source. It's also necessary that the list and the range of concessions offered be cut down. Lastly, the country should lay down its conditions on which the «shopping» will be based.

The international approach demands for the LDCs to work as a team and with one aim of reducing the technological gap between the DCs and the LDCs. As a team the LDCs should make their demands known to international organisations like UNIDO, UNCTAD, GROUP of 77 UNCSTD etc.. Again, they should consistenty fight for their demands to be implemented.

The IMF and the International Development Association must be restructured in order to meet challenge facing the LDCs.

The above recommendations cannot be implemented and attained overnight. They will face some resistance here and there but they should never be postponed. However, consistent and committed leadership, efficient utilisation of national resources, increase in productivity and hard working and motivated masses, should never be under-estimated as the life blood of the process of economic development.

FOOTNOTES:

1. A. C. Coulson, «Case Studies of Silos, TFC, Automated Bakery Projects in Tanzania». In *EASE READER D,* University of Dar-es-Salaam, 1975.
2. Z. Dobrska. *Criterion for Public Investment in Manufacturing Five Tanzanian Case Studies.* ERD Paper 68.28, University of Dar-es-Salaam.
3. G. C. K. Gwassa, «Transfer of Technology and Indigenisation of Technology for Rural Development: Some Notes and Suggestions», University of Dar-es-Salaam, 1978 (Mimeo).

4. G. C. K. Gwassa and H. Mlawa, «Industrialisation in Tanzania since Arusha Declaration», IDS, University of Dar-es-Salaam 1977 (Mimeo).
5. A. H. Jamal. «Accelerating Technology and the Third World», Daily News, 14th November, 1977.
6. G. Koopmann, Klaus Matthies; «Transport of Technology by German Firms», in *Inter Economics,* September/October 1979.
7. P. Masette Kuuya. *Transfer of Technology: An Overview of the Tanzania Case,* ERB Paper 77.3, University of Dar-es-Salaam.
8. Moshi, H. P. B. «Foreign Involvement, Industrialisation and Mining Sector in Tanzania», Addis Ababa 1979.
9. S. M. Rosenblatt (ed). *Technology and Economic Development: A Realistic Perspective.* Westview Press, Boulder, Colorado, 1979, pp. 23–58.
10. J. Rweyemamu. *Underdevelopment and Industrialisation in Tanzania: A Study of Perrerse Capitalist Industrial Development,* Oxford University Press, London, 1973.
11. S. M. Rugumamu. «Local Bargaining Capabilities with Traditional Corporations: The Case of the National Development Corporation,» University of Dar-es-Salaam, 1980.
12. S. M. Rugumamu. «Transnational Corporations, and Industrialisation: The Case of Tanzania,» University of Dar-es-Salaam, 1979.
13. Thomas, C. Y. «Dependence and Transformation», in Monthly Review, 1974.
14. Tandon, Y. «Transnational Corporations and Industrialisation in East Africa», Afro-Arab Symposium, Sharjjah, 1978.
15. S. M. Wangwe. «The Excess Capacity in Manufacturing» – Case Study of Selected Firms, ERB Paper 76.2, University of Dar-es-Salaam.
16. United Republic of Tanzania: *The Second Five-Year Plan for Economic* and Social Development 1969–1974, Vol. I, Dar-es-Salaam, 1969.
17. . *Import Substitution as an Industrial Strategy: The Tanzania Case,* ERB Paper 76.10, University of Dar-es-Salaam.

RESUME

Dans son article intitulé «Industrialisation et Politique Technologique en Tanzanie», H. P. MOSHI fait remarquer, après avoir défini l'industrialisation comme étant «l'application de la science et de la technologie dans le processus de production de biens matériels», que les problèmes technologiques et industriels sont comme les deux faces d'une même feuille de papier et que par conséquent ils sont indissociables. Deux grandes parties composent son article : Dans la première partie il retrace l'histoire du développement des industries en Tanzanie. Cette histoire est marquée par cinq grandes étapes, toutes liées aux besoins et aux problèmes de la métropole. Il fallut attendre la Déclaration d'Arusha de 1967 pour que l'industrie soit marquée d'un sceau nouveau, celui de l'intrusion du capital national dans l'industrialisation à côté des actions des compagnies multinationales. Dans la deuxième partie l'auteur traite des problèmes de technologie, évaluant la part de la technologie dans le processus d'industrialisation en termes d'adéquation de cette technologie aux conditions spécifiques de la Tanzanie, conditions spécifiques marquées plus particulièrement par l'option fondamentale pour une politique d'auto-suffisance.

En conclusion, H. P. MOSHI énumère les caractéristiques du processus d'industrialisation et de technologie en Tanzanie qui sont :

1. Sa nature extravertie
2. Son incapacité à utiliser les ressources locales pour satisfaire les besoins locaux
3. L'absence de rapports fondamentaux entre les trois éléments suivants : les biens de production, l'industrie et la consommation de masse. Au contraire ces rapports n'existent qu'entre les industries orientées vers l'exportation et les industries de consommation de luxe

En tant que stratégie, la critique porte moins sur l'importation de la technologie que sur le genre de technologie qui a été importée. Industrialisation ne veut certainement pas dire absence de contact avec les autres pays mais pour que de ce contact jaillisse la flamme du développement économique dans les pays en développement, il faut qu'ils se conforment à leurs ressources et besoins.