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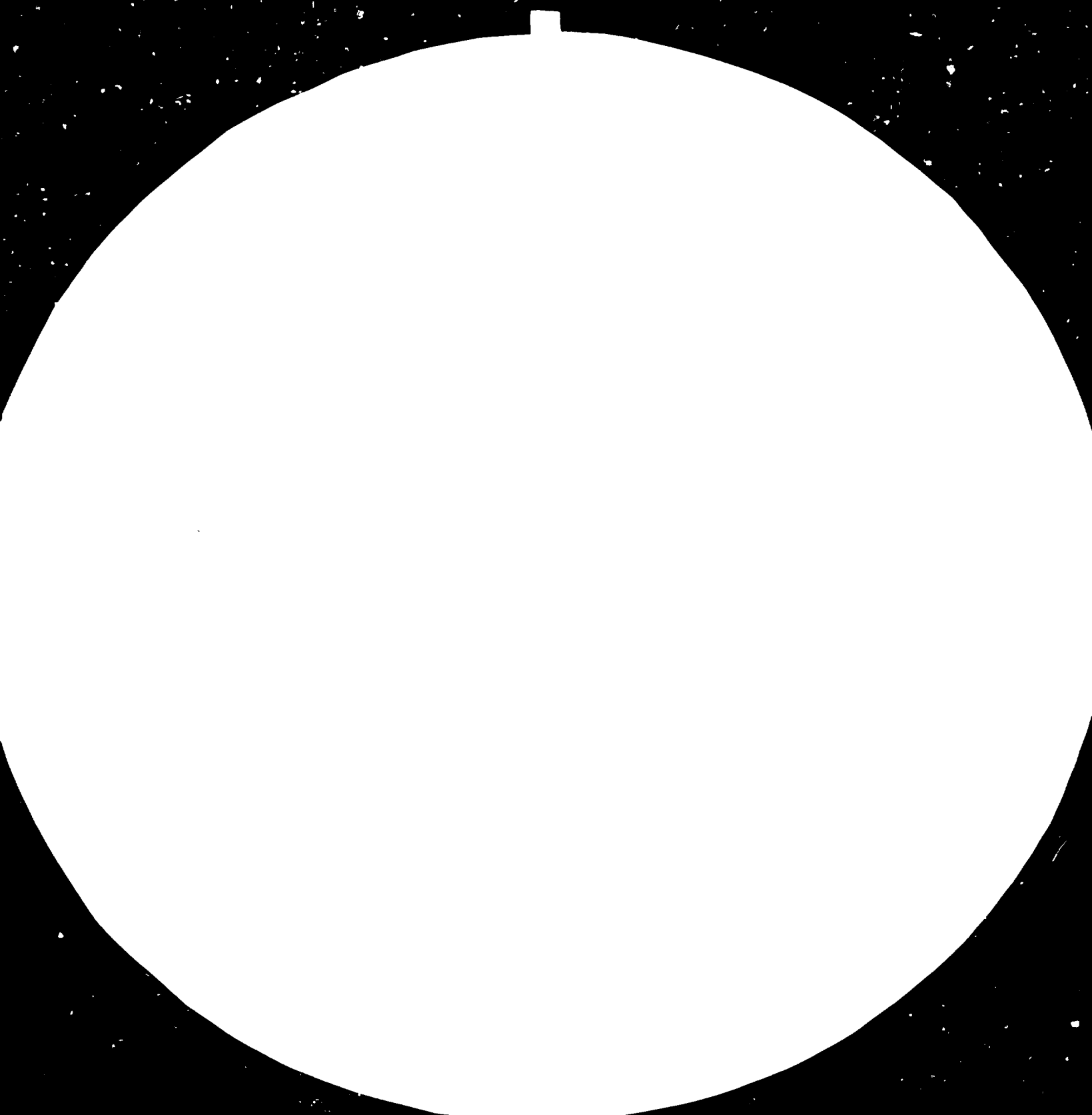
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Some Considerations in the Choice of
Technologies for Industrial Development
in Africa: Social, Economic and
Political implications *

1984

by

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rational working conditions obliges our researches to look for greener
fields ; and we perpetually remain stagnant in our development efforts.

7° — In face of some of these technological problems posed to Africa
by developing countries, there is the need for collective sacrifice. A gradual
and systematic phasing out of production of certain hard-currency earning
products coupled with a systematic local transformation of whatever remains
of the said commodity, is necessary. The final objective is to keep the
African countries in a comfortable situation in face of sudden commodity
substitution tendencies by the developed countries.

8° — And finally, in face of a potential commodity substitution by
the industrialised countries, the African countries can simply refuse to
be bothered by such substitution. When the industrialised countries would
have substituted all the available commodities from Africa, with new products
from frontier technoligies, African countries would equally possess no hard
currencies to buy their new products and trade would come to a virtual
standstill. This approach should be encouraged so long as foodstuffs for
local consumption are developed, and produced for self sufficiency — this
would also encourage development of indigenous technologies.

Conclusion

A stage of parity has to be reached wherein the developed and
developing countries negotiate technology and commodity exchange without
undue imposition from each other. To achieve this parity, there is the
need for African countries to cuddle to face similar cuddling from the
technologically advanced countries in their bid to transfer frontier techno-
logies to Africa or in their bid to use such technologies against the
economies of some African countries.

Acknowledgements

ABSTRACT

This is a position paper. It discusses quite briefly the social, economic and political implications of implementing the Lagos Plan of Action with specific reference to the section relating to the Industrialization of Africa. Three factors have been identified which are relevant for any industrialization process to take place. First, appropriate institutions have to be established. Secondly, appropriate policies must be enacted to guide the industrialization process. Finally, the need is stressed for the provison of adequate infrastructural facilities which are so central to sustained development.

The paper further looks at the implications of technologies particularly new technologies for individual and social adjustments and points out the structual and contextual factors which are likely to make or mar the entire development process. Suggestions are made which could serve as a guide or "aide memoire" to politicians and professionals vis-à-vis peasants.

Introduction

For a long time technology has been considered in development circles as the panacea for all economic, social and political ills. Given that technological applications have the potential of solving most human problems, they have to be applied with care, caution and purpose.

The Lagos Plan of Action promises to provide a policy framework for the involvement of science and technology in African development over the next two decades. As a political document, the Plan of Action presumes that:

1. Development is something or a goal being sought by African countries;

2. Science and technology can be used as means to facilitate the process of development;

3. The populations of African countries have needs which can be satisfied if a dynamic economy is developed to stimulate domestic demand and consumption;

4. African societies have the indigenous capability to supply the new materials needed to match demands;

5. The development of viable regional and international markets on the African continent will help to solidify African Unity and reduce inter-nation conflicts;

6. Finally, that the development of African economies will reduce dependence on external resources.

This is, no doubt, a very ambitious plan which can make all the difference to the African continent if, and only if it is well implemented. Unless necessary action is taken, the Plan like all other plans will remain a mere dream on paper.

Implications

The implementation of the Lagos Plan of Action presupposes (1) that African governments must, in concert and consultation with their peoples, seek ways and means of identifying those technologies from the existing technological shelf which have proved to be useful and beneficial for their respective economies; (2) These technologies should be evaluated for cultural, economic, social and political appropriateness so that they can be improved and eventually integrated into the development process.

In order to achieve this, several prerequisites need to be fulfilled.

1. Appropriate Institutions

Institutions are needed in these countries for the identification of problems and appropriate solutions to those problems. In the area of bio-technologies, microelectronics, energy, etc., African governments need to give research and researchers adequate support (infrastructure, funds, incentives and recognition) so that indigenous scientists can put their best talents to solve indigenous problems.

Marketing, processing, storage and credit facilities and institutions are vital as they will help to reduce post harvest losses and increase the value of agricultural products.

At the present time, the development of African countries is unthinkable without the involvement and participation of the peasants who constitute seventy-five per cent of the population of African countries. Therefore, appropriate institutions are needed which will provide information to farmers from research stations and relay feedback to researchers so that research can be adapted to present farmers' needs and problems.

Existing indigenous institutions such as village loan and thrift societies, cooperatives and farm groups exist which ought to be tapped and integrated into new technological packages for positive and rapid progress. Farmers know what they want, they have ideas about their own environment and possess indigenous knowledge systems and technologies for solving their problems. It is important that such local resources be taken into consideration in the implementation of the Lagos Plan of Action, particularly as not to do so may lead to an unavoidable and undesirable alienation of the local populations from the development process.

1.1 The Role of Appropriate Institutions

The Institutions created or charged with the responsibility of promoting national development in all the sectors of the economy, should have the capability to deal with the following issues:

1.1.1. Establish a catalogue or inventory of existing indigenous technological capabilities and the relevance for national development; such a catalogue should provide information to researchers, policy-makers and planners which should be used as a basis for making technological choices;

1.1.2. Identify technologies which can be improved to solve local problems;

1.1.3. Acquire and adapt foreign technologies which can be adapted for local use in specific areas;

1.1.4. Conduct research on indigenous technology: Such research should be problem-oriented, subject-specific and locally relevant to current and future needs,

1.1.5. Create opportunities for building local technological capabilities (know-how, know-why and know-what);

1.1.6. Diffuse the technology developed, acquired or adapted for wider use in the country.

Such centres, to be effective, should be created at a national level with the possibility of establishing regional offices which respond to the requirements of specific ecological regions. It is expected that by setting up regional technology centres within the country with an apex organization to coordinate the national technological effort, development will be both detribalized and decentralized enough to give it the neutral momentum it deserves to be truly effective.

Perhaps it is important to point out that appropriate institutions which are both national and community-based will tap individual, community, as well as national talents, potential and capabilities. This will ensure that development planners will not be looking at the proverbial "tree in the forest", but a constellation of trees that make up a forest.

2. Appropriate Policies

All development is political. The success of a development programme depends to a large extent on the spirit, conception and implementation of policies that are intended to achieve national development objectives. Government officials and political leaders must be urged to give commitment and will to all development effort.

It must be admitted that there is no African country which does not have a well drawn plan of action backed by a set of policies. What will not be hard to find, on the contrary, is an African country that has set up specific sectoral development policies. Quite often development policies are written without spelling out very clearly the parts that apply to specific sectors of the economy such as agriculture, industrialization, commerce, etc.

This accounts for the fact that technology transfer to African countries over the past years has been characterized by economic, cultural, social and political inappropriateness. Large-scale projects have been set up without a concomittant rise in employment opportunities, and dependence on foreign experts for spare parts, management and repairs has increased rather than reduced. In these industries, and there are many of them in Africa, no significant amount of technology transfer has taken place. Locals have not

acquired new skills, spare parts are still being imported and repairs and management services are still being provided by the parent company from overseas.

Policies are needed in Africa to create the proper atmosphere for rapid economic, social and political development. Land-use planning is necessary to ensure that residential houses do not compete for the same land as industrial or agricultural projects. Measures have to be taken to ensure that grazing land is well managed for example, particularly in areas that are prone to natural hazards such as drought on the one extreme and floods and soil erosion on the other.

2.1 Agricultural Policies and Industrialization

Above all, for lasting industrialization to take place in Africa, agriculture must first be developed. Unless the agricultural sector is improved through the introduction of appropriate bio-chemical technologies, material technology (for rural roads) and microtechnologies (for communication and transfer of information to and from farmers), no genuine and lasting industrialization can take place. It is in this connexion that an African leader once said on the brink of independence that it is not only necessary and urgent to build a nation, it is important

> "to erect a new civilization which can lay claim to
> existence because it is humane. (In doing so, it is
> necessary) to employ not only enlightened reason but
> also dynamic imagination. We shall seek to create
> new forms and institutions - cultural, political,
> social and economic - suited to our present situation",
> (Senghor, 1961: 289-290).

He went on to exhort the people that if the desired progress is to be achieved, thrift and efficiency in all the sectors of the economy must be accompanied by a rationally planned market oriented economy. How will this be done? He replied:

> "It is not our plan to set up a so-called popular democracy
> or a laisser-faire regime. We aim to hold firmly to a
> middle-of-the-road socialism which is liberal and
> undoctrinaire one which socializes all that should be
> socialized, beginning with the rural economy, but
> no more than that (Senghor, 1961: 291).

The rural economy! To say that the Industrial Development Decade for Africa can be successfully launched and executed without putting the rural or agricultural sector first is but an empty anachronism. The struggle for survival in Africa is a battle which affects more than 300 million soldiers, who represent approximately seventy-five per cent of the African populations. All of them eke their living out of traditional farming. Since life is a struggle, industrialization must recognize the fact that for the average African, the satisfaction of basic needs is urgent. Unless the African child is prevented from going to bed hungry for lack of food, from going naked for lack of clothes to wear, from sleeping on the streets for lack of shelter or from dying for lack of medical care, the way will not be open yet for the other human problems to be solved. If the agricultural sector is developed first, industrialization and urban development will naturally come on its heels.

2.3 Double Talk and Double Think

Professionals can do all the nice work of putting ideas on paper, drawing graphs and charts and preparing convincing plans and programmes. Peasants may express all their desires and needs to the professionals (if there is a bridge to link them up). Yet development will not take place. The good ideas are there but the peasant will, like the hungry goat that is dying of hunger standing at equal distance between two equally desirable bundles of grass, will starve to death because the politician does not want to drop the robes carrying the bundle of grass.

Politicians may (they usually are) not be technocrats, but they have the keys to all the doors. They can make or mar, particularly in African societies where genuine democracy or the voice of the masses is anathema.

It is, therefore, important to recognize the bitter truth that lies in political and social power. Unless politicians stop saying one thing and doing something else, all efforts towards development in Africa are doomed to failure. The political WILL and COMMITMENT to get things done, to achieve national objectives that will improve the living conditions of all members of the society are needed for any plan of action to succeed. Whether it is a small project in a village, a regional or national project, those who make the final political decisions must be willing not only to make sacrifices but also to pledge their commitment and will to see that plans and programmes succeed.

This means, in this case, that the political leadership always has
the trump card in the development game. It is important to recognize this
fact because, after all, the Lagos Plan of Action is only a political
document of intent. Unless the politicians are willing to give it support,
not much else can be done about it. It is therefore necessary to conceptualize
development of all kinds in the contextual framework of national and
international politics.

3.   Infrastructure

The third component needed for industrial take-off in Africa is appropriate
infrastructure. The policies may be taken, institutions created but not
much further development can take place.

The industrialization process by nature requires a myriad of capital
inputs in finances, buildings and equipment. Roads have to be built to
take inputs such as biotechnologies to farmers and bring the output of farmers
to markets. Electricity, steady water supply, transportation services are all
needed for agriculture and industrialization to move forward. Schools, labora-
tories and other facilities have to be constructed which will serve as centres
for the generation, diffusion and utilization of knowledge.

Although all this takes time they are very necessary and form the core of
any development effort. If farmers have to increase yields and production, they
need the appropriate framework within which they can operate effectively. If
information has to flow between the farming population, industrialists and other
entrepreneurs, there has to be an effective communication system such as radio,
television or satellite stations to provide up-to-date information on farm
prices, market trends and new technologies.

Thus, agriculture and industrialization must go together. A nation that
places emphasis on both sectors is "walking on two legs" as the famous Chinese
proverb suggests. Kelley et al (1972:1) have written in this regard that:

> "while growth and development may be viewed as a rise in per
> capita income, the process is integrally related to the economy's
> structural transformation. The shift from rural-agricultural
> to urban-industrial activity has not only been empirically verified
> as accompanying growth, but it has been postulated as a major
> factor explaining economic development."

Attempts should be made in the implementation of the Lagos Plan of Action during the IDDA to ensure that rural poverty is attacked as a first step towards sustained industrial growth and development. This involves:

1. Disciplined capital formation;

2. The redistribution of economic and political power;

3. The organization of life in order to increase human rationality;

4. A reallocation of resources;

5. The reconstruction of all the forces that move men's lives.

The accomplishment of these tasks depends entirely on one variable: technology. The choice and acquisition of technology that is appropriate for the specific needs of African countries determines the degree of success of the IDDA.

A careful choice of appropriate technologies by the various African countries will greatly minimize wastes in resources, revitalize communities and prevent the disillusionment which post-independent Africa has experienced as a result of the inappropriate economic policies of the 1960s which placed heavy emphasis on mass, capital-intensive and large-scale industrialization (Nji, 1981).

Conclusions and Suggestions

The implications of applying new technologies in African development over the next decade will produce two kinds of effects: positive and negative. Negative and positive effects can either fall on the individual plane or on the societal plane.

On the personal (individual) side, existing social beliefs, structures, relationships and behaviour patterns will be altered. These shifts will include social mobility, family ties, acquisition of skills and attitudes.

On the societal (collective) side, structural adjustments will have to be made to accommodate the new technology. The employment structure as well as that of institutions will be affected and the centre of power and authority will change. Political instability in most African countries will continue to sap away scarce resources as governments continue to devote an even greater share of their resources to national defence and political security.

The negative effects can be minimized by taking a number of measures. For example, African leaders and policy-makers could:

1. Develop indigenous technological capabilities to discover and use local resources;

2. Give local research and development more support and recognition;

3. Make educational reforms to ensure that suitable manpower is trained in skills immediately needed to keep the industrialization process moving;

4. Direct efforts to blend new technologies with existing ones to ensure a harmonious coherent and consistent modernization process of all the sectors of the society;

5. Enact policies which will guarantee the use of local resources (human and physical) to the best possible advantage;

6. Make special effort to prevent or reduce the brain drain from African countries to developed nations without, however, violating the individual's right to the choice of residence under normal circumstances;

7. Take shift measures which would relax patenting and licencing laws to provide access to new technologies to developing countries;

8. Introduce innovative training programmes to provide capabilities to indigenous professionals in negotiating, bargaining, and dealing with technology developers and exporters;

9. Recognize the important role of science and technology in development and ensure that appropriate science and technology centres are created to generate knowledge for national use. Such an effort should look at short-term as well as long-term strategies which might include "crash" or short training programmes for certain classes of workers and long-range programmes incorporated into the curricula of schools at all levels;

10. Efforts made to build bridges in African countries to link
professionals, politicians and peasants together making sure
that there is no weak link in the chain;

11. And finally, to develop technology assessment units which will
be responsible for evaluating the manifest and latent consequences
of new as well as old or proven technologies.

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