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PROMOTING AND FINANCING THE DEVELOPMENT OF INVENTIONS AND RESSEARCH RESULTS INTO COMMERCIAL PRODUCTS

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INTRODUCTION

When an invention or the result of research reaches the stage of a commercialized product, it becomes an innovation. However, in order to better define the dimensions of the endogenous capability for assuming and solving the problems that arise acutely on the continent, that term could be redefined.

The problems of innovation in Africa have their roots in the industrialization policies of the sixties. The result has been an industrial tissue that is disconnected from the local scientific and technological infrastructure, which has no or not enough contractual links with technological promotion or indeed with the local or foreign suppliers, nor again with the final or industrial consumer customers. As a result, the continent has not developed a capability for collectively assuming its problems and has not set up machinery to settle those problems. As a rule, solutions were bought under the cover of various terms: technical assistance, technology transfer. Although foreign technical assistance and technology transfer may bring with them, when they are properly mastered, gains in productivity and competitiveness for the economy, the way in which such operations have been carried out in sub-Saharan Africa, except for South Africa, has contributed to weakening the local capability for resolving industrial problems and to creating a public system of research that is split up and bureaucratic with little opening towards the market, largely out of touch with the realities of industry and of services, which is more interested in the production of knowledge than of innovation.

We should not finance the promotion of inventions and the products of research in research establishments belonging to national education or to scientific research.

The objective in promoting the development of inventions and research results into a commercial product should be to increase the capability of local industry to deal with its own problems and to use the full local scientific technological and production infrastructure rather than that of the world as a whole, in order to solve its problems. It is also within the framework of insertion within a network that an individual inventor may truly become part of contemporary economic activities.

Industry cannot just transform itself from an industry without strategic vision into an innovative industry. It needs encouragement from outside the enterprise. This is a painful situation at the present time where industrial capitalism has practically finished everywhere, except in Africa, its changeover to financial capitalism. The continent does not have the technological capability to carry out the great innovations needed to better the thirty per cent net annual returns on investments in the USA.

Apart from studying the problems of innovation in Africa and the description of the various components of the machinery, I will propose a framework statute for a technological innovation promotion fund and a framework statute for capital investment societies.

In 1972, the World Bank carried out a study on the comparative advantages and the promotion systems operative in the countries of Western Africa. The criteria applied were the domestic resource cost (DRC) required to earn one unit of currency by exporting or by making savings on imports and also the promotion index which was higher than one for a subsidized sector, whereby one was the neutral state. The DRC was expressed as a proportion of the current exchange rate. That means that a DRC of 1 indicated that the implicit exchange rate at which one unit of domestic resources enabled one unit of currency to be acquired was

more than the actually applied rate of exchange. Consequently, effective economic policy should develop activities of a DRC of less than one unit and reduce activities of DRC of more than one unit.

The results of that study gave for Côte-d'Ivoire:

Sectors	DRC	Subsidy Index
Coffee, cocoa	0.6 to 0.7	0.5 to 0.6
Palm oil and coprah		0.8 to 0.9
Cotton and maize under specific conditions	0.70 to 0.80 for cotton under specific conditions	Approximately 1
Rice	1.05 under traditional growing 0.80 when alternated with cotton	Slightly above 1
Industry		Median 1.45

This situation is fairly representative of all the African countries, taking into account the eco-systems: forest, savanna with trees, savanna. The conditions deteriorate when moving from forest to savanna.

Industrialization did not constitute a strictly economic necessity and that explains some of the particularities of Africa and its problems faced with the globalization of economies and the changeover from industrial capitalism to financial capitalism.

In the 1960s and 70s, the industrialization of Africa occurred without links to the other sectors of the national economy, in full extroversion with regard to the local scientific and technological infrastructure.

Under a syndrome, that has been called the oil syndrome, what was being sold was revenue (raw materials) and technology was being bought. The more the technology was sophisticated, the more that flattered the national esteem. It was a matter of pride, not an economic activity.

This despite the fact that as of the fifties we were aware of what has been called the immaterial factor. We knew that productivity did not depend only on the cost of the raw materials and on the cost of the manpower, but also on the implementation of scientific and technical knowledge as innovation.

Technological innovation also means here the process by which a scientific or technical novelty becomes a marketable product and the process through which producers who appropriate and implement the design and manufacture products, processes or services that are new for them, irrespective of whether those products, processes or services are known and mastered in other places. Does not the intellectual property law of England say that "what is new is that which was unknown in the British Kingdom"?

In the undertakings, it was know that competitiveness depended on the quality and novelty of products, on technological superiority of production and in the organization of production, of the time needed for delivery and for after-sales service. It is now also known that competitiveness cannot be maintained within an undertaking without a series of

contractual links with its local environment: customers, supplies, industrial infrastructure, services, science and technology. The excellent work by Bruno Amable, Rémi Barré and Robert Boyer: Systems of Innovation at the Time of Globalization (Economica) analyzes all the studies carried out on this question.

Since production had become a process involving great intensity of knowledge and information and competition was extended to the whole world, the static comparative advantages eroded at great speed and, in the 90s, failure had to be noted everywhere, except in South Africa.

Of the numerous projects initiated on the continent none addressed the problem of technological innovation and its role in the capability of African industries to compete, both locally and globally.

New initiatives began to emerge, timidly, over recent years, based on networks within the national economies and which helped to build a bridge between research and the sector of industrial production, customers and their needs and towards the outside. It is necessary to assist technological innovation in its development within existing industrial enterprises instead of financing that activity as a research project in the institutions belonging to national education or scientific research. The example of the Soviet Union shows us that scientific activity disconnected from the market does not help to improve the competitiveness of a country's undertakings. Since innovation is a social process, the placing of the players in a network, starting with those who are closest to the consumer, is a strong factor for solving problems within a collectivity having a large potential for resolving the problems of sustainable development.

Such initiatives have been undertaken in other places. Africa could well take inspiration from the experience of:

- The Fundacion Chile in Chile;
- FONTEC in Chile;
- ITINTEC in Peru;
- CEGESTI in Costa Rica;
- SPRINT in the European Union.

Promoting innovation within African undertakings in a period in which capitalism is more financial than industrial cannot be done without the support and contributions from outside the undertaking. It will be necessary to devise machinery by which an undertaking is encouraged to itself identify the problems it faces, to find innovative solutions to its problems by making priority use of the full local scientific and technological structure and then only in second place the technical and scientific potential of the world. It will be necessary also to make available to the undertaking all the necessary resources for such a product, particularly the financial resources.

However, we propose a machinery which gives aid to promotion of financing the development of inventions and research results towards a commercial product. Such machinery could be constituted by:

- a training aspect;
- national, subregional and regional partnership exchanges;
- national funds for financing innovation and capital investment societies.

A set of regulatory, fiscal and legislative measures intended to promote in Africa a society of law in which everyone, and particularly the State, is obliged to submit to the rule of law which would have but one aim, that of guaranteeing a foreseeable environment for all and for each individual.

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