PHYSICS FOR DEVELOPMENT IN AFRICAN SUB-SAHARAN COUNTRIES

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Abstract: *In this talk, we briefly underline the directions that Physics must explore to ensure the development in Africa. These directions correspond to urgent needs for the continent.*

To ensure the development in African sub-Saharan countries in general and in Benin in particular, fundamental Physics (from theoretical, experimental or applied point of view) has to turn towards the satisfaction of the following specific and urgent needs:

1.In the agricultural domain

How to conserve the farm products and how to find the appropriate energy sources to produce?

2.In the medical domain

How to perform and to improve the health treatments and to reduce the death rate due to the use of the non adequate physical instrument?

3.In the building domain

How to build in order to satisfy the tropical climate conditions? And

4.In the environmental domain

How to solve the various environmental problems of desertification, of coast erosion due to the sea move and of pollution?

Indeed, *firstly* the farm production rate reached by the farmers owing hard work with rudimentary production tools is enough low comparatively to the needs. Besides, the farm products are given over to all kinds of severe weather and end up rotting for want of appropriate conservation tools. The usual conservation techniques based on the cold rooms are too expensive both for their cost price and for conventional electric energy cost. The materials used for these techniques do not always withstand the tropical humid

climate and require high prohibitive maintenance costs. Moreover, the renewable energies in general and solar energy in particular possess a low output and cannot satisfy the whole agricultural needs for desired cost. The cultivatable lands are also restricted by the desert which continuously progresses and for want of appropriate irrigation means.

It is therefore important to reorient the research activities and the training in applied Physics in the direction of obtaining the ways the best appropriate to conserve the farm products and the energy sources the best

profitable to produce with respect to the climate conditions.

Secondly, the modern medicine evolves with the most sophisticated physical apparatus. In most African countries, this medicine has to incorporate the local one that needs to be investigated with scientific tools. The bio-chemical analysis could here require specific physical instruments. This situation imposes physicists to work in collaboration with clinical doctors in order to invent the physical apparatus the best appropriate to specific needs.

This explains why it is important to reorient the fundamental and applied medical Physics in the direction of searching new appropriate physical instruments adapted to new needs required to extend the human lifetime in these countries and so doing to ensure the socio-economical development.

Thirdly, in African sub-Saharan countries, people used to build in the same manner as in the North countries. As a consequence, it is too hot inside the buildings and houses and one used to have recourse to air conditioning.

It is therefore important to search for building materials the most appropriate to produce the best thermal comfort in countries with high temperature and humidity rates.

Fourthly, most our countries are threatened to be destroyed by the desert progression and the sea move in the coasts reducing the cultivable and house areas. This situation poses a crucial environmental problem which requires serious investigations in Physics direction.

All in all, to ensure the development, trends in Physics in Africa must aim for searching solutions to urgent needs in the agriculture, medicine, building and environment domains.