

Structuring and use of Science-based Decision Support System in African Development Programs

by

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Abstract

All countries that target sustainable development must by necessity, address four primary categories of issues, namely, economic development, population management, environmental stewardship and governance/social equity. Each country or organization has assets such as natural resources, physical infrastructure and decision support systems (rational or speculative) which can be used to manage the four factors mentioned above. Management of sustainable development issues requires the creation, adaptation and use of information, including data, on a continuous basis. Management systems are best constructed at least initially as options on which decisions are needed. Options either at the national economic development level or at the institutional level, require the use of information for their screening and optimization. Both the options screening and optimization processes must suit the circumstances of the country, province or organization that targets sustainable development. Non-scientific speculation as well as pre-analysis option targeting, are common practices that ravage economic development plans in Africa. At any combined level of natural and human resources endowment, the capacity to structure and use science-based decision support systems is the major determinant of the success of economic development plans of each African country. Introduction of rationality aided by knowledge drawn from scientific fields, be they physical or social sciences, and data drawn from properly configured national research enterprises, can elevate the socio-economic profiles of African countries.

Science-based decision support systems are under-developed and under-utilized in most African countries, although it should be recognized that South Africa, Egypt and Algeria have made remarkable progress when rated on per capita basis. Among the major constraints to the development of knowledge-based systems in Africa are low Gross Domestic Product (GDP) of the majority of African countries, the brain drain that has not yet abated sufficiently, lack of the critical mass of national professional societies in important scientific fields, isolation from the global scientific community in critical fields, poor educational support infrastructure, and politicizing of key technical leadership positions. Scientific research coupled with

entrepreneurship support programmes, is a requirement for sustainable development. Data released by UNESCO in its 2010 report indicate that in 2007, Sub-Saharan Africa contributed only 0.6% of the global R&D expenditure while Israel and Brazil contributed 0.8% and 1.6% respectively. Obviously, the production of locally relevant data and other forms of information through investment in research has been beneficial to the sustainable development of Israel and Brazil. Undoubtedly, the African GDP growth rate which is projected to rise to 5.2% in 2011 from the 2009 level of 2.5% , would rise to even higher levels if decision support systems in economic development are improved.

Most of the challenges that exist in African sustainable development efforts can be successfully addressed at both the national and continental levels, as briefly outlined below for elaboration in the full text of this paper.

1. Creation of an African Continental Research Foundation (ACRF).
2. Allocation specification of 5% of the budget of each major national in-coming investment (as tax) into each country's Research and Educational Support Fund.
3. Creation and development of Science Advisory Boards (SABs) of experts in major economic sectors of each country, e.g agriculture, energy, transportation, telecommunications, health, environment and education.
4. Creation of several Entrepreneurship Support Centers (ESC) in each country with direct interactions with domestic and foreign sponsors and collaborators, including domestic academic institutions and companies.
5. Initiation of National Diaspora Re-engagement Programs (NDRP) in each country.
6. Improvement of public procurement processes to ensure indigenous capacity-building in critical projects and programmes.
7. Creation and operation of National Research Data Repositories (NRDP) with open access and visualization capacities.

In conclusion, the African Ministerial Councils, the African Union, New Partnership for Africa's Development (NEPAD), Economic Commission for Africa(ECA), the regional economic communities, scientific organizations and donor agencies can work with the African government within the framework of ECA and NEPAD, to catalyze the implementation of the recommendations outlined above. This would improve the results of development programmes and enhance quality of life in Africa.