



Capacity Building in Earth Sciences in Africa: An Engine for Accelerated Economic Growth in the Continent

Sospeter Muhongo

ICSU Regional Office for Africa, Pretoria, South Africa

(s.muhongo@icsu-africa.org)

It has been projected that the current population of about 820 million people in Africa will reach 1.5 billion in 2030. Currently, the Sub-Saharan Africa has a population of about 700 million and its average annual population growth rate is about 2%. This rate exceeds the actual economic growth rate of most countries in this region. It is estimated that 8.5% of the population aged between 15 and 49 years are infected with HIV/AIDS; and that the mortality rate in this region is about 103 (infants per 1000 live births). The life expectancy at birth is estimated to be 45.8 years. The social and economic problems facing the African continent are numerous, including lack of quality science at all levels, persistent acute shortages of water, food, health service, shelter and sustainable energy source. The GNI per capita of the Sub-Saharan Africa is about US dollars 490, and thus about 40% of the Sub-Saharan Africa (ca. 250 million people) lives in absolute poverty. On the contrary, in the period between 1978 and 2005, the number of people living in absolute poverty in China has fallen by 200 million, and its per capita income has increased five fold since 1978.

The whole of Africa accounts for about 1% of the total global-gross expenditure on R & D (GERD), and has about 78 researchers per million inhabitants. These are dismal figures when compared to Asia. For instance India and China account for about 1.6% and 6.7%, respectively, of the total GERD; and have about 143 and 554, respectively, researchers per million inhabitants. It has also to be noted that India alone consumes more electricity than the whole of Africa. Can African earth resources and S&T&I intervention (e.g. capacity building in earth sciences) bring about drastic poverty reduction to the majority of the African population?

Energy is the most important engine for sustainable socio-economic development of each nation and every community; and yet about 75% of the Sub-Saharan population has no access to electricity, especially in the rural areas. Africa is endowed with enormous untapped, under-utilized and under-estimated energy resources of all varieties, including the classical (primary) energy sources - oil, gas, coal and nuclear. It is currently estimated that Africa has a reserve of about 13,200 million tons ($\sim 9\%$ of global total) of oil which can last for about 35 years at the current consumption rate. The estimated gas reserve of about 1.3 trillion cubic meters can last Africa for about 50 years; whilst Egypt alone needs about 100 years to exhaust its 1,500 billion cubic meter-reserve of gas. Africa has coal reserves estimated at about 48,750 million tonnes ($\sim 6\%$ of global total) whose life span is about 227 years. The rough estimate of the uranium deposits in Africa is about 613,000 tonnes. It is also clearly recognized that Africa is the leading continent in terms of the availability of renewable energy which include hydropower, geothermal, biofuels, solar, wind and ocean energy.

Large deposits of base metals are ubiquitous in Africa, and estimates show that Africa has the largest reserves of the world's deposits of many metal ores such as Mn (61% of the world's reserves) and Cr (81.2 %). 76.1% of the world's reserves of phosphates are in Africa. The world's largest deposits of Au, diamond and gemstones are in Africa.

The enigmatic geological features in Africa are very favourable for the discovery of the largest deposits of minerals which are required for the new information and communication technology. These include ores of platinum, palladium, tantalum, indium, scandium, rhenium and aluminium. Consequently, it has to be concluded that the abundant and ubiquitous large deposits of earth resources of Africa, especially its mineral resources, can be profitably utilized to accelerate its annual economic growth to above 10%; with the subsequent drastic reduction of poverty in the continent. However, this mission can be realized in Africa through proper application of S&T&I in the earth sciences domain.