

# Biotechnology: Africa's Beachhead for Entry into the Global Economy

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**W**hile every developing region of the world won its fight against extreme poverty and enhanced its human development indices, Africa sank deeper into impoverishment. By 1992, per capita gross national product (GNP) remained at a miserable U.S. \$340; life expectancy had inched along to a mere 52 years; and per capita expenditure on health care was at \$24 (whereas the world average was \$329, and that of the industrial countries \$1860). Geopolitically, the situation was equally disheartening. Somalia, Rwanda, Liberia, Zaire, the Sudan, Algeria—all have become bywords for social violence, ethnic pogroms, warlord dictatorship, and religious intolerance. And the burden of massive external debt has raised concerns about the very survivability of nation-states in many parts of the continent. Indeed, some observers have come to wonder whether Africa in its entirety is not about to fall off the map of the world.

In the course of its 20-year record of abuse by authority, misdirection of the development effort, and missed opportunities linked to its real comparative advantages in any number of areas, Africa has etched in popular perception a story of unending natural disasters, human misery, and abject hopelessness. But this gloomy record covers hardly a generation, much too short a time in which to judge a people's social and economic development.

One of the few lessons history has had the ability to teach us repeatedly is that the impulse and direction for social and economic change must come from within. Surprisingly, because of the creeping marginalization of Africa in world affairs—a process that has accelerated during the emerging realignments following the resolution of the cold war—the continent, for the first time in some 500 years, has the geopolitical space to review its development from its own perspective. When this is done, one realizes immediately that Africa is not poor, but it is, absolutely, impoverished.

Africa possesses an enormous inventory of natural resource endowments, which in the mid-nineteenth century led to a series of humankind's most infamous colonizations. The continent was acquired in its entirety by European powers, complete with all its wealth and all its peoples, and without any of their consent. Among those rich endowments is the continent's biological diversity: The singular assemblage of alpha-species richness, a vast ecosys-

tem diversity, and cultures that kept these assets remarkably well conserved until the European takeover.

African entrepreneurs and decision-makers believe that this biological diversity must be taken as a strategic starting point for science-based industrialization, by linking it to a manifest effort in market-oriented biotechnology and scientific research, technology development, and competitive production and marketing, both in the African domestic market and the global marketplace.

This view is not an ivory-tower dream. At the Second Presidential Forum for the Management of Science and Technology for the Development of Africa, held in Maputo, Mozambique on July 21-22, 1994, African heads of state and CEOs of Africa-based multilateral development organizations agreed on the essential role of knowledge-intensive, demand-driven, production and marketing as the principal vehicle for durable modernization and competitiveness—and in the process, weaning the continent away from an overarching aid dependency. They drafted and signed an intergovernmental charter establishing the African Foundation for Research and Development (AFRAND), with a mandate to become operational by July of 1995. The key mission of AFRAND is the translation of R&D results into demand-driven new technologies, processes, and services directly answering to Africa's needs and aspirations.

One of AFRAND's priorities is biotechnology. Initially this means designing a production-oriented R&D program, encompassing goal-oriented human capital development and internship, and linking this to the development of a pilot biotechnology industrial park, with specialties in areas such as food processing, seeds, primary and veterinary health-care, and microbiology-based applications like pesticides, environmental management technologies, and energy. There are already first-class research and process engineering groups throughout the continent. What has been critically absent is a central organization committed to getting these nuclei to work coherently—with each other and with industrial entrepreneurs—and finding venture partners in both the industrialized and newly industrializing countries.

The next 10-15 years will determine whether Africa can indeed achieve a special niche in the economic promise of biotechnology, and by doing so affirm its ability to energize its own development and begin to fulfill its vast unrealized potential. ///