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."Population Increase, Environment, Food Access and Development in Africa: The Role of the African Union,"

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Population Increase, Environment, Food Access and Development in Africa: The Role of the African Union

By

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Abstract

This paper examines the impact of the massive population increase in Africa in the post World War II era and the environmental challenges the continent confronts in trying to feed such a high number of people. The paper is divided into three sections. The first section examines the demographics of Africa, which show that the continent has increased its total population by 750 million people from 1950 to 2008. The second section of this paper then presents arguments by scholars pertaining to the environmental challenges, especially for agriculture, facing Africa as it finds ways to feed this massive number of people. Finally, the third section presents a framework with suggestions or recommendations as to how policy makers in Africa should proceed in managing this problem.

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Introduction

Just as households, villages, towns and cities must quickly respond to rapid increase in their populations by developing policies that will make them sufficiently feed themselves, countries and world regions must also come up with policies to help them meet the demands for food with increase in their populations. Africa, especially sub-Saharan Africa is a region of the world that has experienced massive population increase in the post World War II era, but has not been able to develop policies to prevent hunger or food shortages.

The total population of the world has increased substantially in the post-World War II era. Africa has contributed substantially to the rapid growth of the world's total population. In 1950 the world population was estimated at 2.5 billion.[2] As of July 2008, the world population was estimated at 6.7 billion.[3] In 1950, Africa's total population was estimated at 221 million.[4] Almost six decades later in 2008, the 16 countries that make up West Africa alone have an estimated total population of 282.8 million. Africa's total estimated population as of July 2008 was 971 million.[5]

Africa's massive increase in total population coincided with the independence of almost all of the countries on the continent. In 1950, only three (Egypt, Ethiopia and Liberia)[6] of Africa's 54 countries were independent. From 1960 to 1969, 31 African nations gained their independence, with 16 of them doing so in 1960 alone. Today, of the 54 African nations, only one, Reunion (an Island nation in the Indian Ocean) is still without independence, and under the control of France. In addition, there are some small island nations surrounding the continent that are still under the control of former colonial powers. For example, Mayotte and Saint Helena in the Indian and the South Atlantic Oceans are still colonies of France and the United Kingdom respectively.[7]

The massive increase of Africa's total population in the past six decades, along with the success in attainment of independence brought with it huge responsibilities that most countries on the continent have been struggling with. At the time of independence, most African nations lacked the educated human resources and a strong infrastructure to ease the transition from dependence to self-rule. As a result, many African nations today are in worse economic,

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[2]. Stephen J. Appold, "Third World Cities in Global Perspective: The Political Economy of Uneven Urbanization," *Social Forces*, 76, no 1 (1997): 333.

[3]. Compiled and computed by author based on data in the 2008 CIA World Factbook.

[4]. "World Population Prospects," United Nations Population Division. Department of Economic and Social Affairs. New York. 2001, February 28.

[5]. Compiled and computed by author based on data in the 2008 CIA World Factbook.

[6]. Many scholars will date South Africa's independence having been ahead of 1994, when the first popular presidential elections were held. According to the 2004 *New York Times Almanac* (p.663), South Africa attained its independence on May 31, 1910, from the United Kingdom.

[7]. Compiled by author from the 2004 *New York Times Almanac*, pp. 517-707.

political, and social conditions than the periods immediately before and after independence: Out of the 33 million people estimated to be living with HIV/AIDS in 2007, 22 million (67 percent) were in sub-Saharan Africa. Out of the estimated 2 million people who died of HIV/AIDS in 2007, 1.5 million (75 percent) were in sub-Saharan Africa[8]; high infant mortality rates; political instability in countries in Western, Middle and Eastern Africa; lack of clean drinking water; famine and hunger all across sub-Saharan Africa; lack of technology; low higher education enrollment rates; slow growth in international trade; unpaved roads; lack of modern agricultural development; corruption and mismanagement; "brain drain" to the West; and many more problems exist.[9] As Nelson puts it: "The combined effects of rapid population growth, government mismanagement and corruption, numerous civil wars, and a woeful lack of commercial trade and employment opportunities, have greatly endangered even the meager goal of basic human subsistence throughout much of the African continent." [10]

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[8]. "Status of the global HIV epidemic," in 2008 Report on the Global Aids Epidemic. UNAIDS. December 2008:30-32. Retrieved on February 21, 2009 from: http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008/2008_Global_report.asp

[9]. See the following works: Michael Elmore-Meegan, and Thomas O Riorden, "Africa on the Precipice: An Ominous but Not Yet Hopeless Future," *JAMA*, 270, no.5 (1993): 629-631; T. S. Jayne, "Do High Food Marketing Costs Constrain Cash Crop Production? Evidence from Zimbabwe," *Economic Development and Cultural Change*, 42, no.2 (1994): 387-402; Michael R. Carter, "Environment, Technology, and the Social Articulation of Risk in West African Agriculture," *Economic Development and Cultural Change*, 45, no. 3 (1997): 557-590; Pierre-Alain Schieb, "Feeding tomorrow's world," Organization for Economic Cooperation and Development. *The OECD Observer*, no. 217/218 (1999): 37-40; Alice, N. Pell, "Integrated Crop-Livestock Management Systems in Sub-Saharan Africa," *Environment, Development and Sustainability*,1, no. 3-4 (1999): 337-348; Fred Nelson, "Sustainable Development and Wildlife Conservation in Tanzanian Maasailand," *Environment, Development and Sustainability* 2, no. 2 (2000) : 107-117; Simon Gregson, Heather Waddell, and Stephen Chandiwana, "School Education and HIV Control in Sub-Saharan Africa: From Discord to Harmony?," *Journal of International Development*, 13, no. 4 (2001): 467-485; S. C. McCombie, "Self-treatment for malaria: the evidence and methodological issues," *Health Policy and Planning*, 17, no. 4 (2002): 333-344; Juha I Uitto, and Alfred M. Duda, "Management of transboundary water resources: lessons from international cooperation for conflict prevention," *The Geographical Journal*, 168, no. 4 (2002): 365-378; Zewdu Ayele, and Christie Peacock, "Improving Access to and Consumption of Animal Source Foods in Rural Household: The Experiences of a Women-Focused Goat Development Program in the Highlands of Ethiopia," *The Journal of Nutrition*, 133, no. (11S-II) (2003): 3981S-3986S; Michael Fleshman, "Africa struggles to attain millennium goals," *Africa Recovery*,17, no.3 (2003.):10; David Leonard, and Strauss Scott, *Africa's Stalled Development: International Causes and Cures* (Boulder and London: Lynne Rienner, 2003); Denis D. Mwanza, "Water for Sustainable Development in Africa," *Environment,Development and Sustainability*, 5, no. 1-2 (2003): 95-11; Darlington Richards, Gladson Nwanna, and Sonny Nwankwo, "Debt burden corruption impacts: African market dynamism," *Management Decision*, 41, no. 3 (2003): 304-310.

[10]. Nelson, Sustainable Development and Wildlife Conservation in Tanzania, p. 107

This paper is divided into three sections. First, it examines the current demographics of the entire continent of Africa and its five regions. The data on the demographics of Africa show a continent with regions showing rapid population growth rates. It also shows a continent that has a substantially high proportion of young people under age 15. Africa's population is the youngest in the world.

With such a high increase in total population comes the responsibility to feed and to provide other important social services to them, which brings us to the second section of the paper. It examines the environmental challenges that the people and policy makers on the continent face in trying to feed this massive number of people and to produce the utilities or machines needed to sustain themselves. Unlike nations in the Northern hemisphere, Africa's geographic location in the Southern hemisphere, which results in an extremely high impact from the Sun, has resulted in many environmental or ecological challenges such as drought, arid atmosphere, desertification and hot and humid temperatures that make life very difficult for plants, animals and humans, contributing to the slow rate of development on the continent. Explanations as to how the sun is having serious environmental impact on the continent and its people are presented.

The third section of this paper presents a framework with suggestions or recommendations as to how policy makers in Africa should proceed in managing this problem. At the core of these recommendations is the role of the African Union, which needs to seek more central or federal power from member states to enable the continent to make strategic policies that will benefit all five regions of the continent. Let us now begin with the demographic trends in Africa.

Demographic Trends in Africa

Following World War II, Africa began experiencing a rapid increase in population. As noted above, in 1950, Africa's total population was estimated at 221 million. By July 2008, the continent's total population was estimated at almost 971million. Table 1 shows the ten most populous countries in Africa as of July 2008.

Table 1: Ten most populous countries in Africa, July 2008
(millions of people)

Country	Population	percent of Total
Nigeria	146.3	15
Ethiopia	82.5	8.5
Egypt	81.7	8.4
Congo, D.R.	66.5	6.8
South Africa	48.9	5
Sudan	40.2	4.1
Tanzania	40.2	4.1
Kenya	38	3.8
Morocco	34.3	3.53
Algeria	33.8	3.48
Africa	971	

Source: Compiled and computed by author based on data in the 2008 CIA World Factbook.

To get a better understanding of the distribution of the population in the different regions of the continent, this author utilizes the classification of the United Nation Statistics Division, of its five regions (Eastern, Middle, Northern, Western and Southern Africa, see Appendix). Table 2 provides the regional distribution and ratio of Africa's 971 million people in July 2008. Eastern Africa had the highest proportion, with 307.4 million and 31.7 percent) followed by Western Africa.

Table 2: Total Population of Africa's Five Geographic Regions, July 2008 (millions of people)

Region	Population	percent of Total
Eastern Africa	307.4	31.7
Western Africa	282.8	29.1
Northern Africa	206.6	21.3
Middle Africa	118.3	12.2
Southern Africa	56	5.8
Africa	971	

Source: Compiled and computed by author based on data in the 2008 CIA World Factbook.

The evidence tends to show that these regions will continue to grow because of the extremely high fertility rates of African women when compared to the world average. According to the United Nations, a country or society needs the average woman to have 2.1 children to continue to maintain their population. In 2008, for example, the average total fertility rate in Africa was

4.6 children born per woman. The average total fertility rate for the world in 2008 was 2.61 children born per woman.[11]

The imbalance of Africa's population structure when compared to the world average, has contributed substantially to its many problems, including the difficulty of feeding itself. The continent has a very large young population, with a substantially smaller older population. For example, in 2008, of the 971 million people in Africa, 40.1 percent was under age 15 (27.3 percent for the world average in that year); 56.4 percent was from ages 15-64 (65.1 percent world average); and 3.6 percent was aged 65 or over (7.6 percent world average). As of 2008, the median age in Africa was 19.7 years (19.4 years for males and 20 years for females), the youngest in the world. The median age in the world in 2008 was 27.4 years for males and 28.7 years for females.[12] That is a substantial number of young people to feed, educate, provide health care for, etc., in a "poor" continent.[13] Let us now examine the environmental challenges to the production of food for Africa's masses.

Africa's Environmental Challenges to Food Production

A nation or continent that cannot feed itself stands very little chance of making any real economic progress. Most developed countries today began their economic rise by producing sufficient food to feed the masses (workers). In the case of Africa, massive population increase has to confront the continent's environmental problems. Researchers have for centuries expressed concerns about rapid population growth, the ability to feed such rising populations and its impact on the environment in which they live. Part of the concerns was whether natural resources of the planet could sustain rapid population growth. Many authors and others concerned with this issue have pointed out Africa's environmental challenges as significantly contributing to the continent's problems in food production and establishing strong and successful economies in its regions. Africa's geographic location on the planet has been cited for some of its environmental problems. Nature (too much Sun) has impacted Africa's

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[11]. Compiled and computed by author based on data in the 2008 CIA World Factbook.

[12]. Compiled and computed by author based on data in the 2008 CIA World Factbook.

[13]. Linda D. Shumaker, and Robert L. Clark, "Population Dependency Rates and Savings Rates: Stability of Estimates," *Economic Development and Cultural Change*, 40, no. 2 (1992): 319-332; Fredrick Muyia Nafukho, "Entrepreneurial skills development programs for unemployed youth in Africa: A Second Look," *Journal of Small Business Management*, 36, no. 1 (1998):100-103; Sandra Wallman, and Valdo Pons, "Where have all the young men gone? evidences and explanations of changing age-sex ratios in Kampala," *Africa*, 71, no.1 (2001): 113-127; Santosh Mehrotra, and Enrique Delamonica, "Public Spending for Children: An Empirical Note," *Journal of International Development*, 14, 8 (2002): 1105-1116.

economic growth negatively.[14] Jayne notes that: "The evidence is now overwhelming that throughout much of semiarid sub-Saharan Africa, a large proportion of rural farm households cannot or do not produce enough grain to feed themselves and are purchasers of grain."[15] Mwanza points out that "…Africa is the only continent where the growth in per capita food production has been lower than the growth in population."[16] According to Mazrui, the lack of the types of winter experienced in the Northern Hemisphere, and the hot and humid climates of Africa have made development a big challenge. Mazrui points out that:

> There is an ecological war going on in Africa. At one level it is a war between the sun and Africa's water resources. The continent is potentially well-endowed in both solar energy and hydro-power. But the two forces are not pulling in the same direction. Like God, the sun both gives water and takes it away. But in recent times the sun has

[14]. J. A. Rogers, *Race and Sex. Volume III* : *Why White and Black Mix in Spite of Opposition* (Renewed 1972 by Helga M. Rogers. 4975 59th Avenue South St. Petersburg, FL. ISBN 0-9602294-2-6, 1944 (1972), 216-217; Ali A. Mazrui, *The Africans: A Triple Heritage* (Boston: Little Brown and Company, 1986); Jayne, "Do High Food Marketing Costs Constrain Cash Crop Production? Evidence from Zimbabwe," ; William Beinart, and Peter Coates, *Environment and History: the taming of nature in the USA and South Africa* (London: Routledge, 1995); Akin L. Mabogunji, "The environmental challenges in sub-Saharan Africa," *Environment* 37, no. 4 (1995): 4-9, 31-35; Appold, "Third World Cities in Global Perspective: The Political Economy of Uneven Urbanization,"; Carole Rakodi, (ed). *The Urban Challenge in Africa: Growth and Management of its Large Cities* (Tokyo: United Nations University Press, 1997); David E. Bloom, and Jeffrey D. Sachs, "Geography, demography, and Economic growth in Africa," *Brookings Papers on Economic Activity* 2 (1998): 207-295; David F. Gordon, David C. Miller, Jr., and Howard Wolpe, *The United States and Africa: A Post-Cold War Perspective* (New York: W. W. Norton & Company, 1998); David S. Landes, *The Wealth and Poverty of Nations: Why Some are so Rich and Some so Poor* (New York: W.W. North & Company, 1998); David, A. McDonald, "Three steps forward, two steps back: Ideology & urban ecology in South Africa," *Review of African Political Economy* 25, no. 75 (1998): 73-88; Anne R. Pebley, "Demography and the Environment," *Demography* 35, no. 4(1998): 377-389; John Reader, *Africa: A Biography of the Continent* (New York: Alfred A. Knopf, 1998); Thomas Sowell, *Conquests and Cultures: An International History* (New York: Basic Books, 1998), 99-105; Moses K. Tesi, "Conceptualizing Africa's Environment: A Framework for Analysis," in The Environment and Development in Africa. Moses K. Tesi, ed. (Lanham, MD: Lexington Books, 2000), 13-38; Narendra P. Sharma, "The Political Economy of Water Resource Management in Africa: Choices and Tradeoffs," in *The Environment and Development in Africa*, Moses K. Tesi, ed (Lanham, D:Lexington Books, 2000), 125-142; Pay Drechsel, Dagmar Kunze, and Frits Penning de Vries, "Soil Nutrient Depletion and Population Growth in Sub-Saharan Africa: A Malthusian Nexus?," *Population and Environment* 22, no. 4 (2001): 411-423; Albert Bates, "Ecovillage Roots (and Branches); When, where, and how we re-invented this ancient village concept," *Communities* 117 (2003): 25; Eric F. Lambin, and Helmut J. Geist, "Regional Differences in Tropical Deforestation," *Environment* 45, no. 6 (2003): 22.

[15] . Jayne, "Do High Food Marketing Costs…", p. 389.

[16] . Mwanza, Water for Sustainable Dvelopment, p. 100

> been taking away water more than giving it in Africa. [17]

Africa, which has been warmer or hotter in temperature than the Northern Hemisphere, is still experiencing rising temperatures. In the 20th century the world's temperature increased by 0.6 degree Celsius, but increased more than that in the northernmost and southernmost regions. Scientists have predicted that the world's temperature will continue to rise. From 1990 to 2100, the world's temperature is projected to rise an additional 1.4 degree Celsius to 5.8 degree Celsius.[18]

According to Mazrui, among all of the continents on the planet, Africa is the most tropical, meaning that it is closest to the sun and far removed from the experience that northern countries such as the United States and Canada have of winter.[19] In addition, Mazrui notes that the areas on the continent where rivers have an adequate water source are the parts that are far removed from tourists or speculators of property. In northern countries, according to Mazrui, winter made it possible to 'save some sunshine for rainy days' through constructive planning. However, "…in the history of tropical Africa there was no real equivalent of winter to foster a culture of planning, the will to anticipate…. It was the colder climates further north in Europe which inaugurated the twin revolutions of modern industrialization and capitalism."

Landes notes that nature, or more specifically geography, plays a major role in the development of a country or a region.[20] According to Landes, although geography is not the only factor at play in the development of a country or region, countries closer to the equator tend to lack water and are less developed than countries farthest away from the sun. Landes quoted another scholar as saying:

> Perhaps the most striking fact is that most underdeveloped countries lie in the tropical and semi-tropical zones, between the Tropic of Cancer and Tropic of Capricorn. Recent writers have too easily glossed over this fact and considered it largely fortuitous. This reveals the deep-seated optimistic bias with which we approach problems of development and the reluctance to admit the vast differences in initial conditions with which today's poor countries are faced compared with the pre-industrial phase of more advanced countries.

As for the problem of water scarcity, Landes notes of the weather patterns in Africa: tropical regions, though they generally have average (sufficient) rainfall, experience irregular and mostly unpredictable and harsh downpours making planning difficult in areas with very little or no technology.[21] "The averages mean nothing when one goes from one extreme to the other, from one

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[17]. Mazrui, *The Africans*, p. 16

[18]. Mari N. Jensen, "Climate Warming Shakes up Species," *Bioscience* 54, no. 8 (2004), 722.

[19]. Mazrui, *The Africans*, p. 217

[20]. Landes, *The Wealth and Poverty of Nations*, p. 5.

[21]. Ibid, p. 13

year or season or one day to the next. In northern Nigeria, 90 percent of all rain falls in storms of over 25 mm. per hour; that makes half the average monthly rainfall at Kew Gardens, outside London." As a result, writes Landes, " … cultivation does not compete easily with jungle and rain forest: these treasure houses of biodiversity favor every species but man and his limited array of crops." [22] According to Landes "Around 1970, the Sahara was advancing into the Sahel at the rate of 18 feet an hour—in geological terms, a gallop."[23] According to Sharma: "An estimated 320 million hectares of vegetated lands have been degraded over the past several decades in SSA, [sub-Saharan Africa] leading to flooding, reduced groundwater recharge, and reduced stream baseflow."[24]

According to Mwanza Africa has the lowest supply of water and sanitation coverage in the world and that over 1 out of every 3 Africans lack access to adequate water supply and sanitation facilities. He adds that due to the lack of access to water supply and adequate sanitation facilities, "…there is a high incidence of communicable diseases that reduce vitality and economic productivity on the continent."[25] For example, McCombie points out that: Malaria kills millions of people worldwide, and that 90 percent of those deaths are in sub-Saharan Africa.[26] "Estimates of the total mortality have ranged between 700 000 and 2.7 million deaths per year."

Reader also points out that Africa's geographic location has played a role in hindering development.[27] Reader writes that unlike other continents, Africa is divided into almost two equal parts by the equator, and that because it lies inside the tropics, it does not enjoy the fluctuations in temperatures, which are typical of the climates of Europe and North America. In Africa, according to Reader, temperatures usually range from warm to hot. Reader continues:

> Differences in altitude, prevailing winds and distances from the ocean have created practically every conceivable type of climatic condition and environment—some perhaps even larger than in popular conception, others smaller. Africa's deserts, for example, occupy 40 per cent of the continent. Rain forests—the jungle of popular myth—account for no more than 8 per cent of the land mass…. The most extensive areas of vegetation are savanna, open plains, and wooded grasslands, which stretch between the deserts and the forests across a series of undulating plateaux that geological uplift has raised to an average of about 900 metres above sea level throughout the continent. This elevation renders the savannas much cooler than they would otherwise have been at those latitudes.[28]

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[22]. Landes, *The Wealth and Poverty of Nations*, p. 13.

[23]. Landes, The Wealth and Poverty of Nations, p. 13.

[24]. Sharma, "The Political Economy of Water Resources Management in Africa," p. 132.

[25]. Ibid.

[26]. McCombie, Self Treatment for Malaria, p. 333.

[27]. Reader, *Africa, A Biography of the Continent*.

[28]. Ibid. p. 100.

Reader adds that Africa is an elevated continent that over time has experienced significant erosion.[29] He notes that although most of Africa's land surface is still between 500 and 1,000 meters above sea level, only a small percentage of the continent rises any higher. Reader notes that "… of the continents' 29.7 million km^2 land surface, barely 400,000 km^2 (1.35 per cent) stands 2,000 meters or more above sea level and only 28,545 km^2 (0.10 per cent) is higher than 3,000 meters…" Due to these environmental or ecological obstacles, it became difficult for the success of agriculture and the ability of Africans to feed them-selves. Reader points out that a 1991 [United Nations Food and Agriculture Organization] FAO survey showed that only 22 percent of land in Africa suitable for agriculture was actually being utilized or in production, and that the comparable figure for South East Asia was 92 percent.[30]

Gordon et al. also lament on Africa's persistent problems with drought and other environmental problems that result in famine for millions of people on the continent.[31] They point out that only 6 percent of Africa's land is used for farming, and that two-thirds of the entire continent is subject to a high risk of drought. They claimed that close to 50 percent of the continent receives less than 75 days of rainfall. Gordon et al. also add that rainforests in Africa comprised 20 percent of the world's remaining rainforests, but that deforestation is slowly eroding them. They point out that the continent's tropical forests are disappearing at a rate of 0.7 percent annually, and that its temperate forests are disappearing at 0.1 percent annually. They claim that 5 million hectares of forest are lost annually due to the clearing of the forest for agriculture. Gordon et al. also add that Africa is experiencing environmental degradation due to the increase of human and animal populations and intensified farming, with an estimated 28 percent of the arid and semi-arid land expected to experience moderate or severe desertification. An estimated 50,000 to 70,000 square kilometers of land in Africa go out of production annually as a result of land degradation. According to Tesi:

> Africa's dependence on its natural systems and resources is a major feature of its en**v**ironmental problems. The clearing of forest vegetation to make way for agriculture, the stripping of the ground for minerals, and extraction of tree covers from forests for timber are all activities that have serious implications for environmental quality and integrity. Mechanized devices and agricultural inputs such as fertilizers and pesticides, whose benefits have been modest even by Third World standards, have also had the devastating effects of accelerating environmental degradation.[32]

The harsh weather conditions in Africa result in inadequate or limited success in agricultural production, due to the destruction of the soil. What is the status of Africa's agricultural sector? How are African farmers and governments

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[29] . Ibid. p. 210.
[30] . Ibid. p. 249
[31]. Gordon et. al. The United States and Africa, pp. 29-31.
[32]. Tesi, "Conceptualizing Africa's Environment", p. 22

dealing with the environmental challenges to food production?

Limited Agricultural Productivity

Unlike many other parts of the world, the impact of the Sun on the soil of the continent of Africa has been cited to slow the growth of agriculture, even though that sector is reported to employ a very large proportion of workers on the continent. However, lack of modern technological techniques or equipments, inadequate agricultural education of farmers, and inadequate planning by government and farmers, have also been cited to slow growth in agriculture in Africa.[33]

Mwanza notes that 4-7 percent of cultivated lands in Africa is under irrigation and that the lack of investment for the improvement of soil, results in "…the excessive extraction of nutrients by agricultural activities." [34] As Tesi also notes, between 1979 and 1981 only 4 percent of sub-Saharan Africa's agricultural lands were irrigated, compared with 11.6 percent for Latin America and the Caribbean.[35] According to Made, between 1965 and 1990, the annual growth rate of agricultural production in Africa was 1.7 percent, or just over one-half of the average 2.8 percent annual population growth rate.[36] During the 1980s, the gap widened significantly, "…as a result, regional food imports (including food aid) increased substantially and today represent about 10 percent

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[33]. Frances M. Lappe, *Diet for a Small Planet (20th Anniversary Edition)* (New York: Ballantine Books, 1992); Stephan J. Goetz, "Interlinked Markets and the Cash Crop-Food Crop Debate in Land-Abundant Tropical Agriculture," *Economic Development and Cultural Change* 41, no. 2 (1993): 343, 361; Patricia Made, "Women and Desertification: Tillers of the land, keepers of knowledge," *Southern African Feminist Review* 1, no. 1 (1995): 32; Carter, "Environment, Technology, and the Social Articulation of Risk in West African Agriculture,"; Randall E. Brummett, "Integrated Aquaculture in Sub-Saharan Africa," *Environment, Development and Sustainability* 1, no. 3-4 (1999): 315-321; Shrikant Jagtap, and Abigail Amissah-Arthur, "Stratefication and synthesis of crop-livestock production system using GIS," *GeoJournal* 47, no. 4 (1999): 573-582; Pell, "Integrated Crop-Livestock Management Systems in Sub-Saharan Africa,"; Jules Pretty, "Can Sustainable Agriculture Feed Africa? New Evidence on Progress, Process and Impacts," *Environment, Development and Sustainability* 1, no. 3-4 (1999): 253-274; Pedro A. Sanchez, "Delivering on the Promise of Agroforestry," *Environment, Development and Sustainability* 1, no. 3-4 (1999): 275-284; Schieb, "Feeding tomorrow's world,"; Tesi, "Conceptualizing Africa's Environment: A Framework for Analysis," 22-25; Drechsel, Kunze, and Vries, "Soil Nutrient Depletion and Population Growth in Sub-Saharan Africa: A Malthusian Nexus?,"; Henk Breman, and Siegfried Kofi Debrah, "Improving African food security," *SAIS Review* 23, no. 1(2003):153-170; Lambin, and Geist, "Regional Differences in Tropical Deforestation,"; Mwanza, "Water for Sustainable Development in Africa,"

[34]. Mwanza,

[35]. Tesi, "Conceptualing Africa's Environment," in *The Environment and Development in Africa*, p. 27.

[36]. Made, Women and Desertification, p. 32.

of food consumed in sub-Saharan Africa." Cleaver and Schreiber point out that in sub-Saharan Africa: "Food imports increased by about 185 percent between 1974 and 1990, food aid by 295 percent….The average African consumes only about 87 percent of the calories needed for a healthy and productive life."[37]

Sanchez notes that in sub-Saharan Africa: "Soil fertility depletion in smallholder farms is now recognized as the fundamental biophysical root cause responsible for declining food security …"[38] Drechsel et al. write that Africa's rapid population growth has "… been exerting tremendous pressure on natural resources, and rural populations are increasingly encroaching onto marginal lands, fallows and protected areas."[39] They point out that although many factors contribute to the continent's agricultural problems, "… soil fertility depletion is considered as the main biophysical factor limiting per capita food production on the majority of African small farms."

Breman and Debrah note that Sub-Saharan Africa ranks at the bottom when it comes to land and labor productivity rates in the world. Its annual growth in cereal yield averages only 10 kilograms per hectare per year (kg/ha/yr), which is about 1 percent."[40] They claim that if agricultural growth in sub-Saharan Africa, for example, remains below 3 percent, "…food security is wishful thinking" and that if the continent wants to depend on agriculture for future economic development, 4 percent to 7 percent annual growth is needed, which will amount to average annual cereal yield increases 3 to 6 times the current 10 kg/ha/yr level." Breman and Debrah continue by pointing out that: "…Africa is at a comparative disadvantage vis-à-vis other continents due to its poor natural resource base for agriculture, and that unfavorable socioeconomic conditions further exacerbate this problem." Breman and Debrah add that : "The poor quality of African soils…" they continue "… is the most important limiting factor for African agriculture. This is true even in regions like the drought-prone Sahel, the semi-arid transition zone from the Sahara Desert to the West and Central African savannah… Africa's poor quality soils limit agriculture even more than its difficult socioeconomic conditions."[41]

This causes African farmers to need more investments for farming, but have the inability to sell their farm products at higher prices. Breman and Debrah assert that: "The paradox of African agriculture is that agricultural development is inhibited at once by overexploitation of the land because of "overpopulation," and by poor market development because of "under population."[42] They point out that: "Urban consumers, who spend up to 80 percent of their income on food, constitute a powerful lobby that pressures governments to maintain low food prices." Pell adds that by the year 2025, more than half of the total African

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[37]. Richard E. Bissell, "The Natural Resources War: Africa's Food at Stake," in *The Environment and Development in Africa*. Moses K. Tesi, ed. (Lanham, MD:Lexington Books, 2000), 42.

[38]. Sanchez, "Delivering on the Promise of Agroforestry," p. 277.

[39]. Drechsel, et al., "Soil Nutrient Depletion and Population Growth," pp. 411-412.

[40]. Breman and Debrah, "Improving African Food Security," pp. 153-155

[41]. Ibid.

[42]. Ibid. pp. 157-158

population will reside in urban areas.[43]

Africa has not always experienced such problem of feeding its people. There was a time in West Africa when: "Coastal farmers produced so much rice that in the 15th century, Portuguese traders described the Rio Nunez as a veritable granary of rice."[44] According to Fields, 1,000 years before the arrival of Europeans, farmers in West Africa had developed "…sophisticated rice growing technology in environments similar to the South Carolina and Georgia Sea Islands."[45] Writing about Africa's agricultural potential, Mazrui quoted a Western historian who wrote in 1875 that: "millions of square miles of rich and fertile lands, some of which are open and park-like in their appearance; and others covered with extensive forests of valuable timber, where the sound of the woodman's axe has never yet been heard, and which only require the culture of the husbandman to make them produce an ample return for labor."[46]

The evidence today, however, shows that the numbers or proportions of Africans who are malnourished have increased substantially since independence. According to Pretty: "As population grows and puts more pressure on natural resources, so it is expected that food insecurity will also grow" and that in sub-Saharan Africa, an estimated 39 percent of the population is malnourished, and that the number of hungry children in the region is predicted to increase by 24 percent to 39 million by the year 2020.[47]

Pell points out that an estimated 15 percent of the world's population consumes less than 2,000 calories a day, less than 75 percent of what is required.[48] According to Pell, in 1993, the annual per capita consumption of meat and milk was 21kg and 40kg in the developing world. In the developed world, it was 76kg and 192 kg during that same year. In sub-Sahara Africa, however, in 1993, the annual consumption of meat and milk was 9 kg and 23 kg respectively. He notes that an estimated 65 percent of the agricultural land and 31 percent of the permanent pasture in Africa were degraded and that human-induced degradation is claimed to have decreased productivity by 25 percent in Africa and by 12.8 percent in Asia in the post-World War II era. In Ethiopia for example, Ayele and Peacock note that vegetable products "…account for 93 percent (1502 kcal) of daily intake with only 7 percent (109 kcal) coming from animal source foods."[49]

Research shows that while most Africans work in the agriculture sector, not only are Africans not producing enough food to feed themselves, the services sector generates the highest proportion of revenues. According to Tesi, "At least 70 percent of sub-Saharan Africans were employed in agriculture in 1995, even

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[43]. Pell, "Intergrated Crop-Livestock Management Systems," p. 337

[44]. Edda L. Fields, "Farmers in Pre-Colonial Coastal Guinea: Their Local Knowledge and Its Global Implications," *The Black Scholar* 30, no. 3-4 (2000), 23.

[45]. Fields, "Farmers in Precolonial Coastal Guinea," p. 23.

[46]. Mazrui, *The African Condition*, p. 72.

[47]. Pretty, "Can Sustainable Agriculture Feed Africa?," p. 253.

[48]. Pell, Ibid. pp. 337-339

[49]. Ayele and Peacock, Improving Access to Consumption of Animal Source Food p. 3981S.

though agriculture's share of Gross Domestic Products (GDP) was only 20 percent."[50] In developed countries, agriculture once dominated the economy, but as those countries developed, they shifted from a dominance in agriculture to the service and manufacturing sectors. In the case of Africa, a similar shift occurred without the actual changes and results that accompany such shifts. Amoako (2000) notes that the pattern is, as economies grow and become successful, the share of agriculture declines, while manufacturing and the service sectors increase. This has been experienced in many developed countries. In the case of Africa, however, Amoako notes that since independence, agriculture's share of the economy declined from 40 percent in the 1960s to 21 percent at the end of the 1990s, but that decline in the share of agriculture was not "…accompanied by a commensurate increase in manufacturing, which rose from 9 to 15 percent of GDP over the same period." The service sector, however, increased from 34 percent to 50 percent of Gross Domestic Products, and that figure may be higher, because the true extent of Africa's informal sector is unknown.[51]

Africa ends up spending substantial amounts of money for the importation of food and consumer goods, but still has substantial numbers of people in poverty and experiencing starvation. According to the United Nations Statistics Division, of the 49 countries classified as least developed countries, 34 (69 percent) are in Africa.[52]

One major problem with Africa's inability to feed large numbers of people on the continent is that farmers tend to produce cash crops for exports to Western nations, instead of first trying to produce food to feed the people.[53] Another factor that has also contributed to large-scale hunger in Africa has been the lack of agricultural machinery for agriculture. When one carefully examines data regarding the extent of use of agricultural machinery by farmers in a given country and the average food calories intake of the people in that country, there appears to be a correlation, whereby higher proportions of agricultural machinery tend to result in higher caloric intake by the population. That is why developed nations have higher caloric intake than developing nations.

Although many of the 22 nations of Latin America have high poverty rates as do many countries in Africa, the higher proportion of agricultural machinery per farmer in Latin American countries has contributed to people there consuming more calories on average than people in African countries. For example, according to the 2000/2001 World Bank World Development report,

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[50]. Tesi, "Conceptualizing Africa's Environment," p. 22.

[51]. Amoako, K.Y. "Economic Development and Reform Issues in Africa: Lessons for Ghana," 2000, September 21. Lecture Delivered at the University of Ghana, Legon. Retrieved on April 23, 2004 from http://www.africaaction.org/docs00/eca0010a.htm.

[52]."Least Developed Countries," 2004. United Nations Statistics Division. Retrieved on May 12, 2004 from http://unstats.un.org/unsd/methods/m49/m49regin.htm.

[53]. Kevin Danaher, "Myths of African Hunger," in *Global Studies: Africa*. Fifth Edition. F. Jeffress Ramsay, ed. (Connecticut: The Dushkin Publishing Group, Inc., 1993), 201; Allen Isaacman, *Cotton is the Mother of Poverty: Peasants, Work, and Rural Struggle in Colonial Mozambique, 1938-1961* (Portsmouth, New Hampshire: Philip Publishers, 1996).

the average number of agricultural machinery (tractors) per 1,000 agricultural workers from 1995 to 1997 for 17 Latin American nations (only available data) was 38.58 tractors. The average for 11 (only data available) West African countries was 0.4 agricultural machinery (tractors) per every 1,000 agricultural workers during that same period. It is worth noting that there was actually an improvement from the 1979 to 1981 figures of 0.27 tractors per agricultural worker in West Africa.[54] Danaher points out that "… Africa ranks last when it comes to the use of irrigation, fertilizers and tractors."[55] Breman and Debrah point out that in the 1990s "inorganic fertilizer use in sub-Saharan Africa decreased from 10 to 8 kg/ha of nutrients."[56] One could then suggest that this might be part of the factors why in 1997, the average daily per capita intake of calories in Latin America was 2,604, lower than the average of no less than 3,000 calories in developed countries. For 14 of West Africa's 16 countries, the average daily per capita intake of calories in 1997, was 2,403.[57] According to Tesi: the average daily calorie supply per capita in Africa in 1965 was 2,074, and that figure increased to only 2,122 in 1989.[58] Let us now turn to some suggestions or recommendations as to what policy makers in Africa and abroad could do to manage the challenges discussed above.

Framework for Managing Africa's Food and Other Development Challenges

There are many important policies that African leaders and the international community could implement in order to manage the food and other development challenges confronting the continent in the beginning of the 21st century. However, because of the increasing international competition for increasingly scarce resources, it is highly unlikely that individual African nations can be effective in creating policies and implementing them all on their own. No individual African nation can really compete in the international arena without being part of a larger union.

This then brings us to the African Union. The African Union has an important role to play for Africa to make real gains in economic development. It has been noted that in the past quarter century, Africa has not been successful with regional or continental integration.[59] However, the African Union, a newly

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[54]. Compiled and calculated by author based on data in "Attacking Poverty," World Bank World Development Report 2000/2001. Table 8. p. 288. Retrieved on May 18, 2004, from http://www.worldbank.org/poverty/wdrpoverty/report/index.htm.

[55]. Danaher, "Myths of African Hunger," p. 202.

[56]. Breman and Debrah, "Improving African Food Security," p. 159.

[57]. Compiled and calculated based on data (Table 23. "Food security and nutrition.") in the 2000 UNDP World Human Development Report. New York: Oxford University Press. UNDP asserted that data not available for Liberia and Mauritania. http://www.undp.org/hdr2000/english/book/back2.pdf.

[58]. Tesi, "Conceptualizing Africa's Environment," p. 26.

[59]. S.K.B. Asante, Regionalism and Africa's Development: Expectations,

established continent-wide organization (established in 2002), which replaced the Organization of African Unity (OAU), has the potential to foster substantial improvements for the people of the continent. More importantly, it has the potential to protect and observe contracts or agreements signed between African countries (especially smaller and weaker countries) and business corporations based in developed countries and governments of developed countries, to make sure that they are treated fairly. The European Union (EU), for example, has been representing its member countries in negotiating international trade agreements and in dealing with various political issues, making it possible for its member states to concentrate their efforts on other important domestic issues. As rich and powerful as Germany, France, Italy, Spain, and the United Kingdom are, each realized that it could not be in a position of strength by remaining isolated. That is why these five nations are members of the European Union.

A useful way to tackle Africa's problems could be through the African Union since the member-nations of that organization share similar challenges and experiences. This then means that with the permission of individual member-states, the African Union could be utilized to perform many important development tasks. It is through this concept of shared or similar challenges and experiences that the following suggestions could be considered for enactment and implemented for the continent's development: (1) A continent-wide transportation system; (2) Electricity production and consumption; (3) The A.U. must assist Individual member- nations if called upon while they negotiate international trade of their mineral and other resources; (4) Establishment of a Fund for Diaspora Taxes in Rich Nations; (5) Recruit Talent from the Diaspora; and (6) Increase Budget Allocation of Education for Member-States that Need It the Most. Let us examine each of these suggestions or recommendations.

(1). A Continent-Wide Transportation System

Among the factors that might be causing lack of success in agriculture in Africa is the problem of limited transportation. Unlike most other parts of the world, transportation is a big problem in Africa. Lack of adequate transportation is one of African farmers' biggest obstacles, especially in a continent with many landlocked countries. If the roads are bad farmers might not have the incentive to conduct large scale farming because they would have difficulty transporting their goods to central locations for trade.

According to the UN Statistics Division, as of December 2008, of the 31 landlocked developing countries in the world, 15 (48.4 percent) were in Africa.[60] It has been noted that: "The road, rail and air transport networks [in Africa] are limited, costly and often in poor condition, resulting in barriers to the increased movement of people and goods…"[61] In 2002, the East African

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reality and Challenges (New York: Palgrave Macmillan, 1997), 62.

[60]. "Landlocked developing countries," UN Statistics Division. December 2008. Retrieved on December 26, 2008 from:http://unstats.un.org/unsd/methods/m49/m49regin.htm.

[61]. Compiled from "The African Internet - A Status Report," 2002, July. African

countries of Kenya, Tanzania and Uganda formed the East African Community (EAC). As of July 2001, the combined total population of Kenya, Tanzania and Uganda was estimated at 91 million. The combined total airports in 2000, in Kenya, Tanzania and Uganda was 384, and only 37 (0.096 percent) of them with paved runways. Malaysia, a Southeast Asian nation of 22 million people in July 2001, had 115 airports, with 33 (29 percent) of them having paved runways. From 1990 to 1996, of the 179,000 kilometers of total highways in Kenya, Tanzania and Uganda combined only 14,372 kilometers (0.08 percent) were paved. For comparative purposes, of Malaysia's 64,672 kilometers of highways in 1999, 48,707 kilometers (75 percent) were paved.[62]

A policy suggestion or recommendation is for the African Union to strategically implement a continent-wide road and rail construction project. Here I will suggest that two African nations become the centers of this project. They are the Democratic Republic of Congo and Sudan. If one carefully examines the map of Africa, one sees that the Democratic Republic of Congo, which is located in Middle Africa, shares land border with nine other African countries (Angola, Burundi, Central African Republic, Republic of the Congo, Rwanda, Sudan, Tanzania, Uganda and Zambia). This means that one can travel among African countries through the Democratic Republic of Congo. Sudan also shares a border with nine African nations (Central African Republic, Chad, Democratic Republic of the Congo, Egypt, Eritrea, Ethiopia, Kenya, Libya and Uganda). This also makes it easy to travel from Sudan to many other parts of Africa.

What the African Union must do is to build modern roads and railways within these two strategically located countries and connect them to all the other African nations that share land borders with them. The same could then be done with nations in the continent that share land borders with multiple other countries.

(2). Electricity Production and Consumption

One important factor that has led to economic progress in Western or developed nations is their ability to provide 24-hour electricity to their people and businesses. Africa has oil, hydropower, and natural gas, yet most African countries cannot provide 24 hours of electricity to their people: "Irregular or non-existent electricity supplies are a common feature [in Africa]…. Many countries have extremely limited power distribution networks which do not penetrate significantly into rural areas…" Regular power outages for many hours in many African countries are common occurrences, "even in some capital cities such as Accra, Dar es Salaam and Lagos."[63] Some oil producing African

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Internet Connectivity. Retrieved on May 14, 2004 from http://www3.sn.apc.org/africa/afstat.htm.

[62]. Compiled and computed from Central Intelligence Agency: World Factbook. Office of Public Affairs. 2001. Washington, D.C. 20505. Global Support Imaging & Publishing Support. Can also be accessed online at http://www.cia.gov/cia/download.html.

[63]. "The African Internet - A Status Report," 2002, July.

nations such as Nigeria lack consistent electricity, while they continue to sell crude oil to developed countries. In Nigeria electricity is available to only 3 out of every 10 homes.[64] In 1999, Kenya, Tanzania and Uganda combined had electricity production of 7.8 billion kwh, and 7.26 billion kwh of electricity consumption. For comparative purposes, during that same year, Malaysia's electricity production was 59 billion kwh, with 54.87 billion kwh, of electricity consumption.[65]

If African governments and businesses could provide reliable transportation systems and twenty-four hour electricity, it is very possible that many of the millions of African professionals in the West would consider returning home, especially with the increase of cell phones, the Internet, and satellite radio and television in Africa. Proved crude oil reserves estimates for 19 African nations (excluding Chad) compiled and computed by this author from the 2006 CIA World Factbook shows that from January 2002 to 2005, their total estimated crude oil reserve was 124.932 billion barrels. *The Mail and Guardian* (South Africa) presented estimates on July 27, 2006, for four African countries including Chad (and three others in the 19 mentioned above), and notes that Chad had estimates of 1 billion barrels of proved crude oil reserves.[66] If Chad's estimated 1 billion barrels of proved crude oil reserves are added to the Africa total, it sums up to 125.932 billion barrels (or 126 billion barrels). The African countries with the top five proved crude oil reserves in 2005 were: Libya, 40 billion barrels; Nigeria, 36 billion barrels, Angola, 25 billion barrels; Algeria, 12.32 billion barrels and Egypt, 2.7 billion barrels.[67]

Africans may need to use those reserves for their own development and not just sell them all off to the West and East. The African Union must develop a plan that would allow strategic regions of Africa to have the ability to have 24-hour electricity for the purpose of the continent's development.

(3). The A.U. Must Assist Member Nations to Negotiate International Trade of Their Mineral Resources

Although Africa as a whole is not as technologically developed as Western and developed countries, the continent has almost all of the resources to build modern infrastructures and can also sell some of those resources. Member-nations of the AU could utilize the expertise or advice of the organization when

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[64]. Samuel W. Jimba, "Information technology, globalization and Africa's information development," *OCLC Systems and Services* 14, no. 2 (1998): 64.

[65]. Compiled and computed by author from Central Intelligence Agency: World Factbook. Office of Public Affairs. 2001. Washington, D.C. 20505. Global Support Imaging & Publishing Support. Can also be accessed online at ttp://www.cia.gov/cia/download.html.

[66]. "Oil riches trickle down," 2006, July 27. *Mail & Guardian* (South Africa). Retrieved on July 27, 2006 at http://www.mg.co.za/articlePage.aspx?articleid=278558&area=/insight/monitor/

[67]. Compiled based on Data in the 2006 CIA World Factbook. Can also be accessed online at http://www.cia.gov/cia/download.html.

they negotiate international trade with rich and powerful countries so that they do not enter into unfair contracts, which could cause negative consequences to their people.

There are strategic resources in Africa that put the continent (which is almost 11.7 million square miles in total area, the second largest in the world) in a position for future success in trade and international relations.[68] As Gordon and others note: "Indeed, as far as its natural capital, Africa is far more self-reliant than any other region of the world."[69] Pretty points out that: "… Africa already has a great wealth of both natural resource assets and social capacity to solve these agricultural challenges."[70] Gordon and others add that:

> Mineral and metal deposits in Africa are among the most important in the world. South Africa alone produces nearly one-quarter of the world's gold and holds 84 percent of the world's total reserve base of the platinum minerals. Africa also remains the source of many minerals strategic to the United States: 54 percent of the world's cobalt, 32 percent of bauxite, 52 percent of manganese, 81 percent of chromium stocks. Beyond strategic metals, Africa's mineral wealth—from West African gold, tin, and iron ore to southern African industrial and precious diamonds, copper, and gold—is at least equal to that of other continents.[71]

According to Mwanza:

> Africa has abundant water resources in large rivers, great lakes, vast wetlands and limited but widespread groundwater. Much of this is located in the Central African sub-region. Africa has 17 rivers with catchment areas greater than 100 000 km^2, and also has more than 160 lakes larger than 27 km^2, most of which are located around the equatorial region and sub-humid East African Highlands within the Rift Valley. The Continent has a huge potential of energy production through hydropower. In this respect, efforts are already under way to create regional power pools in sub-Saharan Africa.[72]

The resources of Africa are distributed in a variety of ways from North Africa to Southern Africa. For example, Libya's natural resources include petroleum, natural gas and gypsum; Sierra Leone's natural resources include, diamonds, titanium ore, bauxite, iron ore, gold and chromite; Niger's natural resources include: uranium, coal, iron ore, tin, phosphates, gold, petroleum;

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[68]. Ali A. Mazrui, *The African Condition* (New York: Cambridge University Press, 1980), 71; Gordon, Miller, Jr., and Wolpe, *The United States and Africa: A Post-Cold War Perspective*; Pretty, "Can Sustainable Agriculture Feed Africa? New Evidence on Progress, Process and Impacts,"; Mwanza, "Water for Sustainable Development in Africa."

[69]. Gordon et al. The United States and Africa, p.31

[70]. Pretty, Can Sustainable Agriculture Feed Africa, p. 254.

[71]. Gordon, Ibid.

[72]. Mwanza, Water for Sustainable Development, p. 102.

Ghana's natural resources include: gold, timber, industrial diamonds, bauxite, manganese, rubber, hydropower; natural resources of the Democratic Republic of Congo, a nation slightly less than one-fourth the size of the United States, include: cobalt, copper, cadmium, petroleum, industrial and gem diamonds, gold, silver, zinc, manganese, tin, germanium, uranium, radium, bauxite, iron ore, coal, hydropower and timber; Kenya's natural resources include, gold, limestone, soda ash, salt, rubies, fluorspar, garnets, wildlife and hydropower; Botswana's natural resources include, diamonds, copper, nickel, salt, soda ash, potash, coal, iron ore and silver; and South Africa's natural resources include: gold, chromium, antimony, coal, iron ore, manganese, nickel, phosphates, tin, uranium, gem diamonds, platinum, copper, vanadium, salt, natural gas.[73]

As to Africa's most recent economic performance, in 2005, Africa's combined total GDP was estimated at 2.366 trillion, (3.9 percent) of the Gross World Products (GWP) of 60.71 trillion. For comparative purposes, the GDP in 2005 for the U.S. (with 298.4 million people as of July 2006) was $12.36 trillion (20.4 percent of the world) and $12.18 trillion (20 percent of the world) for the European Union (with 457 million people as of July 2006).[74]

Pertaining to trade, according to international trade figures produced by the World Trade Organization (WTO), in 2007, Africa's total merchandise trade was $424.1 billion. All of Europe combined was Africa's largest trading partner during that year, with $167.5 billion (39.5 percent of total). Table 3 shows the continent's trade with the other regions.

Table 3: Africa's Intra-and inter regional merchandise trade, 2007

North America $Billion	South/ Central America $Billion	Europe $Billion	CIS* $Billion	Africa $Billion	Middle East $Billion	Asia $Billion	World $Billion
91.9 (21.7 percent)	14.6 (3.4 percent)	167.5 (39.5 percent)	0.9 (0.2 percent)	40.5 (9.5 percent)	10.5 (2.5 percent)	80.9 (19.1 percent)	424.1

CIS*: Commonwealth of Independent States

Source:[75]

(4). Establishment of Fund for Diaspora Taxes in Rich Nations

Africa has lost millions of its educated and economic elites to developed nations ("Brain Drain"), which has been a big contributor to the many problems that the

[73]. Author's calculations based on data in the 2004 *New York Times Almanac*. pp. 517-707; also see Tesi, "Conceptualizing Africa's Environment: A Framework for Analysis," 23-24.

[74]. Compiled and calculated by author based on data in the 2006 CIA World Factbook. Can also be accessed online at http://www.cia.gov/cia/download.html.

[75]. "Table 1.4 Intra-and inter-regional merchandise trade, 2007," in "International Trade Statistics 2008," World Trade Organization. p.9. Available at http://www.wto.org/english/res _e/statis_e/its2008_e/its08_toc_e.htm.

continent is now experiencing.[76] By the beginning of the 21st century, African immigrant professionals in rich nations such as Australia, Canada, the United States and the United Kingdom, pay taxes annually. Indeed, by February 2007, there were 1.1 million Black individuals in the United States alone who earned at least $100,000. A substantial proportion of the 1.25 million African immigrants in the U.S. in 2005 were highly trained professionals, and it is likely that they account for a significant number of those Black Americans earning that annual wage. For example, according to the U.S. Census, as of 2000, there were 881,000 African immigrants in the U.S. and 42.8 percent of that number who were at least 25 years old, had at least a bachelors degree, and 18.6 percent aged 25 years and over had graduate or professional degrees. In terms of income, according to the U.S. Census, in 1999, there were 54,580 African immigrant households (a household is defined as having one or more individuals) earning $100,000 or more. Also in 1999, there were 38,875 African immigrant households earning from $75,000 to $99,999 and 71,420 households earning $50,000 to $74,999.[77] According to the U.S. Internal Revenue Service (IRS), in 2007, an individual who earns from $77,100 to $160,850 pays 28 percent in federal income tax,[78] meaning that if one earns $100,000 the tax would be $28,000.

The African Union could negotiate with rich nations that have significant to substantial professional African immigrant populations to establish a Diaspora fund, whereby 5 percent to 15 percent of their annual taxes could be directed into an account and the funds could be used for development projects across Africa.

(5). Recruit Talent from the Diaspora

One important policy that the African Union could be successful at implementing is to set aside funds that could be used to recruit African professionals working in developed nations. This policy could be implemented in two forms. The first form will be a negotiation with employers of Africans in developed countries and governments of those nations to allow without any penalties for African professionals in those nations to take three to six months leave annually or every two years and go to Africa to serve. The African Union then would strategically dispatch them to particular regions of the continent where their expertise are immediately needed. The second form of this policy is

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[76]. Amadu Jacky Kaba, "Africa's Migration Brain Drain: the Costs and Benefits to the Continent," *Chimera* 2, no. 3 (2004):19-30. Amadu Jacky Kaba, "Africa-U.S. Partnership in the 21st Century," *Chimera* 2, no. 1 (2004): 18-25.

[77]. "Table FBP-1. Profile of Selected Demographic and Social Characteristics: 2000. Population Universe: People Born in Africa," U.S. Census Bureau. Retrieved on February 19, 2009 at: http://www.census.gov/population/cen2000/stp-159/STP-159-africa.pdf.

[78]. "2007 Federal Tax Rate Schedules," Internal Revenue Service. United States Department of the Treasury. Retrieved on February 19, 2009 at: http://www.irs.gov/formspubs/article/0,,id=164272,00.html.

for the African Union to actually negotiate with these Diaspora Africans and pay them acceptable salaries and benefits just as those they are receiving now and strategically distribute them across different locations on the continent according to their expertise and the needs of those regions.

Furthermore, the African Union must make sure that these professionals retain the rights or privileges to travel all across the world for professional meetings or conferences and that those developed nations do not present difficulties for them when they want to travel to the West or developed nations.

(6). Increase Budget Allocation of Education for Member-States that Need It the Most

No country or entity can be economically successful or politically or socially stable without educated bureaucrats to run those entities. As much as bureaucrats are disliked by many in all types of countries, rich or poor, they are always needed. Also, a country or entity cannot have efficient bureaucrats if they are not educated, with at least a bachelor's degree. In the United States for example, as of 2006, out of 233.2 million people aged 15 years and over, 37.33 million (16 percent) had at least a bachelor's degree.[79]

Lutz and Goujon (2001: Table 1) point out that in 2000, the estimated percentage of males aged 15 and over with tertiary/higher education in sub-Saharan Africa was 3 percent, and 1 percent for females. During that same year, the average rate for the world was 11 percent for males and 8 percent for females. This is where the African Union could be very useful. The AU could establish a funding program that identifies nations in the Union with the most need for funds to strengthen their education systems, especially their tertiary/higher sectors. For example, Table 4 illustrates that while education spending as percent of GDP in 2006 is as high as 13.3 percent in Lesotho, it is as low as 1.4 percent in Eritrea. Table 4 also illustrates that among the nations with GDP of $40 billion or more in 2006, only Kenya had education expenditures of 7 percent or more (7.1 percent); 5.5 percent in Ethiopia; 5.4 percent in South Africa; 3.3 percent in Cameroon; and 2.6 percent in Angola.

[79]. "Educational Attainment in the United States: 2006: Table 1. Educational Attainment of the Population 15 Years and Over, by Age, Sex, Race, and Hispanic Origin.," U.S. Census Bureau. Retrieved on May 27, 2007 from: http://www.census.gov/population/socdemo/education/cps2006/tab01-01.xls.

Table 4: Public Expenditure on Education as percent of Gross Domestic Products (GDP) and GDP of Selected African Countries: 2006

Country	Education Expenditure (%)	Gross Domestic Products
Lesotho	13.3	$5.195 Billion
Kenya	7.1	$40.77 Billion
Seychelles	6.3	..*
Cape Verde	6.1	$3.129 Billion
Ethiopia	5.5	$71.63 Billion
South Africa	5.4	$576.4 Billion
Senegal	4.8	$22.01 Billion
Mozambique	4.7	$29.32 Billion
Mali	4.6	$14.59 Billion
Burkina Faso	4.5	$17.87 Billion
Mauritius	3.9	$16.72 Billion
Niger	3.4	$12.23 Billion
Cameroon	3.3	$42.2 Billion
Madagascar	3.1	$17.22 Billion
Angola	2.6	$51.95 Billion
Eritrea	1.4	$4.913 Billion

..*GDP data for 2006 not available
Source:[80]

[80]. The education data are extracted from UNESCO Statistics (only data available for sub-Saharan Africa). "Public expenditure on education as percent of GDP – 2006." Retrieved on February 21, 2009 from: http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=125&IF_Language=eng&BR_Fact=EEGDP&BR_Region=40540.
The GDP figures are extracted from the 2007 CIA World Fact Book. Retrieved on February 21, 2009 from: http://www.umsl.edu/services/govdocs/wofact2007/geos/ct.html.

Conclusion

Africa's total population has increased by 750 million from 1950 to 2008. With such a massive increase of its total population, comes the responsibility to feed and sustain them. This is especially a difficult task because 40.1 percent of the total population in 2008 is 14 years or younger and the median age of the total population of the continent is 19.7 years. The continent's environmental challenges have contributed substantially to the difficulties that people on the continent are experiencing, especially with the lack of consistent and successful agricultural productivity. Other economic activities such as trade and investments in the past quarter century have not brought about the types of benefits that would have offset the slow growth in the agriculture sector. An African Union with a little more mandate from the member-states has the potential to lift the continent out of the current poverty and despair that is affecting its people.

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Appendix
Classifications of Five Regions of Africa
(N=57)

Eastern Africa (n=19)
Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Reunion, Rwanda, Seychelles, Somalia, Tanzania, Uganda, Zambia, Zimbabwe and Mayotte.

Middle Africa (n=9)
Angola, Cameroon, Central African Republic, Chad, Republic of Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon and Sao Tome & Principe

Northern Africa (n=7)
Algeria, Egypt, Libya, Morocco, Sudan, Tunisia and Western Sahara

Southern Africa (n=5)
Botswana, Lesotho, Namibia, South Africa and Swaziland

Western Africa (n=17)
Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Saint Helena (note: Saint Helena (7,601 people as of July 2008) is made up of islands in the South Atlantic Ocean, about midway between South America and Africa).

Source: Country/regional classifications by the United Nations Statistics Division, Department of Economic and Social Affairs. Retrieved on February 25, 2009 from http://unstats.un.org/unsd/methods/m49/m49regin.htm.