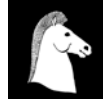




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## **Environmental Change, Control and Management in Africa**

**Vimbai C. Kwashirai**

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African environments have been studied across many disciplines in the natural sciences, social sciences and humanities. This study draws on economic and environmental historical approaches to explore the consumption-conservation nexus in the use of African natural resources. It explores environmental changes resulting from a range of interactive factors, including climate, population, disease, vegetation and technology. Ecological issues are important in the synopsis, but this work does not develop a detailed record of Africa's environmental changes. Instead, it explores the role and impact of the state, whether exploitative or conservationist, from pre-colonial times to the present. The relationship between economic development, nature and conservation is central, given that the main axiom of world conservation strategy is that development depends upon conservation, and lasting development is impossible without conservation.

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# Environmental Change, Control and Management in Africa

**Vimbai C. Kwashirai**

**T**he major contribution of Africans to global history has not been so much to inhabit and make usable a difficult environment, but rather to involuntarily supply hugely significant resources in slaves, minerals, farm and forest produce to an insatiable world capitalist system. A key feature of African environmental historiography lies in its emphasis on colonial capitalism and imperialism as envi-



ronmental contexts and processes. African environmental history has been dominated by analyses of the colonial experience and its legacies. The colonial state has also been characteristically prominent in these works. Studies of the environmental consequences of colonial and imperial encounters have largely fuelled the rapid growth of African environmental historiography, but there are exceptions to this rule in some of the themes and questions emphasized in the literature. The ecological implications of the colonization process have been looked at from intellectual, institutional and ecological perspectives emphasizing themes such as acclimatization, plant and animal exchange, the role of colonial science on the periphery, and the various networks that linked colonial encounters in Africa to other colonial sites.

African environmental historiography is rich in lessons about the dangers of preservationist and desiccationist rhetoric, and the tendency of foreign technocratic authorities and representatives to misrepresent Africans and their landscapes. Some scholars have subjected Western observations and notions about environmental degradation to close scrutiny. African environmental history offers innovative models for thinking about disease and public health as imperial, environmental and local problems. Tying together many of these strands is what defines African environmental historiography, because the history of human land management on the continent is deep, complex, and non-linear. Degradation narratives must be treated with great scepticism, as they often have served colonial and post-colonial critiques of traditional African land use practices. The relative lack of historical sources, especially written ones, on traditional ways of managing resources has meant that African environmental historians often have relied on scientific, archaeological, and linguistic methods to reconstruct the continent's pre-colonial environmental history. In reconstructing the environmental history of past land use, African environmental historians ought to employ a deeper time frame, in spite of the methodological limitations. It is time to pay more attention to the pre-colonial environmental history of Africa rather than to treat it as just a prelude.

Regardless of the overarching focus on the intrusive colonial and capitalist systems in African environmental history and the foreign

conservationist ideas and practices they brought with them, there are regional differences, strengths and weaknesses in African environmental scholarship. West African literatures are at the forefront in investigations of indigenous knowledge and practices, and in historicizing strategies for mitigating drought and famine in times when the region was less affected by colonization. East African environmental historians have been preoccupied with demography and disease histories, especially given the strong evidence of population decline in the late nineteenth and early twentieth centuries. *Trypanosomiasis* or sleeping sickness played a particularly important historical role in east and central Africa. North African environmental historians pay attention to the role and impact of trade, urbanization and land disputes in the light of desert conditions and land shortage. North Africa has the longer history of imperial rule, stretching back to Roman times. Southern African scholars have lagged behind on these themes, but are strong on the invasive reorganization by white settlers of African land use and wildlife conservation. Great attention has been given to the environmental policies pursued by southern African colonial and settler states. A common thread and shared emphasis in African environmental historiography is African resistance to a wide range of unpopular outside environmental interventions, whether by the state or other actors. There have also been more continuities than changes in the key issues examined by African environmental historians over the last half of the 20<sup>th</sup> century. A political economy approach dominates the writings emphasizing Africa's long-term exploitation and marginalization in the global sphere.

### **Defining the African environment**

Africa's terrain – lands, deserts, hills, mountains, rivers, lakes and coasts – have endured several millennia of modification. The forest mosaic, soils, vegetation and population settlements have been going through a variety of transformations since time immemorial. Indigenous and exotic species, and new knowledge, have contributed to biodiversity in plants, animals and viruses on the continent. New crops like maize, cassava and cocoa have adapted to semi-arid savan-

nah woodland, rainforests, coastal swamps and highland plateau. The fact that Africa's climate consists of wet summers and dry winters has a dramatic impact on life conditions, vegetation and access to water.

The animal kingdom in Africa includes both diminutive and huge mammals. African fauna includes domesticated and wild, herbivorous and carnivorous species. Herbivores are in the majority and are sustained by vegetation; grasses, bush and trees, while carnivores-feline, canine, and avian – subsist on the herbivores. Omnivorous species live on different types of food, including both plants and animals. The African environment is also home to a range of benign and malignant disease agents, and some of the latter – protozoans, viruses, nematodes – cause epidemic and endemic illnesses to both humans and animals. Insects, mosquitoes, locusts, tsetse fly, black, green flies and ticks – are hosts or vectors of disease agents and make seasonal migrations following moisture, vegetation and temperature cycles, influencing other fauna and flora in different ways. However, humans are probably the key determining factor in African environmental history. Human actions, beliefs, notions, labour and tools have played a critical role in changing African environments. Axes, sickles, hand hoes, spears, ox-drawn ploughs, tractors and human agents like fire, domestic livestock and crops have effected varying but far reaching environmental changes across Africa. Technology has enhanced human capability to transform local environments. This transformation has been driven by global commodity markets, especially for minerals, food and cash crops. Central to environmental transformation in Africa are multi-layered interactions involving the physical world, flora, fauna and human activity. These interactions also encompass tradition, beliefs, ideas, perceptions and prescriptions regarding habitats and inhabitants. Environmental history studies interactions between the social and natural systems, and the African environment comprises both tangible and intangible, human and non-human activities, and the results of their interaction.

## **Methodology**

Environmental history has a long tradition of using interdisciplinary approaches, and has built on connections and interactions

between history, geography, archaeology and the natural sciences. Environmental historians have also begun to engage with concepts and approaches developed in cultural and literary studies. In the past, environmental history drew heavily on archival research, oral history and detailed field investigations of environmental practices and their outcomes. Other studies draw on such sources combining them with methods that explore African beliefs, concepts, myths, legends and literary narratives, landscape perceptions, colonial and wildlife photography. The use of diverse source material has been accompanied by detailed social and cultural perspectives on environmental control and change. One set of approaches to environmental history concerns itself with physical processes of environmental change, making evaluations on whether or not environmental change has taken place and whether it was beneficial or detrimental. Some evaluate change in terms of human social welfare; others do so by measurements and evaluations of biodiversity, vegetation cover and soil erosion. Yet others are wary of such judgments and discuss historical debates about degradation as contradictory narratives reflecting different perspectives. In any case, multi – historical sources are invariably culturally and politically embedded. Also, environmental historians of Africa have shown that vegetation, rocks, disease and climate have dynamics of their own and are not only important background for social history but form an intrinsic part of it.

### **African management of natural resources**

Environmental historians of Africa no longer see Africans as an inferior and unscientific race. Discredited environmental determinist views of the previous era interpreted Africans as incorrigible creatures of nature, exhibiting tropically induced indolence or subject to primitive impulses born of a non – technological society. African agency is now accorded its due importance in the new environmental history, which shows Africans as doers, masters and shapers of environments rather than as their passive captives in need of external redemption. In some parts of the continent, Africans developed and adopted new and ever changing strategies to cope with disease environments and

frequent drought and famine conditions. Cyclical droughts and famine across Africa influenced the growth of a body of historical environmental work reflecting on climatic and ecological change, coping mechanisms and adaptations to region-specific environmental stress and catastrophe. However, analyses produced in the 1970s and early 1980s on the theme of African environmental control were criticized from various viewpoints, notably for their tendency to over – romanticize the pre-colonial African past or for their anti – science bias. Nonetheless, studies by Vansina and Schoenbrun show the long history of environmental control by African communities as essentially benign rather than generally degrading.<sup>1</sup> Although advocates of indigenous knowledge and African environmental management highlight its depth and importance in Africa, their work does not suggest the absence of degradation, stagnant traditions, or marked dichotomies between scientific and local forms of knowledge.

Developing earlier works on indigenous knowledge, Fairhead and Leach have linked traditional management practices to nuanced understanding of landscapes and narratives of environmental transformation. They have shown that farmers of the forest and savannah zones of Guinea's Kissidougou Region in West Africa transformed their landscape by creating "islands" of forest vegetation around human settlements – areas that would otherwise have had little forest cover. Previous interpretations by foreign forest scientists had cast these forests as surviving remnants from deforestation and under threat from African farmers and pastoralists. Such conclusions were used to justify state intervention and control. However, rigorous historical research combined with detailed field investigation allowed Fairhead and Leach to deconstruct these colonial narratives and convey a different environmental history that also lent support to advocates of localized environmental management.<sup>2</sup> This misunderstanding, as historiogra-

<sup>1</sup> D. Schoenbrun, *A Green Place, A Good Place: Agrarian, Gender and Social Identity in the Great Lakes Region to the 15<sup>th</sup> Century*, Heinemann, Portsmouth 1998, pp. 79-81. J. Vansina, *Paths in the Rainforest: Toward a History of Political Tradition in Equatorial Africa*, University of Wisconsin Press, Madison 1990, pp. 234-5.

<sup>2</sup> J. Fairhead, M. Leach, *Misreading the African Landscape: Society and Ecology in a Forest-Savanna Mosaic*, Cambridge University Press, New York 1996, p. 2.

phy attests, was rife in modern Africa, and frequently used to justify state intervention. African environmental historians appear to be keen to expose such misinterpretations and thus denounce conservation interventions as both imperial and ecologically misinformed.

McCann notes that African landscapes are anthropogenic. This theory states that certain environmental changes in Africa are caused by natural forces outside human-nature interactions. African environmental historians have thoroughly problematized the notion that normative natural landscapes exist-landscapes shaped almost solely by natural processes against which transformation triggered by human activity can be qualitatively and quantitatively measured and assessed. According to Maddox, African environmental history undermines the before and after distinction common to environmental history by demonstrating the ways in which human societies and the natural world have reciprocally constructed each other.<sup>3</sup> In contrast, the North American environmental model discusses nature as a distinct and separable category – an entity that can be transformed in ways good and bad, and that can shape the human experience. Steinberg argues that nature's agency is a fundamental premise of U.S. environmental historiography and, more generally, in U.S. historiography more broadly.<sup>4</sup> In African environmental historiography, however, nature often ceases to be an independent variable (with climate as perhaps the major exception), making it difficult to distinguish nature from culture in ways that are analytically or normatively useful. African environmental history is thus a complex story of consecution, adaptation, cultural and environmental flux. Rather than thinking in terms of a gulf between wild and humanized landscapes, with

<sup>3</sup> J. McCann, *Green Land, Brown Land, Black Land: An Environmental History of Africa, 1800-1990*, Heinemann, Portsmouth 1999, p. 165. J. McCann, "Causation and Climate in African History", in *H-ENVIRONMENT Historiography Series*, (<http://www2.h-net.msu.edu/~environ/historiography/africa.htm>). G. Maddox, J. Giblin I. Kimambo (eds), *Custodians of the Land: Ecology and Culture in the History of Tanzania*, James Currey, London 1996, p. 78. G. Maddox, "Africa and Environmental History", in *Environmental History*, 4, 1999, pp. 162-67.

<sup>4</sup> T. Steinberg, *Down to Earth: Nature's Role in American History*, Oxford University Press, New York 2002, p. 278.



wild nature as the baseline against which to measure human-induced change, the environmental control model offers a spectrum running from the feral to the controlled and the exploited, with environmental control as a normative middle ground. In this model, equilibrium is as much a cultural as it is a natural one.

In the literature on *trypanosomiasis* or sleeping sickness, studies have shown that the ecology of the disease has long dictated that Africans living in the zone of its vector, the tsetse fly, must control vegetation and maintain a separation between livestock and wildlife. Climate and climate change have been a much more prominent part of African and, for that matter, European environmental historiography than of U.S. environmental historiography. More importantly, human environmental control has to a fair extent worked to keep the tsetse and its preferred habitat, the bush, at bay. When forces disrupted that control – colonial policies and practices most notably – and the landscape reverted to jungle, the disease wreaked havoc on human and livestock populations. The history of *trypanosomiasis* control in Africa provides a poignant and concrete example of how the protection, and in some cases the expansion of wild nature at the expense of human control can have a dramatic impact on human populations and economies. The model of environmental control challenges assumptions of wilderness as a preservationist ideal romanticizing the notion of pristine nature, in which human activity is almost by definition destructive, but also a reverence for untrammelled nature, unyoked and free to determine its own course echoing political traditions of natural self-determination.<sup>5</sup> Preservation itself is a model of environmental control in which natural forces can be destabilizing and human interventions restorative. The history of national parks and wilderness areas shows that human intervention is involved in keeping these landscapes wild and for that matter much of what Africans read as wild has been the product of human management with far deeper roots. For several centuries, a notable feature of African environmental management was

<sup>5</sup> P. Sutter, “Reflections: What Can U.S. Environmental Historians Learn from Non-U.S. Environmental Historiography?”, in *Environmental History*, 8, 1, 2011, pp. 1-20

the sacred-grove tradition, in which communities were forbidden or excluded from cutting vegetation – a prototype of modern national parks. Some African communities believed certain natural forests were inhabited by ancestral spirits and were therefore sacrosanct.

With varying degrees of success and failure Africans evolved conservation measures prompted by their environmental experience, economic needs and religious beliefs. The African political and religious elite played a significant and leading role in making and enforcing environmental regulations regarding consumption and conservation. Indigenous knowledge, spirit guardians and holy shrines have yet to be fully appreciated as a means through which ritually controlled ecosystems functioned. The ownership, allocation and control of land, forests and water resources all fell within the spiritual realm. Several forest phenomena; trees, rocks, mountains, pools, mermaids, snakes and large trees, were made holy and conserved by cultural and spiritual design.<sup>6</sup> Many trees were given special protection due to their food, timber, medicinal or other value, or their links with rainfall patterns and worship. This link explains why people never removed large trees or fruit trees from fields, an approach that was criticized and done away with by colonial agricultural expansion workers.

Considerable work has been done on the role of local state institutions and communities in the management of Africa's natural resources. This research focuses on the part played by tenure rules in resource use and conservation, generating controversy which has divided supporters of indigenous tenure systems and advocates of private property and radically new forms of resource management. In the African context, the dominant conservation theme has been that of protecting habitat and wildlife species, though this is now giving way to a broader debate linking conservation to the process of rural development and the survival of agrarian societies on the continent. African interest in actively conserving wildlife and wilderness has a long tradition. Europeans cast doubt on the efficacy of indigenous conservation practices and characterized African mecha-

<sup>6</sup> V. Kwashirai, *Green Colonialism in Zimbabwe: 1890-1980*, Cambria Press, New York 2010, pp. 35-6.

nisms of managing critical resources as unintentional, arguing that conservation was not their primary goal.

Broader ecological continuities as well as long-term environmental changes and pre-colonial regional patterns of land-use are less well understood in Africa – a consequence partly of patchy data sets, the impact of colonialism on natural environments, and subsequent historiography. Important debates, however, have focused on environmental factors in the rise and fall of pre-colonial African kingdoms, notably in southern and western Africa. Conflict resulting from scarcity rather than scarcity itself has been offered as one explanation for social and political upheaval and change. But political demise might have been the result of famine induced by war. Drought is widely invoked in southern and eastern African history, often in passing, as a self-evident explanatory tool of analysis. It is held partly responsible for the decline of African peasantries, for labour migration and proletarianization, for the rise of poor whites, and for certain rebellions. Drought is a frequent and recurring phenomenon in parts of Africa and its impact, as some analyses of famine suggest, depends greatly upon changing forms of production, storage and distribution. Environmental scarcity, such as water, pasture or arable land shortage or general degradation, is frequently offered as an explanation for conflict. Undoubtedly, environmental factors are of crucial importance in explaining long-term social change.

African thought and metaphors express environmental management and loss, but without ignoring history, migration and exchange processes, peoples' own approaches and actions, and the rationality of their innovations. However, African environmental concepts have perhaps been most sensitively discussed not by deploying the notion of landscape, but through studies of resource exploitation and traditional religious environmental controls. Such practices are also filled with cultural meaning. Both men and women played complementary roles in religious ritual, myth and narrative associated with the control of nature and cultural festivals.<sup>7</sup> Hunter gatherer societ-

<sup>7</sup> U. Luig, A. van Oppen (eds), *Use of Nature as a Social and Symbolic Process*, Das Arabische Buch, Berlin 1995, pp. 17-20.

ies such as the San and pastoral communities like the Masai have to be re-conceptualized in less gender-specific ways. Africans also conceived of their environments in the context of aesthetic values. The Matopo Hills in Zimbabwe have always been a central and admired symbol for African religion, identity and nationalism, and in the colonial period were expropriated by colonizers. A similar expropriation occurred in South Africa, with the Kruger National Park being portrayed as central to white South-African identity and unity as well as Afrikaner nationalism.

### **New agricultural crops and animals**

Africa's incorporation and adaptation of exotic stocks of domestic animals and food plants from foreign ecological networks rivals that of other continents. This kind of environmental change is most noticeable in African agriculture, with its importation and adoption of domesticated plants. Bananas, barley and wheat spread across the continent through human trade and travel. The most widespread and prevalent plants introduced in Africa are of Mesoamerican and Caribbean origin; cocoa, peanuts, tobacco and maize. Food-crop maize, a grass, has been spreading throughout the continent since its introduction around 1500. The white variety of maize has become the staple food for most of southern and eastern Africa since the second half of the twentieth century. Cassava, a tuber, replaced local yams and sorghum in most of the humid zones of west and central Africa, and continued its migrations into new zones. Like rubber, it is of Amazonian origin. Imported non-food crops have also spread rapidly in Africa; notably exotic tree species like eucalyptus, white pine, black wattle in southern Africa's plantations, as cash crops or invasive volunteers that brought mixed impacts to different landscapes. In eastern and southern Africa, imported cash crops such as sisal, pyrethrum and sugar cane became mono-crops that have influenced the development of plantation economies. Cocoa, of Brazilian origin, is a key cash crop in several economies of West Africa. African native crops like cotton and coffee have re-entered the continent as hybrid varieties developed externally. Also, rubber trees, imports from Southeast Asia, became

widespread in Liberia and the Democratic Republic of Congo and played a significant role in their modern economic and social history. In Liberia, independent as early as 1847 as a home for freed slaves, Americo-Liberian settlers planted gum trees for the industrial needs of western nations.

Among many mammals introduced in Africa by migrants to the continent were cattle varieties, some of which developed resistance to local diseases, including the fatal *trypanosomiasis*. Other varieties developed a tolerance for arid conditions that allowed their spread along the entire Sahelian region and through eastern and southern Africa. Another domesticated animal, the camel, was introduced to North Africa by the ancient Romans. The Tuareg, Somalis, Beni Amer, and the Nubians – respectively in the Sahel Desert zone, the Horn of Africa and the Nile Valley – mastered camel husbandry and adapted their economic culture around the animals' food and labour potential. The Ngoni, Ndebele and Massai herders, more than other groups, have usually been categorized as pastoralists, and cattle undoubtedly played an important role in their society. They regarded wealth as the possession of large herds of cattle and other domesticated livestock originally acquired through trade and raids. These groups elected to settle on plateau land precisely because it was free of tsetse fly and was ideal cattle country. By the late nineteenth century they had built up enormous herds of cattle in the region, totalling millions of heads. However, lung-sickness brought in by the infected cattle of missionaries and hunters, often took a heavy toll among these herds. During years of prosperity, the demographic overload of livestock – sheep, goats, and pigs, as well as cattle – upset the ecological balance enjoyed in earlier epochs, often causing soil erosion and deforestation. During the 1890s, the livestock disease, rinderpest, killed over 50 per cent of cattle and wildlife in eastern and southern Africa. Its origins were traced to Italy with Eritrea as the entry point into Africa. Cyclical rinderpest epidemics and locust invasions caused widespread famines in Sub-Saharan Africa.

Disease epidemics in Africa also affected public health with millions of people starving from drought and famine or dying from dysentery, smallpox, influenza, measles, meningitis, malaria and other communi-

cable diseases. Infectious diseases transmitted by Europeans were fatal to millions of Africans in the same way indigenous Indian populations in the Americas were decimated by new diseases such as smallpox, for which they had not developed immunity. Fire had long been an important tool in African range management, hunting and agriculture to improve pasture, promote soil fertility and guard against diseases. Africa's savannah landscapes, like American prairies and Argentinean pampas, reflect the scourge of fire that sweeps across the flat grasslands during the dry season paving the way for new plants eliminating non-fire resistant shrubs and trees to produce new woody vegetation, the natural successor to abandoned fields and pastures. Environmental historians of Africa have stressed the role of non-human agents in African history – fire, plants, water, animals, insects and disease.

### **Colonial management of natural resources**

Colonizers combined ideas about tropical nature, race and health into an ideology of control and supremacy within the context of imperial capitalism and an authoritarian state. Environmental-historical literature focuses on the state, because it was a crucial partner in the development of colonial capitalism. Generally, state conservation in Africa was a potent colonizing institution which intervened to upset human ecologies, with western science and foreign religion as alibis. The state was the leading and principal actor in environmental intrusions in forest, soil and wildlife management. African environmental history delineates imperialism as an important benchmark, emphasizing the role of the colonial state and its legacy as the primary agent of environmental change and social differentiation. Colonial governments superimposed new conceptions of property and new resource regimes atop a less formal tradition of rights and practices in which the control of resources and the control of labour were tightly linked. However, colonial influences of settler colonies (eg. Algeria, Angola, South Africa) on the environment and land use were different from non-settler regions (e.g. Nigeria, Tanzania, Mali).

An interventionist state in Africa did not appear where none had existed before; rather, the colonial state clamped down on precisely

those common landscapes that had previously escaped state scrutiny. The colonial state privileged sedentary agricultural production and imposed regulatory regimes on non-arable environments – with the goal of preserving resources crucial to the colonial project, securing labour, and further encouraging sedentary settlement. Long term interest in capitalist economic development underpinned and overrode state conservation controls. Although pre-colonial states in Africa made exacting tribute payments on agrarian societies generally similar to colonial demands, the nineteenth and twentieth century colonial state arrived equipped with advanced industrial technologies and techniques that pre-colonial states did not possess. In this sense, colonialism was an ecological watershed because it was a technological watershed with far wider environmental consequences. But the widespread regulation of population, non-arable lands, disease, forests and national parks in particular, was an important exception. Pre-colonial regimes often neglected agriculturally unproductive lands, allowing users to develop autonomy on the fringes of cultivated arable land. The colonial state changed that, affecting both sedentary farmers, who had relied on such environments for augmenting their livelihoods, and more importantly, those who had survived primarily by utilizing the resources of marginal landscapes through pastoralism, hunting and gathering, and swidden agriculture – however unequal those systems may have been. Predatory imperial hunters in eastern and southern Africa slaughtered wildlife, which led to the extinction of some species, like the blue antelope. Environmental decay was often the result of forcing Africans into unproductive and inadequate areas of land.

The environmental experience of settler society is a concept most fully developed in the Australasian and South African historiographies. The central insight of Grove's work has been that colonialism both promoted large-scale ecological change and provided a context in which those on the periphery could witness and think critically about this change. The importance of Grove's argument lies in its insistence that environmental concern emerged as early as the seventeenth century as a reaction to global processes. He notes that studies have hastened to see American environmental sentiment within the context of

an emerging national culture to which nature was a central component.<sup>8</sup> Unlike South Asian environmental historiographies, which focus on the social consequences of colonial environmental control and the attendant changes, African environmental historiographies stress the ecological consequences of landscape transformation. African ecological historiography perceives the importation of scientific models of forest, soil, water and wildlife conservation by the colonial state as upsetting a complex mosaic of localized use of the same resources. It dispossessed and destabilized African peasant societies, and drew their people away from an intimate and useful knowledge of nature into an endemic cycle of labour migration, protest, poverty and conflict with an interventionist state. Environmental control underpinned long-term capitalist development interests, which overrode conservationist elements within the colonial state. South Asian environmental history has largely been a story of the peasantry versus the colonial and post-colonial state, with the human ecology of the peasant as the ideal worth protecting in which the subaltern voices are heard regarding the environmental costs of capitalist expansion and the social costs of state conservation.<sup>9</sup> State-sponsored environmental management is at the heart of South Asian historiography. However, environmental historians have begun to re-evaluate the autonomy and capacity of the colonial state, and the role of conservationists within that state.

The most significant achievement and theme of African environmental history is its systematic analyses of colonial state conservation policies across many countries. Studies of colonial environmental control have emphasized the arrogance of rationalizing science and official policies that were insensitive to local ecological knowledge, experience and realities. These studies contrast colonial intrusions with the holistic and technically appropriate African ideas and practices, and in the process provoked anti-colonial resistance in various

<sup>8</sup> R. Grove, "Scottish Missionaries, Evangelical Discourses and the Origins of Conservation thinking in Southern Africa 1820-1900", in *Journal of Southern African Studies*, 15, 2, 1989, pp. 163-164.

<sup>9</sup> R. Guha, "Appendix: Indian Environmental History (1989-1999)", in *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya*, Id. (ed.), University of California Press, Berkeley 2000, pp. 211-22.



forms. Literature on conservation and resistance has been an integral part of the reassessment of anti-colonial protest, helping to inform a critique of nationalist historiography. Rural resistance movements in different times and spaces were not always necessarily nationalist. Local leaders often developed their own versions of ethnicity and nationalism to give wider meaning to environmental conflicts. Peasant intellectuals in Tanzania framed customary ideas about land, and resistance to state intervention with thoughts taken from independent Christian churches and new African nationalist rhetoric.<sup>10</sup>

While most of the literature focuses on the intrusive and coercive aspects of the colonial state, older themes in African history emphasized the limits of colonial control. Colonial science has been the subject of condemnatory and ideological judgment in environmental historiography. However, environmental history has also been used too instrumentally in debates over current environmental policy and simply highlighting continuities in policy has given little attention to the contexts in which particular ideas were initially shaped and thereafter reproduced. The revisiting of colonial science, policy and African response builds on studies which have looked at the network exchanging ideas within European empires and the incorporation of information from the periphery. The role of science in particular contexts, and of particular scientists, has been the object of other studies. While scientific discourse could have been used to justify segregationist policies or colonial economic agendas, neither all science nor all scientists could fit this stereotype. Colonial mining and farming interests often clashed over resources, fracturing colonial state power as settlers and imperial scientists failed to resolve differences between economic sectors, departments and individuals within the same colonies. However, the colonial state built a bureaucratic and technocratic apparatus to serve its own interests and those of the metropolis. It adopted universal land-use planning categories and through rubrics such as rational and scientific use it created commercial farms, African areas, national parks, planned forests and game reserves.

<sup>10</sup> S. Feierman, *Peasant Intellectuals: History and Anthropology in Tanzania*, University of Wisconsin Press, Madison 1990, pp. 265-266.

The environmental history of Africa also discusses African and white ideas of identity and nature. Settler societies in southern Africa demonstrated both the scale of environmental destruction attendant on conquest, and the linked rise of conservation. Mackenzie's work on hunting and the decimation of wildlife illustrates the point.<sup>11</sup> Africans called themselves or were referred to as mountain, river, forest, plains, cattle or hunting, warrior or trading people to identify and set them apart. Like Africans, settlers drew positive as well as negative images and metaphors from the animal and insect world to create narratives and folklore about human society. Many cultures have a tendency to anthropomorphize animal behaviour, and zoomorphize human behaviour. This is a measure of how closely the great majority of humans interacted with animals on a regular basis, until recent times. Photography has enhanced the ways in which African landscape and wildlife are perceived, preserved and understood, capturing changes and continuities at the same time. To begin with, Africans were not only misread and treated as part of nature in eastern and southern African national parks, but also generally excluded and relegated to serve as cheap guards, tea boys and only in rare and patronizing cases as sources of local wisdom. The exclusion of rural people from national parks and demarcated game and forest reserves in the interest of protecting large animal species and preservation of habitats engendered conflict between officials and local people.

### **Environmental degradation narrative**

The theory of human destructiveness has been a dominant strand in African environmental history fuelled by environmentalism. In the interwar-period there was a well-developed British and French colonial narrative of African profligacy and degradation of the environment. Colonial foresters acted as agricultural supervisors and blamed Africans for the "wanton" or indiscriminate destruction of vegetation

<sup>11</sup> J. MacKenzie, "Empire and the Ecological Apocalypse: The Historiography of the Imperial Environment", in *Ecology and Empire: Environmental History of Settler Societies*, T. Griffiths, L. Robin (eds), University of Washington Press, Seattle 1997, pp. 176-179.

and soil erosion. The attitudes and actions of foresters showed them as policemen guarding natural resources from illegal exploitation. They also acted as tax collectors, gathering revenue from fines and cutting permits. Foresters cited deforestation, overstocking, cultivation of slopes, over-cultivation, ploughing, increases in cultivated areas, road drainage, and damage by livestock and wildlife as the chief causes of environmental degradation. However, Fairhead and Leach argue that the large numbers of cattle in the west African savannah were not sources of degradation, but rather that their presence increased woody vegetation. They contend that human action was the primary cause of forest re-growth, because settlements were protected from fire as villagers planted shade-loving, commercially lucrative trees such as kola, banana and coffee.<sup>12</sup> The key explanation for vegetative changes has been the introduction of new world crops such as groundnuts, maize, cassava and chilies, which broke the thirty-year fallow cycle of rice production that had allowed the full growth of moist forest.

Colonial conservators were influenced by a long-standing tradition of conservation history in Europe and America, where the forest environment has been well documented. A major theme in this literature is deforestation. Richards and Tucker argue that the conversion of forests to other uses impoverished them in the long run. Judge notes that in both the developed and developing world, forest literature is dominated by the depiction of people in conflict with nature. Terms such as “irreversible destruction”, “decline”, “wasteful” and “degradation” are widespread in the historical literature. The emphasis has largely been upon environmental disharmony resulting from human economic activity dating back from pre-colonial times to the present. However, Richards and Tucker assert that Europe’s power and colonization produced widespread ecological imbalances in Africa due to exploitation for agriculture, grazing, mining and timber. Political colonization was an essential element in this process. The impact of foreign capital together with colonial control was great because industrial countries tapped natural resources of colonies for profit and economic growth.<sup>13</sup>

<sup>12</sup> Fairhead, Leach, *Misreading the African Landscape* cit., p. 3.

<sup>13</sup> J. Richards, R. Tucker, “Introduction”, in *World Deforestation in the Twenti-*

Kjekshus and Vail suggest that the penetration of colonial capitalism in the continent in the early twentieth century was responsible for the ecological collapse that followed the unchecked extraction of raw materials in Africa. For example, the Kjekshus-Vail thesis maintains that colonial intrusions as well as methods of game control and bush clearance facilitated the spread of tsetse fly, halting demographic growth. The “ecological catastrophe” was believed to manifest itself in deforestation, soil infertility, erosion, drought and the disappearance of water sources.<sup>14</sup> The imbalance of power between imperial countries and colonies was reflected in the imbalance of power in African human-ecological relations. Within the global context, however, Agnoletti argues that the dominant discourse in forest history has overestimated the negative effects of capitalist agriculture and industry in destroying forests. This picture of environmental doom has overshadowed a parallel process in which societies have endeavoured to use natural resources in sustainable ways.<sup>15</sup> The colonial state embodied both capitalists and conservationists. There was both conflict and accommodation between the two because some capitalist miners, farmers and loggers in colonial Africa acknowledged the need for natural resource conservation and sustainable management.

According to Ford, colonizers should not be made to shoulder the whole blame for an ecological jigsaw of great complexity. Assigning responsibility for ecological collapse simply to agents of colonial capital, the agents who had earlier blamed African cultivators and slavers, is ideologically suspect and could lead to a partial historical explanation.<sup>16</sup>

*eth Century*, Id. (eds), Heinemann, London 1988, p. 2. J. Judge, “The Teak Forests of Zimbabwe”, in *The Zambezi Teak Forests. Proceedings of the First International Conference on the Teak Forests of Southern Africa*, G.D. Pierce (ed.), Zambia Forest Dept., Ndola 1986, p. 53.

<sup>14</sup> H. Kjekshus, *Ecology Control and Economic Development in East African History: The Case of Tanganyika*, James Currey, London 1996, p. 47-50. L. Vail, *The Creation of Tribalism in Southern Africa*, James Currey, London 1989, pp. 234-236.

<sup>15</sup> M. Agnoletti, “Introduction: The Development of Forest History Research”, in *Methods and Approaches in Forest History*, M. Agnoletti, S. Anderson (eds), CUP, Cambridge 2000, p. 1.

<sup>16</sup> J. Ford, *The Role of Trypanosomiases in African Ecology: A Study in the Tsetse Fly Problem*, 600dpi TIFF G4 images, Clarendon Press, Oxford 1971.

McCracken also illustrates how penetration by colonial capital helped to trigger an ecological crisis in colonial Malawi leading to the spread of *trypanosomiasis*, but colonial tobacco production also drove the disease back.<sup>17</sup> A key issue in the debate on capitalism, colonialism and ecology is the origin and significance of conservationist ideas in Africa. Home-grown conservation ideas were enriched by a mix of the local and foreign as well as intellectual exchanges between individual colonies, and were primarily driven by fears of ecological disaster based on empirical observation of rapid deforestation, erosion and recurring floods. There were various flows of personnel and ideas in the British, French and other empires globally. For example, forestry scientists and modified conservationist ideas moved from British colonial Burma, Malaysia and India to Ghana and Nigeria.

According to Dawkins and Philip, the Ugandan and Ghanaian Forestry Departments established in the late 1890s had concentrated on forest land alienation till about 1945, when scientific forest ideas concerning the decimation of wild fauna and flora prompted governments to implement conservationist measures.<sup>18</sup> Before then, British colonial states in Africa had been in a weak position with respect to local and external European capital. The power and financial capacity of colonial states in Africa increased greatly after the Second World War, making more systematic conservation possible. Indeed, conservationist ideas were entrenched in Africa from 1950 onwards, when governments legally empowered state institutions to impose sanctions on exploiters who failed to observe conservationist regulations. Poore cautions on the possibility of land resources and peoples' needs reaching equilibrium through sustainable and humane planning.<sup>19</sup> Rietbergen also discusses balance as the "art of the possible", arguing that balance between development

<sup>17</sup> J. McCracken, "Colonialism, Capitalism and Ecological Crisis in Malawi: A Reassessment", in *Conservation in Africa, People, Policies and Practice*, D. Anderson, R. Grove (eds), CUP, Cambridge 1987, p. 74.

<sup>18</sup> H. Dawkins, M. Philip, *Tropical Moist Forest Sylviculture and Management, A History of Success and Failure*, CAB International, New York 1998, p. 113.

<sup>19</sup> D. Poore, "The Sustainable Management of Tropical Forest: The Issues", in *No Timber without Trees*, D. Poore (ed.), Earthscan, London 1989, p. 15.

and conservation can be found if resource management is conducted with an awareness of socio-economic and environmental contexts.<sup>20</sup> However, there is no single way to achieve balance that is valid for all nations at all times. Pressures of agriculture and the demand for more food, jobs and fuel mean that balanced resource utilization is an elusive and moving target. The areas exploited or preserved are determined by the prevailing economic and social contexts, the relation between resources and population, standard of living and distribution of wealth in a given country.

### **Post-colonial management of natural resources**

Most post-colonial African states generally retained the authoritarian characteristics of their colonial predecessors in environmental management. In the 1960s and 1970s, many newly independent African states embraced socialism or carried on the capitalist inheritance. The conditions of western donor aid have often subverted the development efforts of African nations. Development aid has been linked to democracy and environmental issues regarding the access of investors and multinational corporations to fertile land, commercial forests, tourism, water, minerals and cheap labour. Institutions responsible for environmental control include ministries of agriculture, energy, health, mining, tourism, and environment. Peasant state conflicts over natural resources in post-colonial Africa have been fuelled by unfulfilled promises of equitable redistribution of wealth made at independence. During and after colonialism, people in many societies protested against the misuse of resources. Women's protests in the Cameroon Grassland in the 1950s and Wangari Maathai's environmental campaign in Kenya show how local people are not passive victims of governmental and donor plans. The Greenbelt Movement and other environmental initiatives show that people are very active in many places. The rich African elites

<sup>20</sup> S. Rietbergen, "Introduction", in *The Earthscan Reader in Tropical Forestry*, S. Rietbergen (ed.), Earthscan, London 1993, p. 13.

have not only become richer, but corruption amongst many of them has dashed the hopes and aspirations of the African majority and minority groups, workers and peasants, the young and old, all generally trapped in endemic and vicious poverty.

Global interests ranging from the World Wildlife Fund to media networks and tourist companies have reinforced and developed National Parks in African countries to protect wilderness and wildlife. Claims by marginalized San and other communities in Africa on lands and national parks are underplayed compared to the successes of Australian Aboriginal people. San communities are generally deeply impoverished, most of them having been absorbed as cheap farm workers, or having ended up unemployed in small towns and camps in South Africa, Namibia and Botswana. Others work in international heritage sites or for interested and sympathetic NGOs, lawyers and claims, and commercial demand for their skills as guides and craftspeople has increased. The context for their reassertion of community rights and traditional knowledge is a newly global and increasingly commoditized phenomenon. Community management of natural resources in Africa is now a major factor in both research and international funding programs at many institutions the world over, but does not always succeed in keeping commercial forces at bay. There is increased commoditization and more systematic involvement of international companies and organizations such as NGOs.

The persistent emphasis by modern states on legibility and centralized planning has led to ecological simplification and forms of social control that are, by definition, hostile to local knowledge and autonomy. Abuse of power, corruption and the violation of state laws contribute to ecological imbalances. The cost-benefit analysis and hands-off approach by many post-colonial governments contribute to ecological problems. Rietbergen maintains that neglected forest laws, understaffed, under-funded forest departments, low penalties for game and forest offences and inactive state attitudes towards nature all help explain ecological crises in contemporary Africa.<sup>21</sup>

Agricultural economic development based on forest clearance was

<sup>21</sup> Ibid.

possible with limited environmental impact in temperate and moderate climates but damaged the environment in African tropical areas. Over the last two thousand years, deciduous summer forest cover was remorselessly reduced to grassland in most countries of Western Europe, but with apparently less disastrous consequences than in the African tropics.<sup>22</sup> Boughey discusses the role of fire and other forms of biotic interference such as felling for commercial timber in Africa as key factors in the destruction of tropical forests, leaving only remnants of the major tropical forests, particularly in West Africa.<sup>23</sup> African forests are in serious danger due to the conversion of millions of hectares into agricultural and pasture lands. At least 50 per cent of deforestation in the tropics is due to agriculture as African nations strive to provide food security to an ever increasing population. The cultivation of cash crops, especially tobacco, in southern Africa consumes large quantities of forest land for plantations and fuel for curing the crops. Commercial and subsistence agriculture continues to turn African woodland to the production of cash and food crops for domestic and foreign markets. The process was similar to developments in Asia and Latin America, with railways and other transport systems quickening this process. Often powerless, foresters end up concurring with local governments that lands suitable for increased production could be turned into croplands.<sup>24</sup>

Although Africa is less endowed with commercial timbers than Asia, a few important African hardwood species are selectively logged across the continent. The timber trade is the most important factor in forest degradation, not only because of its direct exploitation of trees, but also because logging and mining make forests accessible to farmers and game hunters. Technological developments such as chain saws, transport and mechanized milling have had far-reaching consequences on the penetration of forests. Forest products, particularly timber, form part of the raw materials exploited by private capital to benefit the local

<sup>22</sup> Poore, *The Sustainable Management of Tropical Forest: The Issues* cit., p. 17.

<sup>23</sup> A. Boughey, "Man", in *Whose Trees? A Peoples View of Forestry Aid*, N. Atampugre (ed.), Panos, London 1991, p. 19.

<sup>24</sup> B. Munslow, *The Fuelwood Trap*, Earthscan, London 1988, p. 148.



and western capitalist system. Since environmental control in many countries is exclusively the province of government, mining and timber exploitation is carried out either by state departments or licensed contractors. Mining operations have resulted in pollution of water sources and the destruction of landscapes and scenic natural views.

Environmental exploitation for firewood by Africans and for mining and town centres also depletes the forest zone. Firewood scarcity in Africa, Asia and Latin America is a consequence of wood fuel being the most available and affordable single source of energy. The high demand for firewood in Africa throughout the ages increased the rate of forest exploitation, often resulting in widespread deforestation. Millions of people in Africa rely on biomass energy in wood, charcoal, crop and animal residues. Rural women bear the brunt of the struggle in firewood gathering, leading to deteriorating standards of living among millions of families. Alternative forms of energy in stoves, electricity, paraffin, agro-forestry and foreign aid should address the energy crisis in Africa.

In the first half of the 1970s, severe drought swept across the African Sahel from western to northern Africa. The media portrayed the drought and famine as hostile nature inflicting human suffering. Also, media and film imagery of drought in the United States represented it as a consequence of mismanagement on corporate farms that had led to declining productivity and poisoning of the soil. Ecological degradation and drought in West Africa and Africa more generally were attributed to environmental degradation induced by humans, not only causing famine and the advance of the southern edge of the Sahara Desert, but also extreme poverty which appalled viewing audiences from green temperate climates. The argument was that the historical weight of human population and abuse, and the search for profit, had degraded land and made permanent changes in both landscapes and climates.

### **Desert environments**

Arid and semi-arid zones in Africa are variable in terms of the availability of water, a decisive prerequisite for plant growth as well

as for animal and human life. The Kalahari and Sahara Deserts are vast expanses of sandy soils largely bare of vegetation, and experience only minimal annual precipitation. Meagre desert rainfall can only support small populations of plants, animals and humans, usually around or near oases. Arid zones are not only unpredictable to live in but also dangerous and difficult to cross. Movement and travel through them are an almost adventurous undertaking. There are a great variety of motives why people live or move through deserts. Economic pressure is one of them. The introduction of new vehicles changed possibilities and capacities of traveling in deserts. However, the donkey was one of the first long-range “beasts of burden” as early as Pharaonic times, followed by the camel and later by motor vehicles. Inhabitants of arid and semi-arid zones in Africa have developed a wide range of coping mechanisms; social, economic, political and demographic strategies to alleviate hazardous climatic, soil and wind elements. There are many risks involved in conditions of low and unpredictable rainfalls and scarce vegetation. However, natural hazards are not the only pressures faced by desert dwellers. The colonial and post-colonial states have interfered with local livelihoods and transformed socio-economic and political institutions, thus creating new vulnerabilities. For instance, the appropriation of local landscapes and resources for national or tourism development has tended to marginalize local people in countries like Namibia, South Africa, Chad, Mali, Sudan and South Sudan. However, the environmental history of Africa shows how resilient various groups of people have been in coping with unforgiving desert conditions.

### **Rural and urban environments**

Contemporary African environmental concerns continue to be dominated by rural landscapes reflecting the role played by population distribution and agricultural societies in Africa today. In much of Africa, neither the technological revolution in agriculture nor rapid industrialization has occurred. Rural environments continue to absorb more and more people. The rural population of Africa has been increasing steadily since 1950, the first year for which reliable

**Table 1. Rural Population of the World in Millions 1950-2025**

Region	1950		1990		2000		2025	
	No./	Percentage	No./	Percentage	No./	Percentage	No./	Percentage
Africa	190	85	425	66	514	59	685	43
East Africa	62	95	154	78	194	71	288	53
Middle Africa	23	86	44	62	52	54	70	36
North Africa	39	75	78	55	87	49	92	34
South Africa	10	62	18	45	20	39	21	26
West Africa	57	90	130	67	161	60	213	42
Latin America	97	58	128	28	127	24	120	16
North America	60	36	68	25	67	27	51	15
Asia	1,151	84	2,042	66	2,127	57	1,989	40
Europe	171	43	133	27	119	23	80	16
Oceania	5	39	8	29	9	29	9	23
Former Soviet Republics	109	61	99	34	100	32	78	22

Source: United Nations, *World Urbanisation Prospects 1990*

estimates exist for its 56 nations. Africa was the most rural region in the world in 1950, with 85 per cent of its inhabitants living in rural areas. Rural populations outnumbered urban people in 54 of the continent's 56 nations. In about 30 of them,, the rural population comprised at least 90 per cent of the total population. Overall, rural inhabitants increased from almost 192 million in 1950 to 425 million by 1990, the highest growth worldwide (Table 1). Most African farmers and farm workers live outside the cash economy, in the informal sector. Millions are engaged in subsistence agriculture on family-held or communally-owned lands, without tenure, where farming is carried out by traditional methods using family labour with little capital, technology or mechanization.

As custodians and development managers of rural environments, modern African states have relied heavily on cash and food-crop production, as well as mining, timber logging and tourism, for their economic growth rather than on industrialization as has Europe. However, many internal and external factors have curtailed agricultural expansion and output. Worldwide economic depressions and two world wars in the twentieth century generally slowed down the growth of agriculture on the continent. The 1979-80 oil price in-

creases and the world recession of the early 1980s and 2008-12, which reduced the prices of African exports, have also hampered the performance of Africa's rural sector. Efforts to expand and diversify agriculture in Africa have been frustrated by both the tenure systems and inequitable distribution of land in most of its nations. The dilemmas of African farmers range from land conflicts, soil fatigue, water shortages, diseases, lack of infrastructure and inputs, marketing and pricing problems to inadequate state extension services. Recurrent drought continues to take its toll on people, livestock, crops, vegetation and wildlife in about half of African countries, resulting in great suffering, hardship and endemic poverty.

Many African nations are dependent on food aid, partly due to climate and state failures, but especially due to the latter. Food insecurity threatens calorie consumption, nutrition and public health, notably among mothers and children. Food shortages increase susceptibility to disease and indirectly lead to higher mortality levels in some parts of Africa, including Angola, DRC, Mozambique, Malawi, Mali, Niger, Kenya, Ethiopia, Somalia, Sudan and South Sudan. Civil strife, low official prices for agricultural produce, and distributional and marketing bottlenecks have largely been responsible for the sluggish pace, stagnation and crisis in agriculture. Despite poor foreign reserves, the scarcity of food has also compelled many governments to import rice and wheat at unfavourable world market rates. Food donations from bilateral and multilateral agencies have not only been insufficient but also often mismanaged by unscrupulous politicians.

Apart from the farming and food dilemmas, east and West Africa are the most highly rural regions on the continent and face the most critical rural population pressures. There is an intensification of both underemployment and unemployment on the whole continent, resulting in declining per capita incomes exacerbated by low levels of development and economic stagnation. African states are failing to finance and meet a growing demand for more widespread and efficient public social services and facilities. Although very high levels of rural to urban migration have continued over the years, they have not reduced the mounting strain on African villages. The hopes and aspirations of rural youths are dashed after school as they

continue to enter family agriculture on small and often exhausted lands and the ever growing but unrewarding informal sector. Some rural residents have been reluctant to move to urban areas due to the relatively high levels of unemployment in the cities, crime, and the widespread un-serviced shantytown environments in many towns and cities across the continent. Job opportunities in secondary and tertiary industries like manufacturing, construction, finance, transportation and services have not increased in most African countries enough to meet the high demand for jobs.

Urban environmental history in Africa has been on the rise since the late 1970s. The beginnings of urbanization in Africa date back to about 3250 B.C. with Abydos, Egypt's earliest known capital city of about 20,000 inhabitants. However, urbanization has been a very slow process throughout the world. In 1850 about 10 per cent of all residents in developed nations lived in urban environments and by 1900 a quarter were urban dwellers. Urbanization proceeded rapidly after 1900 with 75 per cent and a third of inhabitants in developed and developing countries living in urban areas, respectively. Very little urbanization took place in colonial Africa, although the colonizers established a few mining and administrative towns and cities. The discovery of diamonds in 1870 and gold in 1886 marked a new beginning for population growth and urbanization in South Africa. The pace of urban development in the late nineteenth century across Africa was however mooted. By the 1950s only two African cities had reached a population of 1 million people, the Egyptian cities of Cairo and Alexandria, followed by Casablanca, Morocco with 710,000 and Cape Town in South Africa, with 620,000.<sup>25</sup>

Most African workers employed by colonial governments and companies were accommodated in squalid dormitories and compounds, since they were racially segregated and regarded as transient rather than permanent workers in urban environments. In settler economies of eastern and southern Africa, stringent pass laws excluded Africans from residing in urban spaces except in certain circumscribed and policed areas known as townships, notorious for

<sup>25</sup> United Nations Report, *World Urbanisation Prospects 1990*, p. 4.

inadequate social provisions. As a result of the restricted rural to urban migration of Africans, Africa was the least urbanized region in the world in 1950, with 15 per cent of its inhabitants living in urban areas. State control on urban habitats in eastern and southern Africa kept the number of Africans in these areas to a bare minimum, because urban areas were regarded as “European spaces”. However, Africans in the indigenous West African cities purchased urban property, built city homes and moved freely from rural to urban areas.

The rate of Africa’s urban population growth accelerated after the Second World War, and rapid population increase in the segregated colonial cities followed. The comparatively higher wage rates in cities attracted thousands of rural males, even though most of the urbanization occurred without major economic development or industrialization. Very few Africans obtained decent accommodation in the cities. The overflow population lived in slums and poverty. After decolonization, urbanization grew at a faster pace as millions of Africans moved away from the rapidly deteriorating agricultural sector, where most people lived in impoverished villages with limited access to water, land, pastures, and infrastructure, and without job prospects. Frequent droughts combined with overgrazing, soil erosion and lack of capital adversely affected crop and livestock production. Apart from these push factors, the pulling influences towards urban areas included modern amenities, but with no promising employment offers. Under the pressures of poverty and unemployment, millions established “squatter settlements” close to major cities like the Mathare Valley of Nairobi in Kenya and Grand Yoff outside Dakar, Senegal. The population living in slums in major cities ranged from 30 per cent in Nairobi to 90 per cent in Addis Ababa, Ethiopia. The shantytowns were exposed to many serious health and sanitation problems, such as the lack of decent accommodation, sewers, health care and education. However, the number of urbanized Africans increased from 32 million in 1950 to 217 million in 1990, or 34 per cent of the total African population.<sup>26</sup>

<sup>26</sup> Ibid.

In most African urban areas, the informal sector accounts for more than 60 per cent of the workers and a quarter to a third of the total income. Informal sector labourers engage in labour intensive economic activities such as endless hours of selling cigarettes and matches, street vending of food, and brewing beer, all insignificant and unprofitable enterprises. Generally it is a poor person's sector, with people struggling to survive from hand to mouth and highly dependent upon cheap family labour. Those working in this sector have low educational achievements and lack training and vocational skills for the well-paid formal urban employment. Many farmers also seasonally moonlight in the urban informal sector. In many parts of Africa, the urban and rural populations, and especially the latter, are socially excluded from access to clean water, health facilities, decent accommodation, electricity, and have no social insurance, pension or medical aid cover. Old tropical diseases and new ones like HIV/AIDS have killed and orphaned millions of people across Africa. Urban residents are not better off than their rural counterparts, because opportunities and social services in African towns and cities are not distributed equitably. Urban dwellers are vulnerable to higher living costs in goods, rents, fees, fares and other services, due to inflationary pressures, but particularly because plans by governments to cushion their plight are invariably sporadic and ineffective. Most workers cannot afford an urban existence due to low incomes or wages and joblessness. Structural adjustment programs imposed by the Bretton Woods institutions (IMF and World Bank) have not been a panacea to Africa's socio-economic and political difficulties. In some parts of Africa, such problems have resulted in military coups or the toppling of dictators either by democratic processes or by popular protests, notably in Zambia, Malawi, Tunisia, Libya and Egypt. A tiny minority of urban dwellers are very rich, but the majority live in densely populated suburbs that experience widespread grinding poverty. The major manifestations of environmental problems in urban areas are disease, pollution, overcrowded slum settlements and the lack of adequate sanitary facilities.

## **Conclusion**

African environmental historiography adopts not only different but also complementary and conflicting perspectives. The state model of environmental control is a key approach that straddles across pre-colonial times to the present. Religion-based indigenous knowledge systems and practices dominate the study of African environmental history prior to the late nineteenth century. However, colonial and post-colonial states in Africa often neglected local ecological insights and rights to natural resources as new laws suspended customary rights regarded as inconsistent with notions of scientific and rational environmental control. Environmental history debates in Africa have also been preoccupied with degradation narratives, disease, drought, desiccation theory, and the environmental impacts of colonial rule and its wider ecological connections and implications in the global sphere. Land degradation and deforestation have been observed widely across the continent and have very real adverse livelihood impacts. Environmental rehabilitation initiatives, whether spontaneous and indigenous or catalysed by government or other agency initiatives, can bring dramatic and rapid livelihood and resilient benefits for rural communities. The future of African environmental history lies in further explorations and emphasis on sustainability and equitable distribution of natural resources in both rural and urban environments. The state, in collaboration with local people and NGOs, remains a central player in the democratic management of African environments.