Roots of Crisis: Historical Narratives of Tree Planting in Malawi

Peter A. Walker

This article examines an apparent paradox. In the southeastern African country of Malawi, small farmers perceive rapid deforestation and expect it will create serious problems for them in the future. This perception is supported by reliable environmental research. For almost a century, colonial and postcolonial governments have tried to persuade small farmers to plant trees through projects that provided extension services, education, and subsidized or free tree seedlings. Small farmers responded with little enthusiasm. Officials explained this weak response as evidence of farmers' alleged "indolence" and "wantonness."[1] Such interpretations are clearly inadequate to explain why farmers do not respond eagerly to tree-planting opportunities that they themselves describe as desirable.

To find the root causes of this apparent paradox, this article uses a historically grounded political ecology approach. Political ecology examines the interacting forces of political economy, culture, and discourse as they influence human-environmental interactions, including production of environmental narratives that reflect relations of power. Such narratives may draw upon what Richard Peet and Michael Watts call "regional discursive formations," defined as "certain modes of thought, logics, themes, styles of expression, and typical metaphors [that] run through the discursive history of a region, appearing in a variety of forms, disappearing occasionally, only to reappear with even greater intensity in new guises."[2] Discursive formations rooted in regional history shape what Melissa Leach and Robin Mearns describe as "received wisdom" that guides policy.[3]

This article presents evidence that in Malawi a flawed regional discursive formation known as "fuelwood gap" theory (which persisted in various "guises" through most of the twentieth century) is at the root of official misperceptions of farmer "apathy" toward tree planting and misguided policies that failed to engage farmers' interest. Where deforesta-

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tion has occurred, small farmers proved adept at finding fuel from a wide range of sources, and thus perceived no fuelwood crisis meriting allocation of scarce household resources to tree planting. Yet programs encouraging small farmers to plant trees for fuel persisted—and were resisted—for decades.

These misguided policies are deeply rooted in Malawi's colonial and postcolonial history. The article begins with a brief sketch of the political and economic history of the state since the beginning of British colonial rule in 1891, a period in which structural inequalities were created that endure even to the present. These inequalities produced severe poverty among the majority of small farmers. As a result, today most small farmers say they cannot afford to allocate significant amounts of land or labor to plant trees that do not produce food or income in the near term. The next section examines the shaping of colonial and postcolonial narratives of a fuelwood crisis—narratives that simultaneously obscured the role of the colonial and postcolonial political economies in deforestation while placing the blame and burden of conservation on the shoulders of small farmers and ignoring the contradictions between social injustice and conservation. The article then presents the results of contemporary fieldwork that examines small farmers' perceptions regarding tree planting and the ways these ideas have been shaped by history. I argue that farmers' perceptions—which focus on poverty and social injustice—are at odds with official narratives of a fuelwood crisis. Before concluding, the article offers observations about the persistence of the fuelwood crisis narrative despite the persistent failure of associated policies over many decades. This section focuses on theories of the "stickiness" of such narratives within the local political economy and actor networks.

Historical information was collected from village elders, the Malawi National Archives, and the annual reports of the then-Nyasaland Protectorate. Contemporary research was conducted in two villages representing the range of high- and low-population densities in Malawi using a multi-method approach that included detailed on-site surveys and semi-structured interviews with every household in each of the villages (total N=154) and twenty-six key informants.

Malawi's Political-Economic History

Since the beginning of British rule in 1891, colonial "Nyasaland" pursued an estate-led pattern of economic development. After independence in 1964, this pattern was intensified under the thirty-year postcolonial regime of Kamuzu Banda. This estate-led strategy accounts, in large measure, for the country's history of severe and chronic poverty.[4] Nyasaland had few resources of interest to the British Empire, and received correspondingly little investment in development (especially in relation to its resource-rich neighbors such as Southern and Northern Rho-

desia). Created largely as a strategic afterthought to contain Portuguese colonial expansion, the country remained a minor and neglected outpost of the British Empire.

Landlocked and lacking the transportation, infrastructure, and commercial opportunities available in neighboring countries, Nyasaland's European-owned estates struggled financially throughout the period of colonial rule despite enormous advantages conferred upon them by the colonial government. By the close of the colonial period, many estates were barely breaking even, and few had sufficient capital to fully develop their land.[5] Many of the early European estates had been granted vast areas of land and cultivated only tiny portions of their holdings (as little as 1-2 percent). Unused estate land became a source of enduring resentment among small farmers on crowded "customary" land (land controlled by chiefs or village headmen).[6] As late as the mid-1950s, colonial authorities explicitly defended these inequalities as part of an effort to create a landless class to supply labor to European-owned estates.[7]

Such efforts set in motion a long history of turbulent relations between the estates and small farmers. Between 1891 and 1894, Nyasaland's first Commissioner and Consul-General, Harry Johnston, issued seventy-three Certificates of Claim to Europeans accounting for 1.5 million hectares—15 percent of the total land area of the country, or about 45 percent of the cultivable area.[8] European-owned estates occupied about one-half of the total area of the fertile Shire Highlands.[9] By the early 1930s, Nyasaland had a higher proportion of its cultivable land under the control of Europeans than Kenya, Uganda, Tanzania, or Northern Rhodesia. This imbalance largely defined relations between Europeans and Africans throughout the colonial period, and, since independence, between Malawian estate owners and small farmers.

The estate-led strategy affected labor and taxation as well as land. Hut taxes became an important tool for generating state revenue and forcing African labor onto the estates to earn cash to pay the tax.[10] Africans who lived or migrated onto European-owned land were forced to pay "rent" in the form of up to six months of labor for estate owners in a labor tenancy arrangement known as *thangata*. With increased crowding on customary land, many small farmers were forced onto estate land and into *thangata*, and the colonial government proved largely unwilling or unable to stop rampant abuses of this system.[11] Even for the few African farmers who had sufficient land and labor, opportunities for economic advancement were limited by policies that restricted the types of crops small farmers could produce and the prices offered to them by government-owned marketing boards.[12]

In sum, through seventy-three years of colonial rule, the government consistently invested in failed efforts to boost the estates while neglecting the one source of real growth potential—the small African farmer. With a handful of undercapitalized European farmers in a country with excep-

tionally poor infrastructure and transportation and little to attract foreign capital or expertise, Harry Johnston's gamble on European settler-based agriculture was probably doomed from the start. Some colonial officers who followed Johnston recognized this, but with an entrenched European estate class eager to retain its privileges under a relatively weak government, efforts to promote African agriculture produced only hesitant half-steps. In the end, in a country with exceptional agricultural potential, the missed opportunity to develop a peasant-based agricultural economy seems evident. Nyasaland remained a poor and forgotten colonial backwater—a land Leroy Vail aptly described as an "imperial slum."[13]

Worse still, the failed economy and social relations established under colonial rule were inherited by a class of postcolonial African leaders who, despite populist rhetoric, demonstrated interest primarily in positioning themselves at the top of the existing hierarchy established under colonial rule. Indeed, the thirty-year regime (1964-94) of Kamuzu Banda intensified the inequality and poverty inherited from the colonial past.[14] During the 1970s and 80s, Banda's government converted even more land in the already crowded customary areas into estates, mainly by issuing leases to Malawian-owned tobacco interests.[15] With Banda's renewed land alienation, by 1993 the area controlled by estates had grown to 173 percent of the peak level under colonial rule.[16]

In addition to transferring land to the estate sector, a second key element in Banda's renewed estate-led strategy was the redistribution of capital from small farmers to the estates. Capital accumulated through taxes on small-farmer production through the government's monopsonistic agricultural marketing board was channeled through government-owned banks into soft loans and infrastructure development for private estates.[17] Thus, small farmers literally paid, through taxes on their production, for the dramatic expansion of the estate sector that took away much of their land and returned only a small number of jobs with very low wages.

While the estate-led model failed to bring prosperity even to Europeans, its long-term consequences for small African farmers were disastrous. Having emerged from colonial rule in a position of already severe poverty, Malawi's per capita daily food supply decreased by 18 percent between 1970 and 1995.[18] Today, rural people in Malawi are among the poorest in the world.[19] To most small farmers in Malawi, the always-present threat of starvation overshadows virtually all other concerns.[20]

Historical Origins of Malawi's "Received Wisdom" of Tree Planting

The primary challenge for officials of colonial Nyasaland was to maintain control over land and labor. Closely related, however, was a near-obsession with controlling the use and conservation of natural resources, including trees and forests.[21] A dominant concern was to maintain sup-

plies of fuel. By 1911, the Nyasaland government was annually producing hundreds of thousands of mostly exotic tree seedlings for fuelwood (Figure 1). Fuelwood was essential for curing tobacco (the country's main commercial export), and also for the railroads and steamboats that transported tobacco and Nyasaland's other commercial products. In 1912, the Chief Forest Officer warned that "more extensive afforestation ... is very important if the supply of fuel for the future is to be assured."[22] Tree seedlings were distributed first to fuelwood plantations, but as early as 1914 free seedlings were also given to small farmers to plant in and around their villages. Although government foresters acknowledged that deforestation was largely driven by the tobacco industry, administrators assigned much of the blame—and responsibility for maintaining the county's fuel supply—to small farmers. In 1914, the Director of Agriculture declared, "Eucalyptus is undoubtedly the fuel tree for Nyasaland and steps are now being taken by the Chief Forest Officer ... to establish fuel plantations in the villages under the various chiefs and headmen to try and put a stop to the rapid deforestation."[23]

Figure 1. Government nurseries have provided subsidized tree seedlings to small farmers since 1914 (photo: Eden Nursery in Dedza, circa 1959, courtesy of the Forestry Research Institute of Malawi).

The policy of encouraging small farmers to plant trees for fuel quickly ran aground against what colonial officials described as an inexplicable "apathy towards afforestation,"[24] and an "utter lack of appreciation"[25] for the conservation wisdom offered by the colonial government. By the 1930s,

the frustration of some colonial officers was expressed in invectives against the perceived "indolence" of African farmers.[26] The Department of Agriculture's Report on Native Agriculture, 1931-39, stated, "if the natives of this country are left to their own devices they will *starve themselves* in a very few years ... complete disregard of the maintenance of soil fertility will completely impoverish the land of this country in a very short period unless natives are taught the elementary principles of agricultural science by Europeans" (emphasis in original).[27] This condescending tone and the implication that officials must assist farmers to overcome their alleged ignorance have permeated conservation policy in Malawi to the present.[28]

Importantly, a few colonial officials occasionally displayed some awareness of the perceptions and constraints that limited small farmers' ability to engage in tree planting. In 1931, a Department of Forestry official noted that "for success, exotic species usually require land of considerable agricultural value which cannot be spared in congested regions." In 1938, Forestry officials observed that "tree-planting has to be carried out at the very busiest time of the year, when food and economic crops require attention." The Department of Forestry's Annual Report for 1955 acknowledged that "the practical possibilities of this [tree planting] scheme" for poor African farmers whose "efforts are wholly directed towards the growing of agricultural crops" are "yet to be determined." While the historical record reveals glimpses of understanding among colonial administrators as to the perceived unfairness of such policies, such understanding was drowned out by the drumbeat of official rhetoric about the supposed "indolent" African farmer.

Moreover, had colonial officials asked small farmers themselves the reasons for this "apathy," they would have found that colonial forest policies had little credibility because Africans were very aware of the extravagant exploitation of timber by Europeans and the hypocrisy of the colonial government's failure to enforce similar tree planting requirements among European estate owners.[29] (When questioned about the response of estate owners to government requirements that a certain percentage of estate land be planted with fuelwood trees, an elderly Danish owner of a tobacco estate replied, "Oh, nobody paid any attention to that."[30]) Thus, the burden of conservation literally was placed on the backs of African farmers.[31]

A sense of crisis among colonial officials was reinforced by new global conservation narratives that emerged in the 1930s. Despite its inability to understand African resistance to tree-planting policies, by 1929 the colonial administration recognized the effects of this resistance, concluding that, "little progress [in tree planting] is possible" with small farmers. Yet, a special report from Nyasaland's Soil Erosion Branch observed (with little scientific evidence) that "colossal" soil erosion threatened "the whole social and economic future" of the colony. The Department of Forestry

concluded that "the *only* solution to the problem will be the undertaking by communities of more intensive forestry such as planting schemes" (emphasis added). The role of Europeans—as consumers or potential producers of fuelwood—was given relatively little attention. In what appeared to be a state of official desperation, by 1938 forestry officials resumed, with new determination, earlier failed efforts to induce small farmers to plant trees.

In 1939 these efforts were interrupted by the outbreak of war and the drastic reduction of European staff in the Department of Forestry. At the close of the war in 1945, however, the reinvigorated effort to induce small farmers to plant trees resumed with even greater intensity—initiating the modern era of coercive state-induced tree-planting programs. In the archival record, a militaristic tone set in that was not present before the war. The Commissioner of Mulanje District reported in 1949, for example, that "the native ... will in a very short time be entirely timberless if compulsion is not used to make him plant and care for timber." The 1951 Annual Report stated, "if village forestry is to become anything more than a paper scheme ... it appears more and more necessary to exercise control." By the late 1950s, however, the colonial government's campaign to compel small farmers to plant trees encountered open hostility from the growing movement for African independence, which derived considerable political strength from its opposition to long-hated colonial conservation policies.

After independence in 1964, however, the colonial pattern of paternalistic coercion resumed under the authoritarian rule of Kamuzu Banda. Banda (who included in his portfolio the position of Minister of Natural Resources) intensified efforts to induce small farmers to plant trees. Each year, Banda personally oversaw the nation's much-publicized National Tree Planting Day. The perception of farmer backwardness and "inexplicable" resistance continued. As late as 1994, officials complained that "the nurseries do not attract a lot of customers ... this calls for the intensification of extension efforts so as to educate the farmers and change their attitude."[32] As Kishindo observes, government research and extension services operated on the assumption that they alone knew what was best for the farmer and it was not necessary to try to understand why they behave the way they do; "peasant resistance to change" provided a ready-made explanation for the very limited adoption of recommended practices and technologies.[33] Just as often, however, under Banda's idiosyncratic reign policy failures were simply denied in favor of purely fictional, sycophantic propaganda that made honest assessment of policy failures impossible. A 1990 Department of Forestry report on the status of the national tree-planting effort claimed:

> To date the response by the general public has been encouraging ... last year, (1989/90), the general public planted about 25,000,000 trees around homesteads, on farms, in gardens along roads and farm/

> garden boundaries, and integrated areas. This favourable response by the general public is attributed to the foresighted and dynamic leadership of His Excellency the Life President Ngwazi [roughly, "the savior"] Dr. H. Kamuzu Banda who has always appealed to all people in Malawi to plant more trees and stop the careless cutting down of trees.[34]

The end of Banda's regime in 1994 did not bring about a wholesale change in institutionalized views, but it can be argued that it did bring an end to an era in which the root causes of policy failures could not be openly discussed. A new willingness to talk, without fear, about the appropriateness of long-standing policies began. In a 1996 interview for this study, a top-ranking officer of the research branch of the Malawi Department of Forestry acknowledged:

> The resentment [among small farmers] about exotic trees, in particular bluegum [*Eucalyptus saligna*], I think is a real one, and we are going to see a decline [after the end of Banda's regime] in the planting of these particular species, and more of the indigenous species .... What has been limiting in the [World Bank's] Wood Energy projects was that we didn't actually do a needs assessment .... We focused on energy. When the need for energy was identified, we simply looked at what tree could actually be supplied in large quantities to grow in the shortest period possible, so bluegum was the most promising candidate.[35]

This statement was remarkable not only for its openness (something that could not have been imagined in Malawi only a few years earlier) but also for the fact that it acknowledged the fundamental failure that had impeded real progress in tree planting for nearly a century—the almost single-minded official fixation on energy as the purpose for planting trees. Through the entire colonial period and the thirty-year rule of Kamuzu Banda, the official view of tree planting as an energy policy never changed. This is true despite evidence that some officials understood the problems with this approach. In the early 1980s, a study by the Malawi Government showed that few farmers were willing to plant trees for firewood alone. For that reason, the World Bank's Second Wood Energy project that began in 1986 specifically promoted multi-purpose tree varieties.[36] In practice, however, villagers complained that as late as 1996 "the only trees we find [in government nurseries] are bluegum [*Eucalyptus saligna*] trees; there are a lot of trees [we would like to plant] that are not available."[37]

In sum, colonial and postcolonial governments in Malawi displayed an abiding fear of fuel shortages and remained fixated on compelling small farmers to plant trees for fuelwood—and failed.[38] Narratives of the "indolent" African farmer, as both a cause of deforestation and as a source of labor to solve the problem, fit neatly with the priorities of autocratic colo-

nial and postcolonial regimes that appeared incapable of critical examination of their own role in the "crisis." During Kamuzu Banda's regime, in particular, open questioning of the president's wisdom (in this case, inherited from colonial conservationists) could result in severe punishment. Thus, the old institutionalized views that farmers were the problem, and could be compelled to plant trees for fuel, persisted for much of the twentieth century.

This fixation on tree planting for fuel was supported by a long-standing regional discursive formation that continues to influence conservation policy today. Richard Grove observes, for example, that as early as 1850, deforestation was conceived by Europeans as a problem existing on a global scale, demanding urgent and concerted state intervention.[39] By the 1930s, fears among colonial officials in Africa of an imminent crisis reached the level of a "mania."[40] Trees and tree planting were central in this vision of crisis. By the 1970s, with much of the world gripped by global oil price shocks, old views of trees as a fuel source converged with a new global discourse—the so-called "fuelwood gap" became known as the "other" energy crisis.[41] Old orthodoxies of tree planting as an energy policy were reinforced and given a renewed sense of urgency.

The simple logic of "gap" theory seemed to point to a simple solution. As Leach and Mearns point out, the solution was "implicit from the starting assumptions—namely, to plant trees on a colossal scale."[42] As a result, in the 1970s and 1980s, large international policy, planning, and donor institutions dedicated hundreds of millions of dollars to address deforestation as a problem of energy supply and demand. Because the issues appeared simple, the remedies seemed self-evident—African farmers must plant many more trees.[43] As Peter Dewees observes, the logic seemed so self-evident that "[w]hat was never really questioned were the real dimensions of the fuelwood crisis in the first instance, and whether farmers (rather than planners) perceived that tree planting would have been their most effective response."[44] In fact, African farmers are often able to decrease fuelwood consumption or switch to alternative biomass such as shrubs or crop residues. Thus, even where trees are scarce, small farmers do not necessarily perceive a fuel crisis.[45] Even if they did, they would not necessarily consider large-scale tree planting to be the most rational response. Planting trees requires diversion of scarce land, labor, and capital away from food or higher-value cash crops. Thus, farmers often perceive switching to alternative biomass, or even collecting fuelwood from distant areas, as a lower-cost alternative to planting trees.[46] As a consequence, most energy-focused tree-planting programs have failed for lack of interest.[47] As Leach and Mearns observe, "The way in which problem and solution are framed in the case of the fuelwood crisis offers a classic example of how 'received wisdom' about environmental change obscures a plurality of other possible views, often leading to misguided or even fundamentally flawed development policy in Africa."[48]

In Malawi, the narrative of deforestation as a fuelwood crisis remained alive and well at least through the 1990s. In the early 1990s, the World Bank—chief sponsor of Malawi's mammoth Wood Energy tree-planting projects—still chanted the shibboleths of fuelwood gap theory, and these became embodied, in a formulaic manner, in the Malawi National Environmental Action Plan of 1994 that guides environmental policy in Malawi even today.[49] Little awareness of the different ways farmers conceive of deforestation has been displayed. In 1996, the Ministry of Natural Resources, for example, warned farmers to "stop wanton cutting down of our priceless heritage of forests and trees that provide us with fuelwood… [efforts] to conserve and rehabilitate Malawi's forest land are attended by difficulties that stem generally from inexplicable hostilities [including the] uprooting and destruction of tree seedlings after the seedlings have been planted by Forestry personnel."[50] The following section examines these "inexplicable" hostilities to tree planting programs.

Contemporary Small Farmer Perceptions and Responses to Deforestation

This section summarizes results from twelve months of fieldwork in Malawi in 1995-96 (with follow-up visits in 1997, 2001, and 2002). The central question was how small farmers perceive and respond to deforestation, and why they have generally ignored, resisted, or showed little enthusiasm for long-standing, highly publicized campaigns encouraging them to plant trees.

Reliable evidence—above all from reports by small farmers themselves—indicates that widespread deforestation has indeed occurred in Malawi.[51] By various accounts, Malawi has the highest rate of deforestation in southern Africa.[52] This is supported by Andrew Hudak and Carol Wessman, who document an annual deforestation rate of 1.8 percent in Malawi's Mwanza District from 1981 to 1992.[53] Joanne Abbot and Katherine Homewood find comparable change from 1982 to 1990 around Lake Malawi National Park.[54] Moreover, unlike Mary Tiffen's widely noted studies of Machakos District in Kenya, there is no evidence in Malawi of a significant autonomous conservation response.[55]

A similar pattern was found in the two research sites selected for this study. In Mchombo Village[56] (in southern Malawi's Zomba District) and Napolo Village (in central Malawi's Kasungu District), the oldest villagers consistently note that in their lifetimes, "all this area you see was bush, there were many more trees than now."[57] Aerial photographs of Napolo village show that only 38 percent of the area was cultivated in 1962, with the remaining area covered by forest, woodland, and fallow.[58] By 1995, 71 percent of land in Napolo village was under cultivation. In Mchombo Village, aerial photographs show that by 1965, 91 percent of the village area was already cultivated (reflecting the much greater population den-

sity in the southern region). By 1995, almost all the remaining areas of forest and woodland in Mchombo village were cleared.

As a result, most villagers express concern that tree products will become more scarce. In both sites, virtually all villagers rely heavily on trees for a range of essential goods, including fruit, poles, fuel, fiber, and medicine. In Mchombo Village, with a population density of 468 persons per square kilometer, 71 percent of households report that they experience difficulty acquiring enough tree products to meet their needs (Table 1).[59] In Napolo Village, with a population density of only 78 persons per square kilometer and substantial fallow lands that serve as a source of tree products, only 2 percent of households report that they experience problems acquiring tree products. In both villages, however, exactly 92 percent say they perceive that the number of trees in their area is decreasing rapidly. In densely populated Mchombo village, 100 percent of households say they expect that in the future they will not be able to obtain enough tree products to meet their needs; in Napolo, 94 percent expect this.

Despite this perception and concern about increasing tree scarcity, in neither village do farmers plant large numbers of trees. In Napolo Village, where few households presently experience difficulties getting tree products, households have an average of thirty-four planted trees. In Mchombo Village, where greater scarcity encourages planting, households have an average of fifty-six planted trees on their land. By World Bank estimates, a family in Malawi must plant 1,000 trees to be self-sufficient.[60] By this estimate, households in Napolo and Mchombo have planted enough trees to provide for roughly 3 and 6 percent of their future household needs, respectively.[61]

Table 1. Perceptions of and responses to decreased availability of tree products.

	N[60] households	Population density	Cannot meet present needs	Perceive decreasing tree availability	Expect difficulty meeting future needs	Number of trees planted per household	Percent of household needs met from planted trees
Mchombo	85	468/km^2	71%	92%	100%	56	6
Napolo	64	78/km^2	2%	92%	94%	34	3

If farmers in Mchombo and Napolo villages depend heavily on tree products, and have real concerns about the availability of these products in the future, why have they planted so few trees? The standard official interpretation (again, present continuously since the colonial period), is that a lack of inputs and technical knowledge limits farmers' capacity to plant trees. Yet, as early as 1911, the Annual Reports of the Ministry of Agriculture's Division of Forestry show that hundreds of thousands of

tree seedlings (mostly Eucalyptus *spp.*) were made available to estates and small farmers. By the 1980s, there were several hundred tree nurseries throughout the country that produced millions of seedlings for small farmers, many sponsored by the World Bank's massive Wood Energy projects. A nationwide propaganda campaign included posters that declared, "People need trees, trees need people" and "Trees are life," as well as radio advertisements, newspaper articles, film shows, and an annual National Tree Planting Day.[62] The Carlsberg beer company, in cooperation with the Department of Forestry, exchanged two tree seedlings for every bottle cap from its green-label beer under the slogan "Let's make Malawi a little greener" (Figure 2). Despite such creative efforts (the Carlsberg program was relatively popular), David French observes that, owing to weak demand, tree nurseries operated at only 10-20 percent of capacity and a great deal of time and money was wasted trying to keep them operating.[63]

Figure 2. In the 1980s and 1990s, many government and non-governmental organizations (including the Carlsberg Beer Company, circa 1990) co-sponsored programs to encourage small farmers to plant trees (photo: Peter Walker). Used with permission.

If small farmers perceive increasing tree scarcity, why do nurseries experience low demand? This question was posed directly to farmers in Mchombo and Napolo villages. The answer is that most small farmers feel they cannot afford to divert significant amounts of land and labor to trees that do not provide food or income in the near-term, and they do not share the government's view that deforestation constitutes a "crisis" at present (at least, not in relation to their other needs). For example, when asked why villagers have not responded to the government's call to plant trees, a seventy-five-year-old farmer replied simply, "This problem of trees here hasn't reached the climax, so many people haven't given it much thought."[64] When asked specifically about the question of fuelwood (the main focus of government tree-planting programs since at least 1911) another farmer complained with bitterness that planting trees for fuelwood is a misguided priority: "[villagers] don't even think about planting trees for firewood. They know that there are not enough trees, but they don't think about planting trees… [the real problem is] hunger. [To interviewer:] Go tell the government people are dying here."[65] Looking back, a ninety-year-old woman recalls that little has changed since colonial times: "we just ignored what the Europeans were saying about planting trees."[66]

The fact that most farmers do not see tree planting as a high priority does not mean, however, that they do not consider tree planting a worthy goal—merely that in the context of severe and chronic poverty they consider it a relatively low priority. To assess how farmers view tree planting in relation to other priorities, respondents were invited to participate in an exercise intended to simulate actual household decision-making. The exercise involved asking households to imagine they suddenly acquired a significant amount of cash (300 kwacha, about a month's salary for an uneducated, full-time laborer at the time), and then to explain how they would use it.[67] The interviewer asked respondents (usually both a husband and wife) to decide how to use the money by choosing from cards with images that depicted different ways they could use the money, including planting trees. Farmers were given six "300-kwacha" opportunities, but to ascertain their priorities, they were told they might not get more than one.[68]

This simulation generated great interest and provoked vigorous discussions and arguments over each choice. No household selected tree-planting in the first round of choices.[69] Instead, most chose goods that would maximize short or medium-term food security—fertilizer, food or hybrid maize seed, and improvements to their homes.[70] In the following choices, other priorities became increasingly important. By the fifth choice, tree planting was the fourth most common choice; by the sixth choice tree planting came in second only to household improvements. This exercise suggests that while small farmers do consider tree planting a desirable activity, none consider it a high priority for investment of scarce household resources until more immediate priorities are met.

The overriding priority for most Malawian farmers is immediate food security. In varying circumstances (such as greater or lesser land pressure), households may face differing constraints when they prioritize the allocation of household resources, but all the key factors of production for tree planting—land, labor, capital—compete directly with food and higher and faster-profit cash crop production.[71] Farmers may perceive differing constraints, but they agree that diverting scarce household resources away from food or high-value cash crops in favor of tree planting is a poor investment.[72] Thus, poverty, as shaped by the nation's political-economic history, is the overwhelming factor limiting the capacity of farmers to plant trees.

Somewhat paradoxically, Malawi's social history not only left many farmers too poor to plant trees; it also left a legacy of land ownership that provides many farmers with a lower-cost alternative to tree planting. Official policy has consistently failed to account for the de facto access that many small farmers have to forest resources on private and state land.[73] In Mchombo and Napolo Villages—and, evidence suggests, nationwide—the most common response to tree scarcity on village land has been to collect tree products from nearby private and public land.[74] Malawi's colonial past has left a patchwork of land ownership in which most villages are within walking distance of private estates, forest reserves, or a national park (Figures 3 and 4). In Mchombo Village, 65 percent of households identify neighboring private estates as their primary source of fuelwood, and 59 percent identify the estates as their primary source of construction poles. In Napolo Village, 38 percent of households identify a neighboring national park as their primary source of fuelwood (fallow land within the village is the most common source), and 71 percent identify the park as their primary source of poles. Even in densely populated areas, official policy underestimates the availability of alternative woody biomass for fuel, including bushes, shrubs, and crop residues.[75] Thus, even where trees are scarce, small farmers do not necessarily experience fuel scarcity and thus do not share the perception of a "fuelwood crisis."

In contrast, government officials since the colonial period have simply assumed that rural farmers would share their perception of fuelwood scarcity—a perception based on the needs of urban elites and large estates. The failure to understand (or even to attempt to understand) the perceptions and needs of the small farmers expected to carry out reforestation programs on behalf of all Malawians produced fundamentally misconceived policies. Most notably, the government's choice (dating to at least 1911) to primarily promote eucalyptus trees was logical from an energy perspective because eucalyptus produce more fuelwood more quickly than almost any other species, but it made little sense to most farmers who value trees for a range of products (fruit, timber, fiber, traditional medicine) that are not provided by eucalyptus.[76] Moreover, eucalyptus is not preferred even as fuelwood. In addition, farmers perceive

Figure 3. Colonial land policies left a patchwork of land ownership in which many villages are within walking distance to nearby private or public land. In Mchombo Village, most villagers illicitly acquire the tree products they need from the nearby Madsen Estate and others.

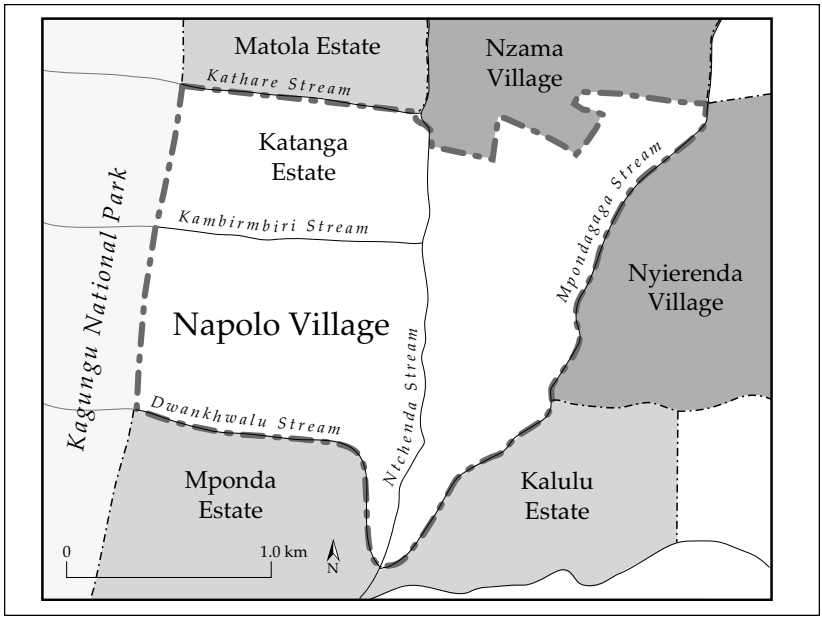

Figure 4. In Napolo Village, most villagers illicitly acquire the tree products they need from the nearby Kasungu National Park.

that eucalyptus trees significantly reduce the productivity of their nearby crops.[77] Eucalyptus met the needs of urban-based officials to produce large volumes of fuel quickly, but fit very poorly with the needs of farmers for whom tree planting for fuel makes little sense. The effort to induce farmers to plant trees for fuel was a non-starter, but persisted through most of the twentieth century.

The Persistence of "Fuelwood Gap" Theory in Malawi

It would seem nearly impossible to comprehend the survival of such seemingly obviously flawed reasoning as "fuelwood gap" theory in Malawi without understanding how history builds momentum behind even bad ideas. In considering how such flawed "received wisdom" persists over long periods, Leach and Mearns suggest two broad answers.[78] "Structuralist explanations" emphasize that certain ideas, no matter how erroneous, persist because they serve the political and economic interests of politically powerful groups. "Actor-network" explanations suggest that ideas become "sticky" or self-perpetuating through a convergence of views among multiple actors, each of whom may be committed to a certain conservation vision for different reasons, but with the net effect of creating an "impregnable, totalizing discourse."[79] In the history of tree-planting policies in Malawi, it appears that these two dynamics reinforced each other.

The structuralist explanation is supported by the fact that placing the burden of planting trees on small farmers reduced potential political pressures on Malawi's other major tree users—the large-scale tobacco estates. From the early colonial period, conservation policies were rarely enforced against estate owners.[80] Efforts to enforce tree-planting policies against small farmers were less politically hazardous to administrators than enforcing such policies against estate owners. In the post-Independence period, little changed—Kamuzu Banda and his closest political allies were among the country's largest tobacco estate owners. Enforcing costly tree-planting policies against these powerful groups appeared politically unpalatable. The government's emphasis on small farmers dovetailed neatly with the World Bank's assessment that "tree planting by rural households is by far the lowest-cost way to deal with the fuelwood crisis." Thus, both the Malawi government and international agencies maintained the colonial policy of placing the burden of responding to Malawi's massive deforestation on small farmers rather than tobacco estates or urban consumers.

The discourse of tree planting in Malawi was also the product of a remarkable series of convergences of conservation discourse among local, regional, and global actors throughout the nineteenth and twentieth centuries. Although the earliest records of the Nyasaland Protectorate (established in 1891) are incomplete, it is likely that colonial administrators were influenced by narratives of an impending global deforestation crisis common among European colonial scientists by the mid-nineteenth cen-

tury. This deforestation narrative converged with the concerns of Malawi's politically dominant European tobacco growers whose economic activities were almost wholly dependent on fuelwood. In the 1930s, these concerns again converged with regional conservation policies in southern Africa influenced by a sort of official panic imported from the North American Dust Bowl.[81] More broadly, conservation concerns were driven by colonial ideologies of a "complex social Darwinist hierarchy" in which claims of environmental harms inflicted by African farmers were used to justify extension of European control over African labor and land.[82] The extension of control over land and labor through conservation also converged with the autocratic political style of the post-Independence regime of Kamuzu Banda, and yet again with the 1970s discourse of a global "energy crisis."

In a remarkable parallel to Jesse Ribot's discussion of the "history of fear" of deforestation in West Africa, at each juncture in this history of narrative convergences, ideas of environmental crisis were the *raison d'etre* of local, regional, and global administrative and scientific bureaucracies—for example the World Bank's multi-million dollar, thirteen-year Wood Energy projects in the 1980s and 1990s that provided agency budgets and salaries for thousands of employees.[83] In this way, structural and actor-network dynamics merged around the imperative of small-farmer tree planting. From this perspective, it is not surprising that the occasional note of dissonance from conscientious administrators failed to receive serious attention. In sum, the enduring narrative of a "fuelwood crisis" and policies of induced small-farmer tree planting were sustained by the convergence of multiple political, economic, ideological and scientific-bureaucratic interests over many decades that operated independently of the question of whether small farmers—the intended agents of these policies—shared official perceptions of a "crisis."

Conclusions

Malawi has indeed confronted a "fuelwood gap"—a gap in official understanding of the actual nature of the "crisis" as experienced by small farmers who have long been expected to act as primary agents of the country's reforestation efforts. For a century, Malawi's conservation policies have relied on outside, "expert" knowledge, often influenced by imported environmental discourses and "off-the-shelf" remedies.[84] As Thomas Bassett and Koli Zueli argue persuasively, governments and international institutions often treat identification of environmental problems as easy and self-evident, when in fact identifying environmental problems and their causes is one of the most critical stages in environmental policy making—and one that often receives far too little time and attention.[85] The case of tree-planting programs in Malawi illustrates that true understanding of how and why small farmers choose to participate in conserva-

tion programs requires understanding of how these decisions are made in relation to complex socio-economic needs, constraints, and survival strategies that compete for farmers' scarce time and resources.

Oversimplified or erroneous problem identification by outside "experts" can contribute not only to a single program failure but also to decades of flawed official wisdom and the perpetuation of social and environmental crisis. In Malawi, the idea that a perceived "fuelwood crisis" could be solved by education or coercive policies obscured a more fundamental environmental and social crisis. In the end, the example of Malawi seems to affirm the view of Harvey and others that environmental sustainability may be impossible without social justice.[86] The effects of a failed and unjust economic order that largely created the environmental "crisis" could not be undone by rhetoric, or even coercion. Ultimately, the underlying problems of social justice and environmental sustainability in Malawi must be corrected by Malawians; however, outside institutions and researchers must avoid being complicit in perpetuating false narratives that waste not only resources but, critically, time. Deforestation in Malawi is a very real problem that has proceeded apace while flawed official wisdom endorsed by the World Bank and legions of consultants has impeded effective solutions. If understanding is the gateway to effective action, it can be argued that this long-enduring "gap" in official wisdom—and the conditions of social injustice that long sustained it—are at the root of Malawi's deforestation "crisis."

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Notes

1. Malawi National Archives NS 3/3/3.
2. Richard Peet and Michael Watts, eds., *Liberation Ecologies: Environment, Development, Social Movements* (London: Routledge, 1996): 15-16.
3. Leach and Mearns define "received wisdom" as a set of ideas "held to be 'correct' by social consensus or by 'the establishment.'" Melissa Leach and Robin Mearns, *The Lie of the Land: Challenging Received Wisdom on the African Environment* (London: James Currey, 1996): 6.
4. Jonathan Kydd and Robert E. Christiansen, "Structural Change in Malawi Since Independence: Consequences of a Development Strategy Based on Large Scale Agriculture," *World Development* 10:5 (1982): 355-375; David Sahn and Jehan Arulpragasam, *Development through Dualism? Land Tenure, Policy, and Poverty in Malawi* (Washington, D.C.: Cornell Food and Nutrition Policy Program, 1990); Frederick Pryor and Chinyamata Chipeta, "Economic Development through Estate Agriculture-the Case of Malawi," *Canadian Journal of African Studies* 24:1 (1990): 50-74.

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6. Bridglal Pachai, *Land and Politics in Malawi, 1875-1975* (Kingston, Ontario, Canada: Limestone Press, 1978).
7. Richard W. Kettlewell, *An Outline of Agrarian Problems and Policy in Nyasaland* (Zomba: Government Printer, 1955); Owen J.M. Kalinga, "The Master Farmer Scheme in Nyasaland, 1950-1962: A Study of a Failed Attempt to Create a 'Yeoman' Class," *African Affairs* 92:368 (1993): 367-87.
8. Landeg White, *Magomero: Portrait of an African Village* (Cambridge: Cambridge University Press, 1985).
9. Pachai, *Land and Politics in Malawi*, 83.
10. White, *Magomero*, 85.
11. George Shepperson, *Independent African: John Chilembwe and the Origins, Setting, and Significance of the Nyasaland Native Uprising of 1915* (Edinburgh: The University Press, 1987).
12. Fredric L. Pryor, *Malawi and Madagascar: The Political Economy of Poverty, Equity, and Growth* (Oxford: Oxford University Press for the World Bank, 1990): 35.
13. Leroy Vail, "The Making of an Imperial Slum: Nyasaland and Her Railways," *Journal of African History* 16:1 (1975): 89-112.
14. Guy Mhone, *Malawi at the Crossroads: The Post-Colonial Political Economy* (Harare: SAPES Books, 1992).
15. Carol W. Dickerman and Peter C. Bloch, *Land Tenure and Agricultural Productivity in Malawi* (Madison: Land Tenure Center, University of Wisconsin, 1991).
16. United Nations, *Malawi Situation Analysis of Poverty* (Lilongwe, Malawi: United Nations in Malawi, 1993).
17. Kydd and Christiansen, "Structural Change in Malawi since Independence," 357.
18. United Nations Development Programme (UNDP), *Human Development Report 1998* (Oxford: Oxford University Press, 1998): 151.
19. UNDP, *Human Development Report 2003* (New York: Oxford University Press, 2003). According to the UNDP's Human Development Index, Malawi ranks 162nd among 175 countries.
20. Barry Bearak, "Why People Still Starve," *New York Times Magazine* (New York: 2003): 33 (nine pages).
21. William Beinart, "Soil Erosion, Conservationism, and Ideas About Development in Southern Africa," *Journal of Southern African Studies* 11:2 (1984): 52-83.
22. N.B.: Hereafter, all uncited quotations are taken from the Annual Reports of the Ministry of Agriculture's Forestry Division (1910-25) and the Forestry Department (1926-64) of the Protectorate of Nyasaland.
23. J. Stewart McCall, "Report of the Chief Forest Officer, Division of Forestry, Ministry of Agriculture, Nyasaland Protectorate" (Zomba, Nyasaland: Government Printer, 1914): 34.
24. Malawi National Archives 51/526/28.
25. Annual Report of the Department of Forestry, 1946; also Malawi National Archives 7.1.8F/22616 LS/EV/MAG/110.
26. Malawi National Archives NS 3/3/3.
27. Malawi National Archives A 3/2/156.
28. Peter A. Dewees, "Forestry Policy and Woodfuel Markets in Malawi," *Natural Resources Forum* 19:2 (1995): 143-52.
29. Megan Vaughn, "Uncontrolled Animals and Aliens: Colonial Conservation Mania in Malawi," a paper read for History Seminar 1977/78 (Zomba: Department of History, University of Malawi, Chancellor College, 1977).
30. Interview, Namadzi, 6/21/96.
31. Wapulumuka Mulwafu, "Soil Erosion and State Intervention into Estate Production in the Shire Highlands Economy of Colonial Malawi, 1891-1964," *Journal of Southern African Studies* 28:1 (2002): 25-43.
32. Ministry of Forestry and Natural Resources, Department of Forestry, *Wood Energy Component Annual Report 1993/94* by K.Z.S. Chirambo, July 1994.
33. Paul Kishindo, "Research, Extension, and Smallholder Agricultural Production in Malawi," *Journal of Rural Development* 9:2 (1990): 323; also E. Kalipeni and D. Feder, "A Political Ecology Perspective on Environmental Change in Malawi with the Blantyre Fuelwood Project Area as a Case Study," *Politics & the Life Sciences* 18:1 (1999): 37-54, who describe Malawi as a premier example of the problems of "top-down" policy.
34. Ministry of Forestry and Natural Resources, Department of Forestry, *1990/91 National Tree Planting Programme* (Zomba, Government Printer, 1990).

35. Interview, Zomba, 7/19/96.
36. Ministry of Agriculture, Energy Unit, *Malawi Rural Energy Survey* (Zomba: Government Printer, 1981).
37. Interview, Mchombo Village 4/1/96; also, personal observation of local tree nurseries.
38. See Jesse C. Ribot, "A History of Fear: Imagining Deforestation in the West African Dryland Forests," *Global Ecology & Biogeography* 8 (1999): 291-300.
39. Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600-1860* (Cambridge: Cambridge University Press, 1995): i.
40. Vaughn, "Uncontrolled Animals and Aliens" 7, 10; heavy exploitation of timber by government and powerful estate owners continued well into the postcolonial period.
41. Peter A. Dewees, "Farmer Responses to Tree Scarcity: The Case of Woodfuel," in J.E. Michael Arnold and Peter A. Dewees, eds., *Tree Management in Farmer Strategies* (Oxford: Oxford University Press, 1995): 174-97.
42. Leach and Mearns, *The Lie of the Land*, 2.
43. Gerald Leach and Robin Mearns, *Beyond the Fuelwood Crisis: People, Land and Trees in Africa* (London: Earthscan, 1988): 2.
44. Peter A. Dewees, "Trees on Farms in Malawi: Private Investment, Public Policy, and Farmer Choice," *World Development* 23:7 (1995): 1097.
45. Leach and Mearns, *Beyond the Fuelwood Crisis*, 9.
46. Leach and Mearns, *Beyond the Fuelwood Crisis*, 3.
47. Leach and Mearns, *Beyond the Fuelwood Crisis*, 2-3.
48. Leach and Mearns, *Lie of the Land*, 3.
49. World Bank, *Malawi Economic Report on Environmental Policy, Vol. 1-2* (Washington, D.C.: Country Operations Divisions, Southern Africa Department, 1992): ii; Department of Research and Environmental Affairs Malawi, *National Environmental Action Plan, Vol. I: The Action Plan* (Lilongwe, Malawi: Government Printer, 1994). The NEAP was created in response to the United Nations' *Agenda 21* program for protection of biodiversity following the 1992 Earth Summit in Rio. See Thomas J. Bassett and Koli B. Zueli, "Environmental Discourses and the Ivorian Savanna," *Annals of the Association of American Geographers* 90:1 (2000): 67-95, on the imposition of NEAPs as conditions for international lending.
50. Malawi Ministry of Natural Resources, "As We Observe the National Tree Planting Day" in *The Monitor* newspaper (Blantyre, Malawi: January 10, 1996): 12-13.
51. There has been much re-evaluation of the degree to which ideas of deforestation in Africa reflect reality. Leach and Mearns (*The Lie of the Land*) show that official perceptions in some parts of Africa have simply been wrong. As Jesse Ribot ("A History of Fear") observes, however, "some areas have undoubtedly experienced severe deforestation." The available evidence (below) indicates that this is the case in Malawi.
52. Malawi and neighboring Zambia share the region's highest annual deforestation rate, 2.4 percent: FAO, *State of the World's Forests 2003* (New York: Oxford University Press, 2003): 132.
53. Andrew Hudak and Carol Wessman, "Deforestation in Mwanza District, Malawi, from 1981 to 1992, as Determined from Landsat MSS Imagery," *Applied Geography* 20:2 (2000): 155-75.
54. Joanne I.O. Abbot and Katherine Homewood, "A History of Change: Causes of Miombo Woodland Decline in a Protected Area in Malawi," *Journal of Applied Ecology* 36:3 (1999): 422-33.
55. See Mary Tiffen, et al., *More People, Less Erosion: Environmental Recovery in Kenya* (Chichester, N.Y.: J. Wiley, 1994); Stephan Carr, *The Unique Challenge of Malawi's Smallholder Agricultural Sector* World Bank (Zomba, Malawi: 1994).
56. All local place names are pseudonyms.
57. Interview, Napolo village, 12/10/95.
58. Source: Malawi Department of Land and Surveys, Blantyre.
59. Based on censuses of Mchombo and Napolo villages conducted for this study in 1995.
60. Cited by David French, "Confronting an Unsolvable Problem: Deforestation in Malawi," *World Development* 14:4 (1986): 531-40, 533.
61. Five households with missing or incomplete data were eliminated from this analysis.
62. Malawi Yearbook 1980/81 (Zomba: Malawi National Archives).
63. French, "Confronting an Unsolvable Problem," 538.
64. Interview, Napolo Village, 12/10/95.
65. Interview, Napolo Village, 12/21/95.
66. Interview, Mchombo Village, 2/20/97.

67. Cash was selected as the medium for this exercise because, in rural Malawi today, it can be easily exchanged for other factors of production, including labor and land (by renting).
68. Pictures depicted nineteen items identified by a focus group as top household priorities. To simulate farmers' unpredictable income streams, participants were asked to draw a card from a deck of playing cards and were told they would be allowed to make another choice only if they drew a red card. Respondents did not know that the deck was stacked to give each household six consecutive red cards.
69. The picture depicting tree planting did not specify what types of trees would be planted. This was deliberately left ambiguous. Most households assumed that "planting trees" meant planting the most common types of pole and firewood trees offered by government nurseries, mainly eucalyptus *spp*.
70. French ("Confronting an Unsolvable Problem") shows that trees in Malawi are never competitive with tobacco or other cash crops as an investment.
71. William Hyde and Juan Seve ("The Economic Role of Wood Products in Tropical Deforestation: The Severe Example of Malawi," *Forest Ecology and Management* 57 (1993): 283-300) erroneously predicted that with provision of tree seedlings market demand would raise fuelwood prices sufficiently to induce small farmers to plant enough trees to stop all further harvesting of Malawi's remaining indigenous forest by 1999. Farmers in Mchombo and Napolo villages state that the long period from planting to harvest, high transportation costs, and opportunity costs of tree planting relative to maize or tobacco make it unprofitable to plant trees as a cash crop. A thriving urban fuelwood market exists, but is supplied almost exclusively from forests on public or privately held land near urban markets rather than trees planted by farmers on rural customary land.
72. In Mchombo village, 54 percent of households reported "lack of land" as the main constraint; in Napolo village, the most commonly cited reason—47 percent—was "lack of labor."
73. Peter A. Walker and Pauline E. Peters, "Maps, Metaphors, and Meanings: Boundary Struggles and Village Forest Use on Private and State Land in Malawi," *Society & Natural Resources* 14:5 (2001): 411-24.
74. French, "Confronting an Unsolvable Problem," 537; Katherine Warner, *Patterns of Farmer Tree Growing in Eastern Africa: A Socioeconomic Analysis* (Oxford and Nairobi: Oxford Forestry Institute and ICRAF, 1993). French predicted that the availability of trees on public and private land and much higher returns for maize and tobacco production guarantees that tree planting will never be a commercially viable investment for small farmers; seventeen years later, this prediction appears to hold true.
75. Leach and Mearns, *The Lie of the Land*, 3.
76. It should be noted, however, that as early as 1939 the colonial government also encouraged planting of fruit trees. Malawi National Archives NS 3/3/3, 18.
77. This view is supported in the scientific literature as well. See Lambert Onyewotu, et al., "A Study of Competitive Effects between a Eucalyptus-Camaldulensis Shelterbelt and an Adjacent Millet (Pennisetum-Typhoides) Crop," *Agriculture Ecosystems & Environment* 51:3 (1994): 281-86.
78. Leach and Mearns, *The Lie of the Land*, 28.
79. Leach and Mearns, *The Lie of the Land*, 119. The term "discourse" is used in the sense meant by Michel Foucault to draw attention to the role of language as embodiment of relationships of power; see "The Order of Discourse," in Robert Young, ed., *Untying the Text: A Post-Structuralist Reader* (Boston: Routledge and Kegan Paul, 1981): 48-78.
80. Mulwafu, "Soil Erosion and State Intervention into Estate Production," 25.
81. William Beinart, "Soil Erosion, Conservationism, and Ideas About Development in Southern Africa," *Journal of Southern African Studies* 11:2 (1984): 52-83.
82. William Beinart, "Empire, Hunting, and Ecological Change in Southern and Central Africa," *Past & Present* 128 (1990): 162-86.
83. Ribot "A History of Fear," 291.
84. James Ferguson, *The Anti-Politics Machine: Development, Depoliticization, and Bureaucratic Power in Lesotho* (Cambridge: Cambridge University Press, 1990) cited in Leach and Mearns, *The Lie of the Land*, 21.
85. Bassett and Zueli, "Environmental Discourses and the Ivorian Savanna," 90.
86. David Harvey, *Justice, Nature, and the Geography of Difference* (Cambridge, Mass.: Blackwell Publishers, 1996): 400; Nicholas Low and Brendan Gleeson, *Justice, Society, and Nature: An Exploration of Political Ecology* (London: Routledge, 1998).