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DEPRESSION, DUST BOWL, DEMOGRAPHY, AND DROUGHT: THE COLONIAL STATE AND SOIL CONSERVATION IN EAST AFRICA DURING THE 1930s

DAVID ANDERSON

THE STRONG INFLUENCE of colonial agrarian policies on the process of decolonization in Eastern Africa has been recognized by historians for some time. Most recently, David Throup has emphasized the role of the anti-terracing campaigns in Kikuyuland during the 1940s in furthering the cause of the Mau Mau movement, while almost twenty years ago Lionel Cliffe stressed the close correlation between the enforcement of agricultural change in Tanganyika and the growth of organized nationalism.¹ Similarly in Uganda, rural protest, significant between the wars in the Bataka movement, played a part in the campaign for political independence.² The 'second colonial occupation', as it has been called, with its 'do good' justification for meddling in African agriculture, heightened political consciousness by giving African farmers something to complain about.

The colonial state may have been correct in its policies, and wise to resort to compulsion, but it failed to show the farmer what tangible benefits the conservation effort would bring on the land, and rarely could it provide an adequate incentive for this effort. While this view of the failure of colonial agrarian reform is now well understood, much less attention has been given to the process by which these new policies emerged. Before the outbreak of the Second World War a number of factors had already acted to persuade administrators in London, and in the colonies, that the agrarian condition of East Africa demanded drastic action. This article examines why these new policies evolved during the 1930s, and investigates the complex manner in which each of the various levels of the colonial administration came to play a part in their formulation.

The author is a Research Fellow in History at New Hall, Cambridge. Earlier versions of this article were discussed at a workshop on 'Conservation Policy in Africa' at Queen Elizabeth House, Oxford, and by the East African Studies seminar at the African Studies Centre, Cambridge, whose comments are all gratefully acknowledged.

1. D. W. Throup, 'The Governorship of Sir Philip Mitchell in Kenya, 1944-1952', unpub. Ph.D. thesis, Cambridge 1983, esp. chapters 3, 6 and 8; L. Cliffe, 'Nationalism and the Reaction to Enforced Agricultural Change in Tanganyika during the Colonial Period', in L. Cliffe and J. Saul (eds), *Socialism in Tanzania: An Interdisciplinary Reader* (EAPH, Nairobi, 1972), pp. 17-24. See also D. A. Low and J. M. Lonsdale, 'Introduction: Towards the New Order 1945-1963', in D. A. Low and Alison Smith (eds), *The Oxford History of East Africa*, iii (Oxford, 1976), pp. 45-46
2. C. C. Wrigley, *Crops and Wealth in Uganda* (East African Institute of Social Research, Kampala 1959), pp. 52-55 and 80-81. Also his 'Changes in the East African Society', pp. 515-516, and C. Gertz, 'Kingdoms, Districts and the Unitary State: Uganda 1945-1962', pp. 67-69, both in D. A. Low and Alison Smith (eds) *History of East Africa*, iii.

It was during the 1930s that the British administration in the East African territories first began to take an active interest in the patterns and methods of African agrarian production. This interest was initially prompted by the desire to increase African agricultural production, as a way of meeting some of the difficulties of the Depression, but rapidly became preoccupied with the apparent threat posed to the productive capacity of African lands by overcrowding, overproduction, and soil erosion. As the decade moved on, the question of the conservation of the natural resources of the colonies became a more important subject of concern, and attention to it contributed to a very fundamental shift in colonial policy, towards the development of rural East Africa. By 1938, both the Colonial Office in London and the administrators in East Africa were committed to a policy of direct intervention in the husbandry practices of African farmers and herders, in any circumstance where it was feared that these practices might be detrimental to the long-term productivity of the land. The period 1930 to 1938, when the passive principles of 'indirect rule' began to give way in colonial thinking to a more active and interventionist strategy of administration, is therefore crucial to any explanation of African response to colonial rule in the years leading up to Independence.³ In particular, if we are to understand the role of rural protest in the process of decolonisation, we must first come to grips with the changes in colonial attitudes towards African agrarian production during the 1930s. The first tinkering with the mechanism of agrarian production before 1939 formed the embryo of what were to become the large-scale development projects of the post-war years. The Betterment Campaigns, Land Utilization Schemes, and Rehabilitation Projects which absorbed the energies and funds of the local administration and the metropolitan resources provided under the Colonial Development and Welfare Act during the 1940s and 1950s, should be seen as a direct consequence of those policies devised before the war.

Four major factors worked to encourage the move towards policies of intervention in African agriculture: the economic reassessments brought about in the colonies, as elsewhere, by the Depression of the early 1930s; the international alarm generated by the catastrophic experience of the southern plains of America in the Dust Bowl, at its height in 1935; the recognition during the 1930s that rapid increase in the human and stock populations of the African Reserves was creating serious pressure on the land; and, finally, the fear that

3. On the moves towards colonial reforms during the 1930s, see R. D. Pearce, *Turning Point in Africa: British Colonial Policy, 1938-1948* (Cass, London, 1982); P. Hetherington, *British Paternalism and Africa, 1920-1940* (Cass, London, 1978); D. J. Morgan, *The Official History of Colonial Development*, vol 1 (Macmillan, London 1980), pp. 14-63; R. Robinson, 'The Moral Disarmament of African Empire, 1919-1947', *Journal of Imperial and Commonwealth History*, 8 (1979/80), pp. 86-104. Recent debate in this journal has examined the connections between pre-war reforms and post-war decolonization; see J. Flint, 'Planned Decolonization and its Failure in British Africa', *African Affairs*, 82, no. 328 (July 1983), pp. 389-411, and the reply by R. D. Pearce, 'The Colonial Office and Planned Decolonization in Africa', *African Affairs*, 83, no. 330 (January 1984), pp. 77-94.

the apparently increasing incidence of drought conditions in many parts of East Africa over the period 1926 to 1935 indicated that the region was becoming progressively more arid. The relative influence of each of these factors naturally varied between the three British East African territories, depending upon differences in political, economic and environmental circumstances, but they combined to shape an essential backcloth to the agrarian reforms worked out by the eve of the Second World War.

The Depression

The Depression struck savagely at the economies of all the African colonies from 1929 until 1935, affecting both European settler agriculture and African production. Many European settlers in Kenya and Tanganyika came near to bankruptcy as their export markets collapsed, and only the resilience of the sisal planters and the slow but steady recovery of coffee prices offered hope for the survival of the settler farming sector.⁴ The vast majority of white settlers lacked the reserves of capital necessary to withstand the slump, and so met their crisis politically, rather than economically, by pressuring the government to prop up their production with subsidies and forms of protection. By exposing the weakness of the settler economy, the years of the Depression generated a wider debate that questioned the very validity of the settler position in East Africa. Not surprisingly, in responding to the Depression the settler communities adopted a defensive posture, and especially in the case of Kenya, they actively campaigned to establish greater security for their status and long-term position in the colony.⁵ The focus of white settler anxiety during the Depression was therefore the legitimacy of European land ownership, the very keystone of white settlement. The appointment of the Kenya Land Commission in 1933 presented a direct challenge to the settler community to justify their position, while also offering the opportunity to entrench their claim to unalienable rights to land ownership. It was in the arena of the Kenya Land Commission that the first skirmishes over African land use were fought.

Although the Commission was intended to establish that adequate provision had been made in Kenya for the land needs of the African population, criticism of indigenous patterns of land use and African farming practices became prominent in the enquiry. These issues were brought to the fore as the settlers

4. E. A. Brett, *Colonialism and Underdevelopment in East Africa: The Politics of Economic Change 1919-1939* (Heinemann, London 1973), pp. 184-185; C. C. Wrigley, 'Kenya: The Patterns of Economic Life, 1902-1945', in V. Harlow and E. M. Chilver (eds), *The Oxford History of East Africa*, ii (Oxford 1965), pp. 247-250; N. Westcott, 'The East African Sisal Industry, 1929-1949: The Marketing of a Colonial Commodity during Depression and War', mimeo, (London, September 1983); M. F. Hill, *Planters Progress* (Coffee Board of Kenya, Nairobi 1956).

5. On the Kenya settlers and the depression, see, C. C. Wrigley, 'Kenya: The Patterns of Economic Life', pp. 247-260; G. Bennett, 'Settlers and Politics in Kenya, up to 1945', in V. Harlow and E. M. Chilver (eds), *Oxford History of East Africa*, ii pp. 318-328; M. G. Redley, 'The Politics of a Predicament: The White Community in Kenya 1918-1932', unpub. Ph.D. thesis, Cambridge 1976, chs 10 and 11; P. Mosley, *The Settler Economies: Studies in the Economic History of Kenya and Southern Rhodesia 1900-1963* (Cambridge 1983), pp. 178-180.

fought a political battle to prevent the African Reserves being extended at the expense of the White Highlands.⁶ African husbandry was typically stigmatized as wasteful and deleterious to the soil, and settler witnesses before the Commission commonly expressed concern that soil erosion might spread from African lands, where they could already identify it as a potentially serious problem, to the white-owned farm lands. In fact, many parts of the White Highlands were already experiencing soil exhaustion and declining fertility as a result of overproduction through cereal monoculture.⁷ But in the settler view this was not where the problem lay. Instead, they drew attention to the large numbers of African 'squatters' occupying European-owned farms, and particularly the illegal and uncontrolled movement of Africans onto farms left unoccupied as a result of the Depression.⁸ The actual cause of land degradation was less important to the settlers than was the politicization of the whole question of African land use; the point was, quite simply, that if the African could not manage the land he had, where was the sense in giving him more land to abuse? Having put forward their view that African husbandry placed the fertility of the Kenyan soil under threat, the settler community further argued that, in the stringent days of the Depression, they lacked the finance to cope with the problem themselves, and therefore that government should accept the burden of responsibility. The Kenya Arbor Society, formed in 1934, joined the many settler Farming Associations in bombarding the administration with pleas for action against the evils of African husbandry. Conservation of the soil became the overt issue after 1933, but behind this lay the emotive question of the sanctity of the White Highlands. Settler concern was not purely environmental, and was only given expression because of the need to meet the economic crisis of the Depression.⁹

6. The findings of the Commission are presented in the *Kenya Land Commission (Carter) Report*, Cmd. 4556 (1934), but the *Kenya Land Commission: Evidence and Memoranda*. 3 volumes (Nairobi 1934), is a more useful account of the proceedings. For a clear example of the settler view, see pp. 3295–3300: evidence of Capt. The Hon. H. F. Ward, 're: Additional Land for Natives'. For a study of the Land Commission see R. M. Breen, 'The Politics of Land: the Kenya Land Commission, 1932–1933, and its effects on land policy in Kenya', unpub. Ph.D. thesis, Michigan State University 1976.

7. *Kenya Land Commission: Evidence*, pp. 1803–1805, evidence of the Solai Farmers Association: pp. 1815–1818, evidence of Maj. F. D. Boyce, representing the Sabukia Farmers Association; pp. 1876–1878, evidence of the Eldama Ravine Farmers Association; pp. 1789–1790, Secretary's Precise, commenting on European cereal farming. On maize monoculture, see V. Liversage, 'Official Economic Management in Kenya 1930–1945', typescript 1945, Rhodes House Mss. Afr. s. 510; and Liversage to Director of Agriculture, January 1936, Kenya National Archives (KNA) CNC/10/4.

8. *Kenya Land Commission: Evidence*, pp. 2072–2074, evidence of E. G. Whittall; pp. 2410–2415, evidence of Maj. R. M. Dunbar; pp. 3313–3322, evidence of H. D. Hill. On squatters see, R. M. van Zwanenberg, *Colonial Capitalism and Labour in Kenya, 1919–1939* (EALB, Nairobi 1975), pp. 215–221. R. M. van Zwanenberg and A. King, *An Economic History of Kenya and Uganda, 1800–1970* (Macmillan, London 1975), p. 39, estimate that 20 per cent of European farms were left unoccupied during the depression.

9. *Kenya Land Commission: Evidence*, p. 1786, Secretary's Precise, clearly stated what the settlers saw as the most crucial principle in the issue of African land use. Although acknowledging that only 'barren, rocky, waterless land was left for the natives' in the Baringo District, the Commissioners were advised that: 'There is one principle which should be here affirmed before

The slump in commodity prices also hit hard at African producers. The steady trend of the 1920s, which had seen the prices for most African crops improve significantly, notably maize in Kenya and cotton in Uganda, came to an abrupt end. This much Africans and European settlers shared, yet whereas the settler response to this crisis was defensive, the response of many African producers was essentially aggressive. With only limited margins of profit to be gained even from most cash crop production, and influenced by many factors other than price, African farmers continued to increase their cultivated acreages throughout the years of the Depression. Sometimes this expansion of production was stimulated by government encouragement, in other cases it was a more independent response to local economic conditions.¹⁰ Kitching and Mosley have each illustrated the point that the 1930s was a decade during which African cultivation in Kenya increased significantly, with producers able to ride out depression, often by enlarging their activities in local markets.¹¹ This parallels the experience of Uganda, where cotton and coffee acreages continued to increase slowly through the early 1930s, rising more dramatically after 1934, and also the case of Tanganyika, where the government encouraged regional self-sufficiency in food crops with its 'Plant-More-Crops' campaign. In their response to the Depression the governments of Uganda and Tanganyika had fewer alternatives than their Kenya counterparts. Cotton cultivation was already expanding dramatically in Uganda, and as Wrigley has shown, it was not easy for the African producer to respond quickly to fluctuations in the price received for his crops. By maintaining the expansion of cotton through the early 1930s the Ugandan economy recovered reasonably speedily as the Depression lifted.¹² The Tanganyika administration, lacking an economically important African grown export crop, attempted to avoid the need for imports of foodstuffs by encouraging greater local production.¹³

considering what solutions may be sought: It is that Government has been responsible for the mistake and that the cost, whatever it may be, of providing sufficient land and water for the natives concerned ought and must be provided by Government'. On the strong conservation lobby in Kenya during the 1930s, see the *Annual Report of the Kenya Arbor Society, 1936 and 1937*, in KNA PC/RVP.6A/11/26, and R. Ward, *Deserts in the Making: A Study of the Causes and Effects of Soil Erosion* (Kenya Arbor Society, Nairobi 1937), in PRO CO 533/483/6.

10. R. M. van Zwabenberg and A. King, *Economic History of Kenya and Uganda*, pp. 208–213; K. Ingram, 'Tanganyika: Slump and Short-term Governors, 1932–1945', in V. Harlow and E. M. Chilver (eds) *Oxford History of East Africa*, ii, pp. 596–598; 'Greater Production in Kenya: Government Campaign in the Native Reserves', *East African Weekly*, 26 November 1931.

11. G. Kitching, *Class and Economic Change in Kenya: The Making of an African Petite-Bourgeoisie* (Yale UP, London 1980), ch. 4; P. Mosley, *The Settler Economies*, ch. 3 and Conclusion. See also I. D. Talbott, 'Agricultural Innovation and Policy Changes in Kenya in the 1930's', unpub. Ph.D. West Virginia 1976.

12. C. C. Wrigley, *Crops and Wealth*, pp. 59–61; J. Vincent, *Teso in Transformation* (Univ. of California, Berkeley 1982), pp. 210–211; V. Jamal, 'The Role of Cotton and Coffee in Uganda's Economic Development', unpub. Ph.D. thesis, Stanford 1976, p. 31, for cotton prices through the colonial period; and for a broader view, C. Ehrlich, 'The Uganda Economy, 1903–1945', in V. Harlow and E. M. Chilver (eds), *Oxford History of East Africa*, ii, pp. 455–469.

13. J. Iliffe, *A Modern History of Tanganyika* (Cambridge 1979), pp. 301–305, 342–345, and 349; N. J. Westcott, 'The Impact of the Second World War on Tanganyika, 1939–1949', unpub. Ph.D. thesis, Cambridge 1982, ch. 2; K. Ingram, 'Tanganyika: Slump and Short-term Governors', pp. 596–597.

The years of the Depression therefore worked to emphasize the potential, and often very real antagonism between the settler farming economy and African agrarian production. In the settler perception, the African economy continued to press in on him, at a time when his own economy was under threat. This antagonism became manifest in many ways, but the issue of land use and conservation took on greater importance as settlers tried to stake claim to the land in the face of an expanding African agrarian frontier. The cause of the European settler in East Africa was not helped by the realization that, in many respects, African agrarian production in Uganda and Tanganyika withstood the rigours of the Depression better than did the settler dominated economy of Kenya. This did not escape the notice of the Colonial Office, and was a matter that troubled the Kenya settlers, who came to fear that their security as a community was under greater threat than ever, and that their control over the utilization of land in Kenya needed to be further bolstered if the fragile resources of the soil were to be preserved.¹⁴

Images of the Dust Bowl

The devastation that could be brought about by erosion of the soil was forcefully demonstrated by the experience of North America in the 'Dust Bowl' of the 1930s. Through the reports of newspapers and magazines the images of the agricultural wasteland of the southern plains of America, an area that had previously been rich farmland, reached East Africa. Pamphlets and books alerting people to the dangers of erosion and instructing them on methods of soil conservation began to arrive in East Africa before 1930. This copious literature, much of it emanating directly from the United States Department of Agriculture's Soil Conservation Service, under the guidance of Hugh Bennett,¹⁵ seemed to have particular relevance to the overcrowded African Reserves of Kenya, to heavily populated parts of upland Tanganyika, and to many intensively cropped areas of Uganda. Several of these publications were produced in the late 1920s, the most famous being Bennett and Chapline's popular study, *Soil Erosion, a National Menace*.¹⁶ Such studies warned

14. For a full discussion of the sharp differences between Kenya and her two neighbours over the inter-war period, see E. A. Brett, *Colonialism and Underdevelopment in East Africa*, chs. 6 and 7.

15. The impact of this American literature is clear in the early Kenyan pamphlets on soil erosion; V. A. Beckley, *Soil Deterioration in Kenya* (Kenya Department of Agriculture Bulletin, no. 4 of 1930), and by the same author, *Soil Erosion* (Kenya Department of Agriculture Bulletin, no. 1 of 1935). For the impact on Central and Southern Africa, see J. McCracken, 'Experts and Expertise in Colonial Malawi', *African Affairs*, 81, no. 322, pp. 110-114; and W. Beinart, 'Soil Erosion, Conservationism, and Ideas About Development in Southern Africa', paper presented at the workshop on 'Conservation Policy in Africa' at Queen Elizabeth House, Oxford, October 1983. For a biography of Bennett, see W. Brink, *Big Hugh* (Macmillan, New York 1951).

16. H. H. Bennett and W. R. Chapline, *Soil Erosion, a National Menace* (United States Department of Agriculture, Civ. 33. 1928). Later publications by Bennett were equally influential, see *Soil Conservation* (New York 1939), *Our American Land. The Story of its Abuse and its Conservation* (United States Department of Agriculture, Misc. Pub. No. 596, 1946), and (with W. C. Pryor) *This Land We Defend* (New York 1942).

against the possible dangers of over-taxing the soil, and as the story of the Dust Bowl unfolded between 1930 and 1936, the horrific prophecy of these writings came surging home to observers everywhere. Because of the Dust Bowl soil erosion was not only viewed as a serious national problem, but became the first global environmental problem. The grand scale of the issue was portrayed in articles appearing in learned journals and farming periodicals throughout the 1930s, under such evocative titles as *Erosion and the Empire* and *Soil Erosion in Tropical Africa*, and most vividly of all in Jacks and Whyte's book *Rape of the Earth*.¹⁷

These images compounded the concern of the Kenya settler over the land issue, and caused Agricultural Officers all over British Africa to examine their own localities for signs of this menace. In a sense, it became fashionable to be aware of soil erosion, and the zeal with which many young officers pursued the problem is testimony to the fact that the acquisition of a Diploma in Agriculture came to have a knowledge of this aspect of agricultural science as one of its essential requirements. Armed with their new perceptions, this small cadre of Agricultural Officers quickly identified the danger areas of East Africa—Kondoa and Sukumaland in Tanganyika, Kitui and Baringo in Kenya, and Teso and Kigezi in Uganda.¹⁸ Others would be added to this list later, and in each case the prevention of soil erosion was to be a prime justification for interfering in customary patterns of African land use. In the case of Kenya, the cause was given the active and vociferous support of the settler community, while in Uganda and Tanganyika, as we shall see, the issue was taken up with rather more caution.

As well as the American influence, the conservation lobby in Southern Africa encouraged the East African administrations to tackle the problem of land degradation. Links of kinship and camaraderie drew the settler colonies of Eastern and Southern Africa together, and Kenya's settlers were never reluctant to draw upon the example of South Africa. Recommendations made by the South African Drought Commission of 1922 for legislation to control many aspects of African husbandry were reiterated to the Kenya Land Commission in 1933, and in particular the 'firm hand' advocated by the South African Com-

17. G. C. Watson, 'Erosion and the Empire', *East African Agricultural Journal*, (1936), pp. 305-308; H. C. Sampson, 'Soil Erosion in Tropical Africa', *Rhodesian Agricultural Journal*, 33, (1936), pp. 197-205; G. V. Jacks and R. O. Whyte, *The Rape of the Earth: A World Survey of Soil Erosion* (Faber and Faber, London 1939); and many others. The best study of the Dust Bowl is D. Worster, *Dust Bowl: The Southern Plains in the 1930s* (Oxford UP, 1979).

18. *Tanganyika Territory Annual Report, 1934*, Appendix VI, 'Measures taken in various Provinces, 1933 and 1934, in connexion with soil erosion', pp. 171-176; 'Soil Erosion in Tanganyika Territory: A Brief Account of the Problem, the Prime Causal Factors, and some suggested lines of cure and prevention', from the Informal Conference at Dodoma, 16 May 1929, CO 822/26/9; C. Maher, 'Soil Erosion and Land Utilisation in the Ukamba (Kitui) Reserve' (Nairobi 1937), and 'Soil Erosion and Land Utilisation in the Kamasta, Njemps, and East Suk Reserves', (Nairobi 1937); *Report of the Teso Informal Committee* (Department of Agriculture, Entebbe 1937); C. C. Wrigley, *Crops and Wealth*, pp. 65-66; For a brief general survey of early conservation measures in East Africa, see Lord Hailey, *An African Survey* (HMSO, London, revised 1956), pp. 1036-1048.

mission was applauded by Kenya's settlers.¹⁹ The South African Soil Erosion Conference of 1929, and the creation of a Soil Erosion Council in the Union, resulted in the implementation of anti-erosion schemes by 1933. These schemes were under taken on European farm land, with heavy subsidy from the State, in precisely the manner which the Kenya settlers wished their own government to adopt. South African influence was therefore important, but practices and policies in South Africa were themselves guided to a large extent by the American experience.²⁰ The crucial aspect of both the South African and the American examples lay in the willingness of the State to enforce better husbandry through legislation.

Demographic Pressure

The need to enforce conservation measures was given greater urgency during the 1930s by the realization that the population of East Africa was increasing rapidly. Demographic statistics for the region are notoriously unreliable, but it is clear that after a period of stagnation (or even decline), the populations of all three East African territories began to increase in the mid-1920s, growing more dramatically in the 1930s.²¹ The population of Uganda would seem to have begun a slow increase after 1923, with the period 1927 to 1933 marking a very alarming climb from estimates of 3·1 million to 3·6 million. A slower, but steady rate of increase continued until the end of the 1930s.²² Broader estimates suggest a 25 per cent increase between 1918 and 1936, while Hailey puts forward a less conservative figure of 60 per cent for the years 1921 to 1948.²³ These figures take on a gloomier significance when linked to the greater areas of land being placed under cultivation. Reports from the Uganda Department of Agriculture indicate that land pressure was most severe in

19. *Interim Report of the South African Drought Investigation Committee, April 1922* (Govt. Printer, Cape Town 1922), reprinted in M. Glantz (ed), *Desertification: Environmental Degradation in and around Arid Lands* (Westview Press, Boulder, Colorado 1977), pp. 233–274. Also *The Report of the Native Economic Commission, Union of South Africa, 1930–1932* (Govt. Printer, Pretoria 1932); *Kenya Land Commission: Evidence*, pp. 3295–3300: evidence of Capt. The Hon. H. F. Ward.

20. W. Beinart, 'Soil Erosion, Conservationism, and Ideas About Development', pp. 11–16; Lord Hailey, *An African Survey*, pp. 1016–1017; J. C. Ross, *Land Utilization and Soil Conservation in the Union of South Africa* (Pretoria 1947), passim; 'National Fight Against Soil Erosion in South Africa', *East African Standard*, 8 March 1930.

21. Much of the following discussion is based on the data assembled in R. R. Kuczynski, *Demographic Survey of the British Colonial Empire, ii* (Institute of International Affairs, Oxford 1949), chs 7–10; C. J. Martin, 'Some Estimates of the General Age, Distribution, Fertility and Rate of Natural Increase of the African Population of British East Africa', *Population Studies*, 7, (1953/54), pp. 181–199; and J. E. Goldthorpe, 'The African Population of East Africa: A Summary of its Past and Present Trends', Appendix 7, *Report of East African Royal Commission, 1953–1955*, Cmd. 9475 (HMSO, London 1955), pp. 462–473.

22. R. R. Kuczynski, *Demographic Survey*, ii, pp. 239–240. C. J. Martin, 'Some Estimates of the General Age . . .', calculates that the annual rate of natural increase over the period 1931 to 1948 was 1·4 per cent. This is quoted in the *Report of the East African Royal Commission*, p. 31.

23. J. D. Tothill, *A Report on 19 Surveys done in small Agricultural Areas in Uganda, with a view to ascertaining the position with regard to Soil Deterioration* (Department of Agriculture, Entebbe 1938), pp. 5–6; Lord Hailey, *An African Survey*, p. 1046.

areas where population increase could be correlated with an expansion of the cultivated acreage.²⁴ This was true of Teso, where cotton cultivation had been expanded while livestock holdings had also become greater, and in Kigezi, where local migration contributed to an estimated population increase of 75 per cent between 1931 and 1948.²⁵ These calculations are, of course, imprecise, and few sources agree as to the exact rate of growth or the actual levels of population, yet the upward trend of the decade is unmistakable.

A similar, though less spectacular pattern, has been presented for Tanganyika, where population increase was identified from 1928. An estimated population of 4.1 million in 1921, gradually climbed to 5.2 million by the eve of the Second World War.²⁶ The effect of this trend on land use was perhaps more localized than in Uganda, and with more land available for expansion the 'Plant-More-Crops' campaign went ahead. The frontiers of cultivation were being pushed forward at the same time by the tsetse reclamation schemes. In Sukumaland alone some 8,000 square kilometers were opened up to human settlement between 1924 and 1947.²⁷ However, the campaigns to encourage African production did eventually spark a revival of interest in the problem of soil erosion, with Agricultural Officers becoming 'concerned about the long-term effects on the soil of this non-voluntary effort'.²⁸

The pattern of European settlement having been clearly established in Kenya in the mid-1920s, with the final demarcation of the African Reserves, it had become apparent within only a few years that these Reserves were too small to house their rapidly growing populations. From an estimated figure of 2.5 million in 1925, Kenya's African population had risen to 3 million by 1935, and to 3.5 million by 1940. Densities of population stood at over 140 persons per square mile in the Kikuyu districts of Fort Hall and Kiambu by 1938, and over 220 persons per square mile in the Luo area of Central Kavirondo, where land pressure was as serious as in parts of the Eastern Province of Uganda.²⁹ European settlers farming lands adjacent to the African Reserves were most acutely aware of this overcrowding, as they witnessed degradation setting in across the farm boundary. For these farmers the spectre of erosion galloping

24. J. D. Tothill, *A Report on 19 Surveys in Small Agricultural Areas*, passim; W. S. Martin, 'Soil Erosion Problems in Uganda', in J. D. Tothill (ed) *Agriculture in Uganda* (Oxford 1940), pp. 73-87.

25. *Report of the Teso Informal Committee*, pp. 13-19; D. J. Vail, *A History of Agricultural Innovation and Development in Teso District, Uganda* (East African Studies Program, Syracuse 1972), pp. 127-135; Lord Hailey, *An African Survey*, pp. 1046-1047.

26. R. R. Kuczynski, *Demographic Survey*, vol 2, pp. 339-343.

27. J. Illife, *A Modern History of Tanganyika*, p. 316. See also D. W. Malcolm, *Sukumaland: an African People and their country* (OUP, London 1953), passim.

28. A. Coulson, *Tanzania: A Political Economy* (Oxford UP, 1982), pp. 48. E. Harrison, *Soil Erosion: Tanganyika Territory* (Govt. Printer, Dar-es-Salaam, 1938), passim.

29. R. R. Kuczynski, *Demographic Survey*, vol. 2, pp. 145-150; *Kenya Land Commission: Evidence*, pp. 971-1039, 'Memo: An Economic Survey of the Kikuyu Reserves', by S. H. Fazan, suggests a rate of growth in the Kikuyu districts of 1.6 per cent per annum over the inter-war period. The *Report of the East Africa Royal Commission* accepts C. J. Martin's estimate of 1.9 per cent per annum, p. 31.

out of the Reserves and into the White Highlands seemed all too real.³⁰ Government recognition of population pressure was implicit in the terms of reference of the Kenya Land Commission, but, as we have seen, any suggestion that more land should be freed for African use met with stiff opposition from the settler community. Their influence lay behind the final decision of the Commission to freeze the apportionment of lands once and for all. While this satisfied settler opinion it was a controversial decision, taken in clear recognition that the pressure on African lands was becoming more severe. It was the opinion of the Commission that the problem was not primarily one of land shortage, but of land use.³¹

Land pressure created by population increase and by expanding cultivation was further exacerbated by the accumulation of larger numbers of livestock by groups of sedentary cultivators. These purchases were often financed by the surpluses gained from greater agricultural production, but because the arable acreage was normally expanded at the expense of grazing land, this resulted in more livestock having less land to graze. In these circumstances the problem of overcrowding could emerge with alarming rapidity. Kitching has demonstrated that this occurred in the Kikuyu Reserve of Kenya during the 1930s, and both Vincent and Vail have shown that it formed a substantial part of the land problem in the Teso District of Uganda, while the development of cotton cultivation coupled with the increased purchase of livestock—financed by the earnings from cotton—clearly contributed to the pressure on land in Sukumaland.³² Even in the drier rangelands where human population was more sparsely settled, there were visible signs of land pressure by the late 1920s. In districts such as Machakos and Baringo, in Kenya, the imposition of quarantine regulations had restricted the marketing of African livestock while the alienation of important dry season grazing lands for European settlement had seriously undermined the viability of local herding systems.³³ The reduction of livestock numbers was seen to be the simplest solution to the overgrazing and degradation of these rangelands, but the unwillingness of African herders to sell low-quality scrub stock at the prices offered by European buyers gave support to the view that African cattle should be culled through the direct

30. The trespass of African cattle on European farmlands, in search of water and grazing, did much to intensify settler awareness of land degradation and land shortage. See my doctoral thesis, 'Herder, Settler, and Colonial Rule: A History of the Peoples of the Baringo Plains, Kenya, c. 1890-1940', unpub. Ph.D thesis, Cambridge 1982, esp. chs 4 and 5.

31. The whole tone of the Report of the Commission makes this evident, but for specific examples; *Kenya Land Commission: Report*, sections 536, and 1980-2558. For a critique of the Report, see R. M. Breen, 'The Politics of Land', ch. 5.

32. G. Kitching, *Class and Economic Change in Kenya*, pp. 106-107 and 217-224; J. Vincent, *Teso in Transformation*, pp. 194-197; D. J. Vail, *A History of Agricultural Innovation... in Teso*, pp. 127-135; P. F. M. McLoughlin, 'Tanzania: agricultural development in Sukumaland', in J. C. de Wilde, et al, *Experiences with Agricultural Development in Tropical Africa*, vol. 2, (Johns Hopkins UP, Baltimore 1967), pp. 415-450.

33. J. Forbes Munro, *Colonial Rule and the Kamba: Social Change in the Kenya Highlands, 1889-1939* (OUP, Oxford 1975), pp. 77-80; D. M. Anderson, 'Herder, Settler, and Colonial Rule', pp. 72-85.

action of the government, either by some form of cattle tax, or by compulsory purchases.³⁴ Calculations of the 'carrying capacities' of grazing lands were accordingly made, and these were set as targets for the reduction of African livestock. Events in Machakos in 1938, and later in Sukumaland, were to show that enforced culling was not easy to implement, but the idea of limiting human and stock populations within well defined zones, based on the estimates of the lands' 'carrying capacity', remained a guiding principle as land use planning became the concern of colonial government in Africa.³⁵

Drought

From the mid-1920s through to the mid-1930s rainfall levels in much of East Africa were significantly below average. Drought was most pronounced in the low-lying semi-arid areas of Northern Uganda, Northern Kenya, and the plains of the Rift Valley, but also affected the agricultural areas in the Highlands of Kenya, and around the shores of Lake Victoria.³⁶ Drought heightened perceptions of environmental crisis, providing ammunition to those who would fire warning shots over the question of soil conservation, but also raising fears of food shortages in the affected areas; it was only when drought became famine that the colonial administration generally concerned itself with the consequences. Concern was greatest in Tanganyika, where drought was more widespread and famine more common. The dry areas of Ugogo and Uzigua experienced drought and famine in 1926, 1928–30, and from 1932–35; but in such unproductive areas this was not unusual, and so raised little anxiety. Localized, isolated droughts in areas where they were not expected had more impact. In 1925 and 1933 the Tanga hinterland experienced serious droughts, and the same occurred in Bugufi in 1929, and in Tunduru from 1930 to 1932.³⁷ Droughts such as these seemed to indicate that East Africa was 'drying up', calling into question the long-term future of agriculture and animal

34. *Interim Report of a Committee appointed to Advise as to the steps to be taken to Deal with the Problem of Overstocking in order to Preserve the Future Welfare of the Native Pastoral Areas* (East Africa Pamphlet no. 293, Nairobi 1941), and the papers connected with this Committee, KNA ARC(MAWR)-3Vet-1/8 to 16. Stock marketing was more successful in Tanganyika, see P. L. Raikes, *Livestock Development and Policy in East Africa* (Scandinavian Institute of African Studies, Uppsala 1981), passim. See also, *Kenya Land Commission: Evidence*, pp. 3103–3114, evidence of Maj. H. H. Brassey-Edwards, pp. 3290–3295, evidence of a Delegation of Elected Members.

35. R. L. Tignor, 'Kamba Political Protest: The Destocking Controversy of 1938', *International Journal of African Historical Studies*, 4, 2 (1971) pp. 237–251; P. F. M. McLoughlin, 'Tanzania: Agricultural development in Sukumaland', passim. The work of Allan and Trapnell, in Northern Rhodesia, was particularly influential in this, see W. Allan, *Studies in African Land Usage in Northern Rhodesia* (Rhodes-Livingstone Papers, no. 15, Oxford 1949, though carried out much earlier), and C. G. Trapnell and J. M. Clothier, *The Soils, Vegetation and Agricultural Systems of North-West Rhodesia* (Govt. Printer, Lusaka 1937).

36. *Meteorological Department Annual Report, 1921–1928* (Govt. Printer, Nairobi); J. C. Bille and H. H. Heemstra, *An Illustrated Introduction to the Rainfall Pattern of Kenya* (ILCA Working Document no. 12, Nairobi 1979); *Uganda Protectorate Annual Reports, 1925–1936* (HMSO London); *Tanganyika Territory Annual Reports, 1926–1936* (HMSO London). Of course, there were exceptions to the general pattern: see for example J. Forbes Munro, *Colonial Rule and the Kamba*, pp. 192–193.

37. J. Iliffe, *A Modern History of Tanganyika*, pp. 315–316.

husbandry in the affected areas. The main thrust of policy in Tanganyika was to eradicate famine by increasing food production, but by over-taxing the soil this policy could be seen as accentuating the damage caused by drought. Leading members of the Tanganyika Department of Agriculture began to suggest that, while the eradication of famine was a positive aim, the permanent loss of soil fertility was too high a price to pay, drought being a major indicator that the processes of degradation were advancing.³⁸

With the notable exception of Karamoja, drought had less effect in Uganda. In many parts of the protectorate the cultivation of drought resistant cassava had been actively encouraged since the last serious famine at the end of the First World War. In Teso each farmer was 'persuaded' to cultivate at least one quarter of an acre of manioc, and local schemes were devised to collect seed for the next years planting immediately after the harvest in order to provide a reserve against drought.³⁹ Food shortage was never serious, but from 1927 to 1930 the erratic nature of the rainfall and a period of drought combined to hamper the cotton crop.⁴⁰ Shortage of rains in Karamoja over the same period, and again in 1933 and 1934, led to anxiety lest the arid north might be extending its dusty tentacles into the fertile lands adjacent to the south. This was reflected in government surveys of Karamoja conducted during the mid-1930s, focusing upon the dual problems of water supply and desert encroachment, themes then also receiving attention in West Africa in regard to the southward drift of the Sahara into the savannah lands.⁴¹

In Kenya droughts were most dramatic in the pastoral areas of the Rift Valley and the North-East. The droughts of 1927–29 and 1933–34 took a heavy toll of African livestock, but to the alarm of observers this did little to relieve the pressure on the parched grasslands. These periods of drought did much to further agitation for direct action to control stock numbers as, far from restoring the equilibrium between land and livestock, it demonstrated the formidable powers of recovery of African cattle herds.⁴² The privations of the

38. 'Memo. on Soil Erosion in Tanganyika Territory', prepared for the Conference of Governors of British East Africa, June 1938, CO 822/88/6; 'A Review of the Position in Regard to Soil Conservation in Tanganyika Territory in 1938', CO 852/249/15.

39. D. J. Vail, *A History of Agricultural Innovation... in Teso*, pp. 106–108; *Report of the Teso Informal Commüttee*, passim.

40. Uganda Protectorate Annual Reports, 1927–1930. J. D. Tothill (ed), *Agriculture in Uganda*, pp. 189–190.

41. Wayland to Bottomley, 22nd April, 1937, enclosing E. J. Wayland and N. V. Brasnett, *Interim Report on Soil Erosion and Water Supplies in Uganda* (Uganda Prot., 1937) and Minutes by Stockdale, 24 May 1937, and Flood, 9 August 1937, CO 822/82/6. On West Africa, see E. P. Stebbing, 'The Encroaching Sahara: the threat to the West African Colonies', *Geographical Journal*, 85 (1935), pp. 506–524; B. Jones, 'Dessication and the West African Colonies', *Geographic Journal*, 91 (1938) pp. 401–423; and L. D. Stamp, 'The Southern Margin of the Sahara: Comments on some recent studies on the Question of Dessication in West Africa', *Geographical Review*, 30 (1940), pp. 297–300.

42. *Kenya Land Commission: Evidence*, pp. 3103–3119: evidence of Maj. Brassey-Edwards and Capt. E. J. Mulligan; pp. 3142–3147: evidence of H. E. Welby; C. Maher, *Soil Erosion and Land Utilisation in the Kamasia... Reserves*, passim; 'The Native Stock Problem', *East African Standard*, 9 April 1930.

migratory locust denuded pasture and croplands still further in a major invasion during 1928. Locust swarms recurred annually in East Africa throughout the next decade.⁴³ Although the agricultural areas of Nyanza and the Central Province escaped the worst effects of drought and locusts, in 1929 the combination of two consecutive failed harvests led to food shortages in Kitui, Embu, and Meru Districts, and in parts of Nyanza. This famine was serious enough to warrant the setting up of a Food Control Board, and the prohibition of the export of foodstuffs from the affected areas.⁴⁴ Government awareness of these environmental problems was undoubtedly sharpened in 1929 by an expenditure of over £60,000 on famine relief and £55,000 on the anti-locust campaign, and by further sums expended for these purposes in Nyanza from 1931 to 1933, and in the Rift Valley from 1931 to 1934 and again in 1938–39.⁴⁵ Drought had a cost that could be measured in financial as well as environmental terms.

The Evolution of Policy

The issue of soil conservation had emerged as a central concern of government in East Africa by 1938. While the responses devised were broadly similar across all three territories, the factors we have noted so far influenced the formulation of policy within each territory to varying degrees. Most significantly, differences appear in the extent to which political factors played a role in the evolution of the new conservationist ideology. In Kenya, where white settler pressure acted on the administration, and where the images of the Dust Bowl were most vividly and frequently reiterated as warnings of the threat posed, government action was better co-ordinated and quickly adopted a colony-wide perspective. Steps toward direct intervention in African farming practices can be plotted through the strategy for native agriculture in 1931, the Report of the Kenya Land Commission, the Department of Agriculture pamphlets circulated in the early 1930s, the visit to the colony by the Colonial Office Agricultural Advisor Frank Stockdale, and the visits of Kenyan officials to South Africa and America to observe conservation methods.⁴⁶ Particularly important in giving continuity to this gradually evolving policy was the work

43. E. Harrison, *History and Activities of Locusts in Kenya and Relative costs of Destruction*, (Department of Agriculture, Nairobi, Bulletin no. 9 of 1929); D. L. Blunt, *Report of the Locust Invasion of Kenya*, (Department of Agriculture, Nairobi, Bulletin no. 21 of 1931); *Kenya Colony Annual Reports, 1928–1939*. For Uganda, see J. D. Tothill, *Agriculture in Uganda*, pp. 518–521, and for Tanganyika, *Tanganyika Territory Annual Reports, 1927–1939*.

44. *Kenya Colony Annual Report, 1929*, pp. 17–19 and 28.

45. *Kenya Colony Annual Report, 1929*, pp. 17–21; See various correspondence and accounts in KNA PC/RVP.6A/11/5 to 7, on famine relief, and KNA PC/RVP.6A/11/9 to 11, on anti-locust measures.

46. G. Kitching, *Class and Economic Change in Kenya*, pp. 61–62; *Kenya Land Commission Evidence*, pp. 3065–3072, evidence of Mr Alex Holm (Director of Agriculture); V. A. Beckley, *Soil Deterioration in Kenya and Soil Erosion*, both passim; F. A. Stockdale, *Report on His Visit to South and East Africa, Seychelles, The Sudan, Egypt, and Cyprus, 1930–1931*, (Colonial Office, London 1931), passim; C. Maher, *A Visit to the United States to Study Soil Conservation*, (Department of Agriculture, Nairobi 1940), passim.

of an Agricultural Officer named Colin Maher. Committed to the cause of soil conservation from an early stage, Maher fought what amounted to a fully-fledged campaign from 1932 to 1938 to publicise the potential dangers of soil erosion in Kenya. A prolific writer, he contributed a multitude of newspaper and magazine articles on the subject, while also compiling many length reports and memoranda for circulation among his colleagues.⁴⁷ The setting up of a Soil Conservation Service in 1938, under his dynamic leadership, was something of a personal triumph, but it also stood as testimony to the power of the many settler pressure groups who had actively supported this cause; after all, the new Soil Conservation Service would work for the benefit of white farmers.⁴⁸ Lacking these strong unofficial accomplices, those Agricultural Officers in Uganda and Tanganyika who advocated similar developments had to adapt their ideas to fit in with the prevailing policies of the Agricultural Department.

In Uganda the determining factor was the commitment towards African cash crop production, attention being drawn to soil conservation by falling crop yields through declining fertility. The first detailed report on soil deterioration in Uganda, a collection of surveys compiled and analysed by the Director of Agriculture, Tothill, was prompted by the fears of the Empire Cotton Growers Association.⁴⁹ It was the Teso District that absorbed much of Uganda's conservation effort, where cotton yields had declined most sharply during the late 1920s and early 1930s, despite a rapid acreage expansion stimulated by the introduction of oxen ploughing.⁵⁰ A committee set up to look into the problem in 1935 made several suggestions for far reaching changes in farming methods. Among these were the resettlement of people from overcrowded and exhausted areas of the District, the introduction of a cattle tax to discourage the accumulation of livestock, and the enforcement of mandatory contour ploughing. After discussion the measures actually implemented were more piecemeal; earthwork bunds were constructed on only about 4,000 acres; selected small areas were closed to livestock to rest the pasture; and strip cropping with grass barriers was enforced. Of these, and many other methods of conservation suggested in Teso, only the strip-cropping proved really successful in the long-term. Supported by a well administered Bye-law, 90 per cent of all cotton land in Teso had been strip-cropped by 1941. An important

47. For details of his career, see his personal file, KNA Min. of Agr./2/274, and also D. M. Anderson, 'Herder, Settler, and Colonial Rule', pp. 110-113 and 253-257. Several of his publications have already been cited, others of interest include *Peasantry or Prosperity?*, (East African Problems no. 3, East African Standard, Nairobi 1943), and 'The People and the Land: Some Problems', *East African Agricultural Journal*, 7 (1942/43) pp. 63-69.

48. Brooke-Popham to Ormsby-Gore, 18 September 1937, and minutes by Flood, 30 September 1937, and Stockdale, 13 October 1937, CO 533/483/7; 'Soil Conservation and Soil Erosion in Kenya Colony, 1937 and 1938', CO 852/249/16; MacDonald to Brooke-Popham, Despatch no. 810, 11 December 1939 KNA PC/RVP.6A/11/23.

49. J. D. Tothill, *A Report on 19 Surveys in small Agricultural Areas*, passim.

50. J. Vincent, *Teso in Transformation*, pp. 173-177; G.B. Masefield, *A History of the Colonial Agricultural Service* (Oxford 1972), pp. 103-104.

factor in this was the imposition of cash fines for failure to comply with the regulations. The shortening of the fallow period, as a result of increased population and greater cultivation, was recognised as the real cause of the decline in soil fertility in Teso, but this could not be so easily handled by legislation at a local level without a much greater commitment to enforcement.⁵¹ Soil erosion was an important question in Uganda by 1938, but it was monitored and treated only in those areas where it seemed likely to threaten the cash crop economy.

A local approach was adopted in Tanganyika. Here the settler community was mainly involved in the plantation production of sisal, and in the growing of coffee. The uncertain political status of the territory during the 1930s absorbed much of the settlers political energies, the rest being taken up with belated attempts to control the spread of coffee production among Africans.⁵² Therefore, the Tanganyika settlers did not make political currency out of the erosion question as their Kenya neighbours did. An initial flush of concern over soil erosion in 1930 saw the formation of a Standing Committee to monitor the problem in the Territory, but, in the words of John Iliffe, 'the urgency faded'.⁵³ In their need to increase revenue and curtail expenditure to meet the rigours of the Depression, the Administration adopted a more cautious attitude. The Plant-More-Crops campaign went ahead, but the question of soil erosion was never completely ignored.⁵⁴ The onus for implementing conservation regulations was handed down to the Native Authorities from 1930, and over the following seven years the majority of Tanganyika's Authorities passed local regulations making certain anti-erosion measures compulsory in their Districts. The results were, naturally, minimal and localized. The basic methods were similar to those advocated elsewhere in Africa at the time, and borrowed heavily from the experience of both Kenya and Nyasaland. They included the demonstration of terracing on the contour; the protection of forests; green manuring (in parts of the Central Province); the provision of better water resources by the construction of dams and wells; and the resting of areas of pasture. Often these measures were applied alongside the anti-tsetse campaign, new husbandry regulations being enforced on newly-cleared areas as the settlers arrived.⁵⁵ Policies in Tanganyika were determined firstly

51. *Report of the Teso Informal Committee*, passim; *Interim Report of the Agricultural Survey Committee*, (Department of Agriculture, Entebbe 1937), pp. 2-6; D. J. Vail, *A History of Agricultural Innovation... in Teso*, pp. 127-135; 'Memo: Soil Erosion in Uganda', May 1938, CO 822/88/6; Mitchell to MacDonald, 12 May 1939, CO 852/249/15.

52. N. J. Westcott, 'The Impact of the Second World War', ch.2; K. Ingram, 'Tanganyika: Slump and Short-term Governors', pp. 605-610.

53. J. Iliffe, *A Modern History of Tanganyika*, pp. 348-349.

54. For example, see *Tanganyika Territory Annual Report, 1934*, Appendix VI 'Measures taken in various Provinces, 1933 and 1934, in connexion with Soil Erosion', pp. 171-176.

55. 'Memo: Soil Erosion in Tanganyika Territory', 28 May 1938, CO 822/88/6; 'A Review of the position in Regard to Soil Conservation in Tanganyika in 1938', 27 March 1939, CO 852/249/15; Lord Hailey, *An African Survey*, pp. 1036-1038; J. Iliffe, *A Modern History of Tanganyika*, pp. 349-352, points out that the erosion 'crisis' predicted by some agriculturalists during the 1930s in Tanganyika never materialized.

by the need to expand production, both of cash crops and food crops, and secondly by the local circumstances of population pressure and drought.

Awareness of an environmental threat to the land, and of a consequent threat to the future viability and profitability of farming, prompted more thorough research into the methods of arable and pastoral production in Africa.⁵⁶ This was first initiated in the colonies themselves, with each Agricultural Department mounting its own set of investigations. In Tanganyika, the Agricultural Research Station at Amani, was reopened in the 1920s, and over the next decade its influential, though sometimes controversial research, was focussed increasingly on problems connected with soil erosion. During 1932 Amani hosted a conference of soil chemists from all over East and Central Africa. Two years earlier the Tanganyikan Standing Committee on Soil Erosion had solicited the co-operation of Amani, encouraging the Institute to carry out research on the causes and processes of land degradation.⁵⁷ This work ultimately sought to demonstrate the value of better husbandry under strictly controlled conditions of land management, and contributed substantially to the opinion that African land could be made more productive *if* appropriate techniques were employed.⁵⁸

The research effort in Uganda took a rather different form, but also reached conclusions that encouraged those who wished to institute reforms in African agriculture. At Serere, in Teso District, experiments were undertaken to establish the cause of fertility loss, and by 1935 results clearly suggested that the breakdown of the soil structure was fundamental to the problem. Where the actual mechanics of the soil were breaking down, fertilizers and manures would do little to maintain the fertility of the earth. The alarming message here was that after a certain point in the breakdown of the soil the decline in fertility was irretrievable; modern methods of agriculture would be of little use. The implications of this were quickly appreciated by the Empire Cotton Growers Association, who supported much of the research; to be sure of maintaining soil fertility you not only had to gain a detailed knowledge of local soil

56. G. B. Masfield, *History of the Colonial Agriculture Service*, pp. 76–87; Lord Hailey, *An African Survey*, pp. 912–917.

57. H. H. Storey, *Basic Research in Agriculture: A Brief History of Research at Amani, 1928–1947*, (Govt. Printer, Nairobi n.d., but probably 1950); Papers concerning the Informal Conference of administrative officers, held at Dodoma May 1929, and Minutes by Passfield, 25 April 1930, and Stockdale, 29 January 1930, CO 822/26/9; *Technical Conferences of the East African Dependencies: Proceedings of a Conference of East African Soil Chemists held at the Agricultural Research Station, Amani*, (Govt. Printer, Nairobi 1932), and the connected papers in CO 822/47/3; *Tanganyika Territory Annual Report, 1934*, p. 39.

58. H. H. Storey, *Brief History of Research at Amani*, passim. And for specific examples H. E. Hornby, 'Overstocking in Tanganyika Territory', *East African Agricultural Journal*, 1 (1935/36) pp. 353–360; R. R. Staples, H. E. Hornby and R. M. Hornby, 'A Study of the Comparative effects of goats and cattle on a mixed grass-bush pasture', *East African Agriculture Journal*, 8 (1942) pp. 62–70. Work at Amani on soil classification and mapping was also very important, see G. Milne (ed), *A Provisional Soil Map of East Africa*, (Amani Institute, Tanganyika, 1936).

chemistry, but had to enforce cultivation methods that would not jeopardize the productive capacity of the land.⁵⁹

Investigation of the erosion question in Kenya initially concentrated upon pastureland, with experimental schemes being set up to recondition overgrazed grasslands and then allow stock back on, in a controlled system of grazing management. In both Machakos and Baringo these experiments demonstrated that rested pasture would recover, and that recovery could be maintained if stocking levels could be kept low enough to prevent a further cycle of overgrazing. These minor successes were the basis for considerable faith in the process of reconditioning in Kenya, and led to the conviction, held by many administrative officers and many settlers, that the compulsory destocking of overgrazed pastures would end the threat of erosion, while also easing congestion in the African Reserves as a whole.

The cumulative result of this research effort in East Africa clearly indicated that action could be taken to prevent, and to ameliorate soil erosion, but that where African husbandry was left unchecked the consequences were likely to be dire. If something could be done, then most people believed something should be done.⁶⁰

These uncoordinated local investigations were gradually given greater coherence and purpose as the Colonial Office became more concerned with the problem of soil conservation. The Colonial Office had first taken notice of the peculiar difficulties of tropical agriculture and at the end of the First World War, acknowledging the need for greater research when Viscount Milner established an Imperial College of Tropical Agriculture in Trinidad. Opened in 1922, and given its Royal Charter in 1926, the College quickly became recognized as an international centre for research, its post-graduate Diploma in Tropical Agriculture, involving a year spent at Cambridge followed by a year in Trinidad, recognized as a prestigious qualification. The problems of land management in the tropical environment, including the evils of soil erosion—which were well known in the West Indies—were the bread and butter of the Trinidad syllabus.⁶¹ In the early 1930s graduates of the Trinidad College began to infiltrate the colonial administration, better qualified in their subject and more in touch with current trends in research and thinking than the previous generation of colonial agricultural officers could ever have hoped to have been. These men dominated the recruits to the Kenyan Department of Agriculture by 1935, a large proportion of them progressing quickly through the

59. 'Memo: Soil Erosion in Uganda', May 1938, CO 822/88/6; C. C. Wrigley, *Crops and Wealth*, pp. 64–66; J. D. Tothill, *Agriculture in Uganda*, pp. 101–110.

60. *Interim Report of a Committee to Deal with the Problem of Overstocking, passim*; 'Soil Erosion and Soil Conservation in Kenya, 1937 and 1938', CO 852/249/16; J. Forbes Munro, *Colonial Rule and the Kamba*, pp. 215–223. D. M. Anderson, 'Herder, Settler, and Colonial Rule', pp. 217–260.

61. G. B. Masefield, *History of the Colonial Agricultural Service*, pp. 37–43; 'Tropical Agriculture: Work of the Trinidad College', *East African Standard*, 5 April 1930.

ranks to hold senior posts by the 1940s.⁶² The Colonial Office itself took more notice of this cadre of experts as it began to re-examine the administration of the colonies and overhaul its own bureaucracy. With the appointment of an Agricultural Advisor to the Colonial Office in 1929, and the creation of a separate Economic Department within the Colonial Office in 1935, and later through the establishment of numerous advisory committees connected with questions of colonial administration and development, such as the Advisory Council on Agriculture and Animal Health, the Colonial Development Advisory Committee and the Colonial Research Council, the Council Office sought to coordinate its policies over a wide range of topics throughout the colonies.⁶³

As questions connected with land degradation become ever more prominent in the day to day business of the Colonial Office, soil erosion—or rather, the fear of it—was the common thread that bound together agricultural policies for the tropical colonies. From being a problem identified and handled at a local level in each colony in 1928, soil erosion had by 1938 come to assume an important position in general policy making for the colonies, demanding a coordinated response from Whitehall. As the problem transcended the various levels of administration, from the District Officer to the Permanent Secretary, its implications were given new meaning and the policies for its amelioration were framed more broadly. From the examples of the Districts of Kondoa in Tanganyika, Teso in Uganda, and Baringo in Kenya, we can identify four phases in this gradually expanding policy:

- i. Initial expressions of concern about land degradation within the District.
- ii. Official recognition of the problem by the District administration.
- iii. Action at the District level, with the implementation of anti-erosion measures.
- iv. Wider colonial concern, with the formulation of large-scale plans at Provincial, or even Colony level, and applications for central funding for ameliorative measures.

As the table below illustrates, by 1938 each of these three Districts, from widely diverging starting points and through divergent sets of agricultural policy aims, had arrived at the same basic approach to the question of land degradation.

The time delay of about ten years between recognition and action can perhaps be dismissed as the natural slow gestation of a conservative bureaucracy. To some extent this is true, but the passing of time also saw an accumulation of forces in favour of agrarian reforms in Africa, and allowed the facts and figures to be gathered and analysed. The Colonial Office began to examine the relationship of cause and effect in African husbandry, and as a result were

62. G. B. Masfield, *ibid*, pp. 43–48; *Colonial Office Lists, 1929–1948* (HMSO London), give the qualifications of Kenyan Agricultural Officers, though not for other colonies. By 1948 almost half the field staff and more than half the technical staff were Trinidad trained.

63. G. B. Masfield, *ibid*, pp. 41–42; Sir C. Jeffries, *The Colonial Office* (Allen & Unwin, London 1956), pp. 108–113.

TABLE
Phases in the evolution of Soil Conservation policies: Kondoa, Teso, and Baringo, 1928 to 1938

	Kondoa	Teso	Baringo
i.	1928—Kondoa described as being 'deeply eroded'.	Late 1920s—Falling yields noted by Empire Cotton Growers Assoc, and overstocking of area discussed.	1928—Drought causes first comments on land degradation.
ii.	1930—District administration comment on erosion, especially gullyng.	1932—Teso officially acknowledged to have lowest cotton yield in Uganda.	1929—First official concern, connected to the issue of overstocking.
iii.	1932—Native Authority Bye-Laws begin to deal with conservation measures. 1933—Kondoa described as 'worst erosion' in Tanganyika. 1937—Secretariat in Dar-es-Salaam marks area as 'first priority' in anti-erosion work.	1935—Informal Committee formed by District administration to advise on conservation measures. 1937—General surveys of erosion throughout colony. Teso main area of concern. 1938—Strip cropping, and other conservation measures implemented.	1930—Reconditioning schemes begun in District, funded by Provincial administration. 1933/34—Kenya Land Commission highlights land use problems, identifying Baringo as an acute example. 1935/37—Surveys of erosion throughout colony declare Baringo to be 'among the worst'.
iv.	1938/39—Development plan drawn up for Kondoa, and requests made to central government for finance. ⁶⁴	1938/39—Uganda administration seeks CDF funding for resettlement and re-afforestation schemes, to prevent spread of erosion. ⁶⁵	1938/39—Detailed Rehabilitation Scheme drawn up for Baringo, supported by central government, and put forward for consideration by the CDF. ⁶⁶

prepared to reassess their own role as reformers. Mounting concern led to a gradually mounting commitment to act.⁶⁷

An ideology of conservation, based upon soil erosion, had emerged within the Colonial Office before the Second World War. The Dust Bowl, at its height in 1935, and its cost spectacularly measured in pounds of soil lost per

64. I am grateful to John Iliffe for allowing me to use his notes on Kondoa District, mostly from the Tanzania National Archive (TNA). The following sources were used in compiling the table: Gillman Diaries, entry for 6 October 1928, Rhodes House Library; Kondoa-Irangi Annual Reports, 1920–1934; re. gully erosion in Kondoa, TNA 691/109/2; re. meeting on soil erosion, 1937, TNA Sec. 19685/2/279; re. plans for rehabilitation and development, TNA CP 26393/1/1 and CP 26393/2/1A.

65. Teso column compiled from: *Report of the Teso Informal Committee; Interim Report of the Agricultural Survey Committee; Report of the Uganda Cotton Commission, 1938*, (Govt. Printer, Entebbe 1939), pp. 15–27; J. D. Tothill, *A Report on 19 Surveys in small Agricultural Areas*; J. D. Vail, *A History of Agricultural Innovation . . . in Teso*, pp. 127–135; E. J. Wayland and N. V. Brasnett, *Interim Report on Soil Erosion in Uganda*, in CO 822/82/6; 'Memo: Soil Erosion in Uganda', May 1938, CO 822/88/6; Mitchell to MacDonald, 12 May 1939, CO 852/249/15.

66. Baringo column compiled from: *Kenya Land Commission: Evidence*, pp. 1773–1799, Secretary's Precis of the Rift Valley Province proposals and recommendations, and pp. 1800–1906, all evidence concerning Baringo; Governors Deputy to MacDonald, 13 August 1939, enclosing Memo. by E. M. Hyde-Clarke, 'Baringo District Rehabilitation Scheme', January 1939, and reply, 11 December 1939, KNA PC/RVP.6A/11/23; C. Maher, *Soil Erosion and Land Utilisation in the Kamasia Reserves*, passim.

67. 'Soil Conservation in the Tropics', by Sir F. Stockdale, prepared for the Netherlands Conference on Tropical Agriculture, 1939, CO 852/249/17.

person and square feet of topsoil blown hundreds of miles across country, had made conservation of the environment an international issue. This impact did much to push the Colonial Office to tackle the issue on an equally grand scale. Administrators from the colonies and bureaucrats from Whitehall travelled to America to see the devastation at first hand and, more importantly, to view the anti-erosion measures being applied by the United States Soil Conservation Service.⁶⁸ But the Americans, for all their efforts to deal with the problem, were barely worth their acknowledged status of 'experts' on soil conservation. Having created one of the most serious single environmental disasters known to man they simply had to set about trying to solve it.⁶⁹ In a sense, there were no 'experts'; only those who were doing something. More of necessity was being done in North America than elsewhere, and so it was primarily from this pool of experience that the Colonial Office drew its ideas. Even when the Colonial Office tried to draw upon more appropriate examples from Africa, they discovered that all roads led back to Hugh Bennett and the American Soil Conservation Service. Before establishing a Soil Conservation Service in Kenya, it was suggested that an Agricultural Officer be sent to Basutoland, where anti-erosion schemes were reportedly at a more advanced stage. The Basutoland administration responded enthusiastically to the request to entertain the Kenyan visitor, but asked that the trip be postponed until their own Soil Conservation Officer had returned from his fact-finding tour to the United States.⁷⁰

It was during Malcolm MacDonald's second term at the Colonial Office that soil conservation was given priority as a matter of very real Imperial importance. Macdonald did much to crystallize the ideas on agrarian reform into harder policies, but even before his return the Colonial Office had already begun to throw its weight behind the push for a conservation-conscious agrarian strategy. The previous year, in June 1937, Ormsby-Gore had pledged the government to greater expenditure on anti-erosion measures in East Africa, acknowledging that direct action was now an urgent necessity.⁷¹ This was followed in February 1938 by a circular to all colonies, demanding that they

68. D. Worster, *Dust Bowl: The Southern Plains in the 1930s*, pp. 10–25; 'Notes on Soil Conservation Work in America', by Sir F. Stockdale, 17 November 1937, following his visit to the United States, CO 533/483/7.

69. This was a common theme in the writings of Hugh Bennett. See also P. B. Sears, *Deserts on the March* (London edition, 1949), and V. G. Carter and T. Dale, *Topsoil and Civilisation*, (Univ. of Oklahoma Press, revised edition 1974, first edition 1955), a book dedicated to Bennett.

70. High Commissioner Basutoland to Brooke-Popham, 25 September 1937, CO 533/483/7. For the American influence in Southern Africa, see W. Beinart, 'Soil Erosion, Conservationism, and Ideas About Development', pp. 25–26.

71. On MacDonald, see J. Flint, 'The Failure of Planned Decolonization', pp. 398–402, but also R. D. Pearce, 'The Colonial Office and Planned Decolonization', pp. 78–80. Ormsby-Gore to Wade, 23 June 1937, and Minute by Stockdale, 9 June 1937, arguing strongly for increased expenditure, claiming present efforts against erosion to be 'about as affective as attempting to build a bridge across Sydney harbour with a Meccano set', in CO 533/483/6. For one of the earliest official references to the dangers of erosion in East Africa, see *Report of the East Africa (Ormsby-Gore) Commission*, Cmd. 2387, pp. 32 and 72.

submit an annual account of all the conservation work undertaken by their various departments each year. Some colonies were slow to respond to this circular—after all, erosion was not a pressing issue in *all* parts of the Empire—but the Colonial Office sent out regular reminders until all the reports were furnished. As the fat files containing colonial soil erosion reports from 1938 onwards testify, this was a subject about which every colonial administration was expected to be aware.⁷² Soil erosion can be seen to have reached its place as a topic of 'High Policy' in East Africa when a special session of the 1938 Governors Conference was devoted to a discussion of conservation policies. The papers prepared for this meeting were later published in full and circulated to other colonies, a rare enough occurrence in itself to signal that something of significance was taking place.⁷³ A similar indication was provided by the demand for a pamphlet on soil conservation in Tanganyika, prepared in 1937 by Harrison, the Director of Agriculture. The initial print-run of 600 copies was distributed in East Africa, and sent to other colonies for their information, but interest was so great that the Crown Agents were asked to arrange for the printing of a further 500 copies in 1938, these being sent, on request, as far afield as British Guiana, the Gold Coast, and Fiji.⁷⁴

At the Colonial Office in London one man stands out as having been most influential in all of this: Sir Frank Stockdale. Looking at his career, one might be tempted to suggest that as Stockdale gained position, so did the question of soil erosion. Stockdale first became concerned with the problem of land degradation in the tropics as Director of Agriculture in Ceylon in 1920, where he was responsible for setting up anti-erosion work on the large tea estates. By the 1930s, as Agricultural Advisor to the Colonial Office, his particular experience of the problem made him more sensitive to the rumblings of concern in the colonies about the threat of erosion. As the issue of soil conservation became a recurrent theme in Colonial Office discussions on tropical agriculture, it was Stockdale who provided the 'expert' opinion and made policy recommendations; who advised which ideas should be supported and which dismissed; who drafted the minutes that alerted many of his junior, and less experienced officers, to the essential importance of the erosion question. Above all, it was Frank Stockdale who encouraged the Colonial Office to view conservation of the soil as an issue common to all the British colonies.⁷⁵ With his close contacts with Hugh Bennett and others involved in the American fight against bad

72. Lord Harlech's (Ormsby-Gore) despatch no. 74, 9 February 1938, CO 852/249/15. Annual Reports from the Colonies on soil erosion can be found in CO 852, beginning in 1938–39, CO 852/249/15 and 16.

73. 'Papers concerning the Conference of Governors of British East Africa, June 1938', CO 822/88/6, later published as *Soil Erosion, Memoranda by the Governments of Uganda, Kenya, and Tanganyika*, (Govt. Printer, Nairobi 1938).

74. Crown Agents to Under Sec. of State, Colonial Office, 25 August 1939, CO 852/250/1.

75. G. B. Masfield, *History of the Colonial Agricultural Service*, pp. 161–162; F. Stockdale, 'Soil Erosion in the Colonial Empire', *Empire Journal of Experimental Agriculture*, 5 (1937); Minute by Stockdale, 9 June 1937, CO 533/483/6; and, for an early example, Minute by Stockdale, 29 January 1930, CO 822/26/9.

farming, Stockdale was committed to direct action to enforce better husbandry on often reluctant and sometimes ignorant farmers.⁷⁶ But it would be wrong to see Frank Stockdale as the orchestrator of a campaign to draw attention to the erosion issue. He did not create the problem, it landed on his desk in the form of reports and memoranda from the various colonies and, as the official with overall responsibility for colonial agricultural policy, he set about trying to make sense of it and devising policies that would tackle it.

It is interesting to note that by 1938 Stockdale was already suggesting that the methods of constructing anti-erosion works then being advocated in the colonies were, in many cases, counter-productive. Following the American experience once again, Stockdale calculated that the overall productive capacity of most African lands could not sustain the current costs of maintaining anti-erosion works, particularly where heavy mechanization was involved. It was uneconomic to rehabilitate, or even protect, African lands by such capital-intensive means. Instead, the natural landscape should be used as the basis for conservation planning, and where larger works of construction were deemed necessary these should be undertaken without the use of heavy machinery.⁷⁷ By this time the Colonial Office was already considering proposals for the amelioration of land degradation involving mechanization and its attendant high costs. These were accepted as the large-scale solutions to what were viewed as large-scale problems, and after 1945 mechanization played a significant part in the implementation of development schemes throughout British Africa. Indeed, although the costs of such action were high, the implications of solving the landuse problem by labour intensive means went far beyond the advantages apparent in simply applying methods of good husbandry. Voluntary labour cost the colonial administration nothing, but was a heavy burden to the farmer, who objected to this interventionist policy, however well meaning it may have been.⁷⁸

Conclusion

The rise of soil erosion as a subject of 'Imperial importance' was not an isolated development, but was part of a much wider and historically more significant transition in British colonial thinking that took place during the 1930s. However real or imaginary the economic and environmental crises were, the 1930s became a decade of reassessment in British colonies and in the Colonial Office itself. It cannot simply be argued that events in the

76. Minute by Stockdale, 9 June 1937, CO 533/483/6; Stockdale to Dr J. H. Reisner, United States Soil Conservation Service, 26 October 1937, and reply 9 November 1937; and, 'Notes on Soil Conservation Work in America', by Stockdale, 17 November 1937, all in CO 533/483/7; Bennett to Reisner, 6 December 1937 CO 533/483/8.

77. 'Notes on Soil Conservation Work in America', by Stockdale, 17 November 1937, CO 533/483/7.

78. D. W. Throup, 'The Governorship of Sir Philip Mitchell', pp. 212–261; L. Cliffe, 'Nationalism and Reaction to Enforced Agricultural Change', *passim*; C. C. Wrigley, *Crops and Wealth*, pp. 76–79.

colonies forced a shift in policies, or that an awakening of concern for African development in London prompted a new set of policies 'from above'. Both explanations are unsophisticated, and ignore the movements of ideas that went from colony to London and back again, that were modified by experience both within and outside the Empire, and that often resulted in reforms that went far beyond what was initially intended. The cumulative effect was important, and by the late 1930s administrators in East Africa and senior members of the Colonial Service in London were well aware that the reforms they contemplated were certain to be profound and pervasive.⁷⁹ How far they connected the beginnings of 'development' in East Africa with ultimately accelerating the process to decolonisation, is a much broader question; what is clear is that the changes of the 1930s established a framework within which the policies of the late 1940s could be implemented. The Second World War was, of course, to add important parts to this structure, but to fully understand the effect of the War, and the reasoning behind the agrarian reforms of the post-war years, we must recognise the significance of the shifts in policy accomplished during the 1930s. The policies that had evolved by 1938 were the product of a combination of local and international circumstances, of a complex interaction between the various levels of the colonial administration each with their own perceptions of the nature of the problems that confronted them. Soil conservation became a fundamental issue because it lay at the very heart of the strategies that emerged for African development.

79. Wade to Ormsby-Gore, 17 March 1937, and reply 23 June 1937; Minute by Stockdale, 9 June 1937, all in CO 533/483/6; Brooke-Popham to Ormsby-Gore, 18 September 1937, and related papers, in CO 533/483/7; 'Soil Conservation in the Tropics', by Stockdale, June 1939, CO 852/249/17.