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Inaugural meeting of the inter-territorial project committee on environmental conservation education in central and east Africa

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INAUGURAL MEETING OF THE INTER-TERRITORIAL
PROJECT COMMITTEE ON ENVIRONMENTAL CONSERVATION
EDUCATION IN CENTRAL AND EAST AFRICA

BACKGROUND REPORT : BOTSWANA

by

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1. Introduction.

The Republic of Botswana is situated in central Southern Africa. It shares common borders with Zambia, Rhodesia, the Republic of South Africa, South-West Africa and the Caprivi Strip. Its total area is 220,000 square miles.

Physiographically, Botswana is an elevated basin having altitudes of 3,000-4,000 feet. There are no perennial rivers except the Okavango and Chobe in the north east. Intermittent streams drain the eastern strip of Botswana into the Limpopo river, but virtually all other drainage is into pans, notably the extensive Makarikari Pans, where evaporation balances or exceeds inflow.

2. Natural Resources.

Rainfall is extremely variable and most unreliable, ranging from less than 6 inches per year in the sand dune area of the extreme south west, through 16-20 inches along the eastern strip, to 26 inches in the northern, Chobe, area. Rains occur principally during the summer months October to March, varying from the lightest showers of little or no agricultural value to heavy tropical storms which create havoc on unprotected soil. Botswana is often beset by months or even years of drought.

The virgin natural vegetation is largely composed of perennial grasses with scattered trees and bushes, dominated by *Acacia* spp. in the south and west and Mopane in the north-east. Natural vegetation provides good grazing and browse for extensive cattle ranching in most areas where water can be obtained. However large parts of the country have rightly been set aside as game reserves, and many eastern and northern areas have been severely overgrazed by domestic animals, with consequent bush encroachment, replacement of perennial by annual grasses and reduced infiltration of rainfall into the soil.

Soils are mainly light, sandy and infertile excepting in the eastern strip where arable cultivation is relatively extensive, in spite of the high risk of drought.

The population of Botswana is estimated at only 626,000 but it will rise to 1.5 million by the end of the century if present trends continue. The majority

of children undertake some primary schooling but only 250 completed Form V secondary schooling in 1970. This number is expected to reach 750 by 1975. Government is the largest employer of manpower though commerce, light industry and mining are assuming increasing importance. The majority of the population is dependent upon livestock, crop production or wildlife for its living. The highest concentrations of people are in the relatively well-watered eastern zone, where rail, road and telephone communications have also been developed to a greater degree than elsewhere.

Substantial mineral resources have been discovered in recent years, including diamonds at Orapa, copper/nickel at Selebi-Pikwe, coal at Morupule and soda-ash/salt at Sua Pan. All of these are under development and there are indications of mineral deposits elsewhere.

Botswana is also blessed with extensive and varied wildlife which provides a valuable dietary supplement, raw materials for village craft industries, and an increasingly important hunter/tourist attraction.

3. Livestock and Grazing.

The population of domestic livestock, chiefly cattle, goats, sheep and donkeys, has expanded steadily during the past hundred years, despite major fluctuations during and after prolonged droughts. The stock population is now in the region of 1.5 million cattle, 0.33 million sheep and 0.9 million goats. However thirty percent of cattle are owned by four percent of the population, whilst 29 percent of the population has no cattle, and half the population has insufficient cattle from which to make a living. In the tribal areas stock are traditionally grazed communally. Whilst this system was satisfactory for small human and stock populations it is unsuited to present day concentrations, and has led to severe overgrazing, encroachment of bush and growth of short-season annual grasses. In many places ground cover has virtually disappeared and only impenetrable thickets of bush remain. In such areas sheep have succeeded cattle and goats have succeeded sheep. Run-off has increased sharply, streams run more strongly for shorter periods, pans, river beds and boreholes dry out more quickly and sheet and gully erosion have become evident. Meanwhile

stock populations continue to expand and there is strong pressure to drill for water and move cattle into the under-utilised but ecologically delicate Kalahari.

4. Dryland Cropping.

The majority of the population owns little or no stock and is dependent upon dryland crop production. The arable acreage varies seasonally from 200,000 to 750,000, the principal crop is sorghum and yields show a very wide variation around a mean of 200 lbs per acre. Marked improvements are possible both in terms of increased mean yields and reduced annual fluctuation of yields, largely through techniques of improved soil moisture conservation.

5. Need For Sustained Production.

Ninety percent of the population is dependent upon arable, livestock and wildlife enterprises; meat and meat products account, at the present time, for ninety percent of Botswana's exports. The development of mining and associated industries will greatly enhance the national income, but will not provide many employment opportunities. There is a clear need to increase agricultural production but this must be done on the basis of sustained production from, and conservation of, the natural resources.

6. Conservation Extension.

During the past two to three years there has been a growing awareness of the problems touched upon above. Leaders of public opinion at village, district and national levels are realising the necessity of full but safe utilization of the natural resources. However it must be reiterated that there is strong pressure for expansion of livestock into hitherto under-utilised country.

The Government, and especially the Ministry of Agriculture and the Department of Wildlife, is acutely conscious of the demand for increased production and the necessity for natural resources conservation. In recent years Government has established Natural Resources Technical and Co-ordinating Committees. A Division of Land Utilization has been set up in the Ministry of Agriculture responsible for land-use surveys, conservation and dam-building. An F.A.O./

U.N.D.P. Project has almost completed a wide-ranging survey into the water potential of Botswana, for agricultural purposes, which involves such aspects as hydrology, rainfall, sociology, pedology, irrigation potential and range ecology. Tribal Land Boards are now responsible for the allocation of tribal lands; Village and District Development Committees are responsible for local and district development plans. More recently, a Conservation Extension Unit has been formed, to take care of extension work preparatory to the construction of dams and other conservation works. It will also follow through with extension work which promotes controlled grazing around the new dams. Forthcoming legislation will streamline the activities of these organizations and provide a legal framework for the protection of agricultural resources.

In these ways it is believed that the conservation needs of individual project areas can be satisfactorily met, in terms of legislation, extension and physical support. The conservation machinery would be able to move from area to area, gradually covering the more densely populated regions. To meet growing demand it will no doubt be necessary to strengthen the Division of Land Utilization and the Conservation Extension Unit, from time to time. However, none of the existing organizations is capable of mounting a sustained, national educational campaign for conservation of the natural resources. Time is no longer unlimited, and a formula must urgently be found which will create national awareness of the need for conservation, and show stock and arable farmers how they can themselves apply profitable techniques of conservation.