

**ECOLOGY, AGRICULTURE AND PROLETARIANIZATION: A STUDY OF THE  
SINAZONGWE AREA IN THE GWEMBE VALLEY OF THE SOUTHERN PROVINCE  
OF ZAMBIA: 1900 TO 1989**

**BY**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIRE-  
MENTS FOR THE DEGREE OF MASTER OF ARTS IN HISTORY**

**THE UNIVERSITY OF ZAMBIA**

**LUSAKA**

**1991**

**DECLARATION**

I **GODFREY HAAMWEELA NACHITUMBI HAANTOBOLO** declare that this dissertation represents my own research work, and that it has not been previously submitted for a degree at this or any other University. **245481**

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APPROVAL

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## ACKNOWLEDGEMENTS

I wish to humbly express my sincere appreciation to my Supervisor, Dr. Fay Gadsden for her unreserved guidance and encouragement during the writing of this dissertation. Her intellectual sophistication in historical standards and the constructive comments she made in the course of writing the dissertation have been extremely rewarding.

I would also wish to thank all the members of the teaching staff in the History Department, University of Zambia, for helping me to learn the necessary methods of carrying out historical research. The practical application of these methods have enabled me to produce this dissertation. I am particularly thankful to Dr. B. Nyeko, Dr. S.N. Chipungu, Dr. S.O.M. Zilombo and Professor H.Y. Kaniki for making history a thought provoking academic discipline during the course work of my Masters of Arts degree.

My thanks are also due to the Department of Manpower Development and Training, Freedom House, and the Rural Development Studies Bureau (through U.S. AID) for financial and material support. Their support enabled me to conduct my archival and field research without many hardships.

I also wish to thank Messrs B. Siamwiza and J. Siakavuba for their constructive academic criticisms of my work during the course of my study. I also wish to give special thanks to Mr. Paul Ndui, a Tanzanian friend and classmate at Nico Lopez in Cuba. He and I struggled tirelessly to look for paper, correcting fluid and a competent Secretary in Cuba.

Many thanks are also due to Mr. Reinaldo Rey for helping me to find a Secretary for typing this dissertation in Cuba. My thanks are also due to Mrs Aida Almeyda for typing this dissertation. I owe my dear wife Prister Himakuni an irrepayable debt. Her patience and sacrifices for me during the darkest period of my life go beyond any sincere word of appreciation. However, the research work presented in this dissertation represents my own work.

FIGURE I

MAP KEY

\_\_\_\_\_ Provincial boundaries

10,000 Population of town (1972)

\_\_\_\_\_ Railway line

----- TANZAM RAILWAY



Gwembe valley development company farm in Sinazongwe

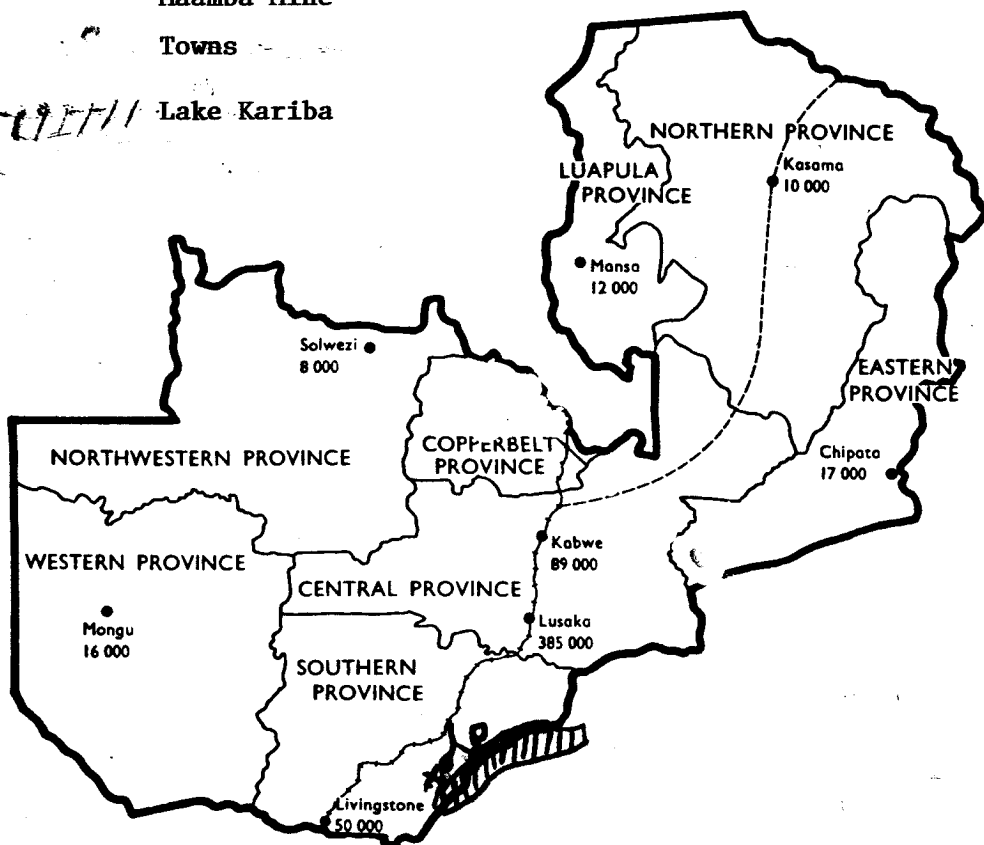


Maamba Mine



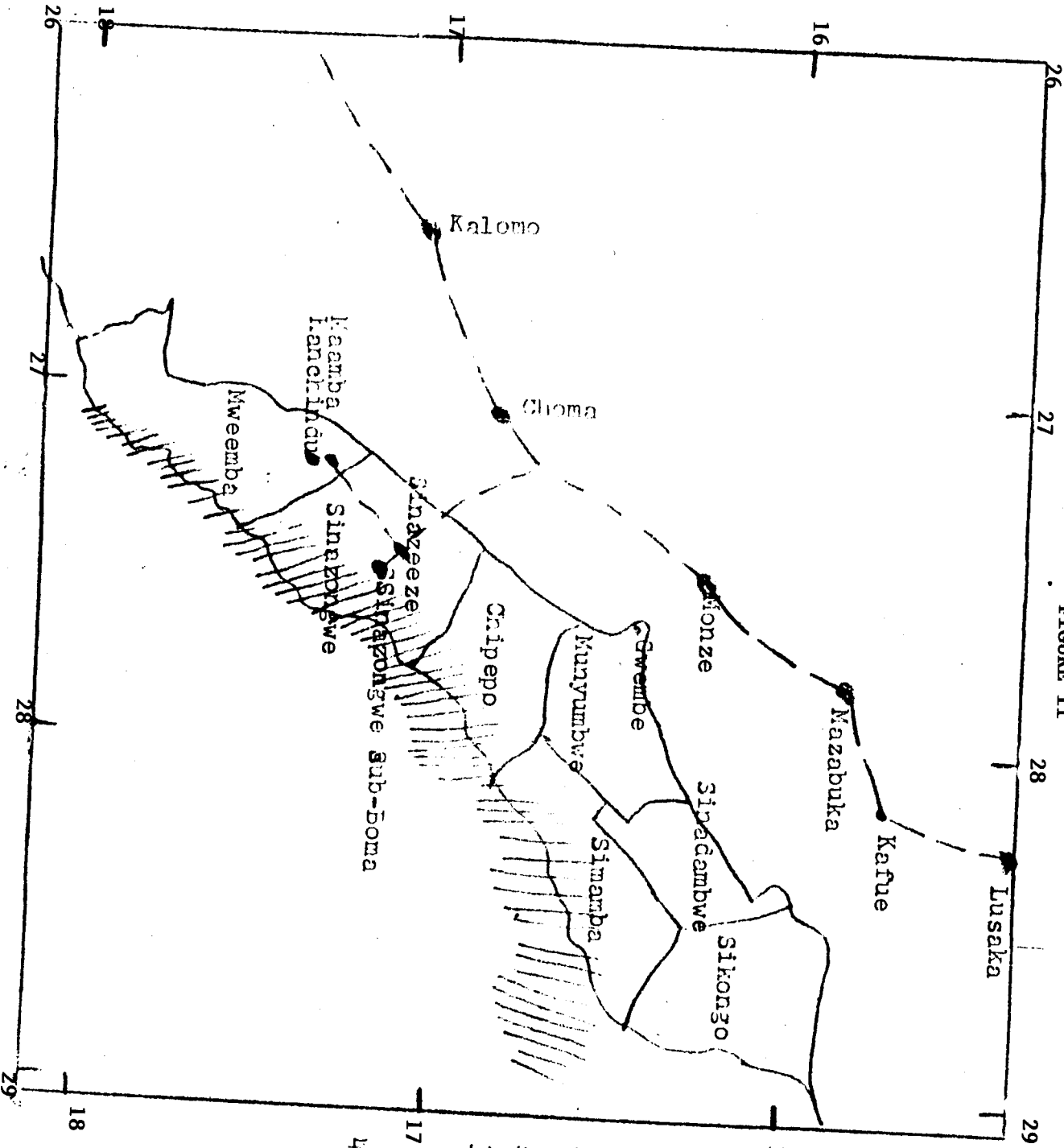
Towns

||||| Lake Kariba



SOURCE: ROBERT MOLTENO, *The Zambian Community and its Government* (LUSAKA: NECZAM 1974) Z.

FIGURE II



MAP KEY

- 1: • Towns
- 2: - - Roads
- 3: — Gwerbe district boundary and chieftaincy boundary.
- 4: // // // Lake Kariba

## ABSTRACT

This dissertation is divided into three chapters. Chapter one examines the impact of colonial rule and capital penetration on ecology and agriculture in the Sinazongwe sub-district between 1900 and 1958. The chapter demonstrates how colonial policies like land alienation, the Inyoka tobacco ordinance of 1924 and the Kariba resettlement programme undermined agricultural development in our area of study. It shows how the impact of colonial policies on ecology worsened the problem of shortage of food which the Sinazongwe people had been experiencing in the previous century. The chapter further shows the defectiveness of the corrective measures the government used to solve the problem of famine.

Chapter two analyses the rationale behind the construction of Kariba Dam . It also examines the ecological impact of the creation of Kariba Dam after 1958. It specifically identifies the impact on ecology which the flooding of Lake Kariba had on the peoples; agricultural lands and the problem of soil erosion in the new areas. The chapter further looks at the process of resettling the people displaced by the flooding of Lake Kariba and the problem of land shortage as a result of population pressure.

We will further demonstrate how the resettled people suffered a prolonged drought in the 1980's and discuss the impact of this drought on child mortality rate as a result of malnutrition. We will further examine the impact of tsetse fly on agricultural expansion and its effects on livestock. We will show that the tsetse control measures introduced after 1958 were so effective

that the number of cattle increased in the Sinazongwe sub-district. However, this increase in the number of livestock resulted in a serious problem of soil erosion.

In the period 1966 to 1989, the study will analyse the reasons which led to the opening of Nkandabwe and later Maamba coal mines in the Sinazongwe sub district. Here the study demonstrates the impact of coal production on human resettlement, the leaching of agricultural lands of the local people located beside the Kazinze river and the study also highlights the problem of water pollution associated with coal production. The chapter further examines the impact of the establishment of an irrigated commercial farm under the **Gwembe Valley Development Company** on human settlement and the impact of the use of poisonous insecticides and herbicides through aerial spraying of cotton and wheat on the environment of villages surrounding the farm.

Chapter three analyses the impact of government policies on the creation of a proletariat among the local people in the sub district. It demonstrates how the traditional land tenure system and the colonial policy of land alienation limited the chances of the youngmen from acquiring land for agriculture. In addition to this, hut tax payments, drought, erosion and famine are high lighted as some of the factors which forced the able **bodied men** to go into wage employment in Southern Rhodesia, South Africa and Northern Rhodesia. Since some of these people went with their wives and families and worked for periods ranging between ten to twenty years, the research assumes that they became

proletarianized. After 1964 a number of Sinazongwe youngmen got the opportunity to go through the formal educational institutions introduced by the government of Zambia. Some of them were employed as teachers, miners and doctors. Some of these are unionized positions whose trade unions were recognised by the government of Zambia. Therefore the research concludes that a number of people in the Sinazongwe sub district became proletarianized.

GLOSSARY OF TONGA TERMS USED IN THE DISSERTATION

<u>Tonga</u>	<u>English</u>
Bachivunye	Swarms of corn creak
Banabutema	Unmarried women
Bana Mweemba	A name given to the Tonga people of the Sinazongwe sub-district who live in Chief Mweemba's area
Busiika	Bitter edible wild fruits common in the Gwembe valley.
Inyoka Tobacco	A colonial name given to the indigenous brand of tobacco grown by the local Gwembe Tonga
Kuti	Annually inundated flood plain gardens cultivated during both the rainy and dry seasons
Mabuyu	Edible wild fruits found in <b>baobab</b> trees
Nshima	Hard porridge cooked using maize meal
Temwa	Rain gardens cultivated on karroo sediments further removed from the river system
Zilili	Zambezi bank gardens cultivated primarily during the dry seasons
Zilundu	Cones of specially prepared tobacco weighing about two and half kilogrammes each

ABBREVIATIONS

B.S.A. Company .....	British South Africa Company
CaO .....	Calcium Oxide
Cm .....	centimetre
D.D.T .....	Dichloro-diphenyl-trichloro-ethane
G.R.Z. ....	Government of the Republic of Zambia
Km. ....	Kilometre
Mg. ....	<b>Milligrammes</b>
M.U.Z. ....	Mine Workers Union of Zambia
N.A.M.B O A R D .....	National Agricultural Marketing Board
NAZ .....	National Archives of Zambia
N.R.G.....	Northern Rhodesia Government
P.H. ....	The Concentration of acid or alkaline in water or soil
S.P.C.M.U.....	Southern Province Cooperative and Marketing Union
U.N. ....	United Nations
U.S.A. ....	United States of America
U.S.A.I.D.....	United States Agency for International <b>Development</b>
Z.N.U.T. ....	Zambia National Union of Teachers

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INTRODUCTION

This study is concerned with the impact of state policies and capital penetration on the ecology and agriculture of the indigenous people of Sinazongwe sub-district of Gwembe district. It also discusses the process of proletarianization among the local people as a result of climatic factors (drought) and unfavourable government policies. The Sinazongwe sub-district is in the Southern Province of Zambia. Ecology here is understood to mean

that each person and each human community operates as an ecologic unit that must possess effective regulatory mechanisms to maintain stability in its fluctuating habitat and that this serves to unify all branches of inquiry concerned in anyway with the relations between man and his physical, biotic and social environment.<sup>1</sup>

It is important to further specify that, in relation to agricultural practices ecology is understood to mean that

the requirements of a given economic plant such as 'sorghum, millet' or animals such as 'goats, sheep, cattle and donkeys' as to climate, soil and other growing conditions have been determined over ages by trial and error and are fairly well known 'by the local people'. Of critical importance ... is the knowledge, that the soil constitutes an ecological system formed of the complex of minerals, organic residues, and living plants and minerals. Only through the application of ecological principles can this complex be maintained in such a condition as to permit the indefinite use of land for the maximum production of agricultural products.<sup>2</sup>

The reader must be further enlightened that the Sinazongwe

sub district is an ecologically difficult area for human habitation. This is because even before the impact of colonialism, periodic droughts often led to food shortages. The study examines how the colonial policy of taxation and land alienation caused ecological deterioration of the area. The study will further examine how the damming of Lake Kariba, coal production at Nkandabwe and Maamba mines and the Sinazongwe development irrigated commercial farm (Gwembe Valley Development Company) have caused ecological deterioration in the Sinazongwe area.

The study will further demonstrate that the above government policies, to a large extent, rendered the natural ecological balance between man and nature ineffective, so that, periods of starvation in the Sinazongwe area became more frequent than in the previous century. Generalizing for the Gwembe valley area, Scudder wrote that

our Tonga informants were aware of at least three great famines during the latter portion of the nineteenth century. However, severe food shortages were reported in 1913-1914, 1922-23, 1928-1931, 1940-47, 1949, 1951, 1957 and a few other periods after 1964.<sup>3</sup>

These shortages of food and landlessness made people go into wage labour and hence a class of rural and urban proletariat developed in the Sinazongwe sub district between 1900 and 1989.

The date 1900 has been chosen as a convenient starting point and 1989 as the terminal date. This is because 1900 is the date when the British South African company effectively started administering North Western Rhodesia.

The long period under study will give us a comprehensive understanding of the effects of state policies, and capital penetration on the ecology of the area, resulting in the deterioration of the local peoples agricultural practices.

#### GEOGRAPHICAL LOCATION, SOILS AND CLIMATE OF THE SINAZONGWE SUB DISTRICT

Sinazongwe sub district is located in the Gwembe district of the Southern Province of Zambia. It lies between latitude  $25^{\circ}$  and  $30^{\circ}$  North and between longitudes  $17^{\circ}$  and  $18^{\circ}$  East. It has a boundary along Lake Kariba with Zimbabwe on the Southern side.

To the west it shares a common border with Choma, Kalomo and Livingstone districts. Sinazongwe sub district has an all-weather road which was previously used to ferry coal to Batoka on the Tonga plateau. This was before the loope way, which uses electric cables and buckets to transport coal to Masuku railway station; was constructed. The road is still being used to ferry fish to the towns on the line of railway.

Located at the foot of six hundred and ten metres of the Zambezi escarpment belt, the climatic conditions in the low lying valley of Sinazongwe sub district are extremely hot and humid especially during the rainy seasons. The mean maximum temperatures are  $5^{\circ}$  and  $7^{\circ}$  centigrade ( $10^{\circ}\text{F}$  to  $15^{\circ}\text{F}$ ) higher than on the plateau virtually throughout the year. During October maximum temperatures of between  $38^{\circ}$  and  $44^{\circ}$  centigrade ( $100^{\circ}\text{F}$  to  $110^{\circ}\text{F}$ ) are common. However, the month of November to April are more uncomfortable as high temperatures are combined with a high humidity.<sup>4</sup> Despite

the damming of Lake Kariba, the 1973 geological research still agrees with Trapnell and Clothiers' assessment of the annual rainfall in the Sinazongwe sub district (Kanchindu mission records) as varying between 800mm to 900mm (18 to 30 inches of rainfall).<sup>5</sup> This type of rainfall combined with the recurrence of droughts of between ten to twenty five days between December and February can cause damage to crops like maize. Between 1900 and 1957 maize here was grown in the moist "Zilili" gardens where the risk was of river floods rather than of drought before the damming of Lake Kariba.<sup>6</sup> However, on the basis of the above rainfall figures it will be safe for us to argue that the frequency of periods of starvation, in Sinazongwe sub district, after 1900 cannot be attributed to climatic factors alone but, also to the effects of state policies outlined above.

Using Glair, Trapnell and Clothiers' analysis, Scudder identified five types of soils which can be found in the Gwembe valley. One of the types is the pre-karoo rocks. These are found in the deeply dissected hills and scarps of the Zambezi escarpment and were not under cultivation before 1958. Another type of soil is the one in the Karroo rocks. These are available in abundance in the valley and are usually cultivated during the rainy season. Since the 1940's the Temwa gardens were normally located on this type of soil. These were gardens made after the clearing of trees. They ranged from 0.66 to 3.52 acres in size and bullrush millet, the traditional crop, was planted every year since the 1940's. Another type is classified as the second Karroo soil types. This

consists of sandstone soils which are a mixture of soils "derived from the escarpment grit" and that 'immediately inland from the Zambezi and its flood plains' in areas 'where bonds cross-section was made'.<sup>7</sup> Here again Temwa gardens were cultivated with bull-rush millet by the local people. Another type of Karroo soils 'occurs in the middle river neighbourhoods'.<sup>8</sup> They comprise of fine red marly sand stone and the fine red soils and are quite fertile for Temwa gardens. The last and most fertile type of soils is classified as the alluvial soils restricted to the Zambezi and its tributaries. This type of soils is a product of **pre-karoo** and karroo rocks. It comprises of high clay and sand grit grades. These are the most popular sites for the cultivation of millet, sorghum and maize both during the rainy season and dry season without following any shifting cultivation.

The type of vegetation found in the Sinazongwe sub district, is that of Mopani type. This is characterized by thick thorn bushes. Massive clearing of this type of vegetation changes the soils structure in that the amount of rain water that enters the ground is reduced. The result is that it requires heavy farming implements like a plough to till the soil in order to get a good harvest.

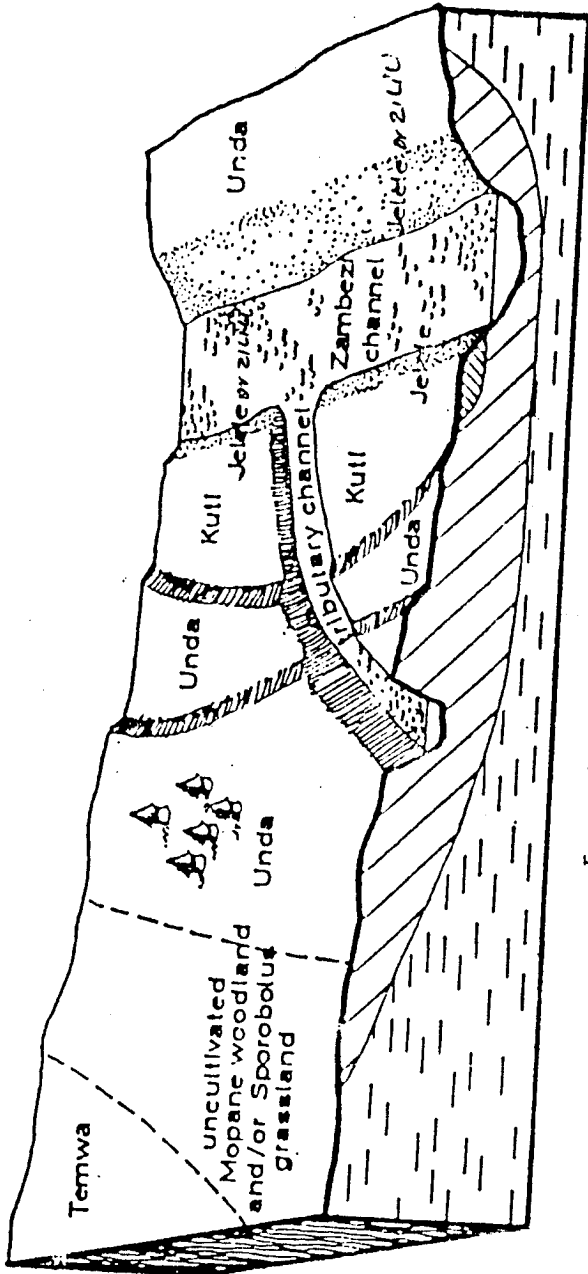
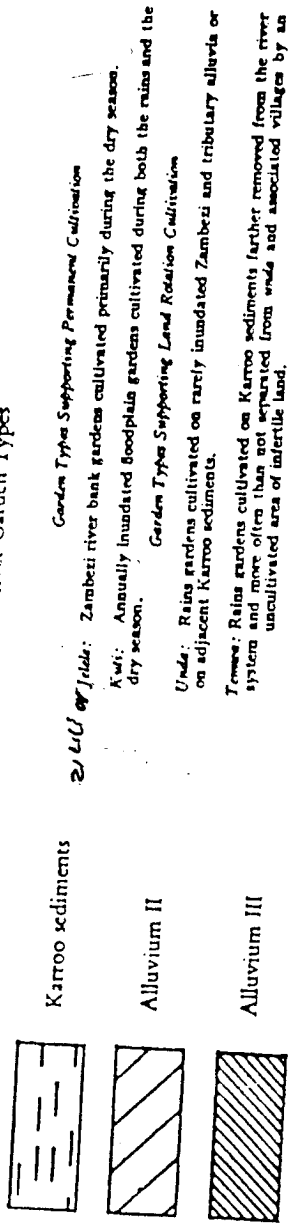


FIG. 12.—Major Middle River Garden Types



From Scudder, 1962

## LITERATURE REVIEW

Very few scholars have written on the relationship between ecology and agriculture in Zambia. The ecological surveys, which have been conducted all over Zambia have shown the importance of different types of environments to the agricultural practices of different Zambian societies. Trapnel and Clothier; for example in history The soils, vegetation and agricultural systems of Northwestern Rhodesia: Report of the ecological survey (1953) discusses the relationship between ecology and agriculture in each society in Zambia as they found them at the time of carrying out the survey.<sup>10</sup>

Much of the available published information on the ecology and agriculture of the Gwembe people is mainly in the anthropological work of E. Colson such as The Social Organization of Gwembe Tonga (1960)<sup>11</sup> and The Social Consequences of Resettlement (1972).<sup>12</sup> Another anthropological work which deals specifically with the ecology of the Gwembe valley is the work of T. Scudder entitled The Ecology of the Gwembe Tonga (1962).<sup>13</sup>

Such works look at the relationship between ecology and agriculture during a specific period and time. They do not use a historical methodology in examining the dynamics, and changing nature of the agriculture practices of the Gwembe people over a long period.

Other writers on the relationship between ecology and history such as Vail, "A study of the Eastern Province of Zambia" and Mulongo's M.A. degree thesis devoted to a study of the "changes in ecology and the environment under colonial rule: a comparative

study of Namwala and Bangweulu,"<sup>14</sup> look at the colonial policies and their general effects on the ecology and economic position of their areas of study. These scholars have demonstrated that in their areas of study state policies such as land alienation were reconsidered in the interest of the local peoples, after the government realized the ecological imbalances they caused in relation to the people's agricultural practices. Our study will demonstrate that state policies on land expropriation for both private and public investments, in the Sinazongwe sub district has never been reconsidered in the interest of the local people. **T. Matthews'** Ph.D. thesis on "The Historical Traditions of the Peoples of the Gwembe Valley, Middle Zambezi from the earliest period up to 1900",<sup>15</sup> is the only historical work on the Gwembe district. In his conclusion, **Matthews** noted the impact of state policies such as hut tax, land alienation, population increase and loss of tobacco markets on the agricultural potential of the area. **Matthews'** work has, therefore, provided a historical background to our study.

The main aims of this study are to examine (1) the extent to which state policies and capital penetration aggravated the imbalance between ecology and agriculture, in the Sinazongwe sub district ; (2) To what extent the imbalance in the ecosystem and the introduction of mining and agricultural capital, deprived the people of access to land, a situation which might have made the people to depend on wage labour; (3) To examine what changes took place in state policies when the Sinazongwe people were faced with problems of land dispossession.

## SOURCES AND METHODOLOGY

Between August and December 1989 we consulted published and unpublished studies in the University of Zambia Library, primary sources were also consulted from the National Archives of Zambia, Ministries of Mines, Agriculture and Water Development, Lands and Natural Resources Headquarters, the Geological Survey, Maamba Mine Colliery, Maamba and the Gwembe Valley Development Company Administration in Sinazongwe Sub-district. Experts in ecology, agriculture and industrial matters such as I.K. Akayombokwa Peter Spies and S. Haamaundu were consulted in Lusaka, Sinazongwe and Maamba respectively.

The most exciting part of our research came when we carried out oral interviews with the people in the Sinazongwe Sub-district. Over one hundred people were interviewed. The first sample of the people to be interviewed were those in the Maamba Mine Administration in Maamba. Here Mr. Haamaundu, the Administrative and Legal Manager, advised all the Heads of Departments in the mine to provide us with both the documentary and oral information we needed in our research. This made our research on the mine site very easy.

The senior and junior mine workers who came from the Sinazongwe Sub-district gave us a list of useful informants, whom we could interview in the villages. In the villages, we first interviewed the village headman who later referred us to other prominent people in his village. While proceeding to the homes of

the above people we carried out interviews at random with the people we met on the way. This was done to counter check the information given to us by people in positions of responsibility both in the mines and villages. A similar pattern of conducting interviews was adopted at Sinazongwe sub boma.

In Lusaka, Maamba Mine and Gwembe Valley Development Company Administration in Sinazongwe interviews were conducted in English. This is because most of the workers here are literate. In the villages, however, although the questionnaire was written in English interviews were conducted in Tonga.

This enabled the local people to give their opinion without facing any language problems in expressing themselves.

#### ORGANIZATION OF THE STUDY

This study is divided chronologically into three chapters. Chapter one examines the impact of colonial policies and capital penetration on the ecology and agriculture of the area between 1900 and 1958. Here we will demonstrate that the above factors fundamentally altered the balance between ecology and agricultural practices of the local people.

Before 1924 the people managed to avoid starvation and met their tax obligations, by increasing tobacco production whose sales enabled them to buy grain during periods of drought. However, the excise duty imposed on Inyoka tobacco in 1924 drastically

reduced the economic value of this tobacco. This discouraged the local people from growing tobacco for sale.

The second chapter assesses the impact of the commercial projects on the ecology and agriculture of the area between 1958 and 1989.

Here we will look at the impact of the damming of Lake Kariba. This was done because of the demand for cheap hydro-electrical power to be used in the copper mines of Northern Rhodesia and industries in Southern Rhodesia. This led to drastic changes in the ecology of the area and agricultural practices of the resettled people in the new environment.

Between 1966 and 1970 Nkandabwe and Maamba coal mines were opened as a joint and private owned enterprise. In 1985 the Gwembe Valley Development Company opened an irrigated commercial farm in Sinazongwe sub boma using private capital. All these giant projects led to the displacement of the people previously affected by the Kariba resettlement. The chemical pollution emanating from the production of coal and the herbicides and insecticides used in spraying cotton and wheat have polluted the surrounding rivers, plants, and the local people's crops. This has affected the health of the people, plants and animal life.

The third chapter analyses the impact of government policies on the process of proletarianization in the Sinazongwe sub district. Here we will demonstrate that some able bodied men moved into migrant labour in Southern Rhodesia for periods ranging between one month to twenty years. Others found employment within Northern Rhodesia

especially between 1957 and 1989. This, as will be shown in the text, marked the beginning of the process of proletarianizing some Sinazongwe people.

#### FOOTNOTES

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## CHAPTER I

### THE IMPACT OF COLONIAL RULE AND CAPITAL PENETRATION ON ECOLOGY AND AGRICULTURE IN THE SINAZONGWE SUB-DISTRICT BETWEEN 1900 AND 1958

In this chapter we shall demonstrate how the economic development in Southern Rhodesia influenced changes in the system of land use and inheritance in the Sinazongwe sub district. We will show how, in Northern Rhodesia, the policies of land alienation, village amalgamation and the 1924 Inyoka tobacco ordinance undermined Inyoka tobacco production and market opportunities for the local inhabitants. We will further demonstrate the impact these policies had on the ecology of the area. We will conclude by explaining the impact of various major policies the Northern Rhodesian Government took to solve the problem of land degradation and famine in the area.

Archaeological evidence suggests that sorghum, bullrush millet, and indigenous tobacco called Inyoka have been cultivated in the Gwembe valley as early as 1500 A.D.<sup>1</sup> These drought resistant crops were using the mixed system of agriculture. This meant that the planting of different crops with varying rooting habits and maturities permitted plants to tap various nutrients in various soil layers. This may have reduced the risks of crop failures as a result of climatic factors or disease infestation.<sup>1A</sup> By the nineteenth century, millet, sorghum and tobacco, were grown in two types of fields namely Zilili and Kuti. The Zilili fields are those which were located on the river banks. These were planted

mainly during the dry season when the water level had gone down along the Zambezi river and its tributaries. The Kuti fields are those which were located on a slightly higher ground than the Zilili fields. These were usually inundated by the annual floods of the Zambezi river and its tributaries. These were planted with grain both during the dry and rainy season. Here millet and sorghum were grown as cereals for domestic consumption. After the 15th century the indigenous people started growing maize, brought in from South America by Portuguese traders. Indigenous tobacco, on the other hand was grown for domestic consumption and as a crop for trade with foreigners. The first written account of this trade was noted by David Livingstone in 1860 when he was exploring the navigability of the Zambezi river. In his travels along the Zambezi river Livingstone noted that

as early as 1860 -- the Sinamani's people in the upper river area were selling tobacco for hoes from the Kololo and noted that twenty balls, weighing three-quarter of a pound each are sold for a hoe.<sup>2</sup>

These iron hoes were used to cultivate and weed the crops.

In the nineteenth century, members of each clan in the Gwembe valley controlled specific agricultural land on a permanent basis. In these specified areas both the Zilili and Kuti fields were permanently owned by people between the age of thirty years onwards. These fields were inherited by their nephews and brothers upon their death. Among the Gwembe Tonga, there was no specific division of labour between men and women in agriculture. Each married man and woman had his or her own Zilili or Kuti fields.

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as early as 1860 - the Sinamani's people in the upper river area were selling tobacco for hoes from the Kololo.<sup>2</sup>

These iron hoes were used to cultivate and weed the crops.

In the nineteenth century, members of each clan in the Gwembe Valley controlled specific agricultural land on a permanent basis. In these specified areas both the Zilili and Kuti fields were permanently owned by people between the age of thirty years onwards. These fields were inherited by their nephews and brothers upon their death. Among the Gwembe Tonga, there was no specific division of labour between men and women in agriculture. Each married man and woman had his or her own Zilili or Kuti fields.

It was the responsibility of each individual with his family members to plough, weed and harvest his crops. If the family was unable to cope with the cultivation or weeding responsibilities within a specified period more labour was recruited from the neighbouring villages. This was done through beer parties. Here the family that needed labour brewed some beer. The extra labour that was recruited was required to accomplish the task of weeding or cultivating the fields. Thereafter, beer would be provided for drinking to the people who worked in the fields. After harvest, each individual together with his family members who owned a field had his or her own granary. Each family and its dependants fed from the woman's granary until it was exhausted. Thereafter, the family would start feeding from the man's granary.<sup>3</sup>

According to Scudder's Tonga informants, there was an increased incidence of the problem of drought in the Gwembe valley towards the end of the nineteenth and beginning of the twentieth centuries. As a result of these periodic droughts a number of the Gwembe valley Tonga people migrated to the plateau. Some of these migrants settled in present day Choma and Kalomo districts and Mungule area west of Lusaka.<sup>5</sup>

The Impact of the Development of Mines, Farms and Industries in Southern Rhodesia on the Sinazongwe Sub-district

The colonization of Southern Rhodesia and the opening up of mine and farms affected the development of agriculture in the Gwembe. In 1890 effective colonial rule was imposed in Southern

Southern Rhodesia by the British South African Company. The white settlers opened up mines and commercial farms using the capital loaned from the British South African Company. These developments required massive use of African labour. The indigenous Shona and Ndebele did not immediately respond positively to the labour demands of the white settlers. This was because the availability of land for agriculture enabled them to grow enough food for both domestic consumption and for sale. The Southern Rhodesian Government tried to solve the problem of labour shortage by introducing a number of policies. One of these policies was that in 1898 hut tax was imposed in Southern Rhodesia. This policy indirectly forced those people who could not produce any surplus food stuffs for sale so as to raise enough money for hut tax, to enter wage employment in the mines and farms. At the same time the Southern Rhodesian Government introduced the policy of land alienation. This was done to punish both the Shona and Ndebele people for rebelling against the settler colonial government between 1896 and 1897. This policy again forced many landless Africans to take up wage employment in the farms, industries and mines within Southern Rhodesia. These developments created centres of worker population where agricultural products could be sold at a profit. The proximity of Sinazongwe sub-district with Southern Rhodesian enabled the Sinazongwe people to exploit the market opportunities for their agricultural products.

The main traditional crop, Inyoka tobacco, which was exchanged for cattle with the plateau Tonga and iron with the Totela in the

previous century,<sup>6</sup> was exchanged for cash in Southern Rhodesia after 1900. The Sinazongwe people responded to the new market opportunities by increasing the production of tobacco. The suitability of the soils of the area in the production of tobacco were noticed and favourably recommended by the Native District Commissioners.

In 1911 one of them thus wrote:

Inyoka tobacco is so very easily cultivated in the extremely rich soils of the valley and river beds and requires so little attention that it strongly appeals to the native mind and body. Any old man with his women can make good money out of this product.<sup>7</sup>

After harvesting, tobacco was made into Zilundu of about two and half kilogrammes each. Each chilundu (singular) was then sold for between six pence and one shilling in Southern Rhodesia.<sup>8</sup>

The commercial value of tobacco was further demonstrated by the trade within the sub-district. This was usually conducted between the local people and foreign traders. By 1913 it was reported that tobacco stores had been established at Sicooba, Buleya-Malima and Siameja. It was further reported that prepared cakes had been on increasing demand by hawkers and traders in the Sub-district.<sup>9</sup>

It can therefore be deduced from the above analysis that market opportunities and the demands of hut tax in Northern Rhodesia, made the Sinazongwe people increase the hectarage of tobacco production at the expense of land for food crops. Hence the incidence of food shortages in the area increased more than in the previous century.

Another impact of the 1898 introduction of hut tax in Southern Rhodesia was that many of the Goba and Tonga peoples who lived on the Southern part of the Zambezi crossed to the Northern bank of the river. This was done to avoid payment of hut tax to the Southern Rhodesia Government.<sup>10</sup> Even though statistics on the size of Goba people's migration from Southern Rhodesia to Northern Rhodesia are not given, archival sources show that this movement resulted in the over concentration of population of people in the fertile alluvial soils available along the Zambezi river and its tributaries.<sup>11</sup>

In 1903 hut tax was introduced in North Western Rhodesia. Its main objective was to make local people finance the colonial administration. The indirect objectives of hut tax in Northern Rhodesia was to force the able bodied men to go into wage employment in Southern Rhodesia. In the Sinazongwe Sub-district, the people responded to the demand for hut tax by increasing the production of tobacco. This enabled them to sell large quantities of tobacco and be able to meet their tax obligations. This practice was even officially allowed by the successive Native District Commissioners who issued passes to Africans to proceed to Southern Rhodesia with tobacco and baskets to sell. In 1908, for example, the Assistant Native Commissioner issued one hundred and twenty passes to natives to cross to the South for the purpose of going to sell tobacco.<sup>12</sup> Hence before 1910, people who had access to agricultural land, were able to pay hut tax from the profits got through the sale of tobacco. It is reasonable, therefore to argue that before 1910 the Sinazongwe land owners had a choice of going into wage

employment in Southern Rhodesia or staying at home but still being able to meet their tax obligations. The only people who had very little alternative but to go into wage labour were the landless young men.

Colonial Land Policies: 1914 To 1930

In spite of the introduction of hut tax between 1900 and 1910 very few ablebodied men in the Sinazongwe sub-district took up wage employment in Southern Rhodesia in order to meet their tax obligation. As argued earlier, access to land for agriculture enabled them to grow tobacco whose sales allowed them to obtain cash for hut tax payments. The policy of encouraging white settlers to settle in Northern Rhodesia led to the Government's introduction of the policy of land alienation in 1910. According to this policy, land in the Gwembe valley was divided into three areas. These were:

TABLE I: DIVISION IN SQUARE MILES OF NATIVE RESERVES AND CROWNLAND

- the railway strip which covered 830 square miles	
- the portion of reserve No. 10 which covered 540 square miles	
- the portion of reserve No. 11 which covered 870 square miles	
- the portion of reserve No. 12 which covered 1535 square miles	
and crownland which covered	524 square miles
Total:	<u>4299 square miles</u>

SOURCE: REPORT ON FAMINE RELIEF: GWEMBE, 1931 TO 1932, p.10

The 1913 population census in the Gwembe valley indicated that about "23,134 people lived on land designated as native reserves and 10,636 lived on crownland."<sup>14</sup> From 1914 onwards

crown land and the railway strip were reserved for the occupation of white settlers. The land in the native reserves on the other hand, was reserved for the occupation of Africans. As in line with the government policy, in 1912 the Native District Commissioners were directed to inform the people who lived on crown land to shift to the native reserves. Those who had not yet moved were instructed to leave their homes in the crown land after the 1914 harvest. In the Sinazongwe area, the local people were aware that Buleya-Malima and Chiyabi areas had some of the most fertile soils in the area. Accordingly a number of individuals requested for permission to move, especially, to Buleya-Malima.<sup>15</sup> However, these requests were not accepted by the government. This was because Buleya Malima and other fertile portions in the area were being reserved for the future occupation of white settlers. These whites were to be resettled within easy reach of Salisbury-Kafue railway line to be constructed later.<sup>16</sup> However this railway line was never constructed and the white settlers did not settle in the area owing to the unsuitability of the climate for European occupation.

The above policy resulted in the concentration of people in the small areas' of alluvial deposits available to them in the reserve land along the Zambezi river. Despite the fact that unoccupied land was available in the Karroo soils, in the vicinity of the local people's villages in the reserves, the people did not settle there nor did they clear land for their fields. This was because of natural factors like the problem of lack

of perennial water supplies throughout the dry season. They also feared being killed by wild animals. Hence there was a concentration of villages along river banks in the native reserves.<sup>17</sup>

The immediate notable impact of the policy of land alienation was the reduction of sorghum and tobacco acreage per individual. The large areas of cultivated land reported by David Livingstone in the 1860's had been reduced to small sizes after 1914. This reduction in the acreage was as a result of population increase in the reserve land. The fertility of the land in the Zilili and Kuti fields available to the local people had also been exhausted.<sup>18</sup> This was because of the heavy utilization of small fields year in year out without allowing the land to lie fallow for some few years. It is in this light that during the 1930 to 1933 famine, Read's report observed that famine in the Gwembe valley could be solved if some people who lived in the native reserves were allowed to occupy the crown land. The report further observed that the "reserves could be extended to cover the whole of the valley with the possible exception of the railway strip."<sup>19</sup> However, these recommendations were not implemented. By the 1950's Scudder found that the large areas of cultivated land per family reported by David Livingstone above had been reduced to "between 0.56 acres to 0.07 acres while the mean of the 38 gardens measured was 0.23 acres."<sup>20</sup>

Despite the above problem of land shortage, the cultivation of tobacco was very successful.

Between 1914 and 1924, successive district commissioners'

reports pointed out that tobacco was a drought resistant crop and that the climatic conditions prevailing in the Gwembe valley were excellent for the cultivation of tobacco. The reports further mentioned the availability of big amounts of traded tobacco in Sicooba and other areas in the Sinazongwe Sub-district. Even though most of these reports do not give estimates of the amount of traded tobacco, the table below gives a clear picture of the name of traders and amounts of tobacco traded in the years when some District Commissioners estimated the amounts traded.

TABLE II: AMOUNT OF TOBACCO TRADE, 1911-1924

YEAR	NAME OF TRADER	AREA WHERE MARKET IS LOCATED	AMOUNT OF TOBACCO TRADE
1911	Mr. Goa Gomez	Sicooba	12,000 pounds
1911	Messrs. Shade and Bridge	Chirundu and Fumbo	5,000 pounds
1917	Mr. Pilarino	Siambezio	3,999 pounds
1923	Northern Rhodesia Gwembe traders	Southern Rhodesia	19,877 pounds
1924	Northern Rhodesia Gwembe traders	Southern Rhodesia	26,606 pounds

SOURCE: Gwembe Tour Reports 1911 to 1924

During this same period severe food shortages were experienced by the local people. This was because they grew too much tobacco at the expense of food crops. According to Hans Ruthenburg's

analysis of the farming systems in the tropics he says that the cultivation of maize and tobacco in the same fields presents a problem of low yields in maize crops. "Tobacco crop is also a host plant for nematodes and it must be grown separately on compatible soils within the holding."<sup>21</sup> Therefore the shortages of food forced the government to supply relief grain to the people. However, instead of getting this maize grain free of charge, the Sinazongwe people were able to buy it using cash obtained from the sale of tobacco. In 1917, for instance, the Native District Commissioner reported that:

in October 1916 about 145 1/4 bags of relief grain were issued to the natives of the Banamweemba country. The natives were asked to pay it back in money at the rate of £01.00 per bag. The sum of £94.14.6 has been paid up to date..<sup>22</sup> There still remains to be collected £39.5.6.

Hence the effects of drought and soil exhaustion

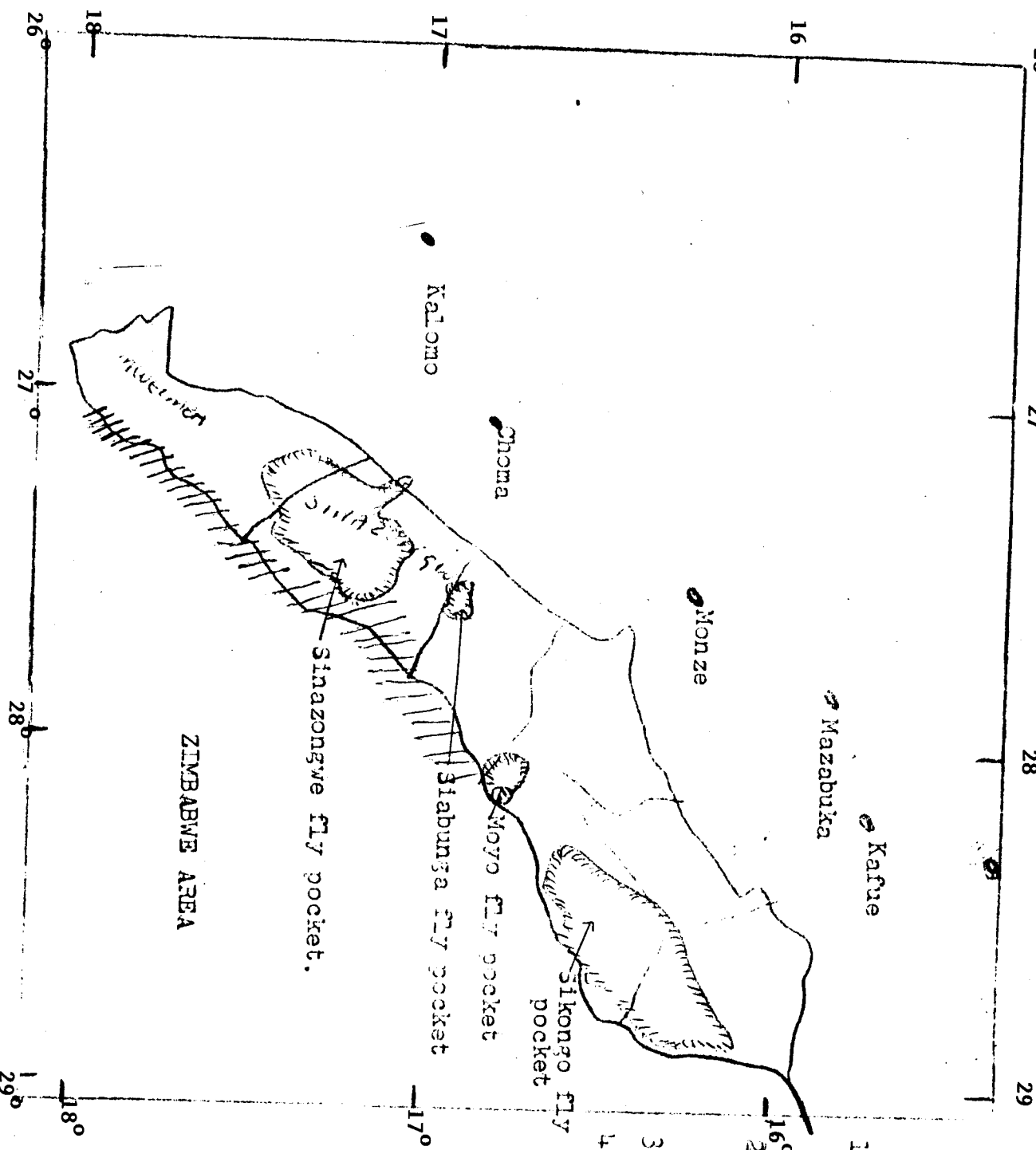
on cereal crops did not necessarily have similar effects on tobacco production. The sales from tobacco, therefore, enabled the people to have a regular supply of food throughout the year.

The policy of land alienation on the Sinazongwe Sub-district resulted in an imbalance between ecology, agriculture and the domestication of cattle. Taking a specific case of the Eastern Province of Zambia, Vail analysed the effects of the Government policies of land alienation, gun and game control policies on the ecology of the local people. He concluded that these policies placed villagers out of harmony with the countryside. Both human beings and domestic animals suffered diseases because of the rapid

spread of trypanosomiasis transmitted by tsetse fly.<sup>23</sup> Like in the Eastern Province of Zambia, land alienation in the Sinazongwe area for the purpose of future white settlement resulted in such land reverting into bush. This became a good habitat for wild animals like baboons, wild pigs and elephants. The destructiveness of these animals to agricultural produce exacerbated the problem of shortages of food in the area. The existence of wild animals near human settlements brought the problem of tsetse fly which feeds on blood of wild animals. The tsetse fly in turn caused a rapid spread of trypanosomiasis which reduced the increase of cattle population in our area of study. By 1931 Read recorded that in "Chiefs Sinazongwe, Sianyuga, Mweemba, Sinakoba, Siameja and Siampondo there were only 4,402 herds of cattle."<sup>24</sup> This was in direct contrast to the increase of the number of cattle in Mazabuka district on the Tonga plateau. Between 1922 and 1931 the number of native owned cattle in Mazabuka district increased from 75,201 to 167,260 respectively.<sup>25</sup> Read's figures must, however, be taken with caution as he does not give comparative number of cattle before 1931, in the other sections of the Gwembe valley where there was no tsetse fly which can enable us to clearly associate the small number of cattle with the existence of tsetse fly.

The existence of tsetse fly also affected technical innovation in agriculture. This was because the transition from a hand hoe method of cultivation to the ox drawn plough was limited only to few villages in our area of study. This was

FIGURE IV

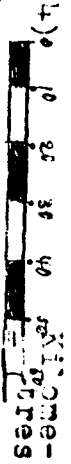


MAP KEY

1) Zwembe district and the Kariba lake basin.

2) Tse Tse fly Distribution in 1956

3) /// Lake Kariba



Adapted from Smith et al. (1956) and modified by the author.

despite the fact that people who lived in the tsetse infested areas had cash obtained from migrant labour and tobacco sales which they could have used to buy ploughs. However, they were discouraged from buying ploughs because of the problems of keeping cattle. Read's report recorded that there were "eight ploughs in Chief Sinazongwe's area, four in village Siameja, and forty three in village Sinakoba."<sup>26</sup> Here Read's report can be justified. This is because these villages are not located in the areas infested by tsetse fly as shown in figure three. Hence the use of ox drawn ploughs in our area of study must have been limited to the areas not infested by tsetse fly. As late as 1970 three quarters of Chief Sinazongwe's area and a quarter of Chief Mweemba's area were still infested with tsetse fly. Figure three sketched by Scudder in 1985 gives a clear picture of the distribution of tsetse fly in our area of study.

The Impact of the Inyoka Tobacco Export Duty Ordinance  
1924 on the Agriculture of the Area

In 1924 the Northern Rhodesian Government severely undermined the economic base of the Sinazongwe people by passing the Inyoka tobacco export duty ordinance .<sup>27</sup> This ordinance was passed in response to the charge of three and half pence per pound of Inyoka tobacco imposed by the Southern **Rhodesian** government on tobacco exported from Northern Rhodesia. The Southern Rhodesia government imposed this duty to reduce the competition on its markets between the settler grown Virginia tobacco and Inyoka

tobacco from the Gwembe valley. In accordance with the customs agreement of all the members of the South African Customs Union, the Southern Rhodesian government was legally entitled to impose a duty on any tobacco exported from a member state within the Union.

Between April 1923 and March 1924 the Southern Rhodesian government is reported to have received Inyoka tobacco which weighed fourty six thousand four hundred and eighty-three pounds. Accordingly, during the year ending March 31st, 1924, the Northern Rhodesian government was requested to pay six-hundred and seventy seven pounds, seven shillings and three pence to the Southern Rhodesian customs office as import duty.<sup>28</sup> Since the Northern Rhodesian government did not charge any duty to traders or individuals who exported Inyoka tobacco to Southern Rhodesian Government the payments of the above excise duty meant that the government was subsidizing trade in Inyoka tobacco. The government, therefore stopped subsidizing Inyoka tobacco exporters by passing the Inyoka tobacco export duty ordinance which required the Gwembe Tonga and people who exported Inyoka tobacco to pay an export duty of three and half pence per pound of Inyoka tobacco to be exported to Southern Rhodesia. Hence from 1925 onwards the creation of an Inyoka tobacco excise duty account enabled the Northern Rhodesia Government to draw cash from this account so as to meet the import duty demanded by the Southern Rhodesian Government in respect of Inyoka tobacco.

In the event of the people resorting to illicit trade or **smuggling**, the ordinance spelt out the penalty the government

would impose on such people who attempted to export Inyoka tobacco without payment of duty. The ordinance further empowered the government to fine such offenders one hundred pounds or lock them up for six months imprisonment or both. In addition to this Inyoka tobacco found in possession of such person was to be confiscated.<sup>29</sup>

The Gwembe Native District Commissioner requested the government to exempt the people in his area for the above ordinance would affect the people's ability to pay hut tax. This was because prices per pound of Inyoka tobacco in Southern Rhodesia ranged between three and seven pence. Therefore an imposition of three and half pence per pound as export duty would gradually reduce the volume of this trade with Southern Rhodesia. This was because the local people in some cases did not even have three and half pence to pay for the duty. Even if they managed to pay the duty, they would not make profit from the sale of their tobacco in Southern Rhodesia. The local traders at home also preferred to pay the lowest price possible for each cone of tobacco sold to them. In the same year, 1924, all the arguments of the Gwembe District Native Commissioner which endeavoured to exempt the Gwembe people from payment of duty were rendered useless by government notice number 112 of 1924. The notice advised the public that "His Excellency the Governor would not be advised to exercise his power of disallowance with respect to the Inyoka tobacco export duty ordinance 1924."<sup>30</sup>

The above Government measures made Inyoka tobacco market less profitable both in the Gwembe valley and in Southern Rhodesia.

They further reduced the volume of surplus tobacco produced by the local people. From this time onwards the vagaries of climate and government policies could not be effectively controlled by the Sinazongwe people. The results were that during the 1931 to 1933 famine, which hit the Gwembe valley, the government was forced to issue free food rations. The Government report on famine relief in the Gwembe valley mentioned that in Nakatontola, Lowe, Zeze and Sinamalina areas all of which are in the Sinazongwe sub district about twenty four thousand and twenty seven people received free food rations.<sup>31</sup> The issue of free rations was in direct contrast to the period before 1924 when the local people were capable of buying relief grain using cash obtained from the sale of tobacco.

The 1929-33 world economic depression which severely reduced the value of many world currencies further reduced the buying capacity of Gwembe valley Tonga. Many migrant workers sacked from their working places in Southern Rhodesia came back home with little or no cash. The local tobacco traders were inundated with supplies and so offered three pence instead of six pence to one shilling for cones of tobacco weighing from four to seven pounds each.<sup>31A</sup>

Read's report also observed that famine in the Gwembe valley could be solved if the local people were taught how to grow drought resistant crops like cassava.<sup>32</sup> However the colonial government did not immediately implement this recommendation. In 1942 the government faced the same problem in the Gwembe valley when another bad famine hit the area. Mr. Mally, a 1942

famine relief officer who worked under Mr. Read in 1931, was dismayed when he found that not a single one of Mr. Read's recommendations had been implemented and the valley was still in its old backward conditions.<sup>33</sup> In 1942 the government was again forced to issue food rations free of charge to Sinazongwe people.

The Impact of Government Policies on the Problem of Drought and Famine in the Gwembe Valley: 1930 to 1958

In 1952 the Government tried to solve the problem of famine in the Gwembe valley by providing cassava cuttings to the local people. The whole Gwembe valley was given a total number of one thousand five hundred and forty-five pounds of cassava cuttings. Out of these

Sinazongwe village received 600 cuttings, Sianyuga 336 cuttings and sixteen loads of cuttings were sent to Kanchindu for distribution to Mweemba, Siampondo, Siameka and Sinakoba villagers.<sup>34</sup>

The Government officials knew that cassava crops were tolerant to droughts and grows fairly well in poor soils with low PH. It is also a good security against famine for it is resistant to disease and insect pests and can be harvested nearly any time of the year.<sup>35</sup>

According to agronomic practices for cassava production

the stakes must be fresh and come from mature healthy plants from which the most lignified part of the basal stem is preferred. ... stakes with signs of canker's galls, tumour, galleries or insect infestation should be eliminated and 30 cm stake are highly recommended. ... cassava is usually the last crop to be planted... following the second or third consecutive harvest in medium poor fertility soils.<sup>36</sup>

However the cultivation of cassava in the Sinazongwe area failed and did not solve the problem of famine . This was because the cuttings were planted on soils whose fertility had been exhausted since they were under cultivation as from the 1920's. Some of the cuttings had come from Namwala, Mumbwa and Broken Hill. As a result of the bad transport system, which was in existence during the colonial period, the time taken from their cutting to planting was too long.<sup>37</sup> The results were that the plants did not give a good germination. The problem was further aggravated by the occurrence of a three to four weeks drought after the crop was planted. The drought destroyed the crop because the plants were planted in some unsuitable heavy clay soils which dried rapidly to a concrete like situation. For the few which survived the droughts, they were later eaten up by the elephants, baboons, white ants and swarms of corncreak, Bachivunye. This problem was regularly reported to the colonial Government authorities but no action was taken.<sup>38</sup> The people were further antagonised by being forced to grow cassava. However, lack of knowledge on how to grow the crop in their environment discouraged the people from growing it. In 1932 it was reported that seven of Sinakoba headmen and many other people in the Sinazongwe sub-district refused to give any assistance in the planting of the crop.<sup>39</sup>

The only Government policy that helped to solve the problem of famine in the Sinazongwe area was the common granary scheme introduced in 1944. The scheme required each family to contribute

specified basket fulls of bullrush millet to the common granary. The same grain could then be redistributed to people during the period of famine. The people responded to this scheme by clearing new gardens in the karroo soil areas which came to be called Temwa gardens. These rainfed fields sometimes produced sufficient millet in the years the region received a minimum amount of rainfall. In 1947, for instance, the Government was able to redistribute a total of four thousand bags of bullrush millet from the common granaries when famine struck the area.<sup>40</sup>

The production of bullrush millet in the Temwa gardens was successful because the people knew the crop's climatic, soil and other growing conditions. However, the Government closed the communal granary scheme before 1956. This was because of the problem of erosion which became evident in the Temwa gardens. Some Temwa gardens were located beside the hills and on hill tops. The continuous cultivation of these fields every year exhausted the soil.

The introduction of the plough made the people cultivate the fields by ploughing down the contour. This caused gully erosion especially during heavy storms. The use of sledges drawn by cattle and donkeys in transporting harvested crops from the Kuti and Temwa fields resulted in the occurrence of both sheet and gully erosion in the new fields. Hence in the 1950's the problem of famine still forced the Government to issue free food rations.

The final blow to the Sinazongwe people in the maintainance of stability between ecology and agriculture came in 1958 when the Central African Federal Government dammed the Zambezi river to create Lake Kariba.

In conclusion this section has shown that in the nineteenth century the people of the Gwembe valley often traded tobacco for grain with the Tonga Plateau and cron hoes with the Totela and Kololo. This helped them to solve the problem of starvation. Between 1900 and 1958, the colonial Government policies, hut tax and land alienation deprived the youngmen of access to agricultural land. Therefore a group of landless people came into existence in the society. As a result of the demands of hut tax these landless people had not alternative but to go into wage labour in Southern Rhodesia. This chapter further demonstrated that despite the financial benefits the Gwembe people enjoyed from the sale of Inyoka tobacco, the passing of the Inyoka export duty ordinance of 1924 undermined the main economic base of the Africans. This in turn worsened the problem of shortages of food in the Gwembe district.

FOOTNOTES

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## CHAPTER II

### IMPACT OF COMMERCIAL PROJECTS ON ECOLOGY AND PEASANT AGRICULTURE: 1958 TO 1989

In this chapter we will discuss the reasons why the Kariba Dam was built along the Zambezi river rather than the Kafue river. We will also assess the impact the damming of Lake Kariba had on the agriculture of the resettled people with regard to over population and increase in the number of livestock. We will further examine the impact the damming of Lake Kariba had on the ecology of the area. Here problems of tsetse fly, soil erosion and increase in the number of livestock will be analysed as some of the main causes of ecological degradation that hit the Gwembe valley after 1958. We will further analyse the impact of the opening of Nkandabwe and Maamba coal mines on land alienation, agriculture and the environmental pollution of the area under study. We will also examine the impact of the Gwembe Valley Development Company's irrigated commercial farm on the alienation of land and the pollution of the surrounding farmland, streams and the lake side.

#### A. Impact of Kariba Dam 1958 to 1989

Between 1920 and 1945 an increase in the number of the manufacturing industries in Southern Rhodesia and the development of the copper mines in Northern Rhodesia brought a demand for cheap hydro-electric power. In response to this problem, the Southern Rhodesian Government sponsored feasibility studies on the development of the Kariba Gorge Scheme which began in 1945.<sup>1</sup>

The contractors worked throughout 1946, 1947, 1948, 1949 and 1950.

In 1953 Northern Rhodesia, Southern Rhodesia and Nyasaland joined together to form the Central African Federation of the Rhodesias and Nyasaland. The Northern Rhodesian Government objected to the site of the Kariba Scheme, on the basis that the Zambezi floods would inundate much valuable land along the Zambezi river. It was expected that the floods would form a lake thirty miles in diameter at the widest point. This would result in the removal of about ten thousand local Africans who lived mainly in Northern Rhodesia. The Northern Rhodesian Government authorities opted for the Kafue Gorge Scheme. This is because the Kafue Gorge Scheme would not have required any movement of people. It would also have been an economic asset for the copper mines of Zambia.<sup>1A</sup>

However, when the Federal Government took over power in 1953, the arguments for <sup>and</sup> against the location of Kariba Gorge Scheme assumed a political dimension. The Federal Government favoured the location of the scheme along the border between Northern Rhodesia and Southern Rhodesia, on the Zambezi river. The Government argued that this joint hydro-electric scheme would make the two territories depend on one another. The economic benefits the two countries would enjoy as a result of joint projects would reduce the hostility Africans had towards the imposing of the federation in Central Africa.<sup>2</sup>

In 1955 the construction of the Kariba Dam commenced. The project was completed in 1958. In the same year the Central African Power Corporation started generating electricity from the Kariba Gorge. This led to the flooding of the entire Gwembe

valley area along the Zambezi river. The Zilili, Kuti and Temwa fields, homes for the local people, virgin land in the crown and proposed railway strips, and grazing areas for both domestic and wild animals in the Gwembe valley were also flooded. This resulted in the drastic change in the ecology of the Sinazongwe sub-district which had a lot of impact on the people's agricultural systems.

Before the people were resettled a preliminary survey of agricultural land available for resettlement was done from aerial photographs. The surveyors reported that there was not sufficient land in the Sinazongwe sub-district to resettle the people. Much of the available land did not have perennial water supplies. It was also infested with tsetse fly and wild animals. The land was also over grown with thick Mopane type of forest.<sup>3</sup> The colonial Government identified some land in Chief Mweemba's area and Sinazongwe's area. Owing to the infertility of the soil in many parts of the Sinazongwe sub-district, land in Buleya Malima was made available to the resettled people. The colonial Government further recognised that there was insufficient land to resettle people in the Sinazongwe sub-district. Therefore extra areas for resettling people were found in Kalomo and Choma districts on the Tonga plateau.

Between 1957 and 1958 people were requested to shift to the new areas of settlement before their old homes were flooded with water. The total number of people resettled in the Sinazongwe sub-district was about thirty thousand. In Chief Mweemba's area of Sinazongwe sub district, forty nine of the seventy-four villages had to be resettled. This resulted in the removal of about ten

thousand people and their property. Nine villages with a population of about one-thousand eight hundred (1,800) were resettled in the Siakatuba area of Choma district under Chief Singani.<sup>4</sup> This is because the Siakatuba area had fertile soils and a good supply of water. In Chief Sinazongwe's area of the Sinazongwe sub district, more than four fifth of the thirteen thousand (13,000) people were resettled between August 1958 and 1959. This involved the resettlement of sixty-five villages into an area previously occupied by only sixteen. Out of these, thirty six villages were resettled in Buleya-Malima. This is because Buleya-Malima did not only have very fertile soils but had a good supply of water as well.

The remaining five thousand and two hundred people consisted of those who shifted without the knowledge of the colonial Government and settled in various parts of the Sinazongwe sub-district.

The Government authorities knew that they were resettling people in areas where the arable agricultural land could only accommodate 2,300 people instead of 7,500 who were actually settled there. In the Kanchindu area which is located in Chief Mweemba's area the colonial Government resettled 14,500 people in the Sinazongwe area in a place whose agricultural land could only accommodate 10,000 people. <sup>5</sup>

This government long term policy of tolerating a critical shortage of land in the Gwembe valley was based on the assumption that "the African population would be able to fish on commercial basis -- and survive and rise above the subsistence level of their

previous life."<sup>6</sup> However, the impact of land shortage was immediately felt by the people in the Sinazongwe sub district. This was because most of the people settled along the Mwenda, Kazinze, Siamambo, Maaze and Nangombe rivers which had the best soils for agriculture. Here each family scrambled for the little pieces of land available for agriculture so as to grow sufficient food to feed their families. As for the people who settled in the mountain grits, very little time was available between October 1958 when they were shifted from their original homes and 1959 agricultural season to open up new gardens and plant crops. In the same year poor rainfall resulted in the shortage of food throughout the Gwembe valley. This forced the Government to distribute free grain supplies to the local people.<sup>7</sup> The problem of poor rainfall was worsened by the infertility of the agricultural fields and land shortage. Writing for Chief Mweemba's area in the period 1959 to 1964 Scudder noted that

Land was extremely poor in Siameja area where several thousand relocatees scratched out an existence on escarpment grits. Not only were soils less fertile than those used prior to resettlement but per capita acreage were reduced with Johnson estimating for the chieftaincy only 0.3 to 0.4 hectares of suitable land per capita, compared with 0.6 to 0.9 before resettlement.<sup>8</sup>

In 1960 the problem of shortage of arable land was aggravated by the return of those people who were earlier resettled in Chief Singani's area. These returned to the valley because the changed climatic conditions between the Zambezi valley and the Tonga plateau, led to a high death rate among the people. This was

the case with the people who were resettled in the Siakatuba area in Choma district under Chief Singani. Shortly after they had left about "60 deaths have been reported, the majority of them amongst children of below the age of ten years."<sup>9</sup> The medical authorities attributed these deaths to a drop in the temperatures from a maximum of between 90 degrees fahrenheit in May, June and July,

102 degrees fahrenheit in September and

95 degrees fahrenheit between November and March in the Gwembe valley to

75 degrees fahrenheit in May, June, July,

86 degrees in September and

80 degrees in November to March in Choma area.<sup>10</sup>

This represented an average drop in the temperature of about 15° degrees fahrenheit. Under the new environment many of the children ran about insufficiently clothed, which whilst of no great consequence previously now exposed them to colds and chills. This rendered them easy victims of such diseases as pneumonia and whooping cough. As a result of these deaths the people demanded to go back to the Gwembe valley. Some people from four of these villages were resettled for the second time into the valley area of Chief Mweemba. This aggravated the shortage of land in Chief Mweemba's area. The people from the other four remaining villages in the Siakatuba area were resettled " one each to the Ngwemansi, Lusowa, Nakabimba and Maunga areas in Kalomo district."<sup>11</sup>

The problem of shortage of arable land was worsened by the local people's method of agriculture which brought the problem

of soil erosion. In Chief Mweemba's area, the cultivation of crops was done in the Temwa and Zilili gardens which extended to the banks of the river. Millet and maize were grown year after year. The non rotation of crops did not only exhaust the soil but caused soil erosion in almost all its forms.

In Chief Sinazongwe's area, the "light sandy soils of Mwezya, getting heavier in the grained soils of Nkandabwe and Buleya Malima,"<sup>12</sup> was cultivated using the slash and burn method of cultivation. As early as 1959 the problems of soil erosion were already being experienced in the Mwezya, Buleya Malima and Sinazeze areas. The Government tried to conserve the soil by employing some local people to dig contour ridges in the Nkandabwe area. However, this programme failed as the local people were not prepared to cooperate with the colonial Government. This was because the Nationalist movement of the African National Congress' policy of civil disobedience against the colonial regime included hostility to the digging of contour ridges. The people supported this policy because they had both economic and political grievances against the colonial government. In the meantime, the local people in Chief Sinazongwe's area triggered off soil erosion by cultivating short but very steep slopes. They also cultivated land close to rivers where the cultivation terraces extended over the steep slope as well as on the level step. In such cases, the Native Commissioner observed that cases of sheet erosion were apparent from the roots of tree stumps which were appearing above the ground. Gullies were being cut into steep slopes and extended

on to the level surface of the terrace.<sup>13</sup> It was difficult for the local people to learn the new methods of preventing soil erosion for they were not prepared to listen to the advice of the agricultural demonstrator responsible for both Sinazongwe and Mweemba areas on political grounds .

Some informants, both in the Sinazongwe and Mweemba's area point out that as a result of resettlement, mortality rates in the Sinazongwe Sub-District were higher than previously experienced by the local people.<sup>13A</sup> However, they could not provide us with average death rates per year neither were we able to confirm this in written sources. Despite this handicap we know that after resettlement it was discovered that in 1960 out of a total of 815 children born in Chief Mweemba's area, 208 of them died from dysentery - about 82 men and 164 women also died from dysentery. Besides dysentery the other causes of death in Buleya Malima and Mweemba's area especially among children were measles and whooping cough.<sup>14</sup>

Between 1964 and 1968 information on the mortality rates among the children is extremely difficult to find as the Native District Commissioners tours were abandoned after independence. Rural health centres such as Siameja, Siatwiinda and Chiyabi were also under construction. The local medical authorities to man these health centres were also being trained under an intensive manpower development programme introduced in the First National Development Plan. However in 1968 the Zambian government decided to appoint a Committee of experts that would establish the national nutritional

status of all the people in Zambia. According to its findings the national nutrition status survey of 1969 to 1972 found that 32.5 per cent of the children in the Gwembe valley were malnourished and that in comparison to Central, North-Western and Western Provinces which had 16.8, 11.5 and 7.5 respectively, malnutrition was significantly high.<sup>15</sup> In 1972, medical authorities detected thirteen cases of malnutrition including Kwashiorkor and Marasmus in the Gwembe valley.<sup>16</sup>

As the war for Zimbabwe's independence reached its peak in the late 1970's the Sinazongwe sub-district became a battle ground between the soldiers of the Southern Rhodesian Government and the nationalist guerrilla fighters. An increasing danger from land mines and being caught up in cross fire between the two warring parties made it difficult for the local people to grow their crops. The government authorities found it difficult to deliver food supplies to those in need because of land mines. "At rural health centres paraffin for refrigerating measles vaccines and other essential drugs and facilities for patients were not available."<sup>17</sup> This made it difficult for medical authorities in the Gwembe valley to examine and submit reports on the extent to which the local people suffered from malnutrition as a result of shortage of food.

Between 1980 and 1985 a prolonged drought hit the Gwembe valley. This worsened the problem of famine in the area. In this period the Zambian government released K512,000 and 93,000 bags of maize to the Gwembe District Council.

The provincial authorities directed the National Agricultural and Marketing Board (NAMBOARD) and the Southern Province Cooperative and Marketing Union (SPCMU) to release adequate maize supplies in rural depots for redistribution to drought stricken areas in the province.<sup>18</sup>

The World Food Programme, a United Nations project, which operates under the Food and Agricultural Organization also distributed relief food in the Gwembe District between 1982 to July 1984. In a very comprehensive study of the relief management in Zambia, Mukwena demonstrated that the United Nations released two hundred and fifty thousand United States Dollars for use in the purchase and distribution of food for the Gwembe valley drought victims. Among some of the food stuffs distributed were maize, milk powder and edible fats. The Table below shows the allocation of the world food programme's relief food in the Gwembe valley:

**TABLE III: WORLD FOOD RELIEF PROGRAMME, 1982-1984**

AREA	MAIZE ALLOCATED AMOUNTS	ACTUAL AMOUNTS DISTRIBUTED
Siavonga	2416 (90 Kg bags)	2400
<b>Gwembe Central</b>	2016 (90 Kg bags)	2022
Sinazongwe	2816 (90 Kg bags)	2798

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AREA	SKIMMED MILK POWDER AMOUNTS	ACTUAL AMOUNT DISTRIBUTED
Siavonga	518 (25 Kg bags)	667 (sic)
Gwembe Central	620(K25 Kg bags)	800 (sic)
Sinazongwe	724 (25 Kg bags)	933 (sic)

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AREA	EDIBLE FATS	ACTUAL AMOUNT DISTRIBUTED
Siavonga	5155 (2 Kg tins)	3269
Gwembe Central	4305 (2 Kg tins)	3918
Sinazongwe	6010 (2 Kg tins)	4567

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SOURCE: Unscheduled interview with SEP representatives.<sup>19</sup>

These food stuffs were distributed to a total of forty-four thousand people. The World Vision International Relief Operation is another body identified by Mukwena to have distributed food in the Gwembe valley between October 1983 and August 1984. Mukwena states that

during the whole period of the operation food was distributed once per month. The items distributed were mealie-meal (50 Kg bag per month), beans (10 Kg bag per child) and distributed only once during the operation. --- The actual expenditure was \$418,376 United States Dollars and about 10,000 people benefited from the relief food supplied.<sup>20</sup>

The above distribution of relief food supplies in the Gwembe valley demonstrates the extent to which famine hit the area. According to the 1980 census results Gwembe North (Siavonga) had a population of 26,902, Gwembe Central had 23,431 people and Gwembe South (Sinazongwe) had 46,541 people.<sup>21</sup> According to the statistics of the world bodies that provided relief food in the Gwembe valley only sixty-four thousand people benefited. This means that the extra twelve thousand, eight hundred and seventy four people were not catered for. This means that the food that was distributed to the people was either not sufficient or these extra people were able to buy their own grain from the cash obtained after the sale of cotton as will be demonstrated later in the study. The monthly returns of children who suffered from malnutrition in the Gwembe valley between 1985 and 1989 is indicative of the extent to which people suffered a serious problem of shortage of food.

Return of Diseases and Deaths, hospital in patients from Gwembe Central, Sinazongwe and Siavonga Sub-districts protein calorie malnutrition including Kwashiorkor and Marasmus cases.<sup>22</sup>

DISTRICT	1985	1986	1987	1988	1989
Gwembe Central	40	564	1324	388	142
Sinazongwe Sub-district	737	378	734	610	299
Siavonga Sub-district	102	563	647	340	200
TOTAL:	879	1505	2705	1338	641

SOURCE: Ministry of Health District Annual Reports 1985-89

Between 1980 and 1985 the Zambian Government tried to solve the problem of famine in the Gwembe valley by encouraging the production of cotton. The Lint Company of Zambia Limited which was given the task to spear head the production of cotton in the Southern Province had to a large extent succeeded in encouraging the local Gwembe people to produce cotton. In the Sinazongwe sub-district, **Sinazeze** was the Lint Company of Zambia Limited headquarters and other mobile depots were set up and maintained in other areas.

In the Gwembe valley the extension offices of the company recruited five thousand and sixty-three peasant grower in the 1981 to 1982 farming season. Out of these one thousand four hundred and thirty eight were in the Siavonga sub-district, one thousand, five hundred and fifteen were in Gwembe Central and two thousand, one hundred and ten were in the Sinazongwe sub-district. A total of six thousand one hundred and seventy six hectares of cultivatable land was planted with cotton seed in the 1981 to 82 season in the Gwembe valley. Out of this land, one thousand, seven hundred and sixty hectares were utilized in the Siavonga sub district, one thousand, four hundred and seventy-eight in Gwembe Central and two thousand, nine hundred and thirty-eight in the Sinazongwe sub-district. A total of two million, seven hundred and eighty-nine thousand, seven hundred and thirty-six kilogrammes of cotton lint were sold to the Lint Company of Zambia from the Gwembe valley in the 1981 to 1982 agricultural season. Out of this the Sinazongwe sub district alone contributed the biggest out put

of one million, five hundred and fourteen thousand, eight hundred and fifty eight kilogrammes of cotton lint.<sup>23</sup> This is illustrated by the table given on page 38.

Cotton production succeeded mainly because cotton is a drought resistant crop. Ever since 1982 the Gwembe district has been the leading cotton producing area in the Southern Province. The Gwembe cotton ginnery was built near the Gwembe District Council Headquarters to process cotton lint from the Gwembe District and the Tonga plateau. There is no doubt that the people of the Gwembe valley benefited from the sale of their cotton produce. This may help to explain why the organizations that provided relief aid to the famine stricken people in the Gwembe valley excluded about twelve thousand, eight hundred and seventy four people. This is because these people were able to buy grain for their own domestic consumption using the money obtained from the sale of cotton lint. It can also be safely argued that between 1980 and 1985 the problem of shortages of food became severe in the Gwembe valley because the people devoted most of the available hectares of land into the production of cotton instead of food crops. As up to 1989 the problem of shortage of food had not changed in the Sinazongwe sub-district. The local people had continued the habit of producing cotton and use the cash obtained from the sale of cotton to buy maize meal brought by businessmen from the Tonga plateau.

Number of Farmers, Hectares Planted and Cotton Yield in Kgs

AREAS	GROWERS	HECTARES PLANTED	YIELD IN KG.
Siavonga	1438	1760	630,029
Munyumbwe (or Gwembe Central)	1515	1478	644,849
<b>Sinazeze</b> (Sinazongwe)	2110	2938	1,514,858
TOTAL:	5063	6176	2,789,736

SOURCE: Lintco Company of Zambia Limited: Annual Report for 1982/83. Lusaka: Lint Company of Zambia, 1983, p. 6

The Impact of Tsetse fly on Agriculture and Domestic Animals

We have already demonstrated in the previous chapter that land alienation led to vast areas of unoccupied land which reverted into bush. These areas were occupied by wild animals. This in turn brought tsetse fly in most of these bush areas. The above tsetse fly infested areas were the places where most of the people, moved after the flooding of Lake Kariba, were resettled within the Sinazongwe sub district.

In Buleya-Malima, Mwezya and Siapaka areas under Chief Sinazongwe about "twelve people had no land for their gardens. Many people in the new villages were prevented from expanding their areas of agricultural land to the South by the **infestation of tsetse fly.**"<sup>24</sup>

A significant number of livestock died in the new villages from snake bites and attacks by lions, **hyenas** and leopards. The threat of attack from predatory animals increased the incidence of disease among domestic animals. Small stock like goats died from scabies. The veterinary officers reported that this situation was worsened by the local people's refusal to separate the infested goats from the non-infested ones in regard to their sleeping arrangements.<sup>26</sup> This was because traditionally the Gwembe valley Tonga sleep in upstaired pole and mud built houses. The ground floor of the house is used as a kraal where cattle, goats and other domestic animals are kept. The first floor of the house is where food stuffs like maize and sorghum are stored. This is **the same** floor where the people sleep and store their weapons. After the 1958 Kariba resettlement project, the threat of **carnivorous** animals that ate the resettled people's domestic animals especially at night forced the people to mix disease infested animals with the healthy ones. The types of structure in which both animals and human beings stay enabled the local people to guard their domestic animals from wild animals like lions and **hyenas**.

These villages also experienced livestock losses due to the tsetse fly infestation. Although statistical information is lacking, the outbreak of trypanosomiasis led to a loss of cattle in Madondo village and areas west of Chimini river under Chief Mweemba.<sup>27</sup>

The main significant government programme, which temporarily solved the problem of tsetse fly in the Gwembe valley was the

tsetse control measures introduced in 1958. In Buleya Malima and some areas in Chief Mweemba, where tsetse fly was wiped out, the local people bought cattle using the £572,000 British Pounds given as tribal and individual compensation by the federal power board for the loss of agricultural land and homes."<sup>27</sup> This led to an increase in the number of cattle. The table below shows a rapid increase of cattle in the period after Kariba resettlement.

SINAZONGWE SUB-DISTRICT CATTLE FIGURES

Chieftaincy	1951	1956	1959	1962	1964	1966	1969	1972
Mweemba	3061	5766	5355	6586	7410	8374	14092	29404
SINAZONGWE	407	351	935	2403	3840	4243	8313	-
TOTAL:	3468	6117	6290	8989	11250	12617	22405	29404

SOURCE: T. Scudder: Extracted from reports of District Commissioners before 1964, Tsetse and Veterinary Reports 1964-72. 28

One of the problems the Government officials did not expect to occur was a rapid increase of cattle after introducing tsetse control measures in the Sinazongwe sub district. However, shortly after 1958 the number of cattle increased rapidly in this area. This increase in the number of cattle on the restricted land available resulted in a serious problem of soil erosion. This is because the Gwembe valley has a long dry season lasting from

March to December every year. This gives a short grazing period for livestock in the flat land and **mountainous areas**. On the Tonga plateau, on the other hand, the rainy season lasts from November to May if there is no drought. This provides for a short **dry season** and gives a long grazing season.<sup>29</sup> In the Gwembe valley where there is a longer dry season than on the plateau: cattle and small stock depended mostly on the residues of crops left after harvests in the fields beside the rivers. The above increase in the number of cattle resulted in over grazing in the areas around the Maaze, Kazinze and Nangombe rivers. The trampling of the cattle in the fields during the long dry season further **loosened the top soil**. The situation was made worse by the cattle which made new paths from the agricultural fields to the rivers where they drank and back to their kraals. This has resulted in serious problem of aerial erosion during the dry season through whirl winds. During the rainy season gully erosion was also experienced along the paths made by live stock to and from water resources. Sheet erosion was also experienced when the rivers flooded the fields situated on the river banks. From 1958 onwards, erosion, as a result of an increase in the number of cattle, became so severe within the Gwembe valley that it has now become difficult to reverse the problem. This is because as Jeff Guy noted for the South African peasant farmers

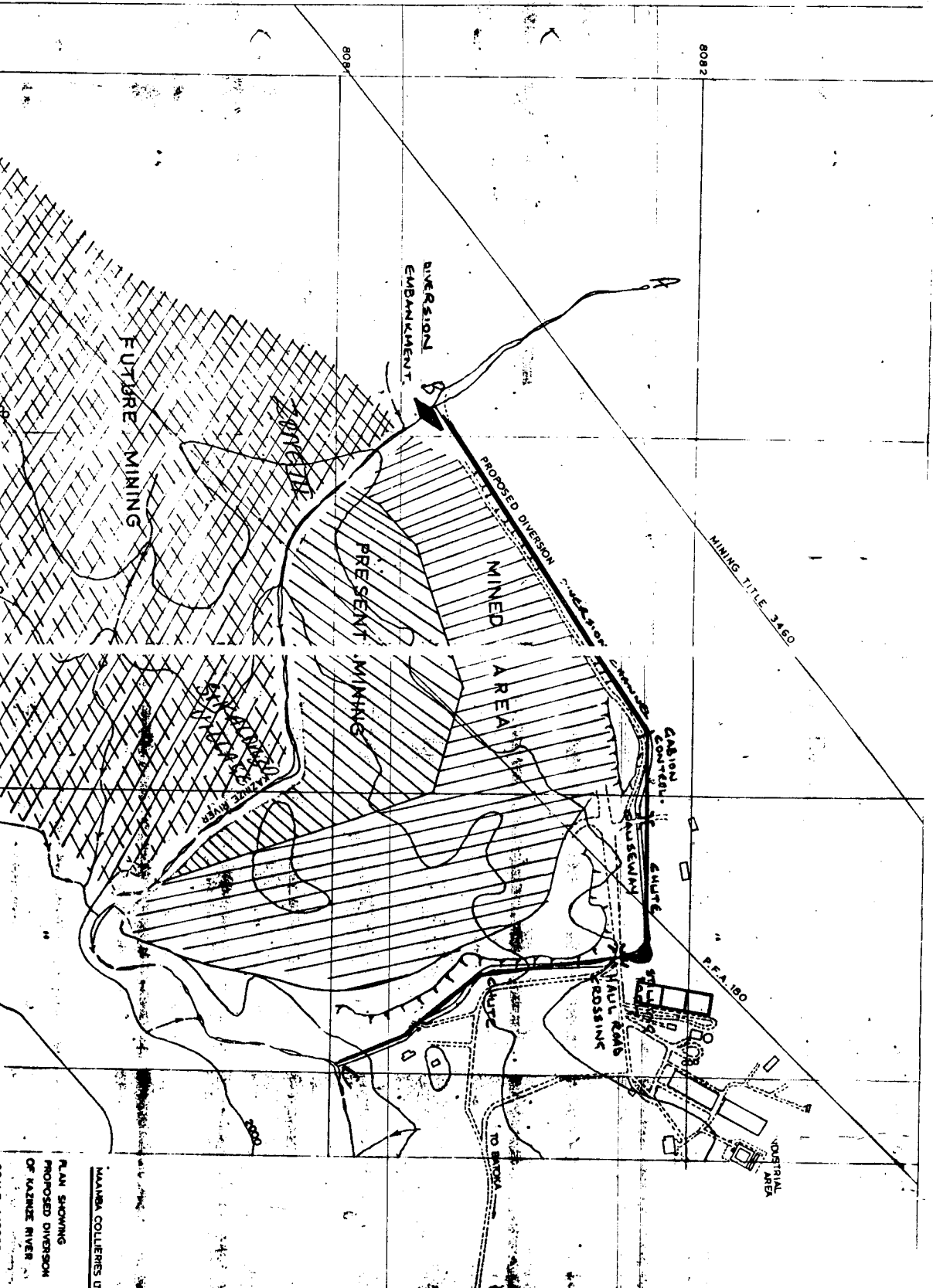
The society has no means to control grazing and cattle movements by fencing, or to restore and pump water, could not avert pasture degeneration, or bring about pasture regeneration, --- Shortage of land, decrease in palatable grasses and population pressure on resources are all aspects of the same problem and can set up a process of continuing environmental degeneration.<sup>30</sup>

IMPACT OF NKANDABWE AND MAAMBA COAL MINES ON THE ECOLOGY AND AGRICULTURE OF THE SINAZONGWE SUB DISTRICT 1966 TO 1989

Nkandabwe and Maamba coal deposit is an extension of the Wankie coal belt which runs North east and North across the Zambezi river. In Zambia these are situated in the Sinazongwe sub-district. In 1965 the closure of the border between Zambia and Southern Rhodesia deprived the copper mines of Zambia access to coal from Wankie. This situation forced the Zambian Government to exploit its coal reserves in the Sinazongwe sub-district. The first mine was opened at Nkandabwe in 1966. The mine area covered "thirty square kilometres and about two thousand people had to be resettled as a result of the commencement of mining operations. The Zambian Government in conjunction with a French company called Sofremines provided capital for the operation of the mine. The mine had an estimated recoverable reserve of 17 million tons of coal outlined at a depth of 1000 feet (300 metres).<sup>32</sup> The Nkandabwe coal mine did not have any major impact on the ecology of the surrounding villages as it was closed in 1969. Specialists from the Geological Survey found that

FIGURE V

42A



the high seepage, nature of drainage together with relatively high water table during the wet season affected the mining activities. In March 1969 a heavy storm flooded the Nkandabwe mine and this led<sup>33</sup> to its abandonment as the place became unworkable.

By 1973, the former Nkandabwe mine was still flooded with water which is used to irrigate some crops for the eighty-six farmers who grow vegetables and citrus fruits.

In 1970, Sofremines, in conjunction with the Zambian Government opened Maamba mine. The mine area covered "58.7 square kilometres."<sup>34</sup> It was estimated that the volume of coal in situ in the Kazinze area of Maamba was about 44,000,000 cubic yards."<sup>35</sup> Maamba mine is located about ten kilometres from Nkandabwe mine. The opening of the mine led to the loss of agricultural fields and removal of about "2,500 people"<sup>36</sup> from Maamba and **Siankodobbo villages** to the surrounding **mountainous land**. These are the villages which were located in the area where Maamba township and mine are currently located.

We have already established that after the Kariba resettlement, a number of people settled along the tributaries of the Zambezi river. One of the major streams along which many of the local people settled is the Kazinze river. According to the findings of the Geological **Survey**: a total amount of usable reserves of coal in the range of "50 million tones were located in the Kazinze river."<sup>37</sup> From these reserves "approximately four million tones of good quality coal, representing, ten per cent of the total reserves was located below the Kazinze river."<sup>38</sup> Here the Kazinze river used to flow across the Northern part

of the basin where the coal seam is above average thickness and lies at comparatively shallow depth. This made it easy to mine this coal by open cast methods. As a result of the above economic and technical advantages,

in 1970, the Maamba Collieries Limited decided to divert the Kazinze river along the North and North Eastern edges of the mined zone and developed zone III. 39

This enabled the mine management to avoid the problem of the flooding of the mine. Figure V shows how the Kazinze river was diverted from its normal course.

The diversion of the Kazinze river had some negative impact on the ecology and agriculture of the people who lived along the river. The immediate impact was felt by the people who lived in the Sikalonzo village whose location in the Sinazongwe sub-district is shown in figure V. The diversion of the Kazinze river resulted in the drying up of their part of the river passing through the village. Since their fields were located on the banks of the river, lack of annual floods deprived them of silt deposited annually by the floods of the river. This made them depend solely on the rain for their crops, which is very erratic in the Gwembe valley. Whereas the people of Sikalonzo village used to plant tomatoes and vegetables in the gardens along the river, lack of water as a result of the diversion of the river made it extremely difficult to find alternative perennial water supplies. This made it difficult for the people to provide themselves with food to eat. Before 1970, both the people and their livestock

used to drink water from the Kazinze river. The drying up of the **river deprived them** of this easy source. In the dry season cattle and goats used to feed on grass along the river. However, after 1970, the grass also dried as a result of lack of water. This led to the loss of grazing areas for the local peoples livestock. Since the diversion of the river, the local people in the Sikalonzo village depend on selling wild fruits like Mabuyu and Busiikka in Maamba township. The money obtained from the sale of these fruits is used to buy maize meal and other types of vegetables for consumption by their families.

The commencement of coal production at Maamba mine resulted in the pollution of the environment in the villages surrounding the mine. The impact of the pollution of the mine on the environment was expected from the beginning as Maamba Collierie Limited Management did not give any serious consideration to the problems of pollution during the early planning phase of the mine. This was because the mine management considered spending money on environmental protection as a costly expenditure with no direct or indirect benefit profitability to the company.<sup>40</sup> The impact of the pollution of the mine on the environment became significant after the machine used to wash the coal was installed at Maamba mine in 1972. Here, after the coal is dug from the ground, it passes through the coal washing plant. Thereafter, the waste matter from the coal has since 1972 **been** dumped in "Slurry ponds" and some directly into the Kazinze river. Water pumped into the Kazinze river from these "slurry ponds" and run-off waters from

the stock piles have high acidity

with PH ranging from 2 to 4 as against the acceptable water quality PH of 6.5 to 9 for potable water. There is also an increase in suspended solids (to a less extent dissolved solids) as a result of discharging water from the pit and washing plant into the stream. This varies from 100 mgm/litre to over 1500 mgm/litre at times at Maamba Colliery Limited, as against maximum permissible suspended solids of 100 mgm/litre.<sup>41</sup>

In the coal mined at Maamba mine, the waste matter consisted of Sulphur whose average acid content is generally high, at between two and three per cent. Sulphur is soluble in water and is more poisonous than carbon monoxide. When sulphur is mixed in water it acidifies the water. This poisonous water is injurious to both plant and animal life. The ash content of the coal from Maamba mine was found to be above nine percent and the other volatile matter ranges between 17.5 to 22.5 percent. These ashes when mixed in water produce carbon monoxide and acidifies the water. Because of the heat in the Gwembe valley, the rate of water evaporation in the Kazinze river is also high. Therefore, during the dry season, the Kazinze river and its tributaries are virtually dry. The pollution of the water is limited to the first few kilometres from the mine. Therefore underground water contamination becomes more pronounced as highly acidic water seeps into the ground (acidity increased by evaporation effect).<sup>42</sup>

Our research found that the pollution from the mines "lowered the water quality in the Kazinze river from which people who live in Mwela, Sikanchimwa, Sinakasikili, Nambisya and Sinankalange villages obtain water for home use and their

livestock."<sup>47</sup> Our fields research findings confirmed the validity of Scudder's research. It was found that villagers who live in the above mentioned villages complained of the deteriorating quality of water in the Kazinze river. They complained of the soil having been leached with acid from the contaminated water. This has affected their fields along the river whose crops give a very low yield. Vegetables grown along the river taste bitter after being cooked. Tomatoes do not even give a good yield resulting in people abandoning the growing of the crops. The relish and Nshima cooked using the water from the Kazinze river does not only turn yellow in colour but tastes bitter also. The research further established that in contrast to the above described poor quality of the water in the area below Maamba mine: the water quality of the people who live between point A and B in Figure V along the Kazinze river is extremely good. Vegetables, tomatoes and other types of crops grown on the banks of the river grow very well and give a good yield. The water does not taste bitter nor does the Nshima turn yellow when cooked using the water from the Kazinze river.<sup>44</sup>

The mine management was asked why they had allowed acidic water to flow into the Kazinze river without purifying it with chemicals. The mine chief chemist complained of the problems of acquiring lime from Chilanga cement factory. In 1982, measures to find a solution to the water pollution neutralization problem were carried out by the Maamba Collieries Limited Management. The Maamba Collieries Limited Geological Section undertook a pre-feasibility study of Siansowa and Kanchindu lime deposits.<sup>45</sup>

The results were not encouraging as the former was of poor quality as it contained only 48 percent lime (CaO) and was at great depth. The later was also located in a densely populated area.<sup>46</sup>

This made it difficult to acquire cheaper sources of lime other than that got from Chilanga lime factory. The other measure taken to alleviate the effects of pollution of domestic water along the Kazinze river was the delivering of drinking water to the affected villages using Maamba Collieries Limited's own water tank. However, by 1989 access to some of the affected villages was difficult because of the bad state of roads. The limited capacity of the motor driven water tank in comparison to the number of people to be catered for made this measure ineffective. The other measure taken in 1982 was the provision of three sites where bore holes fitted with hand pumps were installed. By 1989 most of these bore holes had broken down and could not be serviced because of lack of spare parts.

In spite of the above failures, the mine management justified **its** failure to protect the Kazinze river against mine pollution on the basis of Chapter 32 of the Laws of Zambia as amended by Statutory Instrument Number 65 of 1965. The law states that no person shall institute legal proceeding against a legal mine operator for any injury or damage to any land as a result of fumes or gases washed from the mine.<sup>47</sup> This means that the Government and mine management were mainly interested in benefiting from the use of the coal of Maamba without necessarily providing any care against polluting the environment. The many cases of

chest related problems reported at Maamba clinic by the mine workers and people from the surrounding villages may be associated with "gaseous emissions and air borne dust particles in mine operational areas."<sup>48</sup> In his paper Simataa observed that "acid rain" and dust depositions in the area within five to ten kilometres circumference from the active mining area and beyond has affected the health of the people, plants and animals.<sup>49</sup>

#### The Impact of the Gwembe Valley Development Company 1985-89

In the late 1970's and early 1980's a problem of drought and famine hit the countries in Central Africa. In Zambia the declining copper prices at the London metal exchange and high import bills resulted in the decline of the standard of living of the majority of the people.

The need for self sufficiency in food production made the Zambian Government look for alternative methods of developing the country's system of agriculture. Apart from the establishment of state farms, an irrigation type of agriculture under joint ventures between local and foreign companies was encouraged in the drought stricken areas. The Sinazongwe sub-district was chosen as one of the most suitable sites for an irrigation type of agriculture. This was because according to G. Garbrecht and S. Askoy reports of 1969, about seventy-seven thousand acres of irrigatable land was available in Chief Sinazongwe's area.<sup>50</sup> The area had an advantage of having loam fertile soils and was located beside Lake Kariba. After detailed negotiations were completed between

the Zambian government and the donor agencies: the local chief and village headmen were advised to ratify the agreement on the basis that the company formed was going to bring among other things electricity in the area, agricultural developments, and employment to the local people.<sup>51</sup>

As in accordance with the above agreement, a new company called the Gwembe Valley Development Company Limited was formed with an initial capital of thirty million United States Dollars. The company is a joint venture with the Georgian (U.S.A.) based Lumus Agricultural Services Company Limited which owns seventy percent of the shares. Hoechst (Zambia) Limited a subsidiary of a German multinational chemical company owns ten percent. The Lint Company of Zambia and the Zongwe Cooperative Society **own** the remaining ten percent each. The company had by 1989 established a two thousand and five hundred hectare farm near Sinazongwe Sub Boma. It grows irrigated wheat and rain fed cotton.<sup>52</sup>

There are a number of ecological problems which have already been observed with the introduction of an irrigated type of agriculture in Sinazongwe. One of them is that almost all the trees were cut from the lake side to the end of the two thousand five hundred hectares of farm land. This has led to the problem of lack of natural wind breakers like trees. The result is that the velocity of the wind from Lake Kariba through the farm is very high. This has affected the irrigation application efficiencies of the centre pivot which tills the

soil. This machine is designed to complete cultivating each field of about one hundred hectares once a week. However, because of the high speed at which the wind from the lake travels, the centre pivot cultivates each field once every day. Despite the fact that the company has employed qualified people in chemistry, engineering, soil science and agronomy the soil on the farm will not only become infertile but water penetration will also be difficult because of lack of trees and constant cultivation. Lack of trees has also resulted in the problem of aerial erosion.<sup>53</sup>

Another ecological problem that has been noticed by ecologists from the Ministry of Agriculture is that the Sinazongwe soils fall under what is classified as the mopane soils. The soil texture of this type of land easily closes in the absence of trees and event of heavy rainfall. During the farm preparation stage the use of heavy machinery in clearing trees, ploughing the soil irrigation of the land closed the texture of the soils which has made water penetration in the soil difficult. This has necessitated the introduction of a process of regular tilling of the soil which will further harden the soil.<sup>54</sup>

At the local levels the immediate impact of the establishment of the farm was that

it dispossessed some sixteen hundred people of their fields. Ninety of these house holds representing about seven hundred people lost both fields as well as their dwellings to the company.<sup>55</sup>

This is land which was dispossessed from the local people as part of crownland in 1914 by the Northern Rhodesia colonial government. After the Kariba resettlement programme, this is the same land which was given back to the Kariba resettled people. After 1985 the independent government of Zambia again alienated this land by dispossessing the Kariba resettled people in the interest of foreign companies. These displaced people lived in Siamuya, Maiya, Siangwinda, Sinantandabali, Siamabbula and Zubadenda villages. The people of Siamuyala village lost both their homes and fields and had to be resettled for the third time. The other villagers remained in their old homes but lost the most fertile lands and grazing areas for their livestock.

Since the company grows wheat and cotton on a large commercial scale, they use both ground and aerial spraying to kill the insects. Some of the herbicides used in the spraying of cotton are gramoxone, cupex, treffer, diuron, fusilade and bladex. These selected chemicals are used to destroy grass and other weeds which grow together with cotton in the fields. Some of the insecticides used to prevent and kill insects which are destructive to the proper growth of cotton are decis, pirimor, dieldrin and Rogo. As for wheat prima is the main herbicide while pirimor is the only insecticide available as of 1989.<sup>56</sup>

The aerial and ground method used by the company management to spray the cotton and wheat so as to maintain farm production has damaged the environment of the local people and will damage the farm in the long run. This is because in July and December

1988 and 1989 the farm management introduced aerial spraying for both weed and insect destruction using the above listed chemicals. All these chemicals fall under what are termed as poisonous chlorinated hydrocarbons, and are more poisonous than dichloro-diphenyl-trichloro-ethane (DDT). It was observed that a significant amount of the chemicals filtered down to the flowering baobab trees and streams where the local people draw water for drinking. The pilots who concentrate on spraying the planted fields usually forget to shut off the spray nozzles while flying over the streams. One week after the spraying had ended, dead and dying fish were found **along** the banks of Lake Kariba. The Fisheries Department was requested to go and examine the cause of the death of fish. After getting samples of the dead fish no result had yet been published by the department as of up to 1990.<sup>57</sup> A similar ecological effect of aerial spraying using toxic chemicals happened in Canada in 1954 in the forest of the North-West Miramichi and was vividly explained by Rachel Carson in her book entitled Silent Spring.<sup>58</sup> The use of chemical weed killers which are sprayed using aerial methods has led to the chemicals being blown by wind to areas ranging between four to six kilometres from the farm. This has led to the drying up of the grass in the surrounding villages. The result is that most of the cattle of the local people have little or no grass to feed on especially during the dry season. Lack of grazing areas has therefore contributed to a high death rate of between two to three animals per week in the villages around the farm. A very high possibility

of these animals dying from drinking poisoned water also exists even though this has to be investigated by experts from the Department of Veterinary Services.<sup>59</sup> The baobab trees which provide edible fruits on which the local people depend upon to supplement their diet have also been affected by these chemicals. Most of the branches and stems of these trees had dried up by 1989. The flowers of the surrounding plants drop down before they produce any fruits. The sorghum and maize plants grown by the local people in the fields also dry up as a result of chemical contamination through aerial spraying.<sup>60</sup> A similar situation of this nature was clearly explained by Rachel Carson in the Massachusetts community in New England in 1957.<sup>61</sup> This situation has worsened the problem of starvation among the local people living around the farm. The farm management was asked on what they were doing to reduce the damage done to the environment of the surrounding villages through aerial spraying. The farm management maintained that there was almost nothing that they could do to prevent environmental destruction. They just hoped that the local people would shift on their own and live six kilometres away from the farm. The company is most certainly applying chemicals and technology in the Sinazongwe area which are condemned in the west. There are many chances that the problem of purging and vomiting regularly reported by the people of Sinazongwe to the Sinazongwe rural health centre is as a result of drinking poison contaminated water from both aerial and ground spraying.

In conclusion, this chapter had demonstrated that the construction of the Kariba Dam resulted in the flooding of the ancestral land of the Gwembe people. This destroyed the ecology of the flooded lands and its inhabitants. After resettlement the people suffered from a problem of shortage of arable land, tsetse fly infestation and danger of being killed by wild animals. Later in the early 1970's and mid 1980's some people in the Sinazongwe sub district were not only removed again but suffered from environmental pollution. This was caused by the production of coal at Maamba mine and the growing of irrigated wheat and cotton by the Gwembe Valley Development Company. As a result of these **hardships** a significant number of the landless people had no alternative but to become wage labourers either in the Gwembe valley or other areas of Zambia. The next chapter will therefore assess the extent to which people took up wage employment.

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## CHAPTER III

### GOVERNMENT POLICIES AND PROLETARIANIZATION

In this chapter we will define the context in which the concept proletariat is used. We will show how drought and government policies in the Gwembe valley and Sinazongwe sub-district in particular made some of the local people landless and hence limited their chances of generating cash from local resources. This forced many abled bodied men to go into wage employment in Southern Rhodesia, South Africa and Northern Rhodesia. After 1964 the educational opportunities provided by the independent government of Zambia enabled some local people to join professional jobs. The period spent and the family responsibilities of each worker at their working places made us conclude that some stages of proletarianizing the local Sinazongwe people had been attained. Later, the membership of these people in government recognised trade unions and their active participation in union activities made us conclude that a process of proletarianizing a significant section of the Sinazongwe people was in the process of maturity by 1989.

S.M. Mintz defined the concept rural proletariat to mean

a group of people which is landless, propertyless in the sense of productive property ---and behaves in ways associated with such economic characteristics as wage labour and dependence on imported goods.<sup>1</sup>

The above definition will be applied to the people of Sinazongwe sub-district by looking at the nature of productive relations

among the people. This will be discussed while taking into consideration the impacts of climatic factors, land alienation and market opportunities on the local people.

We have already established that most of the Sinazongwe men from the age of thirty years onwards responded to the introduction of hut tax by expanding tobacco production. The tobacco cakes were then sold in Southern Rhodesia. We have further established the fact that the policy of land alienation made the people live in restricted areas. This situation made it difficult for young men to get land for both cereal and tobacco production within the sub-district. This was because of the complicated nature of acquiring and inheriting land in the restricted African reserves. It was very easy for any person to get land by clearing bush in the karroo soils where Temwa gardens were made from the 1940's onwards. However, in the period before 1920 many people feared to be killed by wild animals. In addition to this, the non availability of dependable perennial water supplies through the dry season made these areas difficult for people to settle there.

The economic and political factors prevailing during the colonial period influenced the system of inheriting land. These problems were faced by the landless people who were obliged to meet their tax obligations by the colonial regime. According to Colson; inheritance of land in the middle river region depended on which particular lineage one belonged to. This was because members of each lineage were bound together through

their inheritance of permanent fields from one generation to the next. The elders of each lineage had power to control the distribution and access to other unused land especially in the river rine areas.<sup>2</sup>

The policy of land alienation created a critical shortage of land. This is because there was less land for the old men to redistribute to the youngmen since they needed the available land to grow tobacco for sale in Southern Rhodesia. This in turn enabled them to raise money to pay hut tax. The young men also found it difficult to wait for their elders to die so that they could inherit the permanent fields controlled by their lineages. In the meantime the political factor of hut tax obliged them to meet their obligations. The only alternative that they had which enabled them to meet their tax obligations was to go into wage employment. This practice was again officially encouraged by the successive District Commissioners who worked together with the **agents** of the Rhodesia Native Labour Bureau. The bureau was an official organ of the Southern Rhodesian Government which recruited African labour in Northern Rhodesia, Nyasaland, Angola and Mozambique for work in Southern Rhodesia. Between 1904 and 1954, the successive District Commissioners reported in their tour reports that a significant number of people were officially issued with passes to go into Southern Rhodesia as migrant labourers for wage employment. Others were employed locally within the territory. The figures given below show the number of people employed locally and those officially registered to go for

migrant labour from the Sinazongwe area to Southern Rhodesia and South Africa between 1904 and 1958.

**TABLE VI: EMPLOYMENT FIGURES, 1908-1958**

Area	Year	Total number of recorded people living in the area	At work locally within the province	At work outside the province but in territory	At work in Southern Rhodesia	At work in South Africa
Chief Sinazongwe	1908	-	233	-	231	-
Chief Mweemba	1932	-	1281	67	198	5
Chief Sinazongwe	1932	-	967	-	252	-
Chief Sinazongwe	1952	2447	223	22	105	-
Chief Sinazongwe	1953	2123	78	11	50	-
Chief Mweemba	1953	-	113	23	62	5
Chief Sinazongwe	1954	9008	298	76	365	-
<hr/>						
Additional notes for Chief Sinazongwe 71 villages	1954					
	A:	Additional tax payers in suspense list				= 94
	B:	Additional tax payers in arrears list				= 27
	C:	percentage of tax payers in employment				= 42.9%
	D:	percentage of tax payers at work in Southern Province				= 16.7%
	E:	percentage of tax payers at work in Northern Rhodesia				= 4.3%
	F:	percentage of tax payers at work in Southern Rhodesia				= 20.4%
<hr/>						
Chief Mweemba	1954	7680	305	31	288	-
<hr/>						
Additional Notes on Chief Mweemba's Siampondo	1954					
	A:	proportion of tax payers at work				= 43 - 47%
	B:	Increase in population of villages censused since the last census				= 91/5%
	C:	Men away at work - less than six months				= 24%

Cis:	D: Men away at work - 6 months to one year	= 188
Siameja	(6 accompanied by wives )	= 29.9%
Cis:	E: Men away at work - 1 year to 2 years	= 103
Mweemba	(3 accompanied by wives)	= 16.3%
Cis:	F: Men away at work - 2 year to 3 years	= 40
Sinakoba	(6 accompanied by wives)	= 6.4%
Cis: and	G: Men away at work over three years	= 54
	(8 accompanied by wives)	= 8.6%
Cis:	H: Men away at work but on leave = 2	= 0.3%
	Sub total = 628 (accompanied by wives)	100%

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Extracted from: NAZ, L.S. MacNamara, Gwembe Tour Reports 1908  
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The above figures exclude those who went for work to Southern Rhodesia and South Africa without being registered by the Government officials. By 1910 the Native District Commissioner pointed out that in Buni Kariba (Sinazongwe Sub-district) he found that the majority of the young men had gone to work in Southern Rhodesia on their own initiative and not through the Bureau. He regretted the loss of their registration fee to the district.

Although a number of these migrant labourers used to return home, a good number of them stayed at their working places on permanent basis. Even though statistical figures in the early years are hard to come by: the writings of successive Native District Commissioners clearly show this. In 1909, for instance, MacNamara found it difficult to get tax from

Banabutema widows and divorced women because headmen were complaining that some of their youngmen who went to Southern Rhodesia stayed on the mines on permanent basis and did not remit any money.<sup>3</sup>

The long absence of these young men from the villages was further noticed in 1910. The new Native District Commissioner mentioned that

in the census of the Sicooba portion was the retention on the books of a large number of names of people who have been absent from the territory since a time antecedent to the arrival of the present administration and from whom tax had been exacted year by year from relatives. These names after careful inquiry, I have now removed from the census and informed the headmen that tax would<sup>4</sup> no longer be collected in respect of them.

After the passing of the 1924 Inyoka tobacco duty ordinance, the problems of soil infertility, famine and hut tax made it necessary for both young men and old men aged between forty to sixty years to go into migrant labour. Loss of cash, which was previously got at a profit through trade in Inyoka tobacco with Southern Rhodesia undermined the people's ability to pay hut tax. The 1929 to 1933 world economic depression reduced the value of many world currencies. This also lowered the prices of Inyoka tobacco in Southern Rhodesia. Since the salaries of workers were reduced as a result of the economic depression and others lost employment, it became difficult to sell Inyoka tobacco in Southern Rhodesia. Therefore, between 1932 and 1938 the Native District Commissioners for Kalomo District complained that **the Kalomo section**

of Gwembe was "very seriously" in arrears with hut tax. They found a lot of difficulties in the ways of collecting and updating the tax register.<sup>5</sup>

The failures of the cassava growing scheme in the 1940's, the communal granary scheme in the 1950's and the problem of drought increased the incidence of famine. In both Chief Mweemba and Sinazongwe's areas an average of forty-eight per cent of the able bodied men were away at work at any time of the year. This is clearly demonstrated in the table given above in the notes under the year 1954. In Chief Mweemba's area the population increase of nine and one fifth per cent in 1954 made Scudder to conclude that the problem of famine in the 1950's was worsened by the fact that "the population in the restricted reserve land had grown beyond the ability of the region to supply its food stuffs."<sup>6</sup> The shortages of land may help to explain why notes under the year 1954 in the table given above, show that a number of people migrated with their wives to Southern Rhodesia over long periods. This means that they depended on wage employment for their living. Hence it can be concluded that some stages of proletarianization had been **attained** by some workers from the Sinazongwe Sub-district. This process began as a result of the administrative policies which brought fundamental changes in the relationship between ecology and agriculture in the Sinazongwe sub-district.

The Pattern of Labour and Population Statistics for the  
Sinazongwe Sub-district: 1958 To 1972

Area	Year	Total number of recorded people living in the area	Employed but at home on leave	At work locally but within the Province	Outside Province but within territory	At work in Southern Rhodesia	Formal and Unionized workers within Zambia after 1964
Chief Sinazongwe	1958	11,343	11	265	171	266	
	1959	13,088	22	344	110	141	
	1960	13,731	14	412	155	164	
Chief Mweemba	1959	14,458	-	450	178	205	
	1960	14,497	-	398	224	205	
Gwembe educated people in professional positions standard of education ranging between Form II and Form V	1965						159
	1966						158
	1967						312
	1968						476
	1969						161
	1970						163
	1971						167
	1972						487

1. Extracted from Tour Reports of the District Native Commissioners Before 1964
2. Extracted from T. Scudder and E. Colson, Secondary education and the Formation of an Elite: The Impact of Education on Gwembe District, Zambia After 1964, p. 112.

The flooding of Lake Kariba made it difficult for able bodiedmen from the Gwembe valley to cross back into Southern Rhodesia. The closure of the border between Zambia and Southern Rhodesia in 1965 as a result of the unilateral declaration of independence by the Southern Rhodesian colonial government further limited the chances of the Gwembe people from getting employment in Southern Rhodesia. This situation forced the Gwembe Tonga to look for work within Zambia. The abolition of the position of the District Native Commissioner, hut tax system and District tour reports after 1964 made it difficult for us to find relevant statistics for the Sinazongwe people's labour turn over after independence. However, the joint study of Colson and Scudder on the impact of secondary education on the Gwembe Tonga of Zambia serves as a useful secondary source to cover the period after 1964. In the period between 1964 and 1972 about two thousand and eighty-three Gwembe Tonga youngmen completed their secondary school education at various levels. Most of these graduates did an extra two years certificate or diploma course in teacher training at one of the Trade's institutes offered by colleges run by either the missionaries or the government. Their salaries ranged between fifty to two hundred Zambian Kwacha per month. Most of these people worked as clerical officers, primary and secondary school teachers, bank tellers, mechanics and many other professional jobs.<sup>8</sup> Some of these professional workers like teachers were members of the Zambia National Union of teachers and hence fell in the category of proletarianized workers. They can be categorized

as proletarianized workers because there was a very little possibility of these people settling down as peasant or commercial farmers within the Gwembe district.

Between 1966 and 1970, the opening up of Nkandabwe and Maamba mines provided job opportunities for the local people in the sub-district. However, most of them worked as casual labourers and mine policemen as they did not have the technical expertise needed in the use of some sophisticated mine equipment. The company management employed qualified people from outside the Gwembe valley. However, it is on record that between "1971 and 1989 only about one hundred and fifty workers from the Sinazongwe sub-district"<sup>9</sup> have been employed to work at the mine in Maamba. Out of these people three of the Sinazongwe workers have risen to positions of mine shift bosses. One of them is a senior chemist. Others are holders of craft certificates in mining and mechanics which enabled them to do technical jobs in the mine.<sup>10</sup> As for the whole Gwembe valley Scudder noted that

the mines have also become a major employer of Gwembe manpower, with 22 percent of the labour force at the mine locally recruited in 1972.<sup>11</sup>

Some of these coal miners automatically became members of the Mine Workers Union of Zambia (MUZ) and depended on their salaries to feed their families. These stayed with them at their working places and can safely be categorized as having been proletarianized.

In 1984, the establishment of an irrigated commercial farm by the Gwembe valley development company, provided employment

opportunities for the local people. The provision of employment to the local people was one of the conditions that the local authorities insisted upon before they signed the agreement which allowed the company to get land in this area. By 1989, the company management had adhered to this agreement. This is demonstrated by the statistics of permanent workers employed on the farm given below.

Number of Permanent Employees for the Gwembe Valley Development Company: 1985 To 1989

Section where employed	Number of local Sinazongwe people	Number of non-Sinazongwe people
Security	23	10
Administration	21	11
Farm section called Mulele	50	18
Farm section called Buchi	57	15
Tractor drivers	23	12
Irrigation Maintenance section	7	1
Crop protection section	8	5
Electrical section	14	2
Building construction	33	9
Main stores	16	5
Workshop	21	9
<b>Total:</b>	<b>273</b>	<b>97</b>

Extracted from the monthly returns for leave days of the GV D C records: 1986 to 1989

A significant number of the non Sinazongwe permanent employees on the farm were skilled workers from outside Gwembe valley. These were brought in to train the local people on how to drive tractors, combine harvestors and cotton pickers. An increase in the number of Sinazongwe workers has proved profitable to the Company. This is because the Company does not provide any accommodation for the workers who come from their homes. The Company is expected to expand its hectarage in the near future and more permanent local workers will be employed from the ranks of the seasonal workers.

In conclusion the chapter has demonstrated that between 1900 and 1989 the pattern of the deployment of the Sinazongwe labour force was determined by the impact of Government policies on the ecology and agriculture of the area. This pattern can be traced from that of migrant workers in the period 1900 to 1945. Between 1945 and 1964, some workers continued working as migrant labourers while others went with their wives and families and worked for periods ranging between five to twenty years. After 1964, a number of educated people took up permanent work in Zambia and some of them became members of trade unions. Hence specific stages of proletarianization were realized by some people from the Sinazongwe area within and outside Sinazongwe sub-district.

### CONCLUSION

The study has demonstrated that as from 1900 the problem of drought in the Sinazongwe sub-district was worsened by the impact of state policies on the ecology of the area. The policy of land alienation, for instance, brought an imbalance between ecology and the domestication of cattle. This is because wild animals and tsetse fly infested the land where the local people were removed by the colonial administration. Tsetse fly, then, made the cattle suffer from the trypanosomiasis and this prevented the increase of cattle in particular before 1957 in the Sinazongwe sub-district. After 1958 the eradication of tsetse fly resulted in an increase in cattle which created great ecological problems. The policy of land alienation further limited the peoples choice of fertile agricultural soils which led to increased poverty. The construction of Lake Kariba led to the flooding of the entire Gwembe valley area along the Zambezi river. Here the study has shown that this led to the loss of the whole river rine areas of the local people. The problems of shortage of land, soil erosion and drought, further aggravated the problem of poverty and famine in the Sinazongwe sub-district.

After 1964, the opening of Nkandabwe and Maamba coal mines led to the removal of formerly resettled people from the mine areas to new places. The mine area also became a principal source of acidic waste matter dumped without chemical purification into the Kazinze river by the mine management. This has not only polluted the water along this river but the acid has

leached the agricultural soils of the local people whose fields are located along the same river. It is suggested that a multi-disciplinary study of Geographers, Historians, Ecologists and Scientists under take a comprehensive study of the extent to which the mine pollution of the Kazinze river has affected the fish, underground streams, water from the wells, lives of livestock and human beings.

In 1985, an irrigated commercial farm was established near the Sinazongwe sub district headquarters under the **Gwembe Valley Development Company**. Our study has demonstrated that the independent government of Zambia has continued the policy of alienating land from the local people in the Gwembe valley without giving them any suitable alternative land for agriculture and settlement. The study has further shown that the use of insecticides and herbicides in the spraying of cotton and wheat on the farm has resulted in environmental destruction which will be extremely expensive to rehabilitate. Here our study high lights the fact that the principal sources of pesticides and insecticide residues found in the **streams** and lake side around the Sinazongwe commercial farm are run off from irrigated agricultural fields and air emissions from the planes that spray the crops. The research has established that birds and fish were found dead a week after spraying in 1988 and 1989. Crops of the local people and baobab trees died or withered after spraying. This information was reported to the Fisheries Department and the National Council for Scientific Research by the local people. These two departments took some samples of the fish and plants affected but we found

of the process of proletarianization of some Sinazongwe able bodied men. The above factors forced the able bodied men to go into wage employment in Southern Rhodesia. We have also established that some Sinazongwe men went for work with their wives and families. We have also discovered that they stayed in their working places for periods ranging between one month to **twenty years**. During this period, the workers and their families depended on their wages for their livelihood. After 1964, some educated people from the Gwembe valley became teachers. These, therefore, became proletarianized by virtue of the professions they joined.

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2. Katoma, C.	NCZ, Nitrogen Chemicals of Zambia Worker	Kafue	20/6/89
3. Kayula, L.M.	Maamba Mine Industrial Relations Officer	Maamba	10/11/89
4. Maamba, M.	Son of Maamba Village Headman	Maamba Village	10/11/89
5.	Villager	Sinalubilo village	11/11/89
6. Malyango, J.	Village headman	Sinazongwe	15/11/89
7. Malyenkuku, M.	Church reverend	Kanchindu	11/11/89
8. Malungo, B.	Villager	Siameja village	12/11/89
9. Michelo, C.	Villager	Sinakoba village	13/11/89
10. Mudenda, W.	Village Councillor	Chikoyo village	11/11/89
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12. Mudodoli, G.	Village Councillor	Mudodoli village	13/11/89
13. Muleya, N.	Villager	Sipummina village	10/11/89

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14. Muloongo, C.	Villager	Maamba village	10/11/89
15. Muntanga, M.	Sinamalima village Councillor	Sinamalima	20/11/89
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35. Syamatanda, P.	Villager	Chikoye village	13/11/89
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