AN INTERIM ECONOMIC APPRAISAL OF THE VOLTA RESETTLEMENT SCHEME - GHANA

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The problem of resettling people whose homes are disrupted by the creation of dams is one which will be faced more frequently in various countries of the world as the need for hydro-electricity in the newly developing countries increases.

The problem of what to do with people so displaced is subject to many different solutions. First, people can be given some form of compensation based on the goods, crops, houses and other buildings which they are about to lose, and then left to rehabilitate themselves elsewhere. Secondly, they can be resettled in new towns and villages with or without compensation for loss of land and then left to develop for themselves new methods and sources of income. Or thirdly, if the state takes a much wider view of its need to participate in economic development, it may decide that, in addition to settling the people in new townships it must also help to find them new sources of income, thus taking a much greater responsibility for rehabilitation. This latter course is most important where there are scarcities of land, where the people involved have had specific sources of income and would find it difficult to secure alternative sources of employment, and where there are clan and tribal differences so that carefully planned resettlement is needed to prevent sociological and political unrest. All these conditions existed in the Volta Basin. Land was particularly scarce in the south, south-east and south-west of the dam. There were many tribal and land ownership disputes awaiting to be rekindled which could have caused conflict. The people involved were poor, nearly all illiterate, nearly all were farmers and with no other source of income, apart from the Ewes, a migrant tribe which undertook fishing.

When the Volta River Project Preparatory Commission reported on the earlier scheme in 1956* it did not concern itself very much with resettlement and its solution to the problem would have lain in paying compensation and leaving the people thereafter to find their own new way of life. In arguing in favour of this action the VRPPC in 1956 stated that "centralised planning of resettlement in a comprehensive government scheme might fail to make sufficient allowance for the existing differences in local customs, general housing standards and in the range of incomes within particular communities." Though the Volta River Authority was well aware of these problems, Ghana government policy by 1962 had developed a long way towards a more responsible attitude towards the welfare of its people and in this framework the resettlement programme was commenced. This approach was in any case necessary because of pressure of time. People to be affected by the flood had little concept of the urgency of the situation and there was not much realisation of the economic consequences of inundation. Further, the government had, in a previous resettlement scheme in rehousing the fishing population of Tema in 1959, provided comparatively lavish housing conditions. With this precedent it was felt that failure to provide adequate housing for the Volta resettlers would incur serious political difficulties.

Unfortunately it was not until May, 1962 that a Resettlement Officer was appointed and a real start made on the problems of evacuation and rehabilitation. Construction of the dam started in October, 1961. The job

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*Volta River Project, H.M.S.O. 1956

of planning the resettlement of people had to be completed before the dam started to fill in 1964. From the beginning the programme of resettlement was one of urgency, developing later into a crash programme. At first the scheme was mainly concerned with housing and building townships for the settlers. A programme for developing sources of income and agriculture for the settlers could only be planned after it had been decided where the new townships would be sited. To a certain extent this was limited by the land and water resources available, but even so, people were given every opportunity to decide for themselves, on the basis of informed advice, where they should settle. Even so on the insistence of certain settlers, some 16 out of a total of 52 new townships were sited in areas not considered suitable by the Volta River Authority and some of these are already finding difficulties in one way or another. The great speed with which everything had to be done did not allow adequate time for any economic assessment or planning to be undertaken before hand. The resettlement scheme was primarily conceived as a sociological problem, not an economic one.

Before assessing the success of the scheme in economic terms it is necessary to consider the economic conditions in which the settlers were living prior to inundation. The population of the flooded area was estimated to be about 80,000 composed of 12,800 households with an average number of 6 per household - somewhat above the national average. Taken as a whole the area was sparsely populated at an average of 24 persons per square mile compared to average density in Ghana of 76 per square mile. Some large areas, e.g. north of the Afram, were however almost completely unpopulated whilst others for example round Kete Krachi and in the south had a density of 413 per square mile.

The 80,000 people lived in some 740 villages. Only one village had a population of over 4,000. 600 villages had a population of less than 100 and the wide dispersal of these small communities, together with the fact that not many of them were accessible by road, made the work of enumerating them, and subsequently making social surveys and valuations for compensation, very difficult. Only 17 villages had markets and only 30 villages had stores of any kind. The people in the area lived generally at a standard well below the national average, though there were a few notable exceptions, e.g. the wealthy households in yam growing areas around Kete Krachi and amongst cocoa farming households in the south Afram. Houses were mostly constructed of mud and thatch which, from present statistics, appear to have an average value of £20 per house. Other properties and farms of households were enumerated, and valued at £10 per household on the average. Average figures show that per household there were 12 domestic animals (pigs, goats, sheep) and 1.5 fowls. Domestic effects showed a very low standard of living averaging per household four chairs, 1½ tables, five boxes. Less than a quarter had cupboards.

90% of the people resettled were farmers whose incomes depended mostly on the type of crop farmed and on the marketing facilities available for disposing of produce. Because of the variability of these, incomes showed wide differences. In the yam growing areas of the north and Kete Krachi areas, yam farms of modal size of 4 acres would yield an average income of £100 to £140 per season (one crop per annum). In large yam farming households, of which there were probably - 20, incomes were probably between £400 and £500. Cocoa farming in the south Afram also yielded a level of income higher than average. The modal cash income from cocoa in the area was probably around £100 to £150 though a few households received up to £500 per annum for cocoa.

Arable farmers, forming about 75% of the total households resettled, farmed, on average, only about 1½ acres of crops per season and this yielded an average, income of between £50 and £80. Some 20,000 fishermen, all Ewes, fished in the river. Most of them received cash incomes comparable with average farming cash incomes though there were 10 seine net companies operating in this stretch of the river prior to inundation and, at an average annual catch of 6 tons, this would have yielded an income of some £400 at 1963 prices. This sum would have to be shared between four to eight members of the seine net company.

These low levels of income are well below national average and must be fairly marginal. They can be compared with the per capital income derived from the Gross Domestic Product figures for 1964 at £97* or on the basis of 4.5 persons per household, £436 for a family unit. All farming and fishing households grow crops for domestic consumption and the level of subsistence in some of the inundated areas probably varied from 40-60%. Taking into account the value of food produced for home consumption a modal real income of around £100 is probable. Fortunately some data on levels of income and expenditure exists for four areas in the vicinity of the Volta inundation region. This data was collected in the Household Expenditure Survey of 1961. At Prang, the poorest community, total cash expenditure was £30 per annum whilst the value of home produce consumed amounted to £60, thus giving a total real income of £90 per annum per household. At Abetifi, a small town with urban characteristics (and therefore much wealthier than the rural sector), near to the inundated area of the south Afram, cash expenditure amounted to £228 and value of home production consumed totalled £57 giving a total real income of some £285 per household. More typical however is Kadjebi, a larger village on the east of the river, where the total value of consumption (and therefore by assumption, real income) was £130 per annum of which about 60% was on home produced foods. This village however was much larger than the average village and income levels here were probably above average for the whole inundation area.

In resettling the people of the inundated areas the Volta River Authority was primarily concerned with providing a suitable physical environment and this involved a great deal of sociological research and adaptation. Unfortunately insufficient stress was laid on the need to provide them with suitable sources of income, so that when people moved into their new townships they found it difficult to find employment or farm land and had very little means of support and income. The World Food Programme assisted for a period of six months during this initial settling-in period by providing basic food requirements at a cost of £½ million. This was supposed to tide the settlers over between the date of arrival in the new towns and the first harvest from their new farms, estimated to be about 6 months. But in fact when they arrived at the settlements there was inadequate farm land ready for them, and in some towns no land had been cleared at all.

There is no time here to consider the vast range of sociological problems involved in resettlement. These were very capably handled by a large team of social welfare and mass education workers and the sociological aspects of the scheme have been very successful. People were resettled in 52 townships, all of them larger than they had lived in before. Villages were laid out and provided with certain minimum necessities such as tap drinking water, latrines, markets, laid-out streets. Few of these facilities had been available to people previously and the physical standard of housing and environment in which the settlers now live is far in excess of what they had previously and greater than that of people living in the host communities nearby. A scheme of housing was designed which would provide two rooms, a cooking porch and a sitting porch each with concrete foundations, an aluminium roof and landcrete walls. Space was provided for expansion of rooms and subsequently settlers were organised by Mass Education teams into communal labour groups to build one additional room to each house. In most of the villages this communal work has been completed with great

* Economic Survey 1964 Central Bureau of Statistics, Accra '65

success and this indicates a willingness of the settlers to help themselves given the right encouragement and technical supervision. This level of housing was provided at a cost originally estimated to be £200 per house but owing to the rising import duties on building materials and other increased construction costs, and to general inflation, house construction rose to £350 per house in 1964-5 and an average cost of £330 per house is now taken for the whole project.

Whilst great care was taken in considering the social aspects of settlement life, insufficient thought was given to economic considerations of the scheme. It was obvious that since the settlers were nearly all farmers land would have to be provided for them. Now, except for certain areas in the north and north of the river Afram, where population was relatively scarce, there were severe shortages of land. This was partly because of the existing high density of population in the areas to which most of the settlers wished to be moved and partly because of the unsuitability of portions of the land, particularly in the hills and forests of the south, south-west and south-east. Because of the scarcity of suitable agricultural land it was realised that it would be impossible to allow the farmers to return to their accustomed shifting system of agriculture, which was wasteful of land resources. Under this traditional system, a farmer, utilising an average of about 1½ acres of land in some three to four separate plots, would exhaust the soil in two to three years of continuous cropping and then move to exploit other plots leaving the evacuated plots to recover as fallow for another period of 3-4 years, depending on population pressure on the land. He would thus have some 6-10 acres under his control which he would shift to in sequence as he exhausted each plot. During the period the land inevitably becomes overgrown, new trees and shrubs develop and the land has to be hand cleared again before it can be used. Thus at least one-third of the available agricultural resources are out of use at any one time.

The only way to provide agricultural land for the settlers in areas where there was land shortage, was to avoid this wastage and to introduce a settled system which would incorporate a rotation of crops and in which land would be initially cleared with mechanical assistance and would be farmed using fertilizer inputs. Agricultural land was to be provided in large plots, cleared by mechanical equipment and later prepared for farming with mechanised agricultural implements. A rotation of crops was designed which with the use of fertilisers and improved seed would give greatly increased yields. It was planned that the land clearing would take place at the same time as clearance for town development. Unfortunately, owing to various factors, e.g. lack of sufficient clearing equipment, lack of time and adequate planning, and the need to move heavy clearing equipment over long distances from town to town, it became impossible to clear sufficient land for agricultural development at any one site. The result was that when the settlers moved in there was a great shortage of adequate agricultural land and immediately they were faced with the problem of finding for themselves suitable land on which they could again earn a living.

The success of the agricultural scheme depended largely on the speed with which clearing of land could be undertaken. The original clearing plans for agriculture were to provide varying quantities of land for different types of farmer as follows:-

Arable farmers	(73.4% of total)	12 acres each
Tree farmers	4.4% "	5 to 15 acres each
Livestock farmers	16.4% "	3 acres each
Pastoral (cattle) farmers	5.8%	30 acres each.

The land to be put under cultivation for crops was very carefully selected beforehand so that it was estimated that 12 acres would yield a similar level of output wherever cultivated. During the period which would elapse before the tree crops yielded - about five to seven years - the farmers would be expected to intercultivate with food crops which would be their main source of income over the period. Food clearing however was undertaken

not only for farming but initially for the construction of villages and roads. In fact the many unanticipated delays in clearing made it subsequently necessary to revise plans for agricultural acreages and the average of 12 acres per crop farmer was cut down to 6 acres. This, taking into consideration the land lying fallow is no greater than the average holding each farmer held before inundation, but it was hoped that, with the new crop rotation and fertiliser inputs a much greater yield would be obtained from the same amount of land. Even so this required a total agricultural clearance of some 54,000 acres. By the beginning of 1965 only some 15,000 acres had been cleared and half of this was for village construction. By the end of 1965 a total of 12,000 acres had been cleared for farming, leaving 42,000 acres still to clear. With the new equipment which has just arrived (December, 1965) the clearing can now be speeded up and it is anticipated that some 15,000 acres more will be cleared by the end of 1966. A further 13,000 acres could be cleared by hand and it is hoped that the financing of this development will be assisted with World Food Programme aid.

Costs of clearance varied in different vegetational regions. In the very heavy forest in the Afram valley for instance clearing cost £50 to £60 per acre. In the Nkwakubew area and elsewhere south-east of the lake, clearing averaged £30-35 per acre, whilst the minimum cost of £15 to £20 per acre applied to tree savannah.

In order to implement its aims in agricultural development the Volta River Authority worked out an efficient and scientific system of crop rotation based on sound agronomic principles and aimed at giving the farmer not only a much higher level of annual income, probably some 2-3 times that of his previous level, but also arranged the rotations so that each farmer, regardless of what he was doing would receive a return similar to those farming tree crops and livestock. The cropping plan covered six crops, maize, cow peas, groundnuts, tobacco, sweet potato and legume hay. These were to be farmed in strips in one large field, which would then be laid out in such a way as to make mechanical clearing, ploughing and harvesting possible. Each strip was to contain one crop so that it could be treated as a homogenous unit when it came to seeding, fertilising, insecticide treatment and so on. Each farmer would have, according to original plans, two acres per crop with a total of 12 acres. The system would operate as a co-operative in that costs of all capital inputs would be charged against sales of crops which would be made through a co-operative marketing organisation. The farmer would be responsible for weeding and harvesting and would receive a return on the basis of the quantity he harvested. Thus it was expected in 1962 when the plans were drawn up, that, working 12 acres the farmer would earn a net annual income of £350. In addition to crop farmers there were to be livestock farmers and tree farmers. These too were to be organised into co-operative units.

The aims of co-operatives were well defined from the beginning. "Co-operative farming offered the advantages of bulk purchasing and selling, the availability of the more expensive necessities of modern farming and gave the farmer a democractic say in the affairs of the community." In setting out the reasons why the Volta resettlement towns would use a co-operative form of organisation in its agricultural development, the Principal Agricultural Officer stated that "The whole farm is organised on a co-operative basis. Each farmer is either an arable farmer, a tree crop farmer, or a livestock farmer. Each group is organised into a sub-co-operative body. This central body controls the overall operation of the farm but since each farmer has a representative from his particular group on this body he has a democractic say in the running of the farm. Each group meets and plans its activities under our Volta River Authority supervision. The main body does the marketing and bulk buying of fertilisers, seeds, insecticides and so on.

Each farmer draws his requirements from the main body. He has a little book in which all services supplied are noted down. At the end of the season the cost of all the services are deducted and the balance is paid to the farmer, less a small amount to cover operating costs. Thus although the farms are close together each farmer receives as much return as he earns on his individual farm according to the effort he puts into it."

Theoretically this system of farming is far superior to anything else which has been operated in Ghana. It retains the peasant farmer in his natural environment, he receives a return based upon his efforts (unlike the State and Workers Brigade farms where agricultural labourers are paid wages irrespective of their efforts and production), and he has an incentive to improve.

Unfortunately however it has not yet been possible to implement this scheme in the way it was designed, primarily because the amount of land cleared is far too small. The whole agricultural programme was seriously frustrated by delays in clearing which occured for a number of reasons. Clearing depends partly on weather. Exceptionally heavy rains in 1964 held up clearing for six months and erosion damage occured in some areas already cleared. Secondly there was a severe shortage of tractors and clearing equipment. Tractors ordered in February 1963 did not arrive until October, 1965. The order consisted of 300 tractors MF 165, 100 tractors MF 135, 300 ploughs and 200 harvestors and other equipment. Delays after the Volta River Authority had taken action were largely due to administrative delays in other Ministries, for example in getting import licences, foreign exchange approval, suppliers credits and in ordering through the government supply commission. Thirdly there was heavy wear and tear on vehicles and equipment at an unanticipated rate. For example experience showed a Land Rover to have an operating life of only 30,000 to 40,000 miles, i.e. some 6-8 months. Many vehicles fell into disrepair and it became very difficult to get spare parts and tyres. Owing to this, out of the 400 hired vehicles used by the Volta River Authority only half were on the road at any one time. The VRA's own 100 vehicles were only maintained by most persistent searching for spares. Delays in getting spares, etc. were again administrative in source, and outside the control of the Volta River Authority.

As a result of these delays the VRA was only able to implement its agricultural scheme in a few places and even there only partially. In the majority of towns no land had been cleared and the settlers were forced to return to their old system of shifting agriculture, finding suitable plots wherever they could. Sometimes where there has been sufficient land they have been fortunate in receiving plots from the host communities but in few cases has this been sufficient and many of the settlers have been obliged to look elsewhere, sometimes many miles away, to find land for farming. In those places however where a portion of allocated land has been properly cleared it has been possible to turn over to mechanised larger-scale farming as an initial phase of the system of co-operative farming described above. Unfortunately as insufficient land has been available at any one site it has only been possible to cultivate one or two crops this year, 1965, and not the full range of crops anticipated in the rotation. In some towns this has had disastrous results and has done little to give the farmers confidence in the new methods of farming.

Apart from insufficient clearing, other events have thwarted the success of the scheme. First there have been bad harvests due to lack of rain. In Dedeso, for example, one of the largest resettlements, farming was concentrated on maize and tobacco so that 250 farmers cultivated tobacco and 295 cultivated maize. The maize crop for the late 1965 season failed completely owing to lack of rain and the farmers received no income at all from this source. These farmers had no other crops under cultivation in the area, though a few had cocoa farms elsewhere, and without the insurance of a spread of crops, they suffered many hardships. The tobacco farmers in this town fared only a little better, having been kept waiting for three to four months for payments from the Tobacco Marketing Board to be made against deliveries, and receiving small amounts only, varying from £7. 10/- to £20 with an average which appears to be around £10 - this for the equivalent of six months work. Great resentment against the VRA agricultural scheme exists in this town followed and the settlers are requesting to be allowed to use the land for their own system of farming.

It is a great pity that such a far reaching agricultural scheme should be jeopardised in the early stages by disasters from natural causes. But this is a normal threat to any agricultural scheme and a sound system should provide for such contigencies, either by having cash reserves to support the temporarily impoverished farmer, or better still, by diversifying crop production in such a way as to form its own insurance against harvest failures.

It is unlikely that, in any case, the full benefits of a sound crop rotation will be realised until the full complement of land is cleared and under cultivation. In the meanwhile some alternative solution must be found to secure a regular income for the farmer. For instance it may be possible to allocate part of the cleared land to the farmer for his own individual use giving him a free hand to grow what he likes, and to allocate the rest of the cleared land to large scale farming on the lines laid down above, in which each farmer would have a share. Such a scheme would form an insurance against crop failures and at the same time enable farmers to see the benefits which could be obtained from larger scale production and scientific crop rotation. Because of the shortage of suitable land, however, the success of this scheme would depend on the VRA being able to introduce [illegible] crop rotation before the land had been exhausted by traditional crops grown in the traditional way.

A second reason for the lack of success is due to insufficient publicity and public relations. Part of the lack of confidence in the VRA agricultural schemes has arisen through insufficient explanation to farmers who need to be constantly reassured in a situation of change and uncertainty. Most farmers live a hand-to-mouth existence from one season to the next and they cannot be expected to envisage what a completely new system of agriculture will yield for them in three to four years time. Thirdly, there have been inadequate marketing facilities for the disposal of farm produce. The envisaged system of co-operative marketing has not yet emerged, and foods have been disposed of through the Food Marketing Board which operated as part of the State Farming organisation and was not directly under the management of the Ministry of Agriculture. At Nkwakubew, which has the largest crop farming scheme, most of the harvested maize was handed over to the Food Marketing Board but owing to poor administration there were long and unnecessary delays before the farmers were paid. The harvest from the crop-season January-June 1965 was not paid for until late August. They received an income averaging £30, which, on the basis of three acres per farmer yielded £10 per acre for six months' effort. This is equivalent to only about one third of the income per acre anticipated in the original scheme. This is a level much below what farmers earned previously. Very dissatisfied with the provision of land made for the, about 20 farmers have now left this settlement town to farm in the Anum area, 20 miles away where they are able to cultivate up to 10 acres from which, in the last season, they earned incomes of between £60 and £100 over six months.

A further source of grievance in the resettlement towns has occurred where tobacco has been grown. Tobacco is sold through the State Tobacco Products Corporation, a state monopoly. In many cases there have been serious delays in collecting crops after harvesting with the result that leaves have deteriorated in storage on the farms. In some cases they were kept waiting for up to six months for payment. Farmers living at low level of subsistence cannot afford to give credit in this way.

Other marketing outlets have had other discouraging effects. In none of the resettlement towns has the new market yet started to function. The farmers either have to take their produce to the nearest market, which in some cases may be up to eight miles away, and if there are few lorries plying along the road they may have to headload to market, or else they have to rely on traders to come and buy from them. This happened to farmers in the Nkwakubew township and visiting traders from the large markets, realising they were weak sellers and in urgent need of cash, have driven a hard bargain. Such farmers have done less well than those who left the town to farm in other areas where there were better established marketing facilities.

Where land has not yet been prepared for large scale agriculture, the villagers show a great resentment against the VRA for alleged neglect. Some settlers have been able to find lands for themselves nearby which they are now farming in the traditional manner. Others are still able to farm their own lands which are not yet inundated. But many have left their new townships to find farming land elsewhere and in these villages the spectre of a ghost town hangs threateningly over the horizon. Some towns are particularly badly off, especially in the sixteen towns which were sited on the insistence of the people against the advice of the VRA. The worst affected are probably at Somanya and Adukrom occupied by Krobos who, in addition, appear to be particularly unco-operative and unprepared to do anything for themselves.

However one must look further for the causes of resentment and everywhere is the same basic complaint. The argument is that, since the VRA has provided good cleared land for a few of the settlements, e.g. at Nkwakubew, the settlers in other towns feel that it is the the responsibility of the VRA to provide them with similar facilities also and until this is done they are not prepared to do much for themselves. This attitude was anticipated by the VRPPC report in 1956 which, in giving reasons why there would be great disadvantages in undertaking resettlement in a comprehensive way instead of by merely paying cash compensation, argued that "The spirit of self-help would be lost. The reaction of the communities would almost certainly become one of accepting everything offered and then of asking for more (like people in other parts of the world.)" This has certainly proved true in this resettlement scheme.

It is difficult to isolate the problems of the VRA agricultural scheme from the existing economic situation in agriculture in Ghana, but some general comments can be made. First it seems obvious that the transition from a subsistence to a cash economy cannot be undertaken in one step. The change over must be gradual. Unfortunately this has been insufficiently realised. In the plans for the agricultural revolution in the Volta resettlement towns it was assumed that it would be possible to introduce the farmers to an entirely new system of agriculture as soon as they moved into their new houses. The fact that this has not been possible owing to the delays in clearing, has necessitated some reappraisal of the scheme and everywhere compromises have been reached. In the long run these may well prove to be the best method of undertaking the transition from a primitive, largely subsistence agriculture to a large scale, partly mechanised and scientifically rotated cropping plan.

The existing food crop farmer is not accustomed to receiving the entire payment for his labour in one or even two cash payments alone. Part of his production, in some places probably up to 60% of his output, though on average 40%, he takes as subsistence for his own family needs. He prefers to be able to plan his crops so that at any one time there is something in the farm or his own harvest stocks which he can withdraw for consumption throughout the year. There appears to be a general reluctance amongst farmers to give up the security of this type of production for the more risky farming of crops which are to be entirely sold for cash.

It is unfortunate that the reluctance to change has manifested itself in a strong prejudice against co-operative farming. This has arisen because the failures so far have been associated with what the farmer has learnt to call "co-operative" farming. Unfortunately, outside the resettlement towns, co-operative farming is also viewed with disfavour by the majority of farmers since it has been developed by the United Ghana Farmers Co-operative Council which is principally a political wing of the C.P.P. and operates independently of the Ministry of Agriculture. Very little guidance has been given to farmers in the management and operation of co-operatives and it has been left to the management committees of the co-operatives to decide how to share crop proceeds. This has usually been done either by sharing equally, or on the basis of the number of days worked by each member on the farm but in both these cases the farmers themselves see the inequity of this system and do not see it as a fair return for individual effort.

The division of land between a number of farmers, the collection of harvest and subsequent distribution of earnings in an equitable way which rewards the farmer on the basis of his own efforts, requires a degree of management and administration which is beyond the powers of the existing farming community.

The successful operation of co-operative farms in the Volta Resettlement scheme could have done a great deal to secure the recognition and confidence of the farmers in the value of such agricultural methods, and this could have proved a real break through to improved production. But at the moment the case for co-operatives has yet to be proved to the farmer. Until this is done the concept of co-operatives as a voluntary organisation of farmers is a myth. The farmer sees it as a scheme imposed on him by authority, and on the basis of present performance, views it as inferior to his own traditional system. Though the farmer sees the value of large scale clearing which enables mechanised equipment to be used for ploughing etc. it is the large scale farming of one or two crops which is not liked largely because it does not allow for a spread of risk. The present system of farming is in itself an insurance against poor harvest. The farmer tries to diversify his crops and to locate his farms in different areas. The elimination of subsistence farming exposes him not only to the risks of poor harvests but also to a complete reliance on a market mechanism which he may have reasons to distrust on account of his being, under these circumstances, a weak seller.

Another factor which hinders the rapid change from a subsistence to a cash economy is that, apart from the cocoa farming sector, there is probably only a limited tradition of holding savings in cash terms. There are no banks or post office savings facilities in any of the resettlement towns and only very few in the rural areas elsewhere. Even where post offices do exist with savings bank facilities they are little used by farmers. Cash which is held is usually only a small amount which may be needed from one harvest to another for the purchase of consumer goods. Larger savings which arise from agriculture, and these are few outside cocoa, appear to be either invested in buildings, sometimes for prestige, in lorry transport, or in some places, in cattle. Investment in cattle however is not considered by the farmers to be agricultural investment for the cattle are usually kept probably some distance away in herds managed by a herdsman along with cattle owned by many other people. Thus investment in cattle does not add to the value of the farmers own farm. Under existing conditions of agriculture the farmer has few opportunities for investment in agriculture except in places where there is no shortage of land, and where opportunities exist for increasing the scale of farming. In areas where land is scarce however, he has, owing to ignorance of agricultural inputs other than labour, no outlet for agricultural investment. So even if savings were obtained from crop farming it is unlikely that there would be much investment in food crop agriculture except in certain areas such as the yam farming areas near Kete Krachi and in the north, where there is no scarcity of land.

So far only arable farming has been discussed in the resettlement scheme. The most successful aspect of agriculture so far has been the pig and poultry schemes which have been limited to three villages and even here success has been limited. Forty farmers were to be involved in pig farming and at an estimated output of 20 pigs per month they were expected to attain an income of £40 per month. Pigs are housed in sites provided by the VRA. Rent is charged and this, together with the cost of feed provided by the VRA, is deducted from gross earnings. In 1964 total pig production was about 70 per month. It was expected that this would have risen to 700 per month by the end of 1965 and that by then the sceme would entirely replace the imports of pork.

The viability of both the poultry and pig schemes rested on the assumption that there would be ample supplies of local feed such as fish meal rice barn, maize and groundnut cake. In 1965 these expectations were not fulfilled. In the first place it had been expected that the VRA agricultural scheme would be sufficiently advanced to provide some of the feed requirments but delays in clearing had prevented this. Secondly, because of the severe cuts in imports in 1964-5 there had been much greater pressure on demand for local food which inflated the price of maize to at

least twice the pre 1964 price and occasionally to four times that price. The inflation of 1964-5 greatly affected the costings of the livestock schemes. It was thought that it would be possible to raise a pig for the market as a cost of 50/- and on this basis the retail selling price of pork from the VRA was pegged at 2/4d per pound. It has recently been decided (December 1965) to raise this to between 3/6d and 4/6d per pound but this is still below the free market price of between 6/- and 8/-. There now seems little point in pursuing the pig scheme if it is no longer economically viable, especially since the pig farmer will be expected to operate on a commercial basis and purchase his animal foodstuffs at market price. The further development of the pig scheme has thus been postponed.

The poultry scheme has suffered the same problem. The scheme was to involve 30 farmers with a broiler house each containing 2000 birds which would operate on a 12 week turn round. At 1/- per bird profit the farmers were expected to make £30 to £40 net profit per month. In 1964, 6000 broilers a month were being marketed at 3/6d per pound weight. A target of 32,000 broilers a month was expected by mid 1965, and 1½ million a year by 1966. Eggs too would be provided for the market at peak demand times and a target of 150,000 eggs per month was anticipated. But in 1965 costs of feed rose far beyond the controlled market selling price of poultry, development of the scheme was halted and restocking of birds was postponed.

It is difficult to discuss the success of the agricultural scheme without reference to the condition of the economy as a whole. But until food supplies increase or can be supplemented with increased imports, the pig and chicken schemes will continue to draw out of supplies needed for human consumption.

The most spectacular development in the Volta Lake is that of the fishery. This is entirely dominated by the Ewe tribe who, over decades, have migrated from their ancestral homeland in the South-East of Ghana and especially from the Tongu area of Lower Volta, to fish in territories in the upper reaches of the Volta. Ewe fishermen can be found right up the Black Volta in the most north-westerly part of Ghana. These migrations originally occured annually but seasonal movement over the years have taken place at a lesser degree. Most migrants gradually develop more permanent settlements upstream and extended their economic activities into farming and trading (in fish). Even so, links with the ancestral homes are still maintained, people returning downstream for festivals and to bury the dead.[1]

A number of Ewe communities were of course involved in the resettlement scheme but 80% of these opted for cash compensation and did not want to be resettled by the VRA. Some of these subsequently changed their minds and there are now about 20,000 Ewe residents in the resettlement towns. All Ewes in resettlement towns are now fishing forming probably 25% of the labour force living in the towns. This is by far the most lucrative source of income in the whole Volta Lake basin. The prosperity of the industry has attracted many hundreds of Ewes from the Tongu district down stream, with the result that many of the villages in this area are now almost depoulated of indigenous male adults, as for example at Battor, Mafe and numerous small villages along the rever side. Many of the Ewe settlers in the resettlement towns have moved out to live temporarily in palm frond shacks by the side of the lake but they are constantly on the move, retreating further back as the lake rises. Fish populations appear to have increased enormously. There is however only one Fisheries Officer (at Akosombo) stationed on the Lake. No records of fish landings or catch statistics are however being kept and the work of the fisheries unit is mainly concerned with taking fish samples and studying growth and distribution of species and also with a study of gear selectivity.

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(1) Lawson, R.M. The structure, migration and resettlement of Ewe fishing units. African Studies, 17,1,1958

The main fishing areas lie between Kpandu and Kete Krachi on the east side of the lake, at Amate on the Afram river, and around Yeji in the north. Data given here is from the Fisheries Officer's quarterly reports supplemented with personal discussions with him and is therefore probably the best estimate available. The Fisheries Officer estimates that there are probably 4000 canoes already operating on the lake though no census has been taken. 400 were counted at one place (Anum) on the east of the lake. This level of activity probably involves some 10,000 fishermen all of whom are earning incomes probably several times their previous levels. Fishermen get between £10 and £20 per basket of smoked fish, depending on basket size and quality of smoking. (A 40 lb-basket cost £6.10.0d. in Kete Krachi in August, 1965). Baskets are never weighed before purchase but probably contain about 60-80 lb. which is about the maximum head-load. In one place visited (near Amate) a man and his wife, who does the smoking, stated they prepared two such baskets a week. This is probably higher than the average for 10,000 fishermen, but if even each were obtaining only one basket per week, output would be around the level of 125 tons per week, or at a rate of 6500 tons per annum. This may be compared with the estimate of 20,000 tons per annum which is expected when the lake has completely filled and stabilised.

Unfortunately gains from fishing do not yet seem to be having much effect on resettlement towns, or even on the properity of the immediate envirous of the lake. There is of course increased trade and greater employment for carpenters, wood cutters etc. in canoe building. But most of the money at present earned by fishermen appears to be either re-invested in canoes and nets or sent back to ancestral villages downstream where it is used mainly for building monumental family houses in concrete. Apart from this latter item very little seems to be spent conspicuously on prestige commodities. Some is probably going into investment in cattle for cattle and household building have always been traditional outlets for savings in the Tongu community. In the downstream ancestral villages one can see a great amount of building taking place. For example in Battor, a village with a normal population of 700, 12 new concrete block buildings have been started in the last year by fishermen who have migrated to fish in the Lake, at a total investment of perhaps some £1,800, an average of £150 per household.

It is unlikely however that, once the Ewes from the Lower Volta have displayed their economic success to their kinsfold in this traditional way, much more of the earnings of fishing will go downstream, for the Tongu area appears to be increasingly depopulated by Ewes who are moving to the Lake. Fishing incomes will undoubtedly yield a large fund available for investment within a year or two and one immediate outlet, once the lake is established will be in adding outboard motors to canoes, at a cost of about £149.

The present level of investment is possibly in the region of £100 per canoe which includes the cost of the vessel - £15 to £16, three or four gill nets at £18 each and a few lines and hooks. If there are 4000 canoes in operation the total capital investment in the lake fishing may be £300,000 - £400,000, most of this will have been made from reinvestment of fishing income.

In spite of high earnings from fishing few indigenous tribes show any interest in fishing. Most people questioned say they would like to learn but take no steps to do so. This is remarkable when one see small Ewe children catching fish in nets tied simply between submerged branches.

Only the Krobos have shown any signs of interest in fishing. In Huhunya in the Pawmpawm valley the Krobos have driven away Ewe fishermen and are now themselves using cast nets. In Northern Ghana methods used in the 1950's to introduce pond fishing did not prove successful largely owing to rapid water evaporation after the rainy season. A few Gonjas in the Yeji region however have learnt to fish but they are not very enterprising and fish largely for subsistence. A few of these are settlers in Bawku, Yeji and Makongo. Fisheries in the Lake will no doubt continue to expand for some years until conditions are stabilised and the ultimate target yield of 20,000 tons per annum may not be an overestimate.

The experience of fisheries on Lake Kariba however has shown that the initial prosperity induced a certain amount of over-investment and after a few years fish production settled to a lower level of productivity. If this waste of resources is to be prevented on the Volta a system of control must be implemented very shortly, but there will be considerable difficulties in implementing this because of the size of the lake estimated at 3,275 sq. miles, and the very extensive shore line of about 4,500 miles.

Apart from agriculture and fisheries few other employments are yet available in the resettlement towns and though a few people in Senchi have been able to find work as unskilled labourers at Akosombo they make no net contribution to the average level of earnings in the townships. When a final economic appraisal is made of the Resettlement Scheme in four or five years time it may be possible to cover a wide range of employments and to consider a larger number of economic indicators, for example in the growth of income and real wealth. By measuring the growth of trade, markets, employments the net movement of goods in and out of the resettlements towns it would be possible to appraise the scheme in relation to the economy as a whole. At the moment however an appraisal must be confined to considering levels of income and wealth only and to relate these to the capital investment involved.

When the resettlement scheme was started it was estimated that a capital investment of some £5 million would be required. This, in retrospect, seems remarkably optimistic especially since the 1956 project, which did not even cover costs of constructing townships but only included compensation for loss, had estimated a cost of £4 million at 1956 prices.

It was not surprising then that, by the end of 1965, resettlement costs had mounted to £10 million. About 10% of this was spent on administrative costs - including soil, water and land surveys, evaluation of property and farms etc. - and about £9 million was spent on clearing, road building and construction. So far however the land clearing plans for agricultural development have only been partly achieved.

The average cost of investment per household, taking 12,800 households is thus about £790. However much of this investment was not meant to be productive of income but was spent on housing, rehabilitation and amenities which constituted essential expenditure. The decision as to what level of housing and amenities to provide in the resettlement towns was a sociological and political decision and it could therefore be argued that these costs should not be considered in any estimation of economic viability. In this sense they can be considered as fixed and unproductive capital and can be distinguished from the part of the costs of resettlement which were intended to be productive of income.

A study of the economic viability of the resettlement scheme it could be argued, should therefore only be considered in relation to the amount invested in productive capital. A large portion of the total investment was committed from the start to be unproductive, and includes the cost of housing and town construction. The productive sector can be separated to include that part of the investment on which income will be earned, and should include costs of agricultural clearing and agricultural inputs.

Out of the existing investment of £790 per household, costs which can be directly attributable to the non-productive sector are housing, at an average cost of £330 per house, and, to the productive sector, an average of £30 per household for agricultural clearing. This covers the cost of clearing an average of one acre per household. The remaining cost consists of infra-structure investment, e.g. roads, water supplies, markets and overheads e.g. administrative costs and many others. It would be difficult to attribute these directly to either the productive or non-productive sectors and since they are common to both we could apportion them equally between the two sectors. Thus the existing investment of £790 would be apportioned £245 to the productive sector and £545 to the non-productive sector. On these assumptions an estimate of economic return can be made. At the moment there seems to be, on average, little increase of income over and above what the farming settlers

earned before they were inundated, which can be directly attributed to agricultural investment. Though they are probably earning an average of £100 to £120 per household from farming, this, considering the rise in the cost of living of about 70% since 1963 represents only a replacement of income from those resources already lost to the country. Most of the income currently being earned from the land is in any case not being obtained from land that has been mechanically cleared but land which the farmers have found and cleared for themselves. The investment in the agricultural scheme has in fact done little so far to add in real terms to the gross domestic product of the country. The criteria for measuring the return on the productive investment should be its net increase to income, i.e. deducting from present levels of income that amount which was previously earned from land now inundated. Since this appears, overall, to be negligible, if the resettlement scheme stops here Ghana will have wasted valuable investment resources in a virtually non net-income earning project.

A further investment in land clearing is thus urgently required. So far only 12,000 acres out of a projected total of 54,000 acres have been cleared for agriculture. It has been estimated that to provide adequate clearing for agricultural development government must make a further investment of about £2½ million. This represents the cost of clearing 42,000 acres at an average of £60 per acre, plus a margin for contingencies. This would bring the investment per household up to £980 and the portion directly attributable to the productive sector to £435 per household. If this then earned its anticipated level of income of £350 at today's prices it would indeed be a very favourable investment by any criteria. Even if we deducted the income obtained by the settlers prior to inundation at about £150 (at today's level of prices) on the argument that this was a replacement and not a net addition to income, this would still be a very favourable capital: output ratio of 2.2. It may be compared with about 2.2. in the most developed economies, and about 2.7 in Ghana in 1961 - taking the total capital stock and relating it to Gross Domestic Production.[1] It compares very favourably to a maximum ratio of 3.5 which was considered in the Seven Year plan to be the upper limit recommended for industrial investment. This rate of return is far higher than the rate expected on the VRA hydro electric scheme which, on the most optimistic prospects will, by 1970, yield an output of only about £8.5 million on an investment of £56 million giving a capital output ratio of 7:1[2].

The economic model of the resettlement scheme presented here is one in which there has been a large proportion of unproductive investment and a lower level of productive investment which at present earns a negligible rate of return. It will take a further investment of about £190 per household to change this situation to a highly profitable and economically viable investment. It may well be asked if Ghana can afford this level of investment especially since the total amount allocated to agriculture for the whole of the Seven Year Plan was only some £67 million. But any development of agriculture which involves the use of mechanised equipment necessitates prior clearing of land. Since land has already been demarcated for this and since the infrastructure investment in roads, water supplies, etc. have already been provided, and since the labour is already there awaiting useful employment, it would be less costly to continue with the agricultural scheme in the resettlement areas than to start another scheme of agricultural development elsewhere. This should thus have priority in Ghana's agricultural revolution.

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1. Ref. Szereszewski, Robert, Capital. In a study of Contemporary Ghana edited by Birmingham, Neustadt and Omaboe, Allen & Unwin, 1966.

2. Futa, A.B. The Volta River Project. Economic Bulletin Vol.5 No.1, May, 1961.

However another solution which would cut down capital investment costs would be to utilise less mechanical inputs and implement a more labour intensive clearing using the settlers themselves to do the work in self-help projects. This scheme would have many advantages. First it would draw the absentee settlers back to the resettlement towns. Secondly, it would give them a sense of participation and responsibility, and thirdly it would renew again, the opportunity, now almost lost, of revolutionising agriculture while people are still in the sociological and physiological status of readaptation to change. But the participation of settlers in clearing large areas of land requires a level of organisation which they themselves could not manage for themselves. It would in the first place require skilled agricultural supervision probably provided by an agricultural extension service but much of the field organisation could be left to social welfare and mass education workers who are at present living in the resettlement towns. These workers are well experienced in the organisation and supervision of communal labour. If the World Food Programme agreed to assist in an accelerated clearance scheme the weekly distributions of food could be made as part payment in kind to those settlers participating in land clearance. This would serve the added purpose of providing supplementary foods in areas of food scarcity until the time the first crops on the new lands yielded their harvest, and it would also reduce the labour cost of land clearance.

Without some additional capital input the depopulation of resettlement towns will undoubtedly continue as people are obliged to move elsewhere to find adequate resources of land to farm. These they will continue to cultivate in their old methods of shifting cultivation which are so wasteful of land resources. In the remaining half-occupied resettlement towns Ghana may well have a high cost wasting asset in which the resettlement scheme might prove a disastrous misuse of economic resources. The problem of resettlement is not solved by moving hungry people into fine houses if they do not have the economic means of support.

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