

CONSTRAINTS TO OPTIMUM LAND-USE IN CISKEI

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ABSTRACT

Against the background of a definition of optimal land-use it is shown that a wide gap exists between the consumption and production of agricultural products in Ciskei. This condition is not due to a paucity of agricultural resources but the outcome of their sub-optimal use resulting from a series of institutional rather than technical constraints.

1. INTRODUCTION

"Agriculture is at the heart of African economies. Most of the population earns its living from agriculture."

World Bank [6].

If this is to remain permanently true of Ciskei, the prospects for the country are daunting. Ciskei is an extreme case of population pressure on limited agricultural resources, a relationship which has been laboured in both the scientific and popular press. Evidence will be presented in this paper however, to show that the disparity between agricultural output and consumption is not a function of either the paucity or quality of Ciskei agricultural resources but a result of sub-optimal land-use practices. Failure to achieve optimal land-use is largely the effect of a series of constraints on Ciskeian agriculture, the most critical of these being of an institutional rather than a technical nature.

The concept of optimal land-use adopted is based on that developed by Pentz [1], for Natal and subsequently modified and accepted by the Department of Agriculture for the whole of South Africa. As used here, the definition of optimal land-use has three components:-

1. Agricultural production must be in harmony with its natural controls. This means that the practices employed must result in sustained, adequate returns, rather than high returns in abnormally favourable seasons, associated with a high risk of failure.

2. Agricultural production must not be exploitative i.e. it must not be conducted at the cost of depleting agricultural resources.
3. Agricultural production must be based on sound economic principles.

It might be argued that a definition of optimality so heavily biased in favour of production pays insufficient attention to the aspects of ecology and resource preservation. On the contrary, it is axiomatic that long-term optimal land-use cannot be achieved without observation of, and adherence to ecological principles.

The balance of this paper is presented in three sections. Firstly, an assessment of current versus potential agricultural output is made to provide a measure of the gap between existing and optimal land-use. This is followed by an analyses of the constraints responsible for the present condition. Finally, in a brief conclusion the pre-requisites for improving the agricultural output are examined.

## 2. PRESENT AND POTENTIAL PRODUCTION COMPARED

The degree of optimality in present land-use is assessed by comparing present production levels for the country with potential levels at modest yields. This will provide a defensible measure of the degree to which constraints are acting to prevent the achievement of optimal land-use. Only rainfed agriculture and livestock production are considered, as other more specialised forms of production fall outside the context of this paper.

### 2.1 Rainfed Agriculture

Two indicator crops are used, maize and wheat. This is not to infer that production from crops such as beans, peas and sorghum is either insignificant or unimportant, but these two crops occupy the majority of the area under cultivation, and, if forecasts quoted in Page [2] are an indication, are likely to continue to do so.

#### Present Production

In any country where a majority proportion of total production is for subsistence consumption, it is notoriously difficult to establish reliable production statistics. For the purpose of this paper, no better indication of present production can be obtained than the data provided by the Department of Agriculture Annual Report. The data used are those for 1979/80, quoted by Page [2].

Table 2.1 Statistics on maize and wheat production in the 1979/80 year for Ciskei.

	Area (ha) (1)	Yield per ha (kg) (1)	Total Yield (tonne) (1)	Total Value (R) (2)
Maize	14 799	301	4 458	748 944
Wheat	1 186	406	481,5	128 079

Source: 1) Page [2] page 133

2) Ciskei Marketing Board Schedules, average price for all maize R168-00 per tonne, for Class A wheat, R266-00 per tonne.

#### Potential Production

Total production potential obviously depends firstly on the land area available, suitable for rainfed cropping. The physical size of the task involved has made accurate estimation based on ground survey impossible to complete to date, and a number of unsupported estimates of suitable land are commonly quoted, such as 12 per cent or 15 per cent of the land area of Ciskei. In this paper, the figure used by the Department of Agriculture recorded by Page [2] in Table 9.2, is adopted. This table indicates that a total of 72 548 ha of "Dryland arable" is available, which is rounded off to 73 000 ha in the interest of realism.

This magnitude is supported by data supplied by Hensley and Laker for the Page Report, which include a map showing four pedosystems, classified by suitability for rainfed cropping. (Figure 4b., Vol. 2).

a) Large proportion of pedosystem suitable for rainfed cropping	83 690 ha
b) Moderate proportion of pedosystem suitable for rainfed cropping	102 988 ha
c) Small proportion of pedosystem suitable for rainfed cropping	381 194 ha
d) Total pedosystem unsuitable for rainfed cropping	217 656 ha
TOTAL	785 528 ha

The subjective qualifications "large", "moderate" and "small" are unavoidable with the present state of knowledge. The sum of the areas of a) and b), however, is 186 678 ha which indicates that the Department of Agriculture figure of 73 000 is probably not an over-estimate.

The second factor determining total potential production is yield per unit area. The best data presently available are those produced by the Ecotope Evaluation Project, run by the Department of Agronomy at Fort Hare, under aegis of ARDRI. In an interim report presented to the TACRESOC Biennial Conference, Marais and Austin [3] present results for the 1980/81 summer season, and the 1981 winter season. In the case of maize, individual cultivar yields occurred within the range of 800 to 5 750kg per ha, while site means between 1 450 and 3 750kg were recorded. Rainfed cropping in Ciskei is characterised by wide fluctuations due to seasonal effects, and in addition, field scale yields seldom approach the yields achieved under experimental conditions, both of which make the estimation of target yields a matter of conjecture. For the purpose of this exercise, a long-term potential yield is arbitrarily selected within the lower third of the range for site means, i.e. 2,0 tonne per ha.

In the case of wheat, cultivar means ranged from 680 to 4 790kg per ha, while site means varied from 1 050kg per ha to 3 200kg per ha. Again, the long-term potential yield for wheat is arbitrarily selected within the lower third of the range, i.e. 1,5 tonne per ha.

The third factor determining total potential production for the selected indicator crops is the ratio of the total available land-area allocated to each crop. Hensley [personal communication, 1983] has indicated that the whole of the arable land portions of pedosystems a) and b) are probably suited to wheat production, but based on the Ehlers scale, portions may not be suitable for maize. The data in Table 12.1 of Page [2] which provide production/ consumption models for a range of crops, are used as guidelines for the allocation of land to

maize and wheat. According to this Table the ratio of maize to wheat consumed in 1985 will be 2:1, and in 2000, 2,2:1. Using an average of 2,1:1, and allowing for the differential in yields, land is allocated to the crops in the ratio of 1,57:1 for maize and wheat.

Using these derived data the following estimates of total potential production are made:-

Table 2.2 Potential production statistics for maize and wheat in Ciskei.

	Area (ha)	Yield per ha (kg)	Total Yield (tonne)	Total Value (R)
Maize	44 595	2 000	89 190	14 983 920
Wheat	29 405	1 500	42 608	11 333 728

It is of passing interest to compare these figures with the consumption estimates in Table 12.1 of the Page Report [2].

Table 2.3 Comparison of potential production and consumption estimates for maize and wheat in Ciskei.

	Potential Pro- duction (tonne)	Estimate of Consumption 1985 (tonne)	2000 (tonne)
Maize	89 190	72 228	103 746
Wheat	42 608	35 265	45 503

The potential considerably exceeds the estimated consumption for 1985 and is not substantially lower than that for 2000.

## 2.2 Livestock

### Present Production

In a subsistence dominated livestock system, offtake from stock is the sum of a number of different means of disposal. These are principally sales through the formal sector, sales through the informal sector, and slaughter for home consumption. While the first of these is commonly well documented, the published data for the latter two are often highly suspect, for obvious reasons. It is not possible to assemble an authoritative set of figures for total turnover from livestock in Ciskei for any given year. An attempt is made in Table 2.4 below to deduce figures which, in view of the mixing of years and the gross estimates of values it was necessary to make for animals slaughtered for home consumption, must be treated with due caution. The figures do, however, provide some sort of comparative base, although the value of milk, draft and manure cannot at this stage be estimated. These, together with the meat available from ritual slaughter, do provide a very real part of the value of livestock in the subsistence sector.

### Sources

1. Ciskei Marketing Board Annual Report 1981/82.
2. Page [2] Table 9.22, figures for 1979/80.
3. Page [2] Table 9.23.
4. Page [2] Table 9.24. Note, this does not include for milk sales from Keiskammahoek and Shiloh, which were not available.
5. Based on values of R162-00 per head for large stock and R12-00 per heard for small stock. These values were calculated from Table 9.20, which gave statistics for live sales in 1977/78.

Table 2.4 Estimated annual turnover of livestock and livestock products for Ciskei.

	No	Value (R)
FORMAL SECTOR		
Sales		
Large stock (1)	5869	1 898 376
Small stock (1)	788	
Slaughter		
Large stock (5)	256 (2)	41 472
Small stock (5)	216 (2)	2 592
Livestock Products		
Wool, hides and skins (3)	-	176 601
Dairy products (4)	-	29 745
INFORMAL SECTOR		
Large stock (5)	2259 (2)	365 958 (5)
Small stock (5)	6729 (2)	80 748 (5)
TOTAL VALUE		2 595 492

Potential Production

Trollope [4] provided input to the Page Report [2] in the form of a paper entitled "Veld Rehabilitation as a Development Strategy for Ciskei." Estimates of potential production were made both under existing degraded veld conditions and under rehabilitated veld conditions. Veld in the Eastern Cape can be effectively rehabilitated using biological means at an acceptably low cost. Since only gross output figures are available for present production, and Trollope [4] has separated gross margin and variable costs ("operational" costs), it has been necessary to add the latter back to obtain

gross output, for consistency.

From the bulk of data presented in this document, and appearing as Table 12.9 in Page [2], two of the three options offered by Trollope are presented here.

Table 2.5 The potential sales of livestock and livestock products from "least management intensive" systems (R'000 000).

	Without Rehabilitation	With Rehabilitation
Cattle - beef	5,21	7,89
Sheep - mutton	4,02	6,11
Goats - mutton	4,42	5,84
TOTAL	13,65	19,84

Table 2.6 Potential sales of livestock and livestock products from "highest gross margin" systems (R'000 000).

	Without Rehabilitation	With Rehabilitation
Cattle - beef	5,21	7,89
Sheep - mutton	4,02	6,11
Goats - mohair	7,06	9,36
TOTAL	16,23	23,36

While the variable costs added back do represent some costs not presently incurred, the ratio of gross margin to variable costs remains very wide - from 4,0:1 to 8,3:1 depending on enterprise. The net improvement over present output is substantial.

The purpose of the preceeding sections is to illustrate from available data that current Ciskei production of both crops and livestock is a fraction of potential, even at modest output levels.



Further, up to the end of the century, the country could be almost self-sufficient in two important grains and could produce a surplus of livestock and livestock products for export. (Page, [2]. Table 12.1) The following sections provide an analysis which is part of the explanation for why the potential production levels are not being achieved.

### 3. THE DECISION MODEL

The picture described as far is not unique to Ciskei nor even to the developing states of Southern Africa (Abel and Stocking, [5]). The World Bank [6], has recorded that production in sub-Saharan Africa in the 1970's grew at only 1,3 per cent per annum against population growth rates of 2,7 per cent. The agricultural systems are described as stagnating, and commercial imports of food grain grew rapidly over the period.

Many of these countries have adopted prescriptive programmes to improve output, frequently based on the "problem" or "ingredient" approach (Abel and Stocking, [5]). By this is meant that problem areas are identified by comparison with a pre-selected model, and programmes devised to overcome them. The supposition is that a stagnating agricultural system will thus be transformed to a close approximation of the desired model. Typical problem areas, but by no means all of them, are:-

- shortage of capital
- lack of inputs, including mechanisation
- weak marketing networks
- undeveloped transport systems
- technology
- land tenure
- poor advisory services

The fact that agricultural output continues to decline in real terms in most sub-Saharan countries, despite massive investment by donors in the '60s and '70s, is testament to the ineffectual nature of the "outside-looking-in" approach. In this paper, the centre of attention will be the individual farmer and his perception of the constraints that afflict him. It will be argued that the "inside-looking-out" approach may provide more valid indications of production constraints, and thus provide better guidelines to the effective and economic deployment of national resources.

It is unlikely that the peasant farmer views the "problems" listed above as problems per se, but rather as facts of life which have to be accommodated in his daily operations. As such they become inputs to a decision model, which limited experience indicates is economically rational and sensitive. The model is illustrated at Figure 1.

The activity selected by the farmer is a subset of a main set of options, which is determined by the technical element, including all the variations available on the themes of crop production, livestock production, or off-farm activity. The decision process by which he arrives at the selected subset is influenced by the human element. The latter consists of those human-related factors which shape his attitudes and motivations and effect his decision as to how he uses, or chooses not to use, his technical environment. The separate factors of the technical and human elements are the individual inputs to the farmer's decision model. Since the outcome of the evaluation of this model is plainly not optimal for production in Ciskei, they can reasonably be viewed as constraints and dealt with as such.

#### 4. CONSTRAINTS OR DECISION INPUTS

It is a truism that in modern agricultural systems individual input factors interact with one another so that none can be considered in isolation. In the peasant economy, agriculture is an integral part of a larger survival system, so that the technical aspects are overlaid by, and interact with a set of social and cultural factors which greatly complicate and confound their effects. For clarity, it is essential to simplify and bring order to the complexity, and the device chosen here is the framework of systems research, particularly as described by Norman [7]. This classification of constraints, illustrated conceptually in Figure 1, is as follows:

<u>Elements</u>	<u>Factors</u>
Technical	Physical Biological
Human	Endogenous Exogenous

The parts of the system which together make up the four factors are examined in this section.

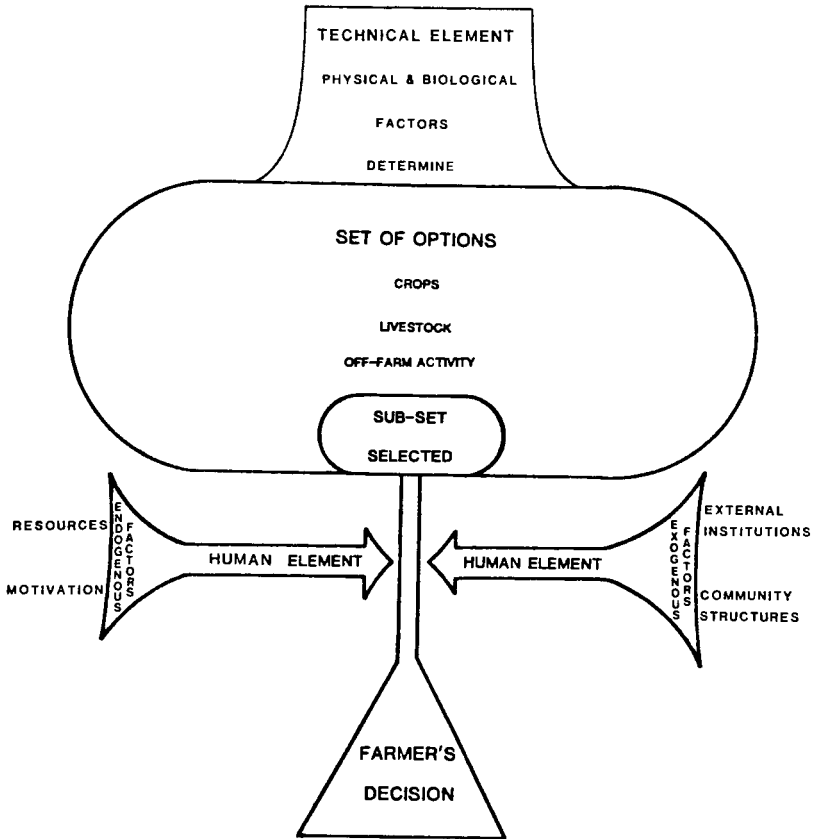


FIGURE 1 SCHEMATIC REPRESENTATION OF FACTORS AFFECTING DECISION ON RURAL ACTIVITIES.

#### 4.1 Technical Element

The physical and biological factors are dealt with together here, i.e. the soils, water, and climate, and the vegetation and animals they support. Limited as Ciskeian resources might be, the data in Section 2 suggest that they are seriously, not to say grievously underused. It is difficult, if not pointless to attempt, to assemble an argument that a lack of resource endowment is a prime cause of low agricultural output from Ciskei. On the contrary, the bizarre statement might as justifiably be made, that Ciskei is in fact over-supplied with agricultural resources.

The co-existence of gross environmental destruction and very low production is not peculiar to Ciskei and is less a function of the size and quantity of the resources than the means of access to them, which is discussed later.

#### 4.2 The Human Element

The human element is the sufficient condition for a particular farming system, which evolves as "a subset of what is potentially possible as defined by the technical element" (Norman, [7]). The human element has exogenous factors which impinge upon the individual, and over which he has no control, and endogenous factors which are either controlled by him or are part of his socio-psychological make-up.

##### 4.2.1 Exogenous Factors

The particular importance of the exogenous factors is that they are beyond the power of the farmer, acting alone, to influence and commonly beyond the influence of developers or other outside agents. On the evidence, it appears that this group contains the pre-eminent constraints to rural and agricultural development in Ciskei. Three distinct groups are identified - those relating to external institutions, community structures, and the influence of technology.

The external institutions are factors external to the community, mostly resulting from Government action or policy, and which inhibit or constrain the individual.

### Marketing

Ciskei is unique among developing Southern African States, in having a well-developed and functional agricultural marketing system, operated by the Ciskei Marketing Board. Through its various agencies, this Board handles maize, wheat and other cereals, fresh produce, seed, milk, livestock and livestock products. Its methods are tailored to meet as closely as possible the requirements of the peasant farmer, particularly in regard to cash purchases, and evidence of its success is the steady increase in turnover it records, in the commonly marketed commodities. (Annual Report of the Ciskei Marketing Board, [8]).

It can reasonably be accepted therefore, that marketing arrangements for agricultural products do not present an impediment to production in Ciskei.

### Inputs

The orderly supply of inputs is held to be a serious constraint to agricultural production. Since lack of suitable draft power is widespread in Ciskei, mechanisation is included with the more usual seeds, fertilizer and pesticides in this context. To satisfy the description "orderly", the supply of inputs must be:-

1. Of the required type for the conditions.
2. Available where required at the appropriate time.
3. At a price at which the cost of the input does not exceed the value of the incremental output achieved by using it.

The overwhelming problem in satisfying these requirements, is the small scale of operation of the farmer-customers, their numbers and their spatial dispersion. These factors militate against involvement by private enterprise, and to date no completely successful method of administered supply has been found. The Ciskeian farmer in common with most of his counterparts in other countries, remains poorly supplied with many of the inputs required to improve his production.

### Advisory Services

Even assuming a successful supply network for inputs could be set up, benefit from using them would be unlikely to exceed cost, without the knowledge necessary to apply them correctly. The key source of such information is the extension service, and a measure of the Ciskei service can be gained from an exhaustive survey conducted by Bembridge [10]. Both the characteristics of the individual officers and the structure and methods of the department were examined.

A wide range of conclusions were drawn and recommendations made, the sum of which indicated that defined priorities, long-term planning, and policy and objective statements were required to enable the department to function more efficiently. In terms of individual officers only 18 per cent showed "Reasonable aptitude, competency and ability", while 60 per cent had "some potential" and 22 per cent "Doubtful aptitude and ability". All categories were held to require extensive training (Bembridge, [10]. Table 20).

It must be accepted that functional inefficiencies within the service do constitute an impediment to achieving increased output in Ciskei.

### Institutional Factors

Most of these factors arise out of the circumstance that Ciskei, as a recently independent country is embedded in an economic fabric dominated by a large and overwhelmingly powerful neighbour. The subject has been commented on exhaustively, but put briefly, in the context of agriculture, most influences resulting from the relationship are negative. The key inhibiting factors are:-

1. The expectations created by opportunities in the urban sector have a profoundly negative effect on perception of agriculture in the rural areas.
2. These opportunities draw energy and expertise away from the rural areas, leaving agriculture largely in the hands of women, and the aged and infirm.
3. The circulation of cash remittances from urban employment reduces the necessity to provide staples

from agriculture.

4. The effect of resettlement and removals are destructive, most particularly in respect of land allocation.

### Policy

A pre-requisite to improving agriculture and land utilisation in a broader sense is an effective land-use policy. In the position in which the developing states find themselves, it is imperative that each state policy should be hooked into a common agricultural policy, including other developing states and South Africa. While President Sebe's objective of "a meal a day" may be held to constitute a policy, no framework or guidelines on how this is to be achieved have been made public. Again, while a common agricultural policy may exist, it does not manifest itself and has not been made public. Development of such policies for Ciskei would need to take account of four key points:-

1. State policy will need to be based on the realities of the country, most particularly in regard to human and natural resources.
2. State policy must be congruent with a common Southern African agricultural policy, should this become a reality.
3. All agricultural output in Ciskei, whether for export or import substitution will directly affect market conditions in South Africa.
4. Such policy as is developed, will require commitment and support from legislators in their constituencies, as well as in parliament.

Community structures are generated from within the community in contrast to the external institutions, related to its social and historical background. They influence the actions of the individual strongly and are beyond his capacity to influence or control. They are factors which, needless to say, have a powerful influence on many aspects of rural behaviour.

### Attitudes to Land

The prevailing attitude to land must be seen as the prime constraint to optimising land-use. Many of the identified constraints are sequels to this attitude and exist only because of it. The issues are far broader than the limited one of land tenure systems, and relate principally to the functions of land in independent and national states.

The main function of land in these countries does not appear to be, as it is in developed economies, that of the prime agricultural resource. On the contrary, it would seem to have four main functions, one of which only, is that of agricultural resource. It is firstly a security system, deeply integrated into the culture of the people who live on it, and an essential component of their physical and psychological well being. It simply cannot be arbitrarily divorced from this role in the interest of moving towards an ideal of freehold tenure, which has frequently been recommended as a solution to abuse of land in developing countries.

Secondly, it is an economic support system for a greater economy, which is thereby relieved of major costs such as family housing, infrastructural development and pension plans, which it would otherwise have to bear.

Thirdly, it is a political resource, used to gain political strength through granting of favours, and for the enhancement of income by the issue of land-rights. Fourthly, what little of its substances is left after satisfying the three pre-eminent roles, it is an agricultural resource. The competing and conflicting demands made upon land in roles other than as an agricultural resource, would seem to be a major reason for its abuse and for the fact that productivity levels are so far below potential.

Basic to the three pre-eminent functions of land are the mechanisms for allocation of land. In contrast to western systems where land has commercial value, is transferable and is subject to market forces, the allocation system in Ciskei acts to prevent the agglomeration of land into the hands of those individuals who have both the ability and intention to make productive use of it. In the case of arable land, allotments of similar size are made quite impartially to all qualifiers, regardless of their intended use of that land. Because of the status imparted by the right to land, the security it represents, and the lack of a practical alternative system, allotments are jealously held, even though the majority of plots are not



cultivated to produce crops.

Grazing land is held under communal tenure, but it is essential to own cattle before use can be made of the grazing. In the case of both grazing land, which can be used without cost, and arable land which is subject either to a minor annual quitrent, or is completely free after an initial payment to the chief, there is effectively no cost incurred in using land. The result is that a good, which is in desperately short supply by almost any measure, has no commercial value and is subject to no market laws. This massive distortion, together with the well established syndrome governing the use of communal resources (Hardin, [11]), is sufficient to explain both the lack of output from, and the gross abuse of land in Ciskei.

#### Role of Women

Apart from the fact that they are the only effective agriculturalists in Ciskei, women by virtue of their assigned role as family providers, have been described as the "economic engine" of agriculture in the developing states (Zovitsky, personal communication 1983).

The effectiveness of ACAT, a Christian organization working in the development field, whose savings clubs are dominated by women, is evidence of the force that can be harnessed by co-opting women into the development process. There does not however, appear to be any established methodology for systematically drawing women into agricultural development, and no women extension officers are employed (Bembridge, [10]). Women are excluded by regulation, from the Tribal authorities, the main organ of local government. An apparently potent resource therefore contributes less to agricultural output, than might appear to be possible.

#### Technology

There are particular problems associated with technology the last of the exogenous factors. Technology is one of those factors acutely affected by the proximity of a large and powerful agricultural economy in South Africa. Firstly, the availability and price of basic foodstuffs are dictated by a technologically advanced system, supported by extensive subsidies in capital and transport, rendering peasant technologies largely uncompetitive in the market. Secondly, the peasant producer is highly aware of the existence of an

alternative technology, apparently highly superior to his own, which must affect his strategy decisions. Subsistence production is at present a major part of total output, and it has become a cliché that the advanced technologies do not always transfer successfully to the subsistence environment. Subsistence production implies a far wider range of separate technologies than is required for simplified commercial cropping. These must be geared to the growing, storage and preparation of a range of nutritionally differing crops for consumption, not disposal. The advanced technologies have little to offer such an integrated system, and no recorded work has been done on improving the adapted, indigenous and historical methods. Some of these, for example mixed and intercropping have been doggedly adhered to through two decades of advice to the contrary from extension services. The traditional methods require to be re-evaluated, using appropriate objective functions, and where justified, investigated and improved as an alternative to the option of the advanced, simplified technologies.

#### 4.2.2 Endogenous Factors

This group includes those which are either generated by the individual or arise from his own mental and social make-up. They can therefore be influenced or controlled by him in contrast to the exogenous factors (Norman, [7]).

Two classes are considered here, firstly the individual's goals, attitudes and personal constraints, aggregated into the global term "motivation", and secondly, the resources which he can command.

##### Motivation

There is a pervasive apathy towards agriculture which has been widely recorded in formal surveys (Bekker *et al*, [9], Quail, [12]). While the phenomenon is well recorded the under-lying reasons have not been extensively investigated. Unsupported reasons have been advanced, ranging from the lack of any need to be involved in agriculture, to its lack of productivity compared to industry. The latter, at least, can be supported by simple calculation.

Much of the confusion over motivation may arise from a tendency to attribute common, blanket motivation to "the peasant". This ignores the fact that many Ciskeians live in the rural areas not by desire, but because circumstances dictate it. It is most unlikely that such a person's attitude to agriculture would have any common feature with the motivation of a would-be peasant farmer, living in the country by choice. Lenta [13] has shown that the majority of rural dwellers in some communities in Kwa-Zulu, lack either the desire or the resources to make full use of their land and the situation in Ciskei is not likely to be widely different from this. Since the majority, by virtue of the land allocation system, controls the majority of the allocated land, it is a reasonable conclusion that this land is voluntarily held out of crop production.

### Resources

For simplicity, the individuals' personal resources are listed under the four production factors - land, labour, capital and management.

The aspect of land has been covered previously. It is worth emphasising that while individuals who lack either the desire or resources to use land productively are allocated more land than they require for agricultural purposes, would-be farmers cannot accumulate enough to sustain a viable operation.

The issue of labour is simpler. There is a demonstrable scarcity of labour for agricultural purposes, for two main reasons. Firstly, the fact of migration physically removes the bulk of the active labour force from Ciskei. Secondly, the productivity and earnings from agriculture compare poorly with opportunities in industry, and labour is consequently withheld from agriculture. Domestic demands upon the chief remaining labour source - women - are such that little time is available to devote to cropping.

The situation in regard to capital presents a striking contrast to agriculture in South Africa. The Ciskeian agricultural system is for all practical purposes, completely unencumbered by debt while the South African system is characterised by an apparently inexorably growing burden of long- and short-term borrowings. The reason of course, lies in the fact that land in Ciskei is free to all qualifiers, is not transferable, and has no value, at least not for raising capital. The resulting paradox is that states which are wealthy in land, and the

individual farmers on that land are largely poverty stricken. There is no growth in capital stock through long-term investment, and no capacity to raise working capital for farming operations.

In regard to the entrepreneurial spirit, even casual observation of Ciskei provides evidence that it flourishes in the informal sector and in small formal enterprises, notably in goods and passenger transport, in the retail trade and in perishable foods. It is largely absent from agriculture and it is suggested that this reflects a simple response to opportunity offered, rather than a pervading lack of enterprise in Ciskei.

## 5. Summary and Conclusion

The nature of the analysis in this paper has been that of a catalogue of unrelieved gloom. A number of constraints have been listed which by their nature are inputs to the peasant's decision making process. Almost any one of these constitutes an effective block to improving agricultural output, and their synergistic effect when taken together is sufficient to explain why the output from the peasant's decision process is so often the option of off-farm activities. Off-farm activity in itself need have no negative or destructive connotations - in the USA off-farm income has exceeded farm income for all people living on farms since 1967 (Ebeling, [14]). It is the spatial separation of farms and sources of off-farm income, and the resulting necessity for migrancy which has caused the negative effects in South Africa.

The listing and description of constraints is not meant to indicate that there is little or no potential for agricultural development in Ciskei. On the contrary it is intended to show that the essential naturally occurring ingredients for success are present, but that realisation of success is inhibited by constraints of human origin, which by their nature, can in fact be altered.

This is not to say that influences of human origin are necessarily simple to change. In fact the changes in attitude required from the Government are almost heroic in scale, but they remain unequivocally a pre-requisite to improve agricultural output. The description of constraints is necessary if the problem of resolving them is to be addressed, but not sufficient, and the processes required to solve them cannot be started without the existence of certain conditions, conducive to their success. The most important of these are:-

1. The recognition that all people living in the rural areas are not necessarily farmers, nor do they all desire to be farmers. This would hardly be true even if living in the country-side were a matter of choice, let alone where it is statutorily

dictated.

2. The acceptance that the present pattern of land allocation is the root cause of most of the physical constraints to production described. Land reform is a pre-requisite to the rationalising of land-use, which if implemented, would enable would-be entrepreneurs to solve the constraints themselves.
3. The acknowledgement that while the problems affecting agriculture may be 'structural' in nature, the foundations of the structure are situated at present within the independent and national states and not in the historical and social fabric of Southern Africa. This being so the solutions can only be developed and implemented by the homeland administrations, with if necessary technical and financial assistance from outside. As examples, the need for land reform and the lack of policy for and commitment to agriculture have an indigenous origin, and were not created by external action or inaction. The solutions therefore must be developed indigenously.

Given that these pre-conditions for successful change exist, the constraints are reduced to mere technical problems, requiring simple technical solutions. There is already established a movement towards the rational solution of peasant and subsistence agricultural systems (Rose and Tapson [15], Erskine [16] van Rooyen [17]) and given that land reform permitted the agglomeration of commercially viable units of land, adaptive research could supply early and meaningful improvements in technology for small commercial farmers. The creation of the pre-conditions should be a prime objective of the Government of Ciskei, and the solutions to the technical problems that of academic and other researchers working in the development field.

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